APPENDIX A

BIG CREEK ALP HYDROELECTRIC PROJECTS SETTLEMENT AGREEMENT PROPOSED NEW LICENSE CONDITIONS

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1.0 INSTREAM FLOW, TEMPERATURE, FLOW, GEOMORPHOLOGY AND RIPARIAN RESOURCES

1.1 INSTREAM FLOWS

1.1.1 STREAMFLOW REQUIREMENTS

The Licensee shall maintain the following flows downstream of Project diversion dams as set forth below. Instream flow releases shall be measured in two ways: as the 24-hour average of the flow and as an instantaneous flow. The instantaneous flow is the flow value used to construct the average daily flow value and shall be measured in time increments of at least 15-minutes. The 24-hour average flow is the average of the incremental readings from midnight of one day to midnight of the next day. The instream flows will be the flow set forth below or the natural inflow into the point of diversion, whichever is less. Should the 24-hour average flow as measured, be less than the required 24-hour average flow, but more than the instantaneous flow (instantaneous floor), the Licensee shall begin releasing the equivalent under-released volume of water within 7 days of discovery of the under-release. Credit for such additional releases will not exceed 20% of the instantaneous flow amount, when used to attain the equivalent of the under-released volume. Water Year Types shall be based on the April 1 forecast for the California Department of Water Resources (DWR), Bulletin No. 120, San Joaquin Valley Water Year Index, or its successor index that is most representative of the Big Creek watershed. The Licensee shall inform the United States Department of Agriculture-Forest Service (FS), State Water Resources Control Board (State Water Board), Untied States Fish and Wildlife Service (USFWS), and the Federal Energy Regulatory Commission (Commission or FERC) which category of instream flows will be implemented based on the April 1 forecast.

1.1.1.1 Rock Creek

<u>All Water Year Types</u>

August 1-December 31:	24-hour average of 0.5 cubic feet per second (cfs), instantaneous floor of 0.35 cfs
January 1-March 31:	24-hour average of 1 cfs, instantaneous floor of 0.75 cfs
April 1-June 30:	24-hour average of 2 cfs, instantaneous floor of 1.5 cfs
July 1-July 31:	24-hour average of 1 cfs, instantaneous floor of 0.75 cfs

1.1.1.2 Ross Creek

Wet, Above Normal, Below Normal Water Year Types

October 1-September 30:	24-hour average of 0.5 cfs, instantaneous floor of 0.35 cfs

Dry, Critical Water Year Types

July 1-November 30:	Turned Out
December 1-June 30:	24-hour average of 0.5 cfs, instantaneous floor of 0.35 cfs

1.1.1.3 San Joaquin River (Dam 6 to Redinger)

All Water Year Types

August 1-October 31:	24-hour average of 50 cfs, instantaneous floor of 45 cfs
November 1-November 30:	24-hour average of 25 cfs, instantaneous floor of 22 cfs
December 1-February 28:	24-hour average of 20 cfs, instantaneous floor of 18 cfs
March 1- March 31:	24-hour average of 50 cfs, instantaneous floor of 45 cfs
April 1-June 30:	24-hour average of 80 cfs, instantaneous floor of 72 cfs
July 1-July 31:	24-hour average of 60 cfs, instantaneous floor of 54 cfs

1.1.1.4 San Joaquin River (Mammoth Pool Dam to Dam 6)

All Water Year Types

September 1-November 30:	24-hour average of 80 cfs, instantaneous floor of 72 cfs
December 1-February 28:	24-hour average of 55 cfs, instantaneous floor of 50 cfs
March 1-March 31:	24-hour average of 80 cfs, instantaneous floor of 72 cfs
April 1-June 30:	24-hour average of 125 cfs, instantaneous floor of 112 cfs
July 1-August 31:	24-hour average of 100 cfs, instantaneous floor of 90 cfs

1.1.1.5 Stevenson Creek

All Water Year Types

October 1-March 31:	24-hour average of 5 cfs, instantaneous floor of 4 cfs
April 1-June 30:	24-hour average of 10 cfs, instantaneous floor of 8 cfs
July 1-September 30:	24-hour average of 8 cfs, instantaneous floor of 6 cfs

1.1.1.6 Balsam Creek (Diversion to Big Creek)

All Water Year Types

October 1-June 30:	24-hour average of 0.5 cfs, instantaneous floor of 0.35 cfs
July 1-September 30:	24-hour average of 1 cfs, instantaneous floor of 0.75 cfs

1.1.1.7 Balsam Creek (Forebay to Diversion)

All Water Year Types

July 1-March 31:	24-hour average of 1 cfs, instantaneous floor of 0.75 cfs
April 1-June 30:	24-hour average of 2 cfs, instantaneous floor of 1.5 cfs

1.1.1.8 Big Creek (Dam 4 to Dam 5)

All Water Year Types

October 1-October 31:	24-hour average of 8 cfs, instantaneous floor of 6 cfs
November 1-March 31:	24-hour average of 7 cfs, instantaneous floor of 5 cfs
April 1-September 30:	24-hour average of 12 cfs, instantaneous floor of 10 cfs

1.1.1.9 Big Creek (Dam 5 to San Joaquin River)

All Water Year Types

October 1-October 31:	24-hour average of 8 cfs, instantaneous floor of 6 cfs
November 1-March 31:	24-hour average of 7 cfs, instantaneous floor of 5 cfs
April 1-September 30:	24-hour average of 12 cfs, instantaneous floor of 10 cfs

1.1.1.10 Big Creek (Huntington Lake to Dam 4)

All Water Year Types

October 1-March 31:	24-hour average of 2 cfs, instantaneous floor of 1.5 cfs
April 1-June 30:	Minimum Instream Flow (MIF) release valve to be fully open April – June
July 1-September 30:	24-hour average of 3 cfs, instantaneous floor of 2 cfs

1.1.1.11 Ely Creek

All Water Year Types

June 1-February 28:	24-hour average of 0.5 cfs, instantaneous floor of 0.35 cfs
March 1-March 31:	24-hour average of 1 cfs, instantaneous floor of 0.75 cfs
April 1-May 31:	24-hour average of 2 cfs, instantaneous floor of 1.5 cfs

1.1.1.12 North Fork Stevenson Creek

All Water Year Types

October 1-September 30:	The minimum release will be 12 cfs, or the flow through the instream flow valve when that valve is wide open

1.1.1.13 Pitman Creek

All Water Year Types

July 1-March 31:	24-hour average of 0.8 cfs, instantaneous floor of 0.5 cfs
April 1-June 30:	24-hour average of 2.5 cfs, instantaneous floor of 2.0 cfs

1.1.1.14 Bear Creek

All Water Year Types

July 1-November 30:	24-hour average of 7 cfs, instantaneous floor of 5 cfs
December 1-December 31:	24-hour average of 6 cfs, instantaneous floor of 4 cfs
January 1-March 31:	24-hour average of 4 cfs, instantaneous floor of 3 cfs
April 1-Jun 30:	24-hour average of 10 cfs, instantaneous floor of 8 cfs

1.1.1.15 Mono Creek (Downstream of Mono Diversion)

All Water Year Types

September 1-December 31:	24-hour average of 25 cfs, instantaneous floor of 22 cfs
January 1-March 31:	24-hour average of 18 cfs, instantaneous floor of 16 cfs
April 1-June 30:	24-hour average of 25 cfs, instantaneous floor of 22 cfs
July 1-August 31:	24-hour average of 30 cfs, instantaneous floor of 27 cfs

1.1.1.16 South Fork San Joaquin River

All Water Year Types

October 1-October 31:	24-hour average of 30 cfs, instantaneous floor of 27 cfs
November 1-March 31:	24-hour average of 25 cfs, instantaneous floor of 22 cfs
April 1-June 30:	24-hour average of 40 cfs, instantaneous floor of 36 cfs
July 1-September 30:	24-hour average of 35 cfs, instantaneous floor of 32 cfs

1.1.1.17 Bolsillo Creek

All Water Year Types

July 1-March 31:	24-hour average of 0.5 cfs, instantaneous floor of 0.35 cfs
April 1-June 30:	24-hour average of 1 cfs, instantaneous floor of 0.75 cfs

1.1.1.18 Camp 61 Creek

Wet, Above Normal, Below Normal Water Year Types

October 1-March 31:	24-hour average of 2 cfs, instantaneous floor of 1.5 cfs
April 1-June 30:	24-hour average of 4 cfs, instantaneous floor of 3 cfs
July 1-September 30:	24-hour average of 3 cfs, instantaneous floor of 2 cfs

Dry, Critical Water Year Types

October 1-September 30:	24-hour average of 1.25 cfs, instantaneous floor of 0.75 cfs

1.1.1.19 Camp 62 Creek

All Water Year Types

July 1-March 31:	24-hour average of 0.5 cfs, instantaneous floor of 0.35 cfs
April 1-June 30:	24-hour average of 1 cfs, instantaneous floor of 0.75 cfs

1.1.1.20 Chinquapin Creek

All Water Year Types

July 1-March 31:	24-hour average of 0.5 cfs, instantaneous floor of 0.35 cfs
April 1-June 30:	24-hour average of 1 cfs, instantaneous floor of 0.75 cfs

1.1.1.21 Crater Creek

All Water Year Types

Removed from Service

1.1.1.22 Hooper Creek

All Water Year Types

October 1-March 31:	24-hour average of 2 cfs, instantaneous floor of 1.5 cfs
April 1-June 30:	24-hour average of 4 cfs, instantaneous floor of 3 cfs
July 1-September 30:	24-hour average of 3 cfs, instantaneous floor of 2 cfs

1.1.1.23 North Slide Creek

All Water Year Types

Removed from Service

1.1.1.24 South Slide Creek

All Water Year Types

Removed from Service

1.1.1.25 Tombstone Creek

All Water Year Types

Removed from Service

1.1.2 INSTREAM FLOW MEASUREMENT

The Licensee shall measure and document all instream flow releases in publicly available and readily accessible formats. For the purposes of measuring and documenting compliance with the required instream flows in Project bypass reaches, the Licensee shall implement the Flow Monitoring and Reservoir Water Level Measurement Plan included as Appendix L to the Settlement Agreement.

1.2 CHANNEL RIPARIAN MAINTENANCE FLOWS (CRMF)

By March 15 of each year, the Licensee shall use the March 1 preliminary Water Year forecast to inform the FS, the State Water Board, USFWS, CDFG and FERC which category of instream flows will be implemented on April 1. The Licensee shall have the option to adjust flows based on the April 1 and May 1 DWR Water Year forecast updates, if those updates are revised. The Licensee shall notify the FS, the State Water Board, USFWS, CDFG and FERC if changes to instream flows are to be modified to conform to the revised forecast Water Year type.

1.2.1 BEAR CREEK

Starting between May 15 and June 30 in Wet Years[1], the Licensee shall not divert water at the Bear Creek Diversion for 10 consecutive days.

[1] As identified in DWR Bulletin 120. Water year types are those developed by the DWR based upon water condition forecasts made on February 1, March 1, April 1, and May 1 conditions and projected flows as identified in DWR Bulletin 120 and applied to the San Joaquin Valley Water Year Index or its successor.

1.2.2 BOLSILLO CREEK

Between April 1 and June 30 in Wet Years[1], the Licensee shall not divert water at the Bolsillo Creek Diversion.

1.2.3 CAMP 62 CREEK

Between April 1 and June 30 in Wet Years[1], the Licensee shall not divert water at the Camp 62 Creek Diversion.

1.2.4 CHINQUAPIN CREEK

Between April 1 and June 30 in Wet Years[1], the Licensee shall not divert water at the Chinquapin Creek Diversion.

1.3 MONO CREEK CHANNEL RIPARIAN MAINTENANCE FLOW PLAN

The Licensee shall implement the Mono Creek Channel Riparian Maintenance Flow Plan, included as Settlement Agreement, Appendix D.

1.4 CAMP 61 CREEK CHANNEL RIPARIAN MAINTENANCE FLOW PLAN

The Licensee shall implement the Camp 61 Creek Channel Riparian Maintenance Flow Plan, included as Settlement Agreement, Appendix E.

1.5 CHANNEL AND RIPARIAN MAINTENANCE (CRM) FLOWS FOR THE SOUTH FORK SAN JOAQUIN RIVER BELOW FLORENCE RESERVOIR

The Licensee shall implement the Channel and Riparian Maintenance (CRM) Flows for the South Fork San Joaquin River below Florence Reservoir, included as Settlement Agreement, Appendix F.

1.6 SMALL DIVERSIONS DECOMMISSIONING PLAN

The Licensee shall implement the Small Diversions Decommissioning Plan (Crater Creek, Tombstone Creek, South Slide Creek and North Slide Creek Diversions), included as Settlement Agreement, Appendix G.

1.7 LARGE WOOD DEBRIS MANAGEMENT LICENSE ARTICLE

The Licensee shall, beginning the first full calendar year after license issuance, make a reasonable effort to return large wood to Bear Creek by allowing large wood debris (LWD) to pass over the Bear Creek Diversion Dam spillway during spill. The Licensee will also collect LWD from the impoundment in the vicinity of the intake gates and dam for placement below the diversion dam. For purposes of this Article, LWD is defined as dead or dying wood 10 feet or longer and at least 4-inches in diameter. The Licensee may cut large pieces of wood that otherwise would not be feasible to collect and move

from the Bear Creek Forebay as long as the minimum dimensions for LWD, as defined above, are maintained.

LWD shall be placed downstream of the United States Geological Survey (USGS) gaging weir below the dam ensuring there is no obstruction of the flow recording equipment at the gage. Individual wood pieces shall be placed so at least a portion lies within the channel to help ensure that it will be captured during spill events and transported downstream. Wood debris should be distributed, as access allows, for approximately 100 to 200 feet downstream of the gaging weir.

At the Annual Consultation Meeting, the Licensee shall describe to the FS and other interested governmental agencies the past year's LWD placement. The licensee, together with the governmental agencies, will decide if adjustments to the amount of LWD placed in the Bear Creek channel or procedures for placing LWD are necessary to provide adequate transport downstream during spill events. Future placement and the procedures for placing and distributing LWD in the Bear Creek channel may be modified based on the annual consultation.

1.8 TEMPERATURE MONITORING AND MANAGEMENT PLAN

The Licensee shall implement the Temperature Monitoring and Management Plan, included as Settlement Agreement, Appendix H.

1.9 FISH MONITORING PLAN

The Licensee shall implement the Fish Monitoring Plan, included as Settlement Agreement, Appendix I.

1.10 SEDIMENT MANAGEMENT PRESCRIPTIONS

The Licensee shall implement the Sediment Management Prescriptions, included as Settlement Agreement, Appendix J.

1.11 RIPARIAN MONITORING PLAN

The Licensee shall implement the Riparian Monitoring Plan, included as Settlement Agreement, Appendix K.

1.12 FLOW MONITORING AND RESERVOIR WATER LEVEL MEASUREMENT PLAN

The Licensee shall implement the Flow Monitoring and Reservoir Water Level Measurement Plan, included as Settlement Agreement, Appendix L.

2.0 CULTURAL RESOURCES

2.1 HISTORIC PROPERTIES MANAGEMENT PLAN (HPMP)

SCE shall complete the Draft Historic Properties Management Plan (HPMP) filed with FERC on about November 29, 2005, pursuant to section 106 of the National Historic Preservation Act. To the extent required by FERC or applicable law, SCE shall consult with FERC, interested governmental agencies, the Settlement Parties, and the Tribal Community for the completion of the Draft HPMP.

The Final HPMP shall include:

- Coordination with the Vegetation Management Plan, Recreation Management Plan, Riparian Monitoring Plan and any other plan referenced in the HPMP.

- A FS representative on the Big Creek Heritage Advisory Committee as described in Chapter 7 of the Draft HPMP. SCE shall consult with the Advisory Committee on the development of management and monitoring plans for cultural resources, review and evaluation of cultural resource data, the development of cultural resource protection measures, implementation of protection measures, or other recommendations as required by any Programmatic Agreement developed for the HPMP. The Advisory Committee will address specific issues or concerns that arise during the implementation of the license.

- Continued management of NRHP ineligible sites as important sites, as per the Draft HPMP.

SCE shall provide GIS compatible electronic data through "Arc GIS coverage/shapefiles" whereby archaeological survey coverage and site locations can be entered into the Forest Service Database.

SCE shall implement the HPMP upon execution of the implementing a Programmatic Agreement.

3.0 LAND MANAGEMENT

3.1 VISUAL RESOURCES PLAN

The Licensee shall implement the Visual Resources Plan, included as Settlement Agreement, Appendix M.

3.2 TRANSPORTATION SYSTEM MANAGEMENT PLAN

The Licensee shall implement the Transportation System Management Plan, included as Settlement Agreement, Appendix N.

4.0 RECREATION MANAGEMENT

4.1 RECREATION MANAGEMENT PLAN

The Licensee shall implement the Recreation Management Plan, included as Settlement Agreement, Appendix O.

5.0 TERRESTRIAL

5.1 SPECIAL-STATUS BAT SPECIES LICENSE ARTICLE

Prior to conducting any non-routine maintenance activities that result in harm to special-status bat species or their habitat, in structures that are known to support maternal or roosting bat species (including but not limited to, reconstruction and painting) (Table 5.1-1), the Licensee shall consult with California Department of Fish and Game (CDFG), FS, and USFWS. Based on the consultation, the Licensee shall implement appropriate avoidance and protection measures if necessary to minimize disturbance of special-status bat species or their habitat.

Table 5.1-1. Project Facilities and Recreation Facilities Known or Potentially Supporting Special-Status Bats.

Mammoth Pool (FERC Project No. 2085)
Mammoth Pool Dam
Mammoth Pool Reservoir Maintenance Cabin
Big Creek Nos. 1 and 2 (FERC Project No. 2175)
Huntington Lake Dams 1, 2, 3, & 3a
Big Creek PH No. 1
Big Creek PH No. 2
Powerhouse No. 1 (facilities)
Incline Adit
Lower 84” Valve House top of PH No. 1 Penstock
Powerhouse No. 2 (facilities)
Adit 1, Tunnel 2
Adit 2, Tunnel 2
Adit 5, Tunnel 2
Adit 6, Tunnel 2
Adit 7, Tunnel 2
Adit 7&1/2 Leakage Weir

Table 5.1-1. Project Facilities and Recreation Facilities Known or Potentially Supporting Special-Status Bats.

Big Creek Nos. 2A, 8 and Eastwood (FERC Project No. 67)
Shaver Lake Dam
Big Creek PH No. 8
Powerhouse No. 2A (facilities)
102" Valve House
Florence Work Camp
Eastwood School Site
West Portal Winch House
Camp Edison Campground
Day Use Areas on North Shore Roads 1 & 2
Eagle Point Boat Only Day Use Area
Big Creek No. 3 (FERC Project No. 120)
Big Creek PH No. 3
Powerhouse No. 3 (facilities)
Adit 1, Tunnel 3
Adit 2, Tunnel 3
Adit 3, Tunnel 3
Big Creek PH No. 3 Facilities (buildings/camps)

5.2 MULE DEER LICENSE ARTICLE

5.2.1 MAMMOTH POOL RESERVOIR

To protect deer crossing Mammoth Pool Reservoir during spring migration, the Licensee shall maintain: (i) the fences around the Mammoth Pool Dam spillway; (ii) the Daulton Creek Bridge; and (iii) a device to discourage deer from crossing the reservoir near the spillway; such as the barrel line that is present across the spillway. If at any time during the term of the license, one or more of these facilities requires repair or replacement, the Licensee shall maintain the facility as needed. Prior to replacement/repair of the facility, the Licensee shall contact FS, CDFG, and USFWS to inform them of the problem and provide a replacement/repair plan and schedule. FS, CDFG and USFWS will approve any replacement/repair plan and schedule prior to implementation.

During the peak migration period (May 1 through June 15), the Licensee shall ensure sand is present on the dam road to encourage deer to use the dam road to cross and will close the road during the peak migration period to reduce any adverse effects from recreation.

Additionally, to ensure that the presence of debris that may impede deer migration across Mammoth Pool Reservoir is monitored and that any build up of debris is removed in a timely manner, the Licensee shall provide an annual photo documentation to CDFG, FS and USFWS of the area at the floating boom above the spillway (i.e., area of concern) along with an estimate of the extent of any debris present. This is especially important in years when Mammoth Pool Reservoir spills. If CDFG and/or FS and/or USFWS determines—based on review of the photograph and the estimate of the aerial extent of debris buildup—that the debris would impede deer migration, the Licensee shall remove sufficient levels of debris to allow deer to migrate without impediment.

5.2.2 EASTWOOD POWER STATION (BALSAM MEADOWS)

The Licensee shall implement road closures within Big Creek Nos. 2A, 8 and Eastwood Project to prevent the disturbance of mule deer and other wildlife. Specific roads and road closure requirements are provided in Table 5.2-1.

Table 5.2-1. Roads and Road Closure Requirements

USFS Road No.	Road Description	Gate (*Closure Period*)
9S58	9S58 from gate to NF Stevenson Gage	Gate A1 (*nights only*) Gates A2 & B (*all year*)
9S32	9S32 from gate near Hwy 168 to EPH transmission line	Gates J & M (*all year*)
9S32A	9S32A, spur from 9S32 to east side of Balsam Forebay	Gate L (*all year*)
9S312	Access to Eastwood Substation from Hwy 168	Gate G (*all year*)
9S24	From Hwy 168 to NF Stevenson Creek Gate No. 2 (Tunnel No. 7)	Gate H (*all year*)

5.3 SPECIAL-STATUS SPECIES LICENSE ARTICLE

Prior to construction of new Project features on National Forest Service land that may affect FS special-status species and their habitat (i.e., FS sensitive and/or management indicator species), the Licensee shall prepare a Biological Evaluation (BE) to describe the potential impact of the action on the species or its habitat. For State or Federally listed species, federal candidate species, California species of special concern, and California fully protected species, the Licensee shall prepare a Biological Assessment (BA) or other required document and obtain any necessary permits or approvals.

5.4 BALD EAGLE MANAGEMENT PLAN

The Licensee shall implement the Bald Eagle Management Plan, included as Settlement Agreement, Appendix P.

5.5 VALLEY ELDERBERRY LONGHORN BEETLE MANAGEMENT PLAN

The Licensee shall implement the Valley Elderberry Longhorn Beetle (VELB) Management Plan, included as Settlement Agreement, Appendix Q.

5.6 VEGETATION AND INTEGRATED PEST MANAGEMENT PLAN

The Licensee shall implement the Vegetation and Integrated Pest Management Plan, included as Settlement Agreement, Appendix R.

5.7 BEAR/HUMAN INTERACTION LICENSE ARTICLE

The Licensee shall install and maintain bear proof dumpsters at the Big Creek No. 1 administrative offices and company housing, and other Project facilities where food waste may be disposed of or stored. CDFG, FS and USFWS will review and approve dumpster design prior to installation. The Licensee shall also implement a program to educate SCE personnel about proper food storage and garbage disposal to reduce bear/human incidents. The education program shall consist of written materials (educational pamphlet) and employee training.

APPENDIX B

NON-FERC SETTLEMENT AGREEMENTS

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1.0 INSTREAM FLOW, TEMPERATURE, GEOMORPHOLOGY AND RIPARIAN RESOURCES

1.1 VERMILION VALLEY LEAKAGE CHANNEL MACROINVERTEBRATE STUDY PLAN

1.1.1 INTRODUCTION

Macroinvertebrate monitoring will take place in Mono Creek below Vermilion Valley Dam to assess the effect of water quality from the Vermilion Valley Dam leakage channel on stream biota, as indicated by the macroinvertebrate community. The Vermilion Valley dam leakage channel contains high concentrations of iron, which influenced local macroinvertebrate community composition in previous studies. This document presents a Plan for monitoring potential effects on the Mono Creek macroinvertebrate community.

1.1.2 OBJECTIVE

The objective of the study is to monitor macroinvertebrate community composition and metrics in the leakage channel and in Mono Creek to evaluate if adverse effects on macroinvertebrates are widely distributed within Mono Creek downstream of the leakage channel.

1.1.3 APPROACH

The approach to be used for the study is similar to the supplementary macroinvertebrate study performed for the Vermilion Valley Hydroelectric Project Application for New License (FERC Project No. 2086). The California Stream Rapid Bioassessment Procedure (CSRBP) for point sources or other protocols that are appropriate will be used for this study, as approved by the California Department of Fish and Game (CDFG) and the State Water Resources Control Board (State Water Board) and in consultation with the Fisheries Review and Oversight Group (FROG)[1]. This approach will make use of the same sampling locations, as used in the previous study in Mono Creek below Vermilion Valley Dam and the Leakage Channel (Figure 1.1.3-1) and include an additional site approximately 100 m downstream of Mono Diversion. In addition, supplemental targeted sampling locations (Figure 1.1.3-2) more closely spaced in the vicinity of the leakage channel than indicated in the CSRBP (and other protocols) will be added to better define potential influence of the leakage channel outflow on the nearby macroinvertebrate community within Mono Creek. These will include additional replicate transects in this vicinity and additional stratified sampling along those transects. The additional stratification will provide focused sampling near both banks and the center of the Mono Creek channel to detect potential localized effects of the influence of the leakage channel outflow on the macroinvertebrate community. Sampling will take place at the same time of year as the previous study

[1] The FROG will consist of the California Department of Fish and Game (CDFG); United States Fish and Wildlife Service (USFWS); State Water Resources Control Board (State Water Board); and United States Department of Agriculture-Forest Service (FS).

(late August-September). Sampling will be conducted yearly for the first three years following the implementation of New License flows. These samples will provide an indication of year-to-year variability. Sampling will take place at least 30 days after the conclusion of any channel and riparian maintenance flow (CRMF) releases to allow some recovery time from potential scouring effects. Appropriate quality assurance/quality control (QA/QC) protocols for sampling and sample handling will be followed.

Physical habitat in each sampling location will be characterized according to the protocol used. In addition, water quality measurements will be made and samples collected for laboratory analysis. Water temperature, dissolved oxygen, pH, and specific conductance will be measured at each location. Water quality samples will be collected to characterize hardness, alkalinity, manganese, and iron (total and dissolved). A state certified laboratory will analyze water quality samples. Appropriate QA procedures will be applied to all sample collection and handling.

1.1.4 ANALYSIS AND REPORTING

Macroinvertebrate identifications will be made according to CSRBP Level 3 taxonomy and subject to standard QC. Data will be summarized and variability among sites calculated. Standard CSRBP metrics will be calculated. Metrics will be compared between sites and community composition will be analyzed and compared among sites. Comparisons also will be made between years and the variability evaluated.

A progress report will be prepared each of the first two years following laboratory analysis and data reduction. The draft reports would be filed with State Water Board, CDFG, USFWS, and the United States Department of Agriculture-Forest Service (FS) for review 120 days after sampling is complete for a 60 day review period, and filed with the Federal Energy Regulatory Commission (Commission or FERC) 30 days following that review period.

After the third year of sampling has been completed, a final report summarizing the overall results will be filed with State Water Board, CDFG, USFWS, and FS for a 60 day review period, 180 days after the final sampling. This will be filed with the FERC 30 days after the agencies 60 day review period. The focus of the final report will be on evaluating whether the discharge of the leakage channel to Mono Creek has an adverse controllable effect on the macroinvertebrate community downstream. Any further studies or remediation, if necessary, will be determined, based on this study, by the State Water Board, Chief of the Division of Water Rights and/or FERC.

1.2 GRAVEL AUGMENTATION PLAN

The goal of the Gravel Augmentation Plan is to improve trout recruitment in the Mammoth Pool diverted reach by providing additional spawning gravel, if feasible.

1.2.1 APPROACH

SCE, in coordination with the United States Department of Agriculture - Forest Service (FS), the US Fish and Wildlife Service (USFWS), California Department of Fish and Game (CDFG), State Water Resources Control Board (State Water Board) and other interested governmental agencies (collectively referred to as the "agencies"), will implement a Gravel Augmentation Project (Project). A Pilot Project will first be implemented by SCE to determine if placing gravel in the Mammoth Pool bypass reach is feasible and will be moved from the emplacement location by spill flows. If so, then gravel augmentation will be implemented over the life of the license. If not, then a supplemental fish stocking program in the Mammoth Reach will be implemented by CDFG.

1.2.2 PILOT PROJECT FEASIBILITY ASSESSMENT

During the reconstruction and modification of the flow release structures for the Mammoth Pool Dam, SCE in consultation with the agencies named above will assess the feasibility of adding gravel into or immediately below the spillway channel. SCE shall provide a written explanation of its determination to the FS, USFWS, CDFG, and State Water Board. SCE shall schedule a meeting with these agencies, and any other interested government agencies to discuss the determination.

The assessment will determine whether gravel augmentation in or below the spillway channel would:

1. impair the Mammoth Pool Dam spillway function;

2. result in erosion and undermining of the access road to Mammoth Dam; or

3. result in dam instability, impair operation of the release structures or hinder inspections to the dam and the release structures.

If the assessment concludes that the placement of gravel in or below the spillway channel would lead to the problems noted in the three above criteria or would create other reliability or operational problems, then, an alternative location for gravel placement will be sought by SCE. Various locations for gravel addition will be evaluated by SCE for the feasibility of adding gravel to the Mammoth Pool bypass reach in a location that would not adversely impact other resources and would likely increase spawning gravel in the Mammoth Pool bypass reach. The alternative location must have sufficient physical space and access for placement of gravels in the bypass reach and be comparable in cost to the placement of gravels in or below the spillway. These alternative locations would include, but not be limited to, a location below the confluence area of Rock Creek with the San Joaquin River. If no alternate location is available or feasible, SCE will consult with the above named resource agencies prior to concluding that gravel placement is infeasible, and implementing a fish stocking program instead. If the resource agencies disagree with SCE's conclusion and agreement cannot be reached, this decision may be subject to dispute resolution, as described below. If fish

stocking is implemented, SCE is making available funds to CDFG, under the Big Creek ALP Recreation Plan, for fish stocking in an amount that is sufficient to cover up to the cost of 300 tons of gravel for the CDFG supplemental stocking of fish in the Mammoth bypass reach. Appropriate fish stocking levels would be determined by CDFG, and CDFG will ensure that the supplemental fish stocking does occur in the Mammoth bypass reach.

Once the feasibility of placing gravels has been assessed by SCE in consultation with the above named resource agencies, the Pilot Project will assess whether gravels will be transported from the site of emplacement and distributed downstream by spill flows from Mammoth Pool Dam.

Gravel augmentation will begin after implementation of the first fish monitoring following the initiation of the new flow regime. SCE will place 300 tons of gravel into the San Joaquin River immediately below the Mammoth Dam Spillway, or at the alternative feasible location as discussed above. SCE will monitor gravel transport and distribution and evaluate whether the next two Above Normal or Wet Water Year spill events with a peak flow of at least 5,000 cfs are capable of moving the gravel into the bypass reach from the emplacement site. Monitoring will use visual observations, photo-documentation, or other techniques as may be necessary, including pebble counts, cross-section surveys, and tracer gravels, to determine that the gravels have been transported from the emplacement site. The Pilot gravel augmentation may be considered successful if after the two spill events, more than 50% of the gravel has moved downstream into the bypass channel from the emplacement site.

SCE will prepare a report following the completion of monitoring gravel movement after the second spill event which will be provided to the agencies for a 60 day review and comment period. SCE will respond in writing to comments and distribute a revised report to the agencies. The report will summarize the actions taken, analyses conducted, and results of gravel augmentation. SCE and the agencies will meet and decide whether to continue or modify the gravel augmentation program. If the gravel augmentation program is not implemented, SCE will instead augment the CDFG fish stocking program as identified above.

If agreement regarding the continuation of the Gravel Augmentation Program is not reached between SCE and the State Water Board, dispute resolution will be made by the Chief of the Division of Water Rights. If agreement is not reached between SCE, other state agencies, and the Federal agencies, SCE may seek dispute resolution at the Federal Energy Regulatory Commission.

When scheduling field monitoring, SCE will give interested governmental agencies a minimum of 30 days advance notice to provide them with the opportunity to participate or observe.

2.0 CULTURAL RESOURCES

2.1 NATIVE AMERICAN ADVISORY GROUP

SCE will invite one representative each from the North Fork Rancheria, Cold Springs Rancheria, Big Sandy Rancheria, Michahai Wuksachi, Mono Nation, Dunlap Band of Mono Indians, Picayune Rancheria, Table Mountain Rancheria, the North Fork Mono Tribe, Duna Wo-Wah Tribal Government, and the Sierra Nevada Native American Coalition to form a Native American Advisory Group (NAAG). By unanimous vote of the original representatives, these representatives may appoint up to an additional four representatives to the NAAG. Each tribal organization may replace its representative at any time. Each tribal organization must notify SCE of any changes in representation.

SCE will offer to provide a facilitator for each NAAG meeting, up to a maximum of one eight hour meeting each three months. If agreed to by a majority of the NAAG members, the facilitator may be an SCE employee, otherwise the facilitator will be from an organization not otherwise represented on the NAAG. The facilitator will be responsible for notifying members of meeting dates, preparing meeting agendas, compiling and distributing materials necessary for members to consider and address in NAAG meetings, compiling and maintaining meeting notes and minutes, and forwarding notes, minutes, action items and other material resulting from NAAG meetings to group members, among other things necessary to facilitate the NAAG meetings. NAAG members will agree to support the facilitator in this role. If a majority of NAAG member organizations agree, the use of the facilitator may be discontinued.

2.2 NATIVE AMERICAN USE AREA NEAR SHAVER LAKE

Within 60 days of when the four Big Creek ALP project licenses are final and no longer subject to appeal, SCE will designate approximately 6.2 acres of its fee-owned lands (outside FERC project boundaries) in the area between Camp Edison and Dorabelle Campground for use as a cultural use area, including interpretive trails and native plant restoration and harvesting, for local Native American people. Management and harvesting of native plants by Native Americans may extend beyond the 6.2 acres upon further agreement of SCE and the NAAG. Although SCE will continue to own the land upon which the cultural site is located, SCE will provide local Native American people free access to the cultural site for the term of the Project No. 67 license. In consultation with the NAAG, SCE will prepare a plan for constructing a limited number of camping and day-use sites, parking areas, representative traditional Native American structures, water supply, sanitary facilities, interpretive signs, and other infrastructure necessary for the use of the cultural site by local Native Americans for family or group events. The estimated cost incurred by SCE for these infrastructure facilities need not exceed $250,000.

After the NAAG and SCE agree upon a plan, SCE will obtain the necessary permits for any construction work to be performed under the plan. SCE will manage reservations for the use of the cultural site in coordination with the NAAG. The NAAG will coordinate among the local various Native American organizations the use of the cultural site. The

NAAG will be responsible for coordinating functions, including security, parking and traffic control, with designated SCE Camp Edison staff. The NAAG must provide at least 14 days prior notification to designated SCE Camp Edison staff when use of the cultural site is desired. The use of the cultural site will be reserved on a first-come, first-served basis. The public will be allowed use of the cultural site facilities for recreation, education, and interpretive purposes when not previously reserved for Native American use, except to the extent such use would infringe upon or degrade the cultural significance of the facilities.

All users of the Cultural Use Area will be responsible for complying with all applicable laws, regulations, and Camp Edison/SCE rules. SCE reserves the right to refuse the use of the site to individuals and organizations not complying with these requirements.

2.3 CEREMONIAL USE AREA

SCE, in consultation with the NAAG, will identify a potential location for ceremonial use, after issuance of the ALP project licenses. This use may include activities such as sweats, Bear Dance ceremonies and other similar activities. The NAAG will provide SCE with a proposal for use of the location. Upon SCE approval of the proposed use, the NAAG will obtain all necessary local governmental approvals for conducting the use at the location, such as ensuring proper sanitation, water and parking. The NAAG will provide SCE with at least 30 days notice prior to conducting the first use. If SCE concludes that the NAAG has obtained all necessary approvals, SCE will issue a temporary entry permit to the NAAG for using the location. SCE and the NAAG will meet after the use occurs to evaluate the success of the use. SCE and the NAAG will consider whether the type of activities would be appropriate on a continuing basis.

2.4 LANDS FOR REBURIAL

If prehistoric human remains are found in connection with SCE activities on lands administered by the FS, the FS will follow federal law in determining their disposition. For prehistoric human remains encountered on SCE lands, SCE will follow the requirements in the California Public Resources Code and other applicable laws. To prepare for circumstances where SCE and the Most Likely Descendant may agree that it is not appropriate to leave human remains in situ on SCE lands, SCE shall negotiate an agreement under PRC Section 5097.94 (quoted below) with members of the NAAG designating an appropriate area that is *not to be subject to further subsurface disturbance* in accordance with PRC Section 5097.98. As part of the negotiation effort, SCE shall provide members of the NAAG an opportunity to visit potential areas SCE may designate for a reburial ground, such as a location near a recorded archeological site. SCE shall endeavor to negotiate this agreement within one year of issuance of the New Licenses for Project Nos. 67, 120, 2085, and 2175. To the extent that regulatory requirements change regarding this activity, SCE will seek to renegotiate the agreement to be consistent with those new requirements.

§ 5097.91 - Native American Heritage Commission

§ 5097.94 - Powers and duties

(1) To assist interested landowners in developing agreements with appropriate Native American groups for treating or disposing, with appropriate dignity, of the human remains and any items associated with Native American burials.

§ 5097.98 - Notification of discovery of Native American human remains, descendants; disposition of human remains and associated grave goods

(b) Whenever the commission is unable to identify a descendent, or the descendent identified fails to make a recommendation, 'or the landowner or his or her authorized representative rejects the recommendation of the descendent and the mediation provided for in subdivision (k) of Section 5097.94 fails to provide measures acceptable to the landowner, the landowner or his or her authorized representative shall reinter the human remains an items associated with Native American burials with appropriate dignity on the property in a location not subject to further subsurface disturbance.

2.5 NATIVE AMERICAN SCHOLARSHIP FUND

Within 60 days of when the four Big Creek ALP project licenses are final and no longer subject to appeal, SCE shall set aside a one-time contribution of $200,000 for a college or university education scholarship fund specifically earmarked for children of local Mono/Yokuts descent. The remaining balance of the $200,000 will accrue interest at a rate of 5% per year (based on the Consumer Price Index). The Native American Advisory Group (NAAG) shall have one year after the new licenses are issued to determine by consensus the criteria for scholarship awards, including qualification criteria for local Native Americans, the amount of the awards, and for how many years a student may receive an award. The scholarship fund shall be administered by SCE. If the NAAG does not meet the one-year time frame, SCE shall develop the criteria and provide it to the NAAG for review and comment. The criteria shall be of sufficient generalization to avoid the designation of specific individuals. The NAAG will provide a list of potential recipients to SCE. SCE, as scholarship administrator, shall determine which children are to receive scholarships based upon the criteria agreed upon by the NAAG. Scholarships shall be awarded on an annual basis and in a manner that provides the most benefit to children of local Native American descent. SCE may choose to provide the scholarship funds to a foundation or other similar nonprofit organization that will administer the scholarship program in consultation with the NAAG. In that event, the interest rate at which the funds will accrue will be determined by the investment portfolio used by the administering organization.

2.6 IMPROVE PEDESTRIAN ACCESS AND PROTECTION OF CULTURAL RESOURCE AT MONO HOT SPRINGS

SCE supports improvements to the Mono Hot Springs area that will serve to facilitate Native American access and cultural use and resource protection from the South Fork San Joaquin River Bridge to the first concrete hot spring. SCE will provide financial support to the FS for projects and improvements at Mono Hot Springs. Within 60 days of when the four Big Creek ALP project licenses are final and no longer subject to appeal, SCE will provide $10,000 to the FS for development of a detailed plan in consultation with the NAAG. SCE will complete initial engineering survey and design of the proposed walkway area and provide the results to the FS. The plan will include a construction schedule, estimated implementation costs, for access and other improvements to the hot springs.

Upon approval of the plan, SCE will enter into a collection agreement with the Forest Service to provide the estimated costs shown in the plan, up to $40,000, to implement the plan. Any funds remaining from the initial $10,000 will be available for implementation of the plan. SCE will pay 50% of the FS Burden Rate normally associated with the collection agreement.

2.7 SIERRA MONO MUSEUM CURATION FUNDING

SCE will contribute up to $150,000 toward the upgrade of the Sierra Mono Museum (Museum) so that its archaeological curation program meets current federal standards (36 CFR §79). This contribution does not remove any obligation that SCE may have to provide monetary support for the future curation of archaeological collections that are found on SCE land or within Project boundaries.

The Museum has proposed a plan entitled *Curatorial Upgrades to Sierra Mono Museum*, dated 5 May 2006, which beginning on page 6 under the heading “Curatorial Work Plan—Outline” delineates the general improvements envisioned to bring the Museum plant and curation program up to current federal standards. Within 60 days of when the four Big Creek ALP project licenses are final and no longer subject to appeal, SCE will provide $50,000 to the Museum for development of a detailed Curation Plan, including estimated costs. SCE shall have 60 days to review the Curation Plan to assure itself that the Curation Plan is reasonable and designed to bring the Museum plant and curation program up to current federal standards. SCE shall provide any comments to the Museum for incorporation into a revised Curation Plan.

Within 60 days of the Museum providing an acceptable Curation Plan to SCE, SCE will provide to the Museum the estimated costs shown in the Curation Plan, up to $100,000, to implement the Curation Plan.

2.8 TRAINING FOR NATIVE AMERICAN MONITORS

SCE shall provide appropriate training for Native Americans to participate as monitors for archaeological field work as referenced in the HPMP. SCE shall conduct workshops for monitors and those who wish to become monitors. When a request is received from one or more tribe, SCE will poll other tribes for their needs and interests in a training workshop. SCE will propose a one or two-day workshop, to be held in or near tribal facilities. The workshop will include visits to sites in the field. Upon receiving the commitment of at least six attendees, SCE shall confirm the schedule with all tribes and conduct the workshop. SCE shall endeavor to include as workshop instructors local Native Americans with prior experience as monitors. SCE shall conduct up to two workshops per year.

2.9 ADDITIONS TO THE CULTURAL AND ENVIRONMENTAL AWARENESS PROGRAM FOR SCE NORTHERN HYDRO EMPLOYEES

SCE shall conduct cultural resource training of Northern Hydro Division field personnel and their supervisors at least once every two years, and of contractors before they undertake field work which is ground-disturbing or for vegetation control. The training shall include the Standard Operating Procedures for Vegetation Management and Road Maintenance that are included in the Historic Properties Management Plan (HPMP) and other aspects of the HPMP that could be affected by field work and ground disturbing activities. The training program shall be developed within six months after the New Licenses for Project Nos. 67 120, 2085, and 2175 have been issued and are no longer subject to appeal. SCE shall provide copies of the training materials to the NAAG for review and comment. SCE shall consider the views of local Native Americans in training material content, and may at its sole discretion involve Native American participants in the delivery of the training.

2.10 ANNOTATED BIBLIOGRAPHY OF REPORTS FROM SCE PROJECT WITHIN BIG CREEK AREA

SCE shall annotate its listing of reports of ethnographic, historical, and archaeological research prepared in conjunction with SCE hydroelectric projects in the Big Creek area through 2006. Each listing will include report title, author, year prepared, and number of pages. Each listing will be annotated with the following information, to the extent available:

- Geographic area covered, including map references
- Type of information (e.g., archaeological data from field work; ethnographic information from document review and interviews; historical information about logging and ranching)
    1. figures included
    2. photographs included

- Local participants (note, where reports indicate that participants have requested confidentiality, names will not be listed)

- Location within ALP area where a copy may be found

SCE shall provide the annotated list to tribes and historical societies in the Big Creek area within six months after the New Licenses for Project Nos. 67 120, 2085, and 2175 have been issued and are no longer subject to appeal.

2.11 ACCESS TO SCE LANDS FOR PLANT GATHERING PURPOSES

Native American community members will notify SCE for access to project roads for plant gathering purposes prior to entry. For safety purposes, SCE will inform its personnel of the presence of Native Americans on the road. SCE will allow tending and gathering of sourberry and other shrubs along project roads, in areas where gathering would be safe and unlikely to conflict with SCE operations. SCE will also:

- Establish herbicide no-spray buffers around gathering sites identified by the NAAG to SCE.
- Post signs to caution drivers that gatherers may be present.

SCE will, for the purpose of enhancing the presence of certain culturally significant plants that were more common and available prior to the construction of the Big Creek Project, allow Native Americans to manage culturally significant plants on SCE lands around Shaver Lake. The steps to initiate and maintain populations of culturally significant plants will be developed after discussion with the NAAG. This activity must be consistent with SCE timber harvesting and land management practices. Upon requests for access, SCE will coordinate opportunities with Native Americans to gather culturally significant plants on SCE's Shaver Lake and Dinkey Creek lands.

2.12 PLANT GATHERING AND TENDING GARDEN

SCE, in consultation with the NAAG, will identify a potential location for a gathering and tending garden after issuance of the ALP project licenses. The NAAG will provide SCE a proposed plan for the garden. Upon SCE approval of the proposed plan, the NAAG will obtain all necessary local governmental approvals for implementing the plan. If SCE concludes that the NAAG has obtained all necessary approvals, SCE will issue a license or temporary entry permit to the NAAG for using the location. SCE and the NAAG will meet after one year to evaluate the success of the use. SCE and the NAAG will consider whether the type of activities would be appropriate on a continuing basis.

2.13 JACKASS MEADOW SEDGE BED RESTORATION

SCE will provide the FS with $2,500 for reconstruction of the fence protecting the sedge bed in the Tombstone Creek channel and $1,500 for augmentation of the sedge bed with sand and/or gravel (to improve soil texture so that the sedge rhizomes can grow to lengths required for basket making). The payment shall not be required before sixty

days have passed since the New Licenses have been issued and are no longer subject to appeal.

The FS will provide the labor to accomplish this work, and will be responsible for annual fence maintenance. SCE is also contributing to this restoration effort by agreeing to decommission Tombstone Creek Diversion and to make Channel Riparian Maintenance flows for the South Fork San Joaquin River below Florence Dam. The FS will discuss this project with members of the Native American community to obtain their expertise regarding the gravel augmentation and tending the sedge bed. In addition, the FS, in cooperation with the Native American community, will plan and monitor different treatments such as burning and cutting the decadent willows in this portion of Jackass Meadow (south of the river) to stimulate new growth for basketry. The FS may monitor the response of the willows to these treatments in coordination with SCE's monitoring under the Riparian Monitoring Plan in the FERC Settlement Agreement.

3.0 LAND MANAGEMENT

3.1 NON-FERC TRANSPORTATION MANAGEMENT CONDITIONS

The following presents the Non-FERC Transportation Conditions to be implemented as part of the Big Creek Alternative Licensing Process (BCALP) Settlement Agreement. The Non-FERC conditions for transportation management address: 1) Road Use Permits (RUP) for SCE use on non-Project roads; 2) SCE maintenance of U.S Department of Agriculture Forest Service (FS) Roads located outside of the FERC Project Boundary; 3) RUP for SCE special projects on non-Project roads that are not part of the normal operation and maintenance of the Project; 4) SCE's support of a Transportation Signage Fund; 5) snow removal; 6) RUP for tunnel muck pile use; 7) cost escalation; and 8) road rehabilitation projects. Each RUP will be issued to SCE for at least five years and subsequent RUPs will be re-issued throughout the term of the License. During the life of the new licenses, the FS will not require, without the concurrence of SCE, any additional road maintenance or repair funding or activities other than those mentioned in this agreement and the Transportation Management Plan filed with the SCE Applications for New License(s).

The Non-FERC Transportation Management Conditions, discussed below, will be reviewed by SCE and the FS during the annual consultation meeting that will be conducted as described in the Big Creek ALP Transportation System Management Plan. At the annual meeting, SCE and the FS will review road work activities proposed for the forthcoming year and coordinate work, as appropriate.

3.1.1 FOREST SERVICE RUP – SCE USE OF NON-PROJECT FOREST SERVICE ROADS

SCE will sign a RUP for SCE's use of FS roads that are located outside of the FERC Project Boundary (non-Project roads) and identified in Table 3.1-1 attached to this agreement. Roads may be added to or removed from the RUP upon mutual agreement by the FS and SCE. The RUP will provide that SCE reimburse the FS for up to $16,000 annually (based on 2006 U.S. currency value) for road maintenance.

3.1.2 SCE MAINTENANCE OF NON-PROJECT FOREST SERVICE ROADS

SCE will perform road maintenance activities on FS roads outside of the FERC Project boundary identified in Table 3.1-2 attached to this agreement. These activities will be authorized under the RUP discussed in the previous section. These activities may include grading of unpaved dirt roads, graveling of graveled road surfaces, and ensuring surface drainage is functioning properly, patching existing paved roads, cleaning of culverts and ditches, vegetation trimming and clearing along roads, and hazard tree removal. Roads may be added to or removed from Table 3.1-2 upon mutual agreement by the FS and SCE. SCE agrees to maintain these roads on an as-needed basis by conducting routine road maintenance activities appropriate to the existing road surface and road class maintenance level. Major road reconstruction work will continue to be the responsibility of the FS.

3.1.3 RUP – SPECIAL PROJECTS

SCE will obtain separate RUPs, from the FS on a case-by-case basis, as needed for any significant special projects that will utilize FS roads located outside of the FERC Project boundary in a manner inconsistent with normal operation and maintenance activities (e.g., significant dam repairs, and infrastructure modification projects). SCE will repair road damage to FS roads that are incurred as a result of these special projects under the terms and conditions of these RUPs, which may include specific measures that are developed on a case-by-case basis to protect resources that may be affected. Such measures would be developed and agreed upon through consultation with the FS.

3.1.4 TRANSPORTATION SIGNAGE FUND

SCE will establish a Transportation Signage Fund account for purchase and delivery of repair materials for roadway and recreation signs and appurtenances on roads identified in Tables 3.1-1 and 3.1-2, capped at $5,000 (based on 2006 U.S. currency value) annually. The FS will coordinate with SCE regarding road sign repair and/or replacements needs. SCE and the FS will review the fund account status during the annual coordination meeting including a review of previous year account expenditures and the amount needed to re-establish the $5,000 annual threshold.

The FS shall order appropriate signs and repair materials using funds from this account. The FS will deliver signs and materials to SCE for SCE installation and/or repair. The FS may, at its discretion, perform installation and/or repair.

3.1.5 SNOW REMOVAL – KAISER PASS ROAD (FS 5S80) AND FLORENCE LAKE ROAD (FS 7S02)

A new agreement for snow removal on Kaiser Pass Road will be included in the RUP identified in Item 1 above. The terms of the RUP will be the same as those of the existing cooperative agreement, dated May 1985, between SCE and the Sierra National Forest (SNF), except that the new annual road closure date will be set at November 15.

3.1.6 TUNNEL MUCK SITES – ROAD BASE MATERIAL BORROW AREA

SCE will sign a RUP that will allow SCE to continue to use tunnel muck material from spoils piles located on SNF lands in the vicinity of SCE's Big Creek Hydroelectric Projects (Projects). The permit will allow SCE to access and actively use these piles to obtain tunnel rock material for use as base fill or surfacing material on roads located in the vicinity of the Projects.

3.1.7 COST ESCALATION

Costs associated with permit fees pursuant to conditions 1 and 4 are based on 2006 dollars. These annual costs shall be escalated based on the U.S. Gross Domestic Product – Implicit Price Deflator (GDP-IPD) found at the Energy Information Administration's website (http://www.eia.doe.gov/aer/txt/stb1601.xls), to insure that the funding is increased over the term of the four Big Creek ALP Project licenses.

3.1.8 ROAD REHABILITATION PROJECTS

The FS has proposed certain road rehabilitation or bridge repair projects on non-Project roads. SCE will, within the first year of license issuance, conduct condition surveys in consultation with the FS to review the proposed rehabilitation and/or repair projects. The objective of the condition survey is to validate the need for each road rehabilitation project listed below. Upon validation by both SCE and the FS, SCE will implement the agreed upon road rehabilitation measures. SCE will schedule these projects in coordination with recreation facility rehabilitation projects or infrastructure improvement projects, when possible. The FS-proposed projects and SCE's proposed approach to address each is discussed below.

- **Mammoth Pool Road (6S25) from 6S76 to 7S20**: SCE proposes to place tunnel muck or gravel on the road surface where needed in coordination with Project infrastructure modifications (e.g. upgrade of existing fish water generator at the base of Mammoth Pool Dam). Infrastructure modification is anticipated to occur within the first ten years following license issuance. SCE will place tunnel muck or gravel on the road surface at locations where ongoing resource damage is occurring (e.g. steep grade sections, which are susceptible to surface erosion).

- **Mammoth Pool Road D Spur (6S25D) from 6S25 to South Lakeshore (Windy Point Boat Launch)**: SCE proposes to place tunnel muck or gravel on the road surface where needed. SCE will place tunnel muck or gravel on the road surface at locations where ongoing resource damage is occurring (e.g. steep grade sections, which are susceptible to surface erosion).

- **Kaiser Pass Road (5S80) from Single Lane to Vermilion**: Based on the results of the road condition survey, SCE will repair failed road shoulders at locations agreed upon by both SCE and the FS. The corrugated metal pipe (CMP) at Camp 61 Creek will be evaluated by a state certified civil engineer to validate the functionality. Where resource protection issues resulting from failing or undersized CMPs are

evident, other CMP's along this road segment will also be evaluated by a state certified civil engineer to validate their functionality. If needed, appropriate CMP replacements will be designed. Road shoulder repairs and/or CMP replacement, if needed, will be completed within five years following license issuance.

- **Florence Lake Road (7S01) from 5S80 to Florence Lake**: Based on the results of the road condition survey SCE will repair failed road shoulders at locations agreed upon by both SCE and the FS. The CMP's along this road segment will be evaluated by a state certified civil engineer to validate their functionality. If needed, appropriate CMP replacements will be designed. Road shoulder repairs and/or CMP replacement, if needed, will be completed within five years following license issuance.

- **Hooper Diversion OHV route (7S65) from 7S370 to 7S76A**: SCE has agreed to assume responsibility for the maintenance of road 7S65 and the associated low water crossing (LWC) at the South Fork San Joaquin River. As such, SCE will conduct annual inspections of the LWC and perform necessary repairs.

- **Hooper Diversion OHV route (7S65) from 7S76A to the Hooper Diversion**: SCE has agreed to assume maintenance responsibility for this road. As part of the responsibility, SCE agrees to place tunnel muck or gravel on the road surface at locations where needed.

- **Hooper Diversion Spur A (7S65A) from 7S65 to Gaging Station**: SCE has agreed to assume maintenance responsibility for this road. The two stream crossings along this road segment will be evaluated in consultation with the FS to determine an appropriate method for stabilization of the stream bed. As agreed, appropriate stabilization measures will be implemented.

- **Railroad Grade Road (8S08) from 8S08A to Big Creek Dam 4**: SCE has agreed to assume maintenance responsibility for this road segment. Road surface repair and surface drainage repairs will be addressed through routine maintenance. Installation of guardrails or object markers, if needed, will be completed within five years following license issuance. The CMP at Ely Creek will be evaluated by a state certified civil engineer to validate the functionality. If needed, an appropriate CMP replacement will be designed and installed within five years of license issuance.

- **Grouse Creek Road (8S12) from Highway 168 to End**: SCE has agreed to assume maintenance responsibility for this road. SCE will repair existing erosion damage to the road surface as part of the annual maintenance responsibility.

- **Eastwood Lane (8S14) from M3120 to M2710 in Big Creek**: SCE has agreed to assume maintenance responsibility for this road. SCE will repair existing erosion damage to the road surface as part of the annual maintenance responsibility.

- **Crater Creek Bridge on Florence Lake Road (7S01):** SCE will replace the Crater Creek Bridge in coordination with the rehabilitation of the Florence Lake Picnic and Day-Use Area. Rehabilitation of the Florence Lake Picnic and Day-Use Area is scheduled to be conducted between 10 and 15 years after license issuance.

- **Chinquapin Creek Bridge on Florence Lake Road (7S01)**: The Chinquapin Bridge will be evaluated by a state certified civil engineer to validate the functionality. An appropriate bridge, if needed, will be designed and will be replaced in coordination of the rehabilitation of the Jackass Meadow Campground. Rehabilitation of the Jackass Meadow Campground is scheduled to be conducted in eight to twelve year after license issuance.

- **Mono Hot Springs Bridge on Kaiser Pass Road (5S80)**: If bridge reinforcement is required in the future due to a SCE vehicle upgrade, then SCE will complete the necessary bridge improvement for safe operation. SCE agrees to repaint the bridge once. Repainting of the bridge will be performed at the time of bridge reinforcement, if conducted, or in coordination with the rehabilitation of the Mono Creek Campground. Rehabilitation of the Mono Creek Campground is scheduled to be conducted in 17 to 22 years after license issuance.

- **Bolsillo Bridge on Kaiser Pass Road (5S80)**: If bridge reinforcement is required in the future due to a SCE vehicle upgrade, then SCE will complete the necessary bridge improvement for safe operation.

- **Florence Spillway Bridge on road 7S370**: Based on the results of the road condition survey, SCE will implement the agreed upon bridge maintenance.

- **Edison Pipeline Bridge on Kaiser Pass Road (5S80)**: Based on the results of the road condition survey, SCE will implement the agreed upon bridge maintenance.

- **High Rock Bridge on Railroad Grade Road (8S08)**: Based on the results of the road condition survey, SCE will implement the agreed upon bridge maintenance.

3.2 SCE OWNED LANDS IN THE VICINITY OF SHAVER LAKE

SCE owns about 12,600 acres of land immediately surrounding Shaver Lake and manages these lands for silviculture, wildlife habitat, education, electric utility, public service, and recreation purposes. SCE recognizes the value of these undeveloped lands for wildlife habitat, and has no plans for developing the lands on the eastern side of Shaver Lake. If development is proposed for SCE's private Shaver Lake lands, SCE will follow all applicable law, including planning requirements under the Fresno County General Plan and environmental analysis under the California Environmental Quality Act.

SCE is currently in the process of developing a land management plan for the Shaver Lake lands. As a part of that land management planning process, SCE shall consult with the California Department of Fish and Game (CDFG) and other interested stakeholders. SCE intends to designate appropriate areas as having one or more of the following management goals: wildlife conservation, timber harvesting, water supply, fire prevention, education, public access, recreation, and vegetation protection. SCE will oversee forest management operations under this plan in a manner that maintains a variety of habitats and protects the overall health of the forest lands. SCE wildlife biologists will regularly assess the condition of wildlife habitat on SCE forest lands and take that condition into account when considering new uses or the authorization of continuing uses. SCE will offer to schedule an annual spring consultation meeting and site visit with representatives of the CDFG to observe management of the Shaver Lake lands.

4.0 RECREATION MANAGEMENT

4.1 RECREATION FACILITY OPERATIONAL MAINTENANCE

The United States Department of Agriculture Forest Service (FS) will be responsible for the operational maintenance of all FS owned facilities in Table 4.1-1. SCE will have no responsibility for the annual operational maintenance of recreation facilities that are operated by the FS, or their concessionaire.

4.2 ASSET MANAGEMENT AND CONCENTRATED USE MAINTENANCE

SCE will provide the FS with annual funding to be used for the recreational purposes of asset management and concentrated use management. SCE will provide the FS the equivalent of $49,000 annually (based on 2006 U.S. currency value) for asset management and concentrated use management for the four Big Creek ALP Projects (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), the Vermilion Valley Hydroelectric Project (FERC Project No. 2086) and the Portal Hydroelectric Power Project (FERC Project No. 2174). The annual costs shall be escalated based on the U.S. Gross Domestic Product – Implicit Price Deflator (GDP IPD), to insure that the funding is increased over the term of the license. The $49,000 funding will be subject to the standard FS “burden rate.” This burden rate would be paid in addition to the $49,000 (adjusted for inflation). Currently the burden rate is 17.9%.

SCE will provide funds to the FS for a boat, described below, and trailer to accomplish the responsibilities associated with the management of the dispersed concentrated use recreation areas. The FS would use the boat at Florence, Edison, Mammoth Pool and Redinger lakes. The FS will make the boat available for use by all emergency personnel including Huntington Lake Volunteer Fire Department (HLVFD), California Department of Forestry and Fire Protection (CDF), SCE, Fresno and Madera Sheriff’s Department or Emergency Medical Services. The boat will be a 17 foot (ft) to 22 ft fiberglass or aluminum hull patrol/rescue boat with a 115 horsepower (hp) to 150 hp

four stroke, 4.3 liter gasoline outboard or comparable inboard/outboard engine. The boat should be able to accommodate a patient on a backboard and be equipped with emergency lighting for law enforcement/rescue use. The estimated cost for the boat and trailer is $25,000. SCE will reimburse the FS, up to $25,000, for the purchase of a boat and trailer meeting the aforementioned specifications.

4.3 RECREATION FACILITY MINOR REHABILITATION

SCE will provide the FS with $145,000 annually (based on 2006 U.S. currency value) for minor rehabilitation activities at the FS owned and operated recreation facilities listed in Table 4.1-1. The annual costs shall be escalated based on the GDP-IPD, to insure that the funding is increased to compensate for inflation over the term of the license.

Minor rehabilitation include repairs and replacement of parts that result in fewer breakdowns and fewer premature replacements, and helps achieve the expected life of the fixed asset. Minor rehabilitation activities will arrest deterioration and appreciably prolong the life of the fixed assets. Examples of minor rehabilitation include: installing a new roof, new floor, new siding, replacing electrical wiring or heating systems, repairing or replacing pipes, pumps and motors, and repairing the paths, walks, or walls of recreation facilities. Inspections are a critical part of minor rehabilitation as they provide the information for identifying repair needs.

Minor rehabilitation also includes repairing interpretive display exhibits in the vicinity of the four Big Creek ALP Projects that are provided by SCE in accordance with Section 5.4 of the Recreation Management Plan for the Big Creek Hydroelectric System (Appendix O). Upon installation, the interpretive exhibits will become the property of the Forest Service which will be responsible for the minor rehabilitation of the interpretive exhibits.

4.4 INTERPRETIVE PROGRAM (FOREST SERVICE, SHAVER CROSSING RAILROAD STATION GROUP, HUNTINGTON LAKE BIG CREEK HISTORICAL CONSERVANCY)

SCE will support interpretative opportunities in the vicinity of the four Big Creek ALP Projects by providing annual contributions to the FS and one-time contributions to the Shaver Crossing Railroad Station Group, and the Huntington Lake Big Creek Historical Conservancy (HLBCHC), as described below.

4.4.1 UNITED STATES DEPARTMENT OF AGRICULTURE – SIERRA NATIONAL FOREST (FS)

SCE will provide the FS with annual funding to be used for the administration of interpretive programs which may include, but not be limited to, the development of brochures/publications for distribution in the vicinity of the four Big Creek ALP Projects. SCE will provide the FS the equivalent of $13,000 annually (based on 2006 U.S. currency value) for the management and coordination of interpretative brochures/publications. The annual costs shall be escalated based on the GDP-IPD, to insure that the funding is increased over the term of the license.

4.4.2 SHAVER CROSSING RAILROAD STATION GROUP

SCE shall provide the Shaver Crossing Railroad Group with up to $25,000 as a one time donation to the Shaver Crossing Railroad Station Museum. The exact amount of the payment will be based upon submittal of a detailed plan and cost estimate by the Shaver Crossing Railroad Group for funding of the activities described below. The payment shall not occur until after 60 days have passed once the New Licenses are issued and are no longer subject to appeal.

The Shaver Crossing Railroad Station Group will use the funding to develop interpretive brochures and an interpretive panel/kiosk that will provide information on the San Joaquin and Eastern Railroad, and the Shaver Crossing Railroad Station Museum. The interpretive brochure will include information regarding the interpretive exhibits available at the museum, and driving directions to the museum. The interpretive panel/kiosk will be located along the road in front of the station to inform motorists of the museum.

SCE will perform a Historic Building Evaluation of the Shaver Crossing Railroad Station, as part of its overall evaluation and formal nomination of the Big Creek Hydroelectric System Historical District (BCHSHD) to the National Historic Properties Registry (NHPR). The Shaver Crossing Railroad Group may also use a portion of the SCE funding to perform a separate historical evaluation.

4.4.3 HUNTINGTON LAKE BIG CREEK HISTORICAL CONSERVANCY

SCE shall provide the HLBCHC with up to $25,000 as a one-time donation for educational and interpretive programs for the HLBCHC. The exact amount of the payment will be based upon submittal of a detailed plan and cost estimate by the HLBCHC for funding of the activities described below. The payment shall not occur until after 60 days have passed since the New Licenses are issued and are no longer subject to appeal.

Subject to FS approval, SCE will provide permanent outdoor housing for the Bull Dog Mack Truck and a section of the original outlet of Ward Tunnel now in possession of the HLBCHC. SCE will construct as part of the Eastwood Visitors Center rehabilitation a facility to display the historic truck and section of the Ward Tunnel. The HLBCHC shall provide the historic Truck and section of the Ward Tunnel for interpretive opportunities at Eastwood Visitor Center. Costs and conceptual plan for the interpretive display shall be developed by SCE in coordination with the HLBCHC. SCE shall incorporate the development of the interpretive display into the rehabilitation schedule for the Eastwood Visitors Center.

SCE shall provide the HLBCHC with up to $125,000 as a one-time donation to the Billy Creek Museum. The exact amount of the payment will be based upon submittal of a detailed plan and cost estimate by the HLBCHC for funding of the activities described below. The payment shall not occur until after 60 days have passed once the New Licenses are issued and are no longer subject to appeal.

The HLBCHC will use the funding to complete repairs and improvements to the Billy Creek Museum and grounds. These activities include:

- Installing permanent underground power at Billy Creek Museum (install outdoor lighting in key areas including power source for outdoor evening presentations);
- Reconstructing the amphitheater;
- Constructing the Tom Barile Memorial Footbridge crossing Billy Creek;
- Refurbishing flower and rock gardens;
- Installing a rock base for museum sign;
- Site preparation and foundation for the third historical building to be moved to museum grounds;
- Constructing a viewing platform designating points of historical interest (i.e. – B-24 bomber crash site, dams, original camp locations, etc.);
- Moving the B-24 memorial from Portal to Billy Creek;
- Repairing the existing driveway;
- Constructing a stone enclosure for trash container;
- Repairing the historical flagstone wall across from museum; and
- Moving the historical building from Kaiser Diggings to Billy Creek.

4.5 HUNTINGTON LAKE BOAT DOCK ASSISTANCE

SCE will provide assistance to the Huntington Lake Association (HLA) in improving existing docks in order to provide a greater range of water recreation functionality in relation to Huntington Lake water surface elevations expected to occur during the recreation season. This assistance may include, but not be limited to:

- Project planning for dock improvements;
- Assisting the HLA with permitting regarding any proposed dock improvements;
- Relocating existing docks, where appropriate and allowed by existing permits;
- Extending access facilities to the docks; and
- Excavating lakebed material to improve the range of water surface functionality, where feasible, appropriate, and permitted by regulatory agencies.

SCE does not intend to become a permittee of docks or to provide advice to the HLA or its members regarding what types of changes that may be made to dock permits issued by the FS.

4.6 EMERGENCY SERVICES

SCE will support emergency service in the vicinity of the Big Creek ALP Projects by providing onetime contributions to the Huntington Lake Volunteer Fire Department (HLVFD) and the Fresno County Sheriff Department, as described below.

4.6.1 HUNTINGTON LAKE VOLUNTEER FIRE DEPARTMENT FUNDING

SCE shall provide the HLVFD with up to $100,000 for the purchase of a water tender for fire protection purposes. The payment shall not occur until after 60 days have passed once the New Licenses are issued and are no longer subject to appeal. SCE shall provide payment to the HLVFD within 15 days after the HLFVD has provided documentation to SCE that the HLVFD has entered into a contract for the purchase of the water tender. The HLVFD shall be responsible for any cost of the water tender that is over $100,000. The HLVFD shall provide SCE with proof that the money is spent on the purchase of a water tender within six months of SCE making the payment, or else the HLVFD will return the money to SCE.

4.6.2 FRESNO COUNTY SHERIFF DEPARTMENT FUNDING

SCE shall provide the Fresno County Sheriff Department with up to $100,000 for the purchase of a snow cat. The payment shall not occur until after 60 days have passed once the New Licenses are issued and are no longer subject to appeal. SCE shall provide payment to the Fresno County Sheriff Department within 15 days after the Fresno County Sheriff Department has provided documentation to SCE that the Fresno County Sheriff Department has entered into a contract for the purchase of the snow cat. SCE shall pay the Fresno County Sheriff Department for the cost of the snow cat up to $100,000. The Fresno County Sheriff Department shall be responsible for any cost of the snow cat that is over $100,000. The Fresno County Sheriff Department shall provide SCE with proof that the money is spent on the purchase of a snow cat within six months of SCE making the payment, or else the Fresno County Sheriff Department will return the money to SCE.

4.7 SAN JOAQUIN RIVER TRAIL MAINTENANCE

In support of the San Joaquin River Trail, a valuable recreation resource in the Sierra Nevada Mountains, SCE shall provide the San Joaquin River Trail Council with $40,000, as a one-time donation for use in the development of the San Joaquin River Trail. The payment shall not occur until after 60 days have passed after the New Licenses have been issued and are no longer subject to appeal. The San Joaquin River Trail Council will use the funds to develop, repair, or improve the multi-use San Joaquin River Trail along the San Joaquin River from Millerton Reservoir to the crest of the Sierra Nevada Mountain Range. The San Joaquin River Trail Council will provide

SCE with an annual accounting of its expenditures of the donated funds until the San Joaquin River Trail Council has expended all of the funds, at which time the annual accounting will be discontinued.

4.8 PORTAL CAMPGROUND WATER SYSTEM

SCE will the reimburse FS for reasonable costs, up to $100,000, for the development and implementation of a water system at the Portal Campground, with the following stipulation:

- No system need be developed if a water treatment plant is needed. (Currently no FS Campground in the vicinity has a treatment plant and the water samples provided to the county meet Water Quality standards).

4.9 BIG CREEK FISH HATCHERY

SCE, in consultation with the California Department of Fish and Game (CDFG), will investigate the feasibility of rehabilitating and operating the Big Creek fish hatchery to: 1) educate the public about fisheries resources and management, and 2) augment CDFG fish stocking activities in the Big Creek basin. The operation of the Big Creek fish hatchery would be in addition to SCE's annual contribution to CDFG to support the fish stocking program in the Big Creek Basin, as described in the Recreation Management Plan. Big Creek fish hatchery operations could potentially contribute approximately 60,000 (four per pound) trout to support recreation in the watershed, which could decrease the CDFG's annual hatchery operations costs. However, permitting requirements for aquaculture facilities are becoming more stringent, and could adversely affect the feasibility analysis. If SCE decides that renewed operation of the Big Creek Hatchery is not feasible, SCE will meet with the Department to discuss alternative approaches to achieve the goals of the Big Creek fish hatchery.

CDFG will assist SCE in securing permits for the operation of the Big Creek fish hatchery, and will provide technical expertise in the management of the hatchery. If the results of the feasibility study are favorable, SCE will consult with CDFG regarding the operation of the fish hatchery in an effort to assist CDFG in meeting its management objectives for fish stocking in the Upper San Joaquin River Basin.

TABLES

Table 3.1-1. Roads Maintained by USFS.

License Area	SCE MAP No.	USFS ROAD No.	USFS Name	Termini	Maintenance Level	Surface	Length	Legal	Quad	SCE Names
Mammoth	25	04S081(02)	MINARETS RD	08S003-06S025	4	A/C	13.8	T8S-R24E-21	397-2C	
Upper Basin	31	05S080(01)	KAISER PASS	SH-168-SINGLE LANE	5	A/C	5.5	T8S-R26E-05	416-3C	5S80 Kaiser Pass Road (Hwy 168 to gate)
Mammoth	26	06S025(01)	MAMMOTH POOL	4S81-6S76	3	A/C	3.6	T6S-R24E-28	417-1C	6S025 Mammoth Pool Road
Upper Basin	4	07S001B(01)	FLORENCE PICNIC	7S01-GATE	4	A/C	0.1	T7S-R27E-36	415-3C	7S01B Florence Work Camp access road from 7S01
Upper Basin	209	07S001C	FLORENCE BOAT RAMP	07S001-RAMP	3	A/C	0.2	T7S-R27E-36	415-3C	7S01C access to Florence Lake Boat Ramp
Upper Basin	34	07S012Y	MONO CR CG	05S080-CAMPGROUND	3	A/C	0.3	T6S-R27E-35	415-3C	7S12Y Mono Campground loop 1
Upper Basin	227	07S012YX	MONO CR CG	07S012X-07S12YX	4	A/C	0.3	T6S-R27E-35	415-3C	7S12YX Mono Campground loop 2
Upper Basin	228	07S012YXA	MONO CR CG	07S012YX-07S12YX	3	NATIVE	0.1	T6S-R27E-35	415-3C	7S12YXA Mono Campground DAY USE AREA ACCESS ROAD
Mammoth	212	07S032	DUSY-ERSHIM OHV ROUTE	05S080-WHITE BARK VISTA	3	NATIVE	1.2	T7S-R26E-26	416-4C	7S32 White Bark Vista and comm site access
Upper Basin	43/211	07S370	JACKASS MEADOW ROAD	07S001-EOP	3	A/C	2.9	T7S-R27E-36	415-3	7S370 from 7S65 to Tombstone Diversion access road gate
Upper Basin	199	07S370B	JACKASS MEADOW SPUR B	07S370-07S370	3	A/C	0.1	T7S-R27E-36	415-3	7S370B from 7S370 (near Florence Lake)
Shaver	154	09S065(01)	MUSICK MOUNTAIN	M2710-9S22	3	AGG	1.0	T9S-R25E-06	397-1C	9S65 Musick Mtn
Shaver	154	09S065(02)	MUSICK MOUNTAIN	09S22-COMM SITE	3	NATIVE	1.8	T9S-R25E-06	397-1C	

Level 1. Assigned to intermittent service roads during the time they are closed to vehicular traffic. The closure period must exceed 1 year. Basic custodial maintenance is performed to keep damage to adjacent resources to an acceptable level and to perpetuate the road to facilitate future management activities. Emphasis is normally given to maintaining drainage facilities and runoff patterns. Planned road deterioration may occur at this level. Appropriate traffic management strategies are "prohibit" and "eliminate." Roads receiving level 1 maintenance may be of any type, class, or construction standard, and may be managed at any other maintenance level during the time they are open for traffic. However, while being maintained at level 1, they are closed to vehicular traffic, but may be open and suitable for non-motorized uses.

Level 2. Assigned to roads open for use by high clearance vehicles. Passenger car traffic is not a consideration. Traffic is normally minor, usually consisting of one or a combination of administrative, permitted, dispersed recreation, or other specialized uses. Log haul may occur at this level. Appropriate traffic management strategies are either to (1) discourage or prohibit passenger cars or (2) accept or discourage high clearance vehicles.

Level 3. Assigned to roads open and maintained for travel by a prudent driver in a standard passenger car. User comfort and convenience are not considered priorities. Roads in this maintenance level are typically low speed, single lane with turnouts and spot surfacing. Some roads may be fully surfaced with either native or processed material. Appropriate traffic management strategies are either "encourage" or "accept." Discourage" or "prohibit" strategies may be employed for certain classes of vehicles or users.

Level 4. Assigned to roads that provide a moderate degree of user comfort and convenience at moderate travel speeds. Most roads are double lane and aggregate surfaced. However, some roads may be single lane. Some roads may be paved and/or dust abated. The most appropriate traffic management strategy is "encourage." However, the "prohibit" strategy may apply to specific classes of vehicles or users at certain times.

Level 5. Assigned to roads that provide a high degree of user comfort and convenience. These roads are normally double lane, paved facilities. some may be aggregate surfaced and dust abated. The appropriate traffic management strategy is "encourage."

Table 3.1-2. Roads Maintained by Southern California Edison Company.

License Area	SCE MAP No.	USFS ROAD No.	USFS Name	Termini	Maintenance Level	Surface	Length	Legal	Quad	SCE Names
Upper Basin	31	05S080(02)	KAISER PASS	SINGLE LANE TO END	3	A/C	17	T7S-R26E-34	416-4C	5S80 Kaiser Pass Road (Single Lane Section)
Upper Basin	70	05S080H	BOLSILLO CG	05S080-TRAILHEAD	3	NATIVE	0.3	T7S-R27E-S28	416-4C	5S80H Access road to Bolsillo Diversion from 5S80
Upper Basin	176	05S080Q	KAISER CABIN	05S080-EAST	2	NATIVE	0.3	T7S R26E S26	396-2C	5S80Q Access road to Portal Forebay low voltage line from 5S80, Kaiser Pass Road
Upper Basin	177	05S080QA	KAISER CABIN A	05S080Q-CABIN	2	NATIVE	0.1	T7S R26E S26	396-2C	5S80QA Access to Kaiser Cabin from 5S80
Upper Basin	222	05S080ZC	MONO TUNNEL BORROW	5S80-SOUTH	2	NATIVE	0.5	T61/2S-R27E-35	415-3C	5S80ZC Access road to Mono Tunnel Borrow Area
Mammoth	26	06S025(02)	MAMMOTH POOL	6S76-7S20	3	NAT>AGG	2.0	T6S-R24E-34	417-1C	6S025 Mammoth Pool Road
Mammoth	165	06S025D	MAMMOTH POOL D SPUR	6S25-SOUTH LAKESHORE	3	NATIVE	0.2	T7S-R24E-10	417-4C	6S025D Mammoth Pool D Spur Road
Mammoth	39	06S076(02)	LOGAN MEADOW	6S025-MAMMOTH POOL RESERVOIR	3	AGG	1.7	T6S-R24E-34	417-4C	6S076 Logan Meadow Road
Upper Basin	45	06S083	BEAR DIV. OHV ROUTE	05S080 - DAM	2	NATIVE	2.4	T7S-R27E-10	416-4C	6S83 Access road to Bear Diversion from 5S80
Upper Basin	52	07S001	FLORENCE LAKE	05S080-LAKE	4	A/C	6.5	T7S-R27E-21	416-4C	7S01 Florence Lake Road
Mammoth	38	07S020	SHAKE FLAT	6S25-SHAKE FLAT CR	2	NATIVE	1.5	T7S-R24E-10	417-4C	7S20 Access to Shake Flat Creek trail from 6S25
Mammoth	134	07S020A	SHAKE FLAT A SPUR	07S020-FACILITY	2	NATIVE	0.2	T7S-R24E-S15	417-4C	7S20A Access to Mammoth Tunnel near MP Dam
Mammoth	40	07S047(01)	ROCK CREEK DIV.	4S81 - MP. 0.1	4	A/C	0.1	T7S-R24E-28	417-4C	7S47 Access to 7S47A from 4S81
Mammoth	40	07S047(02)	ROCK CREEK DIV.	MP 0.1 - MP. 1.4	4	NATIVE	1.3	T7S-R24E-28	417-4C	
Mammoth	40	07S047(03)	ROCK CREEK DIV.	MP1.4 - MP. 4.2	2	AGG	2.8	T7S-R24E-28	417-4C	
Mammoth	126	07S047A	ROCK CREEK DIV A SPUR	07S047-SOUTH	2	NATIVE	0.2	T7S-R24E-S34	417-4C	7S47A Access to Rock Creek Diversion
Upper Basin	46	07S065(01)	HOOPER DIV. OHV RTE	07S370 MP 1.6 - 7S65A	2	NATIVE	1.6	T7S-R27E-36	415-3C	7S65 Hooper Diversion OHV Route
Upper Basin	46	07S065(02)	HOOPER DIV. OHV RTE	7S65A - HOOPER DIV.	2	NATIVE	0.3	T7S-R28E-30	415-3C	
Upper Basin	27	07S065A	HOOPER DIV. SPUR A	7S65-GAGING STAT.	2	NATIVE	1.1	T7S-R28E-30	415-3C	7S65A Access to Hooper Diversion gaging station from 7S65
Upper Basin	76	07S370E	JACKASS MEADOW SPUR E	07S370-SOUTH TO TOMBSTONE						Tombstone Diversion access road from gate with 7S370 to diversion access trail
Mammoth	32	08S003(01)	MAMMOTH POWER HSE	4S81 - S. J. River	3	A/C	3.8	T8S-R24E-21	397-1C	8S03 Mammoth Pool Powerhouse Road
Mammoth	116	08S003F	MAMMOTH MUCK	08S003B-SOUTH	2	NATIVE	0.3	T8S-R24E-22	397-1C	8S03F Access road to tunnel muck site from 8S03
San Joaquin	15	08S005S	CANYON POINT	8S005 - NORTH	2	NATIVE	0.2	T9S-R24E-17	397-2C	8S05S
San Joaquin	9	08S008(02)	SJ&E RAILROAD GRADE	08S008A-M2710	3	AGG	4.7	T9S-R24E-14	397-1C	8S08 SJ&E Railroad Grade Road
Big Creek Cyn		08S008(03)	SJ&E RAILROAD GRADE	M2710-M2710	2	NATIVE	1.5	T9S-R25E-31	397-1C	8S08 Railroad Grade, between gates with M2710
Big Creek Cyn		08S008(04)	SJ&E RAILROAD GRADE	M2710-BIG CREEK DAM	2	NATIVE	1.4	T9S-R25E-33	397-1C	8S08 Railroad Grade, from M2710 to the south end of Dam 4.
Big Creek Cyn	201	08S008AA	AGUA A	08S008 - NORTH	2	NATIVE	0.2	T8S-R25E-36	397-1C	8S08AA Access to east side of Big Creek No. 2/2A penstocks from 8S08A
Big Creek Cyn	150	08S008AB	AGUA B	08S008 - NORTH	2	NATIVE	0.4	T8S-R25E-36	397-1C	8S08AB Access to west of Big Creek No. 2/2A penstocks from 8S08A
Big Creek Cyn	53	08S012	GROUSE CREEK	SH168-SW	2	NATIVE	3.3	T8S-R25E-24	396-2C	8S12 Access road to Huntington Shaver Siphon from Hwy 168 to 8S12A
Big Creek Cyn	125	08S012A	BIG CREEK SPUR	8S012-PENSTOCK	2	NATIVE	1.1	T8SR25E-23	396-2C	8S12A Access road to Huntington Shaver Siphon from 8S12
Big Creek Cyn	96	08S014	EASTWOOD LANE	M3120 - M2710 IN B.C.	2	NATIVE	2.0	T8S-R25E-28	396-2C	8S14 Old Dump Road
Big Creek Cyn	67	08S022	PITMAN ACCESS	M2710-EAST	2	NATIVE	0.2	T8S R25E S28	396-2C	8S68 Access road to trail to Pitman Domestic water diversion from Huntington Lake Road
Big Creek Cyn	258	08S047(01)	BALSAM	M2710 - GATE	2	NATIVE	2.2	T9S-R25E-06	397-1C	Eastwood TL access to tower
Big Creek Cyn	107	08S066C(01)	Dam Spur C	FRE3380-FS BDY	2	NATIVE	0.3	T8S R25E S22	396-2C	8S66C on public access
Big Creek Cyn	120	09S089A	SCHOOLHOUSE A	9S89-WEST	2	NATIVE	0.5	T9S-R24E-18	397-2C	9S98A Access to Chawanakee beach
Big Creek Cyn	121	09S089B	SUBSTATION 8	9S89-EAST	2	BST	0.5	T9S-R24E-18	397-2C	9S89B Access to Big Creek No. 3 Switchyard
Big Creek Cyn	97	09S088XAA	Firebreak	9S88X-9S88XA	2	NATIVE	0.1	T9S-R24E-18	397-2C	9S88XAA Firebreak
Vermilion	112	5S80A	VERMILION WEST	EDISON DAM-PACK STATION	2	NATIVE	0.3	T61/2S-R27E-26	415-3C	5S80A Access to Vermilion Dam Emergency Spillway
Vermilion	191	5S80AB	VERMILION AB	5S80-EAST	2	NATIVE	0.1	T61/2S-R27E-26	415-3C	5S80AB Access to Vermilion Leakage Weirs
Vermilion	265	5S80AC	VERMILION WEST EXT	5S80A-NORTH	2	NATIVE	0.1	T61/2S-R27E-26	415-3C	5S80AC Access to Herringbone Drainage System
Vermilion	196	5S80B	VERMILION GAUGE	5S80-EAST	2	NATIVE	0.4	T61/2S-R27E-25	415-3C	5S80B Access to Leakage Piezometers
Vermilion	193	5S80BA	FISHERMAN SOUTH	5S80B-SOUTH	2	NATIVE	0.4	T61/2S-R27E-26	415-3C	5S80BA Access to Vermilion Leakage Equipment
Vermilion	111	5S80BAA	FISHERMANS PARK	5S80BA-SOUTH	2	NATIVE	0.2	T61/2S-R27E-26	415-3C	5S80AA Access to Mono Creek and Leakage System
Vermilion	105	5S80BAB	FISHERMANS PARK B	5S80BA-5S80BA	2	NATIVE	0.1	T61/2S-R27E-26	415-3C	5S80BAB Access to Vermilion Cabin Loop1

Table 3.1-2. Roads Maintained by Southern California Edison Company.

License Area	SCE MAP No.	USFS ROAD No.	USFS Name	Termini	Maintenance Level	Surface	Length	Legal	Quad	SCE Names
Vermilion	106	5S80BAC	VERMILION CABIN LOOP	5S80BA-5S80BA	2	NATIVE	0.1	T61/2S-R27E-26	415-3C	5S80BAC Access to Vermilion Cabin Loop2
Vermilion	194	5S80BC	GAUGE SOUTH	5S80B-SOUTH	2	NATIVE	0.1	T61/2S-R27E-26	415-3C	5S80BC Access to Vermilion Gage
Vermilion	195	5S80BD	FISHERMANS	5S80-SOUTH	2	NATIVE	0.2	T61/2S-R27E-26	415-3C	5S80BD Access to Leakage Channel
Vermilion	173	5S80BE	OUTFLOW PARKING	5S80B-SOUTH	2	NATIVE	0.1	T61/2S-R27E-26	415-3C	5S80BE Parking area at Gate House
Vermilion	123	5S80BF	FISHERMANS CAMP	5S80B-SOUTHEAST	2	NATIVE	0.2	T61/2S-R27E-26	415-3C	5S80BF Access to Leakage Channel
Vermilion	124	5S80BG	VERMILION BORROW2	5S80BD-PIT	2	NATIVE	0.1	T61/2S-R27E-26	415-3C	5S80BG Access to Leakage Channel area
Vermilion	128	5S80BGA	VERMILION BORROW CUT	5S80BG-5S80BF	2	NATIVE	0.1	T61/2S-R27E-26	415-3C	5S80BGA Loop between 5S80B and 5S80BF
Vermilion	181	5S80BJ	VERMILION BORROW3	5S80B-PIT	2	NATIVE	0.1	T61/2S-R27E-25	415-3C	5S80BJ Access to Vermilion Leakage Points
Vermilion	236	5S80BK	VERMILION CAMP	5S80-DAM	2	NATIVE	0.1	T61/2S-R27E-25	415-3C	5S80BK Access to Vermilion Leakage Points
Vermilion	63	5S80C	MONO CR. GAUGE	5S80-GAUGE	2	NATIVE	0.8	T61/2S-R27E-35	415-3C	5S80C Access to Mono Creek Gage
Vermilion	192	5S80CA	FISHERMANS CUTOFF	5S80C-5S80D	2	NATIVE	0.1	T61/2S-R27E-35	415-3C	5S80CA Connets with 5S80C and 5S80 BA
Vermilion	214	5S80CB	MONO CR. GAUGE B	5S80C-NORTH	2	NATIVE	0.1	T61/2S-R27E-35	415-3C	5S80CB Access to Leakage Gage
Vermilion	206	5S80CC	MONO CR. GAUGE C	5S80C-SOUTH	2	NATIVE	0.2	T61/2S-R27E-35	415-3C	5S80CC Access to Leakage Gage
Vermilion	210	5S80CCA	MONO CR. GAUGE CA	5S80CC-LOOP	2	NATIVE	0.1	T61/2S-R27E-35	415-3C	5S80CCA Access to Leakage Gage
Vermilion	255	5S80CD	MONO CR. GAUGE D	5S80C-SOUTH	2	NATIVE	0.1	T61/2S-R27E-35	415-3C	5S80CD Access to Leakage Gage
Vermilion	253	5S80CE	MONO CR. GAUGE E	5S80C-NORTH	2	NATIVE	0.1	T61/2S-R27E-35	415-3C	5S80CE Access to Leakage Gage
Vermilion	266	5S80CG	MONO CR. GAUGE CAMP	5S80C-WEST	2	NATIVE	0.1	T61/2S-R27E-35	415-3C	5S80CG Mono Creek Gage
Vermilion	44	6S18Y	EDISON LAKE VISTA PT	5S80-VIS.POINT	3	NATIVE	0.2	T6S-R27E-36	415-3C	6S18Y Edison Lake Vist Point
Vermilion	7	6S301A	WARM SPR DIVERSION	5S80-DIVERSION	2	NATIVE	0.2	T6S R27E S34	4161	6S301A Access to Warm Springs Diversion
Portal	73	5S80D	SCE BORROW	5S80-LOOP	2	NATIVE	0.1	T7S-R27E-18	416-4C	5S80D Access to Camp 61 Gage
Portal	65	5S80DA	TUNNEL BORROW	5S80D-WEST	2	NATIVE	0.4	T7S-R27E S19	416-4C	5S80DA Access to Camp 61 Gage
Portal	66	5S80F	PORTAL DIST LINE	5S80-line	2	NATIVE	0.3			5S80F Access to Portal Distribution Line
Portal	57	5S80N	PORTAL PH	5S80-POWERHOUSE	2	NATIVE	0.1	T8S R26E S5	3962	5S80N Access to Portal Powerhouse
Portal	58	5S80P	PORTAL SURGE	5S80-SURGE	2	NATIVE	0.1	T8S R26E S5	416-4C	5S80P Access to Portal Surge Chamber
Portal	8	7S80	CAMP 61	5S80-TRAILHEAD	3	NATIVE	0.6	T7S-R27E-18	416-4C	7S80 Access to Portal Campground
Portal	178	7S80A	PORTAL CAMP	7S80-LOOP	3	NATIVE	0.2	T7S R27E S18	416-4C	7S80A Access to Portal Campground
Portal	180	7S80AA	PORTAL DAM	7S80A-WEST	2	NATIVE	0.1	T7S R27E S18	416-4C	7S80AA Portal Dam
Portal	93	7S80AB	PORTAL CAMP B	7S80A-SOUTH	3	NATIVE	0.1	T7S R27E S18	416-4C	7S80AB Access to Portal Gatehouse
Portal	179	7S80B	PORTAL OUTLET	7S80-WEST	2	NATIVE	0.1	T7S R27E S18	416-4C	7S80B Access to Portal Outlet
Portal	98	7S80C	PORTAL C	7S80-LOOP	3	NATIVE	0.1	T7S R27E S18	416-4C	7S80C Access to Portal Leakage Wells
Portal	100	7S80D	CAMP 61 BORROW	7S80-EAST	2	NATIVE	0.1	T7S R27E S18	416-4C	7S80D Access to Adit 2 Leakage Weir
Portal	104	7S80DA	CAMP 61 BORROW A	7S80D-NORTH	2	NATIVE	0.2	T7S R27E S18	416-4C	7S80DA Access to Camp 61 Borrow

Level 1. Assigned to intermittent service roads during the time they are closed to vehicular traffic. The closure period must exceed 1 year. Basic custodial maintenance is performed to keep damage to adjacent resources to an acceptable level and to perpetuate the road to facilitate future management activities. Emphasis is normally given to maintaining drainage facilities and runoff patterns. Planned road deterioration may occur at this level. Appropriate traffic management strategies are "prohibit" and "eliminate." Roads receiving level 1 maintenance may be of any type, class, or construction standard, and may be managed at any other maintenance level during the time they are open for traffic. However, while being maintained at level 1, they are closed to vehicular traffic, but may be open and suitable for non-motorized uses.

Level 2. Assigned to roads open for use by high clearance vehicles. Passenger car traffic is not a consideration. Traffic is normally minor, usually consisting of one or a combination of administrative, permitted, dispersed recreation, or other specialized uses. Log haul may occur at this level. Appropriate traffic management strategies are either to (1) discourage or prohibit passenger cars or (2) accept or discourage high clearance vehicles.

Level 3. Assigned to roads open and maintained for travel by a prudent driver in a standard passenger car. User comfort and convenience are not considered priorities. Roads in this maintenance level are typically low speed, single lane with turnouts and spot surfacing. Some roads may be fully surfaced with either native or processed material. Appropriate traffic management strategies are either "encourage" or "accept." Discourage" or "prohibit" strategies may be employed for certain classes of vehicles or users.

Level 4. Assigned to roads that provide a moderate degree of user comfort and convenience at moderate travel speeds. Most roads are double lane and aggregate surfaced. However, some roads may be single lane. Some roads may be paved and/or dust abated. The most appropriate traffic management strategy is "encourage." However, the "prohibit" strategy may apply to specific classes of vehicles or users at certain times.

Level 5. Assigned to roads that provide a high degree of user comfort and convenience. These roads are normally double lane, paved facilities. some may be aggregate surfaced and dust abated. The appropriate traffic management strategy is "encourage."

Table 4.1-1. Forest Service Owned Recreation Facilities

Project	Operation and Maintenance Responsibility
Big Creek Nos. 1 and 2 (FERC Project No. 2175)	
Huntington Lake	
Existing Recreation Facility	
Boat Ramp and Parking – Huntington Lake, East	Forest Service
Boat Ramp – Huntington Lake, West	Forest Service
Upper Billy Creek Campground	Forest Service
Lower Billy Creek Campground	Forest Service
Catavee Campground	Forest Service
College Campground	Forest Service
Deer Creek Campground	Forest Service
Kinnikinnick Campground	Forest Service
Rancheria Campground	Forest Service
Bear Cove Day-Use Picnic Area	Forest Service
Billy Creek Day-Use Picnic Area	Forest Service
Deer Creek Day-Use Picnic Area	Forest Service
Dowville Day-Use Picnic Area	Forest Service
Eastwood Overlook and Parking	SCE
New Recreation Facility	
Huntington Dam 3 Day-Use Area	Forest Service
Huntington Lake Universally Accessible Fishing Platform	Forest Service
Big Creek No. 3 (FERC Project No. 120)	
Dam 6 Forebay	
Existing Recreation Facility	
Angler Access Stairway at Mammoth Pool Powerhouse	Forest Service
Parking Area near Mammoth Powerhouse Gate	Forest Service
Big Creek Nos. 2A, 8 and Eastwood (FERC Project No. 67)	
Florence Lake	
Existing Recreation Facility	
Boat Ramp – Florence Lake	Forest Service
Jackass Meadow Campground	Forest Service
Florence Lake Day-Use Picnic Area	Forest Service
New Recreation Facility	
Florence Lake Universally Accessible Boat Loading Platform	Forest Service
South Fork San Joaquin River Universally Accessible Fishing Platform	Forest Service

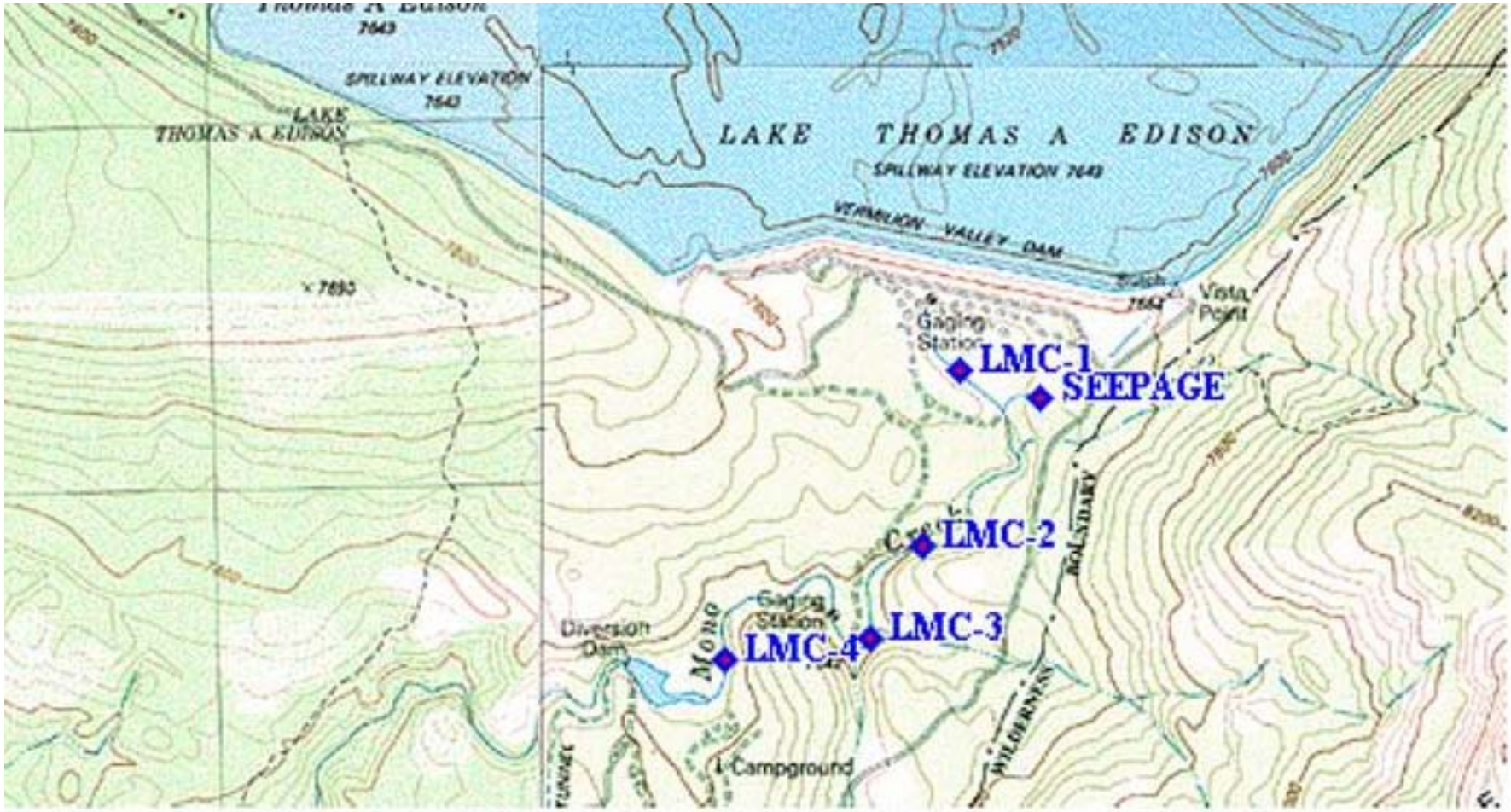
Table 4.1-1. Forest Service Owned Recreation Facilities

Project	Operation and Maintenance Responsibility
Shaver Lake	
Existing Recreation Facility	
Camp Edison Campground	SCE
Camp Edison Boat Ramp/Launch	SCE
Dorabelle Campground	Forest Service
Dorabelle Day-Use Picnic Area	Forest Service
Day-Use Areas on North Shore Roads 1 and 2	SCE
Day-Use Area off Hwy 168 (The Point)	SCE
Eagle Point Boat Only Day-Use Area	SCE
Balsam Meadow Forebay	
Existing Recreation Facility	
Balsam Meadow Forebay Day-Use Picnic Area	SCE
Balsam Meadow Trailhead and Parking	SCE
Mono Creek Forebay	
Existing Recreation Facility	
Mono Creek Campground	Forest Service
Mono Creek Day-Use Picnic Area	Forest Service
Mammoth Pool (FERC Project No. 2085)	
Mammoth Pool Reservoir	
Existing Recreation Facility	
Boat Ramp – Mammoth Pool Boat Launch	Forest Service
China Bar Boat Camp	Forest Service
Mammoth Pool Campground	Forest Service
Windy Point Day-Use Picnic Area	Forest Service
Windy Point Boat Launch	Forest Service
Portal (FERC Project No. 2174)[1]	
Existing Recreation Facility	
Portal Campground	Forest Service
Vermilion Valley (FERC Project No. 2086)[2]	
Existing Recreation Facility	
Vermilion Valley Campground	Forest Service

[1]This is part of the Portal Project (FERC Project No. 2174), which is undergoing the Traditional Licensing Process.

[2]This is part of the Vermilion Valley Project (FERC Project No. 2086), which is undergoing the Traditional Licensing Process.

FIGURES



Sampling Sites in the Vicinity of Vermilion Valley Dam

Figure 1.1.3-1. Mono Creek Sampling Sites Downstream of Vermilion Valley Dam and in the Leakage Channel Sampled during Relicensing.

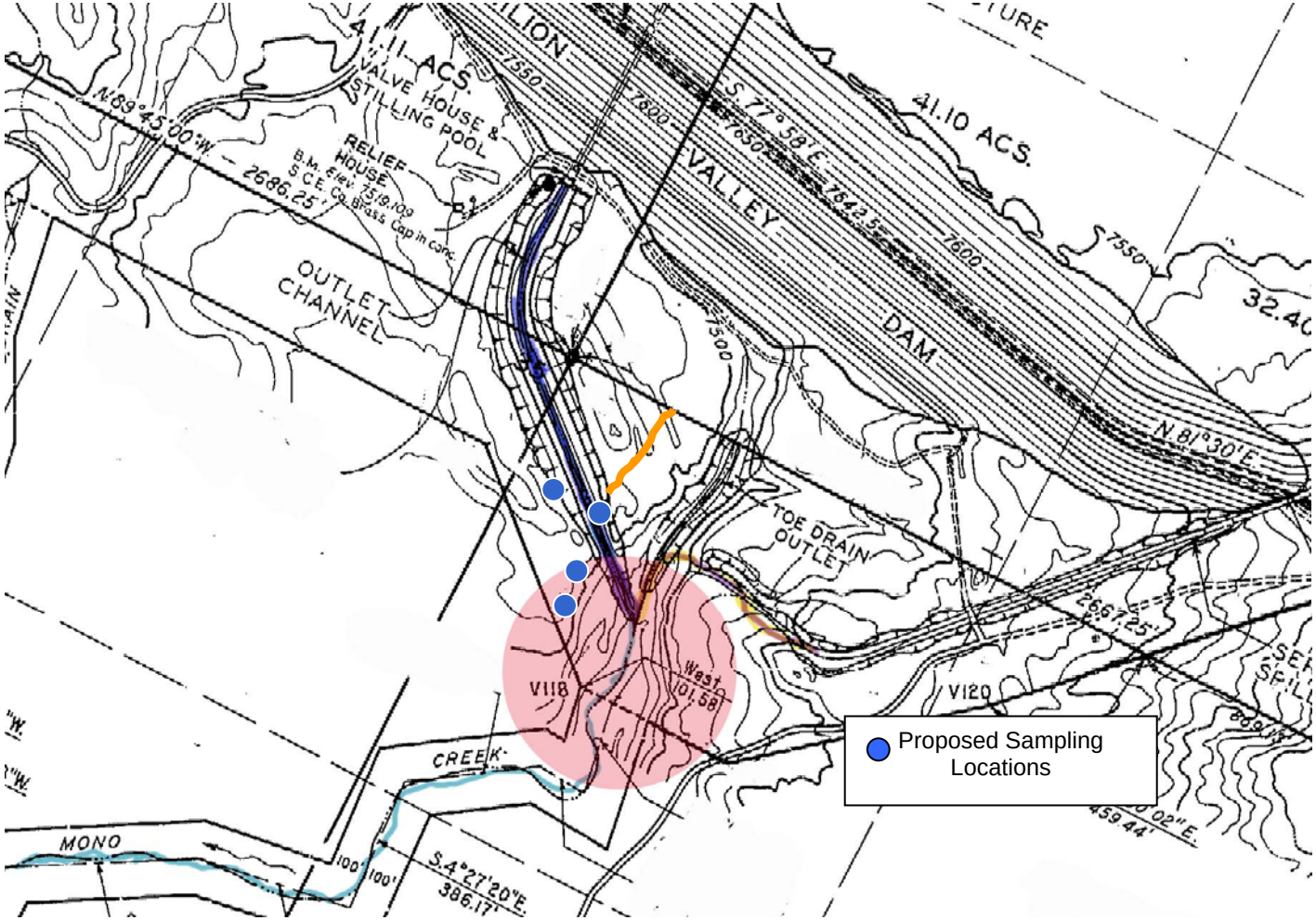


Figure 1.1.3-2. Potential Sampling Locations in Mono Creek in the Vicinity of the Leakage Channel.

ATTACHMENT A

U.S. Department of Agriculture - Forest Service **R O A D U S E P E R M I T** **(Re: FSM 7730)**	**Authority: Acts of 6/30/14, 4/24/50, 6/12/60 and 0/14/64; (16 USC 498, 572, 530 and 532-38 and 43 USC 1742, 1764, and 1765)**

Southern California Edison, PO Box 100, Big Creek, CA 93605-0100

(Name) (Address & Zip Code)

(hereafter called the permittee) is hereby granted use of the following road(s) or road segments:

National Forest System Roads as shown on attached Tables 1 and 2, of approximately 100.1 miles on the Sierra National Forest for the purpose of conducting routine operations and maintenance tasks associated with FERC Licenses 67, 120, 2085, 2086, 2174, and 2175.

The exercise of any of the privileges granted in this permit constitutes acceptance of all the conditions of the permit.

1. INVESTMENT SHARING RATES. Not Applicable.

2-1. WORK REQUIRED TO ACCOMMODATE PERMITTED USE.

This permit grants use of National Forest System Roads as identified in this permit. Note: Permittee will be required to install a lock on those roads that are currently gated.

2-2. COOPERATIVE WORK. Not Applicable.

2-3. CASH DEPOSITS REQUIRED IN LIEU OF WORK PERFORMANCE. Not Applicable

2-4. COST RECOVERY. Not Applicable.

PAYMENT GUARANTEE. Notwithstanding the provisions of clause 1, if the permittee furnishes and maintains an acceptable payment bond in a penal sum of not less than $ n/a guaranteeing payments for road use up to this amount, or in lieu thereof deposits in a Federal depository, through the Regional Fiscal Agent, and maintains therein negotiable securities of the United States having a market value in like sum and agreement authorizing the bond approving officer to sell or collect such securities if payment is not made within n/a days of request therefore, the Forest Service shall permit road use in advance of cash payment up to the penal sum of such bond, or market value at time of deposit of negotiable securities; provided, that regardless of penal sum of such payment bond, or the value of such deposited securities, the permittee shall pay cash within n/a days of request therefore, for all performed road use. If any payment is not received within n/a days of request therefore, the Forest Service may suspend all hauling under this permit until payments due are received, and may take such action as is necessary to collect such payments from the payment guarantee surety, or by sale or collection of securities guaranteeing payments. In the event the permittee fails to make payment and collection is obtained from the surety, or from the sale or collection of the deposited securities, the Forest Service may thereafter require the permittee to make payments in advance of road use.

This permit is accepted subject to all of its terms and conditions.

ACCEPTED Permittee (Name and Signature)	
APPROVED Issuing Officer (Name & Signature) Title: Forest Supervisor	Date

3. USE PLANS. ***The Permittee and the Forest Service shall meet during the first quarter of each year to discuss the anticipated uses, maintenance needs, and special circumstances for the coming calendar year. The Permittee and the Forest Service may meet as needed during the year as needs or conditions dictate.***

4. COMPLIANCE WITH LAWS AND REGULATIONS. The Permittee, in exercising the privileges granted by this permit, shall comply with the regulations of the Department of Agriculture and all Federal, State, county and municipal laws, ordinances or regulations which are applicable to the area or operations covered by this permit.

5. USE NONEXCLUSIVE. The privileges granted in this permit to use these roads are not exclusive. The Forest Service may use these roads and authorize others to use it at any and all times. The permittee shall use said roads in such manner as will not unreasonably or unnecessarily interfere with the use thereof by other authorized persons, including Forest Service.

6. RULES GOVERNING USE. The permittee, its agents, employees, contractors or employees of contractors, shall comply with all reasonable rules prescribed by the Forest Service for control and safety in the use of these roads and to avoid undue damage to the roads. Such rules will include:

(1) Upon reasonable notice, closing the roads or restricting their use when, due to weather conditions or the making of alterations or repairs, unrestricted use would in Forest Service judgment, cause excessive damage, or create hazardous conditions;

(2) Upon reasonable notice, closing roads during periods when, in Forest Service judgment, there is extraordinary fire danger;

(3) Traffic controls, which in Forest Service judgment are required for safe and effective use of the roads by authorized users thereof;

(4) Prohibition upon the loading of materials on trucks while such trucks are standing on the roadway surface, except to recover lost materials; and

(5) Prohibition on the operation on these roads of any vehicles or equipment having cleats or other tracks, which will injure the surface thereof;

(6) Prohibition on the operation of hauling vehicles in excess of legal highway loads in the State.

If permittee acquires a special permit from the State and adds a sixth tag axle to a five axle truck, the following restrictions will apply: The weight limit can be increased to 88,000 lbs. provided that the length is extended to a minimum of 57 feet. This length is measured from the center of the front axle to

the center of the last axle. The maximum length of any vehicle using Forest Development roads is 75 feet in total length including cargo, unless a Forest Service permit authorizes additional length.

(7) Regulation of the number of vehicles so as to prevent undue congestion of these roads.

(8) The permittee shall not use an "active ingredient" as defined in Section 2 of the Federal Insecticide, Fungicide, and Rodenticide Act, as amended (86 Stat. 973), in violation of said act on the land described in this permit.

(9) Temporary blockage of roads shall be less than 15 minutes duration.

(10) Movement of large equipment and hauling of materials by oversized vehicles shall be done by convoy and shall have a pilot vehicle, equipped with flashing strobe lights visible front and rear, far enough in advance to provide safe passage.

(11) Pavement damages shall be repaired promptly.

(12) Loads in excess of posted weight restrictions on bridges require separate Overload Permit.

(13) Projects outside the normal scope of routine operations and maintenance or of unusual size, scope, or duration shall require a separate permit.

(14) In quantities and locations agreed to by the Forest Service during annual scheduling meetings, Permittee may gather, transport and use Government Furnished Materials in the form of tunnel muck.

7. INSURANCE. Permittee or his contractors and assigns shall be required to carry public liability and property damage insurance for the operation of vehicles in the amounts established by applicable State laws, cooperative agreements, or easements issued on the subject road or roads. In any event, the permittee must carry liability insurance and property damage insurance of not less than $100,000 for injury or death to one person, $300,000 for injury or death to two or more persons, and $100,000 for damage to property. The permittee itself shall be responsible for furnishing to the ***Forest Supervisor*** proof of satisfactory insurance when said insurance is to be furnished by other than the permittee. Proof of satisfactory insurance may be required by the ***Forest Supervisor*** prior to hauling over the road(s) and will be for the duration of the permit and such insurance policy shall bear an endorsement requiring the issuing company to give 10 days prior written notice to the Forest Supervisor, of cancellation or material change.

8. MAINTENANCE. The permittee shall bear the expense of maintenance proportionate to his use. This expense will be borne by

Southern California Edison, PO Box 100, Big Creek, CA 93605-0100

The Forest Service will perform the road maintenance as shown in Table 1 in lieu of the Permittee accomplishing the work. The payment required for maintenance will be **$16,000 per year,** which is agreed to be the cost of such works; the deposits or payments to be made at such times and in such amounts as requested by the ***Forest Supervisor***. Provided, however, that the rate shall be revised upward or downward on ***December 1st*** of each year hereafter, based on published changes in the ***U.S. Gross Domestic Product – Implicit Price Deflator (GDP IPD)***; Provided further, that payment shall not relieve the permittee from liability for repair of damages due to carelessness or negligence on its part or on the part of its contractors or agents. ***Permittee may perform additional maintenance on roads in Table 1, to***

offset the $16,000 annual payment, as agreed to and scheduled by the Forest Service in annual consultation meetings.

The Permittee will perform all of the road maintenance as shown in Table 2, within the limits as described in Table 2. Maintenance shall be performed in accordance with Forest Service specifications or requirements for maintenance as hereinafter listed, or as may be mutually agreed upon from time to time and shall consist of (1) current maintenance as necessary to preserve, repair, and protect the roadbed, surface and all structures and appurtenances, and (2) resurfacing equivalent in extent to the wear and loss of surfacing caused by the activities authorized by this permit.

8a. MAINTENANCE REQUIREMENTS AND SPECIFICATIONS.

APPLICABLE SPECIFICATIONS:

P-800 (Definitions)
P-801 (Slide and Slump Repair)
P-802 (Ditch Cleaning)
P-803 (Surface Blading)
P-804 (Surface Repair)
P-805 (Drainage Structures)
P-806 (Dust Abatement);Water
P-807 (Roadside Vegetation); Scatter
P-808 (Miscellaneous Structures)
P-809 (Waterbars)
P-810 (Barriers)
P-811 (Surface Treatment)
P-812 (Hazard Trees)
P-813 (Snow Removal).

Permittee's operations shall be conducted in a workman and orderly like manner. Damages to the roads resulting from permittee's operations shall be repaired by permittee.

9. PERFORMANCE BOND. Not Applicable.

10. FIRE PREVENTION AND SUPPRESSION. The permittee shall take all reasonable precautions to prevent and suppress forest fires. No material shall be disposed of by burning in open fires during the closed season established by law or regulation without a permit from the Forest Service.

11. DAMAGES. The permittee shall exercise diligence in protecting from damage the land and property of the United States covered by and used in connection with this permit, and promptly upon demand shall pay the United Sates for any damage resulting from negligence, or from violation of the terms of this permit or of any law or regulation applicable to the National Forests, by the permittee, or by his agents, contractors, or employees of the permittee acting within the scope of their agency, contract, or employment.

12. OFFICIALS NOT TO BENEFIT. No Member of or Delegate to Congress or Resident Commissioner shall be admitted to any share or part of this agreement or to any benefit that may arise wherefrom unless it is made with a corporation for its general benefit.

13. OUTSTANDING RIGHTS. This permit is subject to all outstanding rights.

14. SUSPENSION. Upon the failure of the permittee, its agents, employees or contractors to comply with any of the requirements of this permit, the officer issuing the permit may suspend operations in pursuance of this permit.

15. TERMINATION. This permit shall terminate on ***December 31, 2011*** unless extended in writing by the Forest Service. It may be terminated upon breach of any conditions herein.

16. DISPUTES. Appeal of any provisions of this authorization or any requirements thereof shall be subject to the appeal regulations in 36 CFR 251, Subpart C, or revisions thereto.

17. ADMINISTRATIVE OFFSET. Pursuant to 31 U.S.C. 3716 and 7 CFR Part 3, Subpart B, any monies that are payable or may become payable from the United States under this permit to any person or legal entity not an agency or subdivision of a State or local government may be subject to administrative offset for the collection of a delinquent debt the person or legal entity owes to the United States. Information on the person's or legal entity's responsibility for a commercial debt or delinquent consumer debt owed the United States may be disclosed to consumer or commercial credit reporting agencies.

18. In the event of any conflict between any of the preceding printed clauses or any provision thereof and any of the following clauses or any provisions thereof, the following clauses will control.

19. SAFETY. Unless otherwise agreed in writing, when Permittee's operations are in progress adjacent to or on Forest Service controlled roads and trails open to public travel, Permittee shall provide the using public with adequate warning of hazardous or potentially hazardous conditions associated with Permittee's operation. Permittee and Forest Service shall agree to a specific traffic control plan for each individual project that may present hazardous conditions prior to commencing such projects. Devices shall be appropriate to current conditions and shall be covered or removed when not needed. Except as otherwise agreed, flagger and devices shall be as specified in the "Manual on Uniform Traffic Control Devices for Streets and Highways" (MUTCD), and in specifications attached hereto.

20. SNOW REMOVAL. ***SCE shall perform snow removal on Kaiser Pass Road (NFSR 5S080) and Florence Lake Road (NFSR 7S001) in accordance with the provisions of Appendix A and Specification P-813.*** There shall be no snow removal on other roads without the prior approval of the Forest Service.

ATTACHMENT B

KAISER PASS SNOW REMOVAL

Southern California Edison (SCE) shall be responsible for removing snow at the beginning of the normal use period from the following roads.

Road No.	Road Name	Length(mi)	Termini
5S80	Kaiser Pass	15.7	State Hwy 168 – 7S01
5S80	Edison Lake	12.2	7S01 – Edison Lake
7S01	Florence Lake	6.5	5S80 – Florence Lake

The normal use period is typically from Memorial Day Weekend thru November 15th, depending upon the volume of snow. Kaiser Pass Road will be opened by SCE according to the table below. SCE will not be responsible for snow removal during the normal use period when weather conditions would render the road unusable or would cause major damage requiring extraordinary repair.

KAISER PASS ROAD OPENING

Kaiser Pass Snow Survey on April 1st	Opening Day	
Less than 120% normal	Memorial Day Weekend	
Greater than 120% normal	On or after Memorial Day Weekend by agreement between SCE and FS	

Snow removal during the non-operating period (November 15th through Memorial Day Weekend) may be initiated by SCE, Forest Service, or other users only with the approval of the Forest Service. However, SCE will not be required to remove snow for public access during the non-operating period. Snow removal costs may be shared upon agreement by the benefiting user(s) during non-operating periods. Nothing herein shall be construed as obligating the Forest Service to expend and/or involve the Forest Service in any contract or obligation for future payment of money in excess of appropriations authorized by law.

There is an identified winter sports use area on and adjacent to the roads covered by this Permit. Some conflicts may exist between snow plowing activities and winter sports use. SCE and the Forest Service will meet approximately one month prior to the beginning of snow removal operations to coordinate snow removal activities with public control and winter sports use. To minimize user conflicts during spring snow plowing, SCE will include the following work as part of their spring snow plowing, in addition to the standard Snow Removal Specifications (P-813):

1) Remove snow from the existing parking access for snowmobiles and cross country skiers at the following trail locations:

a) Badger Flat at Potter Pass Trail junction	7 spaces
b) Badger Flat at end of double lane section	10 spaces
c) Kaiser Pass – ramp both sides of road	5 spaces
d) Sample Meadow turnoff	5 spaces

2) From Eastwood Visitor Center to the Badger Flat Gate plow only one lane. The other lane is reserved for winter sports use. Avoid placement of blown snow on the reserved lane.

3) Provide a level travel surface with a maximum one tractor blade width on snow adjacent to the cleared roadway.

During the spring opening activities the Forest Service agrees to:

1) Be responsible for controlling public access to Kaiser Pass Road by excluding public vehicular traffic during snow plowing operations. When snow plowing has proceeded beyond Badger Flat gate, public access will be allowed to Badger Flat. When snow plowing has proceeded beyond the Kaiser Pass gate, public access will be allowed to that point.

2) Provide manpower, enforcement, authority, signs, vehicles, and necessary supplies and materials to adequately control public access.

3) Provide for legitimate public needs for access through a permit system.

4) Provide public information on status of Kaiser Pass Road, including closure dates, enforcement provisions and opening dates. Include recognition to SCE for their snow plowing efforts.

APPENDIX C

LIST OF AUTHORIZED REPRESENTATIVES OF THE PARTIES

LIST OF AUTHORIZED REPRESENTATIVES OF THE PARTIES

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APPENDIX D

MONO CREEK CHANNEL RIPARIAN MAINTENANCE FLOW PLAN

MONO CREEK CHANNEL RIPARIAN MAINTENANCE FLOW PLAN

The objective of this Mono Creek Channel Riparian Maintenance Flow Plan (Plan) is to establish an appropriate channel and riparian maintenance (CRM) flow regime to maintain reduced accumulations of fine sediment in Mono Creek between Mono Diversion and the confluence with the South Fork San Joaquin River. The Plan shall be used to determine which of two Wet Water Year CRM flow schedules will be released for sediment control in Wet Water Years. The criteria used as the basis for deciding which Wet Water Year CRM flow will be released shall be the weighted mean value of the level of fine sediments (V*w) in a representative set of pools (Hilton and Lisle 1993), or a similar peer reviewed sediment monitoring tool as determined jointly by the Licensee, the United States Department of Agriculture-Forest Service (FS), US Fish and Wildlife Service (USFWS), California Department of Fish and Game (CDFG), and the State Water Resource Control Board (State Water Board). When scheduling sampling site selection or field data collections, Southern California Edison Company (SCE) will give interested governmental agencies 30 days advance notice to provide them with the opportunity to participate or observe. If field conditions or operational situations preclude a 30 day notification, SCE will provide notice as far in advance as feasible.

The weighted mean value of the level of fine sediments (V*w) values in Mono Creek below the diversion shall be initially determined following the procedures described in Hilton and Lisle (1993) no later than the summer following the first year of license issuance. The measurement locations proposed by the Licensee will be approved by FS in consultation with other interested governmental agencies and may be coincident with the sites used in the Licensee's Mono Creek Sediment Studies Report (SCE 2007). These locations will become the measurement sites to determine compliance with the V*w standard and also be used to determine the appropriate CRM flow schedule.

V*w values in Mono Creek below the diversion shall be measured within six months following any Wet Water Year CRM flow release, with the following exceptions:

- If CRM Wet Year flows are released in consecutive years and the V*w values after the first year's release are less than or equal to 0.2, no measurement will be required after the second year CRM flow. Both years will be considered as having a V* of 0.2 for purposes of reducing the frequency of monitoring as identified in the bullet, below.

- If after three successive measurements of V*w of less than or equal to 0.2, then the V* monitoring regime will be modified so that monitoring occurs after every third Wet Water Year release, or at a lesser frequency agreed to by FS and interested governmental agencies.

No V*w monitoring is required following Above Normal Water Year CRM flow releases.

Schedule I - Wet Water Year

In Wet Water Years, if the last sediment monitoring resulted in a V*w value greater than 0.2, Licensee shall ensure the following flow schedule is implemented over 11 consecutive days in Mono Creek below the Mono Creek Diversion beginning during the period July 1 through August 5:

1) for three consecutive days, an average flow of at least 400 cubic feet per second (cfs), representing a gradual increase, to the extent within the Licensee's control, from the minimum instream flow to 800 cfs,

2) an average daily flow of at least 800 cfs for three consecutive days,

3) for five consecutive days, a ramp down consisting of the first two days at approximately an average flow of 500 cfs, the next two days at an average flow of about 350 cfs, followed by a one day ramp down to the minimum instream flow (MIF), and

4) achieve a total flow volume of at least 10,800 acre-feet (ac-ft) over the above 11 days.

Schedule II – Wet Water Year

In Wet Water Years, if the last sediment monitoring resulted in a V*w less than or equal to 0.2, Licensee shall ensure the following flow schedule is implemented over 10 consecutive days in Mono Creek below the Mono Creek Diversion beginning during the period July 1 through August 5:

1) over one day, gradually increase, to the extent within the Licensee's control, the MIF to at least 450 cfs,

2) an average daily flow of at least 450 cfs for eight consecutive days,

3) for one day, gradually decrease the flow, to the extent within the Licensee's control, to the MIF, and

4) achieve a total flow volume of at least 7,700 ac-ft over the above 10 days.

Schedule III - Above Normal Water Year

In Above Normal Water Years, Licensee shall ensure the following flow schedule is implemented over seven consecutive days in Mono Creek below the Mono Creek Diversion beginning during the period July 1 through August 5:

1) over two days, gradually increase, to the extent within the Licensee's control, the MIF to at least 450 cfs,

2) an average daily flow of at least 450 cfs for two consecutive days,

3) for three days, gradually decrease the flow, to an average flow of approximately 345 cfs on the first day of ramp-down and 240 cfs on the second day, to the extent within the Licensee's control, followed by a one day ramp down to the MIF, and

4) achieve a total flow volume of at least 4,100 ac-ft over the above seven days.

Literature Cited

Hilton, S. and T. Lisle. 1993. Measuring the fraction of pool volume filled with fine sediment. Res. Note PSW-RN-414. Albany, CA: Pacific Southwest Research Station, Forest Service, U.S. Department of Agriculture.

Southern California Edison Company (SCE). 2007. Mono Creek Sediment Studies. *In* SCE's Amended Preliminary Draft Environmental Assessment (APDEA) for the Big Creek ALP (Mammoth Pool Project (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)). February 2007 (Volume 4, SD-E, Books 18 and 24).

APPENDIX E

CAMP 61 CREEK CHANNEL RIPARIAN MAINTENANCE FLOW PLAN

CAMP 61 CREEK CHANNEL RIPARIAN MAINTENANCE FLOW PLAN

The objective of this Camp 61 Creek Channel Riparian Maintenance Flow Plan (Plan) is to determine an appropriate channel riparian maintenance (CRM) flow regime to maintain reduced accumulations of fine sediment in Camp 61 Creek below Portal Forebay to the confluence with the South Fork San Joaquin River. The Plan shall be used to determine which CRM flow schedules listed below in Table 1 and Table 2 will be used for sediment control. The criteria used as the basis for deciding which CRM flow will be released shall be the weighted mean value of the level of fine sediments (V*w) in a representative set of pools (Hilton and Lisle 1993) or a similar peer reviewed sediment monitoring tool as determined jointly by the Licensee, the United States Department of Agriculture-Forest Service (USDA-FS), US Fish and Wildlife Service (USFWS), California Department of Fish and Game (CDFG), and the State Water Resources Control Board (State Water Board).

V*w values in Camp 61 Creek below Portal Forebay shall be initially determined no later than the summer following the first year of license issuance. The measurement locations proposed by the Licensee will be approved by USDA-FS in consultation with other interested governmental agencies and may be coincident with the sites used in the Licensee's Camp 61 sediment study during the licensing process. These locations will become the measurement sites to determine compliance with the V*w standard and will also be used to determine the appropriate CRM flow schedule. When scheduling sampling site selection or field data collections, Southern California Edison Company (SCE) will give interested governmental agencies 30 days advance notice to provide them with the opportunity to participate or observe. If field conditions or operational situations preclude a 30 day notification, SCE will provide notice as far in advance as feasible.

V*w values in Camp 61 Creek below Portal Forebay shall be remeasured within six months following any Wet Water Year CRM flow release, with the following exceptions:

- If CRM flows are released in consecutive Wet Years and the V*w values after the first year's release are less than or equal to 0.25, no measurement will be required after the second Wet Year CRM release.

- If V*w values measured following each Wet Year CRM flow release for three successive years are less than or equal to 0.25, than the V* monitoring regime will be modified so that monitoring occurs after every third Wet Year release or at a lesser frequency as agreed to by the above listed agencies.

No V*w monitoring is required following Above Normal Water Year CRM flow releases.

The Licensee will release CRM flows within the limitations of equipment and measurement. These flows will be within 90% of the 24-hour average flow identified in Tables 1 and 2. CRM flows are based on a 24-hour average. SCE will make up any deficiency in total CRM release volume within the existing release period.

To the extent feasible, Licensee shall release for a 10 day consecutive period beginning between May 1 and June 30 the following CRM flows:

Table 1. Initial Flow Schedule (mean daily cubic feet per second (cfs)).

	Above Normal WY	**Wet WY**
Day 1	Ramp up to 22	Ramp up to 28
Days 2-3	22	28
Days 4-7	30	40
Days 8-9	22	28
Day 10	Ramp back to minimum instream flow (MIF)	Ramp back to MIF

If V*w is greater than 0.25 following the release of two Wet Water Year flows, the Licensee shall increase the duration of the CRM flows by adding two days of CRM flows at 30 cfs in Above Normal Years and two days at 40 cfs in Wet Years as shown in Table 2. V*w measurements will be conducted in the same manner as described above.

Table 2. Modified Flow Schedule (mean daily cfs).

	Above Normal WY	**Wet WY**
Day 1	Ramp up to 22	Ramp up to 28
Days 2-3	22	28
Days 4-9	30	40
Days 10-11	22	28
Day 12	Ramp back to MIF	Ramp back to MIF

If the V*w continues to be greater than 0.25 after at least two modified CRM flow releases in Wet Years, the Licensee will consult with the above listed agencies on the need for additional flow modifications to reduce fine sediment recruitment.

Changes to the CRM flows outside of this condition will only be made after consultation and approval by USDA-FS and after a recommended change has been filed with and approved by the Federal Energy Regulatory Commission (FERC or Commission).

Literature Cited

Hilton, S. and T. Lisle. 1993. Measuring the fraction of pool volume filled with fine sediment. Res. Note PSW-RN-414. Albany, CA: Pacific Southwest Research Station, Forest Service, U.S. Department of Agriculture.

APPENDIX F

CHANNEL AND RIPARIAN MAINTENANCE (CRM) FLOWS FOR THE SOUTH FORK SAN JOAQUIN RIVER BELOW FLORENCE RESERVOIR

CHANNEL AND RIPARIAN MAINTENANCE (CRM) FLOWS FOR THE SOUTH FORK SAN JOAQUIN RIVER BELOW FLORENCE RESERVOIR

The channel riparian maintenance (CRM) flows for the South Fork San Joaquin River below Florence Reservoir are described below. Wet Water Year and Above Normal Water Year types shall be based on the April 1 forecast for the California Department of Water Resources (DWR), Bulletin No. 120, San Joaquin Valley Water Year Index, or its successor index that is most representative of the Big Creek watershed. All CRM flow releases shall be measured at the United States Geological Survey (USGS) Gage No. 11230215 downstream of Hooper Creek, near Florence Lake. The Licensee will release CRM flows within the limitations of equipment and measurement. CRM flows are based on a 24-hour average. Licensee will make up any deficiency in total CRM release volume within the existing release period.

Areal Inundation Mapping of Jackass Meadow Complex

No later than one year after license issuance, the Licensee shall survey the micro-topography of the Jackass Meadow Complex at a scale and level of detail that is sufficient to evaluate the areal extent of inundation from CRM flows. This mapping will be provided to the United States Department of Agriculture-Forest Service (USDA-FS), United States Fish and Wildlife Service (USFWS), and other interested governmental agencies at the annual consultation meeting following the completion of the mapping. During the first two Wet Water Years that occur after issuance of the New License, the Licensee shall map and calculate the areal extent of inundation for at least three flow levels between and including 1,000 cubic feet per second (cfs) and 1,600 cfs. In coordination with the USDA-FS, USFWS, and other interested governmental agencies, the Licensee will use the resultant maps and information to determine: 1) whether a flow less than 1,600 cfs will provide the same level of inundation as provided at 1,600 cfs; and 2) the flow necessary to inundate approximately 75% of the area inundated at 1,600 cfs. If the USDA-FS concurs that the results of the Jackass Meadow Inundation Study (SCE 2007) indicates that a peak flow less than 1,600 cfs provides the same level of inundation as provided by 1,600 cfs, the Licensee may release the agreed upon lesser amount after notification to the Federal Energy Regulatory Commission (FERC or Commission). The minimum total volume released will be adjusted down to reflect the reduced peak.

Wet Water Years

During Wet Water Years following license issuance, the Licensee shall, within the extent of its control, release sufficient flow or augment a natural spill event which meets all of the following characteristics:

- Gradually ramp flows from the base flow to 1,600 cfs over three days, in as even increments as feasible,

- Maintain an average daily flow of at least 1,600 cfs for three consecutive days,

- Decrease flow from 1,600 cfs to the minimum instream flow (MIF) over the next eight days according to the schedule below.
    - decrease flow to approximately 1,000 cfs for one day,
    - decrease flow to approximately 750 cfs for two days,
    - decrease flow to approximately 500 cfs for three days,
    - decrease flow to approximately 150 cfs for one day,
    - decrease flow to the minimum instream flow over one day, and
- Release a total flow volume of at least 22,000 acre-feet (ac-ft).

To the extent feasible, CRM flows in Wet Water Years shall be implemented starting between June 1 and July 7.

If the CRM peak and volume release requirements are met by natural spill, then Licensee will make a good faith effort to provide down ramping releases on the descending limb of the hydrograph to meet the following characteristics to accommodate whitewater boating. During these releases, Licensee will make a good faith effort to stabilize the flow releases between 10:00 a.m. and 4:00 p.m. for whitewater boating purposes, if the area is accessible to boaters.

- Approximately 750 cfs for three days,
- Approximately 500 cfs for two days, and
- Licensee will make a good faith effort to provide at least one day of flow between approximately 500 cfs and 750 cfs during a weekend.

Above Normal Water Years

The Licensee shall release CRM flows during Above Normal Water Years beginning in the first Above Normal Water Year after the Licensee has completed its consultation with the USDA-FS regarding calculation of the CRM flow necessary to inundate 75% of the areal extent inundated by 1,600 cfs. To the extent within its control, Licensee shall release sufficient flow, augment a natural spill event, or document a natural spill event, which meets all of the following characteristics:

- Gradually increase flow over one day from the base flow to a peak flow that will provide approximately 75% of the areal extent of inundation measured at 1,600 cfs.
- Maintain an average daily flow at the level of the peak flow for two consecutive days.

- Decrease flow from the peak flow to the MIF over the next five days according to the schedule below.
  - maintain flow of approximately 700 cfs for one day,
  - maintain flow of approximately 500 cfs for three consecutive days,
  - decrease flow to the MIF over one day, and
- Release a total flow volume of at least 6,000 ac-ft plus the volume of the two days of peak flow. In no event will the Licensee be required to increase the flow release volume above 13,000 ac-ft.
- Licensee will make a good faith effort to provide at least one day of flow between approximately 500 and 700 cfs during a weekend.

To the extent feasible, CRM flows in Above Normal Water Years shall be completed before the Memorial Day weekend.

If Above Normal Water Years occur prior to the completion of the Jackass Meadow Inundation study, the Licensee shall provide at least four consecutive days of flow between 500 cfs and 750 cfs for whitewater boating purposes, including two weekend days.

Literature Cited

Southern California Edison Company (SCE). 2007. Jackass Meadow Inundation Study Summary. *In* SCE's Amended Preliminary Draft Environmental Assessment (APDEA) for the Big Creek ALP (Mammoth Pool Project (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)). February 2007 (Volume 4, SD-E, Books 18 and 24).

APPENDIX G

SMALL DIVERSIONS DECOMMISSIONING PLAN

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^3 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 mortal 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

Non-Internet Public Information

These Figures have been removed in accordance with the Commission regulations at 18 CFR Section 388.112.

These Figures are considered Non-Internet Public information and should not be posted on the Internet. This information is provided in Book 25 of the Application for New License and is identified as "Non-Internet Public" information. This information may be accessed from the FERC's Public Reference Room, but is not expected to be posted on the Commission's electronic library, except as an indexed item.

APPENDIX H

TEMPERATURE MONITORING AND MANAGEMENT PLAN

TEMPERATURE MONITORING AND MANAGEMENT PLAN

BIG CREEK HYDROELECTRIC SYSTEM

MAMMOTH POOL (FERC Project No. 2085)
BIG CREEK NOS. 1 AND 2 (FERC Project No. 2175)
BIG CREEK 2A, 8, AND EASTWOOD (FERC Project No. 67)
BIG CREEK NO. 3 (FERC Project No. 120)

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SUBMITTED BY
SOUTHERN CALIFORNIA EDISON COMPANY

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1.0 INTRODUCTION

The Temperature Monitoring and Management Plan (Plan) covers four Southern California Edison Company (SCE) Big Creek Hydroelectric Projects: Mammoth Pool (FERC No. 2085), Big Creek Nos. 1 and 2 (FERC No. 2175), Big Creek Nos. 2A, 8, and Eastwood (FERC No. 67), and Big Creek No. 3 (FERC No. 120) (jointly referred to as the "Project"). The new licenses for the Project include the release of prescribed minimum instream flows (MIF) for Project bypass reaches. One of the principal factors considered in the selection of MIFs was maintaining existing beneficial uses related to water temperature (as described in the Central Valley Regional Water Quality Control Board 1998 Basin Plan [Basin Plan]), when water temperature is a Project controllable factor.

The Plan monitors water temperatures during at least the first three to five years that new MIFs are released under the new Project licenses, including during at least one Dry or Critically Dry Water Year type. Data will be collected by SCE to assist in: 1) documenting compliance with water temperature targets for daily mean and maximum water temperatures under the new MIFs, and 2) obtaining information about potential Project controllable factors. Flows may be adjusted by SCE in situations where temperature criteria may not be achieved. The monitoring results will be used by SCE to prepare a Long-Term Water Temperature Control Program that will be added to this Plan. The Long-Term Water Temperature Control Program must be approved by the State Water Resources Control Board (State Water Board) Chief of the Division of Water Rights and the Federal Energy Regulatory Commission (Commission or FERC). Once the Long-Term Water Temperature Control Program has been approved, water temperature targets must be met by SCE, when water temperatures are a Project controllable factor.

2.0 OBJECTIVES

The principal objective of this Plan is to verify whether the Basin Plan designated cold fresh water beneficial use is being maintained in Project bypass reaches. The cold fresh water beneficial use would be maintained when daily mean water temperatures do not exceed 20°C and daily maximum water temperatures do not exceed 22°C. A second objective of this Plan is to design and implement the Long-Term Water Temperature Control Program, if necessary to meet the water temperature targets, subject to Project controllable factors. SCE will institute operational measures to comply with the Long-Term Water Temperature Control Program. To meet the objectives of this Plan, sufficient water temperature data will need to be collected by SCE in the Project bypass reaches in conjunction with data on other factors, including flow and meteorology.

3.0 APPROACH

3.1 GENERAL APPROACH

This Plan's general approach is to address each of the elements listed below:

1. Monitor summer water temperatures under the new license MIFs in reaches in which temperatures reached or exceeded the temperature targets during temperature monitoring in 2000 or 2001, and in other locations which may provide useful information on factors that may influence water temperatures and potential Project controllable factors.

2. Evaluate whether the new MIFs result in meeting the water temperature targets in those reaches.

3. Prior to monitoring water temperature in the San Joaquin River (SJR) Mammoth Pool Dam to upstream of Mammoth Pool Powerhouse and the Dam 6 to upstream of Powerhouse 3 bypass reaches, develop an Interim Water Temperature Control Program to adjust flow releases to maintain temperature targets in those reaches, if necessary, until the Long-Term Water Temperature Control Program is completed and approved.

4. Use telemetry to monitor real-time water temperatures in the SJR Mammoth Pool Dam to upstream of Mammoth Pool Powerhouse and the Dam 6 to upstream of Powerhouse 3 bypass reaches and adjust releases to maintain water temperature targets using the Interim Water Temperature Control Program.

5. Conduct studies in SJR Dam 6 to upstream of Powerhouse 3 bypass reach to determine if a change in beneficial use designation is warranted based on the reach containing a native transition zone fish assembly and water temperature conditions appropriate to that fish community.

6. Evaluate whether Project controllable factors are feasible and if they can be used to meet temperature targets in reaches or locations where the targets are not met, based on monitoring conducted under this Plan.

7. Consult annually with the resource agencies including US Fish and Wildlife Service (USFWS) during each April of implementation of this Plan regarding temperature monitoring results and potential actions to meet water temperature targets, when water temperatures are Project controllable factors.

8. If necessary to achieve water temperature targets, develop a Long-Term Water Temperature Control Program to meet water temperature targets, when meeting water temperatures is feasibly under Project control.

As some infrastructure changes are necessary prior to SCE making MIF and Channel and Riparian Maintenance Flow (CRMF) releases in many Project bypass reaches, this Plan will be implemented for each bypass reach identified for monitoring during the first

full summer after a new MIF is implemented in that bypass reach. This will likely result in different bypass reaches being monitored during different years and for different periods of time. This monitoring schedule may be adjusted and coordinated, upon approval by the Chief of the Division of Water Rights and approval by the FERC.

3.2 WATER TEMPERATURE MONITORING

Water temperature monitoring to be conducted by SCE will focus on the summer months (June 1 through September 30) in designated bypass reaches downstream of diversions for the Project (Table 1). These locations are listed in Table 1 and shown in Figure 1. Real-time telemetry stations and data loggers are shown in Figure 1 using different symbols.

For higher elevation bypass reaches and other bypass reaches where water temperatures are expected to be cool (all bypass reaches except those in the mainstem SJR), temperature monitoring will have a nominal duration of three years or until at least one Dry or Critically Dry Year is monitored. These bypass reaches are indicated in Table 1 and are distinguished by gray shading. If water temperatures targets are maintained in these locations, monitoring will be discontinued after three years. If target water temperatures are not maintained during extreme conditions in a reach, SCE and the resource agencies will consult to determine if monitoring should be extended for that reach. The Chief of the Division of Water Rights and FERC shall decide when the water temperature monitoring has shown compliance with maintaining target water temperatures and that the monitoring of that stream reach can be terminated.

At lower elevations, in the SJR between Mammoth Pool Dam and Mammoth Pool Powerhouse and between Dam 6 and upstream of Powerhouse 3, water temperatures will be monitored for no less than five years, including at least one Dry or Critically Dry Water Year. In the SJR, telemetry will be used to monitor summer water temperatures as indicated in Table 1. Telemetry will be used to identify in real-time when water temperatures exceed target temperatures, or under unique or extreme conditions are expected to do so. Temperature profiles measured in Mammoth Pool Reservoir and telemetry of water temperatures in the bypass reach near the point of release will identify if the water available for release into that bypass reach is sufficiently cool to attain target temperatures or to prevent warming of daily mean water temperatures over 20°C by more than 2.7°C. When these conditions occur, SCE shall release additional flow, based on the interim Water Temperature Control Program (see Section 5.0) that will be developed no later than one year after the new license is final and no longer subject to appeal.

3.2.1 DETAILED STREAM WATER TEMPERATURE DATA COLLECTION METHODS

All stream temperature monitoring sites are listed in Table 1, including tributaries that have MIF flows that may influence water temperatures in the bypass reach. Table 1 indicates whether SCE will use a temperature recorder (logger) or telemetry device at each site. At least two water temperature recorders will be placed at each site to reduce the potential for data loss. Telemetered locations will report real-time water

temperature data to SCE at its Big Creek Operations Center and to SCE's Big Creek publicly available website. Monitoring will take place from June 1 (in the lower reaches) through September 30, when water temperatures are warmest. Monitoring would begin at non-permanent sites after spill is over. Starting dates for monitoring in the South Fork San Joaquin River (SFSJR) bypass reach, which is generally colder for a longer portion of the year, would be from July 1 (depending upon access conditions and safety) through September 30. However, this later monitoring date does not present a water temperature concern as periods of high flow and snow generally correlate with lower water temperatures. Upon approval by the Chief of the Division of Water Rights and notice to FERC, and based on the developing water temperature record, these dates may be shifted as necessary to incorporate a more appropriate temporal period for which water temperature control is necessary.

Temperatures will be recorded at no less than 15-minute intervals throughout the day. Data will be downloaded monthly from the data loggers. Standard field procedures will be followed to minimize data losses (for example, during trips to download data, each instrument will be examined for tampering and a calibration hack is made). Standard electronic file handling procedures will be used to minimize data translation errors and to maintain data quality (for example, file naming conventions have been established that specify the location and timing of data collection; templates have also been established for storing data yet to be transcribed).

Onset Optic Stowaway temperature recorders, or their equivalent, will be used for recording water temperatures. The units are sealed and transmit data via infrared signal to downloading media. The units will be mounted in armored housings. The parts of the armored housing screw together with a chain passing through mounting rings to lock the unit and prevent it from being opened. When installed, each temperature recorder will be secured and well hidden, where they should not be influenced by groundwater or exposed to air by dropping water levels. Each recorder will be checked for proper function prior to being placed in operation or upon having been reset. Each unit will be checked monthly. A calibration hack will be made during this operations check. A calibration hack consists of measuring the water temperature at the location of the instrument transducer with a calibrated thermometer whose calibration is traceable to a recognized national standard; the date, time, and temperature is recorded and compared to the corresponding temperature measured by the electronic recorder.

The data collected from these units will be downloaded and stored in a database. The data stored in the database will include water temperatures and meteorological data (air temperature, wind speed, relative humidity, and solar radiation). The collected data will be plotted versus time to help indicate any data losses from stranding of units, equipment malfunction, or environmental conditions. Suspect data will be treated as missing values. The location of each recorder will be verified using a Global Positioning System (GPS) unit at the time of installation.

Some existing gaging stations have telemetry capability and these will have temperature sensors added, as indicated in Table 1. These telemetered systems will be

maintained by SCE as part of their maintenance of the flow recorders and telemetry at those gages. Temporary water temperature telemetry gages will be operated in the SJR upstream of Mammoth Pool Powerhouse and in the SJR upstream of Powerhouse 3[1]. These temperature gages will be installed after the cessation of spill in these reaches or by June 1 in non-spill years. These will be operated until September 30 and then removed to avoid damage due to potential spill in the subsequent spring. These telemetered temperature gages will report results to the Big Creek Operations Center and the SCE Big Creek publicly available website.

3.2.2 RESERVOIR TEMPERATURE PROFILES

Temperature profiles will be measured by SCE on a monthly basis in Florence Reservoir and Mammoth Pool Reservoir to characterize water temperatures and reservoir temperature stratification (Table 2). These data provide an indication of the status of reservoir stratification and the controllability of downstream water temperatures. In cases such as Mammoth Pool Reservoir in Dry Water Years, when the reservoir's warm upper water layer (epilimnion) and cool bottom water layer (hypolimnion) mix in late summer/fall, there may no longer be a pool of cool water for release to the bypass reach. Increased water releases from Mammoth Pool may not reduce instream water temperatures below the criteria in this case. Water temperature maintenance therefore, may not be a controllable factor at such times. If telemetered temperature monitoring is continued in the Mammoth Pool bypass reach beyond the initial five year study, the Long-Term Water Temperature Control Program may require measuring temperature profiles or other means of monitoring the presence of thermal stratification in Mammoth Pool Reservoir in Dry or Critically Dry Water Years.

One temperature profile will be taken near the dam or the downstream end of each reservoir, usually the deepest area of the reservoir, another will be taken near mid-reservoir, and one will be taken at the upstream end. Measurements will be taken with a temperature measuring instrument such as a Hydrolab Quanta or YSI DO-Temperature meter or equivalent with a cable length sufficient to measure temperatures in the deepest portion of each reservoir. The location of each site profiled will be documented using a GPS unit.

3.2.3 METEOROLOGY

Meteorology has a very large influence on stream temperatures and warming. As extreme meteorological conditions (and hydrological conditions) may occur, it is important to evaluate the effect of these extreme events, if they occur, on stream temperatures. It is also important to identify these events as extreme cases outside of the normal range. In order to understand the influence of extreme meteorological conditions on water temperatures, meteorological data will be collected by SCE in selected locations within the Upper San Joaquin River Basin.

[1]If feasible, these units will be installed within the Project boundary. If infeasible, USDA-Forest Service special use permits will be obtained.

Concurrent meteorological data will be collected at the same five locations within the Upper San Joaquin River Basin that were used in the Project Alternative Licensing Process (ALP) temperature monitoring study (SCE 2003 Final Technical Study Report (FTSR), CAWG 5, Water Temperature Monitoring (SCE 2004) (Table 3)). Table 3 lists the reaches that are associated with the meteorological stations. The meteorological stations at these locations will collect wind speed, solar radiation, air temperature, and relative humidity data. Additional meteorological data sources will be considered for use (e.g., USDA-Forest Service RAWS sites). Relating local air temperatures to those of stations with long periods of record helps to define the historical exceedances that allow ranking the observed water temperatures as resulting from cold, normal, or hot climatic conditions. This ranking will help in interpreting the temperature data collected. Air temperature and relative humidity also will be recorded at supplementary locations in between the full meteorological stations. These are sited in locations (Table 3) that were used to supplement data collecting during the relicensing studies.

3.2.4 FLOW

Flow data will be obtained by SCE from information reported at the nearest appropriately located stream gage to represent flow conditions during monitoring. Several of the flow gages are telemetered and reported on SCE's Big Creek website.

3.2.5 DATA ANALYSIS

For each bypass reach, during Plan water temperature monitoring over the first three to five years, summer daily mean and maximum water temperatures, flows, and meteorology data will be compiled and presented in a format similar to that of the SCE 2003 FTSR, CAWG 5, Water Temperature Monitoring (SCE 2004). Measured water temperatures will be compared to temperature targets. Days during which water temperature targets are exceeded will be tabulated by month and location. For each day in which target temperatures are exceeded, the conditions affecting water temperatures including meteorology, especially air temperature, and flow will be described.

The Water Year Type, as identified based on the April 1 forecast for the California Department of Water Resources (DWR), Bulletin No. 120, San Joaquin Valley Water Year Index, or its successor index that is most representative of the Big Creek watershed, will be used to characterize hydrological conditions. Air temperatures will be compared to the historical record to identify extreme conditions. The monthly air temperatures will be compared with the historical percent exceedance air temperatures.

For the SJR, water temperatures and thermal stratification in Mammoth Pool Reservoir will be compared with water temperatures in the SJR bypass reaches downstream of Mammoth Pool Dam to upstream of Mammoth Pool Powerhouse and from downstream of Dam 6 to upstream of Powerhouse 3. For the SFSJR, water temperatures and thermal stratification in Florence Lake will be compared with water temperatures in the SFSJR.

If SCE adjusts flow releases to respond to water temperatures warmer than the target temperatures under the Interim Water Temperature Control Program, the adjustments and their efficacies will be described. Potential changes to bypass reach releases that are recommended for the following year and the conditions under which they would apply will be included.

A progress report, as described in Section 5.0, will be prepared by SCE after each year of the three to five year monitoring program. The progress report will tabulate and discuss the results of the previous summer's monitoring and make recommendations for temperature monitoring and changes to the Interim Water Temperature Control Program. The results also will be discussed at an annual meeting of SCE and the resource agencies. SCE shall propose actions it will take in the forth coming summer to avoid target water temperature exceedances.

4.0 SJR STEVENSON REACH (DAM 6 TO UPSTREAM OF POWERHOUSE 3) STUDY

The lower portion of the SJR Stevenson Reach is used by native fish as a transition zone, as identified in the SCE 2002 FTSR, CAWG 7, Characterize Fish Populations Report (SCE 2003). New MIFs should provide increased habitat for the native species, specifically hardhead, Sacramento pikeminnow, and Sacramento sucker. These species, especially hardhead, are in decline in many portions of California. In addition, their temperature requirements are believed to be warmer than those for trout. A supplementary study will evaluate the use and importance of this reach for these species. If this reach is found to be important for native transition zone species, it may be more appropriate to manage this reach as a warm or cool/warm reach rather than as a cold fresh water habitat reach. This would require reclassification of the water temperature beneficial use for this reach under the Basin Plan (CVRWQCB 1998).

In order to evaluate the appropriate temperature regime for this reach, fish data will be collected by SCE in conjunction with water temperatures and dissolved oxygen measurements. Fish sampling in this reach will take place in the first, third, and fifth years after implementation of the new MIF for the reach. Sampling will take place in the same locations and use the same techniques as used in the 2002 FTSR, CAWG 7, Characterize Fish Populations Report (SCE 2003). Results of each year of sampling will be included in the yearly progress report (see below). At the conclusion of the third year of sampling (year five after MIF implementation for this reach), a report will be prepared. The report will summarize the information collected and recommend whether this reach should be reclassified with regard to the temperature beneficial use. The report will be provided to interested resource agencies for review and comment. If the consensus recommendation of SCE and the resource agencies is to change the designation of this reach or the lower portion of the reach (below the Stevenson Creek confluence), this will be discussed with appropriate staff of the State Water Board and Regional Water Quality Control Board and SCE will propose an amendment of the cold fresh water habitat designation in the Basin Plan for this specific sub-reach.

5.0 INTERIM WATER TEMPERATURE CONTROL PROGRAM

The Interim Water Temperature Control Program (Interim Program) will be prepared by SCE within one year of license acceptance. The Interim Program will contain measures (e.g., increased flow releases) that may be feasibly implemented by SCE to maintain water temperatures below target temperatures, when water temperature is a Project controllable factor. The Interim Program will also include feasible measures to reduce water temperature increases, when water temperatures are above target levels and cannot be reduced below target levels, when water temperature increases are a Project controllable factor. The primary concern of the Interim Program is two bypass reaches on the mainstem SJR. The Mammoth Pool Dam to Mammoth Pool Powerhouse bypass reach (Mammoth Reach) and the "Stevenson Reach" from Dam 6 to upstream of Powerhouse 3 are the lowest elevations of the bypass reaches under consideration in this Plan. These reaches are more prone to warming than reaches at higher elevations. During summer months, telemetry will be used to monitor water temperatures at the upper and lower ends of each reach. This provides SCE real-time information on water temperatures and the ability to potentially take actions to modify water temperatures.

If water temperatures in the Mammoth Reach exceed target temperatures when Mammoth Pool Reservoir is thermally stratified, cool water will be released at Mammoth Pool Dam to reduce water temperatures. If water temperatures in the Stevenson Reach of the SJR exceed target temperatures, when cool water is present in the Dam 6 impoundment, cool water will be released at Dam 6 to reduce water temperatures. These water temperature conditions would be considered Project controllable within the capacity of the flow release structures, when cool water is available. As daily mean water temperatures are calculated on a 24-hour basis, water temperatures that exceed the daily mean temperature target would not be known until the following day. Daily maximum water temperatures are based on the warmest hourly temperature measured during the course of the day and so hourly water temperatures that approach or exceed the daily maximum water temperature target may be responded to more promptly.

The Interim Program will make use of water temperature modeling results from the water temperature model developed for the SCE 2004 Technical Study Report, CAWG 5, Water Temperature Model Calibration/Simulation (SCE 2005) to develop interim guidance with respect to the incremental amount of flow that would need to be released to reduce water temperatures below target levels during the summer months at a range of warm air temperatures. The interim guidance would be prepared for the Mammoth and Stevenson reaches of the SJR and provided to SCE operators with instructions on how to implement the guidance to meet target water temperatures.

Increased MIFs below Mammoth Pool Reservoir may slightly accelerate the mixing of the reservoir in late summer, especially in drier Water Year types. After Mammoth Pool Reservoir loses thermal stratification, cool water may no longer be available to meet water temperature targets or to reduce water temperatures. Under these conditions (with water temperatures exceeding the target temperatures), the water temperature target would be to prevent warming from exceeding an increase of 2.7°C (5°F) from the diversion to the end of the bypass reach. The water temperature model and modeling

results will be used to provide interim guidance with respect to the incremental amount of flow beyond the required MIFs that would need to be released to prevent warming in excess of 2.7°C. Under these conditions, predicted air temperatures from available weather forecasts would be used with the interim guidance from modeling to avoid warming of more than 2.7°C on succeeding days during which maximum temperatures are likely to be exceeded. Similar to the guidance provided to the SCE operators for meeting the water temperature targets, this guidance would provide the incremental amount of flow needed to be released to prevent warming in excess of 2.7°C for a range of air temperatures. As Mammoth Pool Reservoir would be expected to lose thermal stratification in August (in Dry Years) or September, the guidance would be provided for a range of air and water temperatures for those two months. The SCE operators would be provided with instructions on how to implement this guidance until it is superseded by the development of the Long-Term Water Temperature Control Program described below. During this interim program, short exceedances of the water temperature targets will not be considered compliance violations.

Water temperatures in the SFSJR just above the confluence with the SJR will be monitored during July of the first Dry or Critically Dry Water Year[2]. SCE will perform additional modeling regarding the relationship between atmospheric and water conditions. If atmospheric and water conditions indicate daily mean temperatures will likely exceed the 20°C target at the SFSJR/SJR confluence, SCE will monitor the actual daily mean water temperature at the confluence to confirm the model's predictions. If the water temperatures exceed 20°C, SCE will increase water releases from Mono Creek by an additional 3 cfs. If the increased water releases do not reduce water temperature to 20°C or less, SCE will continue increasing water releases and monitoring water temperatures at the confluence at least every other day that daily mean water temperatures are predicted to exceed 20°C until water temperatures are 20°C or less. Once water temperatures are 20°C or less, SCE will use this information to develop a revised protocol to maintain water temperatures at 20°C or less at the confluence of the SFSJR and SJR.

The Interim Program will include an annual progress report and recommendations to the State Water Board for potential modifications. The performance of the Interim Program and modifications will be discussed at the annual meeting. Modifications to the Interim Program will be implemented after approval by the Chief of the Division of Water Rights and notification to FERC.

6.0 LONG-TERM WATER TEMPERATURE CONTROL PROGRAM

The development of a Long-Term Water Temperature Control Program (Long-Term Program) is a key objective of this Plan. The Long-Term Program will focus on those feasible actions that will need to be implemented to meet water temperature targets, when water temperature is a Project controllable factor. The Long-Term Program will

[2]If daily mean air temperatures monitored during July are cooler than the 30 percent long-term daily exceedance, the evaluation will be repeated during the next dry or critically dry water year.

provide guidance to SCE operators for complying with temperature targets in the bypass reaches. In developing the Long-Term Program, extreme or unusual conditions will be considered and taken into account in determining appropriate actions. If needed to achieve temperature targets, the Long-Term Program is expected to be developed after the completion of five years of monitoring under this Plan. The Long-Term Program recommendations will be included as part of the summary report discussed below. The Long-Term Program will be implemented after approval by the Chief of the Division of Water Rights and FERC.

Results of water temperature monitoring will be used to identify bypass reaches where temperature targets are being met and no further monitoring or actions are necessary. Those results will also be used to identify the bypass reaches where additional actions may need to be implemented to meet water temperature targets.

Temperature monitoring results and the results of the implementation of the Interim Program will be used to identify feasible Project controllable factors related to water temperatures. The Long-Term Program will recommend whether there is a need for continuation of water temperature telemetry or other monitoring. As necessary, the Long-Term Program will contain guidance for incremental flow releases to meet target water temperatures or to reduce warming, when water temperatures are a Project controllable effect.

7.0 REPORTING

7.1 ANNUAL PROGRESS REPORT

A draft Annual Progress Report shall be prepared and submitted to the USDA-FS, the California Department of Fish and Game (CDFG), the State Water Board and the U.S. Fish and Wildlife Service (USFWS) (together, the “resource agencies”) 90 days following the completion of each year of temperature monitoring (October 15 will be considered the end of each year's monitoring). A 60 day review period shall be provided for resource agencies. Thirty days following the receipt of comments, SCE will finalize the Annual Progress Report to address any comments. The annual meeting described in Section 7.2, would be held following the finalization of the annual report.

The analysis and report of the results of the past year’s water temperature monitoring will include the results of the analyses identified in Section 3.2.5, above. The Annual Progress Report shall follow the general presentation layout of basic temperature data used in the SCE 2003 FTSR, CAWG 5, Water Temperature Monitoring (SCE 2004). All hourly records collected will be provided on CD-ROM as part of the report. In cases where temperature targets were exceeded in bypass reaches, SCE shall identify, as part of that analysis, whether these exceedances occurred due to conditions that were included within the range used in the temperature model predictions or were due to conditions that were more extreme. The report shall discuss the known reasons for not meeting the water temperature goal, such as seasonal mixing of Project reservoirs that result in the unavailability of cool stored water for release and temperature

maintenance. For any exceedance of the temperature objectives for a reach, an evaluation shall be made of the conditions related to that exceedance. If based upon Project controllable factors, SCE shall propose feasible short-term responses (not including infrastructure changes) to be included in the Interim Program to meet water temperature targets in a forthcoming season with similar conditions (e.g., a water year of the same type or drier, with similar meteorological conditions). The actions shall be reviewed with the resource agencies and SCE and included in the Interim Program upon concurrence of the resource agencies. The Annual Progress Reports shall be filed with the resource agencies and the FERC.

If after (up to) five successive years of monitoring, including at least one Dry or Critically Dry Water Year, monitoring of the water temperatures demonstrates that the temperature goals are being met by Project operations, SCE may discontinue the monitoring required by this Plan and file a Summary Report as detailed below. SCE shall include a recommendation to discontinue monitoring in appropriate reaches in the last Annual Progress Report if SCE believes that the Plan is eligible to be discontinued. Notwithstanding SCE's recommendations, water temperature monitoring may be discontinued only upon the approval of the Chief of the Division of Water Rights and FERC.

7.2 ANNUAL MEETING

An annual meeting between SCE and the resource agencies will be held during April, after the April 1 runoff prediction and water year type for the upper San Joaquin basin is announced by DWR. During that meeting, the results of the previous year's monitoring and recommendations for modifying monitoring or bypass reach releases will be discussed. Changes agreed to by SCE and the resource agencies will be added to the draft final Annual Progress Report prepared for that year. Upon completion of any changes to the draft final Annual Progress Report, the report will be sent to the resource agencies and filed with the FERC.

7.3 SUMMARY REPORT

A draft Summary Report shall be submitted to the resource agencies six months following the conclusion of the temperature monitoring required by this Plan. The report will summarize the results of all the years of monitoring for each reach. Observed temperatures and conditions shall be compared to the temperature goals. Extreme conditions occurring within the monitoring period and their effects on exceeding water temperature goals will be evaluated. It is recognized that temperature monitoring for one or more of the short-term monitoring bypass reaches (three-year studies) may conclude prior to the remainder of the reaches being studied.

The Summary Report will include recommendations for any potential modification of the temperature Beneficial Use of the Stevenson Reach of the SJR. The Summary Report also will include the Long-Term Program for those reaches in which target temperatures were exceeded, or in which additional monitoring is needed (see Section 6.0, above for a description of the contents of that plan).

A 60 day comment period will be provided for resource agency review. If needed, a meeting will be scheduled between SCE and the resource agencies. Within 30 days after receipt of comments, or meeting with the resource agencies, whichever comes later, a final Summary Report shall be filed with the FERC and the resource agencies, including copies of comments received, and SCE's replies to comments. The Long-Term Program would be implemented after approval by the Chief of the Division of Water Rights and FERC.

8.0 LITERATURE CITED

California RWQCB, Central Valley Region (CVRWQCB). 1998. Basin Plan. The Water Quality Control Plan (Basin Plan) for the California Regional Water Quality Control Board, Central Valley Region, Fourth Edition, 1998, The Sacramento River Basin and the San Joaquin River Basin. Sacramento, California.

Southern California Edison Company (SCE). 2003. CAWG 7, Characterize Fish Populations, 2002 Final Technical Study Report (FTSR). *In* SCE's Amended Preliminary Draft Environmental Assessment (APDEA) for the Big Creek Alternative Licensing Process (ALP) Projects (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)). (Volume 4, SD-C, Books 8 and 21). February 2007.

SCE. 2004. CAWG 5, Water Temperature Monitoring, 2003 FTSR. *In* SCE's APDEA for the Big Creek ALP Projects (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)). (Volume 4, SD-D, Books 12 and 23). February 2007.

SCE. 2005. CAWG 5, Water Temperature Model Calibration/Simulation. *In* SCE's APDEA for the Big Creek ALP Projects (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)). (Volume 4, SD-E, Books 18 and 24). February 2007.

TABLES

Table 1. Proposed Stream Temperature Monitoring Sites Including River Miles (RM) in the Vicinity of the Four Big Creek ALP Projects[1].

Temp. Gage Type	License, Reach and Location	Temp. Gage Type	Locations Not in Mainstem Bypass Reach
	Mammoth Pool (FERC Project No. 2085)[2]		
	San Joaquin River (SJR) Mammoth Reach Sites		
		Logger	Upstream of Mammoth Pool Reservoir (Short Term -3 yr) (SJR RM 34.6)
Telemetry	SJR Downstream of Mammoth Pool (SJR RM 25.55)	**Profile**	**Mammoth Pool Reservoir** (Profile in Summer Monthly)
Logger	SJR Upstream of Rock Creek (SJR RM 22.6)		
Telemetry After Spill	SJR Upstream of Mammoth Pool PH (SJR RM 18.2)		
	Big Creek Nos. 1 and 2 (FERC Project No. 2175)		
	Big Creek Dam 4 to PH 2/2A Reach Sites		
Logger	Big Creek Release at Dam 4 (Short Term 3-yr) (BC RM 5.9)		
Logger	Big Creek Upstream of Powerhouse 2/2A (Short Term 3-yr) (BC RM 2.1)		
	Big Creek 2A, 8, and Eastwood (FERC Project No. 67)		
	South Fork San Joaquin River (SFSJR) Sites		**SFSJR Tributary and Reservoir Sites**
Telemetry	SFSJR Downstream of Florence Lake (SFSJR RM 27.85)	**Profile**	**Florence Lake** (Profile in Summer Monthly)
Logger	SFSJR Upstream of Camp 61 Creek (Short Term 3-yr) (SFSJR RM 17.9)	**Logger**	Camp 61 Creek Upstream of SFSJR (Short Term 3-yr) (C61 RM 0.1)
Logger	SFSJR Downstream of Camp 61 Creek (Short Term 3-yr) (SFSJR RM 17.8)		
Logger	SFSJR Upstream of Mono Creek (Short Term 3-yr) (SFSJR RM 16.65)	**Logger**	Mono Creek Upstream of SFSJR (Short Term 3-yr) (MC RM 0.1)
Logger	SFSJR Downstream of Mono Creek (Short Term 3-yr) (SFSJR RM 16.55)		
Logger	SFSJR Rattlesnake Crossing (Short Term 3-yr) (SFSJR RM 14.35)		
Logger	SFSJR Upstream of San Joaquin River[3] (Short Term 3-yr) (SFSJR RM 0.1)	**Logger**	San Joaquin River Upstream of SFSJR[3] (Short Term 3-yr) (SJR RM 38.4)

Table 1. Proposed Stream Temperature Monitoring Sites Including River Miles (RM) in the Vicinity of the Four Big Creek ALP Projects[1] (continued).

Temp. Gage Type	License, Reach and Location	Temp. Gage Type	Locations Not in Mainstem Bypass Reach
	Big Creek Dam 5 to PH 8 Reach Sites		
Logger	Big Creek Downstream of Dam 5 (Short Term 3-yr) (BC RM 1.65)		
Logger	Big Creek Upstream of Powerhouse 8 (Short Term 3-yr) (BC RM 0.1)		
	North Fork Stevenson Creek Sites		
Telemetry/ Logger[4]	Tunnel 7 Outlet (Short Term 3-yr) (NFSC RM 3.5)		
Telemetry/ Logger[4]	SCE Gage 99 (USGS Gage 11239300) (Short Term 3-yr) (NFSC RM 1.6)		
	Big Creek No. 3 (FERC Project No. 120)		
	San Joaquin River – Dam 6 to Redinger Lake		
Telemetry	SJR at Dam 6 (SJR RM 17.0)		
Logger	SJR upstream of Stevenson Creek (Staircase) (SJR RM 15.5)		
Telemetry After Spill	SJR upstream of Powerhouse 3 (SJR RM 11.0)		

[1]Primarily based on monitoring sites used in 2003 (SCE 2004).

[2]Light gray shading indicates short term monitoring of at least 3 years, including at least one Dry Water Year (see Section 3.2).

[3]To be emplaced as accessible (snow and high flows).

[4]SCE's choice as to type of instrumentation to be installed.

Table 2. Proposed Reservoir Temperature Profile Measurement Sites in the Vicinity of the Four Big Creek ALP Projects.

Florence Lake
Mammoth Pool Powerhouse

Table 3. Proposed Meteorological Monitoring Sites in the Vicinity of the Four Big Creek ALP Projects.

Complete Meteorological Stations
Florence Lake
Lake Thomas A. Edison
Huntington Lake
Mammoth Pool Powerhouse
Big Creek Powerhouse 3
Air Temperature - Relative Humidity Stations
South Fork San Joaquin River upstream of San Joaquin River confluence
San Joaquin River upstream of Mammoth Pool Reservoir
Big Creek upstream of Powerhouses 2/2A

FIGURE

Placeholder for

Figure 1. Temperature Monitoring Sites

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This Figure is considered Non-Internet Public information and should not be posted on the Internet. This information is provided in Book 25 of the Application for New License and is identified as "Non-Internet Public" information. This information may be accessed from the FERC's Public Reference Room, but is not expected to be posted on the Commission's electronic library, except as an indexed item.

APPENDIX I

FISH MONITORING PLAN

FISH MONITORING PLAN

BIG CREEK HYDROELECTRIC SYSTEM

MAMMOTH POOL (FERC Project No. 2085)
BIG CREEK NOS. 1 AND 2 (FERC Project No. 2175)
BIG CREEK 2A, 8, AND EASTWOOD (FERC Project No. 67)
BIG CREEK NO. 3 (FERC Project No. 120)

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SUBMITTED BY
SOUTHERN CALIFORNIA EDISON COMPANY

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Table 1. Proposed Fish Population Monitoring Bypass Reaches
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1.0 GOALS AND OBJECTIVES

Monitoring fish populations provides a means of assessing the effects of the newly required minimum streamflow releases on fish community composition and abundance. The goal of the Fish Monitoring Plan is to evaluate the status of fish populations in selected reaches under the flow regimes stipulated by the new license. The specific objectives of the monitoring include the following items.

1) Monitor fish species composition and relative abundance in selected reaches and major reservoirs

2) Monitor size/age distribution of fish species

3) Monitor condition factor of sampled fish species

2.0 GENERAL APPROACH

The principal task of this plan is for SCE to collect data to characterize fish populations in the selected bypass reaches and major reservoirs. Fish species composition and relative abundance will be monitored using the same sampling methods and a subset of locations previously established during the relicensing surveys (SCE 2003). Species size/age distributions and condition factors will be monitored through a combination of electrofishing and snorkeling. Physical measurements and observations of stream conditions also will be made at each sampling site.

Fish surveys in a subset of the reaches including San Joaquin River from Mammoth Pool to Mammoth Pool Powerhouse, San Joaquin River Dam 6 to Powerhouse 3, and Mono Creek will begin in the third full year of the new license, followed by sampling of the set of study reaches listed in Table 1 in years 8, 18, 28, and 38, depending on the length of the license through the remainder of the license period, but not to begin before new minimum instream flows (MIFs) are implemented in each survey reach. If sampling is scheduled for a Wet Water Year, it will be postponed until the next non-Wet Water Year to avoid the potential confounding effect of high flows on fish recruitment and populations. Mammoth Pool Reservoir, Huntington Lake, Florence Lake, and Shaver Lake also will be sampled (Table 2). These reservoirs will be sampled for fish in the same years as sampling of the Big Creek ALP bypass reaches (years 8, 18, 28, and 38)[1] required by the Plan. As part of the reservoir sampling, tissue analyses for silver will be conducted in Mammoth Pool Reservoir and Huntington Lake. If not restricted by the license conditions for the other Big Creek System (BCS) hydroelectric projects, the sampling of other SCE operated reservoirs within the BCS, if required by those other licenses, will be performed consistent and concurrently with this Plan. When scheduling sampling site selection or field data collections, Southern California Edison Company (SCE) will give interested governmental agencies 30-days advance notice to provide

[1] If bypass reach fish sampling is postponed due to a wet water year or other reason, reservoir sampling will be postponed to remain concurrent with bypass reach sampling.

them with the opportunity to participate or observe. If field conditions or operational situations preclude a 30-day notification, SCE will provide notice as far in advance as feasible.

Draft reports will be provided by SCE to the Fisheries Review and Oversight Group (FROG) and other interested parties requesting the report following each monitoring period. The FROG will consist of the California Department of Fish and Game (CDFG); US Fish and Wildlife Service (USFWS); State Water Board; and United States Department of Agriculture-Forest Service (USDA-FS).

Table 1. Proposed Fish Population Monitoring Bypass Reaches.

Mammoth Pool (FERC Project No. 2085)
San Joaquin River – downstream of Mammoth Pool Dam
Big Creek Nos. 1 and 2 (FERC Project No. 2175)
Big Creek - Dam 4 to Powerhouse 2 and 2A
Big Creek 2A, 8, and Eastwood (FERC Project No. 67)
South Fork San Joaquin River below Florence Dam
Mono Creek below Mono diversion
Bear Creek below diversion
North Fork Stevenson Creek
Big Creek – Dam 5 to confluence with San Joaquin River
Big Creek No. 3 (FERC Project No. 120)
San Joaquin River – Dam 6 to upstream of Redinger Lake
Stevenson Creek below Shaver Lake

Table 2. Proposed Fish Population Monitoring Major Reservoirs.

Mammoth Pool (FERC Project No. 2085)
Mammoth Pool Reservoir
Big Creek Nos. 1 and 2 (FERC Project No. 2175)
Huntington Lake
Big Creek 2A, 8, and Eastwood (FERC Project No. 67)
Florence Lake
Shaver Lake

3.0 SAMPLING METHODS

3.1 ELECTROFISHING SAMPLING

Stream electrofishing will be conducted using backpack electrofishing units. This method will be used in habitats sufficiently shallow (under existing seasonal conditions

at the time of sampling) to allow effective sampling. Prior to initial sampling activities, specific habitat units will be visually inspected to determine if any special status amphibians are present. Sampling gear will be sterilized prior to use on a stream to avoid transport of pathogens.

Where conditions permit, sampling will be conducted using multiple-pass depletion. Population estimates from these data will be based on the maximum likelihood technique of Zippin (1958) or another scientifically accepted methodology.

The upstream and downstream ends of the site will be blocked using 0.25-inch mesh block nets. The block nets will prevent fish passage into or out of the site during sampling. At most sites, electrofishing will be conducted using one backpack electrofishing unit. At sites where the stream widths are approximately 20 feet or more, two backpack electrofishing units will be used. Sampling will be performed in an upstream direction beginning at the downstream block net and finishing at the upstream block net. Settings on the electroshocker will be adjusted to provide adequate strength for polarization and anesthesia of fish based on site-specific conditions, but low enough to prevent excessive harm to shocked fish. A typical electrofishing team will consist of one backpack electrofisher, one or two net persons, and one net/livecar person for streams smaller than 20 feet wide. Additional backpack electrofishers and net persons will be required for streams greater than 20 feet wide. Electrofishing will be generally conducted as described by Reynolds (1996).

Fish captured from each pass will be transferred to separate holding pens outside of the sample site. Between passes, the fish captured during that pass will be processed as described in the Section 3.3, Fish Processing.

3.2 SNORKEL SURVEYS

Snorkel surveys will be conducted in habitat units that are too deep to be effectively sampled using electrofishing techniques (i.e., pool habitats). The habitat units will be divided into one or more swimming lanes parallel to the direction of stream flow, depending upon stream width and visibility. Underwater visibility will be measured to determine lane width (Hillman et al. 1992). If stream velocity or depth impedes the diver's ability to move upstream, pull ropes will be used to assist the diver. A main rope will be positioned at the uppermost boundary of the sample site, perpendicular to the flow. Pull ropes (one for each diver) will be evenly spaced and attached to the main rope. The pull ropes extend to the lower most boundary of the sample site and will be allowed to float at the water surface parallel with the stream flow. Lane markers and pull ropes, if used, will be positioned in the site at least two hours prior to each direct underwater observation survey. This delay minimizes the influence of disturbance on the fish community (Hankin and Reeves 1988). Methods will be generally similar to those presented in Griffith (1972), Platts et al. (1983), Hicks and Watson (1985), Hankin and Reeves (1988), and Hillman et al. (1992). Surveys will be performed between 0900 to 1600 hours (Hankin and Reeves 1988) so that light intensity will be suitable for observing fish. Direct observation surveys will not be conducted on overcast days (Platts et al. 1983).

Divers will enter the water slightly below the downstream end of the sample unit (Hankin and Reeves 1988) and move directly across and slightly below the lowermost boundary of the sample unit into their designated swimming lane. When in position, the divers will move upstream to the lowermost boundary of the sample unit. From a fixed position and prior to moving upstream, the divers will look upstream to locate fish on the limits of visibility (Platts et al. 1983). Divers will then identify and count fish species in their lane while moving slowly upstream at a uniform, even pace with no abrupt movements. Fish will be counted as they pass below or to the side of an observer. Cover for fish, such as interstitial spaces between substrate particles, wood debris, bubble screens, crannies in bedrock and along stream margins, will be inspected closely for concealed fish to the best of the divers' abilities (Fausch and White 1981; Hicks and Watson 1985). A bank-side observer will be stationed to monitor and verbally direct diver distribution and sampling rate.

Fish lengths will be estimated by comparison with a fish length calibration cord. The calibration cord is a piece of small diameter rope with size-length categories marked on it. In addition to the fish length calibration cord, all divers will be trained in estimating fish lengths, so estimates of fish length will be consistent and accurate.

Night snorkeling will be minimally included in fish monitoring at established sampling sites in the San Joaquin River between Mammoth Pool Dam and Mammoth Pool Powerhouse. Night snorkeling will be used to assist in detecting the presence of larger and older brown trout in pools, whose cryptic behavior may result in under-representation in daylight snorkel sampling. Sampling will occur prior to implementation of the new MIFs or during the first year of implementation to assess this segment of the brown trout population. This sampling will be repeated during year 8, after implementation of the new MIFs in this reach, to evaluate changes that may have occurred in this population segment under the new MIFs.

3.3 RESERVOIR SAMPLING METHODS

Sampling will take place using sampling approaches consistent with the same methods and locations previously established during the relicensing surveys (SCE 2003). Reservoirs will be sampled for fish through a variety of techniques, including electrofishing, minnow traps and trap nets in shallow areas, gill and trap nets in deeper areas, and hydroacoustic surveys in all areas. Hydroacoustic density surveys will be used to characterize overall fish density.

Electrofishing will be conducted using a boat or barge shocker. During this sampling, representative coves and shallow margin habitats will be sampled. Fish will be stunned and netted from the boat. All fish captured will be processed as described in the Fish Monitoring Plan.

Minnow traps and trap nets will be set in shallow water and baited with sardines. These traps will be set for 48 hours and checked at approximately 12-hour intervals. All fish captured will be processed as described above.

Variable mesh (¼ to 2 inches mesh) gill nets will be set overnight for 2 nights and checked in the morning. All fish captured will be processed as described above.

Crayfish will be collected for tissue sampling in Mammoth Pool Reservoir using baited inclined plane traps used for characterizing crayfish populations as part of the ALP studies.

Hydroacoustic surveys will be conducted to characterize reservoir fish populations in large reservoirs. The surveys will be conducted using boat mounted hydroacoustic equipment. A BioSonics Model DT4000 digital echosounder or equivalent will be used with the transducer mounted on a sled designed to be towed behind the boat. Data will be collected; including GPS coordinates of sampling transects, to allow spatial integration of fish counts to determine fish densities. The transducer will be towed through the lake in a series of about 10 transects or their equivalent, depending upon the size of the lake, to provide sufficient coverage of the lake to obtain a reasonable estimate the number of fish present. Due to the configuration of the hydroacoustic equipment, this method will be employed primarily in areas where water depth exceeds 10 feet. At depths less than 10 ft, the volume of the cone ensonified by the hydroacoustic transducer is too small to provide adequate sampling results.

3.4 SILVER SAMPLING

As part of reservoir sampling, fish and crayfish will be collected from Mammoth Pool Reservoir and fish from Huntington Lake for tissue analysis to evaluate for the presence bioaccumulated silver. Ten wild fish would be collected from each reservoir, and an additional ten crayfish would be collected from Mammoth Pool reservoir, using the same collection technique used in support of the ALP studies. Samples would be analyzed for silver content in 1) fish muscle tissue; 2) fish liver; and 3) entire crayfish. Tissue samples will be analyzed by a state-certified laboratory. The analysis method used will be selected in consultation with the FROG and CalEPA.

3.5 FISH PROCESSING

All fish captured through electrofishing will be identified to species, measured for length to the nearest millimeter fork length for species with forked tails (i.e., trout species) or total length for all other species, and weighed to the nearest 0.1 g for fish up to two kg, or to the nearest one g for fish over two kg. If large numbers (>100) of a species are captured, each fish will be counted and identified, but the measurements will be collected from a sub-sample of fish. The sub-samples will be stratified by size class, with 10 measurements collected within each 25-mm size category.

Scale samples will be collected from wild trout for age determination. Scales will be collected from the back of the fish above the lateral line and below and slightly behind the dorsal fin. Scales will be stored in envelopes and the date, stream, site, species, length, weight and a data sheet reference code will be recorded on the envelope. Scale samples are available to the FROG upon request.

Scale analysis will be conducted to determine the age of sampled trout and to assess the age structure of sampled populations. In order to determine the age of the fish, scales will be mounted on standard glass microscope slides and either directly viewed through a microscope or imaged with a microscope-mounted digital camera. Images of scales will be digitally recorded for analysis. The electronic files will allow biologists to view and manipulate the scale images using simple imaging software (e.g., Motic® Images 2000 release 1.2, Jasc® Paintshop Pro version 7.02, or equivalent). The digital images of the scales will be manipulated to make the annuli appear distinct from the rest of the circuli (scale rings). Due to their small size and the limitations of digital imaging, brook trout scales will not be amenable to digital recording. The brook trout scales will be aged using a microscope or standard microfiche viewer.

3.6 PHYSICAL CONDITIONS

Routine observations will be made of habitat and physical conditions in the specific bypass reach areas sampled. These observations will include physical measurements of water temperature, specific conductance, and dissolved oxygen. Physical measurements also will be taken of reservoir conditions. These will include measurements of water temperature, specific conductance, and dissolved oxygen. These measurements will be profiled at two locations in each reservoir, in locations similar to those used during the ALP field studies. Measurements will be made using either a Hydrolab Quanta or equivalent water quality meter. Water quality meters will be calibrated at least daily prior to use, to correct for altitude and dissolved oxygen saturation among sites.

4.0 FISH POPULATION CHARACTERISTICS

Hatchery-origin and wild trout will be evaluated separately and hatchery trout will not be included in population characteristics calculated for wild trout. Characteristics that are used to differentiate hatchery trout from wild trout will be identified.

Fish populations will be characterized by abundance, biomass, and density. Abundance will be characterized as numbers sampled per site by species and lifestage. Biomass will be characterized by biomass per species and lifestage at each site. Density will be reported as numbers and biomass per kilometer and hectare. Density will be provided by species and lifestage.

Condition factors will be calculated for trout, hardhead, pike minnow, and other species as appropriate and directed by the FROG. Condition factors will be calculated by species and lifestage and reported as both the mean and 95% confidence limits, if adequate numbers of species and lifestages are collected to make these measurements meaningful.

Population structure will be reported based on scale aging and length frequency results. Length frequency histograms will be provided for target fish species. Length at age will be assessed and reported.

The presence of disease, parasites, or injury to fish will be summarized and reported.

5.0 FISH MONITORING SITES

Fish monitoring will occur during August and September in listed reaches along medium and large diversions that were surveyed in 2002, as part of the current licensing process. Those surveys were conducted by electroshocking, supplemented by snorkeling at several sites. The snorkeling and electrofishing provided complementary results, which were reported in the license application.

The study area is summarized as the following Project-affected reaches of the Big Creek system (Table 1 provides breakdown by Project reach):

1) South Fork San Joaquin River
2) Bear Creek
3) Mono Creek
4) San Joaquin River (Mammoth Reach)
5) San Joaquin River (Stevenson Reach)
6) Big Creek (below Dam 4)
7) Big Creek (below Dam 5)
8) Stevenson Creek
9) North Fork Stevenson Creek

Table 2 provides a list of the major Project reservoirs that will by sampled by Project. These reservoirs are:

1) Mammoth pool Reservoir
2) Huntington Lake
3) Florence Lake
4) Shaver Lake

6.0 REPORTING

6.1 DRAFT REPORT

A Draft Technical Report providing the results of the fish population survey will be prepared by SCE within 120 days following completion of the fieldwork following each monitoring period and provided to the FROG, and other parties requesting copies of the report. The report will follow the general presentation layout for basic fish monitoring data used in the CAWG 7, Characterize Fish Population Technical Study Report (SCE

2003). The report will include a map showing the locations of the monitoring stations. The report will provide tabular results for numbers captured and average length and weight for each species at each station. The table will also provide computed abundance, total length, length/weight ratios, average condition factors, and biomass estimates, with 95 percent confidence limits for each species and lifestage captured in sufficient quantities. The report also will provide a graph of the combined length-frequency distribution from all monitoring stations. In addition to describing the results, the report will compare the results with previous fish population surveys (starting with 2002 sampling), from each monitoring site and will discuss implications regarding trends in fish abundances. Results of hydroacoustic surveys will be compared with fish netting results for each of the reservoirs sampled. Fish densities will be described for depth intervals corresponding to those evaluated for reservoir habitat. Netting will be used to characterize differences in habitat use for different species and lifestages, identify species composition, and catch per unit effort by species and lifestage.

Results of reservoir tissue sampling for silver will be included in the report and will be compared to appropriate criteria. Also included in the report shall be any water temperature monitoring data or physical measurements that have been collected concurrently for the year during the fish population surveys.

A 60-day review period for the FROG will be provided. Based on the results of the fish population monitoring and comments received during the review process, SCE may elect to meet with the FROG to discuss any outstanding issues. Within 30 days following the receipt of comments, or 30 days following a meeting, comments will be addressed and the final progress report will be filed with the FROG and the Federal Energy Regulatory Commission (Commission or FERC).

6.2 FINAL SUMMARY REPORT

A Draft Final Technical Report summarizing the fish monitoring would be prepared by SCE and provided to the FROG and other interested parties within 120 days following the completion of the last sampling period (year 8, 18, 28, and 38 depending on period of license). The report will follow the general presentation layout for basic fish monitoring data used in the CAWG 7 Fish Population Study Report (SCE 2003). The report will provide results as detailed in the previous section.

A 60-day review period for the FROG will be provided. Based on the results of the fish population monitoring and comments received during the review process, SCE may elect to meet with the FROG to discuss any outstanding issues. Within 30 days following the receipt of comments, or 30 days following a meeting, comments will be addressed and the final progress report will be filed by SCE with the FROG and the FERC. These data should be used in any relicensing process that is being used by FERC at the time of the expiration of this license.

7.0 LITERATURE CITED

Fausch, K.D., and R.J. White. 1981. Competition between brook trout (*Salvelinus fontinalis*) and brown trout (*Salmo trutta*) for positions in a Michigan stream. Canadian Journal of Fisheries and Aquatic Sciences 38:1220-1227.

Griffith, J.S., Jr. 1972. Comparative behavior and habitat utilization of brook trout (*Salvelinus fontinalis*) and cutthroat trout (*Salmo clarki*) in small streams in northern Idaho. Journal of Fishery Research Board of Canada 29:265-273.

Hankin, D.G. and G.H. Reeves. 1988. Estimation total fish abundance and total habitat area in small streams based on visual estimation methods. Canadian Journal of Fisheries and Aquatic Sciences 45:834-844.

Hicks, B.J., and N.R.N. Watson. 1985. Seasonal changes in abundance of brown trout (*Salmo trutta*) and rainbow trout (*S. gairdnerii*) assessed by drift diving in the Rangitikei River, New Zealand. New Zealand Journal of Marine and Freshwater Research. 19:1-10.

Hillman, T.W., J.W. Mullan, and J.S. Griffith. 1992. Accuracy of underwater counts of juvenile chinook salmon, coho salmon, and steelhead. North American Journal of Fisheries Management 12:596-603.

Platts, W.S., W.F. Megahan, and G.W. Minshall. 1983. Methods for evaluating stream, riparian, and biotic conditions. USDA-FS For. Serv. Gen. Tech. Rep. INT-138.

Reynolds, J.B. 1996. Chapter 8, Electrofishing. In: Fisheries Techniques, 2nd Edition. Edited by B.R. Murphy and D.W. Willis. American Fisheries Society. Bethesda, Maryland.

Southern California Edison (SCE). 2003. CAWG 7, Characterize Fish Populations, 2002 Technical Study Report. Southern California Edison, Big Creek, California. *In* SCE's Amended Preliminary Draft Environmental Assessment (APDEA) for the Big Creek Alternative Licensing Process (ALP) (Mammoth Pool Project (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)). February 2007 (Volume 4, SD-C, Books 8 and 21).

Zippin, C. 1958. The removal method of population estimation. J. Wildl. Manage. 22(1):82-90.

APPENDIX J

SEDIMENT MANAGEMENT PRESCRIPTIONS

Sediment Issues and Proposed Sediment Management Prescriptions for the Four Big Creek ALP Projects[1].

Facility	FERC Project Number(s)	Sediment Issue	Sediment Management Prescriptions and Monitoring
Balsam Creek Diversion Bolsillo Creek Diversion Camp 62 Diversion Chinquapin Creek Diversion Hooper Creek Diversion Pitman Creek Diversion Ross Creek Diversion Rock Creek Diversion Ely Creek Diversion	67 67 67 67 67 67 2085 2085 2175	Accumulation of sediment behind the diversion may block the intake structure.	Sediment Pass Through[2,3] To reduce the accumulation of sediment behind the diversion, the low-level outlet will be opened during each spring runoff period in wet years when the diversion is turned out. Physical Removal of Sediment If necessary, physical removal of sediment by hand or equipment will be conducted during the low flow period in the spring prior to runoff, or in the fall. If feasible, any trapped sediment will be removed. Sediments removed from the channel will be either placed above the high water elevation (mean annual flood elevation) where they will not be re-entrained or the sediments will be removed to an offsite location, which will be pre-approved by the USDA-Forest Service (USDA-Forest Service) and California Department of Fish and Game (CDFG) if the agencies have jurisdiction over the disposal location.
Dam 4 Forebay	2175	Accumulation of sediment behind the dam may block the low-level outlet valves or intake structure.	Sediment Pass Through[2,3] Within five years of approval of this sediment prescription by FERC, SCE will implement the sediment pass through activities. This prescription will be implemented subsequently at least once every five years thereafter. Sediment pass through activities will be completed over one or two days and will occur between January 1 and March 31. SCE will open the low-level outlet and repeatedly fluctuate the water surface elevation (WSE) of the forebay, between the elevation of the tunnel invert intake and the low-level outlet. This approach will assist in mobilization of sediment from the banks of the forebay. During implementation of the sediment pass through prescription, a flow not less than the minimum instream flow (MIF) downstream of the dam will be maintained through the low-level outlet (opened at its maximum capacity). Following the first day of implementation, the licensee will inspect the forebay for the presence of residual sediment and determine if a second day of sediment pass through activities are necessary. If it is determined that a second day is necessary, the approach described above will be implemented for a second day. After sediment pass through is completed and the low-level outlet has been closed, a minimum of 600 cfs will be spilled over the dam for at least 24 hours (clear water release). This additional release will allow for continued mobilization of sediment downstream. Monitoring Monitoring of pools downstream of the dam will be conducted prior to, and after implementation of the prescription, to determine if the sediment prescription has resulted in deposition of fine sediment in the stream. The weighted mean value of the level of fine sediments (V^*_w) in a representative set of five pools below the diversion will be measured according to the procedures defined by Hilton and Lisle (1993). V^*_w values shall be initially determined (baseline condition) prior to implementation of the sediment management prescription. Additional V^*_w will be determined following implementation of the sediment prescription. The monitoring measurement locations will be approved by the USDA-FS, CDFG, United States Fish and Wildlife Service (USFWS), and the State Water Resources Control Board (State Water Board) and other interested governmental agencies. When scheduling sampling site selection or field data collections, SCE will give interested governmental agencies 30-days advance notice to provide them with the opportunity to participate or observe. If field conditions or operational situations preclude a 30-day notification, SCE will provide notice as far in advance as feasible.

Sediment Issues and Proposed Sediment Management Prescriptions for the Four Big Creek ALP Projects[1].

Facility	FERC Project Number(s)	Sediment Issue	Sediment Management Prescriptions and Monitoring
Dam 4 Forebay	2175	Accumulation of sediment behind the dam may block the low-level outlet valves or intake structure.	Monitoring (continued) V^*_w results will be reported to the USDA-FS, USFWS, CDFG and State Water Board, and other interested government agencies within six months of completing sediment prescriptions[4]. Following submittal of the monitoring results, SCE will consult with USDA-FS, USFWS, CDFG and State Water Board and other interested government agencies to determine if modifications to the sediment prescription are warranted. Monitoring will be discontinued in subsequent years, upon approval of the USDA-FS, CDFG, USFWS and State Water Board. SCE will also monitor turbidity during implementation of sediment prescriptions at three locations (upstream of the forebay, immediately downstream of the forebay and 1,000 feet downstream of the forebay). Monitoring will be conducted on an hourly basis from 8 hours prior to initiation of sediment prescriptions to at least 8 hours after the clear water release). In each year prior to implementation of sediment prescriptions, SCE will also monitor turbidity during two storm events at the same locations described above. Monitoring during the storm event will be conducted on an hourly basis for 24 hours. Turbidity monitoring results will be reported to the USDA-FS, USFWS, CDFG and State Water Board and other interested government agencies within six months of completing sediment prescriptions[4]. Following submittal of the monitoring results, SCE will consult with USDA-FS, USFWS CDFG and State Water Board and other interested government agencies to determine if modifications to the sediment prescription are warranted. Monitoring will be discontinued in subsequent years, upon approval of the USDA-FS, CDFG, USFWS and State Water Board.
Dam 5 Forebay	67	Accumulation of sediment behind the dam may block the low level outlet valves or intake structure.	Sediment Removal and Pass Through[2,3] Within five years of approval of this sediment prescription by FERC, SCE will implement the sediment prescriptions described below. Any sediment prescriptions will be initiated between January 1 and March 31 and will be implemented at least every five years after the initial implementation. Sediment Removal After implementing any sediment pass through prescription, described below, an inspection of the forebay will be conducted to determine if physical removal of sediment is necessary. If SCE determines it to be necessary, SCE will implement this sediment removal prescription. First the low-level outlet will be opened to drawdown the forebay. Once the forebay is drained, SCE will use mechanical equipment (e.g., dozer, excavator) to remove sediment. During sediment removal activities, MIF required downstream of the dam will be maintained. In areas where heavy equipment must cross the channel in the forebay, culverts will be installed. Sediment will be transported to a sediment disposal site pre-selected in consultation with USDA-FS and CDFG if the agencies have jurisdiction over the disposal location. Sediment Pass Through Implement sediment pass through prescription as described under Dam 4 Forebay. Monitoring Implement monitoring as described under Dam 4 Forebay.

Sediment Issues and Proposed Sediment Management Prescriptions for the Four Big Creek ALP Projects[1].

Facility	FERC Project Number(s)	Sediment Issue	Sediment Management Prescriptions and Monitoring
Dam 6 Forebay	120	Accumulation of sediment behind the dam may block the low-level outlet valves or intake structure.	Sediment Removal and Pass Through[2,3] SCE will conduct sediment prescriptions at Dam 6 Forebay at least every five years beginning the year following implementation of sediment prescriptions at Dam 4 and Dam 5. Sediment prescriptions at Dam 6 Forebay will be initiated between January 1 and March 31. Sediment Removal An inspection of the forebay will be initiated to determine if physical removal of sediment is necessary. If SCE determines it to be necessary, SCE will implement this sediment removal prescription. During sediment removal, two of the four low-level outlets will be opened to drawdown the forebay. No more than two of the four low-level outlets will be opened at any time. Once the forebay is drained, SCE will use mechanical equipment (e.g., dozer, excavator) to remove sediment. MIF required downstream of the dam will be maintained through the forebay. In areas where heavy equipment must cross the channel in the forebay, culverts will be installed. Sediment will be transported to a sediment disposal site pre-selected in consultation with USDA-FS and CDFG if the agencies have jurisdiction over the disposal location. Sediment Pass Through Implement the sediment pass through prescription, as described above under Dam 4 Forebay, with the following modifications. During each forebay WSE fluctuation, a different sequence of two of the four low-level outlets will be opened. During implementation of the sediment pass through prescription, a flow not less than the MIF will be maintained downstream of the dam through the two low-level outlets (opened to their maximum capacities). After the sediment pass through is completed and the low-level outlets have been closed, a minimum of 3,000 cfs will be spilled over the dam for at least 24 hours. This additional release will allow for continued mobilization of sediment downstream. Monitoring Implement monitoring as described under Dam 4 Forebay.
Mono Creek Diversion	67	Accumulation of sediment behind the dam may block the outlet valves or intake structure.	**Sediment Removal[2,3]** Within five years of approval of this sediment prescription by FERC, SCE will inspect the forebay to determine if physical removal of sediment is necessary. If physical removal of sediment is necessary, the following prescription will be implemented. Any sediment removal activities will occur in Wet Years prior to the implementation of channel riparian maintenance (CRM) flows. An inspection of the forebay will be completed at least every five years thereafter. The forebay will be drawn down for a period no longer than two weeks between July 1 and August 31 to allow for removal of sediment from the forebay using mechanical equipment. A trench will be created within the forebay from the confluence of Mono Creek and the forebay to the low-level outlet prior to sediment removal activities. This trench will be used to transport the 25 cfs MIF or the maximum flow through the lower level outlet valve, whichever is less. Once the trenching is completed, mechanical equipment will be used to remove sediment from the forebay. This sediment will be transported to a sediment disposal site pre-selected in consultation with USDA-FS and CDFG if the agencies have jurisdiction over the disposal location. Upon completion of the sediment removal, the low-level outlet will be closed and a flow will be spilled over the dam consistent with the CRM flow condition for Mono Diversion for at least 24 hours. Once sediment prescriptions are complete, flows will be returned to the MIF (25 cfs).

Sediment Issues and Proposed Sediment Management Prescriptions for the Four Big Creek ALP Projects[1].

Facility	FERC Project Number(s)	Sediment Issue	Sediment Management Prescriptions and Monitoring
Mono Creek Diversion	67	Accumulation of sediment behind the dam may block the outlet valves or intake structure.	**Sediment Removal[2,3] (continued)** Monitoring Fine sediment monitoring will be done in Mono Creek as part of the proposed CRM flow license requirement. SCE will monitor turbidity during implementation of sediment prescriptions at three locations (upstream of the forebay, immediately downstream of the forebay and 1,000 feet downstream of the forebay). Monitoring will be conducted on an hourly basis from 8 hours prior to initiation of sediment prescriptions to at least 8 hours after the clear water release. Turbidity monitoring results will be reported to the USDA-FS, USFWS, CDFG and State Water Board and other interested government agencies within six months of completing sediment prescriptions[4]. Following submittal of the monitoring results, SCE will consult with USDA-FS, USFWS, CDFG and State Water Board and other interested government agencies to determine if modifications to the sediment prescription are warranted. Monitoring will be discontinued in subsequent years, upon approval of the USDA-FS, CDFG, USFWS and State Water Board.
Mammoth Pool Dam	2085	Accumulation of sediment at intake structure leading to Howell-Bunger (HB) valve.	Sediment Pass Through[2,3] During wet years, SCE will comply with its whitewater obligations for the Mammoth Pool Project license and the project's Recreation Plan. The operation of the Howell-Bunger (HB) valve to provide pre-spill release flows from Mammoth Pool Reservoir for whitewater boating opportunities may allow sediment accumulated at the intake structure to pass downstream. Monitoring SCE will monitor turbidity during implementation of pre-spill release at two locations (downstream of the dam and just upstream of Mammoth Pool Powerhouse). Monitoring will be conducted on an hourly basis from 8 hours prior to initiation of pre-spill releases to 48hours after HB value is opened. Turbidity monitoring results will be reported to the USDA-FS, USFWS, CDFG and State Water Board and other interested government agencies within six months of completing the monitoring activities. Following submittal of the monitoring results, SCE will consult with USDA-FS, USFWS, CDFG and State Water Board and other interested government agencies to determine if modifications to the pre-spill release are warranted. Monitoring will be discontinued in subsequent years, upon approval of the USDA-FS, CDFG, USFWS and State Water Board.
Portal Forebay Balsam Meadow Forebay	2174 67	Accumulation of sediment behind the dam may block low-level outlets or intake structure.	Sediment Removal[2,3] Within five years of approval of this sediment prescription by FERC, SCE will inspect the forebays to determine if physical removal of sediment is necessary. If physical removal of sediment is necessary, this prescription will be implemented. An inspection of the forebays will be completed at least every five years thereafter. If necessary, the forebay will be drawn down in the late fall to allow for removal of sediment using mechanical equipment. A trench will be created within the forebay from the point of inflow to the low-level outlet prior to sediment removal activities. This trench will be used to transport the required MIF around the sediment removal area. Once the trenching is completed, mechanical equipment will be used to remove sediment from the forebay. This sediment will be transported to a sediment disposal site pre-selected in consultation with USDA-FS and CDFG if the agencies have jurisdiction over the disposal location. If the licensee determines that "flushing" flows are required as part of the sediment management, such flows will only be released within the time frames and peak magnitudes specified in the Portal CRM flow unless otherwise agreed to by the USDA-FS and other interested governmental agencies.

Sediment Issues and Proposed Sediment Management Prescriptions for the Four Big Creek ALP Projects[1].

Facility	FERC Project Number(s)	Sediment Issue	Sediment Management Prescriptions and Monitoring
Portal Forebay Balsam Meadow Forebay	2174 67	Accumulation of sediment behind the dam may block low-level outlets or intake structure.	Sediment Removal[2,3] (continued) **Monitoring** SCE will monitor turbidity during implementation of sediment prescriptions at three locations (upstream of the forebay, immediately downstream of the forebay and 1,000 feet downstream of the forebay). Monitoring will be conducted on an hourly basis from 8 hours prior to initiation of sediment prescriptions to at least 8 hours after the completion of sediment removal activities. Turbidity monitoring results will be reported to the USDA-FS, USFWS, CDFG and State Water Board and other interested government agencies within six months of completing sediment prescriptions[4]. Following submittal of the monitoring results, SCE will consult with USDA-FS, USFWS, CDFG and State Water Board and other interested government agencies to determine if modifications to the sediment prescription are warranted. Monitoring will be discontinued in subsequent years, upon approval of the USDA-FS, USFWS, CDFG and State Water Board.

[1]SCE will consult with the USDA-FS, CDFG, USFWS and other regulatory agencies regarding information needs and permitting requirements for the sediment activities. If additional information is needed in order to obtain approval of necessary permits, then SCE will provide that information.

[2]Other regulatory or operational constraints may take precedence of sediment management prescriptions. These constraints may include, but not be limited to: (i) necessary repairs to the dam(s) or associated equipment; (ii) providing water supplies during drought periods to downstream water users or for environmental purposes; (iii) operating generating facilities to address power shortages in California due to unscheduled power outages of other power generation facilities, State declared energy emergencies, or orders from a State agency with authority to dispatch power generated by the Projects; (iv) reducing downstream flooding risks; (v) meeting the terms of the Mammoth Pool Operating Contract or other obligations to downstream water rights holders; or (vi) meeting other Project license water release requirements. In the event that sediment management prescriptions are not conducted due to conflicting operational constraints, SCE will make a good faith effort to complete the sediment management prescription(s) in the following year.

[3]SCE will provide notification of Sediment Pass Through or Sediment Removal activities to the USDA-FS, USFWS, State Water Board, CDFG and other interested parties, including the Whitewater Boating Community, 30 – days prior to commencing work.

[4]Deviations from turbidity standards in the Basin Plan will not be considered violations during the first two cycles of sediment prescriptions, but will be reported to the State Water Board, who will determine whether modifications should be made to the sediment management prescriptions, monitoring programs, or whitewater pre-spill releases contained in this Plan.

APPENDIX K

RIPARIAN MONITORING PLAN

RIPARIAN MONITORING PLAN

BIG CREEK HYDROELECTRIC SYSTEM

MAMMOTH POOL (FERC Project No. 2085)
BIG CREEK NOS. 1 AND 2 (FERC Project No. 2175)
BIG CREEK 2A, 8, AND EASTWOOD (FERC Project No. 67)
BIG CREEK NO. 3 (FERC Project No. 120)

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SUBMITTED BY
SOUTHERN CALIFORNIA EDISON COMPANY

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Figure 1. Locations for Riparian Monitoring

1.0 INTRODUCTION

This Riparian Monitoring Plan (Plan) has been developed for five of Southern California Edison's (SCE's) hydroelectric Projects that are a part of the Big Creek Hydroelectric System, located in the Upper San Joaquin River Watershed. The Plan covers the following four Big Creek Alternative Licensing Process (ALP) Projects: Mammoth Pool (FERC No. 2085), Big Creek Nos. 1 and 2 (FERC No. 2175), Big Creek Nos. 2A, 8, and Eastwood (FERC No. 67), and Big Creek No. 3 (FERC No. 120). In addition, the Plan covers the Portal Hydroelectric Project (FERC No. 2174). These Projects consist of eight powerhouses, and four major reservoirs, and have a combined dependable operating capacity of about 900 megawatts (MW).

Quantitative and qualitative riparian studies completed for the Big Creek ALP (SCE 2002 and 2003 Final Technical Study Reports (FTSR), CAWG 11, Riparian (SCE 2003a; SCE 2004) identified potential riparian or meadow resource issues along certain bypass streams. Channel Riparian Maintenance (CRM) flows to enhance and support riparian resources will occur along Mono Creek and Camp 61 Creek. CRM flow releases to enhance and support riparian and meadow resources will be provided along the South Fork San Joaquin River (Jackass Meadow area). Mono Creek and the South Fork San Joaquin River CRM flows are part of the Big Creek 2A, 8 and Eastwood Project (FERC No. 67). Camp 61 Creek CRM flows are part of Portal Hydroelectric Project (FERC No. 2174). This Plan is designed to monitor the status and trends of the riparian resources along these streams in response to the CRM flow and minimum instream flow (MIF) releases required under new licenses.

2.0 GOALS AND OBJECTIVES

Monitoring riparian vegetation provides a means of assessing the effects of the new CRM flow releases on the composition, structure, and health of the riparian resources in selected reaches. The goal of the Riparian Monitoring Plan is to evaluate the status of riparian resources in selected reaches under the new CRM flow regimes required by the new licenses for Camp 61 Creek, Mono Creek, and the South Fork San Joaquin River. The specific objectives for the monitoring include the following:

1. Monitor riparian and meadow vegetation composition in selected reaches.

2. Monitor riparian vegetation age class structure, including regeneration, in selected reaches.

3. Monitor trends in riparian and meadow health in selected reaches over the length of the new license.

3.0 GENERAL APPROACH

The main task of this Monitoring Plan is to collect data to monitor the riparian resources in the selected bypass reaches for which CRM flows will be required by the new license

to address riparian resource issues. The riparian vegetation will be monitored using the same or similar sampling methods previously established during the relicensing surveys (SCE 2003a; SCE 2004) to enable comparisons with this data. The riparian data collected, including regeneration success, species coverage, species presence/absence, distribution of stem size classes, and percent decadence of species present will provide information as to whether suitable flow conditions are occurring to promote healthy riparian and meadow communities, successful native species' establishment on alluvial surfaces in reaches with identified age class resource issues, to support native riparian or meadow species, and to discourage the establishment of mature woody vegetation and upland species on lower surfaces within the channel (channel encroachment).

Riparian vegetation along the streams will be monitored at least four times during the term of the license using a combination of ground-level photo documentation, and transects and plots located perpendicular to the channel (along surveyed transects). Plot locations will be selected in consultation with the resource agencies. Results, including resource evaluations, will be included in a draft Riparian Monitoring Report, which will be provided to the U.S. Department of Agriculture-Forest Service (USDA-FS), the Federal Energy Regulatory Commission (Commission or FERC), United States Fish and Wildlife Service (USFWS), California Department of Fish and Game (CDFG), and other interested federal and state agencies that express an interest in participating.

The stream reaches for monitoring and sampling methods are discussed in the following sections.

4.0 RIPARIAN MONITORING REACHES

Riparian monitoring will be conducted in the following reaches, which were also surveyed in support of the relicensing processes, along Camp 61 Creek, Mono Creek, and South Fork San Joaquin River:

1. Camp 61 Creek: River Miles (RM) 1.1-1.6; 1.87-1.95

2. Mono Creek: RM 2.3-2.7; 3.5-3.7; 4.4-4.7

3. South Fork San Joaquin River: RM 26.1-27.7

The locations of these reaches are shown on Figure 1.

The riparian resource issues that were identified along each stream during the relicensing process include:

- Camp 61 Creek: Riparian resource issues include channel encroachment and riparian health in certain reaches. The potential for increased bank erosion was also identified as a potential consequence of the higher flows to be required by the new FERC license (FERC 2006).

- Mono Creek: Resource issues include channel encroachment and reduced regeneration success (age class structure resource issue), change in community composition, reduced floodplain connectivity and bar inundation along adjustable reaches, and altered frequency and timing of peak flows.

- South Fork San Joaquin River (Jackass Meadow Complex): Major riparian resource issues include decreased flow connectivity, change in community composition, upland species encroachment (lodgepole pine), and stress to herbaceous vegetation and willows within the meadow (also caused by grazing and recreation). Last, the USDA-FS has expressed an interest in the regeneration of sedge beds in certain locations along the meadow.

5.0 SAMPLING METHODS

Monitoring along all three streams will include the collection of baseline data within one year of the license issuance, prior to the initiation of MIFs and CRM flows in the selected reaches. The USDA-FS, USFWS, CDFG, and State Water Board will participate in the selection of sampling sites and refining protocols. If an agency does not respond or declines to participate after notification, SCE can move forward with site selection or protocol refinement. When scheduling sampling site selection or field data collections, SCE will give interested governmental agencies 30 days advance notice to provide them with the opportunity to participate or observe. If field conditions or operational situations preclude a 30 day notification, SCE will provide notice as far in advance as feasible. CRM flows will not be provided during this first year when these data are collected. The data collected will be similar to that collected for the Big Creek ALP and will include plant species composition, percent cover, height and canopy structure, relative density, size classes present, evidence of unusual mortality, structural diversity, width of the riparian zone, and observations of other stressors potentially impacting riparian and/or meadow resources. Incidental wildlife observation, presence of diagnostic sign (e.g. tracks, scat, feathers, etc) and habitat suitability will also be collected. After the initial surveys, measured flows since the preceding monitoring period will be evaluated.

Along all three streams, riparian vegetation will be monitored using a combination of ground-level photo documentation and surveyed transects and plots. To the extent feasible, the monitoring will be conducted at the same time of year each monitoring period, in the summer. As different riparian resource issues were identified along each of these streams, aspects of the riparian monitoring have been designed for each to concentrate on assessing the trends of these specific riparian attributes.

Photo documentation and vegetation transect composition and structure, which will be conducted along each stream, is described below. The additional monitoring is described in the following section by stream.

5.1 PHOTO DOCUMENTATION

Photo documentation will provide a visual record of the conditions of the riparian and meadow communities and land use (Elzinga et al. 1998; Bureau of Land Management 1999). The photographs will document species present, vegetation type and cover, species health, and land uses.

Permanent photo points were not established during the riparian Big Creek ALP studies, although numerous photographs were taken along the reaches and reach transects, as part of the various Big Creek ALP studies. These photographs will be evaluated for each of the monitoring reaches to determine if the exact spots can be re-located in the first monitoring season. Permanent photo points will be established in consultation with the USDA-FS, USFWS, CDFG, State Water Board, and other interested government agencies prior to the implementation of the photo documentation, at either the re-located or appropriate new positions, within one year of the license issuance. Each point will be marked with a scribed platform on a pole at the photographer's location and the location will be recorded with a Global Positioning System (GPS). The photographs will be taken at approximately the same location, time of year (season), and time of day. The photographs will be stored by year electronically in a photolog with pertinent information such as date, time, number, environmental information (such as recent high flows, etc). Hard copies of the photographs and accompanying information will be provided to the USDA-FS as a back up.

The photographs will be used to document changes in herbaceous and woody cover along the stream banks and within the meadows, position of the vegetation along the channel, other activities within the reaches, and to a lesser extent, species composition. The photographs will be compared to baseline conditions and each preceding monitoring season. Results will be included in the subsequent Riparian Monitoring Report.

5.2 VEGETATION TRANSECT COMPOSITION AND STRUCTURE

Quantitative data will be collected within each reach with plots distributed along surveyed transects established perpendicular to the channel. Vegetation will be sampled from the low flow water's edge to the valley walls or hillslope, and will include bars if present. Data will be collected in paired plots established along the transects at changes in elevations with potential differences in flow connectivity and hydroperiod.

Data will be collected in two plot sizes at each plot location. Herbaceous and other cover data will be collected within 1 m^2 plots along transects. Shrub and tree data will be collected within 5 x 2 m plots along transects. Herbarium specimens of all vascular plant and bryophyte species will be made the first time each species is encountered or as necessary to conclusively confirm identification to species, and deposited at the Sierra National Forest herbarium

Plot-transect data collection will be used to collect quantitative data, including:

Shrub and Tree Layers (5 x 2 m plots):

- Canopy coverage class (%)
- Total number of stems (class)
- Stem count per individual or species (class)[1]
- Tree diameter (diameter at breast height)
- Dominant species relative decadence (%)
- Dominant species coverage (%)
- Total plot decadence (%)
- All tree and shrub species present in each plot (species richness) and whether native or nonnative

Ground Layer (1 x 1 m plots)

- Dominant species coverage (%)
- Total canopy coverage
- Ground layer canopy coverage
- Shrub layer canopy coverage
- Tree layer canopy coverage
- All species present in each plot (species richness) and whether native or nonnative

Other pertinent information will be recorded as observed in the field, including: substrate, channel encroachment, large woody debris within the riparian corridor, bank instability, and evidence of recreational and other land use activities (e.g. fishing trails, vegetation trampling or clipping, horses or cattle present). Evidence of unusual stress or mortality, and/or evidence of wildlife use, will also be noted. In addition, noxious weed and special-status plant species will be documented if encountered during field surveys.

The total plot number of plots along each transect will vary depending on the width of the riparian corridor. However, plots will be established to sample at least five percent of the total transect length, with a minimum of four 5 x 2 plots and six 1 x 1 plots per transect, as feasible based on feasibility and the width of the valley bottom. A plot will

[1] Many observers have difficulty differentiating willow and mountain alder individuals, particularly mature individuals. Stems per individual will not be assessed if this occurs; rather stems per area (densities) will be determined. Seedlings or young individuals will be identified as this information is important for assessing regeneration. In addition, when stem densities are high, the accuracy of the counting tends to decrease. To minimize this error in the field, stem densities have been grouped. The groupings are finer at lower densities and broader as densities increase.

always be established at the water's edge, and plots will also be established on bar features, if present along the transect.

In reaches with poorly developed or narrow floodplains in which only one or two plots would be placed along the transect, additional plots will be established parallel to the channel to evaluate a minimum of four 5 x 2 plots and six 1 x 1 plots per transect.

5.2.1 CAMP 61 CREEK

Riparian vegetation will be monitored within the same reaches along which Proper Functioning Condition (PFC) Assessments (Prichard 1988) were completed for the preparation of the Portal License Application (RM 1.1-1.3, 1.3-1.45, 1.45-1.60) (SCE 2003b). One additional reach will be established within the encroached reach downstream of Portal Forebay (RM 1.87-1.95). A minimum of three and maximum of five transects will be established within each reach. If transects have been previously established for the geomorphology or aquatics relicensing studies, the riparian monitoring will occur along those transects.

In addition to the data described above, data on bank protection by riparian vegetation within the reach will be collected by a modified greenline method[2] (Winward 2000; Coles-Ritchie et al. 2004). For this method, dominant species (ground, shrub, and tree species), bare ground, leaf litter, and large woody debris are assessed by walking along the stream bank for approximately 100 m (300 feet)[3] and recording the length of each along each stream bank. The lengths of the vegetation community types and other corridor attributes are then related to the length of the greenline to determine the proportion of each along the stream bank. The existing vegetation will be evaluated and rated for its ability to buffer the erosional effects of the flows on the stream banks, which includes rooting structure (Winward 2000; Potter 2005).

5.2.2 MONO CREEK

Riparian vegetation will be monitored along the same reaches where data was collected during the Big Creek ALP studies (RM 2.3-2.8, 3.5-3.7, and 4.4-4.7). Data were collected in randomly selected plots along surveyed transects that were permanently installed and surveyed. Data, as described above, will be collected in paired plots along these same transects. Permanent plots were not established along the transects during the Big Creek ALP studies, and it is unlikely that the exact same plot locations would be re-sampled during the monitoring studies. Plots, however, will be located at similar distances and elevations as were sampled in the Big Creek ALP studies.

[2] The greenline is defined as: '*The first perennial vegetation that forms a lineal grouping of community types on or near the water's edge. Most often it occurs at or slightly below the bankfull stage'* (Winward 2000).

[3] The length of the greenline survey is based on protocols outlined in Winward, 2000.

5.2.3 SOUTH FORK SAN JOAQUIN RIVER

Riparian vegetation will be monitored within the Jackass Meadow Complex in paired plots with and without enclosures at locations similar to those evaluated as part of the relicensing studies (RM 26.1-27.7). The microtopography will be surveyed as part of the *Channel and Riparian Maintenance (CRM) Flows for the South Fork San Joaquin River below Florence Reservoir*. This data will be reviewed and used to assist in the selection of plot locations for monitoring. The locations of the plots will also consider the data collected as part of the 2005 and 2006 studies focused on assessing inundation, soil moisture conditions, and vegetation within the meadow (SCE 2005; SCE 2007). Plot locations will be based on topography and vegetation present.

6.0 FREQUENCY OF MONITORING

Riparian resources will be evaluated the first year after license issuance, five years following CRM flow releases made in the first Wet Water Year for Mono Creek and Camp 61 Creek and the second Wet Water Year for the South Fork San Joaquin River, and at 10 year intervals for the remainder of the license term.

7.0 QUALITY CONTROL AND ASSURANCE

All field personnel will be familiar with the dominant species, recent hydrology, and field data that will be collected and supervised by a riparian ecologist. The supervisor will ensure that the field personnel are adequately prepared to collect the data accurately and correctly. All data collected onto field datasheets will be checked by the accompanying field crewmember. All electronically entered data will be checked for accuracy and completeness against the field data sheets. All data will be stored both electronically and as a hard copy to ensure that the data will be accessible through the term of the next license.

8.0 ANALYSIS AND STATISTICAL FRAMEWORK

The quantitative riparian data for each reach will be compiled to determine descriptive statistics[4], as well as frequency distributions (i.e., histograms), of woody riparian and tree seedling densities and stem densities by size class on alluvial surfaces, and riparian plant association based on Potter (2005) or similar classification. Qualitative data collected for each reach will be compiled and summarized, including observations of encroachment, bank instability due to lack of vegetation, and species lists, classified according to wetland or upland indicator, native or non-native, noxious weed, or special-status species.

[4] Descriptive statistics include mean, median, range, and measurement of variability of the attribute within the reach.

During each monitoring period, the hydrology, climate, and other environmental factors that may affect the trends in riparian resource condition (upward or downward) since the previous sampling period will be assessed. Climate trends will also be evaluated, such as distribution of particularly wet or dry years in between sampling periods. Other activities or changes in the magnitude of activities within the watersheds, such as grazing, recreation, fire, or timber management, will also be assessed.

9.0 REPORTING AND AGENCY CONSULTATION

After each monitoring event (see Section 6), a draft Riparian Monitoring Report providing the results of the riparian surveys will be provided to the USDA-FS, USFWS, CDFG, State Water Board, and other interested federal and state resource agencies requesting copies of the report at least two months prior to the Consultation Meetings specified in Condition 1. The report will include a map showing the monitoring locations, a summary of the data collected, and a time series of the photo points. In addition to summarizing and describing the results, the report will compare the results with the previous riparian studies completed in support of the latest relicensing and previous monitoring surveys for each of the three streams and will discuss implications regarding trends in the health and quality of the riparian resources. The climate, hydrology, and sequencing of water years between monitoring periods will also be summarized in the reports. The purpose of the report is to document trends in the riparian community during the course of the license.

A 60 day review period will be provided. Results would be discussed during the annual consultation meeting with the USDA-FS. Within 30 days following the receipt of comments, or 30 days following the meeting, comments will be addressed and the final progress report will be filed with the USDA-FS, USFWS, CDFG, State Water Board, other interested federal and state resource agencies having expressed an interest in participating, and the FERC.

10.0 LITERATURE CITED

Bureau of Land Management. 1999. Sampling Vegetation Attributes Interagency Technical Reference. Denver, Colorado.

Coles-Ritchie, M.C., R.C. Henderson, E.K. Archer, C. Kennedy, and J.L. Kershner. 2004. Repeatability of riparian vegetation sampling methods: how useful are these techniques for broad-scale, long-term monitoring? USDA-FS Gen. Tech. Rep. RMRS-GTR-138.

Elzinga, C.L., D.W. Salzer, and J.W. Willoughby. 1998. Measuring and Monitoring Plant Populations. Bureau of Land Management, BLM Technical Reference 1730-1. Denver, Colorado.

Federal Energy Regulatory Commission. 2006. Final Environmental Assessment. Portal Hydroelectric Power Project (FERC Project No. 2174-012). April 2006.

Potter, D.A. 2005. Riparian Plan Community Classification. West Slope, Central, and Southern Sierra Nevada, California. USDA-FS. Pacific Northwest Region. R5-TP-022.

Prichard, D. 1998. Riparian Area Management: a user guide to assessing proper functioning condition and the supporting science for lotic areas. U.S. Department of the Interior, Bureau of Land Management, Denver, Colorado.

Southern California Edison Company (SCE). 2003a. 2002 Technical Study Report Package. *In* SCE's Amended Preliminary Draft Environmental Assessment (APDEA) for the Big Creek Alternative Licensing Process (ALP) Projects (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)). (Volume 4, SD-C, Books 7-10, 21 and 22). February 2007.

SCE. 2003b. Portal Hydroelectric Power Project (FERC Project No. 2174) Application for New License. March 2003.

SCE. 2004. 2003 Technical Study Report Package. *In* SCE's APDEA for the Big Creek ALP Projects (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)). (Volume 4, SD-D, Books 11-17 and 23). February 2007.

SCE. 2005. Jackass Meadow Inundation Study. *In* SCE's APDEA for the Big Creek ALP Projects (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)). (Volume 4, SD-E, Book 18). February 2007.

SCE. 2007. 2006 Jackass Meadow Inundation Study Summary. *In* SCE's APDEA for the Big Creek ALP Projects (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)). (Volume 4, SD-E, Books 18 and 24). February 2007.

Winward, A.H. 2000. Monitoring the Vegetation Resources in Riparian Areas. USDA-FS, Rocky Mountain Research Station RMRS-GTR-47.

FIGURE

Placeholder for

Figure 1. Locations for Riparian Monitoring

Non-Internet Public Information

This Figure has been removed in accordance with the Commission regulations at 18 CFR Section 388.112.

This Figure is considered Non-Internet Public information and should not be posted on the Internet. This information is provided in Book 25 of the Application for New License and is identified as "Non-Internet Public" information. This information may be accessed from the FERC's Public Reference Room, but is not expected to be posted on the Commission's electronic library, except as an indexed item.

APPENDIX L

FLOW MONITORING AND RESERVOIR WATER LEVEL MEASUREMENT PLAN

FLOW MONITORING AND RESERVOIR WATER LEVEL MEASUREMENT PLAN

BIG CREEK HYDROELECTRIC SYSTEM

MAMMOTH POOL (FERC Project No. 2085)
BIG CREEK NOS. 1 AND 2 (FERC Project No. 2175)
BIG CREEK 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 OBJECTIVES

The Flow Monitoring and Reservoir Water Level Measurement Plan (Plan) describes the approach to measurement and documentation of flow conditions in the bypass and augmented stream reaches that will have instream flow requirements specified in the new Federal Energy Regulatory Commission (Commission or FERC) licenses issued to Southern California Edison Company (SCE) for the four Big Creek Alternative Licensing Process (ALP) Projects. It also lays out a process and schedule for the design, permitting and construction of infrastructure changes proposed in the new license and new flow monitoring equipment associated with these infrastructure changes. This Plan also documents the measurement of water surface elevations (water levels) at major Project reservoirs. These Projects include: Mammoth Pool (FERC No. 2085), Big Creek Nos. 1 and 2 (FERC No. 2175), Big Creek Nos. 2A, 8, and Eastwood (FERC No. 67), and Big Creek No. 3 (FERC No. 120).

2.0 INTRODUCTION

This Plan describes how SCE will measure and document flow conditions and reservoir water levels for the four ALP Projects. This Plan describes how instream flow information will be collected and recorded to document compliance with instream flow requirements. This Plan describes the equipment proposed to collect and record flow information and identifies the locations where instream flow measurements will be collected within the Basin. The Plan documents how information on water levels at major ALP Project reservoirs is collected.

The Plan includes the following components:

- Location and Design of Flow Monitoring Equipment
- Instream Flow Monitoring, and Recording of Flow Data
- Operation, Maintenance, and Calibration of Flow Monitoring Equipment
- Schedule for Designing, Permitting and Installing Infrastructure Changes and Associated Flow Monitoring Equipment
- Flow Data Dissemination to Resource Agencies
- Reservoir Water Surface Elevation Measurement

Each of these topics is addressed in the following sections of this Plan.

3.0 LOCATION AND DESIGN OF EXISTING FLOW MONITORING EQUIPMENT

SCE currently operates an extensive network of flow monitoring equipment in the vicinity of the four Big Creek ALP Projects to monitor and record stream flows at various locations. Instream flow is measured at either stream gages or flow release structures.

The types of equipment used to monitor flow at each location may potentially include Acoustic Velocity Meters (AVMs), float level recorders, pressure transducers, bubblers, or other flow measurement equipment, depending on location conditions. There are many factors that will influence the choice of flow measurement equipment selected. Such factors include the specific infrastructure present at the diversion or in the bypass reach, site remoteness, site climatic conditions, visibility of satellites or radio reception, and availability of electricity.

Table 1 identifies the stream bypass or augmented reaches where changes in minimum instream flow are proposed, whether infrastructure changes are proposed, and whether instream flows are currently gaged in those locations. Table 1 also indicates where new instream flow gages are currently proposed and the proposed type of measurement equipment to be installed. SCE will evaluate the choices of flow measurement equipment and will choose the specific equipment that is both practicable for the location and meets the needs of complying with the terms of the FERC license. SCE will obtain the approval of the Chief of the Division of Water Rights prior to installing new equipment.

4.0 INSTREAM FLOW MONITORING, COLLECTING, AND RECORDING OF FLOW DATA

To document compliance with required instream flows, SCE shall monitor flow for the various Project bypass and augmented reaches at the locations identified in Table 1. Table 1 presents the current United States Geological Survey (USGS) gage number for those compliance gages currently in operation. During operation of facilities, SCE will monitor the required 24-hour average and instantaneous (instantaneous floor) instream flows. The instantaneous flow is the flow value used to construct the average daily flow value and will be measured in time increments of at least once every 15-minutes. The 24-hour average flow is the average of the incremental readings from midnight of one day to midnight of the next day. Except for malfunctions or occurrences beyond the control of SCE, 24-hour average, instantaneous flows will be measured at each site during the period the associated diversion point is diverting water. The instream flow requirements allow the Licensee to compensate for an under release, as follows:

- Should the 24-hour average flow as measured, be less than the 24-hour average flow, but more than the Instantaneous Flow (instantaneous floor), Licensee shall begin releasing the equivalent under-released volume of water within seven days of discovery of the under-release. Credit for such releases will not exceed 20% of the instantaneous flow amount, when used to attain the equivalent of the under-released volume.

Therefore, under-releases and volumes released to compensate for under-releases will be documented to demonstrate compliance, as needed, based upon the 15-minute flow recordings which will be available upon request. The 24-hour average flow values will be reported to the USGS on an annual basis. The 15-minute recordings used to construct the 24-hour average flows will be available from SCE upon request. Turn-in and turn-out dates for small diversions also will be available upon request.

5.0 OPERATION, MAINTENANCE, AND CALIBRATION OF FLOW MONITORING EQUIPMENT

The type and frequency of maintenance activity on the flow monitoring equipment, and the methods and frequency used to calibrate the flow measuring devices will depend on the equipment chosen to monitor stream flows and the quality assurance (QA) requirements of USGS. SCE will use the QA requirements outlined in the May 15, 2006 letter from the USGS to FERC cooperators (Attachment A), or such USGS requirements that may supercede these in the future.

As presented in Table 1, the proposed types of equipment used to monitor flow include AVMs and float level recorders (as stated previously, the type of equipment selected may change due to infrastructure limitations that are dependant on the license requirements). SCE has identified the locations and types of equipment to be used for monitoring flow in Table 1. As stated previously, SCE will evaluate the choices of gaging equipment and will choose the equipment that is practical for application and best meets SCE's needs to comply with the conditions of the FERC license. As discussed above, several factors may influence SCE's ability to operate equipment, especially during the winter. Due to low flows and severe winter conditions at elevations over 5,000 feet (ft) in the Project area, it may not be feasible to operate flow-measuring equipment in smaller streams during winter months, when SCE is not diverting flow from those streams.

Calibration of the AVMs will be performed biannually using a portable AVM. Float level recorders or bubblers will include the collection of current meter measurements to verify the rating tables. Float level recorders and bubblers will be checked on a monthly basis by SCE by comparing the inside recorder reading to the outside permanent staff gage reading for any discrepancies. The USGS also conducts biannual inspections to verify the calibration of the rating curves for each of the gaging stations for which it is responsible for reviewing and publishing flow records.

6.0 SCHEDULE FOR INSTALLING FLOW MONITORING EQUIPMENT

A schedule for installing any additional flow monitoring equipment is provided as Table 2 to this Plan. Engineering, design, and construction is scheduled to begin after the new license is final and no longer subject to appeal. This work may differ among the four licenses. Where significant infrastructure modifications are necessary to release the instream flows, SCE has provided a preliminary engineering and

construction schedule for infrastructure modifications and gage installation. The schedule may be updated as evaluation of site conditions, preliminary engineering, and permitting for each site is completed. Licensee will notify the agencies if there are changes to the schedule resulting in a change of one year or more.

7.0 LOCATION, DESIGN AND PERMITTING PROCESS FOR INFRASTRUCTURE CHANGES AND NEW FLOW MONITORING EQUIPMENT

The proposed infrastructure changes necessary for the release of instream flows and gaging are identified in Table 1. The engineering, design, construction, and permitting by resource agencies other than FERC for each location will vary. In some cases, access will need to be provided for construction equipment. It is expected that infrastructure changes at Dam 4, Mammoth Pool Dam, and Dam 6[1] may involve the most extensive engineering and construction work. Site access below Dam 4 and Dam 6 is particularly difficult and access is likely to necessitate additional construction, or, depending upon site-specific conditions, alternative design strategies.

For Ross, Balsam, and Ely creeks, new float type gages shall be installed downstream of these diversions. The design and installation of these gages will likely involve the construction of gaging weirs with associated in-channel construction.

For each site at which infrastructure changes are proposed, preliminary engineering work, including design, likely construction approach, and access needs, will be assessed first. Based on this preliminary work, necessary permits from resource agencies other than FERC to construct the infrastructure changes will be identified. SCE will prepare a description for each infrastructure modification proposal that is identified to need additional permits and consult with the appropriate agencies regarding permits necessary for construction-related activities. Permit applications will be prepared and any necessary site-specific studies will be carried out, while engineering design proceeds. It is anticipated that sites involving instream construction or otherwise affecting the stream channel for access and use of heavy equipment may involve the need for the following permits:

- US Army Corps of Engineers (USACE) 404 Permit (the use of a Nationwide 3 Permit is assumed, and consultation with the U.S. Fish and Wildlife Service (USFWS), if necessary)
- California Department of Fish and Game (CDFG) Streambed Alteration Agreement
- State Water Resources Control Board (State Water Board) 401 Permit or Waiver

[1]The need for infrastructure change at Dam 6 is being evaluated.

- Preparation of U.S. Department of Agriculture-Forest Service (USDA-FS) Biological Evaluation (BE)

The majority of the information needed will be derived from SCE's ALP relicensing studies. The Biological Assessment for the ALP will address threatened and endangered species issues. In some cases, additional site-specific surveys may be needed for special-status plants and animals. The need for site-specific studies will be based on consultation with the agencies.

Where needed, procurement of equipment and support services to implement the infrastructure modifications will take place, when design work is complete. The timing of these activities will vary with location due to potential differences in license issuances, site-specific design issues, permitting, and procurement. In general, SCE will plan to stagger timing of construction to allow for efficient use of personnel and resources.

8.0 RELEASE OF INSTREAM FLOWS

After installation of necessary infrastructure and flow monitoring equipment, SCE will release instream flows in accordance with the terms of the new licenses. As indicated above, compliance with instream flow requirements will be measured at the appropriate gage, as indicated in Table 1. The gages identified for monitoring flow at SCE's small diversions will not be operated when SCE stops diverting at those locations (turn out of diversions). Diversions will be turned out when the natural stream flow upstream of diversions decreases to or below the instream flow required for that stream, or as agreed to in the instream flow schedule.

The instream flow releases may be temporarily modified, if required for safety reasons, by operating emergencies, by actions beyond the control of SCE (including, but not limited to "acts of God" and natural events), or upon agreement between SCE, the USDA-FS, State Water Board, USFWS, and CDFG for short periods.

9.0 FLOW DATA DISSEMINATION TO RESOURCE AGENCIES

SCE will measure and document all instream flow releases in readily accessible formats. Flow data collected by SCE from the stream gages will be reviewed by SCE hydrographers as part of its QA/QC protocol. Upon completion of the QA/QC process, the data will be catalogued and made available to USGS in annual hydrology summary reports. SCE understands that the USGS will then complete their QA/QC review of the data and subsequently publish the data and post it within their electronic database that can be accessed via the Internet. The flow values (generally 15-minute recordings) used to construct the 24-hour average flows will be available to the resource agencies from SCE upon request.

10.0 RESERVOIR WATER SURFACE ELEVATION MEASUREMENT

SCE measures and documents water surface elevations at each major reservoir. Water levels are measured and reported at midnight each day. For each major reservoir included in the ALP, Table 3 presents the location, gage number, and gage type. The datum of each gage is referenced to sea level as determined by SCE.

TABLES

Table 1. Status of Compliance Gages for Streams with Proposed Changes in Minimum Instream Flows.

	Streams with Proposed Changes in Minimum Instream Flow	Streams with Proposed Changes in Infrastructure at Diversion	Current Status of Gaging		Existing Gage Number	Proposed Flow Monitoring		Type of New Gage Proposed	
			Currently Gaged	Not Currently Gaged		Currently Gaged	New Gage Proposed	Acoustic Velocity Meter (AVM)	Float Type
Mammoth Pool (FERC Project No. 2085)									
SJR (Mammoth Pool Dam to Dam 6)	X	X	X		USGS 11234760	X	X	X	
Rock Creek	X	X		X	-		X	X	
Ross Creek	X	X		X	-		X		X
Big Creek Nos. 1 and 2 (FERC Project No. 2175)									
Big Creek (Huntington Lake to Dam 4)	X		X		USGS 11237000	X			
Big Creek (Dam 4 to Dam 5)	X	X		X	-		X	X	
Balsam Creek (Diversion to Big Creek)	X	X		X	-		X		X
Ely Creek	X	X		X	-		X		X
Big Creek 2A, 8, and Eastwood (FERC Project No. 67)									
South Fork SJR	X		X		USGS 11230215	X[1]			
Bear Creek	X		X		USGS 11230530	X		X	
Mono Creek (Downstream of Mono Diversion)	X	X	X		USGS 11231600	X	X[2]	X	
Bolsillo Creek	X		X		USGS 11230670	X			
Camp 62 Creek	X		X		USGS 11230600	X			
Chinquapin Diversion	X[3]		X		USGS 11230560	X			

Table 1. Status of Compliance Gages for Streams with Proposed Changes in Minimum Instream Flows (continued).

	Streams with Proposed Changes in Minimum Instream Flow	Streams with Proposed Changes in Infrastructure at Diversion	Current Status of Gaging		Existing Gage Number	Proposed Flow Monitoring		Type of New Gage Proposed	
			Currently Gaged	Not Currently Gaged		Currently Gaged	New Gage Proposed	Acoustic Velocity Meter (AVM)	Float Type
Big Creek 2A, 8, and Eastwood (FERC Project No. 67) (continued)									
Hooper Creek	X		X		USGS 11230200	X			
Big Creek (Dam 5 to SJR)	X	X	X		USGS 11238500	X	X[4]	X	
Pitman Creek	X		X		USGS 11237700	X			
Balsam Creek (Forebay to Diversion)	X		X		USGS 11238270	X			
North Fork Stevenson Creek	X		X		USGS 11239300	X			
Stevenson Creek	X		X		USGS 11241500	X			
Big Creek No. 3 (FERC Project No. 120)									
SJR (Dam 6 to Redinger)	X	X	X		USGS 11238600	X			
Portal Hydroelectric Project (FERC Project No. 2174)									
Camp 61 Creek (below Portal Forebay)	X	X		X			X	X	

[1]A new gage has been installed and will be calibrated to better characterize high flow events.
[2]A new gage (AVM) will be installed to monitor increased MIFs under the new license.
[3]24-hour average flow remains the same, but instantaneous floor is added.
[4]An AVM will be installed at Dam 5 to monitor MIF releases. The existing downstream gage (USGS No. 11238500) will be operated to monitor higher flow events

Table 2. Preliminary Schedule for Infrastructure Changes Necessitated by New MIF Schedule.

	2008	2009	2010	2011	2012	2013	2014	2015
Mammoth Pool (FERC Project No. 2085)								
SJR (Mammoth Pool Dam to Dam 6)	Preliminary Engineering, Permitting,	Engineering, Ordering Equipment	Begin Construction	X	X	X		
Rock Creek	Preliminary Engineering, Permitting,	Engineering, Ordering Equipment	Begin Construction	X				
Ross Creek	Permitting, Engineering, Ordering Equipment	Begin Construction	X					
Big Creek Nos. 1 and 2 (FERC Project No. 2175)								
Big Creek (Dam 4 to Dam 5)	Preliminary Engineering, Site Evaluation	Permitting, Engineering	Engineering, Ordering Equipment	Begin Construction	X			
Balsam Creek (Diversion to Big Creek)	Preliminary Engineering, Permitting,	Engineering, Ordering Equipment	Begin Construction	X				
Ely Creek	Preliminary Engineering, Permitting,	Engineering, Ordering Equipment	Begin Construction	X				
Big Creek 2A, 8, and Eastwood (FERC Project No. 67)								
Mono Creek (Downstream of Mono Diversion)	Preliminary Engineering, Permitting,	Engineering, Ordering Equipment	Begin Construction	X				

Table 2. Preliminary Schedule for Infrastructure Changes Necessitated by New MIF Schedule (continued).

	2008	2009	2010	2011	2012	2013	2014	2015
Portal Powerhouse (FERC Project No. 2174)								
Camp 61 Creek	Permitting, Engineering, Ordering Equipment	Begin Construction	X					
Big Creek (Dam 5 to SJR)	Preliminary Engineering, Site Evaluation	Permitting, Engineering,	Ordering Equipment	Begin Construction				
Big Creek No. 3 (FERC Project No. 120)								
SJR (Dam 6 to Redinger)[6]	Preliminary Engineering, Site Evaluation	Permitting, Engineering,	Engineering, Ordering Equipment	Begin Construction	X			

1-Gray shading indicates continuing activities.
2-X indicates activity likely to continue into the indicated year.
3-Gray diagonals indicate that some activities may continue into this year, but less likelihood than for solid gray shading.
4-Some preliminary site and engineering work may take place prior to license issuance.
5-Years indicated are generally dependent upon license issuance and possible appeals. Delays in license issuance or by appeals may delay indicated schedules by license.
6-The extent of needed construction will be re-evaluated after site inspection and preliminary engineering. This may alter the construction schedule at this site.

Table 3. Reservoir Water Level Gages at Major Reservoir.

Reservoir	Gage Number	Gage Type
Big Creek Nos. 1 and 2 (FERC Project No. 2175)		
Huntington Lake	USGS No. 11236000	Water-stage recorder
Big Creek 2A, 8, and Eastwood (FERC Project No. 67)		
Florence Lake	USGS No. 11229600	Water-stage recorder
Shaver Lake	USGS No. 11239500	Water-stage recorder
Mammoth Pool (FERC Project No. 2085)		
Mammoth Pool Reservoir	USGS No. 11234700	Water-stage recorder

ATTACHMENT A

MAY 15, 2006 LETTER FROM THE USGS TO FERC COOPERATORS

United States Department of the Interior
U. S. GEOLOGICAL SURVEY
California Water Science Center
6000 J Street, Placer Hall
California State University
Sacramento, California 95819-6129
Phone: (916) 278-3026 Fax: (916) 278-3045
http://water.wr.usgs.gov

IN REPLY REFER TO:

May 15, 2006

To Whom It May Concern:

You are receiving this letter because you furnish surface-water data to the United States Geological Survey (USGS), California Water Science Center (CAWSC), for quality assurance and publication. This letter, together with the attached document entitled "Guidance and Instructions for the Preparation of Data Furnished to the USGS for Review and Publication" and a reference CD, provide the USGS and CAWSC policy and standards for acceptable furnished data.

As part of the internal USGS quality assurance process, streamgaging activities of each USGS Water Science Center are reviewed to ensure uniform quality and adherence to USGS standards. The 2002 review of the CAWSC revealed some deficiencies requiring improvement. The most common problems concerned records furnished to the CAWSC by non-USGS entities. The review concluded that some streamflow records furnished to the CAWSC were not collected or computed to the same standards as normal USGS data or lacked required documentation of the data collection process. USGS policy requires that furnished data be collected and computed to the same standards as data collected by the USGS. Therefore, the CAWSC will be adhering to the guidelines provided in the attachments to this letter as a condition for the acceptance of all furnished data.

In order to allow the time necessary for review (and possible corrections) of furnished data prior to publication, all furnished data must be received by the reviewing USGS field office no later than December 15th for the water year ending September 30th. This deadline will be effective for the 2006 water year ending September 30, 2006.

If you have any questions or problems regarding this letter or USGS standards, please call Denis O'Halloran, FERC Coordinator for the CAWSC, at (916) 278-3168, or send him email at dohall@usgs.gov.

Sincerely,

Michael V. Shulters
Director, California Water Science Center

Enclosures

Guidance and Instructions for the Preparation of Data Furnished to the USGS for Review and Publication

Annual Review of Furnished Records

The annual review by USGS personnel of furnished records is designed to ensure that furnished records are collected in accordance with USGS standards. The review also provides a mechanism for identifying opportunities for improvement. During the review and during visits to streamgaging facilities, USGS personnel will identify areas, if any, that need improvement. Cooperators may consult USGS staff as they endeavor to make these improvements. For records provided to the USGS as a condition of a FERC license, the USGS will report unresolved deficiencies to the FERC for follow-up action.

To allow the time necessary for review (and possible corrections) of furnished data prior to publication, all furnished data must be received by the reviewing USGS field office no later than **December 15th** for the water year ending September 30th. This deadline will be effective for the 2006 water year ending September 30, 2006. Records not received by the due date will not be included in the annual data report for that water year.

Technical References, USGS standards for streamgaging

As an aid to those providing furnished records, the California Water Science Center created the enclosed CD that includes USGS OFR 96-618 (Surface Water Quality Assurance Plan for the California District (now called California Water Science Center)) and several procedural and technical guidelines for non-USGS hydrographers.

USGS Open-File Report (OFR) 96-618, "Surface Water Quality Assurance Plan for the California District of the U.S. Geological Survey,"

(http://ca.water.usgs.gov/archive/reports/ofr96618/)

summarizes and supplements data collection and computation techniques, practices, and policies described in applicable USGS Techniques of Water Resources Investigations (TWRI's), other USGS published documents, and USGS Technical memoranda. Collectively, these documents, each addressing different streamgaging activities, constitute "USGS standards." These references are included on the enclosed CD for your use.

Two interactive courses have also been created and are available on the Internet at the following URLs:

Surface-Water Field Techniques Training Class:
http://wwwrcamnl.wr.usgs.gov/sws/SWTraining/FlashFandR/Index.html

Stage-Discharge Relations – Basic Concepts:
http://wwwrcamnl.wr.usgs.gov/sws/SWTraining/RatingsWeb/Index.html

Many USGS publications are now available on line and can be retrieved at the following URL: http://water.usgs.gov/pubs. A limited number of CD-based classes on wading measurements, cableway measurements, ice measurements, and levels are available. Please contact your local USGS Field office if you are interested in obtaining one of these CDs.

Materials to Be Included for Review of Furnished Record

Materials that should be provided for review are described in OFR 96-618 and include:

- Daily values table for the water year
- Hydrograph of daily discharge values
- List of discharge measurements
- Copies of discharge measurements
- Primary computation sheets (hourly gage-heights, shifts, datum corrections)
- Copy of any graphic record used for computation
- New rating tables and new rating curves
- Station analysis (explaining how and why ratings were changed, shifts, and datum corrections for the current water year)
- A copy of the latest gaging station levels
- Station description, updated annually as necessary, including:
    - The surveyed elevation of at least three reference marks; and,
    - A revised "Quality Assurance" section containing the information described below.

Questions about what should be included in the review package can be directed to the local USGS Field Office or the FERC coordinator.

Development and Maintenance of Discharge Ratings

Collection and computation of high-quality streamflow data require the development and maintenance of discharge ratings, instrument ratings, or both. Developing and maintaining ratings are among the more challenging aspects of streamgaging. For natural channels, stage-discharge relations (rating curves or tables) are usually defined by discharge measurements (using current-meter or hydroacoustic instrumentation) of sufficient number to define the rating over a sufficient range of discharge, along with applicable changes (shifts) to the rating. Measurements generally are made every 4-8 weeks (depending on the site), and may be required more frequently to document significant changes in channel conditions that will affect the rating. Ratings are then adjusted in accordance with the measurement data. If discharge measurements covering the entire range of stage observed during a period of time indicate that the stage-discharge relation is stable, there is little problem in defining the discharge rating for that period.

In WSP-2175, Measurement and Computation of Streamflow, (included on CD), S.E Rantz states: "At a new station many discharge measurements are needed to define the stage-discharge relation throughout the entire range of stage. Periodic measurements are needed

thereafter to either confirm the permanence of the rating or to follow changes (shifts) in the rating. A minimum of 10 discharge measurements per year is recommended, unless it has been demonstrated that the stage-discharge relation is unvarying with time. In that event the frequency of measurements may be reduced. It is of prime importance that the stage-discharge relation be defined for flood conditions and for periods when the rating is subject to shifts as a result of ice formation (see section titled, "Effect of Ice Formation on Discharge Ratings") or as a result of the variable channel and control conditions discussed in the section titled, 'Shifts in the Discharge Rating'. It is essential that the stream-gaging program have sufficient flexibility to provide for the non-routine scheduling of additional measurements of discharge at those times."

The USGS will make two discharge measurements which will serve as check measurements each year. These measurements are **in addition to, and do not substitute for**, measurements to be made by the licensee. These check measurements represent a key part of the quality assurance process. If there are any questions about the number of discharge measurements to be made by the licensee at a particular site, guidance should be obtained from the local USGS field office.

As part of the normal operation and maintenance of a streamgage, a leveling survey is required every 3 years. For sites that have proven to be particularly stable over the years, the interval between leveling surveys can be extended to 5 years after discussion with and approval by the local USGS Field Office Chief. Three Reference Marks (RMs), all staffs, point of zero flow (pzf), and present water surface should be surveyed during the leveling survey. These are minimum quality assurance procedures. Much more may need to be done if unusual events occur.

Ratings Based on Powerplant Records

Discharge ratings developed for well-maintained turbines and penstocks are usually very stable and accurate. However, worn or damaged meters, orifices, valves, and piping or obstructed passages may result in significant rating changes. The planned technique for ensuring the accuracy of turbine and penstocks ratings, and how often the technique is to be, should be described in the "Quality Assurance" section of the station description. Where possible, such ratings should be checked periodically by independent data such as measurements made using current-meters or AVMs (Acoustic Velocity Meters).

Ratings at Sites with Hydraulic Structures and Hydroacoustic Devices

Properly calibrated and maintained weirs, flumes, or gates (hydraulic structures), various hydroacoustic devices including ultrasonic-velocity meters (UVMs), Acoustic Velocity Meters (AVMs), Acoustic Doppler Velocimeters (ADVMs), Acoustic Doppler Current Profilers (ADCPs), and occasionally, dye-dilution techniques, may be used to collect and verify streamflow records. Use of these techniques requires skilled application and periodic verification or recalibration of instruments and ratings. FERC licensees who use hydraulic structures or other technologies often do so to reduce the number of measurements required to maintain the discharge rating, or to overcome physical limitations that make discharge measurements impractical. Plans for using these methods should be discussed with the USGS field office that will review the data, and the methods should be described under the "Quality

Assurance" section of the station description. The methods used to verify streamflow records will vary depending on gaging conditions.

USGS standards require that the typical stage-discharge relation be checked by periodic discharge measurements (made by the licensee) to ensure that the relation still is applicable and to provide for adjustment of the rating as needed. Hydraulic structures are often used to improve rating sensitivity and stability. However, while ratings for hydraulic structures are usually more precise than those for natural streams, they introduce other factors that require additional consideration. Theoretical or manufacturer ratings for hydraulic structures should be checked by a minimum of two discharge measurements made by the licensee each year (one each on the high-and low-ends of the rating) or as needed to define shifting conditions. This minimum number (two) of measurements can only be justified under the ideal conditions for which the structure was designed. The accumulation of debris, aquatic growth on surfaces, degradation or erosion of contact surfaces, changed or unstable approach conditions, expansion and contraction of materials used in the structure, and settling, all can affect the rating and result in inaccurate or biased discharge estimates. These factors necessitate the need for increased monitoring and measurements to verify the applicability of the rating.

Generally, UVM ratings are stable and accurate, but periodically they should be verified by an independent means such as using temporary clamp-on UVM's, current meter measurements, or against independently developed turbine ratings. UVM instrumentation should be monitored for signal strength and inspected for system wear or damage. Plans for quality assuring UVM data should be described in the "Quality Assurance" section of the station description.

Provisions to maintain the applicability of the rating by periodically inspecting and cleaning the structure, repairing and replacing worn or damaged parts, and ensuring correct positioning (through level surveys and adjustment) will be required and should be described in the "Quality Assurance section" of the station description. Changes in stage or hydraulic head following these activities should be recorded and may be used to apply shifts to established ratings.

Other devices or structures in use for measurement of discharge also are subject to change, so any rating developed must be checked periodically just as in the case of a stage-discharge rating. Turbine wear can change head-flow relationships over time. Intake pipes may become coated with mineral deposits, increasing resistance to flow. AVM transducers may fail, resulting in a biased estimate of the velocity profile, and thus, the average velocity. Any of these changes can result in biased discharge estimates.

Station Description

A station description documents the location and describes the characteristics of a streamgaging station. Beginning with records for water year 2000, records furnished to the USGS were required to be accompanied by a station description that explains how the discharge rating for that system was established, the functional limitations of the rating, how the rating is maintained and its applicability assured, and a section on Quality Assurance. Examples of Quality

Assurance write-ups are provided later in this document. A station description generally should follow the examples included in USGS OFR 96-618.

Most or all of the following elements comprise a station description:

- Location
- Drainage Area
- Establishment and History
- Description of the Gage
- Control
- Discharge Measurements
- Point of Zero Flow
- Regulations and Diversions
- Accuracy
- Reference Marks
- Road Log
- Quality Assurance

A description of the rating could be included in the Discharge measurements section or the Quality Assurance section. Items that should be included in describing the rating include:

- date the rating was developed
- the technique that was used to develop it
- the persons, agencies, or contractors who developed it
- the operational range and sensitivity of the rating over that range
- description of planned activities to check the rating or maintain its applicability.

Planned activities to check ratings might include type and number of check measurements anticipated each year, or a plan for explaining the circumstances under which a hydraulic structure or its components will be re-rated, cleaned, repaired, or replaced. If engineered structures, AVMs, power-plant ratings, or other non-standard streamgaging techniques are used, the station description must include a brief discussion of the applicability of the non-standard technique(s) to the computation of streamflow, how the rating for that system was established, its functional limitations, and how the system is maintained.

Examples of Quality Assurance Section of the Station Description

The following are sample write-ups for the Quality assurance section of the Station description.

- Example 1 (Natural Channel): "Quality assurance - Make 8-10 discharge measurements per year, covering the full range of flow. Read all staffs and recorders during each visit and document. Survey levels every 3-5 years. Three RMs, all staffs, point of zero flow (pzf), and present water surface should be surveyed when levels are run. These are minimum quality assurance procedures. Much more may need to be done if unusual events occur."

- Example 2 (Natural Channel); "Monthly measurements will be made throughout the range of flow up to 50,000 cfs. Higher flows would involve heavy debris that would pose

significant hazards to hydrographers. Flows higher than 50,000 cfs, will be rated by rating extension no greater than twice the measured discharge. Flows beyond that range will be rated by indirect methods."

- Example 3 (Artificial Control): "A minimum of two discharge measurements each year (one each on the high-and low-end of the rating) will be made with more measurements made as needed to define shifting conditions. Included in these visits will be checks of control-structure condition. A leveling survey is required every 3-5 years. Three RMs, all staffs, pzf, and present water surface should be surveyed during the leveling survey. These are minimum quality assurance procedures. Much more may need to be done if unusual events occur."

- Example 4 (Weir): "This 20 foot weir was rated by the manufacturer in 1959 based on standard ratings published by King. The rating was checked after installation using discharge measurements. The weir is cleared monthly of debris when the width of the accumulated debris exceeds 5 percent of the length of the weir. The approach section depth to dam height ratio is __ , greatly exceeding the ratio needed to ensure that the approach section velocity (head) is zero. Brass reference markers are surveyed every 3 years and have shown no settlement or shifting. The spring edge of the weir is covered by angle iron that is in good condition and follows the original profile as determined from visual inspections and level checks. Consequently, the original rating can be continued without change. Flows that exceed the rating are determined by indirect methods for dams as described by USGS TWRI..."

- Example 5 (Power Plants): "This power plant rating was confirmed by the salt-dilution method (Gibson methods, pitot tube methods, etc.) in 1940 by the AAA Turbine Company under contract with the BOR. There is no access for current meter measurements due to backwater from the downstream lake. (Other limitations might apply such as irregular channel bottoms that degrade measurement condition such that measurements are considered poor or unusable by the USGS.) The intake pipes are coated with calcium deposits that have greatly increased flow resistance and may have caused the rating to be in error at low heads. A UVM system has been ordered and will be installed in 2002 to replace the old rating for this intake."

- Example 6 (AVM): "This AVM was installed in 1985 by the AAA Streamgagers Company. The system consists of 16 transducers in a 60 inch steel pipe 50 feet downstream of the nearest pipe elbow. The transducer readings are temperature-compensated by a temperature probe installed in the turbine forebay near the intakes. The temperature probes are calibrated twice each year with a scientific grade thermometer. The cross-sectional area of the pipe is clean and no changes in area were observed during inspections when the plant was dewatered in 1998. Transducer signal strength is routinely monitored to detect failed transducers. Two transducers failed this year. These failures were reported to the vender who furnished a revised area-weighted coefficient that was applied to compute the mean velocity from the remaining transducers. The unit is expected to be replaced in 2001".

- Example 7 (AVM): "This AVM was installed in 1990 by Power Omega Corporation. The system consists of 4 transducers in a 36-inch pipe 25 feet downstream of the nearest elbow. The AVM rating is checked twice each year utilizing a strap-on AVM. When the errors exceed 5 percent the unit is serviced or replaced."

- Example 8 (AVM): "This AVM was installed in 1990 by Tiny Drop Power Company. The system consists of 8 transducers in a 36-inch pipe 25 feet downstream of the nearest elbow. The AVM results match power plant rated flows for heads from 15 (minimum operations pool) to 50 feet (spillway crest) as determined by examination of current records on the 15th of each month in 2001. Flows exceeding the AVM rating are determined by indirect methods at a constricted bridge opening 0.5 miles downstream."

APPENDIX M

VISUAL RESOURCES PLAN

VISUAL RESOURCES PLAN

BIG CREEK HYDROELECTRIC SYSTEM

MAMMOTH POOL PROJECT (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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Figures 1A and 1B. Visual Resources Plan Study Area Map.

Attachment A

Photo 1. Big Creek No. 1 Penstocks (viewed from Huntington Lake Road).

Photo 2. Big Creek No. 3 Powerhouse and Penstocks (viewed from Redinger Lake and Italian Bar Road)

Photos 3a, 3b. Mono Bear Siphon Combined Flow Line Conduit over South Fork San Joaquin River (viewed from Kaiser Pass Road).

Photo 4. Mammoth Pool Powerhouse and Penstock (viewed from USFS Road 8S03).

Photo 5. Big Creek No. 1 Switchyard (viewed from Huntington Lake Road looking across Big Creek Canyon).

OBJECTIVE

The objective of this Visual Resources Plan (Plan) is to address visual effects on the surrounding landscape of Project-related facilities through the use of visual screening or color scheme selection.

1.0 INTRODUCTION

This Plan has been developed for four Southern California Edison Company (SCE) hydroelectric projects that are a part of the Big Creek Hydroelectric System, located in the Upper San Joaquin River Watershed. The Plan covers the following four Federal Energy Regulatory Commission (FERC) licensed Projects: Mammoth Pool (FERC No. 2085), Big Creek Nos. 1 and 2 (FERC No. 2175), Big Creek Nos. 2A, 8, and Eastwood (FERC No. 67), and Big Creek No. 3 (FERC No. 120).

This Plan includes sections on:

- Evaluation of existing visual resources in the Project vicinity;
- Mitigation measures for five facilities that have been identified as currently having a visual effect on the landscape character; and
- Selection of colors for future painting of Project facilities to minimize potential visual impacts.

2.0 EXISTING VISUAL RESOURCES

The current United States Department of Agriculture-Forest Service (USDA-FS) Land and Resource Management Plan (LRMP) uses the Visual Management System (VMS) as guidance to inventory, evaluate, and manage visual resources. The Sierra National Forest (SNF) is in the process of revising the LRMP. The Scenery Management System (SMS) likely will be used in future scenery analysis and evaluation. The SMS differs from the VMS by adding more public involvement in the planning process and integrating ecosystem management concepts into scenic analysis. This Project has been analyzed using the VMS. The current LRMP identifies three Visual Quality Objective (VQO) classifications for lands within the Project area. These designations and their definitions are:

- **Retention**. Retention refers to landscapes where the valued landscape character “appears” intact. Deviations may be present but must repeat the form, line, color, texture, and pattern consistent to the landscape character so completely and at such scale that they are not evident.
- **Partial retention**. Partial retention refers to landscapes where the valued landscape characters “appear slightly altered.” Noticeable deviations must remain visually subordinate to the landscape character being viewed.

- **Modification**. Modification refers to landscapes where the valued landscape characters "appear moderately altered." Deviations begin to dominate the valued landscape character being viewed, but they borrow valued attributes such as size, shape, edge effect and pattern of natural openings, vegetative type changes or architectural styles outside the landscape being viewed.

The majority of the study area has a VQO of Retention, which is the objective that strives for the highest degree of scenic integrity by providing a landscape character that appears intact. The effect analysis of Project facilities on visual resources was based on studies conducted in support of the Big Creek Alternative Licensing Process (ALP) (SCE 2003; SCE 2004). The Land Management Working Group, which was composed of stakeholders including the USDA-FS, used the study results to assess visual resource issues, identified views from Key Observation Points (KOPs) inconsistent with VQO's, and developed potential mitigation and enhancement measures. The Land Management Working Group evaluation of visual quality study results identified 27 locations where views of Project facilities may not meet with designated Forest VQOs. Of the 27 locations, it was determined that mitigation measures should be considered at five locations. These five locations are KOPs where the general public can easily view the five Project facilities. These facilities include: Mammoth Pool Penstock (FERC No. 2085); Mono-Bear Siphon Combined Flow Line Conduit over the South Fork San Joaquin River (FERC No. 67); Big Creek No. 1 Penstock (FERC No. 2175); Big Creek No. 3 Penstocks (FERC No. 120); and the Big Creek No. 1 Switchyard (FERC No. 2175). The locations of these facilities are depicted on Figures 1A and 1B and shown in Photos 1 through 5 (Attachment A).

Further evaluation of these five locations, however, indicated that the penstocks for the Big Creek No. 1 Powerhouse (Photo 1) and Big Creek No. 3 Powerhouse (Photo 2), and the Mono-Bear Siphon Flow Line Conduit (Photos 3a and 3b) are proposed contributing elements of the proposed Big Creek Historic District that includes Project facilities associated with Big Creek Nos. 1, 2, 2A, 8, and 3. Based upon results of the California State Historic Preservation Office (SHPO) future determination of the proposed Big Creek Historic District, one of two paths would be followed to develop mitigation measures for these two penstocks and flow line conduit. Should SHPO concur with the Big Creek Historic District designation and these three facilities are identified as contributing elements of the historic district, SCE will use a paint color(s) that continues to reflect the penstocks and flow line historic appearance. Should SHPO disagree with the historic district designation or the identification of one or both of the penstocks and flow line conduit as contributing elements of the historic district, then SCE will follow steps detailed under Recommended Mitigation Measures (Section 3.2 of this Plan) for the two penstocks and flow line conduit.

Measures to reduce the visual effect of the other 22 view locations were not developed because these locations are not readily accessible to the general public or it was determined that there was no practical or reasonable method to mitigate for visual effect. For example, the Federal Energy Regulatory Commission (Commission or FERC) concluded in previous relicensing proceedings that attempts to devise methods

to make Project facilities such as large dams blend in with the natural environment would be impractical.

3.0 PROJECT FACILITIES AFFECTING VISUAL RESOURCES AND RECOMMENDED MITIGATION MEASURES

3.1 PROJECT FACILITIES AFFECTING VISUAL RESOURCES

The locations where visual effects occur and where measures to reduce visual contrast are proposed are described below:

Big Creek No. 1 Penstocks. View of Big Creek No. 1 Penstocks from Huntington Lake Road (Photo 1). The landscape viewed has a VQO of Partial Retention. The facilities are noticeable deviations from the landscape character and are inconsistent with Partial Retention VQO.

Big Creek No. 3 Project Penstocks. View of Big Creek No. 3 Penstocks from Redinger Lake (Photo 2). The landscape viewed has a VQO of Partial Retention. The facilities are noticeable deviations from the landscape character and are inconsistent with Partial Retention VQO.

Mono-Bear Siphon Combined Flow Line. View of the flow line conduit over the San Joaquin River from Kaiser Pass Road (Photos 3a and 3b). The landscape viewed has a VQO of Partial Retention. The facilities are deviations from the landscape character and are inconsistent with Partial Retention VQO.

Mammoth Pool Penstock. View of Mammoth Pool Powerhouse and penstock southeast looking from Forest Route 8S03 (Photo 4). The landscape viewed has a VQO of Partial Retention. The facilities are noticeable deviations from the landscape character. The facilities are inconsistent with Partial Retention VQO.

Big Creek No. 1 Switchyard. View of the Big Creek No. 1 Switchyard can be viewed from one location along Huntington Lake Road when looking across Big Creek Canyon (Photo 5). The landscape viewed has a VQO of Retention. The landscape appears altered. The switchyard is inconsistent with Retention VQO.

3.2 RECOMMENDED ENVIRONMENTAL MEASURES

SCE will conduct the following measures at the penstocks and flow line covered in this Plan, and the Big Creek No. 1 Switchyard to reduce visual contrast.

3.2.1 PENSTOCKS AND FLOW LINE CONDUIT

- SCE will consult with the USDA-FS to select three test colors to be used in test patches for repainting the penstock and combined flow line conduit that blend best with the surrounding environment.

- SCE will paint three 10 foot by 10 foot or other readily visible and appropriately sized test panels on the penstock and conduit using the agreed upon test colors. The size of the test patches will depend on the size of the facility. These test patches will be observed for a one-year period to determine which color best blends with the natural environment. The one-year period will allow for seasonal color contrast comparisons.

- SCE will select the final color in consultation with the USDA-FS.

- SCE will repaint the penstock/conduit using the agreed upon color during the normal painting schedule for that facility.

3.2.2 BIG CREEK NO.1 PROJECT SWITCHYARD

SCE recommends that careful thinning of existing trees will be the best method to achieve long-term visual screening of the Big Creek No. 1 Switchyard. SCE has developed a prescription to promote growth of the existing trees, which should facilitate screening of the switchyard from public view. The prescription includes the following activities:

- SCE will consult with the USDA-FS on the proposed silvicultural techniques to promote growth of the existing trees to screen the view of the Project switchyard.

- A registered professional forester will survey the site to identify and select the best phenotypic tree specimens to retain. A combination of the healthiest and fullest crown trees will be selected to remain on site.

- SCE will develop a recommendation for submittal to the USDA-FS for the removal of trees.

- Upon approval by the USDA-FS, SCE will begin to implement tree removal activities. Trees will be removed in several stages with five to ten years between each stage. Each stage of tree removal will reduce screening for the short-term, however, the expected increase in the vigor of remaining trees is expected to fill in the openings over time. The first two stages of tree removal should take at least 20% of the standing trees to reduce resource competition. After several tree removal stages, smaller trees will be allowed to grow in the understory to provide lower screening and replacements for the larger trees, when they require removal. This sequence of tree removal should provide the best screening over the long-term while enhancing the vigor of the remaining trees.

- SCE will consult with the USDA-FS to discuss and evaluate the growth of the remaining trees and to evaluate the ability of the trees to screen the switchyard following each tree removal stage. This consultation will occur in the following year during the annual consultation meeting between the USDA-FS and SCE. The consultation may include a discussion with the USDA-FS to re-evaluate the need to continue this tree management prescription if it is determined that these

activities are not resulting in increased tree growth and vigor, or providing adequate screening of the switchyard.

3.3 PROJECT FACILITIES PAINTING

During the new license term, SCE Project facilities will require repainting in accordance with routine painting requirements and schedules. SCE is committed to selecting neutral paint color schemes that blend in with the surrounding landscapes, thereby reducing visual effects. SCE will consult with the Forest Service regarding the paint color selection for the penstocks and flow line conduit. Upon Forest Service approval of the paint color selected, SCE will file the paint color selection with the FERC for their final approval. Upon final approval by the FERC, painting of the penstocks and flow line conduit will be conducted as described.

A number of Project facilities associated with the four Big Creek ALP Projects are proposed contributing elements of the National Register of Historic Places (NRHP) eligible Big Creek Hydroelectric System Historic District (BCHSHD) and are proposed key components of the historic landscape. Upon determination by SHPO of the Big Creek Historic District Designation and concurrence that the penstocks and flow line conduit are contributing elements of the BCHSHD, SCE will seek guidance from SHPO regarding the selection of paint colors that will preserve the historic character of the BCHSHD. Upon approval by SHPO, SCE will seek approval from the Forest Service and final approval by the FERC. These facilities will be repainted using a color that retains the historic character of the BCHSHD.

4.0 LITERATURE CITED

Southern California Edison Company. 2003. LAND-9 Visual Quality Assessment. 2002 Final Technical Study Report Package (FTSRP) for the Big Creek Hydroelectric System Alternative Licensing Process (ALP). *In* SCE's Amended Preliminary Draft Environmental Assessment (APDEA) for the Big Creek ALP (Mammoth Pool Project (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)). February 2007 (Volume 4, SD-C, Books 9 and 21).

Southern California Edison Company. 2004. LAND-9 Visual Quality Assessment. 2003 FTSRP for the Big Creek Hydroelectric System ALP. *In* SCE's APDEA for the Big Creek ALP (Mammoth Pool Project (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)). February 2007 (Volume 4, SD-D, Book 15).

FIGURES

Placeholder for

Figures 1A and 1B. Visual Resources Plan. Study Area Map

Non-Internet Public Information

These Figures have been removed in accordance with the Commission regulations at 18 CFR Section 388.112.

These Figures are considered Non-Internet Public information and should not be posted on the Internet. This information is provided in Book 25 of the Application for New License and is identified as "Non-Internet Public" information. This information may be accessed from the FERC's Public Reference Room, but is not expected to be posted on the Commission's electronic library, except as an indexed item.

ATTACHMENT A

PHOTOGRAPHS

Photo 1. Big Creek No 1 Penstocks (viewed from Huntington Lake Road).

Photo 2. Big Creek No. 3 Powerhouse and Penstocks (viewed from Redinger Lake and Italian Bar Road).

Photos 3a and 3b. Mono Bear Siphon Combined Flow Line Conduit over South Fork San Joaquin River (viewed from Kaiser Pass Road).

Photo 4. Mammoth Pool Powerhouse and Penstock (viewed from USFS Road 8S03).

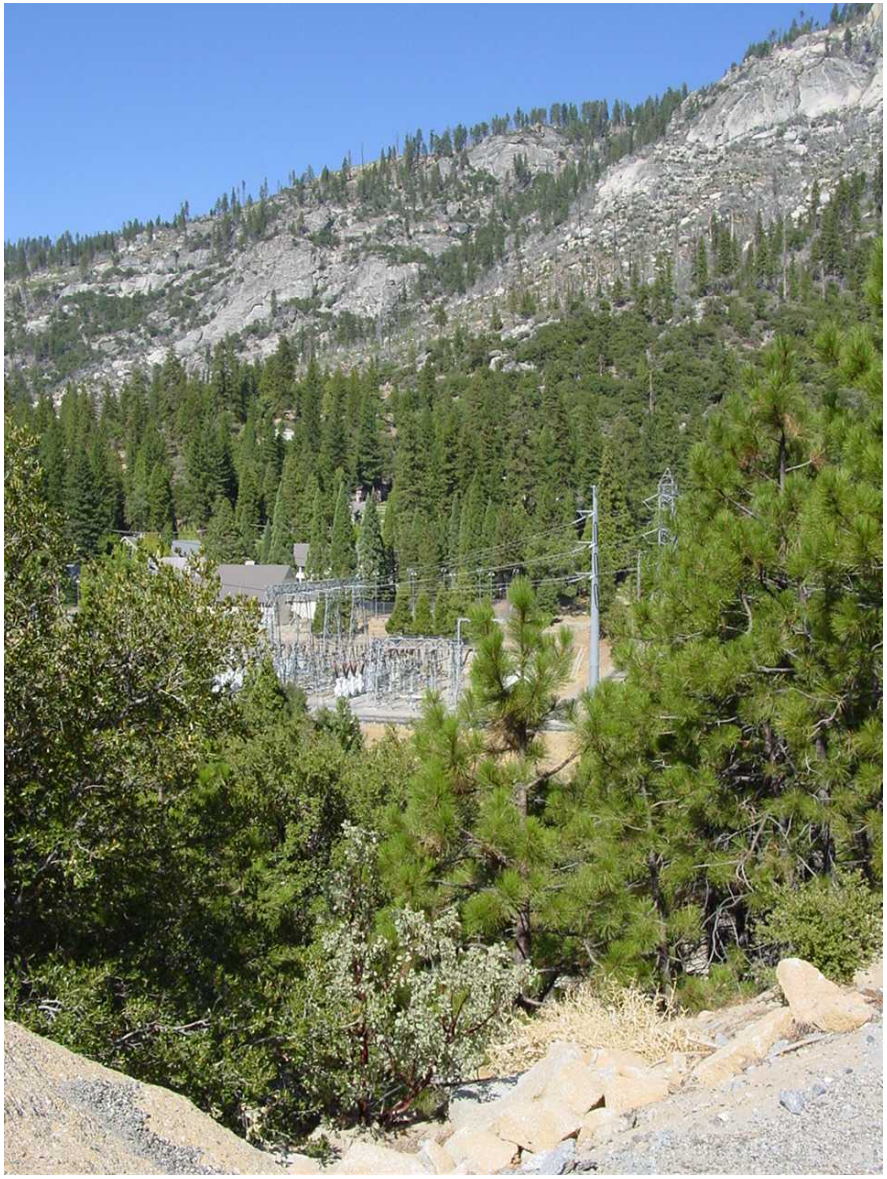

Photo 5. Big Creek No. 1 Switchyard (viewed from Huntington Lake Road looking across Big Creek Canyon).

APPENDIX N

TRANSPORTATION SYSTEM MANAGEMENT PLAN

TRANSPORTATION SYSTEM MANAGEMENT PLAN

BIG CREEK HYDROELECTRIC SYSTEM

MAMMOTH POOL
BIG CREEK Nos. 1 AND 2
BIG CREEK Nos. 2A, 8, AND EASTWOOD
BIG CREEK No. 3

FERC Project Nos. 2085, 2175, 67, and 120

FEBRUARY 2007

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Attachment A Sierra National Forest - Road Maintenance P-Specifications

1.0 OBJECTIVE

This Transportation System Management Plan (Plan) has been developed for Southern California Edison's (SCE) Projects included in the Big Creek Alternative Licensing Process (ALP), located in the Upper San Joaquin River Watershed. The Big Creek ALP is comprised of four FERC licenses (Projects): Mammoth Pool (FERC No. 2085), Big Creek Nos. 1 and 2 (FERC No. 2175), Big Creek Nos. 2A, 8, and Eastwood (FERC No. 67), and Big Creek No. 3 (FERC No. 120). These Projects consist of seven powerhouses and four major reservoirs with a combined dependable operating capacity of approximately 890 megawatts (MW).

The objective of the Plan is to address transportation system management issues in a comprehensive manner and to put all requirements for the above licenses in one plan that would cover Big Creek Hydro System Operations. The Plan will describe the transportation system used by SCE to access the ALP Project facilities. The Plan will address road and trail issues related to access, maintenance activities, rehabilitation needs, road use and traffic control measures. The Plan will describe measures that SCE will implement to repair, minimize, or eliminate impacts associated with the maintenance and operation of SCE's Big Creek ALP Hydroelectric Projects.

This Plan only addresses Project Roads and Trails: (1) located within FERC Project boundaries; (2) used by SCE for the operation and maintenance of the Project: and (3) closed to public motor vehicle use. Table 1 provides a list of Project roads and trails that are addressed by this Plan. SCE's use of Sierra National Forest (SNF) open access public roads (non-Project roads) is not addressed in this Plan. SCE's use of SNF public access roads will be addressed through a separate SNF Road Use Permit (RUP) in a manner consistent with other commercial uses of SNF roads. Minor changes in Project Boundaries may be required to ensure consistency with SCE's operations and maintenance use patterns.

2.0 DESCRIPTION OF PROJECT ACCESS TRANSPORTATION SYSTEM

The transportation system in the Project vicinity includes one state route, county roads, open access roads on public lands, closed access roads on public lands, closed access roads on private lands, and foot trails. State route (SR) 168 is a two-lane highway that serves as a main access route into the Big Creek and Kaiser Basins from the Fresno metropolitan area. State route 168 provides access to the community of Shaver Lake and ends near the community of Lakeshore along the northeast shore of Huntington Lake. County roads in the Big Creek Basin considered primary access roads include: (1) Jose Basin Road (M2441 in Fresno County) and Italian Bar Road (M2080 in Fresno County and road 225 in Madera County) that provide access to the Big Creek No. 3 Project facilities; (2) Huntington Lake Road (FRE 2710 in Fresno County) that provides access from Shaver Lake to the community of Big Creek and continues to Huntington Lake; and (3) Huntington Lodge Road (FRE 3380) provides access to Dams 1 and 2 and other Project facilities south of Huntington Lake. Other access roads on public

lands in the basin are United States Forest Service (USDA-FS) roads. Principal USDA-FS access roads are: (1) Kaiser Pass Road (NFSR 5S80) that provides access from Huntington Lake over Kaiser Pass into the upper basin area and ends near Thomas A. Edison Lake; (2) Florence Lake Road (NFSR 7S01) that provides access to Florence Lake from the Kaiser Pass Road; (3) Railroad Grade Road (NFSR 8S08) that leads from the community of Big Creek to the Jose Basin area; (4) Minarets Road (NFSR 4S81) that provides access to the Mammoth Pool Reservoir and Project facilities; (5) Mammoth Pool Road (NFSR 6S25) from Minarets Road to Mammoth Pool; and (6) Mammoth Pool Powerhouse Road (NFSR 8S03) that provides access from Minarets Road to the Mammoth Pool Powerhouse. These are routes used by SCE and by the public when traveling through or within the basin. In addition to these primary roads, there are numerous other roads throughout the Forest that are open to the public and provide access to campgrounds, Project facilities such as reservoirs, dispersed and developed recreation facilities, and areas of interest in the ALP Project vicinity.

There are several roads within the basin that are closed to public motor vehicle access and are used almost exclusively by SCE to access ALP Project facilities. The Canyon Road (NFSR 8S05) is an SCE road that originates off of Huntington Lake Road near the community of Big Creek and ends near the Big Creek No. 3 Project facilities. The segment of the Mammoth Pool Powerhouse Road (NFSR 8S03) between Mammoth Pool Powerhouse and the Canyon Road (NFSR 8S05) is also an SCE road segment that is closed to public motor vehicle access. Both roads are integral components of the SCE transportation network that provide access to SCE hydroelectric Project facilities in the Big Creek canyon and the San Joaquin River canyon. SCE also uses a number of foot trails to access Project facilities (i.e., stream gages and small diversions).

SCE will maintain roads and trails within the basin that are within license boundaries, closed to public motor vehicle use, and are used almost exclusively by SCE to access various Project facilities (Table 1). SCE will maintain roads and trails outside license boundaries where the primary purpose is to provide access for SCE to operate its facilities. These roads will be authorized by a Road Use Permit and SCE will be responsible for maintenance at a rate commensurate with SCE use. The USFS will calculate commensurate share responsibilities based on SCE access to SCE facilities. Estimates may be based on traffic surveillance, recreation use reports, or estimates derived through observation. SCE may perform maintenance of these roads and/or provide the Forest Service with deposits for maintenance activities at Forest Service discretion.

The three roads most commonly used by SCE vehicles are Huntington Lake Road (FRE 2710), Canyon Road (NFSR 8S05), and Mammoth Pool Powerhouse Road (NFSR 8S03) between Mammoth Powerhouse and Big Creek Powerhouse No. 8. The majority of SCE vehicle trips originate from SCE's Northern Hydro facilities near the town of Big Creek. From this location Huntington Lake Road and Canyon Road are main routes to reach all the Project facilities in the basin. Other commonly used roads include Kaiser Pass Rd. (NFSR 5S80), Florence Lake Rd. (NFSR 7S01), Mammoth Pool Powerhouse 8 Rd. (NFSR 8S03) from Rd. 4S81 to PH 8, Minarets Rd (4S81), and Mammoth Pool Rd. (NFSR 6S25). The majority of SCE vehicles are trucks or pick-up trucks with four-

wheel drive. To a lesser extent sport utility vehicles with four-wheel drive are also used. Other SCE vehicles which require "critical vehicle" access include dump trucks to haul gravel or soil, flatbed and lowbed trucks to haul equipment, a grader, a loader, and a crane (SCE 2004).

SCE uses this network of roads and trails to travel to their administrative offices and hydroelectric facilities to conduct routine operation and maintenance activities. However, travel in some areas of the basin is limited by restrictions imposed to reduce impacts to deer or T&E species, or by season when snowfall closes roads. For example, travel on the Mammoth Pool Road (NFSR 6S25) is restricted during deer migration season from May 1 to June 15 to reduce impacts to mule deer. Winter snowfall restricts vehicular access into the upper basin area east of Kaiser Pass and to Mammoth Pool Reservoir because the Kaiser Pass Road and Minarets Road over Mile High Vista are not normally plowed during the winter and were not designed for all weather use. These seasonal travel conditions influence SCE vehicle activity in these areas. Therefore, maintenance at facilities east of Kaiser Pass and Mammoth Pool Reservoir is concentrated during months when the roads are open, whereas maintenance at facilities that can be reached year-round tends to be distributed more evenly throughout the year.

Roads and trails associated with each of the ALP Projects are presented in Table 1. Table 1 provides information on Project Roads and Trails including: road name; Sierra National Forest (SNF) transportation inventory road number; project related road length (in miles); and road surface type. These roads and trails are depicted on Figures 1a through 1c and detailed sheets 1through 5.

SCE and USFS will review and revise Table 1 contents as the need arises. SCE and USFS will maintain a list of additions, deletions, and corrections to Table 1. A meeting will occur once every five years to revalidate the contents of Table 1, or when either party seeks review. Changes in Table 1 will occur with SCE and SNF concurrence, and will become guidance for this Plan.

3.0 TRANSPORTATION SYSTEM MAINTENANCE ACTIVITIES

Routine road and trail maintenance activities that SCE conducts include grading or re-graveling of unpaved dirt and gravel surfaces to ensure surface drainage is functioning properly, paving or patching of existing paved roads, cleaning of culverts and ditches, vegetation trimming and clearing along roads and trails, hazard tree removal, snow removal, and sanding. These activities are conducted on an as needed basis. Table 1 provides information on the type and frequency of maintenance activities SCE conducts on roads and trails. The frequency at which maintenance activities are conducted is identified in Table 1 as (1) annual (activity typically occurs once a year), (2) regular (activity will occur one or more times during a five-year period), or (3) infrequent (activity typically will occur during a 20-year period, but less than once every five years). Vegetation control by clearing or trimming along road and trail margins may be performed using hand tools or mechanical methods, and is typically conducted on a

regular schedule (one or more times during a five–year period). Grading, drainage maintenance, and paving activities are typically conducted on an as needed basis, as outlined in Table 1. SCE also maintains signage, fencing, and gates.

At locations where trails share their alignment with a Project road, the trails will be maintained to a road use standard, which will also accommodate use of the road by hikers and pack animals.

SCE will perform, at its expense and using qualified personnel, periodic condition surveys of roads and trails to ensure that maintenance activities are being performed with adequate frequency. Condition surveys will identify necessary changes in frequency, methodology being used and deferred maintenance requirements in order to ensure minimal impacts to resources. Condition surveys will be coordinated with the USFS, and will not preclude separate condition surveys or inspections being conducted by the USFS. Initial condition surveys on all roads in Table 1 will be performed by SCE within 1 year of License and at 5 year intervals thereafter unless otherwise agreed to by USFS.

3.1 SAN JOAQUIN RIVER TRAIL MAINTENANCE

Portions of the San Joaquin River Trail share an alignment with Project roads NFSR 9S42, 8S44, and 8S44Y along a section of the trail between Italian Bar Bridge at Redinger Reservoir and Mammoth Pool Powerhouse. These roads are used by SCE to provide access to the Mammoth Pool Powerhouse Transmission Line between Big Creek Powerhouse No. 3 and Mammoth Pool Powerhouse. The public uses portions of these roads when hiking the San Joaquin River Trail. The surface of these roads is graded natural, which is a graded dirt surface suitable for vehicle, hiker, and pack animal use. The graded natural road surface provides a footing surface for pack animal use. SCE will continue to maintain the graded natural road surface on portions of the road that have a shared trail alignment, and also at those locations where the San Joaquin River Trail crosses a Project Road.

4.0 MEASURES TO MINIMIZE OR ELIMINATE POTENTIAL IMPACTS FROM ROAD MAINTENANCE ACTIVITIES

This section describes general measures that will be used, where applicable, for SCE maintained roads and trails to minimize potential impacts on the environment that may occur as the result of maintenance or improvements. These measures will incorporate applicable Best Management Practices (BMPs) for water quality management and will correspond with prescriptions identified in other Project resource management plans, as appropriate. If the need for road improvements other than routine maintenance activities occurs, then specific measures will be developed on a case-by-case basis to protect other resources that may be affected. Specific measures will depend on the site and physical conditions encountered. These measures are expected to include erosion and traffic control, cultural resource protection, and biological resource protection. In addition, these measures will incorporate, but are not limited to, applicable BMPs for

water quality management found in sections 12.2, 12.21, and 12.22 of the field *guide Water Quality Management for Forest System Lands in California*. These measures comply with federal laws including, but not limited to, the National Environmental Policy Act (NEPA), Endangered Species Act (ESA), National Historic Preservation Act (NHPA), Clean Air Act (CAA), Clean Water Act (CWA), and the National Forest Management Act (NFMA). Measures that may be implemented by SCE and coordination activities with other resource management plans are summarized in the following sections.

4.1 EROSION CONTROL

The following measures will be implemented in conjunction with road maintenance activities, where applicable. In addition, specific road maintenance direction is included in the SNF "Road Maintenance P-Specifications" in Attachment A.

4.1.1 GRADING AND CONTOURING

Grading will conform to natural ground contours, where feasible. To the extent possible, efforts will be made to retain the original drainage patterns and not create patterns that will accelerate erosion. SCE will not sidecast materials. Disposal sites for excess material will be agreed upon in advance by SCE and USFS.

4.1.2 CONSTRUCTION OF EROSION CONTROL STRUCTURES

In areas prone to significant flows and/or erosion, structures such as riprap, water bars, culverts, or small concrete retaining structures may be necessary. Where required, sedimentation basins (and/or sediment fences) may be used to control sediments where work is conducted in or adjacent to streams.

4.1.3 SLOPE STABILIZATION

Certified weed free straw and/or jute matting will be used for slope stabilization where applicable. The matting would be placed on graded slopes and used to hold the slope prior to revegetation and after revegetation until plants have been established.

4.1.4 REVEGETATION

Where applicable, revegetation may be used to control erosion and sedimentation on a long-term basis. Revegetation methods and plant palettes are site-specific and would require preparation of a revegetation plan to identify types of plants to be used and the appropriate method and time of planting. The revegetation plan would be prepared in consultation with the SNF at the time the maintenance work is performed.

4.1.5 WIND EROSION

Long-term wind erosion can be reduced through revegetation or the intermittent use of dust-palliatives if revegetation is not an option. Lath fences or earthen berms may be used to reduce wind velocities in areas prone to wind erosion.

4.2 HISTORIC PROPERTIES MANAGEMENT PLAN

SCE maintains a Historic Properties Management Plan (HPMP) in consultation with the State Historic Preservation Officer (SHPO), SNF, and local Native American representatives to address potential Project effects on cultural resources. The HPMP describes procedures for regulatory consultation and treatment for archaeological properties during routine Project maintenance and operation related activities, and measures for unforeseen circumstances requiring prompt emergency response. Project related road use is addressed in the HPMP as follows:

- The operation of SCE vehicles and the movement of SCE heavy equipment across National Register of Historic Places Archaeological properties shall be avoided unless operation and movement occurs on an existing roadway or an emergency arises (see below);

- Reasonable effort shall be made to avoid road maintenance activities that may affect archaeological properties. Signage and protection requirements are described in the HPMP;

- Archaeological properties traversed by existing roads where SCE has maintenance responsibility shall be protected, and appropriate restrictions on use or maintenance shall be applied;

- If measures to protect archaeological properties fail under normal circumstances (i.e., routine operation and maintenance), SCE, in consultation with SHPO, Commission, and the SNF (for those properties on SNF lands), shall follow the provisions of 36 CFR Part 800.4-800.6;

- Under extraordinary circumstances (i.e., unusual system outages caused by severe weather, flood, landslide, earthquake, or other natural cataclysm) where prompt restoration of electrical service is a vital necessity, reasonable effort shall be made to minimize effects on archaeological properties during emergency repair work. The provisions of 36 CFR Part 800.4-800.6 shall be followed to determine appropriate additional treatment; and

- Previously undiscovered historic properties encountered during operation and maintenance of the ALP Projects shall be treated in accordance with the HPMP in consultation with SHPO, Commission, and the SNF (for properties on SNF lands). Under circumstances where those newly discovered resources cannot be preserved partially or wholly in place, they shall be evaluated in accordance with 36 CFR Part 60; and treatment shall be determined pursuant to 36 CFR Part 800.4-800.6.

4.3 VEGETATION MANAGEMENT AND INVASIVE/NOXIOUS WEED CONTROL

Vegetation management and invasive/noxious weed control are described in the Vegetation and Noxious Weed Management Plan for the ALP Projects. This plan includes evaluation and implementation of maintenance activities related to vegetation, potential impacts, and mitigation measures, where necessary. Locations of vehicle cleaning sites are described in the Vegetation and Noxious Weed Management Plan.

4.4 ESAP PROGRAM

The Endangered Species Alert Program (ESAP) was developed to provide SCE personnel with a means for identifying the potential occurrence of legally protected plant and animal species in the SCE Service Territory. For each sensitive species within the SCE Service Territory, the ESAP Manual includes a photograph, description, natural history information, and map showing the species' distribution in relation to SCE's facilities. This manual and maps are reviewed prior to implementing any ground disturbing activities in the Project area. Should a proposed activity have a potential to conflict with a known sensitive species population, SCE Environmental Affairs staff is contacted to evaluate the situation and, if needed, coordinate the appropriate permits with the regulatory agencies. SCE's Northern Hydro Division will develop an additional section to supplement the existing ESAP Noxious Weeds and Forest Service Sensitive Species potentially occurring in the Project area.

5.0 REHABILITATION NEEDS

SCE, in consultation with the SNF, has full responsibility and will take appropriate measures to rehabilitate unsafe conditions or resource damage on Project Roads and Trails as shown in Table 1. SCE and the SNF will identify and agree upon specific road rehabilitation projects (including activity types, scheduling, and protection of other key resources) during an annual coordination meeting and document them in the Annual Plan of Operation. Gates or other vehicle control measures may be installed, where necessary, to achieve resource protection or facility security. Maintenance or construction projects on roads other than Project Roads and Trails on lands administered by USFS are generally subject to authorization through a Special Use Permit or 7700-41 Road Use Permit issued by the SNF, and have their own set of conditions and schedules covering maintenance needs.

5.1 IMMEDIATE REHABILITATION NEEDS

Four Project roads have been identified with as needing immediate rehabilitation to provide for public safety or resource protection. These are 1) 8S03 Mammoth Pool Powerhouse Road between 8S05 Canyon Road and 8S08A Access road to Powerhouse No. 8; 2) 8S05F Access road to Powerhouse No. 8 penstock from 8S05; 3) 8S05FB Access road to Powerhouse No. 8 penstock from 8S05; and 4) 8S08A Access road south from Railroad Grade to West Portal. The rehabilitation projects can be performed by SCE staff, through the use of private contractors, or by the USFS through collection agreements. SCE, or its designee, will be responsible for performing all

needed rehabilitation activities through the provision of necessary personnel, equipment, materials, and management.

Rehabilitation projects will be designed and constructed after review of USDA-FS specifications and standards applicable at the time of construction. Plans and specifications for rehabilitation projects shall be submitted to the USFS for review and approval prior to commencement of work.

5.2 FUTURE PROJECTS

During the life of the License, rehabilitation or major maintenance will be required on roads and trails as they reach their service life. SCE will, at that time, be responsible for rehabilitation and maintenance costs of Project roads and trails as condition surveys require. Projects may include but are not limited to reapplication of gravel surface, chip seals, and repaving.

SCE agrees to become a cooperator as equal (50/50) partner with USFS on future Capital Investment Projects and on Forest Service Public Roads projects that affect access to SCE facilities. Project proposals and status will be discussed at annual coordination meetings between SCE and USFS.

5.1 REHABILITATION OF UNNEEDED ROADS

There are existing roads in the project area which are no longer needed for SCE's operations and maintenance of facilities. Roads that were previously used by SCE but no longer serve their needs and are not needed by the USFS for its land management activities are candidates for decommissioning. SCE will be responsible for the decommissioning of these roads. This may be done by SCE or by the USFS through collection agreements. Roads to be decommissioned will be identified, and agreed upon, during annual coordination meetings. The USFS will be responsible for the design and strategy of decommissioning efforts. Environmental compliance and required permits will be the responsibility of SCE.

6.0 ROAD ACCESS

SCE will allow the SNF unrestricted access and use of any road constructed within the Project area for all purposes deemed necessary or desirable in connection with the protection, administration, management, and utilization of Federal lands or resources. The SNF shall have the right to extend rights and privileges for use of the right of way and road thereon to States and local subdivisions thereof, as well as to other users, including members of the public. The Forest shall control such use so as not to unreasonably interfere with use of the road by the Licensee. Unless approved separately in a plan for a particular project, SCE shall drive or park all Project vehicles, including but not limited to administrative and transportation vehicles and construction and inspection equipment, on roads, turnouts or specifically designated areas.

SCE shall ensure that all SCE gates on Project related roads are maintained and signed according to SNF gate standards. These gates shall be constructed to allow SNF to install a USFS lock for SNF access or parking. SCE will ensure that authorized locks are kept in position so as to remain useful.

A separate Road Use Permit or Special Use authorization shall be required of SCE for new construction or activities or when its activities fall outside normal and routine maintenance and operational needs.

7.0 ROAD USE/TRAFFIC CONTROL MEASURES

SCE will install and maintain traffic controls to provide the public with adequate warning and protection from hazardous or potentially hazardous conditions associated with the Licensee's operations when conducting construction or maintenance activities adjacent to or on SNF roads that are open to public travel. Traffic control measures would be implemented on publicly accessed roads to support maintenance activities. These measures would be designed and coordinated in conjunction with the Fresno and/or Madera Sheriff Departments, the Fresno and/or Madera County Planning and/or Public Works Departments, and the SNF, as needed. SCE will consult with SNF regarding road sign repair and/or replacement needs on Project Roads and Trails identified in Table 1. Sign requirements will meet standards listed in the Manual on Uniform Traffic Control Devices of the U.S. Department of Transportation, Federal Highway Administration.

8.0 ANNUAL CONSULTATION REQUIREMENTS

SCE shall consult with the SNF each year to identify specific road rehabilitation and maintenance projects and other activities that will be performed each forthcoming year. Planned road maintenance activities by SCE will be identified and documented in the Annual Plan of Operations submitted to the SNF for concurrence. The Plan of Operations will document specific maintenance activities, schedules, and measures required for BMPs and resource protection resources. The Annual Plan of Operations will also include the identification of key resources (e.g., cultural resources) that may be affected by the planned road maintenance activities. Maintenance activities will follow prescriptions and correspond with other resource management plans, as appropriate. If the need for road improvement other than routine maintenance activities occurs, then specific measures will be developed on a case-by-case basis to protect resources that may be affected. Specific measures will depend on the site and physical conditions encountered. These measures are expected to include erosion and traffic control, cultural resource protection, and biological resource protection. Measures that may be required to protect other environmental resources (e.g., air and water) will be developed in consultation with the SNF on an as-needed basis. Other applicable federal agencies (e.g., U.S. Fish and Wildlife Service) and state agencies (e.g., California Department of Fish and Game and SHPO) will be consulted when appropriate. SCE shall obtain all

applicable permits and environmental compliance required to implement maintenance or rehabilitation measures.

9.0 LITERATURE CITED

Southern California Edison. 2004. 2003 Final Technical Study Report Package for the Big Creek Hydroelectric System Alternative Licensing Process (ALP). *In* SCE's Amended Preliminary Draft Environmental Assessment (APDEA) for the Big Creek ALP (Mammoth Pool Project (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)). February 2007 (Volume 4, SD-D, Books 11-17 and 23).

TABLE

Table 1. Project Roads and SCE Operation and Maintenance Activities.

FERC Project No.	SCE MAP No.	USFS ROAD No.	USFS Name	Termini	Maintenance Level	Surface	Length (miles)	Legal	Quad Name		SCE Name	SCE Operation & Maintenance Activities						
												Roads Repair/Clearing						
												Grading	Gravel/Paving	Snow Removal / Sanding	Culverts/Ditches/Water Bars	Signage	Fencing	Gates
Mammoth Pool Project (FERC No. 2085)																		
Roads																		
2085	6	06S025G	MAMMOTH POOL G SP	6S25 - BOT. OF DAM	3	AC	0.6	T7S-R24E-14	417-4C		Mammoth Pool Fishwater Generator access road from 6S25, Mammoth Pool Road, to base of Mammoth Pool Dam	I	I		R		X*	X
2085	80	08S003B	BC2-3 TRANS SOUTH	8S03 - BC2-3 TRANS	2	NATIVE	0.6	T8S-R24E-26	397-1C		Access road from 8S03 to Mammoth Pool penstock	R	I		R			X
2085	79	08S003C	BC2-3 TRANS NORTH	8S03 - BC2-3 TRANS	2	NATIVE	1.0	T8S-R24E-26	397-1C		Access road to Mammoth Pool Transmission Line from 8S03	R	I		R			X
2085	144	08S003CA	BC2-3 TRANS NORTH A	8S03B - NORTH	2	NATIVE	0.2	T8S-R24E-26	397-1C		8S03CA, spur road to Mammoth Pool Transmission Line	R	I		R			
2085	145	08S003CB	BC2-3 TRANS NORTH B	8S03B - NW	2	NATIVE	0.3	T8S-R24E-26	397-1C		Access road to Mammoth Pool Transmission Line from 8S03C	R	I		R			
2085	146	08S003CC	BC2-3 TRANS NORTH C	8S03CB - NW	2	NATIVE	0.2	T8S-R24E-26	397-1C		Access road to Mammoth Pool Transmission Line from 8S03C	R	I		R			
2085	78	08S003D	MAMMOTH SURGE	08S003-SOUTH	2	NATIVE	0.5	T8S-R24E-15	397-1C		Access road from 8S03 to Mammoth Pool Powerhouse surge chamber	R	I		R			
2085	213	08S044	HOOKER COVE	4S81 - Southeast	2	NATIVE	5.8	T8S-R23E-25	397-2C		8S44, Mammoth Pool Transmission Line access road	R	I		R	X*		X
2085	37	08S044Y	DEEP COVE	8S03 - 8S44	2	NATIVE	3.3	T8S-R24E-22	397-1C		8S44Y, Mammoth Pool Transmission Line access road from gate near 8S03 to 9S42	R	I		R	X*		X
2085	138	08S044YA	DEEP COVE	8S03 - 8S44	2	NATIVE	0.5	T8S-R24E-27	397-1C		8S44YA, Mammoth Pool Transmission Line access road	R	I		R	X*		X
2085	136	08S044YB	DEEP COVE		2	NATIVE	0.5	T8S-R24E-27	397-1C		8S44YB, Mammoth Pool Transmission Line access road	R	I		R	X*		X
2085	18	09S042	TRANSMISSION NO.1	8S44 - MAD 225	2	NATIVE	4.2	T9S-R24E-05	397-2C		9S42, Mammoth Pool Powerhouse Transmission Line access road from gate near County Road 225, Italian Bar Road, to 8S44	R	I		R	X*		X
2085	135	09S042A	TRANS NO.1 SPUR A	9S42 - END	2	NATIVE	0.2	T9S-R24E-05	397-2C		Access road to Mammoth Pool Transmission Line from 9S42	R	I		R	X*		X
2085	102	07S047B	ROCK CREEK TUNNEL MUCK	7S47 - Tunnel Muck	2	NATIVE	0.1				9S47A Access road to Rock Creek Tunnel Muck Pile	R	I		R			
2085/67	33	08S003(02)	MAMMOTH POWER HSE	S. J. River - 08S05	3	AC	1.4	T8S-R24E-26	397-1C		8S03 (from Powerhouse No. 8 to Mammoth Pool Powerhouse)	I	I	A	R	X*	X*	X
2085	30	06S025(03)	MAMMOTH POOL	7S20-END	3	NAT>AGG	1.3	T7S-R24E-10	417-4C		6S25, Mammoth Pool Road, from 7S20, Shake Flat Creek access, to end at east abutment	I	I		I			
2085	164	06S025DA	MAMMOTH POOL C SPUR	6S25-BOAT LAUNCH	3	NATIVE	0.2	T7S-R24E-4	417-4C		6S25DA, spur to Windy Point Picnic Area from 6S25D	R	I		R			
Mammoth Pool Project (FERC No. 2085)																		
Trail																		
2085	75	26E16	Trail to San Joaquin River Gage above Shakeflat Creek	7S20-SJR gage	NA	NATIVE	0.6	T9S-R24E-05	397-2C		Trail to San Joaquin River Gage above Shakeflat Creek	I			I			

Table 1. Project Roads and SCE Operation and Maintenance Activities.

FERC Project No.	SCE MAP No.	USFS ROAD No.	USFS Name	Termini	Maintenance Level	Surface	Length (miles)	Legal	Quad Name		SCE Name	SCE Operation & Maintenance Activities						
												Roads Repair/Clearing						
												Grading	Gravel/Paving	Snow Removal / Sanding	Culverts/Ditches/Water Bars	Signage	Fencing	Gates
Big Creek No. 1 & 2 Project (FERC No. 2175)																		
Roads																		
2175	21	08S005(02)	CANYON	8S05E - PH8	2	AC	3.0	T8S-R24E-25	397-1C		8S05, Canyon Road (from Huntington Lake Road to Powerhouse No. 2 and 8S05E)	I	I	A	R	X*	X*	X
2175	81	08S005C	POWERHOUSE 2	8S05-EAST	2	AC	0.7	T8S-R24E-25	397-1C		Powerhouse No.2 access road from Canyon Road	I	I	A	R	X*		
2175	160	08S005CA	POWERHOUSE 2TRANS	8S05C-NORTH	2	AC	0.3	T8S-R24E-25	397-1C		Access to Big Creek No. 2 switchyard	I	I	A	R	X*		
2175	16	08S005E	LINE	8S05-WEST	2	NATIVE	0.3	T8S-R24E-25	397-1C		Old housing road 1 adjacent to Powerhouse No. 2 from 8S05, Canyon Road	I			I			
2175	159	08S005EA	SOUTH LINE	8S05E-MP 0.2	2	NATIVE	0.2	T8S-R24E-26	397-1C		Old housing road 3 adjacent to Powerhouse No. 2 from 8S05E	I			I			
2175	158	08S005EC	PEN LINE	8S05E-WEST	2	NATIVE	0.3	T8S-R24E-25	397-1C		Old housing road 2 adjacent to Powerhouse No. 2 from 8S05E	I			I			
2175/67	69	08S008A	AGUA	8S08-SOUTH	2	NATIVE	0.5	T8S-R24E-36	397-1C		Access road south from Railroad Grade to West Portal	R	I		R			
2175/67	41	08S013(02)	CAMP SIX	GATE 53-54 - 8S05	2	NATIVE	0.7	T8S-R24E-36	397-1C		8S13 from gate to 8S05, the Canyon Road	I	I	A	R	X*		
2175	168	08S013K	CAMP SIX K	8S013 - NORTH	2	NATIVE	0.2	T8S-R24E-35	397-1C		8S13K Access road to Powerhouse No. 2 penstock	I	I	I	R	X*		
2175	22	08S066(01)	HUNTINGTON DAMS	M3380 - FS BDY	2	NATIVE	0.5	T8S-R25E-22	396-2C		8S66, from west end of Dam 2 to 8S66A	I	I	A	R			
2175	23	08S066(02)	HUNTINGTON DAMS	PVT - 8S066A	2	NATIVE	1.0	T8S-R25E-22	396-2C		8S66 from gate to west end of Dam 2	I	I	A	R			
2175	207	08S066A	STREAM GAGE	8S066 - GAGING STATION	2	NATIVE	0.6	T8S-R25E-23	396-2C		8S66A, access road to gaging station on Big Creek below Huntington Lake	I	I	A	R			
2175	42	08S066B	DAM SPUR	8S66-NORTHEAST	2	NATIVE	0.7	T8S-R25E-22	396-2C		8S66B from Dam 2 to end	I	I	I	R	X*		
2175	171	08S066BA	DAM SPUR A	8S066B-8S066BC	2	NATIVE	0.1	T8S-R25E-14	396-2C		Short road between 8S66B and 8S66BC	I	I	I	R	X*		
2175	99	08S066BC	DAM SPUR C	8S066B-EAST	2	NATIVE	0.3	T8S-R25E-14	396-2C		East end of Dam 1 to Dam 1 drainage gates	I	I	A	R			
2175	107	08S066C(02)	Dam Spur C	FS BDY - PVT	2	NATIVE	0.5	T8S R25E S22	396-2C		8S66C on public lands from 8S301 to 8S66 east	I	I	I	R			
2175	107	08S066C(03)	Dam Spur C	PVT - FS BDY	2	NATIVE	0.5	T8S R25E S22	396-2C		8S66C on public lands from 8S301 to 8S66 east	I	I	I	R			
2175	107	08S066C(04)	Dam Spur C	FS BDY - 8S066	2	NATIVE	0.5	T8S R25E S22	396-2C		8S66C on SCE private lands from gate to 8S302	I	I	I	R			
2175	184	08S066X	HUNTINGTON LEVEE	8S066-8S066	2	NATIVE	0.4	T8S-R25E-22	396-2C		Road over Dam 2	I	I	A	R			
2175	186	08S082	BIG CREEK HD QTRS	M2710-SOUTHWEST	3	AC	0.4	T8S-R25E-28	396-2C		8S082 access to Hydro offices at Big Creek	I	I	A*	R	X*		
2175	1	08S082A	BCH SPUR A	8S082-8S082	3	AC	0.3	T8S-R25E-28	396-2C		8S082A access to Hydro offices at Big Creek	I	I	A*	R	X*		
2175	249	08S082AA	BCH SPUR AA	08S082A - LOOP	3	AC	0.2	T8S-R25E-28	396-2C		Access road to Warehouse	I	I	A*	R	X*		
2175	185	08S082B(01)	BCH SPUR B	8S082-GATE	3	AC	0.2	T8S-R25E-28	396-2C		8S082B access to Hydro offices at Big Creek	I	I	A*	R	X*		
2175	206	08S082B(02)	BCH SPUR B	GATE-PO.HOUSE #1	3	AC	0.2	T8S-R25E-28	396-2C		8S082B access to Powerhouse No. 1	I	I	A*	R	X*		
2175	248	08S082BA	BCH SPUR BA	8S02B - 8S82	3	AC	0.2	T8S-R25E-28	396-2C		Upper access road to Wastewater treatment plant from 8S82B	I	I	A*	R	X*		

Table 1. Project Roads and SCE Operation and Maintenance Activities.

FERC Project No.	SCE MAP No.	USFS ROAD No.	USFS Name	Termini	Maintenance Level	Surface	Length (miles)	Legal	Quad Name		SCE Name	SCE Operation & Maintenance Activities						
												Roads Repair/Clearing						
												Grading	Gravel/Paving	Snow Removal / Sanding	Culverts/Ditches/Water Bars	Signage	Fencing	Gates
Big Creek No. 1 & 2 Project (FERC No. 2175) (continued)																		
Roads (continued)																		
2175	247	08S082BB	BCH SPUR BB	8S02B - SOUTH	3	AC	0.2	T8S-R25E-28	396-2C		Lower access road to Wastewater treatment plant from 8S82B	I	I	A*	R	X*		
2175	245	08S082BC	BCH SPUR BC	8S82B - 8S82	3	AC	0.3	T8S-R25E-28	396-2C		Access road to Fish Farm upper gate	I	I	A*	R	X*		
2175	188	08S082C	BCH SPUR C	8S082-8S082A	3	AC	0.1	T8S-R25E-28	396-2C		8S082C access to Hydro offices at Big Creek	I	I	A*	R	X*		
2175	187	08S082D	BCH SPUR D	8S082-8S082A	3	AC	0.1	T8S-R25E-28	396-2C		8S082D access to Hydro offices at Big Creek	I	I	A*	R	X*		
2175	250	08S082E	BCH SPUR E	M2710 - M2710	3	AC	0.5	T8S-R25E-28	396-2C		Upper access road to SCE company housing	I	I	A*	R	X*		
2175	252	08S082EA	BCH SPUR EA	8S82E - M2710	3	AC	0.2	T8S-R25E-28	396-2C		Lower access road to SCE company housing	I	I	A*	R	X*		
2175	251	08S082F	BCH SPUR F	8S82E - NE	3	AC	0.2	T8S-R25E-28	396-2C		Access road to Domestic water treatment plant from FRE 2710	I	I	A*	R	X*		
2175	246	08S082J	BCH SPUR J	M2710 - SE	3	AC	0.2	T8S-R25E-28	396-2C		Upper access road to Powerhouse No. 1 from FRE 2710	I	I	A*	R	X*		
2175	189	08S082X	SCE RESIDENCES	M2710-SOUTHWEST	3	AC	0.4	T8S-R25E-28	396-2C		8S082X access to Hydro offices at Big Creek	I	I	A*	R	X*		
2175	48	08S083(02)	SIPHON	8S66 - 8S83A	2	NATIVE	0.9	T8S-R25E-22	396-2C		8S83 from 8S66 to 8S83A	I	I		R			
2175	200	08S083A	SIPHON SPUR A	8S83 - 8S66	2	NATIVE	0.2	T8S-R25E-22	396-2C		8S83A, connector road between 8S66T and 8S83	I	I					
2175	28	08S301	SUNSET POINT	M3380 - DIST. LINE	2	NATIVE	0.6	T8S-R25E-22	396-2C		8S301 from gate with 8S66T to penstock surge pipes	I	I	I	R			X
2175	47	08S302	BC PENSTOCK GATE HSE	M3380 - GATEHOUSE	2	NATIVE	1.0	T8S-R25E-22	396-2C		8S302, access to Big Creek No. 1 42-inch gatehouse	I	I	I	R	X*		
2175	262	09S017	EASTWOOD LINE	SR168 - SOUTH	2	NATIVE	0.2	T9S-R25E17	397-2C		9S17 access road to Eastwood Transmission line from Hwy 168	I	I	I	R	X*		
Big Creek No. 1 & 2 Project (FERC No. 2175) (continued)																		
Trail																		
2175	261	NA	Trail to Scott Lake Domestic Diversion	M2710 - diversion	NA	NATIVE	0.4	T8S-R25E-28	396-2C		Trail to Scott Lake Domestic Diversion	I			I			
Big Creek No. 3 Project (FERC No. 120)																		
Roads																		
120	21	08S005(03)	CANYON	PH8 - M2090	2	AC	7.3	T8S-R24E-26	397-1C		8S05, Canyon Road (from junction with 8S03 to junction with Italian Bar Road)	I	I	A	R	X*	X*	X
120	72	08S005A	PENSTOCK 3 NORTH	8S05-NORTH	2	NATIVE	0.3	T9S-R24E-17	397-2C		Access road to Powerhouse No. 3 penstocks and gate house downhill from 8S05, Canyon Road	I	I		R			
120	217	08S005B	PENSTOCK 3 SOUTH	8S05-SOUTH	2	NATIVE	0.2	T9S-R24E-17	397-1C		8S05B Access road to Powerhouse No. 3 penstock from 8S05 Canyon Road	R			R			
120	119	08S005G	LOWER PENSTOCK	8S05-PENSTOCK	2	NATIVE	0.2	T9S-R24E-17	397-2C		8S05G Access road to Powerhouse No. 3 surge chamber uphill from 8S05 Canyon Road	I	I		R			
120	24	08S005T	CANYON TAILING	8S005 - WEST	2	NATIVE	0.1	T9S-R24E-8	397-1C		8S05T Access to tailings	R	I		R			
120	29	08S005TA	CANYON TAILING A	8S008 - WEST	2	NATIVE	0.1	T9S-R24E-17	397-1C		8S05TA Access to tailings	R	I		R			
120	216	09S020	BAR	M2090-EAST	2	BIT	0.4	T9S-R24E-18	397-2C		9S20 Access to Carpenter shop		I		I	X*	X*	X
120	85	09S020A	BAR A	9S20 - SOUTH	2	NATIVE	0.1	T9S-R24E-18	397-2C		9S20A Access road to transmission line tower	I	I		R	X*	X*	X

Table 1. Project Roads and SCE Operation and Maintenance Activities.

FERC Project No.	SCE MAP No.	USFS ROAD No.	USFS Name	Termini	Maintenance Level	Surface	Length (miles)	Legal	Quad Name		SCE Name	SCE Operation & Maintenance Activities						
												Roads Repair/Clearing						
												Grading	Gravel/Paving	Snow Removal / Sanding	Culverts/Ditches/Water Bars	Signage	Fencing	Gates
Big Creek No. 3 Project (FERC No. 120) (continued)																		
Roads (continued)																		
120	62	09S020B	BAR B	9S20 - NE	2	NATIVE	0.1	T9S-R24E-18	397-2C		9S20B Access road to transmission line tower	I	I		R	X*	X*	X
120	64	09S020C	BAR C	9S20 - 9S20	2	BIT	0.1	T9S-R24E-18	397-2C		9S20C Connector road between 9S20 loop	R	I		R			
120	13	09S020D	BAR SPUR D	9S20-M2090	2	NATIVE	0.1	T9S-R24E-18	397-2C		9S20D Access to Carpenter Shop	R	I		R			
120	257	09S020DA	BAR SPUR DA	M2090 - 9S20D	2	NATIVE	0.2	T9S-R24E-18	397-2C		9S20DA Access to Garage and shops	R	I		R			
120	52	09S020E	BAR SPUR E	9S20 - yard	2	NATIVE	0.1	T9S-R24E-18	397-2C		9S20E Access to material yard	R	I		R			
120	87	09S020F	SCHOOLHOUSE F	9S89 - SOUTH	2	NATIVE	0.1	T9S-R24E-18	397-2C		9S88F Connector road between 9S20 loop	I	I		R			
120	127	09S088	CHAWANAKEE RES	M2090-SOUTH	2	BST	0.3	T9S-R24E-18	397-2C		9S88 from Italian Bar Road to old company housing	I	I		R	X*	X*	X
120	5	09S088A	SCHOOL	9S88-9S88	2	NATIVE	0.1	T9S-R24E-18	397-2C		9S88A Access to old company housing	R	I		R			
120	256	09S088X	SCHOOLHOUSE TANK	9S88-SOUTH	2	BIT	0.3	T9S-R24E-18	397-2C		9S88X Access road to Powerhouse No. 3 water tank and shop	I	I		R	X*	X*	X
120	215	09S088XA	SCHOOLHOUSE TANK A	9S88X - WEST	2	NATIVE	0.4	T9S-R24E-18	397-2C		9S88XA Access road to old company housing from 9S88X	R			R	X*	X*	
120	61	09S089	SCHOOLHOUSE	M2090-NORTH	2	NATIVE	0.5	T9S-R24E-18	397-2C		9S89 Access road to Powerhouse No. 3 administrative bldg. from Italian Bar Road	I	I		R	X*	X*	X
120	59	09S089BA	BAR BA	09S089B-SUB	2	NATIVE	0.2	T9S R24E S18	397-2C		9S89BA Access road to Powerhouse No. 3 and switchyard	I	I		R			
Big Creek No. 2A, 8, & Eastwood Project (FERC No. 67)																		
Roads																		
67	68	05S080Z	MONO TUNNEL	5S80-NORTH	2	NATIVE	0.4	T61/2S-R27E-35	415-3C		Mono Creek Diversion access road	I			I			
67	4	07S001B(02)	FLORENCE PICNIC	GATE-SOUTH	2	A/C	0.5	T7S-R27E-36	415-3C		7S01B Access road to Florence Work Camp	I	I	R	R	X*		X
67	219	07S001BA	WORK CAMP LOOP	7S01B-SOUTHEAST	2	NATIVE	0.3	T8S-R27E-01	415-3C		7S01BA Florence Work Camp road from 7S01B	I	I	R	R	X*		X
67	71	07S370D	JACKASS MEADOW SPUR D	07S370-SOUTH TO DAM	2	NATIVE	0.2	T7S-R27E-36	415-3C		7S370D Access road to Florence Dam and water storage tank from 7S370	R	I		R			X
67	237	07S370F	JACKASS MEADOW SPUR F	07S370-DAM	2	NATIVE	0.2	T7S-R27E-36	415-3C		7S370F Access road to Florence Dam from 7S370	I			I			
67	54	08S002(01)	CAMP 72	SR168-PVT	2	NATIVE	1.7	T9S-R25E-09	396-2C		8S02 from Highway 168 to 8S02B							
67	54	08S002(02)	CAMP 72	PVT-ADIT	2	NATIVE	2.0	T9S-R25E-09	396-2C		8S02 from Highway 168 to 8S02B	I*			I*			X
67	197	08S002B	CAMP 72 SPUR B	08S002-GRAVEL PIT (ADIT)	2	NATIVE	0.1	T8S-R25E-34	396-2C		8S02B Access to Huntington-Pitman-Shaver tunnel adit	I						
2085/67	33	08S003(02)	MAMMOTH POWER HSE	S. J. River - 08S05	3	A/C	1.4	T8S-R24E-26	397-1C		8S03 (from 8S05, Canyon Road, to 8S03A, Powerhouse No. 8 access road)	I	I	A	R	X*	X*	
67	166	08S003A	POWERHOUSE 8	8S03-WEST	2	A/C	0.4	T8S-R24E-26	397-1C		Access road to Powerhouse No. 8 from 8S03	I	I	A	R	X*	X*	
67	21	08S005(01)	CANYON	M2710 - 8S05E	2	A/C	10.0	T8S-R25E-32	397-1C		8S05, Canyon Road (from Powerhouse No. 2 and 8S05E to Powerhouse No. 8)	I	I	A	R	X*	X*	X
67	77	08S005F	PENSTOCK 8	8S05-WEST	2	NATIVE	0.8	T8S-R24E-26	397-1C		8S05F Access road to Powerhouse No. 8 penstock from 8S05	I	I		R			
67	157	08S005FB	UPPER PEN 8	8S05F-NORTH	2	NATIVE	0.4	T8S-R24E-26	397-1C		8S05FB Access road to Powerhouse No. 8 penstock from 8S05	I	I		R			
67	167	08S005L	CANYON SPUR L	8S005 - EAST	2	NATIVE	0.1	T8S-R24E-26	397-1C		Road to communication line near Powerhouse No. 8	I	I		I			

Table 1. Project Roads and SCE Operation and Maintenance Activities.

FERC Project No.	SCE MAP No.	USFS ROAD No.	USFS Name	Termini	Maintenance Level	Surface	Length (miles)	Legal	Quad Name		SCE Name	SCE Operation & Maintenance Activities						
												Roads Repair/Clearing						
												Grading	Gravel/Paving	Snow Removal / Sanding	Culverts/Ditches/Water Bars	Signage	Fencing	Gates
Big Creek No. 2A, 8, & Eastwood Project (FERC No. 67) (continued)																		
Roads (continued)																		
2175/67	69	08S008A	AGUA	8S08-SOUTH	2	NATIVE	0.5	T8S-R24E-36	397-1C		Access road south from Railroad Grade to West Portal	R	I		R			X
2175/67	41	08S013(02)	CAMP SIX	GATE 53-54 - 8S05	2	NATIVE	0.7	T8S-R24E-36	397-1C		8S13 from the gate to 8S05, Canyon Road	I	I	A	R	X*		X
67	258	08S047(02)	BALSAM	GATE - TRANSMISSION LINE	2	NATIVE	2.2	T9S-R25E-06	397-1C		8S47 Access road to Eastwood Powerstation Transmission Line tower - from gate to end	R			R			
67	48	08S083(01)	SIPHON	08S083A - PENSTOCK	2	NATIVE	0.9	T8S-R25E-22	396-2C		8S83 from 8S83A to Huntington Shaver Siphon	I	I		R			
67	56	08S094	PITMAN DIVERSION	SR168-WEST	2	NATIVE	0.4	T8S-R25E-35	396-2C		Pitman Creek Diversion access road	I*	I*	A*	R*			X
67	174	08S303	RANCHERIA OVERFLOW CG	5S080-CAMPGROUND	2	NATIVE	0.1	T8S-R26E-05	396-3C		8S303 Access road to Eastwood Overflow Campground	I	I		R			
67	156	09S003(01)	DAWN	PVT-SR168	2	NATIVE	0.1	T9S-R24E-S12	397-1C		9S03 from 8S08 to FRE 2710 (non-project segment on SCE private lands)	R	I		R			
67	55	09S024	TUNNEL OUTLET	SR168-SOUTHEAST	2	NATIVE	0.6	T9S-R25E-S10	396-2C		9S24 from Hwy 168 to North Fork Stevenson Creek gate No. 2 (Tunnel No. 7 Outlet)	I	I	A	R			X
67	89	09S032	ELY MOUNTAIN	SR168 - TRANS LINE	2	NATIVE	1.5	T9S-R25E-09	396-2C		9S32 from gate near Highway 168 to EPH Transmission Line	I	I	A	R			X
67	50	09S032A	BALSAM MEADOW	9S32-BALSAM F.BAY	3	NATIVE	1.0	T9S-R25E-09	396-2C		9S32A, spur from 9S32 to east side of Balsam Forebay	I	I	R	R			
67	153	09S032AB	BALSAM SPUR AB	9S32A-WEST	3	NATIVE	0.2	T9S-R25E-09	396-2C		9S32AB, spur from 9S32A to Balsam Forebay	I	I	R	R			
67	170	09S032C	FOREBAY SPUR	9S32-NORTH	3	NATIVE	0.5	T9S-R25E-09	397-1C		Road below Balsam Forebay Dam	R			R			
67	208	09S032CA	FOREBAY SPUR CA	9S32C - 9S32	2	NATIVE	0.3	T9S-R25E-09	396-2C		9S32CA Access road to Eastwood Powerstation Transmission Line tower	R			R			
67	232	09S032CB	FOREBAY SPUR CB	9S32CA - EAST	2	NATIVE	0.1	T9S-R25E-09	396-2C		9S32CB	R			R			
67	242	09S032CC	FOREBAY SPUR CC	9S32 - SOUTH	2	NATIVE	0.7	T9S-R25E-09	396-2C		9S32CC	R			R			
67	231	09S032CD	FOREBAY SPUR CD	9S32C - NORTH	2	NATIVE	0.6	T9S-R25E-09	396-2C		9S32CD	R			R			
67	230	09S032CE	FOREBAY SPUR CE	9S32C - SOUTH	2	NATIVE	0.2	T9S-R25E-25	396-2C		9S32CE	R			R			
67	241	09S032CF	FOREBAY SPUR CF	9S32C - NW	2	NATIVE	0.1	T9S-R25E-25	396-2C		9S32CF	R			R			
67	51	09S058(01)	PERIMETER	HWY 168 - GATE	3	NATIVE	0.1	T9S-R24E-13	397-1C		9S58 from Shaver Marina to SCE gate (non-project segment)	I	I	A*	R	X*	X*	X
67	84	09S058(02)	PERIMETER	GATE(N)-GATE(STEV. CK)	3	NATIVE		T9S-R24E-13	397-1C		9S58 from gate to North Fork Stevenson Gage	I	I	A*	R	X*	X*	X
67	114	09S058K	BALSAM PORTAL ACCESS	09S058-END	2	NATIVE	0.1	T9S-R25E-S20	397-1C		Access road to Eastwood Power Tunnel entrance	I	I	A*	R	X*	X*	X
67	243	09S311(01)	HAMILTON	SR168 - FS BDY	2	NATIVE	0.6	T9S-R25E17	397-2C		9S311 Access to Eastwood Powerstation Transmission Line tower	R	I		R			X
67	243	09S311(02)	HAMILTON	FS BDY - SOUTH	2	NATIVE	0.2	T9S-R25E17	397-2C		9S311 Access to Eastwood Powerstation Transmission Line tower	R	I		R			
67	244	09S311A	HAMILTON SPUR A	9S311 - EAST	2	NATIVE	0.1	T9S-R25E17	397-2C		9S311A Access to Eastwood Powerstation Transmission Line tower	R			R			
67	19	09S312	BALSAM PH SW. YD	HWY 168 - END	2	NATIVE	0.2	T9S-R25E-21	397-1C		9S312 access to Eastwood Substation from Highway 168	I	I	A	R			X

Table 1. Project Roads and SCE Operation and Maintenance Activities.

FERC Project No.	SCE MAP No.	USFS ROAD No.	USFS Name	Termini	Maintenance Level	Surface	Length (miles)	Legal	Quad Name		SCE Name	SCE Operation & Maintenance Activities						
												Roads Repair/Clearing						
												Grading	Gravel/Paving	Snow Removal / Sanding	Culverts/Ditches/Water Bars	Signage	Fencing	Gates
Big Creek No. 2A, 8, & Eastwood Project (FERC No. 67) (continued)																		
Roads (continued)																		
67	2	N/A	CAMP EDISON	HWY 168-CAMP EDISON	NA	AC	3.5	T9S-R24E-13	397-1C		Camp Edison Roads	I	I	A	R			
67	83	N/A	SHAVER DAM NORTH	HWY 168-DAM	NA	NATIVE	0.2	T9S-R24E-13	397-1C		Access road to Shaver Dam north	I		A*	R	X*	X*	X
67	49	N/A	SHAVER DAM SOUTH	HWY 168-DAM	NA	NATIVE	0.2	T9S-R24E-13	397-1C		Access road to Shaver Dam south	I		A*	R	X*	X*	X
67	109	N/A	EAGLE POINT DAY-USE	9S58 -EAGLE PT DAY-USE	NA	NATIVE	1.1	T9S-R24E-13	397-1C		Access road to Eagle Point Boat Only Day Use Area from 9S58	I			I			
67	110	N/A	EASTWOOD TAILRACE	9S58-EASTWOOD TAILRACE	NA	NATIVE	0.1	T9S-R24E-13	397-1C		Access road to Eastwood Tailrace	I			I			
67	115	N/A	EASTWOOD POWERSTATION TUNNEL	9S58-EASTWOOD POWERSTATION TUNNEL	NA	AC	0.9	T9S-R24E-13	397-1C		Access Tunnel to Eastwood Power Station	I	I	A*	R	X*	X*	X
Big Creek No. 2A, 8, & Eastwood Project (FERC No. 67) (continued)																		
Trails																		
67	265	NA	Trails to North-South Slide Creek Diversions	7S65 - diversion	NA	NATIVE	0.1				Trails to North-South Slide Creek Diversions							
67	108	NA	Trail to Pitman Creek Gage near Tamarack Mountain (below shaft)	7S65 - diversion	NA	NATIVE	0.1				Trail to Pitman Creek Gage near Tamarack Mountain (below shaft)	R			R			
67	74	NA	Trail to Big Creek Gage below Dam 5	8S05 - gage	NA	NATIVE	0.1				Trail to Big Creek Gage below Dam 5	R			R			
67	91	NA	Trail to Bolsillo Creek Gage above Intake	5S80H - gage	NA	NATIVE	0.1				Trail to Bolsillo Creek Gage above Intake	R			R			
67	12	NA	Trail to Camp 62 Creek Gage and Diversion Dam	5S80 - gage and diversion	NA	NATIVE	0.2				Trail to Camp 62 Creek Gage and Diversion Dam	R			R			
67	259	NA	Trail to South Fork San Joaquin River Gage downstream of Jackass Meadow	7S65 - gage	NA	NATIVE	0.1				Trail to South Fork San Joaquin River Gage downstream of Jackass Meadow	I			I			
67	260	NA	Trail to Chinquapin Creek Gage and Diversion Dam	7S01 - gage and diversion	NA	NATIVE	0.7				Trail to Chinquapin Creek Gage and Diversion Dam	R			R			
67	92	28E01	Trial to Bear Creek Gage upstream of Bear Forebay	6S83 - gage	NA	NATIVE	0.3				Trial to Bear Creek Gage upstream of Bear Forebay	R			R			
67	14	NA	Trail to Tombstone Creek Diversion	Access road - diversion	NA	NATIVE					Trail to Tombstone Creek Diversion							

Table 1. Project Roads and SCE Operation and Maintenance Activities.

FERC Project No.	SCE MAP No.	USFS ROAD No.	USFS Name	Termini	Maintenance Level	Surface	Length (miles)	Legal	Quad Name		SCE Name	SCE Operation & Maintenance Activities						
												Roads Repair/Clearing						
												Grading	Gravel/Paving	Snow Removal / Sanding	Culverts/Ditches/Water Bars	Signage	Fencing	Gates
Big Creek No. 2A, 8, & Eastwood Project (FERC No. 67) (continued)																		
Trails (continued)																		
67	88	NA	Trail from Jackass Meadow Campground to Florence Dam outlet and Gage	7S370 - outlet and gage	NA	NATIVE	0.1				Trail from Jackass Meadow Campground to Florence Dam outlet and Gage	I			I			
67	86	NA	Trail to Crater Creek Diversion Ditch (off of the Dutch Lake Trail)	7S01B - 27E05	NA	NATIVE	0.9				Trail to Crater Creek Diversion Ditch (off of the Dutch Lake Trail)	I			I			
67	17	NA	Two trails to Stevenson Creek Gage below Shave Lake Dam	Hwy 168 - gage	NA	NATIVE	0.1				Two trails to Stevenson Creek Gage below Shave Lake Dam	R			R			

Key:
X - Done
A - Annual (activity typically occurs each year)
R - Regular (activity will occur one or more times in a 5-year period)
I - Infrequent (activity typically occurs during a 20-year period, but less than once every 5 years)
* This activity occurs at less than 50% at this type of facility in the Big Creek Study Area
(1) This road is also included in the FERC boundary of the Big Creek Nos. 1 and 2 Project (FERC Project No. 2175).

FIGURES

Placeholder for

Figures 1a-1c. Project Related Roads and Trails
(Including Detailed Sheets 1-5)

Non-Internet Public Information

These Figures have been removed in accordance with the Commission regulations at 18 CFR Section 388.112.

These Figures are considered Non-Internet Public information and should not be posted on the Internet. This information is provided in Book 25 of the Application for New License and is identified as "Non-Internet Public" information. This information may be accessed from the FERC's Public Reference Room, but is not expected to be posted on the Commission's electronic library, except as an indexed item.

ATTACHMENT A

Sierra National Forest
Road Maintenance P-Specifications

Road Maintenance P-Specifications

for

Road Use Permits

To be used with Road Use Permit Form 7700-41

No.	Specification Title
P-800	Definitions
P-801	Slide and Slump Repair
P-802	Ditch Cleaning
P-803	Surface Blading
P-804	Surfacing Repair
P-805	Drainage Structures
P-806	Dust Abatement
P-807	Roadway Vegetation
P-808	Miscellaneous Structures
P-809	Waterbars
P-810	Barriers
P-811	Surface Treatment
P-812	Hazard Trees
P-813	Snow Removal

SPECIFICATION P-800 DEFINITIONS

Wherever the following terms or pronouns are used in Permit provisions and Specifications P-801 through P-813, the intent and meaning shall be interpreted as follows:

AGREEMENT Maintenance projects require a mutually acceptable method to resolve the problems which arise when incompatible situations arise between drawings and specifications and actual conditions on the ground to allow orderly and satisfactory progress of the maintenance.

These specifications have been developed in anticipation of those problem areas and have provided that such changes will be by agreement.

It is intended that drawings and specifications will govern unless "on-the-ground" conditions warrant otherwise, when specifications call for "agreement", "agreed", or "approval" such agreement or approval shall be promptly confirmed in writing.

ANNUAL ROAD MAINTENANCE PLAN A plan prepared by various users of one or several roads. The plan is an agreement on maintenance responsibilities to be performed for the coming year.

BASE COURSE Material used to reinforce subgrade or, as shown on drawings, placed on subgrade to distribute wheel loads.

BERM Curb or dike constructed to prevent roadway run-off water from discharging onto embankment slope.

BORROW Select material taken from designated borrow sites.

CROWN (inslope and outslope) The cross slope of the traveled way to aid in drainage and traffic maneuverability.

CULVERTS A conduit or passageway under a road, trail or other obstruction. A culvert differs from a bridge in that it is usually entirely below the elevation of the traveled way.

DRAINAGE DIP A dip in the traveled way which intercepts surface runoff and diverts the water off the traveled way. A drainage dip does not block the movement of traffic.

DRAINAGE STRUCTURES Manufactured structures which control the runoff of water from the roadway including culverts, overside drains, aprons, flumes, downdrains, downpipes, and the like.

DUST ABATEMENT PLAN A list of roads and the method for abating dust on each road.

LEAD-OFF DITCHES A ditch used to transmit water from a drainage structure or drainage dip outlet to the natural drainage area.

MATERIAL Any substances specified for use in the performance of the work.

PREHAUL MAINTENANCE Road maintenance work which the Permittee must accomplish to maintain the roads to a satisfactory condition commensurate with Permittee's use, provided Permittee's operations do not damage improvements under or National Forest resources, and hauling can be done safely.

Prehaul maintenance shall be completed before use and shall be in compliance with the road maintenance P-Specifications.

ROADBED The portion of a road between the intersection of subgrade and sideslopes, excluding that portion of the ditch below subgrade.

ROADSIDE A general term denoting the area adjoining the outer edge of the roadway.

ROADWAY The portion of a road within the limits of excavation and embankment.

SHOULDER That portion of roadway contiguous with traveled way for accommodation of stopped vehicles, for emergency use, and lateral support of base and surface course, if any.

SLIDE A concentrated deposit of materials from above or on backslope extending onto the traveled way or shoulders, whether caused by mass land movements or accumulated ravelling.

SLOUGH Material eroded from the backslope which partially or completely blocks the ditch, but does not encroach on the traveled way so as to block passage of traffic.

SLUMP A localized portion of the roadbed which has slipped or otherwise become lower than that of the adjacent roadbed and constitutes a hazard to traffic.

SUBGRADE Top surface of roadbed upon which base course or surface course is constructed. For roads without base course or surface course, that portion of roadbed prepared as the finished wearing surface.

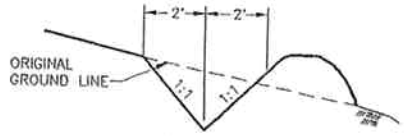
SURFACE COURSE The material placed on base course or subgrade primarily to resist abrasion and the effects of climate. Surface course may be referred to as surfacing.

TRAVELED WAY That portion of roadway, excluding shoulders, used for the movement of vehicles.

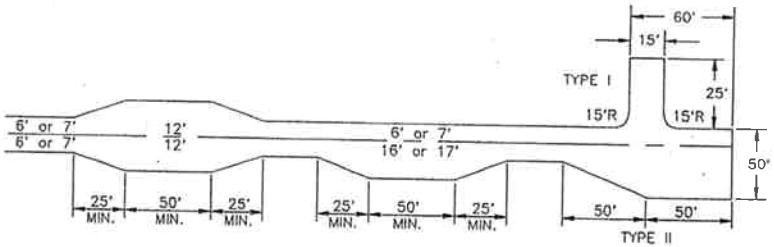
TURNOUTS That portion of the traveled way constructed as additional width on single lane roads to allow for safe passing of vehicles.

WATER SOURCE A place designated by the Forest Service on the Permit Map for acquiring water for road maintenance purposes.

WATERBAR A dip in the roadbed which intercepts surface runoff and diverts the water off the roadway. A waterbar is not designed to be traversable by logging trucks.



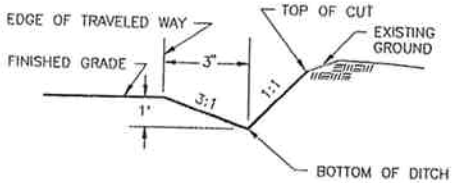
TYPICAL LEADOFF DITCH AND FURROW DITCH



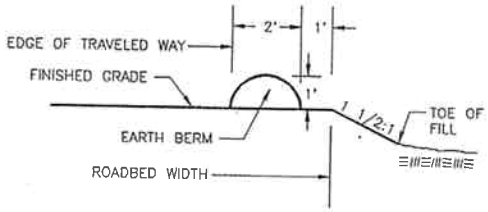
TYPICAL DOUBLE LANE, TURNOUT, AND TURNAROUND

GENERAL NOTES

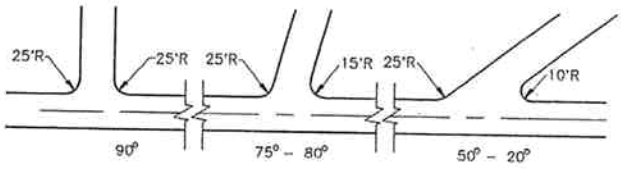
1. ROADBED WIDTHS INCLUDE CURVE WIDENING, DOUBLE LANE, TURNOUT AND BERM WIDENING. DOES NOT INCLUDE EXTRA WIDTH FOR ROADWAY DITCH.
2. CONSTRUCTION TOLERANCE FOR ALL ROADS SHALL BE CLASS "E".
3. ALL SLOPES 1 1/2:1 AND FLATTER AND ALL AREAS DISTURBED BY OPERATIONS NOT WITHIN THE SCOPE OF THE CONTRACT SHALL BE SEEDED, FERTILIZED AND MULCHED; ALL 1:1 SLOPES SHALL BE SEEDED AND FERTILIZED IN ACCORDANCE WITH SECTION 625.
4. THE ALIGNMENT AND GRADE SHOWN ARE SUBJECT TO CHANGE. QUANTITIES ARE APPROXIMATE ONLY AND SUBJECT TO INCREASE OR DECREASE.
5. EMBANKMENT SHALL BE PLACED AS SPECIFIED IN SPECIFICATION 203 METHOD 2, LAYER PLACEMENT.
6. ELDERBERRY PLANTS WITHIN THE CLEARING LIMITS SHALL NOT BE DISTURBED EXCEPT WHERE THEY POSE A CLEAR SAFETY HAZARD (SUCH AS THE INSIDE OF CURVES). ELDERBERRY PLANTS TO BE SAVED WILL BE FLAGGED BY THE ENGINEER.



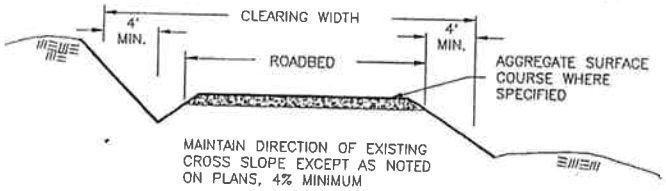
ROADWAY DITCH DETAIL



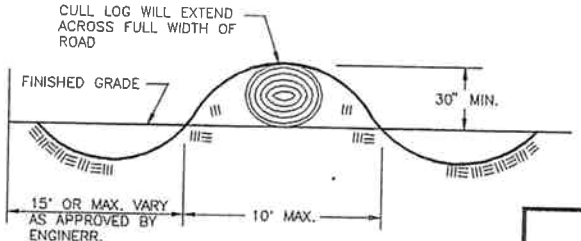
EARTH BERM DETAIL



TYPICAL INTERSECTION



TYPICAL RECONSTRUCTION SECTION



EARTH LOG BARRIER

TYPICAL SECTIONS

STATE	FOREST	PROJECT	NAME	SHEET NUMBER	TOTAL SHEETS
CALIF.	SIERRA				

SPECIFICATION P-801 SLIDE AND SLUMP REPAIR

DESCRIPTION

1.1 Slide removal is the removal from roadway and disposal of any material, such as soil, rock, and entrained vegetation that cannot be routinely handled by a motor grader during ditch cleaning (P-802) and surface blading (P-803).

Slump repair is the filling of depressions or washouts in roadway which cannot be routinely filled by a motor grader during surface blading (P-803).

Slide removal and slump repair includes excavation, loading, hauling, placing, and compacting of waste or replacement material and the development of disposal or borrow areas.

REQUIREMENTS

3.1 Slide material, including soil, rock and vegetative matter which encroaches into the roadway, shall be removed. The slope which generated the slide material shall be reshaped during the removal of the slide material with the excavation and loading equipment. Slide material deposited on the fill slope and below the traveled way will not be removed unless needed for slope stability or to protect adjacent resources.

Surface and base courses shall not be excavated during slide removal operations.

Slide material which cannot be used for other beneficial purposes shall be disposed of at disposal sites shown on the Permit Area Map. Material placed in disposal sites will not require compaction unless compaction is required in the specifications.

3.2 When filling slumps or washouts; material shall be moved from agreed locations or borrow sites shown on the Permit Area Map, placed in layers, and compacted by operating the hauling and spreading equipment uniformally over the full width of each layer.

Existing aggregate surfacing shall be salvaged when practical and relaid after depressions have been filled.

Damaged aggregate base, aggregate surfacing, and bituminous pavement shall be repaired under Specification P-804, Surfacing Repair.

The repaired areas of the slump shall conform to the cross section which existed prior to the slump and shall blend with the adjacent undisturbed traveled way.

SPECIFICATION P-802 DITCH CLEANING

DESCRIPTION

1.1 Ditch cleaning is removing and disposing of all slough material from roadside ditches to provide a free-draining waterway.

REQUIREMENTS

3.1 Ditch cleaning shall be repeated during the year as often as necessary to facilitate proper drainage.

3.2 All slough material or other debris which might obstruct water flow in the roadside ditch shall be removed. Material removed from the ditch, if suitable, may be blended into existing native road surface or shoulder or placed in designated berms in conjunction with surface blading (P-803).

Material removed from ditches that is not by agreement blended into existing roads or placed in berms shall be loaded and hauled to the approved disposal site.

3.3 Roadway backslope or berm shall not be undercut.

SPECIFICATION P-803 SURFACE BLADING

DESCRIPTION

1.1 Surface blading is keeping a native or aggregate roadbed in a condition to facilitate traffic and provide proper drainage. It includes maintaining the crown (inslope or outslope) of traveled way, turnouts, and shoulder; repairing berms; blending approach road intersections; and cleaning of bridge decks, drainage dips and lead-off ditches.

REQUIREMENTS

3.1 Surface blading shall be performed before, during and after Permittee's use as necessary to facilitate traffic and proper drainage.

3.2 The surface blading shall preserve the existing cross section. Surface irregularities shall be eliminated and the surface left in a free draining state and to a smoothness needed to facilitate traffic. Surface material which has been displaced from the shoulders or turnouts shall be returned to the traveled way. The blading operation shall be conducted to prevent the loss of surface material and to provide for a thorough mixing of the material being worked.

3.3 Water, taken from water sources designated on the Road Use Map, shall be applied during blading if sufficient moisture is not present to cut, mix, or compact the surface material.

3.4 On native surfaced roads, material generated from backslope sloughing and ditch cleaning may be blended with the surface material being worked. On aggregate surfaced roads this material shall not be blended with surface or base course material unless agreed otherwise.

3.5 Roadway backslopes or berms shall not be undercut, nor shall new berms be established unless agreed otherwise. Berms shall be repaired by placing material as needed to restore the berm to reasonably blend with existing line, grade, and cross section.

3.6 Drainage dips and lead-off ditches shall be cleaned and maintained to reasonably blend with existing line, grade, and cross section.

3.7 Intersecting roads shall be bladed for a distance of 50 feet to assure proper blending of the two riding surfaces.

3.8 Rocks or other material remaining on the traveled way after the final pass that are larger than 4 inches in diameter or are larger than the maximum size of imported surfacing shall be removed from the traveled way. The oversized material may be disposed of by sidecasting unless another method is agreed to. Sidecasting into streams, lakes or water courses will not be permitted.

3.9 Material resulting from work under this specification shall not remain on, or in, structures such as culverts, overside drains, cattleguards, ditches and drainage dips.

3.10 Material resulting from work under this specification plus any accumulated debris shall be removed from bridge decks, and the deck drains shall be maintained open

SPECIFICATION P-804 SURFACING REPAIR

DESCRIPTION

1.1 Surfacing repair is repairing potholes or small, soft areas in the traveled way. It includes area preparation, furnishing and placing all necessary materials, and other work necessary to repair the surface.

MATERIAL

2.1 Material used in the repair of soft areas on aggregate or native surfaced roads may be acquired from approved commercial sources, designated Forest Service borrow areas or borrow sources agreed to. The quality and quantity of the imported material used in the repair will be limited to that needed to provide a stable traveled way for hauling and to minimize damage to the road and adjacent resources.

2.2 Material used in the repair of bituminous pavements may be acquired from local commercial sources. If a mixing table is required, the location shall be approved by the Forest Service. The bituminous mixture to be used by the Permittee shall be approved by the Forest Service.

REQUIREMENTS

3.1 Work under this specification shall be performed in a timely manner to reduce further deterioration of the traveled way.

3.2 The areas to receive bituminous pavement repairs will be marked on the road surface by the Forest Service just prior to the Permittee performing the work.

3.3 **Aggregate and Native Surfaces** Soft spots on aggregate or native surfaces shall be repaired by placing the imported surface course on top of the soft spot. Layers of imported material shall be placed until a firm surface is produced.

3.4 **Potholes (deep patch)** Surface course and base course materials shall be excavated to a depth necessary to reach firm, suitable material. The minimum depth of excavation shall be two inches and the maximum depth of excavation shall be to the top of the subgrade.

The edges of the prepared hold shall be extended to form a vertical face in unfractured asphalt surfacing. The prepared hole shall generally be circular or rectangular in shape, dry, and cleaned of all loose material. The faces of the prepared hole shall be coated with a slow-setting emulsified asphalt.

Prepared potholes shall be patched or protected by barricades immediately.

The bituminous mixture shall be placed in layers not exceeding a compacted depth of two inches. Each layer shall be compacted thoroughly with hand or mechanical tampers or rollers. Compaction shall not be done with equipment wheels.

Upon completion, the compacted patch in the pothole shall be flush, with a tolerance or approximately one-fourth inch to one-half inch above the level of the adjacent pavement.

3.5 **Skin Patches** Prior to skin patching, potholes shall be patched, and the surface shall be cleaned of loose and deleterious material. Apply a tack coat with a slow-setting emulsified asphalt at the rate of 0.1 gallons per square yard.

Bituminous mixture shall be distributed uniformly with feathered edges in layers not to exceed two inches compacted depth. When multiple layers are ordered, joints shall be offset at least six inches between layers.

Each layer shall be compacted by two passes with a 7-10 ton steel roller or comparable vibratory roller.

3.6 **Asphalt Berm** Damaged segments of berm shall be removed and the exposed ends beveled at approximately forty-five degrees. The berm foundation shall be cleaned and patched as necessary. The foundation and joining surfaces shall be coated with a slow-setting emulsified asphalt. Asphalt mix shall be placed and compacted to conform with the shape and alignment of the undamaged segment.

3.7 All materials removed from potholes, patches, and berms shall be disposed of at disposal sites approved by the Forest Service.

SPECIFICATION P-805 DRAINAGE STRUCTURES

DESCRIPTION

1.1 This work consists of maintaining drainage structures and related items such as inlet and outlet channels, existing riprap, trash racks and drop inlets.

MATERIALS

2.1 All materials used in the maintenance of drainage structures shall conform by type and specification to the material in the structure being maintained.

REQUIREMENTS

3.1 Drainage structures and related items shall be cleared of all foreign material which has been deposited above the bottom of the structure and all vegetative growth which interferes with the flow pattern. Material removed that cannot be incorporated into maintenance work shall be hauled to an approved disposal site.

3.2 Perform maintenance to insure the proper functioning of the head walls, aprons, inlet assemblies, overside drains, riprap, trash racks, and other facilities related to the drainage structure.

SPECIFICATION P-806 DUST ABATEMENT

DESCRIPTION

1.1 This work shall consist of preparing traveled way, and furnishing and applying materials to abate dust.

MATERIALS

2.1 The roads requiring dust abatement, type of dust abatement material to be used, the rates of application, and frequency of applications will be specified by the Forest Service.

2.2 Water sources are shown on the Road Use Map.

2.3 Dust abatement materials shall meet the requirements of the following subsections of Forest Service Standard Specifications for Construction of Roads and Bridges or attached special project specifications.

Bituminous Materials

- Liquid Asphalts..... 702.02
- Bituminous Dust Palliatives.... 702.04
- Application Temperatures..... 702.05

Blotter Material..... 703.14

Lignin Sulfonate..... 712.09

- Application Temperature..... 712.09
- Water, for diluting..... 712.01

Magnesium Chloride..... 712.11

- Application Temperature..... 712.11 (b)

2.4 Certification and sampling of bituminous materials lignin sulfonate and magnesium chloride shall be in accordance with Subsection 105.04 and 712.09, and 712.11 (c) respectively of Forest Service Standard Specifications for Construction of Roads and Bridges.

REQUIREMENTS

3.1 General

Dust abatement materials shall be applied to the road surface as necessary to control road surface loss, provide for road user safety, and minimize damage to adjacent resources.

3.2 Compaction

When compaction is required, the traveled way shall be compacted by an 8 to 10 ton pneumatic, steel-wheeled or equivalent vibrating roller making 2 passes over the full traveled way and shoulder width.

3.3 Preparation for Dust Abatement Materials Other Than Water

Bituminous residue shall be scarified and pulverized to produce loosened material not exceeding 4 inches in greatest dimension.

Traveled way shall be bladed in accordance with P-803 (Surface Blading).

Prior to applying DO-6BA, DO-6PA, or DO-8 the top 2 inches of Traveled Way shall contain not less than 80 percent nor more than 120 percent of optimum moisture as determined by AASHTO T-99, Method C. Prior to applying other bituminous material Traveled Way shall have a moisture content between 1 and 3 percent. If surface dusting prevents the bituminous material from penetrating, a light application of water shall be applied just prior to applying the bituminous material.

Lignin Sulfonate and magnesium chloride shall be applied when the top 1 inch of Traveled Way contains not less than 3 percent moisture nor more than 120 percent of optimum moisture as determined by AASHTO T-99, Method C.

Moisture content will be determined in accordance with AASHTO T-217 or T-239.

One or more of the following methods shall be used as specified:

Method 1 Compact traveled way and apply the dust abatement material.

Method 2 Develop a layer of loose material approximately one inch in depth for the full width of traveled way. Apply the dust abatement material to this loose material and compact after penetration. If traffic makes maintenance of the loose material difficult, one inch of the material may be bladed into a windrow along the shoulder. The specified moisture content shall be maintained in the windrow and the top one inch of traveled way. The windrow shall be bladed to a uniform depth across traveled way just prior to applying the dust abatement material. When the dust abatement material has penetrated, traveled way shall be compacted.

Method 3 Blade one inch of material from traveled way into a windrow along the shoulder. Maintain the specified moisture content in the windrow and the top inch of traveled way. Apply half the dust abatement material. When the dust abatement material has penetrated, the windrow shall be bladed to a uniform depth across dust abatement traveled way, and the remaining dust abatement material shall be applied. Traveled way shall be compacted.

Method 4 Develop a layer of loose material approximately 2 inches in depth for the full width of traveled way. Apply half the dust abatement material to the loose material. Blade the top 2 inches into a windrow along the shoulder. Apply the remaining dust abatement material to traveled way and the berm. Spread the berm evenly across traveled way and compact.

3.4 Preparation for Dust Abatement with Water

Traveled way shall be prepared in accordance with Specification P-803 (Surface Blading).

3.5 Application Tolerance

Dust abatement materials other than water shall be applied within 0.05 gallons per square yard of the rate specified.

3.6 Mixing Requirements

DO-6BA, DO-6PA, and DO-8 shall be thoroughly circulated in the distributor within one hour of application.

3.7 Weather Limitations

Dust abatement materials shall not be applied when it is raining.

Bituminous material shall be applied when the surface temperature of Traveled Way is 50 degrees Fahrenheit or higher.

Lignin sulfonate and magnesium chloride shall be applied when the atmospheric temperature is 40 degrees Fahrenheit or higher.

3.8 Blotter Material

Blotter material shall be spread in a sufficient quantity to prevent tire pickup.

SPECIFICATION P-807 ROADWAY VEGETATION

DESCRIPTION

1.1 This work includes removal of brush and trees from within the roadway limits.

REQUIREMENTS

3.1 Vegetative matter within the roadway which impedes vehicular travel or interferes with road maintenance operations such as surface blading, ditch and culvert cleaning, shall be removed. Downed timber meeting utilization standards shall be cut in appropriate lengths and decked along the roadside in locations where the traveled way or sight distances will not be impaired.

3.2 Vegetative matter removed from the roadway shall be disposed of by the method(s) specified in the permit.

3.3 **Scattering;** Clearing slash shall be scattered to reduce slash concentrations with slash generally left within 18" of the ground. Slash shall be scattered into openings away from and without unnecessary damage to residual trees. All scattered logs shall be limbed, placed away from trees and positioned so they will not roll.

3.4 **Removal;** Clearing slash shall be moved or hauled to a location designated by the Forest Sevice and piled for disposal by the Forest Service.

3.5 **Chipping and Scattering;** Chippable slash up to 4 inches in diameter shall be processed through a chipping machine. Chips shall be scattered to a loose depth not to exceed 6 inches.

3.6 **Chipping and Removal;** Chippable slash up to 4 inches in diameter shall be processed through a chipping machine. Chips shall be removed from National Forest lands.

3.7 **Bucking;** Clearing slash larger than 4 inches in large end diameter shall be bucked into lengths not to exceed 6 feet. Bucked lengths shall be left in place and positioned so they will not roll.

3.8 **Piling;** Clearing slash 4 inches and smaller in large end diameter shall be hand piled for Forest Service disposal. Piles shall be reasonably compact and free from soil, and shall have a 3 foot fireline cleared to mineral soil.

SPECIFICATION P-808 MISCELLANEOUS STRUCTURES

DESCRIPTION

1.1 Maintenance of miscellaneous structures includes cattleguards, gates, and other similar structures that have been previously installed to insure the safe and efficient operation of the road.

MATERIALS

2.1 Any materials needed in the maintenance of miscellaneous structures shall be similar in type and quality to the material in the structure being maintained.

REQUIREMENTS

3.1 Cattleguards

Loose rails shall be welded or bolted back in place.

Excess material carried into the cattleguard shall be removed when drainage is blocked or when it reaches 6 inches from the bottom of the cattleguard frame. Drainage into and from the cattleguard shall be kept open.

3.2 Gates

Gates shall be kept in good repair and made to swing easily. Hinges or latches shall be repaired if not operating properly.

Brush and debris shall be removed from within the swinging radius.

SPECIFICATION P-809 WATERBARS

DESCRIPTION

1.1 This work consists of removing and installing waterbars in the roadbed.

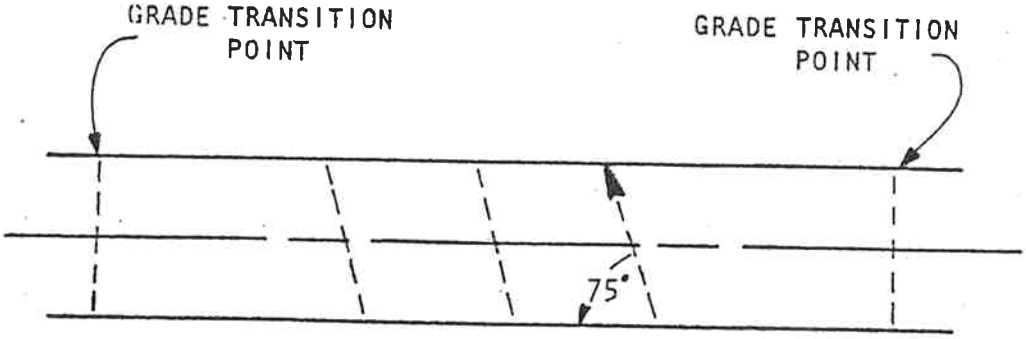
REQUIREMENTS

3.1 Waterbars shall be removed by blading the berm into the adjacent depression to form a smooth transition along the traveled way. The length and width of the fill material shall be compacted by the equipment performing the work.

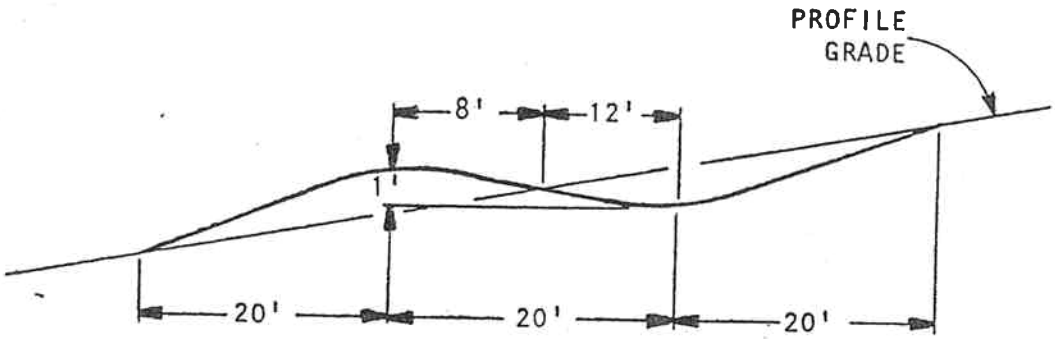
3.2 Waterbars shall be required to be installed between seasons of use and then removed when haul is resumed. Waterbar installation may also be required when use of road has been completed.

3.3 Waterbars shall be installed on roads in accordance with the attached drawings at existing locations and at locations designated by the Forest Service.

3.4 All material excavated shall be used in the installation of the waterbar. Bermed material shall be compacted by operating heavy equipment over the length and width of the berm.



PLAN



PROFILE

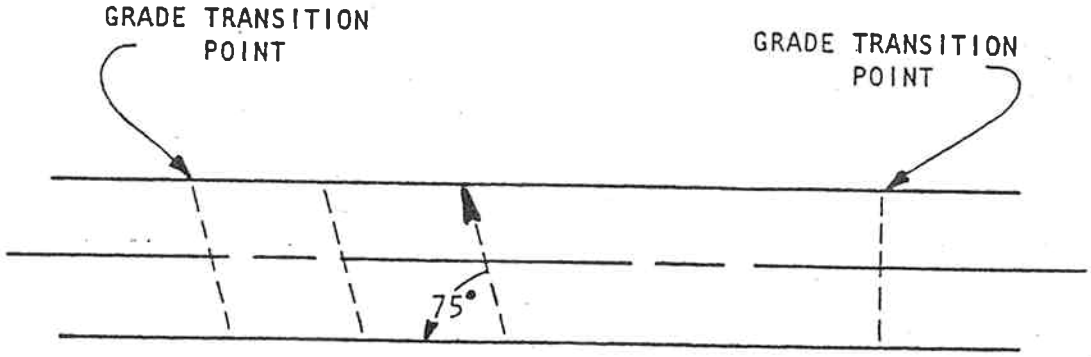
Applicable to: Road No.

NO SCALE

DRIVABLE WATERBAR

T - 809 - 1

(01-83)



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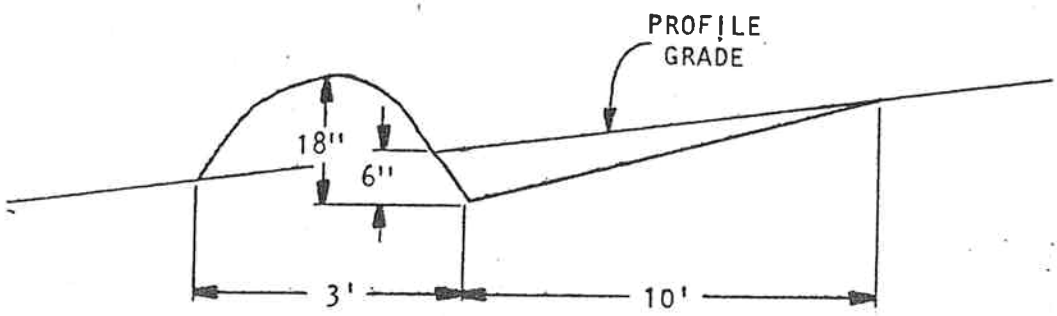


PROFILE

Applicable to: Road No.

NO SCALE

NON-DRIVABLE WATERBAR

T - 809 - 2

(01-83)

SPECIFICATION P-810 BARRIERS

DESCRIPTION

1.1 This work shall consist of furnishing, installing, or removing barriers. Gates are not included.

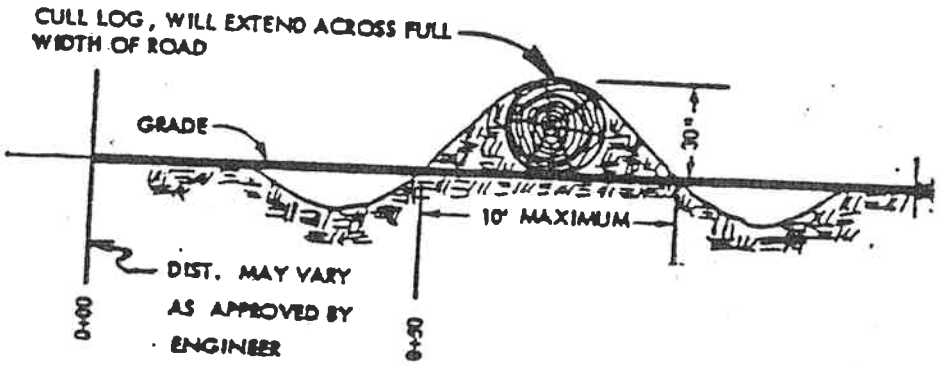
MATERIALS

2.1 Materials for barriers shall meet the requirements as shown on the attached drawings.

REQUIREMENTS

3.1 Barriers shall be installed in accordance with the attached drawings.

The location of barriers to be removed or installed is shown on the Permit Area Map. Installation or removal may occur as often as road use is terminated and resumed.



Applicable to: Road No.

BARRIER

T - 810 - 2

(01-83)

SHEET ___ OF ___

SPECIFICATION P-811 SURFACE TREATMENT

DESCRIPTION

1.1 This work shall consist of applying a chip seal, sand seal, or fog seal to a traveled way. Chip seals may consist of single or double applications of bituminous material and cover aggregate.

MATERIALS

2.1 The roads requiring surface treatments, the type of seal coat to be applied, the rate of application, and type and grade of bituminous material, and the rate of application and grading of cover aggregate will be shown on the Permit.

2.2 Emulsions used for fog seals shall be diluted with an equal amount of water and shall be applied at the diluted application rate shown on the Permit.

2.3 Seal coat materials shall meet the requirements of the following subsections of Forest Service Standard Specifications for Construction of Roads and Bridges or attached special project specifications:

Bituminous Materials

Asphalt Cement.....702.01
Liquid Asphalts.....702.02
Emulsified Asphalt.....702.03
Application Temperatures.....702.05

Cover Aggregate.....703.13
Blotter Material.....703.14
Water for Diluting.....712.01

2.4 The cover aggregate shall be surface damp at the time of application when using emulsified asphalt and dry when using an asphalt cement or liquid asphalt. Excess water on the aggregate surface will not be permitted.

REQUIREMENTS

3.1 Traffic shall be maintained in accordance to the Manual on Uniform Traffic Control Devices (MUTCD).

3.2 **Weather Limitations**

Fog seal and chip seal shall not be applied when the weather is foggy or rainy.

Seal coats requiring cover aggregate shall not be applied when the temperature of the surface being treated is below 70 degrees Fahrenheit in the shade.

Fog seal coats shall not be applied when the surface temperature is below 40 degrees Fahrenheit in the shade.

3.3 Equipment The following equipment or its equivalent shall be used:

A distributor truck equipped to spread the material uniformly at the designated rate, within the temperature range specified and within 0.04 gallons per square yard of the rate specified. The distributor shall be equipped with a thermometer and a hand hose with spray nozzle.

A rotary power broom and/or blower.

When cover aggregates are applied: A pneumatic tire roller, 8-ton minimum weight with all tires equally inflated to a pressure of at least 90 pounds per square inch. Rollers shall be equipped with devices for applying water to the tires.

Self-propelled aggregate spreader supported by at least four wheels equipped with pneumatic tires on two axles, situated so that at no time will the tires contact the uncovered bituminous materials. The aggregate spreader shall be equipped with positive controls so that the required amount of materials will be deposited uniformly over the full width.

Trucks with spreading attachments shall not be used.

3.4 Preparation of Surface Immediately before applying the bituminous material, the surface to be sealed shall be cleaned of all foreign and loose material.

3.5 Application of Bituminous Material Bituminous material shall be applied in a uniform, continuous spread. The distributor shall be moving forward at proper application speed at the time the spray bar is opened. Skipped areas or deficiencies shall be corrected prior to the application of cover aggregate.

The spread of bituminous material shall not be more than 6 inches wider than the width to be covered by the cover aggregate. Operations shall not proceed if the bituminous material is allowed to cool, set up, dry, or otherwise impair retention of cover aggregate.

Fog seal shall be allowed to penetrate and dry before traffic is permitted on the sealed portion.

The surfaces of structures and trees adjacent to the area being treated shall be protected to prevent their being spattered or marred.

3.6 Application of Cover Aggregate and Blotter Immediately following the application of the bituminous material, cover aggregate shall be spread at the specified rate. Joints between adjacent application of cover aggregate shall be approximately in the center of two-lane roads.

The aggregate spreader shall not be operated at speeds which cause the aggregate to roll over after striking the bituminous material. The cut-off of aggregate shall be complete, and any excess aggregate shall be removed from the surface prior to resuming operations. Immediately after the cover asggregate has been spread, any piles, ridges, and uneven distribution shall be corrected.

Cover aggregate may be applied by hand in areas inaccessible to spreading equipment.

Rolling shall begin immediately after spreading the cover aggregate and shall consist of a minimum of two complete coverages.

If a double chip seal is required the second treatment shall not be applied until at least 24 hours after completion of a first treatment, when an emulsion or asphalt cement is used. If a medium cure liquid asphalt is used, 48 hours shall be allowed between applications. Prior to the second treatment, any loose cover aggregate remaining on the surface after the first treatment shall be removed in such a manner that the cover aggregate set in the bituminous material will not be displaced.

After rolling, traffic shall be controlled to a maximum speed of 15 miles per hour for a period of 4 hours.

The day following the final application of cover aggregate, any concentrations of loose cover aggregate shall be redistributed without disturbing the embedded aggregate. Four days after the final application of cover aggregate, all excess cover aggregate shall be removed. During this period, any bituminous material that comes to the surface shall be covered with additional cover aggregate or approved blotter material.

3.7 Blotter material for fog seals shall be spread in sufficient quantity to prevent tire pickup.

SPECIFICATION P-812 HAZARD TREES

DESCRIPTION

1.1 This work includes removal of hazard trees from the roadside.

REQUIREMENTS

3.1 All trees hazardeous to the Permittee's use of the Forest Development Road shall be felled before use of the road. All hazard trees to be felled shall be marked in advance by the Forest Service.

3.2 No material shall be removed as logs without the advanced approval of the Forest Service.

3.3 All felling shall be done in a matter as to protect the residual trees.

3.4 Roadside vegetative matter shall be disposed of by the method(s) specified in the permit.

3.5 **Scattering;** Slash shall be scattered to reduce slash concentrations with slash generally left within 18" of the ground. Slash shall be scattered into openings away from and without unnecessary damage to residual trees. All scattered logs shall be limbed, placed away from trees and positioned so they will not roll.

3.6 **Removal;** Clearing slash shall be moved or hauled to a location designated by the Forest Sevice and piled for disposal by the Forest Service.

3.7 **Chipping and Scattering;** Chippable slash up to 4 inches in diameter shall be processed through a chipping machine. Chips shall be scattered to a loose depth not to exceed 6 inches.

3.8 **Chipping and Removal;** Chippable slash up to 4 inches in diameter shall be processed through a chipping machine. Chips shall be removed from National Forest lands.

3.9 **Bucking;** Clearing slash larger than 4 inches in large end diameter shall be bucked into lengths not to exceed 6 feet. Bucked lengths shall be left in place and positioned so they will not roll.

3.10**Piling;** Clearing slash 4 inches and smaller in large end diameter shall be hand piled for Forest Service disposal. Piles shall be reasonably compact and free from soil, and shall have a 3 foot fireline cleared to mineral soil.

APPENDIX O

RECREATION MANAGEMENT PLAN

RECREATION MANAGEMENT PLAN

BIG CREEK HYDROELECTRIC SYSTEM

MAMMOTH POOL PROJECT (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 Recreation Management Plan (Plan) has been developed for the following four Southern California Edison Company (SCE) Hydroelectric Projects:

1. Mammoth Pool (FERC Project No. 2085)
2. Big Creek Nos. 1 and 2 (FERC Project No. 2175)
3. Big Creek Nos. 2A, 8, and Eastwood (FERC Project No. 67)
4. Big Creek No. 3 (FERC Project No. 120)

Together, these four Projects consist of seven powerhouses and four major reservoirs and have a combined dependable operating capacity of about 890 megawatts (MW).

This Plan identifies SCE's responsibility for the management of recreation resources associated with the four Projects during the term of the new license. The Plan identifies measures for continuing or improving recreation opportunities and resources, and identifies a schedule for the implementation of these measures.

2.0 PURPOSE AND INTENT

The purpose and intent of the Plan is to provide a framework for the operation and maintenance, rehabilitation, replacement, and improvement of the recreation facilities in the vicinity of the Projects. This Plan applies to specific Forest Service recreation facilities in the vicinity of the Projects and SCE-owned recreation facilities around Shaver Lake. These facilities are listed in Table 1 and depicted in Figures 1 through 5. Those Forest Service recreation facilities covered in the Plan currently outside Project Boundaries will remain outside of the boundaries.

3.0 GOALS AND OBJECTIVES OF THE RECREATION PLAN

To meet the purpose and intent of this Plan, the following goals and objectives have been identified. These goals will help guide existing and future recreation planning and design activities in the Project vicinity and in the overall decision-making during the term of the new license:

- Protect, maintain, and/or enhance public recreation resources listed in this Plan.
- When feasible, provide safe public access to Project water bodies and their shorelines, unless such access would (i) interfere with Project operations, (ii) damage property or the environment, (iii) create security, safety and health concerns, or (iv) be inconsistent with sound land management practices.

- Provide cost-effective recreation facilities.

- When planning rehabilitation of specific recreation facilities, evaluate if recreation resources are compatible with other natural and/or cultural resources in the Project area, and take appropriate steps to address any inconsistencies, if feasible.

4.0 CONSULTATION AND PLAN REVIEW

4.1 CONSULTATION FOR THE DEVELOPMENT OF THIS PLAN (PRE-LICENSE)

SCE has completed extensive stakeholder consultation leading to the development of this Plan and will continue consultation, as needed, during the term of the new licenses for the Projects. As a component of the Big Creek Alternative Licensing Process (ALP), the Big Creek Collaborative (BCC) was formed and is comprised of a stakeholder group consisting of representatives from state and federal agencies, Native American Tribes, local and regional authorities, private interests, and the public. During the course of the ALP, over 300 meetings were held to define stakeholder interests, develop and implement technical studies, complete technical reports, and develop potential mitigation measures for incorporation into various resource management plans, including recreation. This Plan reflects input from this intensive collaboration.

Over the term of the new license, additional consultation may occur, as necessary to ensure that the goals and objectives of the Plan are being met and the proposed measures are implemented. Consultation activities that will be conducted during the new license terms will include annual consultation meetings and periodic reporting of recreation use as described below.

4.2 ANNUAL COORDINATION MEETING

Each year during the term of the licenses, SCE will arrange to meet with the Forest Service for an annual meeting to discuss the measures needed to ensure protection and utilization of the recreation facilities listed in Table 1 of this Plan. The date of the meeting will be mutually agreed to by SCE and the Forest Service, but in general will be held within the first 90 days of each calendar year.

At the annual meetings, SCE will review with the Forest Service the long-term planning and implementation schedule for the rehabilitation of existing recreation facilities, and development of the new capital improvements proposed by SCE in this Plan, identify any revisions needed, and make any adjustments to the Plan or schedule as deemed appropriate. Any substantive revisions to the Plan or implementation schedule will be distributed to signatories to the Settlement Agreement for review and comment prior to submittal to the Federal Energy Regulatory Commission (Commission or FERC) for review and approval.

During the annual meeting with the Forest Service, SCE will review the status of recreation projects from the previous year. This will include rehabilitation of existing

recreation facilities, the establishment of new recreation facilities, and any other recreation measures or programs that were implemented. The Forest Service will provide SCE with any available recreational use data from the previous year for the facilities listed in Table 1.

At the annual coordination meeting, SCE and the Forest Service may consider potential adjustments in specific actions or schedules, if appropriate. Work on recreation facilities scheduled for the forthcoming year will be presented to the Forest Service for review and will include logistical and coordination planning and an implementation schedule. At the coordination meetings, SCE will provide the Forest Service with a summary list of the recreation facilities scheduled for rehabilitation and any other Plan measures or programs to be implemented. SCE and the Forest Service will identify any coordination needs in regards to other Forest Service projects being implemented in the basin. This includes permitting requirements and other key resources that will need to be protected from potential impacts associated with the implementation of the scheduled recreation projects. The Forest Service will be asked to approve any revisions to the schedule, and the revised schedule will be submitted to the FERC.

Within 60 days following such consultation, the SCE shall file with the FERC evidence of the meeting, which summarizes any comments made by the Forest Service, and any agreements or Plan revisions that were reached by SCE and the Forest Service.

Annual consultation meetings required by this condition, and similar consultation conditions in other licenses for all SCE-owned hydroelectric projects in the Sierra National Forest (SNF), should be coordinated and combined wherever practical, to increase efficiency and effectiveness. Documentation of these meetings may be combined and reported together by SCE.

As indicated in Section 5.2 and 6.0 of this Plan, SCE will also consult with appropriate Native American groups to discuss protection of Cultural Resources at specific recreation sites where major rehabilitation is being planned. SCE will include a record of any such meetings with the planning documentation of the rehabilitation projects.

4.3 PERIODIC REVIEW AND REPORTING

At least once every six years, SCE shall complete a recreational use and facilities condition survey, as agreed upon by the Forest Service and SCE, at the sites listed in the Plan. The survey will be designed to determine trends of use, the number of days parking capacity is met or exceeded, and whether resource damage is occurring. SCE will use Forest Service data when available. When the data indicates a need for increased campground facilities, SCE and the Forest Service will address the need through this periodic Plan review process.

Current FERC regulations require that SCE prepare a Recreation Report every six years after license issuance. In addition to the information required by the FERC, the Recreation Report will also include the following information:

- The recreation survey information discussed above.
- Annual water surface elevation graphs for Huntington Lake that show the daily reservoir water surface elevations, between May 1 and September 10.
- Annual exceedance tables showing the Huntington Lake water surface elevations between May 1 and September 10.
- The dates when Kaiser Pass Road opened to provide public vehicular traffic access into the backcountry for non-winter recreational use.
- Annual number of whitewater boating opportunity days provided by SCE through pre-spill release flows below Mammoth Pool Reservoir (Tied-for-First Reach) and channel riparian maintenance flows (CRMF) below Florence Lake (Florence Run)[1]. This will include a summary of the number of days that Kaiser Pass Road was open concurrent with the CRMF releases.

Over the term of the Project Licenses, unforeseen recreation needs, changes in visitor preferences and attitudes, and new recreation technologies may occur. The frequency with which the Plan is revised or updated shall depend on significant changes to existing conditions, monitoring results, and management responses made over time. The frequency of Plan updates shall be based on consultation with the Forest Service during monitoring and coordination meetings, review of recreation use and facilities condition reports, and through other appropriate sources. Agreed upon changes to this Plan will be incorporated into a revised document or an amendment to this document, and after approval by the Forest Service, the revised plan will be submitted to FERC for approval.

Factors that may trigger a revision include:

- Revisions and update to Sierra National Forest land and resource management plans.
- Substantial changes (>75% change) in the National Visitor Use Monitoring (NVUM) system for the Sierra National Forest[2] or similar survey conducted by the Forest Service.

[1]Boating opportunity days in the Florence Run are days when flow in the reach is between 350 cfs and 2,000 cfs for kayaks and between 400 cfs and 1,200 cfs for rafts. Boating opportunity Days in the Tied-For-First Run are days when flow in the reach is between 700 cfs and 2,000 cfs. (Recreation Working Group meeting, September 13, 2006).

[2]The National Visitor Use Monitoring (NVUM) is a systematic process used by the Forest Service to estimate annual recreation and other uses of National Forest lands through user surveys. The NVUM process includes a survey to develop statistically accurate estimates of National Forest visitor use; the survey began in 2000 and is expected to continue indefinitely. Use information is gathered in five categories: day-use developed sites, overnight use developed sites, general forest areas, wilderness and viewing corridors.

- Catastrophic natural events, such as major forest fires or natural disasters, and significant effects of social disorder.

- New federal or state policies, regulations, and laws that significantly affect recreation resources in the Project area.

- Documentation of significant changes in demographic use patterns, visitor needs, recreation preferences or other cultural factors affecting recreation facilities within the Project area.

Once every six years, in compliance with Regulation 18 CFR §8.11, SCE shall file Form No. 80 Licensed Hydropower Development Recreation Report with the FERC. This is a FERC approved form that is used to report existing recreational use at developments within projects.

5.0 RECREATION MEASURES

This section describes the recreation measures that will be implemented by SCE for the Projects during the term of the Project License(s). The programs associated with the recreational facilities are described below and include:

- Recreation Facility Operational Maintenance
- Recreation Facility Major Rehabilitation
- Capital Improvements
- Interpretative Program
- Reservoir Recreation
- Whitewater Recreation
- Fish Stocking
- San Joaquin River Trail
- Winter Recreation

5.1 RECREATION FACILITY ANNUAL OPERATIONAL MAINTENANCE

SCE will be responsible for the annual maintenance of Camp Edison facilities at Shaver Lake, Day-Use area recreational facilities located at Shaver Lake, the Day-Use area at Balsam Meadow Forebay, and any other listed recreation facilities located on SCE-owned lands. Table 2 provides a list of SCE operated recreation facilities.

Recreation facilities owned and operated by the SNF will continue to be owned, operated and administered by the Forest Service. Recreation facilities owned and operated by SCE, will continue to be owned, operated and administered by SCE.

Operational maintenance activities keep fixed assets in an acceptable condition and include repairs, painting, replacement of minor parts and minor structural components. Operational maintenance, or reconditioning, neither materially adds to the value of the property nor appreciably prolongs its life. Operational maintenance excludes activities aimed at expanding the capacity of an asset or otherwise upgrading it to serve needs different from, or significantly greater than those originally intended. The work serves only to keep the facility in an ordinary, efficient operating condition. Examples include, but are not limited to interior painting, repair of broken windows, light bulb replacement, cleaning, unplugging drains, greasing, servicing, inspecting, oiling, adjusting, tightening, aligning, sweeping, and general snow removal. The annual operational maintenance activities are completed at a higher frequency than repair activities. Repair activities occur less frequently and are the result of wear from normal use, naturally occurring damage, and/or acts of vandalism. The repair of recreation features, which could include some limited replacement of items, should be conducted on an as-needed basis as soon as practical after being identified through routine facility inspections. Recreation features should be inspected during the routine maintenance visits and any recreation features that are identified as broken and in need of repair/replacement will be noted.

Maintenance activities may include work needed to meet laws, regulations, codes, and other legal direction (such as compliance with the Americans with Disabilities Act (ADA)) as long as the original intent or purpose of the fixed asset is not changed.

5.2 RECREATION FACILITY MAJOR REHABILITATION

Rehabilitation includes reconditioning or replacing an existing fixed asset or any of its components in order to restore the functionality or life of the asset. Replacement is the substitution or exchange of an existing fixed asset or component with one having essentially the same capacity and purpose. The decision to replace or rehabilitate a fixed asset or component is usually reached when replacement is more cost effective or more environmentally sound. Replacement of an asset or component usually occurs when it nears or has exceeded its useful life.

SCE will be responsible for the full cost for major rehabilitation of existing recreation facilities listed in Table 1. SCE will be responsible for performing all needed rehabilitation activities through the provision of necessary personnel, equipment, materials, and management. SCE will be responsible to replace/rehabilitate recreation features currently existing at the recreation facilities.

Recreation facility rehabilitation projects will be designed and constructed after review of applicable Forest Service specifications and standards at the time of construction including the Forest Manual direction concerning Outdoor Recreation Accessibility Guidelines and the Forest Service Trails Accessibility Guidelines. The renovated

recreational facilities will strive to meet applicable ADA requirements regarding accessibility at campgrounds at the time of facility design and as feasible. The renovated facilities may be different from these requirements depending on topography, vegetation, cultural and archaeological resources, feasibility, practicality, preserving the primitive character of campgrounds, and the current design standards during the time of the Project design and construction.

The schedule for the rehabilitation of recreation facilities addressed in this Plan is presented in Table 3 and spans a 25 year time period. The implementation of the rehabilitation schedule begins with the acceptance of a Settlement Agreement. The rehabilitation schedule identifies for each of the recreation facilities in Table 1 a five year time frame in which SCE will complete the planning, designing, contracting and rehabilitation construction activities. However, the initial five-year period may be extended to the point it is necessary for SCE to budget for the expense and obtain recovery of its costs in a California Public Utilities Commission (CPUC) rate recovery proceeding. This rehabilitation schedule provides a year to complete each of the planning, design and contracting tasks, and includes a two year time frame for the rehabilitation construction activities. Recreation facility rehabilitation activities will be coordinated during the annual meetings when the upcoming year's rehabilitation projects will be reviewed.

Any necessary consultation with Native American groups, as referenced in the Big Creek ALP Historic Properties Management Plan (HPMP) and Sections 4.2 and 6.0, will be conducted during the two year planning and design phase and used to modify the rehabilitation planning, if appropriate or necessary (SCE 2005).

This rehabilitation schedule will allow identification of major rehabilitation projects at least five years prior to implementation to facilitate budgeting, planning, design, and acquisition of supplies and materials for the rehabilitation work. SCE may seek recovery of its costs associated with the recreation facility rehabilitation in its General Rate Case (or other appropriate regulatory proceeding) filed at the CPUC. The identification of major rehabilitation projects five years prior to construction will facilitate SCE's ability to obtain cost recovery in the General Rate Case. This schedule will consider the timing, construction, and budget needs associated with other SCE licenses within the Big Creek Basin. The rehabilitation schedule may be revised by SCE after consultation with the Forest Service and submittal to the Commission.

A five year planning and implementation time frame should provide sufficient time to complete the process activities associated with the recreation facility rehabilitation. These process activities include preparation of a Design Narrative, Conceptual Plan, completing any necessary National Environmental Policy Act (NEPA) compliance, preparing a Site Development Plan and Construction Plan, contracting and reconstruction. These steps and their anticipated timing are described in the following:

Year one – Planning will occur in the first year and will be conducted in consultation with the Forest Service. Based on the consultation activities, SCE will complete the planning and design documents describing the recreation facility which include a Design Narrative and a Conceptual Plan.

The Design Narrative describes the management objectives, design criteria, and constraints associated with the major rehabilitation of a recreation facility. The Design Narrative should include: (a) management objectives; (b) design criteria, including criteria on type and color of materials and accessibility; (c) existing physical conditions; (d) any rehabilitation and new construction; (e) anticipated management problems that design may minimize; (f) site capacity, durability, and protection; (g) user safety; and (h) interpretive services.

The Concept Plan presents a preliminary graphic illustration of proposed facilities and utilities in relationship to existing site features, facilities, and utilities. The Concept Plan will communicate proposed development ideas or alternatives. The Concept Plan may include enlargements of the area that indicate placement and orientation of the proposed facilities. This may include the use of aerial photography or topographic maps.

Any required NEPA compliance process would be initiated by the Forest Service following Forest Service approval of the Design Narrative and Conceptual Plan.

Year two – Upon completion of the Forest Service NEPA compliance process or upon a determination that the activity is exempt from NEPA, SCE will prepare a Site Development Plan that is consistent with the Concept Plan that is approved or revised by the Forest Service. The Site Development Plan will be prepared in consultation with the Forest Service. The goal of this step is to: 1) develop design drawings for the recreational features described in this Plan; 2) identify site-specific erosion and sedimentation control measures that will be used; (3) identify any necessary measures to address traffic circulation and parking issues associated with recreation use during the reconstruction activity; and (4) develop an implementation schedule. If no NEPA analysis is conducted, this step will also involve review of the cultural resource inventory and biological resource inventories, and identification of appropriate procedures to avoid impacts to other key resources at the site. Upon Forest Service approval of the Site Development Plan, SCE will prepare a professionally engineered Construction Plan for submittal to the Forest Service. Within 60 days following Forest Service approval, SCE will file the Construction Plan with the Commission for approval.

Years three through five – SCE will conduct the contracting, planning and coordination in preparation of construction activities in year three. SCE will strive to complete the rehabilitation of the recreation facility between years four and five, based on Commission approval, CPUC cost recovery, and Forest Service coordination. Upon CPUC approval of the cost recovery and after further consultation with the Forest Service to ensure construction activities are

coordinated with Forest Service management of the recreational resources, SCE will commence rehabilitation of the recreation facility. SCE will make a good faith effort to complete the rehabilitation of any one campground or picnic area within two years of commencement of reconstruction activities, so that the facility is not closed for more than two calendar years.

During this five year period, SCE and the Forest Service will, during the annual meeting, review the status of recreation facilities proposed for rehabilitation. Upon agreement by both SCE and the Forest, the recreation facility rehabilitation schedule may be revised, as needed.

5.3 CAPITAL IMPROVEMENTS

The Forest Service has identified four new capital improvements at recreation facilities that should be implemented. The four capital improvements will be designed and constructed according to applicable Forest Service specifications and standards, and will conform to the current applicable ADA requirements and health and safety standards in effect at the time of design, permitting, and construction.

SCE will be responsible for the full cost of the recreational capital improvements identified below. SCE will also be responsible for scheduling and/or performing all needed activities including the provision of necessary personnel, equipment requirements, materials purchase and management oversight.

Huntington Lake, Dam 3 Day-Use Area. SCE will develop a Day-Use area adjacent to Dam No. 3 at Huntington Lake. The development will include a parking area, a trail from such parking area to Dam 3, an accessible toilet, three picnic tables, and a new gate to prevent parking on Dam 3. Two disabled parking spots will be designated at the north end of the dam.

Huntington Lake Universally Accessible Fishing Platform. SCE will develop a universally accessible fishing access platform at Huntington Lake. SCE will consult with the Forest Service to select a site specific for the construction of this facility. The universally accessible fishing access may take advantage of existing parking facilities or may require expanded parking depending on the site that is selected. SCE will consult with the Forest Service to define design specifications and develop final construction design packages.

South Fork San Joaquin River Universally Accessible Fishing Platforms. SCE will develop a universally accessible fishing access platform on the South Fork San Joaquin River near Jackass Meadows Campground. SCE will consult with the Forest Service to select a location for the construction of this facility. The universally accessible fishing access facilities may take advantage of existing parking facilities. SCE will consult with the Forest Service to define design specifications and develop final construction design packages.

Florence Lake, Universally Accessible Boat Loading Facility at Florence Lake. SCE will develop a boat launch facility for universally accessible boat loading. SCE will consult with the Forest Service to define design specifications and develop a final construction design package for the facility.

SCE will initiate the process for the planning, design, and construction of the above capital improvements following the issuance of a FERC License that is no longer subject to appeal. Once the process is initiated, SCE anticipates that it will take approximately five years to complete the planning, design and construction of each listed capital improvement, provided that all of the necessary approvals and permits are secured in a timely manner. The activities to be completed in the planning, design and construction process will follow the same general procedure described above in Section 5.2.

During the planning and design period, SCE and the Forest Service, during the annual meeting, will review the status of capital improvement recreation facilities in the General Rate Case. Upon agreement by both SCE and the Forest Service, the construction schedule may be revised, as needed.

5.4 INTERPRETIVE

SCE will design and install up to 13 interpretative display exhibits (kiosks) at various locations in the vicinity of the Big Creek ALP Projects. The kiosks will contain two display panels approximately 24” by 36” in size presenting media to educate the public on cultural, historical, pre-historic, biological and recreation resources in the Big Creek area. The interpretive information to be provided on the display panels may include, but not be limited to, Native American traditional and contemporary culture, history of the Big Creek Hydroelectric System, history of logging, and other historical themes and events relevant to the upper San Joaquin River basin. In accordance with the HPMP for the Big Creek Hydroelectric System, some kiosks/display panels will be used to interpret Native American topics and other historic preservation topics.

SCE will consult with the Forest Service and the Big Creek Heritage Advisory Committee (as defined in the HPMP) regarding the design, content, and placement of the interpretative display panels/kiosks. Agreed upon changes will be incorporated and after approval by the Forest Service, the final design will be submitted to FERC for approval. The schedule for the design and installation of the interpretive display exhibits will be coordinated with the major rehabilitation of recreation facilities where the kiosks are to be installed.

The following summarizes the proposed interpretative kiosk locations by geographic area in the Big Creek Basin.

Huntington Lake Area

- Bear Cove Day-Use Picnic Area
- Dam 3 Parking Area
- Dowville Picnic Area
- Eastwood Visitor Center

Shaver Lake Area

- Shaver Lake Highway 168 Day-Use Area
- Sierra Marina
- One other location to be determined in consultation as described above

Florence Lake and Backcountry Area

- Florence Lake Store
- Jackass Meadows Campground
- Mono Campground
- Whitebark Vista

Mammoth Pool Reservoir Area

- Mammoth Pool Vicinity
- Redinger Lake Overlook

5.5 RESERVOIR RECREATION

SCE will support reservoir-based recreation through the maintenance of reservoir water surface elevations at Project reservoirs/lakes. SCE manages its reservoir water surface elevations to be consistent with the primary purpose of the reservoirs for hydroelectric generation, existing water rights, contracts, and/or licenses associated with the reservoirs, and other beneficial uses. In meeting the primary purpose of the reservoirs, SCE will make a good faith effort to maintain reservoir water surface elevations at Project reservoirs that will support recreation.

At Huntington Lake SCE will make every reasonable effort to maintain the water surface at as high an elevation and with as little fluctuation as feasible during the period between May 1 to September 10 of each water year as is consistent with the primary purpose of the reservoir, existing water rights, and contracts.

At Shaver Lake, SCE will make every effort to secure recreational benefits by maintaining the water surface at the maximum elevation practical for water storage, with minimum noticeable fluctuation, from Memorial Day to September 10. Operation of the

Eastwood Powerhouse in a pumped storage mode does not cause more than a minimum noticeable fluctuation in the reservoir level.

In order to provide recreation and cultural resource benefits at Mammoth Pool Reservoir, SCE will make every effort to secure recreational benefits by maintaining the water surface at the maximum elevation practical for water storage, with minimum noticeable fluctuation, from June 1 to September 1 of each year.

At Florence Lake SCE will maintain a minimum reservoir storage of 21,000 acre-feet (ac-ft) level at Florence Lake during the period from July 1 through August 31, and a minimum reservoir storage of 1,000 ac-ft level during the remainder of the year.

Reservoir elevations needed to support recreation will not be maintained when reduced water storage is necessary (i) to allow necessary repairs to the dam(s) or associated equipment; (ii) to provide water supplies during drought periods to downstream water users or for environmental purposes; (iii) to operate generating facilities to address power shortages in California due to unscheduled power outages of other power generation facilities, State declared energy emergencies, or orders from a State agency with authority to dispatch power generated by the Projects; (iv) to reduce downstream flooding risks; (v) to meet the terms of the Mammoth Pool Operating Contract or other obligations to downstream water rights holders; or (vi) to meet other Project license water release requirements. SCE need not reduce power generation to maintain reservoir elevations if the releases from the reservoir are required to meet license conditions, and/or generation is ordered by the Independent System Operator (ISO) or another authority.

5.5.1 HYDROLOGY INFORMATION – RESERVOIR AND STREAMFLOW

Reservoir Water Surface Elevation Information

SCE will provide reservoir elevation information to the public via the Internet or other appropriate technologies. Where feasible, SCE will provide year-round midnight reservoir surface elevations at Huntington Lake, Shaver Lake, Mammoth Pool Reservoir and Florence Lake. Reservoir water surface elevation data will be provided in feet above mean sea level (msl). All reservoir water surface elevation values may be rounded to the tenth of a foot. In association with the reservoir water surface elevation, SCE will also post the functional operating ranges of the boat launch ramps at the reservoirs.

SCE will annually notify the Forest Service, the Huntington Lake Resort, Lakeshore Resort, Rancheria Enterprises, Sierra Marina, Shaver Lake Marina; post at the SNF boat ramp and post via a website or other similar information method, its monthly storage targets for Huntington, Shaver, Mammoth Pool, Florence, and Thomas A. Edison reservoirs for the recreational season (May through September). SCE will make a good faith effort to notify these parties and post via website or other informational method, at least two weeks before it significantly reduces the reservoir elevation for Dam maintenance or annual drawdown.

This notification need not be given if SCE must reduce the reservoir elevation for emergency purposes or other circumstances that preclude the issuance of a notification. In such cases, SCE will make a good faith effort to inform the above listed entities of the circumstances and expected reservoir elevation and fluctuations as soon as feasible.

SCE will install a staff gage and post the annual water plan for Huntington Lake at the Forest Service boat ramp. The annual water plan for the lake will provide to the general public estimates of projected reservoir water surface elevations during the recreation season.

SCE will provide to the SNF, the Huntington Lake Association (HLA) and interested parties the annual report on Huntington Lake water surface elevations (including an exceedance table of water surface elevations) from the previous year. Upon request of the HLA, SCE will attend the HLA annual meeting or meet with the HLA Board in lieu of the annual meeting to discuss the annual water plan.

Real-Time Stream Flow Information Dissemination

The Licensee shall provide streamflow information to the public as described below. The flow information shall be available to the public via the Internet in a machine readable format or other appropriate publicly accessible technology.

Where feasible, SCE will provide year-round hourly flow data for the following stream reaches:

- South Fork San Joaquin River below Florence Dam
- San Joaquin River below Mammoth Pool Reservoir
- San Joaquin River below Dam 6
- Stevenson Creek below Shaver Dam
- Mono Creek between Vermilion Valley Dam and Mono Diversion

If and when feasible, the hourly stream flow data shall be posted on the Internet. The flow data on the Internet will show the most recent seven days of flow information. This flow data will not have been checked for accuracy by SCE before posting. Thus, the data may be subject to significant change. All streamflow values may be rounded to the nearest cubic feet per second (cfs), and any plots or tables showing these data may be labeled with the following, or similar, language “These provisional stream flow data have not been reviewed or edited for accuracy and may be subject to significant change.”

The dissemination of streamflow information may come directly from SCE, or, may be provided through a third party. SCE may modify the flow information protocols after consultation with interested stakeholders.

SCE may decline to post this information when the information (i) is determined by SCE to have market value that could adversely affect SCE's power purchase bidding activities and power or ancillary service prices; or (ii) would be considered by a regulatory agency to be inappropriate or unlawful.

If SCE decides to discontinue or modify the provision or method of providing flow data, it will post notice of the discontinuation or modification of flow data on the Internet at least two days prior to the suspension of flow data. Within 30 days of the suspension or modification of providing flow data, SCE will notify FERC, and request approval to suspend posting of this data.

In addition to posted streamflow data, SCE shall install and maintain staff gages from which streamflow in cfs or reservoir elevation can be determined. Staff gages will be installed in the San Joaquin River below Mammoth Pool Dam, in the South Fork San Joaquin River below Florence Dam, and at the Forest Service Rancheria Boat Ramp at Huntington Lake. SCE shall make a good faith attempt to locate the staff gages near locations used for angling access points and whitewater boating put-ins, so they are viewable by the public.

By April 10 of each year, SCE shall make available on the Internet the forecast of the water year type in the same fashion as the streamflow information, and if available, will forecast the probability of spill and/or supplemental flows at Florence Lake Dam and Mammoth Pool Dam. SCE shall make a good faith effort to provide notice of the anticipated date of the beginning of spill at Florence Lake Dam and Mammoth Pool Dam during years when spill is likely to occur.

5.6 WHITEWATER BOATING

5.6.1 PRE-SPILL WHITEWATER FLOW RELEASE

SCE will provide pre-spill whitewater flow releases below Mammoth Pool and Florence Reservoir Dams in Wet and Above Normal Years. The presence of Wet years and Above Normal years will be determined by the Department of Water Resources (DWR) in its April 1 forecast for the projected water runoff for the San Joaquin River Basin.

Upon request of the American Whitewater Association or regional whitewater boating representatives after March 15, SCE will discuss the anticipated water runoff conditions in relation to pre-spill releases, as described below. If the water year type is determined to be a Wet or Above Normal water year, the timing and flow magnitudes of the pre-spill releases will be proposed.

Wet Year Releases at Mammoth Pool Dam

In Wet years, as defined by the DWR forecast, SCE will provide a continuous release of between approximately 350 cfs and 850 cfs until such time as Mammoth Pool Dam spills. This pre-spill whitewater release is targeted to begin on April 15. If, on April 15

Mammoth Pool Dam is spilling, SCE will have no further responsibilities to provide whitewater recreation flows for the year. If, SCE determines conditions are suitable to provide pre-spill flows prior to April 15, SCE may initiate pre-spill releases at an earlier date. Pre-spill release flows will be provided by operation of the Howell Bunger (HB) valve at Mammoth Pool Dam. Operation of the HB Valve will be consistent with the requirements of the Sediment Management Prescriptions.

Above Normal Year Releases at Mammoth Pool Dam

To provide whitewater boating opportunities during Above Normal water years, SCE will provide pre-spill whitewater releases below Mammoth Pool Dam of between approximately 350 cfs and 850 cfs for two consecutive weekend days. At a minimum, the whitewater flows would be provided between the hours of 10 AM to 4 PM over one weekend. These pre-spill whitewater releases would be made after April 15. If by April 15, Mammoth Pool Dam is spilling, SCE will have no further responsibilities to provide whitewater releases for that year. Upon the request of regional whitewater boating representatives, and if SCE determines conditions are suitable, SCE may initiate pre-spill releases at an earlier date. Pre-spill release flows will be provided by operation of the HB valve at Mammoth Pool Dam. Operation of the HB Valve will be consistent with the requirements of the Sediment Management Prescriptions.

Pre-spill releases have the potential to impact flood control and water supply operations downstream of the Mammoth Pool Reservoir. Prior to making pre-spill releases, SCE will consult with the United States Bureau of Reclamation (USBR) (or the then current operator of Friant Dam). If the USBR determines that a pre-spill release will adversely impact USBR flood control or water supply operations, SCE will not make the planned pre-spill release. In that event, SCE will make a good faith effort to identify another time acceptable to the USBR when pre-spill releases may be made.

Channel Riparian Maintenance Flow Releases at Florence Lake Dam

The Jackass Meadow Inundation Study Summary sets forth a program for SCE to provide CRMF in the South Fork San Joaquin River below Florence Lake in Wet and Above Normal water years (SCE 2007). To the extent it is within SCE's control and consistent with the requirements of the CRMF schedule at Florence Dam, SCE will attempt to provide flows sufficient in timing and magnitude for whitewater boating opportunities during the descending portion of the CRMF release.

5.7 FISH STOCKING

In order to enhance angling opportunities on Project reservoirs and stream reaches in the vicinity of the Project, SCE will equally match the California Department of Fish and Game (CDFG) stocking of Project-related reservoirs and bypass stream reaches below Project diversions and upstream of Redinger Lake, up to the following amounts:

Rainbow Trout:

Fingerlings – up to 20,000 per year

Catchables – up to 60,000 per year

Subcatchables – up to 40,000 per year

Kokanee:

Fingerlings – up to 30,000 per year

At SCE's option, SCE will either acquire the fish directly through available sources or reimburse CDFG for the cost of fish production. SCE will consult with CDFG annually to obtain fish stocking targets and verify the completion of the previous years stocking efforts.

5.8 TRAILS

5.8.1 SAN JOAQUIN RIVER TRAIL

The San Joaquin River Trail is a public multi-use trail that runs through the San Joaquin River Canyon from Millerton Reservoir to the crest of the Sierra Nevada Mountains. The San Joaquin River Trail is co-aligned with the Mammoth Pool Transmission Line Project Road for about 9 miles. Additionally, the San Joaquin River Trail also crosses two other Project roads: 8S03 (Mammoth Pool Powerhouse Road) and 7S47 (Rock Creek Diversion access road).

SCE will maintain the section of the San Joaquin River Trail that is co-aligned with the Mammoth Pool Transmission Line Project Road. The Mammoth Pool Transmission Line Project Road will be maintained in accordance with, and to Forest Service road standards for a Class 2 road. The maintenance standards for a Class 2 road are adequate to satisfy the management prescription for a Class 3 trail designation. The road standards are presented in the Transportation System Management Plan. SCE will maintain the two Project road crossings of the trail with a surface material that accommodates multiple use of the San Joaquin River Trail.

5.9 WINTER RECREATION

5.9.1 SNOW PLOWING

Kaiser Pass Road (5S80) and Florence Lake Road (7S01) provide snowmobiling opportunities during the winter recreation season which typically extend between November 15 through spring, depending on snow conditions. The Forest Service maintains the snowmobile trail along these roads by grooming the trail following each winter storm.

Should SCE need to plow these roads for Project purposes, SCE will as follows:

- unless required for larger equipment, plow one lane only on the Eastwood/Badger Flat segment of road 5S80 and the other lane will be maintained and reserved for winter sports use. SCE should avoid placement of blown snow on the reserved lane.

- provide a uniform travel surface of a maximum one tractor blade width on snow adjacent to the cleared roadway, where practical.

6.0 PROTECTION OF OTHER RESOURCES

Extensive literature reviews, agency consultation and biological and cultural surveys were completed to document the occurrence of sensitive resources in the vicinity of the Project. These and subsequently acquired data will be used during the design of capital improvements and the rehabilitation of recreational facilities to identify site-specific measures to avoid potential impacts to sensitive resources. SCE has prepared resource management plans for the protection of significant and sensitive resources as part of the licensing process. SCE will consult with the appropriate resource agency to ensure that its recreation rehabilitation and enhancements are consistent with the overall goals and specific requirements of other license conditions and other Commission-approved management plans that are protective of other key resources.

Cultural Resource sites in the vicinity of the recreation facilities are discussed in the HPMP for the four Projects. The HPMP management measures will be incorporated into the design and re-construction of recreational facilities to ensure cultural resources are protected during the implementation of this Plan. SCE will initiate consultation with Native Americans to determine appropriate protection and mitigation measures if potential recreational facility construction or rehabilitation impacts to cultural resources are identified.

7.0 LITERATURE CITED

SCE. 2005. Historic Properties Management Plan (HPMP). *In* SCE's APDEA for the Big Creek ALP (Mammoth Pool Project (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)). February 2007 (Volume 4, SD-I, Book 27).

SCE. 2007. Jackass Meadow Inundation Study. 2007 Supplemental Report for the Big Creek Hydroelectric System (ALP). *In* SCE's APDEA for the Big Creek ALP (Mammoth Pool Project (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)). February 2007 (Volume 4, SD-E, Books 18 and 24).

GLOSSARY

Glossary

For the purpose of this Plan, the following definitions apply:

Boating Opportunity Day: A boating opportunity day occurs when flow in a reach is equal to or greater than the minimum acceptable flow and, equal to or less than maximum acceptable flow.

Capital Improvement: The construction, installation, or assembly of a new fixed asset, or the significant alteration, expansion, or extension of an existing fixed asset to accommodate a change of purpose.

Concept Plan: This plan presents a preliminary graphic illustration of proposed facilities and utilities in relationship to existing site features, facilities, and utilities. The Concept Plan will communicate proposed development ideas or alternatives. The Concept Plan may include enlargements of the area that indicate placement and orientation of the proposed facilities. This may include the use of aerial photography or topographic maps.

Construction Plans: Construction Plans are professionally prepared engineering, architectural, or landscape architectural plans that provide specifications for buildings, utilities, roads, grading, plantings, and related improvements. After review, construction plans must be approved by the appropriate Forest Service line officer.

Design Narrative: Describes the management objectives, design criteria, and constraints associated with the development or major rehabilitation of a recreation facility. The Design Narrative should include: (a) management objectives; (b) design criteria, including criteria on type and color of materials and accessibility; (c) existing physical conditions; (d) any rehabilitation and new construction; (e) anticipated management problems that design may minimize; (f) site capacity, durability, and protection; (g) user safety; and (h) interpretive services.

Major Rehabilitation: Making capital improvements and reconditioning or replacing an existing fixed asset or any of its components in order to restore the functionality or life of the asset. Replacement is the substitution or exchange of an existing fixed asset or component with one having essentially the same capacity and purpose. The decision to replace or rehabilitate a fixed asset or component is usually reached when replacement is more cost effective or more environmentally sound. Replacement of an asset or component usually occurs when it nears or has exceeded its useful life.

Minor Rehabilitation: Minor rehabilitation includes repairs, and replacement of parts that result in fewer breakdowns and fewer premature replacements, and help achieve the expected life of the fixed asset. Minor rehabilitation does not include construction of new facilities or the replacement of an existing fixed asset. Minor rehabilitation activities will arrest deterioration and appreciably prolong the life of a property. Examples include: installing a new roof, new floor, or new siding, replacing electrical wiring or heating systems, repairing or replacing pipes, pumps and motors, and repairing the paths, walks, or walls of recreation facilities.

Operational Maintenance: Keeping fixed assets in acceptable condition, including repairs, painting, replacement of minor parts and minor structural components. Operation maintenance, or reconditioning, neither materially adds to the value of the property nor appreciably prolongs its life. Operational maintenance excludes activities aimed at expanding the capacity of an asset or otherwise upgrading it to serve needs different from, or significantly greater than those originally intended. The work serves only to keep the facility in an ordinary, efficient operation condition. Examples include: interior painting, repair of broken windows, light bulb replacement, cleaning, unplugging drains, greasing, servicing, inspecting, oiling, adjusting, tightening, aligning, sweeping, and general snow removal. Maintenance activities may include: work needed to meet laws, regulations, codes, and other legal direction (such as compliance with ADA) as long as the original intent or purpose of the fixed asset is not changed.

NEPA Compliance: Conduct any appropriate environmental analysis of the proposed project presented in the Concept Plan. At times a NEPA review may not be necessary as the project may be exempt.

Pre-spill Release: A controlled release of water from storage into a bypass reach in advance of naturally occurring spill. Pre-spill releases are only provided in Wet or Above Normal water years when hydrologic conditions and projected spring run-off conditions enable prediction of naturally occurring spill from Project reservoirs.

Site Development Plan: This plan presents a comprehensive graphic illustration of the facilities and utilities (both existing and proposed) to be built or modified as approved by the NEPA decision. The development plan is based on an accurate survey, usually drawn to a scale ranging from 1" = 20' or 1" = 100', with appropriate contour information, and may also include descriptions or lists of features. The plan must be approved by FERC before construction proposals are prepared. The plan must be consistent with the concept plan approved by the NEPA decision or revised through the NEPA process.

TABLES

Table 1. Recreation Facilities in the Vicinity of the Project.

Project	Operation and Maintenance Responsibility
Big Creek Nos. 1 and 2 (FERC Project No. 2175)	
Huntington Lake	
Existing Recreation Facility	
Boat Ramp and Parking – Huntington Lake, East	Forest Service
Boat Ramp – Huntington Lake, West	Forest Service
Upper Billy Creek Campground	Forest Service
Lower Billy Creek Campground	Forest Service
Catavee Campground	Forest Service
College Campground	Forest Service
Deer Creek Campground	Forest Service
Kinnikinnick Campground	Forest Service
Rancheria Campground	Forest Service
Bear Cove Day-Use Picnic Area	Forest Service
Billy Creek Day-Use Picnic Area	Forest Service
Deer Creek Day-Use Picnic Area	Forest Service
Dowville Day-Use Picnic Area	Forest Service
Eastwood Overlook and Parking	SCE
New Recreation Facility	
Huntington Dam 3 Day-Use Area	Forest Service
Huntington Lake Universally Accessible Fishing Platform	Forest Service
Big Creek No. 3 (FERC Project No. 120)	
Dam 6 Forebay	
Existing Recreation Facility	
Angler Access Stairway at Mammoth Pool Powerhouse	Forest Service
Parking Area near Mammoth Pool Powerhouse Gate	Forest Service
Big Creek Nos. 2A, 8 and Eastwood (FERC Project No. 67)	
Florence Lake	
Existing Recreation Facility	
Boat Ramp – Florence Lake	Forest Service
Jackass Meadow Campground	Forest Service
Florence Lake Day-Use Picnic Area	Forest Service

Table 1. Recreation Facilities in the Vicinity of the Project (continued).

Project	Operation and Maintenance Responsibility
Big Creek Nos. 2A, 8 and Eastwood (FERC Project No. 67) (continued)	
New Recreation Facility	
Florence Lake Universally Accessible Boat Loading Platform	Forest Service
South Fork San Joaquin River Universally Accessible Fishing Platform	Forest Service
Shaver Lake	
Existing Recreation Facility	
Camp Edison Campground	SCE
Camp Edison Boat Ramp/Launch	SCE
Dorabelle Campground	Forest Service
Dorabelle Day-Use Picnic Area	Forest Service
Day-Use Areas on North Shore Roads 1 and 2	SCE
Day-Use Area off Hwy 168 (The Point)	SCE
Eagle Point Boat Only Day-Use Area	SCE
Balsam Meadow Forebay	
Existing Recreation Facility	
Balsam Meadow Forebay Day-Use Picnic Area	SCE
Balsam Meadow Trailhead and Parking	SCE
Mono Creek Forebay	
Existing Recreation Facility	
Mono Creek Campground	Forest Service
Mono Creek Day-Use Picnic Area	Forest Service
Mammoth Pool (FERC Project No. 2085)	
Mammoth Pool Reservoir	
Existing Recreation Facility	
Boat Ramp – Mammoth Pool Boat Launch	Forest Service
China Bar Boat Camp	Forest Service
Mammoth Pool Campground	Forest Service
Windy Point Day-Use Picnic Area	Forest Service
Windy Point Boat Launch	Forest Service

Table 2. SCE Operated Recreation Facilities.

Project	Operation and Maintenance Responsibility
Big Creek Nos. 2A 8 and Eastwood (FERC Project No. 67)	
Shaver Lake	
Camp Edison Campground	
Camp Edison Boat Ramp/Launch	
Day-Use Areas on North Shore Roads 1 and 2	
Day-Use Area off Hwy 168 (The Point)	
Eagle Point Boat Only Day-Use Area	
Balsam Meadow Forebay	
Balsam Meadow Forebay Day-Use Picnic Area	
Balsam Meadow Trailhead and Parking	

Table 3. Recreational Facility Rehabilitation Schedule.

Facility	Year Rehabilitation Activity Begins Post-Settlement Agreement[1]	Years Post Settlement Agreement (2007)																								
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
Big Creek Nos. 1 and 2 (FERC Project No. 2175)																												
Huntington Lake																												
Boat Ramp and Parking-Huntington Lake, East	21																					Planning	Designing	Contract	Construction	Construction		
Boat Ramp-Huntington Lake, West	5					Planning	Designing	Contract	Construction	Construction																		
Upper Billy Creek Campground	4				Planning	Designing	Contract	Construction	Construction																			
Lower Billy Creek Campground	4				Planning	Designing	Contract	Construction	Construction																			
Catavee Campground	22																						Planning	Designing	Contract	Construction	Construction	
College Campground	2		Planning	Designing	Contract	Construction	Construction																					
Deer Creek Campground	23																							Planning	Designing	Contract	Construction	Construction
Kinnikinnick Campground	23																							Planning	Designing	Contract	Construction	Construction
Rancheria Campground	1	Planning	Designing	Contract	Construction	Construction																						
Bear Cove Day-Use Picnic Area	4				Planning	Designing	Contract	Construction	Construction																			
Billy Creek Day-Use Picnic Area	4				Planning	Designing	Contract	Construction	Construction																			
Deer Creek Day-Use Picnic Area	23																							Planning	Designing	Contract	Construction	Construction
Dowville Day-Use Picnic Area	3			Planning	Designing	Contract	Construction	Construction																				
Eastwood Overlook and Parking	6						Planning	Designing	Contract	Construction	Construction																	
Big Creek No. 3 (FERC Project No. 120)																												
Dam 6 Forebay																												
Angler Access Stairway at Mammoth Pool Powerhouse	11											Planning	Designing	Contract	Construction	Construction												
Parking Area near Mammoth Pool Powerhouse Gate	11											Planning	Designing	Contract	Construction	Construction												
Big Creek Nos. 2A, 8 and Eastwood (FERC Project No. 67)																												
Florence Lake																												
Boat Ramp-Florence Lake	10										Planning	Designing	Contract	Construction	Construction													
Jackass Meadow Campground	8								Planning	Designing	Contract	Construction	Construction															
Florence Lake Day-Use Picnic Area	10										Planning	Designing	Contract	Construction	Construction													
Shaver Lake																												
Camp Edison Campground[2]																												
Camp Edison Boat Ramp/Launch[2]																												
Dorabelle Campground	3			Planning	Designing	Contract	Construction	Construction																				
Dorabelle Day-Use Picnic Area	3			Planning	Designing	Contract	Construction	Construction																				
Day-Use Areas on North Shore Roads 1 and 2[2]																												
Day-Use Area off of Hwy 168 (The Point)[2]																												
Eagle Point Boat Only Day-Use Area[2]																												
Balsam Meadow Forebay																												
Balsam Meadow Forebay Day Use Picnic Area[2]																												
Balsam Meadow Trailhead and Parking[2]																												
Mono Creek Forebay																												
Mono Creek Campground	17																	Planning	Designing	Contract	Construction	Construction						
Mono Creek Day-Use Picnic Area	17																	Planning	Designing	Contract	Construction	Construction						
Mammoth Pool (FERC Project No. 2085)																												
Mammoth Pool Reservoir																												
Boat Ramp-Mammoth Pool Boat Launch	12												Planning	Designing	Contract	Construction	Construction											
China Bar Boat Camp	16																Planning	Designing	Contract	Construction	Construction							
Mammoth Pool Campground	11											Planning	Designing	Contract	Construction	Construction												
Windy Point Day-Use Picnic Area	14														Planning	Designing	Contract	Construction	Construction									
Windy Point Boat Launch	14														Planning	Designing	Contract	Construction	Construction									

Footnote:
[1] Initiation of the recreation facility rehabilitation schedule is based on the establishment of a settlement agreement in year 2007
[2] These facilities are maintained by SCE and the rehabilitation of these facilities are conducted on an ongoing basis during the term of the License as part of the routine maintenance and repair activities

FIGURES

Placeholder for

Figure 1. Recreation Opportunities: Big Creek ALP

Figure 2. Recreation Opportunities: Mammoth Pool Region

Figure 3. Recreation Opportunities: Shaver Lake Region

Figure 4. Recreation Opportunities: Huntington Lake Region

Figure 5. Recreation Opportunities: Upper Basin Region

Non-Internet Public Information

These Figures have been removed in accordance with the Commission regulations at 18 CFR Section 388.112.

These Figures are considered Non-Internet Public information and should not be posted on the Internet. This information is provided in Book 25 of the Application for New License and is identified as "Non-Internet Public" information. This information may be accessed from the FERC's Public Reference Room, but is not expected to be posted on the Commission's electronic library, except as an indexed item.

APPENDIX P

BALD EAGLE MANAGEMENT PLAN

BALD EAGLE MANAGEMENT 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 Bald Eagle Management Plan (Plan) has been developed for four of Southern California Edison's (SCE) hydroelectric projects included in the Big Creek Hydroelectric System, located in the Upper San Joaquin River Watershed. The Plan covers the following four Federal Energy Regulatory Commission (Commission or FERC) licensed projects: Mammoth Pool (FERC No. 2085), Big Creek Nos. 1 and 2 (FERC No. 2175), Big Creek Nos. 2A, 8, and Eastwood (FERC No. 67) and Big Creek No. 3 (FERC No. 120). These Projects include seven powerhouses and four major reservoirs, and have a combined dependable operating capacity of about 890 megawatts (MW).

SCE has prepared this Plan in consultation with the U.S. Fish and Wildlife Service (USFWS), U.S. Department of Agriculture-Forest Service (USDA-FS), California Department of Fish and Game (CDFG) and other stakeholders in the Big Creek Alternative Licensing Process (ALP). The Plan was developed to address ongoing maintenance and operations of the four Big Creek Projects and their potential impact to bald eagle in the Projects' vicinity. This Plan, including the specified avoidance, protection, and mitigation measures, will supersede all previous documents developed by SCE for the four Big Creek Projects that address bald eagles. The Plan will be in effect upon FERC approval.

The Draft Bald Eagle Management Plan was submitted to agencies and stakeholders on August 17, 2005. Comments on the plan were received from USFWS, USDA-FS, and CDFG.

2.0 EVALUATION AND IMPLEMENTATION OF MAINTENANCE ACTIVITIES

This section describes the location of bald eagles and their habitat within the vicinity of the four Big Creek Projects and the potential effects/enhancements of ongoing operations and maintenance activities. Additionally, this section identifies the appropriate bald eagle avoidance and protection measures to be implemented for the term of the license(s).

2.1 LOCATION OF BALD EAGLES AND HABITAT IN THE PROJECT AREA

The presence of bald eagles and their habitat (nesting and wintering) in the vicinity of the four Big Creek Projects was determined based on extensive field surveys conducted in the vicinity of the four Big Creek Projects as part of the Big Creek ALP (SCE 2001; 2003; and 2004). The location of known nests, nesting habitat, and wintering habitat are summarized below. Maps of bald eagles nests in the vicinity of the four Big Creek Projects are provided as Figures 1, 1A and 1B.

2.1.1 NESTING AND FORAGING HABITAT

Appropriate nesting habitat within the four Big Creek Projects includes tall (> 100 feet) conifers in uneven-aged, multistoried stands within 0.5 mile of Project reservoirs (i.e.,

Florence Lake, Shaver Lake, Huntington Lake, and Mammoth Pool Reservoir) and the South Fork San Joaquin and San Joaquin rivers. Foraging habitat is the same as nesting habitat except that large forebays (Balsam Creek Forebay, Bear Diversion Forebay, Mono Diversion Forebay, Dam 5 Forebay, and San Joaquin River Dam 6 Forebay) are also considered suitable habitat. Bald eagle occurrences have been recorded in the vicinity of all four Big Creek Projects.

Two bald eagle nests have been confirmed in the vicinity of the Big Creek Projects. This includes a nest on the south shore of Shaver Lake (Big Creek Nos. 2A, 8, and Eastwood), and another near Rancheria Campground (Big Creek Nos. 1 and 2).

The nest at the south shore of Shaver Lake on Kokanee Point was first detected in 1999. In 2000, two chicks were reported, but both chicks died, presumably from a winter storm. In 2001, two chicks successfully fledged. The nest was unsuccessful in 2002, but produced three young in 2003. In 2005, one chick fledged successfully (Byrd, pers. comm., 2005).

A nest was identified at Huntington Lake in 2003, after the breeding season. In 2004, one juvenile was observed that fledged the nest (Smith, pers. comm., 2005). In 2005, this nest produced two fledglings (Sorini-Wilson, pers. comm., 2005).

2.1.2 WINTERING HABITAT

Wintering habitat elements that are critical to bald eagles include trees or other vantage points of sufficient height, night roosts, and shelter from harsh weather conditions in areas with adequate forage. Wintering habitat in the vicinity of the four Big Creek Projects is the same as nesting habitat, except for elevations above 6,500 feet in elevation because of severe weather and at least partial freezing of rivers and reservoirs. Bald eagles are not known to winter above 6,500 feet in elevation in the vicinity of the four Big Creek Projects. Wintering bald eagles have been reported near Powerhouse 3 facilities and surrounding roads and at Mammoth Pool Reservoir and surrounding Project facilities and roads. Although wintering bald eagles have been documented at these locations, it has not been determined if there are bald eagle winter roosts. Winter roosts are communal night roosting locations, near wintering foraging grounds, in protected locations to minimize energy expenditure. Traditional winter roosts are used regularly on multiple days or consecutive years by numerous eagles in the winter.

2.2 POTENTIAL EFFECTS/ENHANCEMENTS TO BALD EAGLE

As part of the Big Creek ALP, an analysis of potential effects from ongoing operation and maintenance (O/M) of the four Big Creek Projects was completed. The potential Project impacts are summarized below.

2.2.1 PROJECT POWER LINES

Project power lines in the vicinity of the Big Creek Projects were evaluated to determine if they meet the guidelines set forth in the Suggested Practices for Raptor Protection on

Power Lines: The State of the Art in 1996 (Avian Power Line Interaction Committee (APLIC) 1996). Following completion of this analysis, it was determined that four Project power lines do not meet APLIC guidelines for protection of raptors. These Project power lines therefore pose a potential risk for raptor electrocution (including bald eagles). However, no raptor or bald eagle mortalities have been known to occur along these lines and the potential risk is considered small.

Raptors, including bald eagles, may also nest on Project power lines or associated structures during the term of the license(s). If these nests pose a fire or public safety issue, they may require removal or trimming. Removal or trimming of an active nest may be considered an adverse effect.

2.2.2 LAKES AND FOREBAYS

More than 87% of bald eagles in California nest within one mile of water, including reservoirs (Zeiner et al. 1990). Consistent with this, bald eagles are known to nest and forage on reservoirs and forebays in the vicinity of the Big Creek Projects. Florence Lake, Shaver Lake, Huntington Lake, and Mammoth Pool Reservoir represent nesting and foraging habitat for bald eagle.

2.3 AVOIDANCE AND PROTECTION MEASURES

Avoidance and protection (A/P) measures that SCE will implement during the term of the license(s) are provided below.

2.3.1 PROJECT POWER LINES

To avoid and minimize the potential for bald eagles to be electrocuted on Project power lines and to minimize adverse effects to eagles nesting on power poles and towers, SCE will implement Procedures set forth in the Avian Protection (Specific Order) (Attachment A).

Electrocution

If during the term of the license(s) a bald eagle mortality occurs on a Project power line, the mortality shall be reported via telephone to the Northern Hydro Division's Environmental Manager or Safety and Environmental Specialist (SES) within 24 (twenty-four) hours of discovery of a carcass. Either the Environmental Manager or SES will promptly notify SCE's Environment, Health and Safety (EH&S) Division by telephone and will immediately follow up that notification with a written raptor mortality report. The report shall be completed using the Animal/Bird Mortality Reporting Form, provided as Attachment B, or a similar form providing relevant information.

SCE will provide USFWS and CDFG with an annual bald eagle mortality report that includes the date, raptor species, and location of each Project-related mortality. SCE will not provide reports for years in which no Project-related bald eagle mortalities have occurred.

Nest Protection

All vegetation maintenance and work activities involving active or inactive bald eagle nests on Project power lines will be coordinated with the Northern Hydro Division's Environmental Manager, SES, or other qualified personnel.

Active Nests

- SCE will not remove active bald eagle nests (i.e., eggs, young, and incubating adults present) from power poles without close coordination with and any required approval from CDFG and USFWS. All necessary state/federal permits will be obtained by SCE prior to any actions to the nest.

- If imminent danger (fire/electrocution) to the safety of bald eagles or nests exists, or if a threat to human life or property exists, nest material may be trimmed, conductors may be moved away from the nest, or other practices may be implemented to ensure the welfare of the birds, if present. Such activities will be coordinated with the Northern Hydro Division's Environmental Manager, SES, or other qualified personnel. CDFG and USFWS will be notified by telephone or in writing, within one week of any such actions.

Inactive Nests

- Inactive bald eagle nests or nests present in nonbreeding season (September–March) will not be removed unless the presence of the nest creates a threat (i.e., fire or safety) to operations and appropriate permits have been obtained. This removal may include placement of the inactive nest on an artificial nesting platform. Such activities will be coordinated with the Northern Hydro Division's Environmental Manager, SES, or other qualified personnel. USFWS will be contacted prior to nest relocation to obtain necessary permits.

2.4 SCE PROGRAMS

In addition to the above A/P measures, SCE has also established several programs to train personnel on the recognition of special-status resources, including bald eagle. The programs will continue to be implemented during the term of the license(s), and are briefly described below. The programs may be revised from time to time to ensure compliance with new or changed laws, regulations, policies, and operational or business practices. Each program is described briefly below.

2.4.1 ENDANGERED SPECIES ALERT PROGRAM

The Endangered Species Alert Program (ESAP) was developed to provide SCE personnel with a means for identifying when they may be working within an area with the potential for occurrence of legally protected plants and animal species in the SCE Service Territory. This training is conducted on an annual basis. For each of these species within the SCE Service Territory, the ESAP Manual (SCE 2006a) includes a photograph, description, natural history information, and map showing the species'

distribution in relation to SCE facilities. This manual and maps (or Geographic Information System (GIS) database) are reviewed prior to implementing any project that involves ground disturbing activities within the Project area. Should a proposed activity have the potential to conflict with a known sensitive species population, SCE's Northern Hydro Division Environmental Manager, SES, or other qualified personnel will be notified to evaluate the situation and, if needed, coordinate with and obtain appropriate permits from regulatory agencies.

2.4.2 Northern Hydro Special-Status Species Information Program

SCE's Northern Hydro Division has developed a Special-Status Species Information Program (NHSSIP) to provide SCE personnel with a means of identifying when they may be working within an area that could support a Forest Service Sensitive (FSS) species. This Program will require the use of the Environmental Compliance Program described below and will enhance the ESAP described above. This program includes a photograph or line drawing, description, natural history information, and map showing the species' distribution in relation to SCE facilities for all FSS species potentially occurring in the Project vicinity (SCE 2006b).

2.4.3 Avian Protection Program

SCE employees are informed about the SCE Avian Protection Program (APP) through posters, written literature, wallet-sized cards, formal training that discusses pertinent environmental regulations, general raptor identification, reporting procedures for the discovery of a dead raptor, protocols for how to deal with avian nests, and modifications that can be made to power line structures to lower the risk of avian electrocutions. A copy of the SCE's Avian Protection (Specific Order) and the Animal/Bird Mortality Reporting Form are provided as Attachments A and B. This training is conducted annually as part of the ESAP described above.

2.4.4 Environmental Training Program

SCE employees attend environmental training sessions on a regular basis, as well as on an as-needed basis. These training sessions include a review of background material, permit conditions, and instructions on how to avoid impacts to biological resources. Project-specific meetings may also be conducted in the field on a job-specific or activity-specific basis to review appropriate maintenance protocols (A/P measures) in environmentally sensitive areas.

2.4.5 Environmental Compliance Program

SCE will develop a compliance program that includes a process that must be followed prior to implementation of specific O/M activities. This is a program designed to track O/M activities implemented, update resource information, and guide personnel in implementation of O/M activities in compliance with A/P measures developed for the Project. The compliance program consists of three components, the Northern Hydroelectric Environmental Compliance Database, GIS Database, and the Compliance Process, as described below.

Northern Hydroelectric Environmental Compliance Database

The Northern Hydroelectric Environmental Compliance Database (Compliance Database) will be developed and integrated with SCE's existing databases. A component of the database will be designed for tracking the training records of SCE personnel and O/M activities that have been planned and completed. The database will also include all A/P measures associated with this Plan. This database will be queried prior to implementation of specified O/M activities.

Geographic Information System Database

Several studies have been conducted for the Project. The results of these studies, data obtained from the USDA-FS Special-status Species Database, the California Natural Diversity Database (CNDDB), and other biological studies were incorporated into a GIS database. This information includes the locations of special-status species and their habitats in the vicinity of the Project. Because of the sensitive nature of the locations of some special-status species, some GIS data layers are confidential. Therefore, access to these layers will be limited to SCE employees who are trained in the sensitivity and proper use of the information.

Updating GIS Database

The GIS database will be evaluated annually during the term of the license(s) to determine if updates are needed. Prior to updating the database, SCE will contact USDA-FS for the most recent version of its Special-status Species Database. SCE will also contact the USFWS for the current list of Threatened and Endangered Species and obtain any new versions of the CNDDB when they become available. Any new data on the location of resources in the vicinity of the Project that is obtained during implementation of O/M activities, or required species monitoring, will also be incorporated into the database on a regular basis. SCE will contact the agencies and obtain approval to use the newest available data sources if they become available.

Compliance

SCE will review all O/M work activity requests that are determined to be subject to environmental regulation. They will use the Database to determine which A/P measures are appropriate, given the timing and nature of the work to be conducted, and the proximity of special-status biological resources to the work location. SCE will require that contractors comply with all applicable A/P measures.

2.5 RESOURCE MONITORING AND REPORTING

The following section defines the resource monitoring and reporting that will be implemented for the four Big Creek Projects. Additionally, agency consultation is also described.

2.5.1 MONITORING

Two types of surveys will be conducted to monitor the status of bald eagles in the vicinity of the four Big Creek Projects—nesting surveys and wintering surveys. Each of these is described below.

Bald Eagle Nesting Surveys

Protocol-level Surveys

The objective of bald eagle nesting surveys is to monitor the breeding status of existing nests and to locate any new nests during the term of the license(s). Nesting surveys (i.e., searching for new nests and monitoring existing nests) will be completed in appropriate breeding habitat identified in the vicinity of the four Big Creek Projects every five years in accordance with Protocol for Evaluating Bald Eagle Habitat and Populations in California (Jackman and Jenkins 2004). The result of each survey will be reported on the CDFG Bald Eagle Nesting Territory Survey Form provided as an attachment to the CDFG Bald Eagle Breeding Survey Instructions (Attachment C). The first bald eagle nesting survey will be initiated one year following FERC approval of this Plan and every five years thereafter. A brief description of nesting surveys is provided below. Table 1 shows the timing of bald eagle nesting and wintering surveys.

- Determination of New Nests and Occupancy of Existing Nests. Conducted in late February through March (as early in the season as possible, but contingent upon weather conditions) to determine whether the survey area (suitable breeding habitat) is occupied by bald eagles and if so, to determine their breeding status. This shall include observations of old nests, as well as identification of any new nests in the area. Presence or apparent absence of adult bald eagles, courtship behavior, and nest construction will be recorded.

- Determination of Presence of Eggs/Nestlings. Conducted in mid-nesting season, late April through May, to determine the presence of eggs/nestlings in known nests. All nesting sites documented in the initial survey shall be evaluated to determine the presence of adults and number of eggs and/or nestlings.

- Determination of Nest Success. Conducted in late nesting season, early June through early July, to determine nest success. All nesting sites documented as having eggs or nestlings during the second survey shall be revisited a third time to determine the status and breeding success of the nest.

Annual Nest Monitoring Surveys

SCE will contact USDA-FS, CDFG, and USFWS annually to determine if new nests are identified in the Project area. SCE will coordinate with the agencies to verify that each nest is surveyed and that data is collected on the status of the nest (active/inactive) and the number of fledglings produced. If nests are not already scheduled to be surveyed by an agency or local biologists, SCE will conduct the survey. Surveys will consist of

one or two visits to the nest on foot or by boat. Following each survey, SCE will provide a report of findings to USDA-FS, CDFG, and USFWS.

Bald Eagle Wintering Surveys

Wintering surveys consist of two types of surveys, wintering bird surveys and winter roost surveys. Winter surveys will be conducted every five years during the period from November 15 through March 15. Survey methods are based on the Protocol for Evaluating Bald Eagle Habitat and Populations in California (Jackman and Jenkins 2004). The first wintering bald eagle survey will occur within one year of FERC approval of this Plan. Wintering surveys will be completed in appropriate wintering habitat in the vicinity of the four Big Creek Projects. A brief description of wintering bird and winter roost surveys is provided below.

Wintering Bird Surveys

- Single-day surveys will be conducted monthly in the Project area from December through February (three surveys, at least two weeks apart). Unless weather prohibits safe surveys, the January survey will be conducted during the USFWS two-week nationwide bald eagle winter survey to allow comparisons with statewide population trends. Surveys will be completed from a helicopter or boat, depending on weather conditions and accessibility. Data will be recorded on data sheets developed by Zack et al., 1997, as modified by Jackman, et al., 2001 (Attachment D).

Winter Night Roost Surveys

- Winter night roost surveys will be conducted once a month (December through February) in areas where wintering eagles are observed foraging during daylight hours. To find potential night roost areas, bald eagles will be visually observed as they move from foraging habitat to potential night roosts in the late afternoon. The number of eagles entering the potential night roost will be recorded.

- Probable night roost areas will be revisited the following morning for at least two hours beginning one-half hour before sunrise. Eagles observed returning to foraging habitat will be counted. Once a forest stand is identified as a potential night roost, a daytime survey will be conducted to look for evidence of use by bald eagles (feathers, castings) and to Global Positioning System (GPS) or pinpoint the exact location used for roosting.

2.5.2 REPORTING

Within six months of the completion of protocol-level nesting and wintering surveys, SCE will prepare a survey report that includes the following:

- Results of nesting and wintering surveys;

- Map of the location of active nests and winter roosts;

- Survey data sheets;
- Evaluation of operations and maintenance activities potentially affecting any newly identified nest or winter roost;
- Appropriate avoidance and protection measures to minimize any potential effects to bald eagle, if necessary; and
- Completed CNDDB forms.

Within three months of the completion of annual nest monitoring surveys, SCE will provide a letter report of findings to USFWS, USDA-FS, and CDFG.

2.6 AGENCY CONSULTATION

Following the submittal of the completed nesting and wintering survey report to FERC, USDA-FS, CDFG, and USFWS, SCE will review all agency comments and consult with agencies as necessary on the adequacy of any A/P measures to minimize adverse effects on bald eagles.

Additionally, if the bald eagle is delisted during the license(s) term, SCE will consult with agencies and revise this Plan as appropriate.

3.0 LITERATURE CITED AND PERSONAL COMMUNICATIONS

Avian Power Line Interaction Committee (APLIC). 1996. Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 1996. Edison Electric Institute and the Raptor Research Foundation. Washington, D.C.

Jackman, R.E., and J.M. Jenkins. 2004. Protocol for Evaluating Bald Eagle Habitat and Populations in California.

Jackman, R.E., W.G. Hunt, and N. Hutchins. 2001. Foraging Ecology of Bald Eagles on Shasta Lake. Report by U.C. Santa Cruz, Predatory Bird Research Group for USDA Forest Service, Shasta Lake Ranger District.

Southern California Edison Company (SCE). 2001. Final Technical Study Plan Package for the Big Creek Hydroelectric System Alternative Licensing Process prepared by Southern California Edison. August 3, 2001. *In* SCE's Amended Preliminary Draft Environmental Assessment (APDEA) for the Big Creek Alternative Licensing Process (ALP). Mammoth Pool Project (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). February 2007 (Supporting Document (SD)-B, Volume 4, Books 6 and 21).

SCE. 2003. 2002 Technical Study Report Package for the Big Creek Hydroelectric System Alternative Licensing Process prepared by Southern California Edison. October 10, 2003. *In* SCE's APDEA for the Big Creek ALP. Mammoth Pool Project (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). February 2007 (SD-C, Volume 4, Books 7-10, 21 and 22).

SCE. 2004. 2003 Technical Study Reports (First Distribution) for the Big Creek Hydroelectric System Alternative Licensing Process prepared by Southern California Edison. August 20, 2004. *In* SCE's APDEA for the Big Creek ALP. Mammoth Pool Project (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). February 2007 (SD-D, Volume 4, Books 11-17 and 23).

SCE. 2006a. Endangered Species Alert Program Manual; Species Accounts and Procedures. Environmental Affairs Division. *In* SCE's SCE Response to FERC's Additional Information Request (AIR) No. 6 (Schedule B). August 2006.

SCE. 2006b. Northern Hydro Special-Status Species Information Program. Environmental Affairs Division. *In* SCE's SCE Response to FERC's AIR No. 6 (Schedule B). August 2006.

Zack, S.H., N.N. Cooke, K. Mehl, and J. Wood. 1997. Bald Eagles at Shasta Lake: Ecological and Behavioral Issues Relating to Lake Management and Eagle Productivity. 1997 Summary Report of Field Activities.

Zeiner, D.C, W.F. Loudenslayer Jr, K.E. Mayer, and M. White. 1990. A Guide to California's Wildlife, Volume II, Birds.

Personal Communication

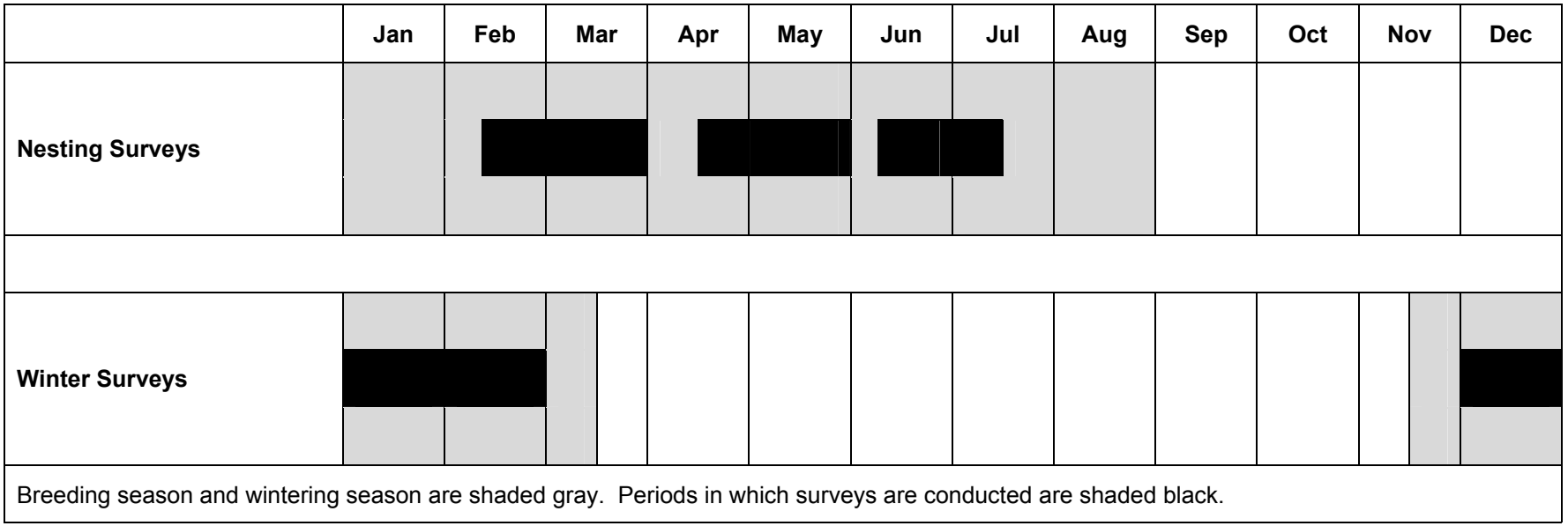
Byrd, Stephen. Wildlife Biologist. Southern California Edison, Shaver Lake, California. October 14, 2005—e-mail to Sara Gillespie of RBI regarding status of Shaver Lake bald eagle nest.

Smith, Michael. Biologist. November 2, 2005—e-mail to Janelle Nolan-Summers of RBI regarding status of Huntington Lake bald eagle nest.

Sorini-Wilson, Kim. Wildlife Biologist. High Sierra Ranger District, Sierra National Forest, Prather, California. October 14, 2005—e-mail to Janelle Nolan-Summers of RBI regarding status of Huntington Lake bald eagle nest.

TABLE

Table 1. Timing of Bald Eagle Nesting and Wintering Surveys.



Source: Jackman and Jenkins 2004

FIGURES

Placeholder for

Figure 1. Big Creek Projects Bald Eagle Overall View

Figures 1A and 1B. Locations of Bald Eagle Nests in the Vicinity of the Four Big Creek Projects

Non-Internet Public Information

These Figures have been removed in accordance with the Commission regulations at 18 CFR Section 388.112.

These Figures are considered Non-Internet Public information and should not be posted on the Internet. This information is provided in Book 25 of the Application for New License and is identified as "Non-Internet Public" information. This information may be accessed from the FERC's Public Reference Room, but is not expected to be posted on the Commission's electronic library, except as an indexed item.

ATTACHMENT A

AVIAN PROTECTION (SPECIFIC ORDER)

Avian Protection

(Specific Order)

I. PURPOSE

The purpose of this Department Order is to:

- Provide a standard procedure for reporting and monitoring avian mortality or other activities (i.e., nesting) in the vicinity of Power Production Department (PPD) structures;
- Facilitate efficient communication among the PPD Divisions (Eastern and Northern Hydro, Mohave and Mountainview Generating Stations), other entities within SCE [i.e., the Corporate Environment, Health, and Safety Division (EH&S)], and appropriate regulatory agencies;
- Ensure PPD structures are maintained in a manner that reduces adverse effects on bird species in accordance with federal and state regulations, while protecting public health and safety.

II. RAPTOR MORTALITY REPORTING

Raptor electrocutions and power line collisions shall be reported via telephone to the Division's Environmental Manager or Safety and Environmental Specialist (SES) within 24 (twenty-four) hours of discovery of a carcass. Either the Environmental Manager or SES will in turn promptly notify EH&S by telephone and will immediately follow up that notification with a written raptor mortality report. (See Attachment A)

III. RETROFITTING OF EXISTING STRUCTURES

Any PPD structure involved in the electrocution of any raptor, or other endangered/threatened bird species, will be evaluated to determine the feasibility of retrofitting or modifying that structure so that the probability of future bird electrocutions is minimized. Such evaluation of that structure will be performed within 30 (thirty) business days or sooner (for eagles or listed species), and the results of that evaluation will be reported to either the Division's Environmental Manager or SES, and EH&S. If structures of a similar design and in similar habitat are located in the same vicinity of any electrocution, the responsible Manager will determine if these other structures should also be retrofitted to make them more raptor safe. All other electrical structures in any area where clusters of electrocutions have occurred will be examined for possible retrofitting. Each Division, in consultation with EH&S, will identify these clusters and determine which structures may need to be retrofitted and the appropriate retrofit required.

As opportunities arise during routine operation and maintenance activities, field personnel will assess exposed wires and surfaces for possible retrofitting if they are capable of electrocuting raptors and other birds/wildlife. The Division's Environmental Manager or SES must be advised of any retrofitting activity. Retrofits may include, but are not limited to, installing approved bushing covers on transformers, insulator hoods, protective covering on jumper wires or taps, and making other modifications.

IV. NEW CONSTRUCTION

All new or rebuilt structures within Raptor Concentration Areas (RCAs) will be of a raptor-safe construction. An RCA is an area designated by EH&S as likely to have a high concentration of raptors. All new or rebuilt structures on land administered by the federal government (USFS, BLM, etc.) shall be designed to be raptor safe whenever possible. Each new structure installed that has potential to electrocute birds and other wildlife will be evaluated by both the Division and EH&S to determine if the structure can be made raptor-safe. The Division's Environmental Manager or SES will be contacted regarding the replacement of structures.

V. NEST PROTECTION

Protected nests include:

- Active nests (nest contains eggs, young birds or adult birds sitting on the nest) of raptors and other bird species protected by the Migratory Bird Treaty Act;
- Active and inactive nests of all eagles and other threatened or endangered bird species.

All vegetation maintenance and work activities involving protected nests on PPD structures will be coordinated with the Division's Environmental Manager or SES. The Division's Environmental Manager or SES will assess the work activity and, if deemed necessary, coordinate with EH&S and appropriate governmental agencies in accordance with SCE's Federal Fish and Wildlife Permit (See Attachment B).

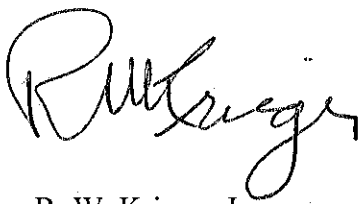
In the event of an emergency (threat to public health or safety, or to the safety of the birds and nests), nesting material and/or nearby trees may be trimmed, conductors or other structures may be moved away from the nest, or other appropriate measures taken as listed in SCE's Federal Fish and Wildlife Permit, to ensure safety of birds and provide safe electrical operations. The Division's Environmental manager or SES shall be contacted before conducting these emergency activities, whenever possible. Contact with the agencies is required before the relocation of any protected bird nest.

All personnel with potential to discover birds injured or killed by SCE facilities or with potential to work near active or inactive nests in the course of their work should carry the current Federal Fish and Wildlife Permit in their possession. A copy of the valid permit is necessary to carry out procedures outlined in this avian protection department order.

VI. TRAINING

All PPD personnel whose jobs may have some involvement with environmental resources such as wildlife habitat or water quality will receive regular training on special-status species, including avian protection issues, at a frequency to be determined by each Division. All contractors will receive training on environmental resource issues depending on the work to be performed, and will have contractual obligations to abide by applicable laws, regulations and SCE permits.

Appropriate personnel will receive guidance on correct measures to take should an encounter with protected nests impact project activities.



R. W. Krieger Jr.
Vice President

Attachment A: Raptor Mortality Report Form
Attachment B: Federal Fish and Wildlife Permit effective 6/1/2006 through 3/31/2009

Prepared by: Michael Murphy, Technical Specialist, Northern Hydro Division, in consultation with Anne M. Gollay, Project Manager, Business Planning & Development and Jill Fariss, Technical Specialist, Corporate Environment, Health and Safety.

ATTACHMENT B

ANIMAL/BIRD MORTALITY REPORTING FORM

Animal/Bird Mortality Report

To: Jill Fariss Date: _____
Biological & Archaeological Resources Group
Corporate EH&S Division, RP&A Department
Quad 3A, G.O.1

From: Name _____
Work Location _____ PAX _____

Describe the species of the Animal or Bird that was mortally injured by SCE facilities (electrocuted/hit by a SCE vehicle, etc.).

_____
_____

Describe how the Animal or Bird was mortally injured by SCE facilities (bird contacted transformer bushings, etc.).

_____
_____
_____
_____

Weather Conditions (e.g. rainy and cold, sunny and warm, etc.)

_____
_____
_____

Circuit Name & Voltage _____

Specific Problem Location (e.g. Pole #/Address/Cross Streets, etc.)

_____
_____
_____

Description of Terrain and Vegetation in Area (e.g. near agriculture area, dense city area, residential housing, etc.)

_____

_____

_____

Please attach picture of the Bird or Animal, if possible.

ATTACHMENT C

CDFG BALD EAGLE BREEDING SURVEY INSTRUCTIONS

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF FISH AND GAME

BALD EAGLE BREEDING SURVEY INSTRUCTIONS

The breeding season of bald eagles in California extends primarily from February through July. Each year, cooperating agencies, organizations, and private individuals participate in a statewide monitoring program to document nesting activities at each nesting territory. In 1997, 160 recently active breeding territories were surveyed, and the number increases yearly.

Annual breeding season surveys are an important part of the population recovery effort. Survey information is used by resource agencies to aid breeding territory management or protection activities. Additionally, population status and trends must be monitored annually to provide the data needed for assessing population recovery.

Specific assignments and scheduling of observer time are usually handled at the agency district or regional office level. In general, agencies are responsible for surveys of territories on or near their own lands, with Department of Fish and Game also surveying on private lands. Field personnel should coordinate their surveys with other agencies or with volunteers to avoid duplication of effort or to arrange for survey help.

The bald eagle breeding population is increasing annually. So, it is important that suspected new nesting territories be adequately checked, especially early in the breeding season.

Territories should be checked at least three times during the nesting season, although more frequent checking is preferred. Emphasis should be placed on checking during incubation and early nestling periods.

1. **Early March** (early incubation) - Territories in northern California should be checked in the first half of March, if possible, or as soon thereafter as road or weather conditions allow. The purpose of the first check is to determine whether the territory is occupied (record presence of adults, courtship behavior, evidence of nest repair or construction, incubation).

2. **Late April or early May** (early nestling period) - This check is needed to confirm that a territory is unoccupied, or if occupied in March, to determine whether the breeding pair is still tending the nest (incubating eggs or tending young nestlings.

3. **Mid June** (late nestling period) - The main purpose of this check is to determine how many nestlings are approaching fledging age.

Survey dates may be modified from these recommended time periods if the territories can be checked more frequently or if particular breeding pairs are known to begin nesting especially early or late in the season.

We recommend that observers report the stage of development of nestlings in accordance with An Illustrated Guide for Identifying Developmental Stages of Bald Eagle Nestlings in the Field, by G. P. Carpenter (April 1990). This booklet is available from the San Francisco Zoological Society, Sloat Blvd. at the Pacific Ocean, San Francisco, CA 94132 (415-753-7080).

SUBMITTAL OF SURVEY FORMS

Please report observations on the **CALIFORNIA BALD EAGLE NESTING TERRITORY SURVEY FORM (REVISED** 3/98).

Please mail all completed forms by September 1 of the survey year to:

Mr. Ronald Jurek
California Department of Fish and Game
Habitat Conservation Planning Branch
1416 Ninth Street
Sacramento, CA 958 14

Forms will be maintained in Department files and annual survey results will be compiled on the basis of these reports. If you have questions or need additional forms, please contact Mr. Jurek at the above address or at Rjurek@dfg.ca.gov, PHONE 916-654-4267, CALNET 464-4267, FAX 916-653-2588.

11/99

California Department of Fish and Game
CALIFORNIA BALD EAGLE

NESTING TERRITORY SURVEY FORM Revised 11/99

County: _____

Survey Year: _____

Property Owner: _____(If USFS: _____ National Forest)

Name (or general location) of territory: _____

Name of nearest water body: _____

Location of nest: T_____ R_____ Sec ____, 1/4_____ 1/16 _____ UTMn_____

No. of nests in territory - Intact:_____, Remnant: _____ UTMe_____

Nest Tree: Species_____ Year last used_____ Nest: Year last used_____

NOTE: Please attach a map showing the location of any newly documented nest tree.

Describe tree and nest condition and size, and any other remarks:

For each visit to the territory, note, in detail, the times, number and age of birds, behavior of birds (lying, perching, etc.), evidence of nesting (nest maintenance, courtship, incubation posture), disturbances, and other pertinent information:

Initials of Observer	Date of Visit	Observations

(Attach additional pages, if necessary)

(Attach additional pages, if necessary)

General Remarks: _____

_____

_____

PLEASE SUMMARIZE OBSERVATIONS:

A. Successful nestings: No. of young known fledged _____ or probably fledged _____

B. If no fledglings were produced this season, please answer the following, if known:

How many adults were seen in the territory? ___ Were adults seen in the nest? Yes No

Number of nestlings observed: _____ Evidence of nest repair or construction? Yes No

Was an adult in incubation posture? Yes No

When did nesting fail?: During incubation ____ or nestling stage _____

Other remarks: _____

_____

Observers names: _____

_____

Affiliation: _____

Address: _____

Phone: ( ) _____ FAX or email: _____

Mail completed forms by **SEPTEMBER 1** of the survey year to:

California Department of Fish and Game
Habitat Conservation Planning Branch
1416 Ninth Street
Sacramento, CA 95814
Attn: Ron Jurek 916-654-4267 FAX 916-653-2588 RJurek@dfg.ca.gov

Territory_____ Year_____ ADDITIONAL OBSERVATIONS

Initials of Observer	Date of Visit	Observations (continued)

ATTACHMENT D

BALD EAGLE OBSERVATION DATA SHEET

BALD EAGLE OBSERVATION DATA SHEET

Pg ___ of ____ **Data Entered:_____** **Reservoir surface elevation_____**
Date:_____Time Start:_____End:_____ Territory:_____Nest Stage:_____
Observer Location:_____ Observers:_____ Temperature (x10°):_____
Weather: (Clear / Partly Cloudy / Overcast / Rain/ Snow) **Wind:** (Calm / Slight Breeze / Breezy / Windy)

Eagle/Osprey	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Time start								
Species/Age/Sex								
Number								
General Location								
UTM northing								
UTM easting								
Activity								
Perch type								
Dist from H2O(m)								
Habitat								
Time End								

Forage	**1F**	**2F**	**3F**	**4F**	**5F**	**6F**	**7F**	**8F**
General Location								
UTM northing								
UTM easting								
Time								
# Attempts								
Attack mode								
Dist. from perch								
Dist. from shore								
Success?								
Prey species								
Prey remains?								
Prey size (mm)								
Prey status								
Aquatic Habitat								

Public user #	**1P**	**2P**	**3P**	**4P**	**5P**	**6P**	**7P**	**8P**
Time								
Type								
Number								
Location								
Shore dist. (m)								
Eagle response								
Dist. to eagle (m)								

Comments on back; plot map points by observation, forage, or public user # (e.g., 1, 1F, 1P).

APPENDIX Q

VALLEY ELDERBERRY LONGHORN BEETLE MANAGEMENT PLAN

VALLEY ELDERBERRY LONGHORN BEETLE MANAGEMENT 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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- C1 Garlon 4®
- C2 Pathfinder II®
- C3 Accord®
- C4 Velpar®
- C5 Hasten®
- C6 R-11®
- C7 In-Place®

Attachment D USFWS Conservation Guidelines for the Valley Elderberry Longhorn Beetle

1.0 INTRODUCTION

This Valley Elderberry Longhorn Beetle (VELB) Management Plan (Plan) has been developed for four Southern California Edison (SCE) hydroelectric projects included in the Big Creek Hydroelectric System, which is located in the Upper San Joaquin River Watershed. The Big Creek Hydroelectric System is comprised of four FERC licenses: Mammoth Pool (FERC No. 2085), Big Creek Nos. 1 and 2 (FERC No. 2175), Big Creek Nos. 2A, 8, and Eastwood (FERC No. 67), and Big Creek No. 3 (FERC No. 120). These Projects consist of seven powerhouses and four major reservoirs, and have a combined dependable operating capacity of about 890 megawatts (MW).

1.1 PREPARATION OF THE VELB MANAGEMENT PLAN

SCE has prepared this Plan in consultation with the U.S. Fish and Wildlife Service (USFWS), United States Department of Agriculture-Forest Service (USDA-FS), California Department of Fish and Game (CDFG) and other stakeholders involved in the Big Creek Alternative Licensing Process (ALP). The Plan was developed to address VELB management during on-going operations and maintenance of all Project facilities, roads, trails and recreation features of the four Big Creek Projects. This Plan, including the specified avoidance, protection, and mitigation measures, will supersede all previous documents developed by SCE for the four Big Creek Projects. The Plan will become effective upon the Federal Energy Regulatory Commission (FERC or Commission) approval.

The Draft VELB Management Plan was submitted to agencies and stakeholders on August 29, 2005. Comments on the plan were received from USDA-FS and USFWS.

1.1.1 LOCATION OF VELB AND THEIR HABITAT

The presence of VELB and their habitat (defined as elderberry shrubs below 3,000 feet in elevation) within the Project area was determined based on extensive field surveys conducted in the vicinity of the four Big Creek Projects (SCE 2002a; SCE 2003; SCE 2004, and SCE 2005). A total of 572 elderberry shrubs have been identified in the vicinity of the four Projects, 42 shrubs in the Mammoth Pool Project vicinity, 515 in the Big Creek No. 3 Project vicinity, and 15 in the Big Creek Nos. 2A, 8, & Eastwood Project vicinity. Of these, only 10 shrubs show evidence of potential VELB occupancy, as determined by the presence of exit holes (SCE 2002a; SCE 2005). This includes two in the Mammoth Pool Project vicinity and eight in the Big Creek No. 3 Project vicinity. Table 1 contains a summary of the number of shrubs by project facility or road.

Following completion of the surveys, SCE and/or USDA-FS identified additional roads to be included as Project roads and/or added to the FERC Project boundaries under the new license. Table 2 provides a list of each of these additional roads occurring at or below 3,000 feet in elevation. SCE will survey these roads to determine the location of potential VELB habitat (i.e., elderberry shrubs) within one year of FERC approval of this Plan.

2.0 MANAGEMENT ACTIVITIES

The implementation of management activities, including vegetation control and road maintenance, may result in adverse effects to VELB by trimming or pruning habitat. A summary of vegetation management and road maintenance activities conducted in the vicinity of the Projects is provided below. Refer to Attachment A for a description of vegetation management and road maintenance that occur in the vicinity of the four Big Creek Projects where potential VELB habitat is present.

2.1 VEGETATION MANAGEMENT

Vegetation management occurs at various locations in the vicinity of the four Big Creek Projects (e.g., Project facilities, roads). SCE conducts vegetation management in the spring and summer in these areas in association with on-going operations and maintenance. Vegetation management includes trimming of vegetation by hand or equipment and the use of herbicides. Refer to Attachment A for a list of vegetation management activities that occur in areas that support potential VELB habitat. Attachment B provides a list of vegetation management activities that will be implemented on Project roads that have not yet been surveyed for potential VELB habitat. These matrices also provide the frequency at which the maintenance activity typically occurs at a specific location. A description of vegetation management activities is provided below. In general, vegetation management activities occur during the spring and early summer to avoid work during high fire danger periods. Vegetation management implemented on a regular basis typically occurs one or more times in a five-year period. Activities implemented on an infrequent basis tend to occur at least once during a 20-year period, but less than once every five years.

The area where vegetation management occurs around Project facilities and along roads is limited to the area necessary to reduce fire hazard and to provide for worker/public health and safety. Vegetation management generally occurs within 150 feet of Project facilities (dams, small and moderate diversions, gaging stations, powerhouses, transmission lines) and within 10 feet on either side of roads.

SCE implements a combination of manual, mechanical, and chemical methods to control vegetation in the vicinity of the Big Creek Projects. Selection of an appropriate control method is based on an evaluation of worker/public health and safety, potential environmental effects, effectiveness of methods based on site characteristics, and economics. Each control method is summarized below.

2.1.1 VEGETATION TRIMMING BY HAND

One of the methods used to trim vegetation in the vicinity of the Big Creek Projects is with hand tools. This includes trimming of grasses and forbs with a string trimmer, as well as removing or trimming of overhanging shrubs and trees with a chain saw or other handheld saw. This maintenance activity is implemented on an as-needed basis in conjunction with facility inspections.

2.1.2 VEGETATION TRIMMING WITH EQUIPMENT

Vegetation in the vicinity of the Projects is also trimmed using mechanical equipment, including a flail-type mower. A flail mower is a cutting device attached to a tractor that is used to cut brush along roadsides. As with trimming of vegetation by hand, this activity is implemented on an as-needed basis.

2.1.3 HERBICIDE APPLICATION

After vegetation has been trimmed by hand or mechanical methods, herbicides may also be applied. Two methods of herbicide application are utilized; these include basal and foliar application techniques. Basal application is used for shrub species and includes cutting of a shrub and applying an oil-based herbicide directly to the stump. Foliar application techniques include hand spraying of an herbicide, with an additive or other agent, to control overspray. The herbicides and other agents used in the vicinity of the four Big Creek Projects are listed in Table 3. The label or Material Safety Datasheet (MSDS) for each herbicide or other agent is provided as Attachment C. If more effective herbicides become available in the future, SCE will consult with USDA-FS and USFWS to obtain permission to substitute the use of herbicides listed in Table 3. The application of all herbicides is completed or supervised by a certified pesticide applicator in compliance with the specified herbicide application prescription.

Herbicides and other chemical agents used in the vicinity of the four Projects are as follows:

- Garlon 4® and Hasten® (a vegetable oil-based additive) are combined and applied using a basal bark application technique.
- Garlon 4® and Accord® are combined and applied using a foliar application technique.
- Accord® is used by itself or combined with either R-11® or In-Place® and applied using basal bark and foliar techniques.
- Pathfinder® is used as a spot treatment of individual plants.
- Velpar® is used as a pre-emergent and is applied directly to moist soil to treat grasses and broad-leaved plants.

2.2 ROAD MAINTENANCE

Road maintenance, including road grading, graveling and paving, occurs along Project roads at all four Big Creek Projects. Road maintenance activities typically occur during the spring and summer on a regular or infrequent basis. As with vegetation management, road maintenance is conducted on a regular basis and typically occurs one or more times in a five year period, while maintenance implemented on an infrequent basis will occur during a 20 year period, but less than once every five years. These road maintenance activities are conducted primarily for improved visibility and

therefore, increase safety on narrow mountain roads, and decrease the chance of brush fires being accidentally ignited.

3.0 AVOIDANCE AND PROTECTION MEASURES

The following measures will be implemented to avoid and protect VELB and their habitat. Measures apply only to areas where elderberry shrubs are present below 3,000 feet in elevation.

3.1 MEASURES

3.1.1 PROTECTED AREAS

- Each elderberry shrub, or group of shrubs, potentially affected by Project operation or maintenance activities, with one or more stems measuring 1 inch in diameter or greater (≥1) at ground level, will be flagged prior to implementation of management activities.

- Signage will be installed in areas where elderberry shrubs are known to occur.

3.1.2 VEGETATION CONTROL

- No elderberry shrub with one or more stems ≥1 inch in diameter at ground level will be removed.

- No elderberry shrub stems or branches ≥1 inch in diameter will be trimmed.

- Annual and biannual vegetation control will only be conducted July through April in areas within 100 feet of elderberry shrubs.

- No flail-type mower will be used within an elderberry shrub dripline with one or more stems measuring ≥1 inch in diameter at ground level.

- Basal bark or foliar techniques will be utilized when herbicide application must occur within 100 feet of the dripline of an elderberry shrub with one or more stems measuring ≥1 in diameter or greater at ground level. Basal application techniques include cutting of a non-elderberry shrub and applying an oil-based herbicide directly to the stump. Foliar application techniques include hand spraying of an herbicide, with a deposition/retention additive, to control overspray. The application of herbicides will be completed or supervised by a certified pesticide applicator in compliance with the herbicide application prescription. Herbicide application will occur from July through April on an as-needed basis.

3.1.3 ROAD GRADING

- Non-emergency road grading will be conducted July through April and the use of a grader will be restricted to the road surface and adjacent berms to remove any eroded material and to maintain roadside berms.

3.2 SCE PROGRAMS

In addition to the above avoidance and protection measures, SCE also has established several programs to train personnel on the recognition and avoidance of special-status resources, including VELB and their habitat, in the vicinity of the four Big Creek Projects. These programs will continue to be implemented during the term of the license. Each program is described below.

3.2.1 ENDANGERED SPECIES ALERT PROGRAM

The Endangered Species Alert Program (ESAP) was developed to provide SCE personnel with a means for identifying when they may be working within an area with the potential for occurrence of legally protected plants and animal species in the SCE Service Territory. This training is conducted on an annual basis. For each of these species within the SCE Service Territory, the ESAP Manual (SCE 2006a) includes a photograph, description, natural history information, and map showing the species' distribution in relation to SCE facilities. This manual and maps (or Geographic Information System (GIS) database) are reviewed prior to implementing any project that involves ground disturbing activities within the Project area. Should a proposed activity have the potential to conflict with a known sensitive species population, SCE's Northern Hydro Division Environmental Manager, SES, or other qualified personnel will be notified to evaluate the situation and, if needed, coordinate with and obtain appropriate permits from regulatory agencies.

3.2.2 NORTHERN HYDRO SPECIAL-STATUS SPECIES INFORMATION PROGRAM

SCE's Northern Hydro Division has developed a Special-status Species Information Program (NHSSIP) to provide SCE personnel with a means of identifying when they may be working within an area that could support a Forest Service Sensitive (FSS) species. This Program will require the use of the Environmental Compliance Program described below and will enhance the ESAP described above. This program includes a photograph or line drawing, description, natural history information, and map showing the species' distribution in relation to SCE facilities for all FSS species potentially occurring in the Project vicinity (SCE 2006b).

3.2.3 ENVIRONMENTAL TRAINING PROGRAM

SCE employees attend environmental training sessions on a regular basis, as well as on an as-needed basis. These training sessions include a review of background material, permit conditions, and instructions on how to avoid impacts to biological resources. Project-specific meetings may also be conducted in the field on a job-

specific or activity-specific basis to review appropriate maintenance protocols (A/P measures) in environmentally sensitive areas.

3.2.4 COMPLIANCE PROGRAM

SCE will develop a compliance program that includes a process that must be followed prior to implementation of specific O/M activities. This is a program designed to track O/M activities implemented, update resource information, and guide personnel in implementation of O/M activities in compliance with A/P measures developed for the Big Creek Hydroelectric System. The compliance program consists of three components, the Northern Hydroelectric Environmental Compliance Database, GIS Database, and the Compliance Process, as described below.

Northern Hydroelectric Environmental Compliance Database

The Northern Hydroelectric Environmental Compliance Database (Compliance Database) will be developed and integrated with SCE's existing databases. A component of the database will be designed for tracking the training records of SCE personnel, O/M activities that have been planned and completed, and noxious weed populations that have been identified and treated. The database will also include all A/P measures associated with this Plan. This database will be queried prior to implementation of specified O/M activities.

Geographic Information System Database

Several studies have been conducted for the Big Creek Hydroelectric System. The results of these studies, data obtained from the USDA-FS Special-status Species Database, the CNDDB, and other biological studies were incorporated into a GIS database. This information includes the locations of special-status species and their habitats, noxious weed population, and cultural resources in the vicinity of the Project. Because of the sensitive nature of the locations of some special-status species and cultural resources, some GIS data layers are confidential. Therefore, access to these layers will be limited to SCE employees who are trained in the sensitivity and proper use of the information.

Updating GIS Database

The GIS database will be evaluated annually during the term of the license to determine if updates are needed. Prior to updating the database, SCE will contact USDA-FS for the most recent version of its Special-status Species Database. SCE will also contact the USFWS for the current list of Threatened and Endangered Species and obtain any new versions of the CNDDB when they become available. Any new data on the location of resources (i.e., special-status species, cultural resources, and noxious weed populations) in the vicinity of the Project that are obtained during implementation of O/M activities or required monitoring will also be incorporated into the database on a regular basis. SCE will contact the agencies and obtain approval to use the newest available data sources if they become available.

Compliance Process

SCE will review all O/M work activity requests that are determined to be subject to environmental regulation. They will use the Database to determine which A/P measures are appropriate, given the timing and nature of the work to be conducted, and the proximity of special-status biological resources and/or cultural resources to the work location. SCE will require that contractors comply with all applicable A/P measures.

4.0 IMPACTS ANALYSIS

The following describes the approach for the assessment of potential impacts from O/M activities implemented over the term of the FERC license to elderberry shrubs. It is assumed in the impact analysis that the avoidance and protection measures, as described in Section 3.0, would be implemented at Project facilities and roads, and that non-compliance with measures in Section 3.0 would result in impacts to VELB. Operations and maintenance activities are conducted primarily to improve visibility and therefore increase safety on narrow mountain roads, and decrease the chance of brush fires being accidentally ignited. It is probable that these maintenance activities, which necessitate the reduction of a small fraction of existing habitat along roads, reduce the potential for widespread catastrophic adverse effects of brush fires on VELB habitat. This is an important part of the impact analysis. Assuming, therefore, that these activities protect the larger existing habitat, a further step in the impact analysis was to determine the most appropriate method of performing these activities with minimal adverse effects, and to mitigate for any unavoidable adverse effects.

Potential Project impacts on VELB were determined based on the protocols established by SCE as part of the Lower Tule Hydroelectric Project (SCE 2002b) and approved by USFWS in the Biological Opinion for the Lower Tule Hydroelectric Project (USFWS 2002) and Big Creek No. 4 VELB Management Plan and Draft Supplemental Report (SCE 2005b). Based on the location of plants in relation to Project facilities and roads and SCE's maintenance practices, it was determined that additional field surveys were needed to collect data on stems and branches to more adequately identify potential Project impacts. The following describes the methods of the impact analysis for the necessary O/M activities.

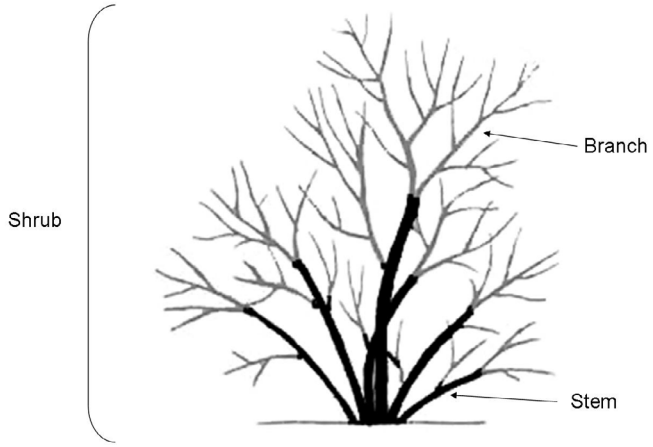
4.1 METHODS

SCE evaluated a total of 572 elderberry shrubs in the vicinity of Project facilities and roads to determine potential Project impacts from vegetation management and road maintenance. Analysis methods were based on an evaluation of the type of vegetation management and road maintenance activities that occur at each facility or road, the distance of the shrub from the facility, the presence of stems greater than or equal to 1 inch ($\geq$1), and the ability to implement the activity in compliance with avoidance and protection measure defined in Section 3.0. Maintenance activities completed at each facility or road with elderberry plants in the vicinity are described in Section 2.0.

Surveys were completed by Janelle Nolan-Summers of Robertson-Bryan, Inc. (RBI), Joe Tanski of SCE, and Ed Bianchi of ENTRIX on June 28 and 29, 2005.

Table 2 of this Plan contains a list of additional Project roads occurring at or below 3,000 feet in elevation that have not yet been surveyed. SCE will survey these roads to determine the location of potential VELB habitat (i.e., elderberry shrubs) within one year of FERC approval of this Plan. Additionally, SCE will evaluate any elderberry shrubs identified during these surveys to determine potential Project impacts from vegetation management and road maintenance using the methods detailed below.

For those elderberry shrubs that were determined to be potentially trimmed, the number of stems and branches—by size class (<1, ≥ 1 & ≤ 3, >3 & < 5, ≥ 5)—that would be trimmed during maintenance activities was determined. For the purposes of this report, stems are defined as the main stalk or stalks of the plant and branches are defined as woody extensions from the main stems or stalks. The diagram below shows stems and branches.



Shrub – a woody plant with several stems and branches
Stem – the main stalk(s) of a plant
Branch – a woody extension from the stem or main stalk

4.2 RESULTS

It was determined that no shrubs would be removed over the term of the license for the four Big Creek Projects. Trimming would occur on 18 of the total 572 shrubs in the vicinity of the four Big Creek Projects. This includes trimming of shrubs in the vicinity of two Big Creek Projects, 13 in Big Creek No. 3, and 5 in Big Creek Nos. 2A, 8, and Eastwood. Table 4 lists the elderberry shrub number, distance of the shrub from the facility, stem diameter by size class, and number of stems and branches potentially trimmed by size class. None of the shrubs trimmed showed evidence of VELB occupancy. A total of 7 stems ≥ 1 & ≤ 3, 27 branches <1, and 1 branch ≥ 1 & ≤ 3 would be trimmed during the term of the license. Refer to Table 5 for a summary of survey results and to Figure 1 for the location of shrubs that would be trimmed by maintenance activities during the term of the license.

5.0 MITIGATION AND MITIGATION/RESOURCE MONITORING

This section outlines mitigation, mitigation/resource monitoring, and reporting procedures to be implemented during the term of the license.

5.1 MITIGATION

The USFWS has developed and approved the Conservation Guidelines for the Valley Elderberry Longhorn Beetle (July 9, 1999; Guidelines; Attachment D) to assist federal agencies and non-federal project applicants in obtaining incidental take authorizations through Endangered Species Act (ESA) consultation or permit processes. The Guidelines provide measures to avoid, minimize, and mitigate adverse effects on VELB. Although USFWS recommends that these Guidelines be used for all projects, they were primarily developed for construction-type projects that would result in ground disturbance and removal of shrubs. Because suitable habitat for VELB is defined as any live branch that is one inch (2.5 cm) or greater in diameter that occurs within 6 feet from the ground, (USFWS 1999) no mitigation is proposed for trimming of branches <1 inch in diameter. Maintenance of Project facilities and roads will result in trimming of stems and branches >1 inch in diameter from a small number of shrubs and mechanical vegetation control and herbicide application up to the dripline of an unspecified number of elderberry shrubs, but not in ground disturbance or removal of shrubs. This mitigation proposal is based on the USFWS (1999) guidance, with modifications developed cooperatively by SCE and the USFWS to address the specific requirements of the Project.

Table 2 of this Plan contains a list of additional Project roads occurring at or below 3,000 feet in elevation that have not yet been surveyed. SCE will survey these roads to determine the location of potential VELB habitat (i.e., elderberry shrubs) within one year of FERC approval of this Plan. If it is determined that potential VELB habitat is present along these additional roads that may potentially be affected by Project maintenance activities, SCE will follow the mitigation approach included in this Plan. SCE will seek approval from USFWS on mitigation for any potential impacts to VELB or their habitat from maintenance of Project roads identified in Table 2.

5.1.1 PROPOSED MITIGATION

A total of 572 elderberry shrubs are present in the vicinity of the four Big Creek Projects. Maintenance activities will result in trimming of stems or branches ≥ 1 inch in diameter on six of these shrubs. That is, only approximately 1% of the total number of shrubs will be impacted. Additionally, the 572 shrubs in the Project area support a total of 1,511 stems ≥1 inch in diameter. Maintenance activities will result in the trimming of seven stems and one branch ≥ 1 inch in diameter. That is, less than 1% (0.53%) of the total number of the stems present in the vicinity of the four Projects will be trimmed. None of the shrubs to be trimmed are in riparian habitat. To compensate for trimming seven elderberry stems and one branch ≥ 1 & ≤ 3 inches in diameter, SCE proposes to plant a total of eight seedlings. Refer to Table 6 for a summary of the proposed mitigation. Planting eight local native seedlings would provide additional habitat for VELB and more

than adequately mitigate for trimming of seven stems and one branch during the term of the license.

SCE proposes to plant the seedlings on USDA-FS property in the Project vicinity adjacent to other elderberry shrubs. The specific locations of the seedlings to be planted will be agreed upon by SCE, USFWS, and USDA-FS, and will be in an area that will not be affected by future maintenance activities. SCE will plant seedlings in areas supporting native plant species; thus SCE does not propose to plant associated native plant species.

5.1.2 Mitigation/Resource Monitoring and Reporting

Monitoring of the mitigation site will be implemented following planting of the seedlings. This includes monitoring the general condition of the mitigation site and the condition of the elderberry plantings. SCE will monitor the site seven times over a 15 year period. SCE does not, however, propose to monitor for VELB occupancy at the proposed mitigation site because the Guidelines do not specify a threshold for VELB occupancy of planted cuttings/seedlings. SCE will conduct surveys and prepare monitoring reports for years 1, 2, 3, 5, 7, 10, and 15, with the first year beginning one year after the seedlings have been planted.

5.1.3 Success Criteria

A minimum survival rate of at least 60% of the elderberry shrubs will be maintained throughout the monitoring period. Within one year of discovery that survival is less than 60%, SCE will replace failed plantings to bring the survival rate above the minimum level. If SCE determines that the success criteria at the monitoring site cannot be met for reasons beyond their control (e.g., vandalism, fire, flood), SCE will provide USFWS with a letter report summarizing the reasons and, if possible, photographs that support the determination.

5.1.4 Survival of Trimmed Shrubs

As requested by USFWS, SCE will monitor the survival of the six shrubs with stems or branches $\geq$1 inch in diameter that will be trimmed. SCE will monitor these shrubs plus 12 adjacent untrimmed shrubs (two shrubs adjacent to each trimmed shrub) during the term of the license. The 12 shrubs that will not be trimmed will serve as a control group representing the natural survival of elderberry shrubs in the Project area. Data that will be collected for the six trimmed and 12 control shrubs will include shrub height, overall health of the shrub, the number of stems by size class, and the presence of dead stems by size class. SCE will include the results of the survival of trimmed shrubs compared with the survival of control shrubs in the mitigation monitoring reports described in Subsection 5.1.2. Monitoring will be conducted seven times over a 15 year period, as described in Subsection 5.1.2.

5.1.5 IMPLEMENTATION SCHEDULE

Within one year of FERC approval of this Plan, SCE will complete planting of the seedlings. The first monitoring report will be submitted to the Commission, USDA-FS, and USFWS within three months after the surveys of the seedlings have been completed. Additional monitoring reports will be submitted within three months of the surveys to be conducted after years 2, 3, 5, 7, 10, and 15 following planting of the seedlings.

SCE will complete VELB and VELB habitat surveys at roads identified in Table 2 within one year of FERC approval of this Plan. Following completion of surveys, SCE will submit a report to USFWS that includes results of surveys, potential Project impacts, and appropriate mitigation measures, if necessary.

6.0 AGENCY CONSULTATION

Agency consultation has been ongoing during the Big Creek ALP. This includes consultation as part of the study plan development, technical studies, Preliminary Administrative Draft Biological Assessment/Biological Evaluation (BA/BE), and development of this Plan. Descriptions of consultation completed during the study plan development and during completion of technical studies are provided in the *Final Technical Study Plan Package for the Big Creek Hydroelectric System Alternative Licensing Process* (SCE 2001) and in the 2002 and 2003 *Technical Study Report Package for the Big Creek Hydroelectric System Alternative Licensing Process* (SCE 2003; SCE 2004).

Additionally, a complete summary of consultation and copies of correspondence completed to date for the four Big Creek Projects is provided in the BA/BE. Consultation completed with USFWS for development of this Plan consisted of three meetings and correspondence (i.e., letter, e-mail). This included meetings on February 17, 2005; June 20, 2005; and October 13, 2005. During these meetings, proposed avoidance and protection measures were discussed and revised, and the impact and mitigation approaches were evaluated. On June 23, 2005, USFWS requested additional information on the herbicides used in the vicinity of the four Big Creek Projects, a copy of the Holyoak (2005c) report, and information on roads. SCE provided the requested information on July 19, 2005. During the October 13, 2005 meeting USFWS and SCE tentatively agreed that planting of eight seedlings would adequately mitigate for impacts to VELB in the vicinity of the four Big Creek Projects and that implementing avoidance and protection measures in this Plan would provide protection for VELB habitat during the term of the license. Following completion of this meeting, USFWS provided tentative agreement on the VELB Management Plan after incorporation of revisions to the mitigation as agreed upon during the meeting.

Since this time, SCE and/or USDA-FS have identified additional roads to be included as Project roads and/or added to FERC Project boundaries that have not been surveyed for the presence of VELB or their habitat. SCE will complete surveys at these roads

and develop a report for USFWS review that includes survey results, potential Project impacts and proposed mitigation. SCE will follow the impacts analysis methods and mitigation approaches described in this Plan, and already approved by USFWS and other resource agencies. SCE will seek approval from USFWS on mitigation for any potential impacts to VELB or their habitat on Project roads identified in Table 2.

6.1 NEW FACILITIES

During the term of the license, SCE will notify FERC and the USFWS within 60 days if any new facilities are proposed that require ground-disturbing activities that have the potential to affect VELB. USDA-FS and CDFG will also be provided notification. The determination will be based on the known occurrence of VELB and their habitat in the vicinity of the Projects and the associated proposed activities. No new facilities are proposed at this time.

6.1.1 IDENTIFICATION OF NEED FOR ADDITIONAL SURVEYS

The protocol-level surveys completed by SCE included all areas where Project-related ground-disturbance activities and/or maintenance activities occur within the vicinity of the four Projects. However, additional surveys will be completed by SCE if new facilities are proposed in areas not previously surveyed as part of implementing the terms and conditions of the new license order that may result in adverse effects on VELB or their habitat.

7.0 LITERATURE CITED

Barr, C.B. 1991. The Distribution, Habitat, and Status of Valley Elderberry Longhorn Beetle (Insecta: Coleoptera: Cerambycidae, U.S. Fish and Wildlife Service, Sacramento, CA).

Southern California Edison Company (SCE). 2001. Final Technical Study Plan Package for the Big Creek Hydroelectric System Alternative Licensing Process prepared by Southern California Edison. August 3, 2001. *In* SCE's Amended Preliminary Draft Environmental Assessment (APDEA) for the Big Creek Alternative Licensing Process (ALP). Mammoth Pool Project (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). February 2007 (Supporting Document (SD)-B, Volume 4, Books 6 and 21).

SCE. 2003. 2002 Technical Study Report Package for the Big Creek Hydroelectric System Alternative Licensing Process prepared by Southern California Edison. October 10, 2003. *In* SCE's APDEA for the Big Creek ALP. Mammoth Pool Project (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). February 2007 (SD-C, Volume 4, Books 7-10, 21 and 22).

SCE. 2004. 2003 Technical Study Reports (First Distribution) for the Big Creek Hydroelectric System Alternative Licensing Process prepared by Southern California Edison. August 20, 2004. *In* SCE's APDEA for the Big Creek ALP. Mammoth Pool Project (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). February 2007 (SD-D, Volume 4, Books 11-17 and 23).

SCE. 2005. 2004 Draft Technical Study Reports for the Big Creek Hydroelectric System Alternative Licensing Process prepared by Southern California Edison. *In* SCE's APDEA for the Big Creek ALP. Mammoth Pool Project (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). February 2007 (SD-D, Volume 4, Books 18 and 24).

SCE. 2005a. Endangered Species Alert Program Manual; Species Accounts and Procedures. Environmental, Health & Safety Division.

SCE. 2005b. Supplemental Information Completed in Support of Southern California Edison's Valley Elderberry Longhorn Beetle Management Plan - Big Creek No. 4 (FERC Project No. 2017). June 14, 2005.

SCE. 2005c. Vegetation and Noxious Weed Management Plan (FERC Project Nos. 2175, 2085, 120 and 67).

SCE. 2006a. Endangered Species Alert Program Manual; Species Accounts and Procedures. Environmental Affairs Division. *In* SCE's SCE Response to FERC's Additional Information Request (AIR) No. 6 (Schedule B). August 2006.

SCE. 2006b. Northern Hydro Special-Status Species Information Program. Environmental Affairs Division. *In* SCE's SCE Response to FERC's AIR No. 6 (Schedule B). August 2006.

U.S. Fish and Wildlife Service (USFWS). 1999. Conservation Guidelines for the Valley Elderberry Longhorn Beetle.

USFWS. 2002. Formal consultation on the Lower Tule Hydroelectric Project (SCE 2002) and approved by USFWS in the Biological Opinion for the Lower Tule Hydroelectric Project.

TABLES

Table 1. Valley Elderberry Longhorn Beetle Habitat in the Vicinity of the Big Creek Projects.

Project Facility or Road	Number of Shrubs	Number of Shrubs with Exit Holes
Mammoth Pool Project Vicinity (FERC Project No. 2085)		
2002 Survey Results		
9S42, Mammoth Pool Powerhouse transmission line access road from gate near County Road 225, Italian Bar Road to 8S44 (#18)	32	2
8S03 (from Powerhouse No. 8 to Mammoth Pool Powerhouse) (#33)	10	0
Project Total	**42**	**2**
Big Creek Nos. 2A, 8 & Eastwood Project Vicinity (FERC Project No. 67)		
2002 Survey Results		
Powerhouse No. 8, Tunnel 8	4	0
Access Road to Powerhouse No. 8 from 8S03 (#166)	11	0
Project Total	**15**	**0**
Big Creek No. 3 Project Vicinity (FERC Project No. 120)		
2002 Survey Results		
Powerhouse No. 3 (penstocks)	5	5
Powerhouse No. 3 (rock/sand trap)	6	3
Powerhouse No. 3 (surge chamber)	10	0
8S05, Canyon Road (from junction with 8S03 to junction with Italian Bar Road) (#21)	484	0
9S89, Access road to Big Creek Powerhouse No. 3 and administrative buildings from Italian Bar Road (#61)	5	0
2004 Survey Results		
Miscellaneous Powerhouse No. 3 roads (i.e., water tank access road and shop) (#5, #13, #127, 215, #256 and #257)	5	0
Project Total	**515**	**8**
Grand Total	**572**	**10**

Table 2. New Project Roads at or Below 3,000 Feet in Elevation.

Mammoth Pool (FERC Project No. 2085)
7S47B Access road to Rock Creek Tunnel Muck Pile (#102)
8S03B Access road from 8S03 to Mammoth Pool penstock (#80)
8S03CA, spur road to Mammoth Pool Transmission Line (#144)
Big Creek Nos. 1 and 2 (FERC Project No. 2175)
8S05CA Access to Big Creek No. 2 switchyard (#160)
8S13K Access road to Powerhouse No. 2 penstock (#168)
Big Creek Nos. 2A, 8 and Eastwood (FERC Project No. 67)
8S03A Access road to Powerhouse No. 8 from 8S03 (#166)
8S05L Road to communication line near Powerhouse No. 8 (#167)
Big Creek No. 3 (FERC Project No. 120)
8S05B Access road to Powerhouse No. 3 penstock from 8S05 Canyon Road (#217)
8S05T Access to tailings (#24)
8S05TA Access to tailings (#29)
9S20 Access to Carpenter shop (#216)
9S20B Access road to carpenter shop from Italian Bar Road (#62)
9S20BA (#85)
9S20BC Connector road between 9S20B loop (#64)
9S20D Access to Carpenter Shop (#13)
9S20DA Access to garage and shops (#257)
9S20E (#52)
9S20F Connector road between 9S20 loop (#87)
9S88A Access to old company housing (#5)
9S88XA Access road to old company housing from 9S88X (#215)
9S89BA Access road to PH 3 and switchyard (#59)

Table 3. Herbicides and Other Agents Used at the Four Big Creek Projects.

	Garlon 4® at 0.6-1.5 lbs/ acre[1]	**Pathfinder II®**	**Accord® at 0.6-1.0 lbs/acre[2]**	**Velpar® at 2 lbs/acre**
Active Ingredient	triclopyr	triclopyr	glyphosate	Hexazinone
Other Agents				
	Hasten®	**R-11®**	**In-Place®**	
Properties	Spray Adjuvant Nonionic surfactant and esterified vegetable oils	Wetting Agent Nonionic surfactant Spreader Activator	Deposition and Retention Agent	

[1]These rates represent average coverage (20%) to maximum expected coverage (50%) using a 3.0 lbs. per acre mixture.

[2]These rates represent average coverage (30%) to maximum expected coverage (50%) using a 2.0 lbs. per acre mixture.

Table 4. Elderberry Shrub Impact Analysis Results.

Shrub to be Affected	Facility or Road	Distance of Shrub from Facility (feet)	All Stems/Shrubs are Non-Riparian			Impacts					
						Stems Trimmed			Branches Trimmed		
			Stem Diameter (inches)	Total Number of Stems	Exit Holes (Yes/No)	Stem size (at point to be trimmed)	No. of stems estimated to be trimmed over the license term	Total no. of stems to be trimmed over the license term	Number of stems and size class from which branches originate	Branches <1 at point to be trimmed	Branches ≥ 1 & ≤3 at point to be trimmed
Big Creek Nos. 2A, 8, and Eastwood (FERC Project No. 67)											
14	Access road to Powerhouse No. 8 from 8S03	3	< 1	n/a	No	0	0	0	1 (≥ 1 & ≤ 3)	1	0
			≥ 1 & ≤ 3	3	No	0	0	0		0	0
			> 3 & < 5	0	No	0	0	0		0	0
			≥ 5	0	No	0	0	0		0	0
15	Powerhouse No. 8, Tunnel 8	0	< 1	n/a	No	0	0	0	1 (> 3 & < 5)	0	0
			≥ 1 & ≤ 3	0	No	0	0	0		1	1
			> 3 & < 5	2	No	0	0	0		0	0
			≥ 5	0	No	0	0	0		0	0
16	Powerhouse No. 8, Tunnel 8	0	< 1	n/a	No	0	0	0	1 (≥ 1 & ≤ 3)	3	0
			≥ 1 & ≤ 3	1	No	0	0	0		0	0
			> 3 & < 5	1	No	0	0	0		0	0
			≥ 5	0	No	0	0	0		0	0
17	Powerhouse No. 8, Tunnel 8	0	< 1	n/a	No	0	0	0	1 (≥ 1 & ≤ 3)	3	0
			≥ 1 & ≤ 3	1	No	0	0	0		0	0
			> 3 & < 5	0	No	0	0	0		0	0
			≥ 5	0	No	0	0	0		0	0
18	Powerhouse No. 8, Tunnel 8	1	< 1	n/a	No	0	0	0		0	0
			≥ 1 & ≤ 3	1	No	1	1	1		0	0
			> 3 & < 5	0	No	0	0	0		0	0
			≥ 5	0	No	0	0	0		0	0
					Total		**1**	**1**		**8**	**1**

Table 4. Elderberry Shrub Impact Analysis Results (continued).

						Impacts					
						Stems Trimmed			Branches Trimmed		
Shrub to be Affected	Facility or Road	Distance of Shrub from Facility (feet)	All Stems/Shrubs are Non-Riparian			Stem size (at point to be trimmed)	No. of stems estimated to be trimmed over the license term	Total no. of stems to be trimmed over the license term	Number of stems and size class from which branches originate	Branches <1 at point to be trimmed	Branches ≥ 1 & ≤3 at point to be trimmed
Big Creek No. 3 (FERC Project No. 120)											
1	Powerhouse No. 3 (Surge Chamber)	3	< 1	n/a[1]	No	0	0	0	1 (> 3 & < 5)	4	0
			≥ 1 & ≤ 3	0	No	0	0	0		0	0
			> 3 & < 5	1	No	0	0	0		0	0
			≥ 5	0	No	0	0	0		0	0
2	8S05, Canyon Road (from Powerhouse No. 8 to junction with Italian Bar Road)	5	< 1	n/a	No	0	0	0	1 (≥ 1 & ≤ 3)	1	0
			≥ 1 & ≤ 3	3	No	0	0	0		0	0
			> 3 & < 5	0	No	0	0	0		0	0
			≥ 5	2	No	0	0	0		0	0
3	8S05, Canyon Road (from Powerhouse No. 8 to junction with Italian Bar Road)	6	< 1	n/a	No	0	0	0	1 (≥ 1 & ≤ 3)	1	0
			≥ 1 & ≤ 3	3	No	0	0	0		0	0
			> 3 & < 5	1	No	0	0	0		0	0
			≥ 5		No	0	0	0		0	0
4	8S05, Canyon Road (from Powerhouse No. 8 to junction with Italian Bar Road)	3	< 1	n/a	No	0	0	0	3 (≥ 1 & ≤ 3)	5	0
			≥ 1 & ≤ 3	3	No	0	0	0		0	0
			> 3 & < 5	1	No	0	0	0		0	0
			≥ 5	0	No	0	0	0		0	0
5	8S05, Canyon Road (from Powerhouse No. 8 to junction with Italian Bar Road)	5	< 1	n/a	No	0	0	0	1 (> 3 & < 5)	1	0
			≥ 1 & ≤ 3	2	No	0	0	0		0	0
			> 3 & < 5	1	No	0	0	0		0	0
			≥ 5	0	No	0	0	0		0	0

Table 4. Elderberry Shrub Impact Analysis Results (continued).

						Impacts					
						Stems Trimmed			Branches Trimmed		
Shrub to be Affected	Facility or Road	Distance of Shrub from Facility (feet)	All Stems/Shrubs are Non-Riparian			Stem size (at point to be trimmed)	No. of stems estimated to be trimmed over the license term	Total no. of stems to be trimmed over the license term	Number of stems and size class from which branches originate	Branches <1 at point to be trimmed	Branches ≥ 1 & ≤3 at point to be trimmed
			Stem Diameter (inches)	Total Number of Stems	Exit Holes (Yes/No)						
Big Creek No. 3 (FERC Project No. 120) (continued)											
6	8S05, Canyon Road (from Powerhouse No. 8 to junction with Italian Bar Road)	3	< 1	n/a	No	0	0	0	1 (≥ 1 & ≤ 3)	1	0
			≥ 1 & ≤ 3	2	No	0	0	0		0	0
			> 3 & < 5		No	0	0	0		0	0
			≥ 5		No	0	0	0		0	0
7	8S05, Canyon Road (from Powerhouse No. 8 to junction with Italian Bar Road)	4	< 1	n/a	No					0	0
			≥ 1 & ≤ 3	2	No	1	1	1		0	0
			> 3 & < 5	0	No	0	0	0		0	0
			≥ 5	0	No	0	0	0		0	0
8	8S05, Canyon Road (from Powerhouse No. 8 to junction with Italian Bar Road)	5	< 1	n/a	No	0	0	0	3 (≥ 1 & ≤ 3)	3	0
			≥ 1 & ≤ 3	5	No	0	0	0		0	0
			> 3 & < 5	0	No	0	0	0		0	0
			≥ 5	0	No	0	0	0		0	0
9	8S05, Canyon Road (from Powerhouse No. 8 to junction with Italian Bar Road)	2	< 1	n/a	No	0	0	0	1 (≥ 1 & ≤ 3)	2	0
			≥ 1 & ≤ 3	1	No	0	0	0		0	0
			> 3 & < 5	0	No	0	0	0		0	0
			≥ 5	0	No	0	0	0		0	0
10	8S05, Canyon Road (from Powerhouse No. 8 to junction with Italian Bar Road)	4	< 1	n/a	No	0	0	0		0	0
			≥ 1 & ≤ 3	3	No	3[3]	3	3		0	0
			> 3 & < 5	0	No	0	0	0		0	0
			≥ 5	0	No	0	0	0		0	0

Table 4. Elderberry Shrub Impact Analysis Results (continued).

						Impacts					
						Stems Trimmed			Branches Trimmed		
Shrub to be Affected	Facility or Road	Distance of Shrub from Facility (feet)	All Stems/Shrubs are Non-Riparian			Stem size (at point to be trimmed)	No. of stems estimated to be trimmed over the license term	Total no. of stems to be trimmed over the license term	Number of stems and size class from which branches originate	Branches <1 at point to be trimmed	Branches ≥ 1 & ≤3 at point to be trimmed
			Stem Diameter (inches)	Total Number of Stems	Exit Holes (Yes/No)						
Big Creek No. 3 (FERC Project No. 120) (continued)											
11	8S05, Canyon Road (from Powerhouse No. 8 to junction with Italian Bar Road)	4	< 1	n/a	No	0	0	0		0	0
			≥ 1 & ≤ 3	6	No	1	1	1		0	0
			> 3 & < 5	0	No	0	0	0		0	0
			≥ 5	0	No	0	0	0		0	0
12	8S05, Canyon Road (from Powerhouse No. 8 to junction with Italian Bar Road)	6	< 1	n/a	No	0	0	0	1 (≥ 1 & ≤ 3)	0	0
			≥ 1 & ≤ 3	1	No	0	0	0		1	0
			> 3 & < 5	0	No	0	0	0		0	0
			≥ 5	0	No	0	0	0		0	0
13	8S05, Canyon Road (from Powerhouse No. 8 to junction with Italian Bar Road)	5	< 1	n/a	No	0	0	0		0	0
			≥ 1 & ≤ 3	3	No	1	1	1		0	0
			> 3 & < 5	0	No	0	0	0		0	0
			≥ 5	0	No	0	0	0		0	0
					Total		**6**	**6**		**19**	**0**
					Grand Total		**7**	**7**		**27**	**1**

[1]Not Applicable - USFWS Guidelines do not require specific data on stems <1 inch in diameter. Specific data was not collected on these stems.

[2]Assumes a 50 year license term.

[3]This shrub supports 3 stems ≥1 inch in diameter. Other stems <1 inch are also present, but specific data was not collected on these stems.

Table 5. Results Summary.

Total Number of Shrubs Trimmed	Total Number of Stems to be Trimmed (≥1 & ≤3)	Total Number of Branches to be Trimmed (<1)	Total Number of Branches to be Trimmed (≥1 & ≤3)
18	7	27	1

Table 6. Mitigation Summary.

	Number of Stems or Branches to be Trimmed	Number of Seedlings to be Planted
Stems to be Trimmed (≥1 & ≤3)	7	7
Branches to be Trimmed (≥1 & ≤3)	1	1
Total	**8**	**8**

FIGURE

Placeholder for

Figure 1. Elderberry Shrubs to be Trimmed within the Four Big Creek ALP Projects

Non-Internet Public Information

This Figure has been removed in accordance with the Commission regulations at 18 CFR Section 388.112.

This Figure is considered Non-Internet Public information and should not be posted on the Internet. This information is provided in Book 25 of the Application for New License and is identified as "Non-Internet Public" information. This information may be accessed from the FERC's Public Reference Room, but is not expected to be posted on the Commission's electronic library, except as an indexed item.

ATTACHMENT A

VEGETATION MANAGEMENT AND ROAD MAINTENANCE AT PROJECT FACILITIES AND ROADS THAT SUPPORT POTENTIAL VELB HABITAT

Attachment A

Vegetation and Road Maintenance at Project Facilities and Roads that Support VELB Habitat

Road or Facility Name	Trimming			Roads Repair/Clearing			
	Hand	Equipment	Herbicides	Grading	Gravel/Paving	Snow Removal / Sanding	Culverts/Ditches/Water Bars
Mammoth Pool Project Vicinity							
8S03 (from Powerhouse No. 8 to Mammoth Pool Powerhouse) (#33)	R	R	R	I	I	A	R
9S42, Mammoth Pool Powerhouse transmission line access road from gate near County Road 225, Italian Bar Road, to 8S44 (#18)	R	R		R	I		R
Big Creek Nos. 2A, 8 and Eastwood							
Powerhouse No. 8, Tunnel 8	R		R				
Access road to Powerhouse 8 from 8S03 (#166)	R	R	R	I	I	A	R
Big Creek No. 3 Project Vicinity							
Powerhouse No. 3 (penstocks)	R		R				
Powerhouse No. 3 (rock/sand trap)	R		R				
Powerhouse No. 3 (surge chamber)	R		R				
Road 8S05, Canyon Road (from junction with 8S03 to junction with Italian Bar Road) (#21)	R	R	R	I	I	A	R
9S89 Access road to Powerhouse No. 3 and administrative building from Italian Bar Road (#61)	R	R	R	I	I		R
Miscellaneous Powerhouse No. 3 roads (i.e. water tank access road and shop) (#5, 13, 127, 215, 256, 257)	R		R	R	I		R

ATTACHMENT B

NEW PROJECT ROADS AT OR BELOW 3,000 FEET IN ELEVATION

Attachment B

New Project Roads at or Below 3,000 Feet in Elevation.

	Vegetation Management			Roads Repair / Clearing			
	Trimming						
	Hand	Equipment	Herbicides	Grading	Gravel / Paving	Snow Removal / Sanding	Culverts/Ditches/Water Bars
Mammoth Pool (FERC Project No. 2085)							
7S47B Access road to Rock Creek Tunnel Muck Pile (#102)	R	R	I	R	I		R
8S03B Access road from 8S03 to Mammoth Pool penstock (#80)	R	R	R	R	I		R
8S03CA, spur road to Mammoth Pool Transmission Line (#144)	R	R	I	R	I		R
Big Creek Nos. 1 and 2 (FERC Project No. 2175)							
8S05CA Access to Big Creek No. 2 switchyard (#160)	R	R	R	I	I	A	R
8S13K Access road to Powerhouse No. 2 penstock (#168)	R	R	R	I	I	I	R
Big Creek Nos. 2A, 8, and Eastwood (FERC Project No. 67)							
8S03A Access road to Powerhouse No. 8 from 8S03 (#166)	R	R	R	I	I	A	R
8S05L Road to communication line near Powerhouse No. 8 (#167)	I	I	I	I	I		i
Big Creek No. 3 (FERC Project No. 120)							
9S88A Access to old company housing (#5)	R		R	R	I		R
9S20D Access to Carpenter Shop (#13)	R		R	R	I		R
8S05T Access to tailings (#24)		I		R	I		R
8S05TA Access to tailings (#29)		I		R	I		R
9S20B Access road to carpenter shop from Italian Bar Road (#62)	R		R	I	I		R
9S20C Connector road between 9S20B loop (#64)	R		R	R	I		R
9S20A (#85)	R		R	I	I		R
9S88XA Access road to old company housing from 9S88X (#215)	R		R	R			R
9S20 Access to Carpenter shop (#216)	R		R		I		I
8S05B Access road to Powerhouse No. 3 penstock from 8S05 Canyon Road (#217)	R	R	R	R			R
9S20E (#52)	R		R	R	I		R
9S20DA Access to Garage and Shops (#257)	R		R	R	I		R
9S20F Connector Road Between 9S20 Loop (#87)	R		R	I	I		R
9S89BA Access road to Powerhouse No. 3 and Switchyard (#59)	R		R	I	I		R

ATTACHMENT C

MATERIAL SAFETY DATA SHEETS FOR HERBICIDES AND OTHER AGENTS

ATTACHMENT C1

GARLON 4®

Specimen Label

Dow AgroSciences™

Garlon* 4

Specialty Herbicide

*Trademark of Dow AgroSciences LLC

For the control of woody plants and broadleaf weeds on rights-of-way, industrial sites, non-crop areas, non-irrigation ditch banks, forests, and wildlife openings, including grazed areas on these sites.

Active Ingredient:	
triclopyr: 3,5,6-trichloro-2-pyridinyloxyacetic acid, butoxyethyl ester	61.6%
Inert Ingredients	38.4%
Total	100.0%

Contains petroleum distillates
Acid Equivalent:
triclopyr - 44.3% - 4 lb/gal

EPA Reg. No. 62719-40

Precautionary Statements

Hazards to Humans and Domestic Animals

Keep Out of Reach of Children

CAUTION PRECAUCION

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand the label, find someone to explain it to you in detail.)

Harmful If Swallowed, Inhaled, Or Absorbed Through Skin

Avoid contact with eyes, skin, or clothing. Avoid breathing mists or vapors. Avoid contamination of food.

Personal Protective Equipment (PPE)

Some materials that are chemical-resistant to this product are listed below. If you want more options, follow the instructions for category E on an EPA chemical resistance category selections chart.

WPS Uses: Applicators and other handlers who handle this pesticide for any use covered by the Worker Protection Standard (40 CFR Part 170) – in general, agricultural-plant uses are covered – must wear:

- Long-sleeved shirt and long pants
- Chemical-resistant gloves such as Barrier Laminate, Nitrile Rubber, Neoprene Rubber, or Viton
- Shoes plus socks

Non-WPS Uses: Applicators and other handlers who handle this pesticide for any use NOT covered by the Worker Protection Standard (40 CFR Part 170) – in general, only agricultural-plant uses are covered by the WPS – must wear:

- Long-sleeved shirt and long pants
- Shoes plus socks

Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

User Safety Recommendations

Users should:
- Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.
- Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.

First Aid

If on skin: Flush skin with plenty of water. Get medical attention if irritation persists.
If swallowed: Do not induce vomiting. Call a physician.

Environmental Hazards

This pesticide is toxic to fish. Do not apply directly to water, to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwaters.

Physical or Chemical Hazards

Do not use or store near heat or open flame. Do not cut or weld container.

Notice: Read the entire label. Use only according to label directions. **Before buying or using this product, read "Warranty Disclaimer" and "Limitation of Remedies" elsewhere on this label.**

In case of emergency endangering health or the environment involving this product, call 1-800-992-5994. If you wish to obtain additional product information, visit our web site at www.dowagro.com.

Agricultural Chemical: Do not ship or store with food, feeds, drugs or clothing.

Directions for Use

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.
Read all Directions for Use carefully before applying.

Do not use for manufacturing or formulating.

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your state or tribe, consult the agency responsible for pesticide regulation.

Agricultural Use Requirements

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. This standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE) and restricted-entry interval. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 12 hours.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water, is:

- Coveralls
- Chemical-resistant gloves such as Barrier Laminate, Nitrile Rubber, Neoprene Rubber, or Viton
- Shoes plus socks

Storage and Disposal

Do not contaminate water, food, or feed by storage or disposal. Open dumping is prohibited.

Storage: Store above 28°F or agitate before use.

Pesticide Disposal: Pesticide, spray mixture, or rinse water that cannot be used according to label instructions must be disposed of according to applicable federal, state, or local procedures.

Plastic Container Disposal: Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

Metal Container Disposal: Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities.

Container Disposal for Refillable Containers: Replace the dry disconnect cap, if applicable, and seal all openings which have been opened during use. Return the empty container to a collection site designated by Dow AgroSciences. If the container has been damaged and cannot be returned according to the recommended procedures, contact the Dow AgroSciences Customer Service Center at 1-800-258-1470 to obtain proper handling instructions.

General: Consult federal, state, or local disposal authorities for approved alternative procedures.

General Information

Garlon* 4 herbicide is recommended for the control of unwanted woody plants and annual and perennial broadleaf weeds in forests, and on non-crop areas including industrial manufacturing and storage sites, rights-of-way such as electrical power lines, communication lines, pipelines, roadsides and railroads, fence rows, non-irrigation ditch banks, and around farm buildings. Use on these sites may include application to grazed areas as well as establishment and maintenance of wildlife openings.

General Use Precautions

Agricultural Use Requirements for Forestry Uses: For use of this product on forestry sites, follow PPE and Reentry restrictions in the Agricultural Use Requirements section of this label.

Use Requirements for Non-cropland Areas: No Worker Protection Standard worker entry restrictions or worker notification requirements apply when this product is applied to non-cropland.

In Arizona: The state of Arizona has not approved Garlon 4 for use on plants grown for commercial production; specifically forests grown for commercial timber production, or on designated grazing areas.

Chemigation: Do not apply this product through any type of irrigation system.

Other Precautions:

- When applying this product in tank mix combination, follow all applicable use directions and precautions on each manufacturer's label.
- Do not apply on ditches used to transport irrigation water. Do not apply where runoff or irrigation water may flow onto agricultural land as injury to crops may result.
- Do not apply this product using mist blowers unless a drift control additive, high viscosity inverting system, or equivalent is used to control spray drift.
- Sprays applied directly to Christmas trees may result in conifer injury. When treating unwanted vegetation in Christmas tree plantations, care should be taken to direct sprays away from conifers.
- Do not apply Garlon 4 directly to, or otherwise permit it to come into direct contact with grapes, tobacco, vegetable crops, flowers, or other desirable broadleaf plants and do not permit spray mists containing it to drift onto them.
- It is permissible to treat non-irrigation ditch banks, seasonally dry wetlands, flood plains, deltas, marshes, swamps, bogs, and transitional areas between upland and lowland sites. Do not apply to open water such as lakes, reservoirs, rivers, streams, creeks, salt water bays, or estuaries.

Avoid Injurious Spray Drift

Applications should be made only when there is little or no hazard from spray drift. Very small quantities of spray, which may not be visible may seriously injure susceptible plants. Do not spray when wind is blowing toward susceptible crops or ornamental plants near enough to be injured. It is suggested that a continuous smoke column at or near the spray site or a smoke generator on the spray equipment be used to detect air movement, lapse conditions, or temperature inversions (stable air). If the smoke layers or indicates a potential of hazardous spray drift, do not spray.

Aerial Application (Helicopter Only): For aerial application on rights-of-way or other areas near susceptible crops, use an agriculturally registered spray thickening drift control additive as recommended by the manufacturer or apply through the Microfoil® boom, Thru-Valve boom, or equivalent drift control system. Thickened sprays prepared by using high viscosity invert systems or other drift reducing systems may be utilized if they are made as drift-free as are mixtures containing an agriculturally registered thickening agent or applications made with the Microfoil boom or Thru Valve boom. If a spray thickening agent is used, follow all use recommendations and precautions on the product label. Do not use a thickening agent with the Microfoil boom, Thru Valve boom, or other systems that cannot accommodate thick sprays.

†Reference within this label to a particular piece of equipment produced by or available form other parties is provided without consideration for use by the reader at its discretion and subject to the reader's independent circumstances, evaluation, and expertise. Such reference by Dow AgroSciences is not intended as an endorsement of such equipment, shall not constitute a warranty (express or implied) of such equipment, and is not intended to imply that other equipment is not available and equally suitable. Any discussion of methods of use of such equipment does not imply that the reader should use the equipment other than is advised in directions available from the equipment's manufacturer. The reader is responsible for exercising its own judgment and expertise, or consulting with sources other than Dow AgroSciences, in selecting and determining how to use its equipment.

With aircraft, drift can be lessened by applying a coarse spray; by using a spray boom no longer than 3/4 the rotor length; by spraying only when wind velocities are low; or by using an approved drift control system. Keep operating spray pressures at the lower end of the manufacturer's recommended pressures for the specific nozzle type used. Low pressure nozzles are available from spray equipment manufacturers. Select nozzles and pressures which provide adequate plant coverage, but minimize the production of fine spray particles.

Ground Equipment: To aid in reducing spray drift potential when making ground applications near susceptible crops or other desirable broadleaf plants, Garlon 4 should be applied through large droplet producing equipment, such as the Radiarc sprayer or in thickened spray mixtures using an agriculturally registered drift control additive, or high viscosity invert systems. When using a spray thickening or inverting additive, follow all use directions and precautions on the product label. With ground equipment, spray drift can be reduced by keeping the spray boom as low as possible; by applying 20 gallons or more of spray per acre; and by spraying when wind velocity is low. Do not apply with nozzles that produce a fine droplet spray. Keep operating spray pressures at the lower end of the manufacturer's recommended pressures for the specific nozzle type used. Low pressure nozzles are available from spray equipment manufacturers. Select nozzles and pressures which provide adequate plant coverage, but minimize the production of fine spray particles.

High Volume Leaf-Stem Treatment: To minimize spray drift, keep sprays no higher than brush tops and keep spray pressures low enough to provide coarse spray droplets. A spray thickening agent may be used to reduce spray drift.

Grazing and Haying Restrictions

Grazing or harvesting green forage:

1) Lactating dairy animals
   Two quarts per acre or less: Do not graze or harvest green forage from treated area for 14 days after treatment.
   Greater than 2 to 6 quarts per acre: Do not graze or harvest green forage until the next growing season.
2) Other Livestock
   Two quarts per acre or less: No grazing restrictions.
   Greater than 2 to 6 quarts per acre: Do not graze or harvest green forage from treated area for 14 days after treatment. **Note:** If less than 25% of a grazed area is treated, there is no grazing restriction.

Haying (harvesting of dried forage):

1) Lactating dairy animals
   Do not harvest hay until the next growing season.
2) Other Livestock
   Two quarts per acre or less: Do not harvest hay for 7 days after treatment.
   Greater than 2 to 4 quarts per acre: Do not harvest hay for 14 days after treatment.
   Greater than 4 quarts per acre: Do not harvest hay until the next growing season.

Slaughter Restrictions:
Withdraw livestock from grazing treated grass or consumption of treated hay at least 3 days before slaughter. This restriction applies to grazing during the season following treatment or hay harvested during the season following treatment.

Plants Controlled by Garlon 4

Woody Plants Controlled

alder	chinquapin	madrone	scotch broom
arrowwood	choke cherry	maples	sumac
ash	cottonwood	mulberry	sweetbay magnolia
aspen	Crataegus (hawthorn)	oaks	sweetgum
bear clover (bearmat)	dogwood	persimmon	sycamore
beech	Douglas-fir	pine	tanoak
birch	elderberry	poison ivy	thimbleberry
blackberry	elm	poison oak	tree-of-heaven (*Ailanthus*)†
blackgum	gallberry	poplar	tulip poplar
boxelder†	gorse	salmonberry	wax myrtle
Brazilian pepper	hazel	salt-bush	wild rose
buckthorn	hickory	(*Braccharis* spp.)	willow
cascara	hornbeam	salt-cedar†	winged elm
Ceanothus	kudzu††	sassafras	
cherry	locust		

†For best control, use either a basal bark or cut stump treatment.
††For complete control, retreatment may be necessary.

Annual and Perennial Broadleaf Weeds Controlled

black medic	curly dock	matchweed	sweet clover
bull thistle	dandelion	mustard	vetch
burdock	field bindweed	Oxalis	wild carrot (Queen Anne's lace)
Canada thistle	goldenrod	plantain	wild lettuce
chicory	ground ivy	purple loosestrife	wild violet
clover	lambsquarters	ragweed	yarrow
creeping beggarweed	lespedeza	smartweed	

Table 1 (Maximum Application Rate): The following table is provided as a guide to the user to achieve the proper rate of Garlon 4 without exceeding the maximum use rate of 8 quarts per acre:

Spray Volume Per Acre	Quarts of Garlon 4 Per 100 Gallons of Spray (Not to Exceed 8 qt/Acre)
400	2
300	2.7
200	4
100	8
50	16
20	40
10	80

Approved Uses

Foliar Applications

Use Garlon 4 at rates of 1 to 8 quarts per acre to control broadleaf weeds and woody plants. In all cases use the amount specified in enough water to give uniform and complete coverage of the plants to be controlled. The recommended order of addition to the spray tank is water, spray thickening agent (if used), surfactant (if used), additional herbicide (if used), and Garlon 4. If a standard agricultural surfactant is used, use at a rate of 1 to 2 quarts per acre. Use continuous adequate agitation.

Before using any recommended tank mixtures, read the directions and all precautions on both labels.

For best results applications should be made when woody plants and weeds are actively growing. When hard-to-control species such as ash, blackgum, choke cherry, elm, maples (other than vine or big leaf), oaks, pines, or winged elm are prevalent, and during applications made during late summer when the plants are mature, or during drought conditions, use the higher rates of Garlon 4 alone or in combination with Tordon* 101 Mixture herbicide.

When using Garlon 4 in combination with 3.8 pounds per gallon 2,4-D low volatile ester herbicide generally the higher rates should be used for satisfactory brush control.

Use the higher dosage rates when brush approaches an average of 15 feet in height or when the brush covers more than 60% of the area to be treated. If lower rates are used on hard-to-control species, resprouting may occur the year following treatment.

On sites where easy to control brush species dominate, rates less than those recommended may be effective. Consult state or local extension personnel for such information.

Foliar Treatment With Ground Equipment

High Volume Foliar Treatment
For control of woody plants, use Garlon 4 at the rate of 1 to 3 quarts per 100 gallons of spray mixture, or Garlon 4 at 1 to 3 quarts may be tank mixed with labeled rates of 2,4-D low volatile ester herbicide, Tordon 101 Mixture herbicide, or Tordon K herbicide and diluted to make 100 gallons of spray. Apply at a volume of 100 to 400 gallons of total spray per acre depending on size and density of woody plants. Coverage should be thorough to wet all leaves, stems, and root collars. See Table 1 for relationship between spray volume and maximum application rate. When tank mixing, follow applicable use directions and precautions on each manufacturer's label.

Low Volume Foliar Treatment
To control susceptible woody plants, mix up to 20 quarts of Garlon 4 in 10 to 100 gallons of finished spray. The spray concentration of Garlon 4 and total spray volume per acre should be adjusted according to the size and density of target woody plants and kind of spray equipment used. With low volume sprays, use sufficient spray volume to obtain uniform coverage of target plants including the surfaces of all foliage, stems, and root collars (See General Use Precautions). For best results, a surfactant should be added to all spray mixtures. Match equipment and delivery rate of spray nozzles to height and density of woody plants. When treating tall, dense brush, a truck mounted spray gun with spray tips that deliver up to 2 gallons per minute at 40 to 60 psi may be required. Backpack or other types of specialized spray equipment with spray tips that deliver less than 1 gallon of spray per minute may be appropriate for short, low to moderate density brush. See Table 1 for relationship between mixing rate, spray volume and maximum application rate.

Tank Mixing: As a low volume foliar spray, up to 12 quarts of Garlon 4 may be applied in tank mix combination with labeled rates of Tordon K or Tordon 101 Mixture in 10 to 100 gallons of finished spray.

Broadcast Applications With Ground Equipment

Make application using equipment that will assure thorough and uniform coverage at spray volumes applied.

Woody Plant Control

Foliage Treatment: Use 4 to 8 quarts of Garlon 4 in enough water to make 5 or more gallons per acre of total spray, or Garlon 4 at 1 1/2 to 3 quarts may be combined with labeled rates of 2,4-D low volatile ester, Tordon 101 Mixture, or Tordon K in sufficient water to make 5 or more gallons per acre of total spray.

Broadleaf Weed Control
Use Garlon 4 at rates of 1 to 4 quarts in a total volume of 5 or more gallons per acre as a water spray mixture. Apply at any time weeds are actively growing. Garlon 4 at 0.25 to 3 quarts may be tank mixed with labeled rates of 2,4-D amine or low volatile ester, Tordon K, or Tordon 101 Mixture to improve the spectrum of activity. For thickened (high viscosity) spray mixtures, Garlon 4 can be mixed with diesel oil or other inverting agent. When using an inverting agent, read and follow the use directions and precautions on the product label.

Aerial Application (Helicopter Only)

Aerial sprays should be applied using suitable drift control (See "General Use Precautions").

Foliage Treatment (Utility and Pipeline Rights-of-Way)
Use 4 to 8 quarts of Garlon 4 alone, or 3 to 4 quarts Garlon 4 in a tank mix combination with labeled rates of 2,4-D low volatile ester Tordon 101 Mixture or Tordon K and apply in a total spray volume of 10 to 30 gallons per acre. Use the higher rates and volumes when plants are dense or under drought conditions.

Basal Bark and Dormant Brush Treatments

To control susceptible woody plants in rights-of-way, and other non-crop areas, and in forests, use Garlon 4 in oil or oil-water mixtures prepared and applied as described below. When preparing mixtures, use as oils either a commercially available basal oil, diesel fuel, No. 1 or No. 2 fuel oil, or kerosene. Substitute other oils or diluents only as recommended by the oil or diluent's manufacturer. When mixing with a basal oil or other oils or diluents, read and follow the use directions and precautions on the product label prepared by the oil or diluent's manufacturer.

Oil Mixture Sprays
Add Garlon 4 to the required amount of oil in the spray tank or mixing tank and mix thoroughly. If the mixture stands over 4 hours, reagitation is required.

Oil Mixtures of Garlon 4 and Tordon K: Tordon K and Garlon 4 may be used in tank mix combination for basal bark treatment of woody plants. These herbicides are incompatible and will not form a stable mixture when mixed together directly in oil. Stable tank mixtures for basal bark application can be made if each product is first combined with a compatibility agent prior to final mixing in the desired ratio.
(See product bulletin for mixing instructions.)

Oil-Water Mixture Sprays
First, premix the Garlon 4, oil and surfactant in a separate container. Do not allow any water or mixtures containing water to get into the Garlon 4 or the premix. Fill the spray tank about half full with water, then slowly add the premix with continuous agitation and complete filling the tank with water. Continue moderate agitation.

Note: If the premix is put in the tank without any water, the first water added may form a thick "invert" (water in oil) emulsion which will be hard to break.

Basal Bark Treatment
To control susceptible woody plants with stems less than 6 inches in basal diameter, mix 1 to 5 gallons of Garlon 4 in enough oil to make 100 gallons of spray mixture. Apply with knapsack sprayer or power spraying equipment using low pressure (20-40 psi). Spray the basal parts of brush and tree trunks to a height of 12 to 15 inches from the ground. Thorough wetting of the indicated area is necessary for good control. Spray until runoff at the ground line is noticeable. Old or rough bark requires more spray than smooth young bark. Apply at any time, including the winter months, except when snow or water prevent spraying to the ground line.

Low Volume Basal Bark Treatment
To control susceptible woody plants with stems less than 6 inches in basal diameter, mix 20 to 30 gallons of Garlon 4 in enough oil to make 100 gallons of spray mixture. Apply with a backpack or knapsack sprayer using low pressure and a solid cone or flat fan nozzle. Spray the basal parts of brush and tree trunks in a manner which thoroughly wets the lower stems, including the root collar area, but not to the point of runoff. Herbicide concentration should vary with size and susceptibility of species treated. Apply at any time, including the winter months, except when snow or water prevent spraying to the ground line or when stem surfaces are saturated with water.

Garlon 4 Plus Tordon K in Oil Tank Mix: Garlon 4 and Tordon K may be applied as a low volume basal bark treatment to improve control of certain woody species such as ash, elm, maple, poplar, aspen, hackberry, oak, oceanspray, birch, hickory, pine, tanoak, cherry, locust, sassafras, and multiflora rose. (See product bulletin for mixing instructions.)

Streamline Basal Bark Treatment (Southern States)
To control or suppress susceptible woody plants for conifer release, mix 20 to 30 gallons of Garlon 4 in enough oil to make 100 gallons of spray mixture. Apply with a backpack or knapsack sprayer using equipment which provides a directed straight stream spray. Apply sufficient spray to one side of stems less than 3 inches in basal diameter to form a treated zone that is 6 inches in height. When the optimum amount of spray mixture is applied, the treated zone should widen to encircle the stem within approximately 30 minutes. Treat both sides of stems which are 3 to 4 inches in basal diameter. Direct the spray at bark that is approximately 12 to 24 inches above ground. Pines (loblolly, slash, shortleaf, and Virginia) up to 2 inches in diameter breast height (dbh) can be controlled by directing the spray at a point approximately 4 feet above ground. Vary spray mixture concentration with size and susceptibility of the species being treated. Best results are achieved when applications are made to young vigorously growing stems which have not developed the thicker bark characteristic of slower growing, understory trees in older stands. This technique is not recommended for scrub and live oak species, including blackjack, turkey, post, live, bluejack and laurel oaks, or bigleaf maple. Apply from approximately 6 weeks prior to hardwood leaf expansion in the spring until approximately 2 months after leaf expansion is completed. Do not apply when snow or water prevent spraying at the desired height above ground level.

Low Volume Stem Bark Band Treatment (North Central and Lake States)
To control susceptible woody plants with stems less than 6 inches in basal diameter, mix 20 to 30 gallons of Garlon 4 in enough oil to make 100 gallons of spray mixture. Apply with a backpack or knapsack sprayer using low pressure and a solid cone or flat fan nozzle. Apply the spray in a 6 to 10 inch wide band that completely encircles the stem. Spray in a manner that completely wets the bark, but not to the point of runoff. The treatment band may be positioned at any height up to the first major branch. For best results apply the band as low as possible. Spray mixture concentration should vary with size and susceptibility of species to be treated. Applications may be made at any time, including winter months.

Thinline Basal Bark Treatment
To control susceptible woody plants with stems less than 6 inches in diameter, apply Garlon 4 either undiluted or mixed at 50-75% v/v with oil in a thin stream to all sides of the lower stems. The stream should be directed horizontally to apply a narrow band around each stem or clump. Use a minimum of 2 to 15 milliliters of Garlon 4 or oil mixture with Garlon 4 to treat single stems and from 25 to 100 milliliters to treat clumps of stems. Use an applicator metered or calibrated to deliver the small amounts required.

Dormant Stem Treatment
Dormant stem treatments will control susceptible woody plants and vines with stems less than 2 inches in diameter. Plants with stems greater than 2 inches in diameter may not be controlled and resprouting may occur. This treatment method is best suited for sites with dense, small diameter brush. Dormant stem treatments of Garlon 4 can also be used as a chemical side-trim for controlling lateral branches of larger trees that encroach onto roadside, utility, or other rights-of-way.

Mix 4 to 8 quarts of Garlon 4 in 2 to 3 gallons of crop oil concentrate or other recommended oil and add this mixture to enough water to make 100 gallons of spray solution. Use continuous adequate agitation. Apply with Radiarc, OC or equivalent nozzles, or handgun using 70 to 100 gallons of spray per acre to ensure uniform coverage of stems. Garlon 4 may be mixed with 4 quarts of Weedone 170 herbicide to improve the control of black cherry and broaden the spectrum of herbicidal activity. In western states, apply anytime after woody plants are dormant. In other areas apply anytime within 10 weeks of budbreak, generally February through April. Do not apply to wet or saturated bark as poor control may result.

Cut Stump Treatment
To control resprouting of cut stumps of susceptible species, mix 20 to 30 gallons of Garlon 4 in enough oil to make 100 gallons of spray mixture. Apply with a backpack or knapsack sprayer using low pressures and a solid cone or flat fan nozzle. Spray the root collar area, sides of the stump, and the outer portion of the cut surface including the cambium until thoroughly wet, but not to the point of runoff. Spray mixture concentration should vary with size and susceptibility of species treated. Apply at any time, including in winter months, except when snow or water prevent spraying to the ground line.

Treatment of Cut Stumps in Western States
To control resprouting of salt-cedar and other *Tamarix* species, bigleaf maple, tanoak, Oregon myrtle, and other susceptible species, apply undiluted

Garlon 4 to wet the cambium and adjacent wood around the entire circumference of the cut stump. Treatments may be applied throughout the year; however, control may be reduced with treatment during periods of moisture stress as in late summer. Use an applicator which can be calibrated to deliver the small amounts of material required.

Note: All basal bark and dormant brush treatment methods may be used to treat susceptible woody species on range and permanent pasture land provided that no more than 1.5 quarts of Garlon 4 are applied per acre. Large plants or species requiring higher rates of Garlon 4 may not be completely controlled.

Forest Management Applications

For broadcast applications apply the recommended rate of Garlon 4 in a total spray volume of 5 to 25 gallons per acre by air or 10 to 100 gallons per acre by ground. Use spray volumes sufficient to provide thorough coverage of treated foliage. Use application systems designed to prevent spray drift to off-target sites. Nozzles or additives that produce larger droplets may require higher spray volumes to provide adequate coverage.

Plant Back Interval for Conifers: Conifers planted sooner than 1 month after treatment with Garlon 4 at less than 4 quarts per acre or sooner than 2 months after treatment at 4 to 8 quarts per acre may be injured. When tank mixtures of herbicides are used for forest site preparation, labels for all products in the mixture should be consulted and the longest recommended waiting period observed.

Broadcast Treatments for Forest Site Preparation (Not For Conifer Release)

Southern States Including Alabama, Arkansas, Delaware, Florida, Georgia, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, and Virginia: To control susceptible woody plants and broadleaf weeds, apply Garlon 4 at a rate of 4 to 8 quarts per acre. To broaden the spectrum of woody plants and broadleaf weeds controlled, apply 2 to 4 quarts per acre of Garlon 4 in tank mix combination with labeled rates of Tordon 101 Mixture or Tordon K. Tordon 101 Mixture and Tordon K are not registered for use in the states of California and Florida. Where grass control is also desired, Garlon 4, alone or in combination with Tordon K or Tordon 101 Mixture, may be tank mixed with labeled rates of other herbicides registered for grass control in forests. Use of tank mix products must be in accordance with the most restrictive of label limitations and precautions. No label application rates should be exceeded. Garlon 4 cannot be tank mixed with any product containing a label prohibition against such mixing.

In Western, Northeastern, North Central, and Lake States (States Not Listed Above As Southern States): To control susceptible woody plants and broadleaf weeds, apply Garlon 4 at a rate of 3 to 6 quarts per acre. To broaden the spectrum of woody plants and broadleaf weeds controlled, apply 1.5 to 3.0 quarts per acre of Garlon 4 in tank mix combination with labeled rates of Tordon 101 Mixture, Tordon K, or 2,4-D low volatile ester. Tordon 101 Mixture and Tordon K are not registered for use in the states of California and Florida. Where grass control is also desired, Garlon 4, alone or in tank mix combination with Tordon 101 Mixture or Tordon K, may be applied with labeled rates of other herbicides registered for grass control in forests. When applying tank mixes, follow applicable use directions and precautions on each product label.

Applications for Site Preparation in Southern Coastal Flatwoods: To control susceptible broadleaf weeds and woody species such as gallberry and wax-myrtle, and for partial control of saw-palmetto, apply 2 to 4 quarts per acre of Garlon 4. To broaden the spectrum of species controlled to include fetterbush, staggerbush, titi, and grasses, apply 2 to 3 quarts per acre of Garlon 4 in tank mix combination with labeled rates of Arsenal Applicator's Concentrate herbicide. Where control of gallberry, wax-myrtle, broadleaf weeds, and grasses is desired, 2 to 3 quarts per acre of Garlon 4 may be applied in tank mix combination with labeled rates of Accord herbicide.

These treatments may be broadcast during site preparation of flat planted or bedded sites or, on bedded sites, applied in bands over the top of beds. For best results, make applications in late summer or fall. Efficacy may not be satisfactory when applications are made in early season prior to August. **Note: Do not apply after planting pines.**

Applications for Conifer Release

Note: Applications for conifer release may cause temporary damage and growth suppression where contact with conifers occurs; however, injured conifers should recover and grow normally. Over-the-top spray applications can kill pines.

Directed Sprays
To release conifers from competing hardwoods and brush such as red maple, sugar maple, striped maple, sweetgum, red and white oaks, ash, hickory, alder, birch, aspen, pin cherry, *Ceanothus* spp., blackberry, chinquapin, and poison oak, mix 4 to 20 quarts of Garlon 4 in enough water to make 100 gallons of spray mixture. This spray should be directed onto foliage of competitive hardwoods using knapsack or backpack sprayers with flat fan nozzles or equivalent any time after the hardwoods and brush have reached full leaf size, but before autumn coloration. The majority of treated hardwoods and brush should be less than 6 feet in height to ensure adequate spray coverage. Care should be taken to direct spray solutions away from conifer foliage, particularly foliage of desirable pines. See Table 1 for relationship between mixing rate, spray volume and maximum application rate.

Broadcast Applications for Mid-Rotation Understory Brush Control in Southern Coastal Flatwoods Pine Stands (Ground Equipment Only)
For control of susceptible species such as gallberry and wax-myrtle and broadleaf weeds, apply 2 to 4 quarts per acre of Garlon 4. To broaden the spectrum of woody plants controlled to include fetterbush, staggerbush, and titi, apply 2 to 3 quarts per acre of Garlon 4 in tank mix combination with labeled rates of Arsenal Applicator's Concentrate. Saw-palmetto will be partially controlled by use of Garlon 4 at 4 quarts per acre or by mixtures of Garlon 4 at 2 to 3 quarts per acre in tank mix combination with either Arsenal Applicator's Concentrate or Escort herbicide.

These mixtures should be broadcast applied over target understory brush species, **but to prevent injury to pines, make applications underneath the foliage of pines.** It is recommended that sprays be applied in 30 or more gallons per acre of total volume. For best results, make applications in late summer or fall. Efficacy may not be satisfactory when applications are made in early season prior to August.

Broadcast Applications for Conifer Release in the Pacific Northwest and California

On Dormant Conifers Before Bud Swell (Excluding Pines): To control or suppress deciduous hardwoods such as vine maple, bigleaf maple, alder, scotch broom, or willow **before leaf-out** or evergreen hardwoods such as madrone, chinquapin, and *Ceanothus* spp., use Garlon 4 at 1 to 2 quarts per acre. Diluents used may be diesel or fuel oil. Or, water plus 1 to 2 gallons per acre of diesel oil or a suitable surfactant or oil substitute at manufacturer's recommended rates may be used.

On Conifer Plantations (Excluding Pines) After Hardwoods Begin Growth and Before Conifer Bud Break ("Early Foliar" Hardwood Stage): Use Garlon 4 at 1.0 to 1.5 quarts alone or plus 2,4-D low volatile ester herbicide in water carrier to provide no more than 3 pounds acid

equivalent per acre from both products. After conifer bud break, these sprays may cause more serious injury to the crop trees. Use of a surfactant may cause unacceptable injury to conifers especially after bud break.

On Conifer Plantations (Excluding Pines) After Conifers Harden Off In Late Summer and While Hardwoods Are Still Growing Actively: Use Garlon 4 at rates of 1.0 to 1.5 quarts per acre alone or plus 2,4-D low volatile ester to provide no more than 3 pounds acid equivalent per acre from both products. Treat as soon after conifer bud hardening as possible so that hardwoods and brush are actively growing. Use of oil, oil substitute, or surfactant may cause unacceptable injury to the conifers.

Broadcast Applications for Conifer Release in the Eastern United States
To release spruce, fir, red pine, and white pine from competing hardwoods such as red maple, sugar maple, striped maple, alder, birch (white, yellow, and grey), aspen, ash, pin cherry, and *Rubus* spp. and perennial and annual broadleaf weeds, use Garlon 4 at rates of 1.5 to 3.0 quarts per acre alone or plus 2,4-D amine or low volatile ester to provide no more than 4 pounds acid equivalent per acre from both products. Applications should be made in late summer or early fall after conifers have formed their overwintering buds and hardwoods are in full leaf and prior to autumn coloration.

Broadcast Applications for Conifer Release in the Lake States Region
To release spruce, fir, and red pine from competing hardwoods such as aspen, birch, maple, cherry, willow, oak, hazel, and *Rubus* spp. and perennial and annual broadleaf weeds, use Garlon 4 at rates of 1.5 to 3.0 quarts per acre. Applications should be made in late summer or early fall after conifers have formed their overwintering buds and hardwoods are in full leaf and prior to autumn coloration.

Warranty Disclaimer

Dow AgroSciences warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes stated on the label when used in strict accordance with the directions, subject to the inherent risks set forth below. Dow AgroSciences MAKES NO OTHER EXPRESS OR IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY OTHER EXPRESS OR IMPLIED WARRANTY.

Inherent Risks of Use

It is impossible to eliminate all risks associated with use of this product. Plant injury, lack of performance, or other unintended consequences may result because of such factors as use of the product contrary to label instructions (including conditions noted on the label, such as unfavorable temperature, soil conditions, etc.), abnormal conditions (such as excessive rainfall, drought, tornadoes, hurricanes), presence of other materials, the manner of application, or other factors, all of which are beyond the control of Dow AgroSciences or the seller. All such risks shall be assumed by buyer.

Limitation of Remedies

The exclusive remedy for losses or damages resulting from this product (including claims based on contract, negligence, strict liability, or other legal theories), shall be limited to, at Dow AgroSciences' election, one of the following:

1. Refund of purchase price paid by buyer or user for product bought, or
2. Replacement of amount of product used

Dow AgroSciences shall not be liable for losses or damages resulting from handling or use of this product unless Dow AgroSciences is promptly notified of such loss or damage in writing. In no case shall Dow AgroSciences be liable for consequential or incidental damages or losses.

The terms of the "Warranty Disclaimer" above and this "Limitation of Remedies" cannot be varied by any written or verbal statements or agreements. No employee or sales agent of Dow AgroSciences or the seller is authorized to vary or exceed the terms of the "Warranty Disclaimer" or this "Limitation of Remedies" in any manner.

*Trademark of Dow AgroSciences LLC
Dow AgroSciences LLC • Indianapolis, IN 46268 U.S.A.

Label Code: D02-102-023
Replaces Label: D02-102-022

EPA-Accepted 07/22/97

Revisions:
Minor corrections to EPA accepted text dated 7-22-97

ATTACHMENT C2

PATHFINDER II®

Specimen Label

Dow AgroSciences

Pathfinder* II

Specialty Herbicide

*Trademark of Dow AgroSciences LLC

A ready-to-use herbicide for the control of woody plants on:

- **Forests**
- **Non-crop areas including: Industrial manufacturing and storage sites, rights-of-way, non-irrigation ditch banks**
- **Rangeland and permanent pastures**
- **Grazed areas and maintenance of wildlife openings on those sites**

Active Ingredient:	
triclopyr: 3,5,6-trichloro-2-pyridinyloxyacetic acid, butoxyethyl ester	13.6%
Inert Ingredients	86.4%
Total	100.0%

Acid Equivalent: triclopyr – 9.81% – 0.75 lb/gal

EPA Reg. No. 62719-176

Keep Out of Reach of Children

CAUTION PRECAUCION

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand the label, find someone to explain it to you in detail.)

Precautionary Statements

Hazards to Humans and Domestic Animals

Harmful If Swallowed, Inhaled Or Absorbed Through The Skin

Avoid contact with skin, eyes or clothing. Avoid breathing vapor or spray mist. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.

Personal Protective Equipment (PPE)

Some materials that are chemical-resistant to this product are listed below. If you want more options, follow the instructions for category E on an EPA chemical resistance category selections chart.

Applicators and other handlers must wear:

- Long-sleeved shirt and long pants
- Chemical-resistant gloves such as Barrier Laminate, Nitrile Rubber, Neoprene Rubber, or Viton
- Shoes plus socks

Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

User Safety Recommendations

Users should:

- Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.
- Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.

First Aid

If on skin: Wash with plenty of soap and water. Get medical attention.
If inhaled: Remove victim to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. Get medical attention.
If swallowed: Call a physician or Poison Control Center. Drink 1 or 2 glasses of water and induce vomiting by touching back of throat with finger. Do not induce vomiting or give anything by mouth to an unconscious person.

Environmental Hazards

This pesticide is toxic to fish. Keep out of lakes, ponds or streams. Do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwaters.

Physical or Chemical Hazards

Combustible - Do not use or store near heat or open flame. Do not cut or weld container.

Notice: Read the entire label. Use only according to label directions. **Before buying or using this product, read "Warranty Disclaimer" and "Limitation of Remedies" elsewhere on this label.**

In case of emergency endangering health or the environment involving this product, call 1-800-992-5994. If you wish to obtain additional product information, visit our web site at www.dowagro.com.

Agricultural Chemical: Do not ship or store with food, feeds, drugs or clothing.

Directions for Use

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.
Read all Directions for Use carefully before applying.

Ready-To-Use, No Mixing Required.

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your state or tribe, consult the agency responsible for pesticide regulation.

Agricultural Use Requirements

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE) and restricted-entry interval. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 12 hours.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water, is:

- Coveralls
- Chemical-resistant gloves such as Barrier Laminate, Nitrile Rubber, Neoprene Rubber, or Viton
- Shoes plus socks

Storage and Disposal

Do not contaminate water, food or feed by storage or disposal. Open dumping is prohibited.
Storage: Store above 28°F or agitate before use.
Pesticide Disposal: Pesticide, spray mixture, or rinsate that cannot be used according to label instructions must be disposed of according to applicable federal, state, or local procedures.
Container Disposal: Triple rinse (or equivalent) with 10 drops or more of a liquid hand soap and water or an oil basal product such as kerosene or diesel fuel and spray rinsate on undesirable vegetation, in target area. Offer containers for recycling or reconditioning where allowed, or puncture and dispose of in a sanitary landfill, or by incineration if approved by state and local procedures.
Container Disposal for Refillable Containers: Close all openings which have been opened during use and replace all caps. Return the empty container to a collection site designated by Dow AgroSciences. If the container has been damaged and cannot be returned according to the recommended procedures, contact the Dow AgroSciences Customer Service Center at 1-800-258-1470 to obtain proper handling instructions.
General: Consult federal, state, or local disposal authorities for approved alternative procedures.

General Information

Pathfinder II herbicide is a ready-to-use product which is recommended for the control of unwanted woody plants through the use of basal bark application techniques in forests, rangeland and permanent pastures, and on non-crop areas including industrial manufacturing and storage sites, rights-of-way such as electrical power lines, communication lines, pipelines, road sides and railroads, fence rows, non-irrigation ditch banks and around farm buildings. Use on these sites may include application to grazed areas as well as establishment and maintenance of wildlife openings.

General Use Precautions

The state of Arizona has not approved Pathfinder II for use on plants grown for commercial production; specifically forests grown for commercial timber production, or on designated grazing areas.

Apply this product only as specified on this label.

Do not apply this product through any type of irrigation system.

It is permissible to treat non-irrigation ditch banks, seasonally dry wetlands, flood plains, deltas, marshes, swamps, bogs, and transitional areas between upland and lowland sites. Do not apply to open water (such as lakes, reservoirs, rivers, streams, creeks, salt water bays or estuaries) nor to water present in fresh water wetlands, deltas, marshes, swamps, bogs or potholes, or to salt water marshes below the mean high water mark.

Do not apply Pathfinder II herbicide directly to, or otherwise permit it to come into direct contact with grapes, tobacco, vegetable crops, flowers or other desirable broadleaf plants, and do not permit spray mists containing it to drift onto them.

Avoid Injurious Spray Drift: Applications should be made only when there is little or no hazard from spray drift. Very small quantities of spray, which may not be visible, may seriously injure susceptible plants. Do not spray when wind is blowing toward susceptible crops or ornamental plants near enough to be injured.

With ground equipment, spray drift can be reduced by using spray pressures no greater than are required to obtain adequate coverage; by using large droplet producing nozzle tips; and by spraying when wind velocity is low. Do not apply with nozzles that produce a fine droplet spray. Do not apply with an orchard type mist blower.

Do not apply on snow or frozen ground.

Untreated trees occasionally can be affected by movement of the herbicide through root grafting with the treated trees.

Since this herbicide moves within the treated plant, do not use Pathfinder II on parts of a multiple stem plant if injury to the untreated portions (cut or standing stems) cannot be tolerated.

Do not apply on ditches used to transport irrigation water. Do not apply where runoff or irrigation water may flow onto agricultural land as injury to crops may result.

Be sure that use of this product conforms to all applicable regulations.

Grazing and Haying Restrictions

Grazing or harvesting green forage:

1) Lactating dairy animals
   - 2.5 gallons/acre or less: Do not graze or harvest green forage from treated area for 14 days after treatment.
   - Greater than 2.5 gallons/acre: Do not graze or harvest green forage until the next growing season.
2) Other Livestock
   - 2.5 gallons/acre or less: No grazing restrictions.
   - Greater than 2.5 to 7.5 gallons/acre: Do not graze or harvest green forage from treated area for 14 days after treatment. **Note:** If less than 25% of a grazed area is treated, there is no grazing restriction.

Haying (harvesting of dried forage):

1) Lactating dairy animals
   - Do not harvest hay until the next growing season.

2) Other Livestock
   - 2.5 gallons/acre or less: Do not harvest hay for 7 days after treatment.
   - Greater than 2.5 to 5 gallons/acre: Do not harvest hay for 14 days after treatment.
   - Greater than 5 gallons/acre: Do not harvest hay until the next growing season.

Slaughter Restrictions: Withdraw livestock from grazing treated grass or consumption of treated hay at least 3 days before slaughter. This restriction applies to grazing during the season following treatment or hay harvested during the season following treatment.

Among The Woody Plant Species Controlled Are:

ailanthus	hackberry	oak, water
alder, red	hazel	oak, white
alder, speckled	hercules club	olive, autumn
ash, green	hickory, mockernut	olive, Russian
ash, white	hickory, pignut	persimmon, common
aspen†	honeylocust	pine, jack
Australian pine	hornbeam (blue beach)	pine, loblolly
basswood	locust, black†	pine, ponderosa
beech, American	madrone, Pacific	pine, red
birch, black	manzanita, greenleaf	pine, white
birch, gray	maple, bigleaf†	poison ivy
birch, paper	maple, mountain	poison oak
blackberry	maple, red	poplar, balsam
black locust	maple, silver	redcedar, eastern
blackgum	maple, striped	salt cedar†
boxelder	maple, sugar	sassafras†
Brazilian pepper	maple, vine	sumac, smooth†
cherry, black†	mesquite†/†††	sumac, staghorn†
cherry, choke	mountain-laurel	sweetgum
cherry, pin	oak, black††	sycamore
cottonwood	oak, blackjack††	tamarack
dogwood, flowering	oak, chestnut	tanoak
dogwood, red-osier	oak, post††	walnut
elm, American	tanoak	waxmyrtle
elm, winged†	walnut	willow
gallberry	oak, red	yaupon
guava	oak, scarlet	yellow poplar

† Some resprouting may occur.
†† Not recommended for streamline basal treatment.
††† Suppression only with streamline basal bark treatment.

Approved Uses

Forest Uses

Agricultural Use Requirements for Forest Use: For the following crop and forestry uses, follow PPE and Reentry instructions in the "Agricultural Use Requirements" section of this label.

Non-crop Uses Such As Rights-of-Way, Industrial Sites, Rangeland and Permanent Pastures, Non-irrigation Ditch Banks and Wildlife Openings.

Use Requirements for Non-cropland Areas: No Worker Protection Standard worker entry restrictions or worker notification requirements apply when this product is applied to non-cropland areas.

Low Volume Basal Bark Treatment
To control susceptible woody plants with stems less than 6 inches in basal diameter, apply Pathfinder II with a backpack or knapsack sprayer using low pressure and a solid cone or flat fan nozzle. Spray the basal parts of brush and tree trunks in a manner which thoroughly wets the lower 12 to 15 inches of stems, including the root collar area, but not to the point of runoff. Herbicide concentration should vary with size and susceptibility of species treated. Apply at any time, including the winter months, except when snow or water prevent spraying to the ground line.

Treatment of Cut Stumps
To control resprouting, apply undiluted Pathfinder II to wet the area adjacent to the cambium and bark around the entire circumference and the sides of cut stumps. Sides of stumps should be thoroughly wetted down to the root collar area, but not to the point of runoff. Treatments may be applied throughout the year, except when snow or water prevent spraying to the ground line. Control may be reduced with treatment during periods of moisture stress as in late summer.

Streamline Basal Bark Treatment (Southern States)
To control or suppress susceptible woody plants for conifer release or in rangeland and pasture, apply Pathfinder II with a backpack or knapsack sprayer using equipment which provides a directed straight-stream spray. Apply sufficient spray to one side of stems less than 3 inches in basal diameter to form a treated zone that is 6 inches in height. When the optimum amount of spray mixture is applied, the treated zone should widen to encircle the stem within approximately 30 minutes. Treat both sides of stems which are 3 to 4 inches in basal diameter. Direct the spray at bark that is approximately 12 to 24 inches above ground. Pines (loblolly, slash, shortleaf, and Virginia) up to 2 inches in diameter breast height (dbh) can be controlled by directing the spray at the point approximately 4 feet above ground. Best results are achieved when applications are made to young vigorously growing stems which have not developed the thicker bark characteristic of slower growing, understory trees in older stands. This technique is not recommended for scrub and live oak species, including blackjack, turkey, post, live, bluejack and laurel oaks. Apply from approximately 6 weeks prior to hardwood leaf expansion in the spring until approximately 2 months after leaf expansion is completed. Do not apply when snow or water prevent spraying at the desired height above ground level.

Warranty Disclaimer

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Inherent Risks of Use

It is impossible to eliminate all risks associated with use of this product. Plant injury, lack of performance, or other unintended consequences may result because of such factors as use of the product contrary to label instructions (including conditions noted on the label, such as unfavorable temperature, soil conditions, etc.), abnormal conditions (such as excessive rainfall, drought, tornadoes, hurricanes), presence of other materials, the manner of application, or other factors, all of which are beyond the control of Dow AgroSciences or the seller. All such risks shall be assumed by buyer.

Limitation of Remedies

The exclusive remedy for losses or damages resulting from this product (including claims based on contract, negligence, strict liability, or other legal theories), shall be limited to, at Dow AgroSciences' election, one of the following:

1. Refund of purchase price paid by buyer or user for product bought, or
2. Replacement of amount of product used

Dow AgroSciences shall not be liable for losses or damages resulting from handling or use of this product unless Dow AgroSciences is promptly notified of such loss or damage in writing. In no case shall Dow AgroSciences be liable for consequential or incidental damages or losses.

The terms of the "Warranty Disclaimer" above and this "Limitation of Remedies" cannot be varied by any written or verbal statements or agreements. No employee or sales agent of Dow AgroSciences or the seller is authorized to vary or exceed the terms of the "Warranty Disclaimer" or this "Limitation of Remedies" in any manner.

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Label Code: D02-104-007
Replaces Label: D02-104-006

EPA Accepted 05/17/94

Revisions:

1. General Use Precautions (The following statement was deleted from this section): "Do not use for manufacturing or formulating."

ATTACHMENT C3

ACCORD®

MATERIAL SAFETY DATA SHEET

Dow AgroSciences

Emergency Phone: 800-992-5994
Dow AgroSciences LLC
Indianapolis, IN 46268

ACCORD* CONCENTRATE HERBICIDE

Effective Date: 3/23/04
Product Code: 84820
MSDS: 006694

1. PRODUCT AND COMPANY IDENTIFICATION:

PRODUCT: Accord* Concentrate Herbicide

COMPANY IDENTIFICATION:
Dow AgroSciences LLC
9330 Zionsville Road
Indianapolis, IN 46268-1189

2. COMPOSITION/INFORMATION ON INGREDIENTS:

Glyphosate IPA: N-(phosphono-methyl) glycine, Isopropylamine Salt	CAS # 038641-94-0	53.8%
Balance, Total		46.2%

3. HAZARDOUS IDENTIFICATIONS:

EMERGENCY OVERVIEW

Clear, pale yellow liquid. May cause eye irritation. Slightly toxic to aquatic organisms.
EMERGENCY PHONE NUMBER: 800-992-5994

4. FIRST AID:

EYE: Flush eyes thoroughly with water for several minutes. Remove contact lenses after initial 1-2 minutes and continue flushing for several additional minutes. If effects occur, consult a physician, preferably an ophthalmologist.

SKIN: Wash skin with plenty of water.

INGESTION: No emergency medical treatment necessary.

INHALATION: Remove person to fresh air; if effects occur, consult a physician.

NOTE TO PHYSICIAN: No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

5. FIRE FIGHTING MEASURES:

FLASH POINT: >214°F (>101°C)
METHOD USED: Setaflash

FLAMMABLE LIMITS:
LFL: Not applicable
UFL: Not applicable

EXTINGUISHING MEDIA: Foam, CO_2, Dry Chemical

FIRE AND EXPLOSION HAZARDS: Foam fire extinguishing system is preferred because uncontrolled water can spread possible contamination. Toxic irritating gases may be formed under fire conditions.

FIRE-FIGHTING EQUIPMENT: Use positive-pressure, self-contained breathing apparatus and full protective equipment.

6. ACCIDENTAL RELEASE MEASURES:

ACTION TO TAKE FOR SPILLS: Absorb small spills with an inert absorbent material such as Hazorb, Zorball, sand, or dirt. Report large spills to Dow AgroSciences on 800-992-5994.

7. HANDLING AND STORAGE:

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Keep out of reach of children. Do not swallow. Avoid contact with eyes, skin, and clothing. Avoid breathing vapors and spray mist. Handle concentrate in ventilated area. Wash thoroughly with soap and water after handling and before eating, chewing gum, using tobacco, using the toilet or smoking. Keep away from food, feedstuffs, and water supplies. Store in original container with the lid tightly closed. Store above 10°F (-12°C) to keep from crystallizing.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION:

These precautions are suggested for conditions where the potential for exposure exists. Emergency conditions may require additional precautions.

EXPOSURE GUIDELINES: None established

ENGINEERING CONTROLS: Good general ventilation should be sufficient for most conditions. Local exhaust ventilation may be necessary for some operations.

RECOMMENDATIONS FOR MANUFACTURING, COMMERCIAL BLENDING, AND PACKAGING WORKERS:

EYE/FACE PROTECTION: Use safety glasses.

SKIN PROTECTION: No precautions other than clean body-covering clothing should be needed.

RESPIRATORY PROTECTION: For most conditions, no respiratory protection should be needed; however, if discomfort is experienced, use a NIOSH approved air-purifying respirator.

APPLICATIONS AND ALL OTHER HANDLERS: Please refer to the product label for personal protective clothing and equipment.

9. PHYSICAL AND CHEMICAL PROPERTIES:

APPEARANCE: Clear, pale yellow liquid
DENSITY: 10.0 - 10.5 lbs/gal
pH: 4.8 – 5.0
ODOR: None
SOLUBILITY IN WATER: Miscible
SPECIFIC GRAVITY: 1.21 gm/L
FREEZING POINT: -7°F - -10°F (-21°C - -25°C)

10. STABILITY AND REACTIVITY:

STABILITY: (CONDITIONS TO AVOID) Stable under normal storage conditions.

INCOMPATIBILITY: (SPECIFIC MATERIALS TO AVOID) Galvanized or unlined steel (except stainless steel) containers or spray tanks may produce hydrogen gas which may form a highly combustible gas mixture.

HAZARDOUS DECOMPOSITION PRODUCTS: None known.

HAZARDOUS POLYMERIZATION: Not known to occur.

11. TOXICOLOGICAL INFORMATION:

EYE: May cause slight temporary eye irritation. Corneal injury is unlikely.

SKIN: Essentially non-irritating to skin. Prolonged skin contact is unlikely to result in absorption of harmful amounts. The LD_{50} for skin absorption in rabbits is >5000 mg/kg. Did not cause allergic skin reactions when tested in guinea pigs.

INGESTION: Very low toxicity if swallowed. Harmful effects not anticipated from swallowing small amounts. The oral LD_{50} for rats is >5000 mg/kg.

INHALATION: Brief exposure (minutes) is not likely to cause adverse effects. The aerosol LC_{50} for rats is >6.37 mg/L for 4 hours.

SYSTEMIC (OTHER TARGET ORGAN) EFFECTS: For a similar material, glyphosate, in animals, effects have been reported on the following organ: liver.

CANCER INFORMATION: A similar material, glyphosate, did not cause cancer in laboratory animals.

TERATOLOGY (BIRTH DEFECTS): For glyphosate IPA, available data are inadequate for evaluation of potential to cause birth defects.

REPRODUCTIVE EFFECTS: For glyphosate IPA, available data are inadequate to determine effects on reproduction.

MUTAGENICITY: For a similar material, glyphosate, in-vitro and animal genetic toxicity studies were negative.

12. ECOLOGICAL INFORMATION:

ENVIRONMENTAL DATA:

ECOTOXICOLOGY:
Material is practically non-toxic to aquatic organisms on an acute basis (LC_{50} or EC_{50} is >100 mg/L in most sensitive species tested).
Acute LC_{50} for rainbow trout *(Oncorhynchus mykiss)* is >2500 mg/L.
Acute immobilization EC_{50} in water flea *(Daphnia magna)* is 918 mg/L.
Material is practically non-toxic to birds on an acute basis (LD_{50} is >2000 mg/kg).
Acute oral LD_{50} in bobwhite *(Colinus virginianus)* is >2000 mg/kg.
The LC_{50} in earthworm Eisenia foetida is >1000 mg/kg.
Acute contact LD_{50} in honey bee *(Apis mellifera)* is >100 µg/bee.
Acute oral LD_{50} in honey bee *(Apis mellifera)* is >100 µg/bee.
Growth inhibition EC_{50} in green alga *(Selenastrum capricornutum)* is 127 mg/L.
Growth inhibition EC_{50} in duckweed *(Lemna sp.)* is 24.4 mg/L.

13. DISPOSAL CONSIDERATIONS:

DISPOSAL METHOD: If wastes and/or containers cannot be disposed of according to the product label directions, disposal of this material must be in accordance with your local or area regulatory authorities.

MATERIAL SAFETY DATA SHEET

Dow AgroSciences

Emergency Phone: 800-992-5994
Dow AgroSciences LLC
Indianapolis, IN 46268

ACCORD* CONCENTRATE HERBICIDE

Effective Date: 3/23/04
Product Code: 84820
MSDS: 006694

This information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations.

If the material as supplied becomes a waste, follow all applicable regional, national and local laws and regulations.

14. TRANSPORT INFORMATION:

U.S. DEPARTMENT OF TRANSPORTATION (DOT) INFORMATION:

For all package sizes and modes of transportation:
This material is not regulated for transport.

15. REGULATORY INFORMATION:

NOTICE: The information herein is presented in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ from one location to another; it is the buyer's responsibility to ensure that its activities comply with federal, state or provincial, and local laws. The following specific information is made for the purpose of complying with numerous federal, state or provincial, and local laws and regulations.

U.S. REGULATIONS

SARA 313 INFORMATION: To the best of our knowledge, this product contains no chemical subject to SARA Title III Section 313 supplier notification requirements.

SARA HAZARD CATEGORY: This product has been reviewed according to the EPA "Hazard Categories" promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

Not to have met any hazard category

TOXIC SUBSTANCES CONTROL ACT (TSCA): All ingredients are on the TSCA inventory or are not required to be listed on the TSCA inventory.

STATE RIGHT-TO-KNOW: This product is not known to contain any substances subject to the disclosure requirements of

New Jersey
Pennsylvania

OSHA HAZARD COMMUNICATION STANDARD: This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY ACT (CERCLA, or SUPERFUND): To the best of our knowledge, this product contains no chemical subject to reporting under CERCLA.

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) RATINGS:

CATEGORY	RATING
Health	1
Flammability	1
Reactivity	0

16. OTHER INFORMATION:

MSDS STATUS: Revised Sections: 3,4,11,12,13,14 & 15
Reference: DR-0361-8028
Replaces MSDS Dated: 1/12/00
Document Code: D03-145-002
Replaces Document Code: D03-145-001

The Information Herein Is Given In Good Faith, But No Warranty, Express Or Implied, Is Made. Consult Dow AgroSciences For Further Information.

*Trademark of Dow AgroSciences LLC

ATTACHMENT C4

VELPAR®

The MSDS format adheres to the standards and regulatory requirements of the United States and may not meet regulatory requirements in other countries.

"DuPont" "VELPAR" DF HERBICIDE
M0000325 Revised 25-JUN-2003

CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Material Identification

VELPAR is a registered trademark of DuPont.

"DuPont" is a trademark of DuPont.

Corporate MSDS Number : DU008210

Tradenames and Synonyms

"Velpar" F
"VELPAR" 75WG
DUPONT VELPAR 75WG

Company Identification

MANUFACTURER/DISTRIBUTOR
DuPont
1007 Market Street
Wilmington, DE 19898

PHONE NUMBERS
Product Information : 1-800-441-7515 (outside the U.S. 302-774-1000)
Transport Emergency : CHEMTREC 1-800-424-9300(outside U.S. 703-527-3887)
Medical Emergency : 1-800-441-3637 (outside the U.S. 302-774-1000)

COMPOSITION/INFORMATION ON INGREDIENTS

Components

Material	CAS Number	%
*HEXAZINONE (3-cyclohexyl-6-(dimethylamino)-1-methyl-1,3,5-triazine-2,4(1H,3H)-dione)	51235-04-2	75
INERT INGREDIENTS		25

* Disclosure as a toxic chemical is required under Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.

HAZARDS IDENTIFICATION

Emergency Overview

DANGER Corrosive, causes irreversible eye damage. Harmful if swallowed. Do not get in eyes or on clothing. Avoid contact with skin. Wash thoroughly with soap and water after handling.

Potential Health Effects

HUMAN HEALTH EFFECTS OF OVEREXPOSURE TO HEXAZINONE:

Overexposure to hexazinone by eye contact may initially include eye irritation with discomfort, tearing, or blurring of vision.

Ingestion may include abnormal liver function as detected by laboratory tests.

Significant skin permeation and systemic toxicity after contact appears unlikely. Individuals with preexisting diseases of the liver may have increased susceptability to the toxicity of excessive exposures.

Carcinogenicity Information

None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, OSHA or ACGIH as a carcinogen.

FIRST AID MEASURES

First Aid

IF IN EYES: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

IF ON SKIN OR CLOTHING: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

IF SWALLOWED: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Do not give anything by mouth to an unconscious person.

INHALATION: No specific intervention is indicated, as the compound is not likely to be hazardous by inhalation. Consult a physician if necessary.

(FIRST AID MEASURES - Continued)

Notes to Physicians

Probable mucosal damage may contraindicate the use of gastric lavage.

Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-800-441-3637 for emergency medical treatment information.

FIRE FIGHTING MEASURES

Flammable Properties

Not a fire or explosion hazard.

Extinguishing Media

Use media appropriate for surrounding material.

Fire Fighting Instructions

Keep personnel removed and upwind of fire. Wear self-contained breathing apparatus. Wear full protective equipment.

If area is exposed to fire and conditions permit, let fire burn itself out. Burning chemicals may produce by-products more toxic than the original material. If product is on fire, wear self-contained breathing apparatus and full protective equipment. Use water spray. Control runoff.

ACCIDENTAL RELEASE MEASURES

Safeguards (Personnel)

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

Emergency Response - Chemical resistant coveralls, waterproof gloves, waterproof boots and face/eye protection. If dusting occurs, use NIOSH approved respirator protection.

Initial Containment

Dike spill. Prevent material from entering sewers, waterways, or low areas.

Spill Clean Up

Shovel or sweep up.

HANDLING AND STORAGE

Handling (Personnel)

Do not get in eyes. Avoid breathing dust. Avoid contact with skin. Avoid contact with clothing.

USERS SHOULD: Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.

Storage

Store product in original container only. Do not contaminate water, other pesticides, fertilizer, food or feed in storage.

EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls

Use only with adequate ventilation.

Personal Protective Equipment

Applicators and other handlers must wear:

Long-sleeved shirt and long pants.
Shoes plus socks.
Protective eye wear

Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them.

Follow manufacturer instructions for cleaning and maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water is:

- Coveralls.
- Chemical resistant gloves in Category A (such as
- butyl rubber, natural rubber, neoprene rubber, or
- Nitrile rubber) all greater than or equal to 14
- mils.
- Shoes plus socks.
- Protective eyewear.

Exposure Guidelines

Applicable Exposure Limits
HEXAZINONE

PEL	(OSHA)	: None Established
TLV	(ACGIH)	: None Established
AEL *	(DuPont)	: 10 mg/m3, 8 Hr. TWA

* AEL is DuPont's Acceptable Exposure Limit. Where governmentally imposed occupational exposure limits which are lower than the AEL are in effect, such limits shall take precedence.

PHYSICAL AND CHEMICAL PROPERTIES

Physical Data

Odor	: Acrid (slight).
Form	: Dry Flowable Granules.
Color	: Tan (light).
pH	: 8.4 (1% wt/wt in water)
Density	: 0.58 g/mL
Solubility in Water¸	: Water Dispersible

STABILITY AND REACTIVITY

Chemical Stability

Stable at normal temperatures and storage conditions.

Incompatibility with Other Materials

Incompatible or can react with strong bases.

Decomposition

Decomposition will not occur.

Polymerization

Polymerization will not occur.

TOXICOLOGICAL INFORMATION

Animal Data

Acute Oral LD50¸: calculated to be 1310 mg/kg in rats.

Acute Dermal LD50¸: > 5000 mg/kg in rabbits.

Inhalation 4 hour LC50¸: > 5.2 mg/L in rats.

Eye Irritation: In tests with rabbits, product caused conjunctival chemosis, conjunctival redness, and corneal opacity. Positive irritant effects were present in 1 rabbit

(TOXICOLOGICAL INFORMATION - Continued)

21 days after treatment.

Skin irritation and Sensitization: According to criteria established by the U.S. EPA this product is considered to be a moderate skin irritant. According to criteria established by EEC Directive 93/21 this product can be classified a non-irritant. Product is not a skin sensitizer in tests on guinea pigs.

OTHER STUDIES - Hexazinone

Oral (rat): In a 2-year feeding study with the 90% powder, the no-observable-effect level (NOEL) was 200 ppm a.i.; nutritional and body weight effects were seen in females at 1000 ppm a.i. and in both sexes at 2500 ppm a.i. Biochemical effects were noted in both sexes at 2500 ppm a.i.

Oral (mouse): In a 2-year feeding study with technical material, the no-observable-effect level (NOEL) was 200 ppm. Decreased body weight gain was observed in both sexes at 2500 ppm and 10000 ppm. This effect was severe at 10000 ppm, the highest level tested. Non-neoplastic liver effects were noted in males at 2500 ppm and in both sexes at 10000 ppm. Based on recent pathology review, hyperplastic liver nodules diagnosed at 10000 ppm when this study was initially conducted have been reclassified as liver adenomas. This effect was only significant among female mice in this dose group. This change reflects the current scientific concensus regarding the classification of this benign lesion in the mouse liver.

Oral (dog): In a 1-year feeding study with technical material, the NOEL was 200 ppm. Reduced food consumption and body weight gains were significant at the high dose, 6000 ppm. These nutritional effects were associated with mild but reversible changes in hematological parameters at the high dose. Increased liver weights and other non-neoplastic liver effects as indicated by histopathology and changes in clinical chemical parameters were observed at 1500 and/or 60000 ppm.

Reproduction (rat): In a 3-generation, 3-litter study with 90% powder, no adverse reproduction or lactation effects were seen at any level; slightly depressed average weanling weights were noted in the second and third litters at the high dose, 2500 ppm. A second rat reproduction study (2-generation, 3-litter study) was conducted at dietary doses from 200 to 5000 ppm. There were no adverse effects on fertility. The NOEL was 200 ppm. Decreased food consumption, parental body weight gain and decreased offspring weights were observed at the higher doses.

Teratogenicity: Not teratogenic or embrryo-fetal toxic to

(TOXICOLOGICAL INFORMATION - Continued)

rats by dietary administration at levels as high as 5000 ppm, the highest dose tested. Administration to rats by oral intubation resulted in a NOEL for maternal and fetal effects of 100 mg/kg body wt./day. Maternal toxicity (reduced food consumption and lower body weights) was observed at 400 and 900 mg/kg. Lower fetal weights and indications of general delayed development associated with maternal toxicity were also observed at these doses. When hexazinone was administered to rabbits via oral intubation, there were no teratogenic or embryo-fetal toxic effects at the highest dose tested, 125 mg/kg/day. Only a transient reduction in maternal food consumption was observed at the high dose. The maternal and fetal NOELs are considered to be 125 mg/kg.

Mutagenicity: Not mutagenic in Ames bacterial assay, Chinese hamster ovary cell point mutation assay, or rat liver DNA repair assay; positive in the in vitro Chinese hamster ovary cell cytogenetic assay but negative in the in vivo rat bone marrow cytogenic assay.

ECOLOGICAL INFORMATION

Ecotoxicological Information

Aquatic Toxicity

For the active ingredient hexazinone:

- 96 Hour LC50, bluegill sunfish: >370 ppm
  96 Hour LC50, rainbow trout : >320 ppm
- 96 hour LC50, fathead minnow : 274 ppm

DISPOSAL CONSIDERATIONS

Waste Disposal

Do not contaminate water, food, or feed by disposal. Waste resulting from the use of this product may be disposed of on the site or at an approved waste disposal facility.

Environmental Hazards
Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwaters.
The active ingredient, hexazinone, in this product is known to leach through soil into ground water under certain conditions as a result of agricultural use. Use of this chemical in areas where soils are permeable, particularly where the water table is shallow, may result in ground-water

(DISPOSAL CONSIDERATIONS - Continued)

contamination.

Container Disposal

For Plastic Containers: Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or incineration, or, if allowed by State and local authorities, by burning. If burned, stay out of smoke.

For Fiber Sacks: Completely empty fiber sack by shaking and tapping sides and bottom to loosen clinging particles. Empty residue into manufacturing or application equipment. Then dispose of sack in a sanitary landfill or by incineration if allowed by State and local authorities.

For Fiber Drums with Liners: Completely empty liners by shaking and tapping sides and bottom to loosen clinging particles. Empty residue into manufacturing or application equipment. Then dispose of liner in a sanitary landfill or by incineration if allowed by State and local authorities. If the drum is contaminated and cannot be reused, dispose of in the same manner.

For Paper and Plastic Bags: Completely empty bag into application equipment. Then dispose of empty bag in a sanitary landfill or by incineration or, if allowed by State and local authorities, by burning. If burned, stay out of smoke.

TRANSPORTATION INFORMATION

Shipping Information

DOT/IMO
Proper Shipping Name : Not Regulated

REGULATORY INFORMATION

U.S. Federal Regulations

TITLE III HAZARD CLASSIFICATIONS SECTIONS 311, 312

Acute : Yes
Chronic : No
Fire : No
Reactivity : No
Pressure : No

(REGULATORY INFORMATION - Continued)

In the United States this product is regulated by the US Environmental Protection Agency under the Federal Insecticide, Fungicide and Rodenticide Act. It is a violation of federal law to use this product in a manner inconsistent with its labeling.

EPA Reg. No. 352-581

OTHER INFORMATION

NFPA, NPCA-HMIS

NFPA Rating
Health : 2
Flammability : 1
Reactivity : 0

NPCA-HMIS Rating
Health : 2
Flammability : 1
Reactivity : 0

Personal Protection rating to be supplied by user depending on use conditions.

The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.

Responsibility for MSDS : DuPont Crop Protection
Address : Wilmington, DE 19898
Telephone : 1-888-638-7668

# Indicates updated section.

This information is based upon technical information believed to be reliable. It is subject to revision as additional knowledge and experience is gained.

End of MSDS

ATTACHMENT C5

HASTEN®

WILBUR-ELLIS
IDEAS TO GROW WITH®
PO BOX 16458 • FRESNO CA 93755

MATERIAL SAFETY DATA SHEET

PRODUCT/TRADE NAME:

HASTEN

I. NAME

PRODUCT/TRADE NAME: HASTEN
EPA REGISTRATION #: NONE
CHEMICAL NAME/COMMON NAME:
Nonionic Surfactant/Nonionic Surfactant

II. HAZARDOUS INGREDIENTS

	CAS#	OSHA PEL	ACGIH TLV
Nonionic Surfactant	Mixture	NE	NE

III. PHYSICAL DATA

SPECIFIC GRAVITY (H2O = 1): .9
MELTING POINT: NA
VAPOR DENSITY (AIR = 1): NE
% VOLATILES BY VOL.: NE
ODOR: Fatty
APPEARANCE: Amber Liquid
FLASH POINT/METHOD: >150 Deg. C
VAPOR PRESSURE (mmHg): NE
SOLUBILITY IN H2O: Emulsifiable

IV. FIRE & EXPLOSION HAZARD

EXTINGUISHING MEDIA: [ ] Water Fog [X] Foam [ ]Alcohol Foam
[X] CO2 [X] Dry Chemical [ ] Other
FIRE FIGHTING PRECAUTIONS & HAZARDS:
Fight fire upwind. Wear positive pressure self-contained breathing apparatus and full protective clothing. Do not breathe smoke or spray mist. Avoid fallout and runoff. Dike to prevent entering drains, sewers, or water courses. Evacuate people downwind from fire.

V. CARCINOGEN STATUS

[ ] OSHA [ ] NTP [ ] IARC [X] No Listing Type

VI. REACTIVITY

[X] Stable HAZARDOUS POLYMERIZATION
[ ] Unstable [ ] May Occur [X] Will Not Occur
AVOID: Strong oxidizers, organic material
HAZARDOUS DECOMPOSITION PRODUCTS: COx

VII. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE OF SPILL: Absorb with inert material and sweep or vacuum into disposal container.
DECONTAMINATION: Treat spill area with detergent and water. Absorb with inert material. Place in disposal container and repeat procedure as necessary until area is clean.
ENVIRONMENTAL HAZARDS: Dike to prevent entering drains, sewers or water courses.
DISPOSAL: Dispose of in accordance with Federal, State and local regulations.

VIII. HEALTH PRECAUTION DATA

INGESTION: Do not ingest. Acute Oral LD50 (Rat) >5000 mg/kg (WECO). Wash thoroughly before eating, drinking or smoking.
INHALATION: No PEL/TLV established for this product. Do not inhale mist. Use proper respiratory protective equipment for the exposures encountered.
SKIN ABSORPTION: Acute Dermal LD50 (Rabbit) >2000 mg/kg (WECO). May cause slight skin irritation. Wear proper personal protective equipment to reduce skin exposure.
EYE EXPOSURE: Keep out of eyes. Minimally irritating to the eyes. If exposed, flush eyes for a minimum of 15 minutes with water. Wear proper eye protection to reduce splash exposure.
EFFECTS OF OVEREXPOSURE: Material is not toxic or irritating to the skin. No known chronic effects. No known preexisting medical conditions will be aggravated by exposure.
FIRST AID: In all cases, get prompt medical attention. If ingested, give several glasses of water and induce vomiting. Do not induce vomiting if person is unconscious. For skin exposure, remove contaminated clothing and wash with soap and water. For eye contact, irrigate for a minimum of 15 minutes with water. If inhaled, remove victim to fresh air, and administer CPR if necessary.

IX. SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION: Use NIOSH/MSHA - approved respirator for organic vapors for the exposures encountered. Positive pressure self-contained breathing apparatus should be used for confined space entry and excessive exposures.
PERSONAL PROTECTIVE EQUIPMENT: Neoprene or rubber gloves and safety goggles.
VENTILATION: General ventilation.

X. SPECIAL PRECAUTIONS

Keep out of the reach of children. Read and follow all label instructions.

XI. REGULATORY DATA

SARA HAZARD CLASS: [X] Acute [ ] Chronic [ ] Flammable
[ ] Pressure [ ] Reactive [ ] None
SARA 313: [ ] Yes [X] No Chemical:
SARA 302: [ ] Yes [X] No Chemical:
TPQ:
CERCLA: [ ] Yes [X] No Chemical:
RQ:
RCRA: [ ] Yes [X] No

NFPA HAZARD RATING:
Health: [1]
Fire: [1]
Reactivity: [0]
Special: [ ]

NFPA HAZARD RATING SCALE:
0 = Minimal 3 = Serious
1 = Slight 4 = Severe
2 = Moderate

HMIS CODES:
Health: [1]
Fire: [1]
Reactivity: [0]

HMIS HAZARD RATING SCALE:
0 = Minimal 3 = Serious
1 = Slight 4 = Severe
2 = Moderate

DATE PREPARED: March 22, 1994
REVISED DATE: July 22, 2005

Notice: This information was developed from information on the constituent materials. No warranty is expressed or implied regarding the completeness or continuing accuracy of the information contained herein, and Wilbur-Ellis disclaims all liability for reliance thereon. The user should satisfy himself that he has all current data relevant to his particular use.

*Technical Material NE - Not Established NA - Not Applicable

24 Hour Emergency Phone Number
CHEMTREC: (800) 424-9300

ATTACHMENT C6

R-11®

WILBUR-ELLIS

IDEAS TO GROW WITH®

PO BOX 16458 • FRESNO CA 93755

MATERIAL SAFETY DATA SHEET

PRODUCT/TRADE NAME:

R-11

I. NAME

PRODUCT/TRADE NAME: R-11
EPA REGISTRATION #: NONE
CHEMICAL NAME/COMMON NAME:
1-Butanol/Butyl Alcohol
Octyl Phenoxy Polyethoxy Ethanol/Nonionic Surfactants

II. HAZARDOUS INGREDIENTS

	CAS#	OSHA PEL	ACGIH TLV
Butyl Alcohol	71-36-3	50 ppm c	50 ppm c
Nonionic Surfactants	Mixture	NE	NE

III. PHYSICAL DATA

SPECIFIC GRAVITY (H2O = 1): 1.02
MELTING POINT: NA
VAPOR DENSITY (AIR = 1): NE
% VOLATILES BY VOL.: NE
ODOR: Alcohol
APPEARANCE: Clear Liquid
FLASH POINT/METHOD: 130 Deg. F TCC
VAPOR PRESSURE (mmHg): NE
SOLUBILITY IN H2O: 10%

IV. FIRE & EXPLOSION HAZARD

EXTINGUISHING MEDIA: [X] Water Fog [X] Foam [ ]Alcohol Foam
[X] CO2 [X] Dry Chemical [ ] Other

FIRE FIGHTING PRECAUTIONS & HAZARDS:
Fight fire upwind. Wear positive pressure self-contained breathing apparatus and full personal protective equipment. Cool exposed containers with water. Dike area to prevent entering drains, sewers or water courses. Evacuate people downwind from fire.

V. CARCINOGEN STATUS

[ ] OSHA [ ] NTP [ ] IARC [X] No Listing Type

VI. REACTIVITY

[X] Stable HAZARDOUS POLYMERIZATION
[ ] Unstable [ ] May Occur [X] Will Not Occur

AVOID: Oxidizers, Liquid chlorine and Concentrated 02
HAZARDOUS DECOMPOSITION PRODUCTS: COx

VII. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE OF SPILL: Wear appropriate respiratory and personal protective equipment. Absorb with inert material and sweep or vacuum into approved disposal container.
DECONTAMINATION: Treat area with detergent and water. Absorb with inert material and place in approved container. Repeat as necessary until area is clean.
ENVIRONMENTAL HAZARDS: Dike to prevent entering drains, sewers or water courses.
DISPOSAL: Place in DOT-approved container and dispose of in an approved disposal site.

VIII. HEALTH PRECAUTION DATA

INGESTION: Acute oral LD50 (rat) Butyl Alcohol 790 mg/kg (SAX*). Wash thoroughly before eating, drinking or smoking. Do not ingest. Do not store near food or feed.
INHALATION: PEL/TLV Butyl Alcohol 100 ppm. Can cause respiratory irritation in high concentrations. Wear appropriate respiratory protection for exposures above the PEL/TLV.
SKIN ABSORPTION: Acute dermal LD50 (rabbit) for Butyl Alcohol 4200 mg/kg (SAX*). Can cause mild skin irritation or dermatitis. Wear proper personal protective equipment to reduce exposure.
EYE EXPOSURE: May be mildly irritating to the eyes. If exposed, flush eyes a minimum of 15 minutes with water. Wear proper eye protection to reduce splash exposure.
EFFECTS OF OVEREXPOSURE: May cause eye irritation and corneal inflammation. High concentrations can cause respiratory irritation. May cause skin irritation, scaling or dermatitis. No known chronic effects. Preexisting medical conditions involving the above symptoms may be aggravated by exposure.
FIRST AID: In all cases, get prompt medical attention. If ingested, give several glasses of water. Do not induce vomiting. For skin exposure, remove contaminated clothing and wash with soap and water. For eye contact, irrigate eyes a minimum of 15 minutes with water. For inhalation, remove victim to fresh air, and administer CPR if necessary.

IX. SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION: Use only NIOSH/MSHA - approved respiratory protection for organic vapors up to 10 times the PEL/TLV. Positive pressure self-contained breathing apparatus should be used for confined space entry and high exposures above 10 times the PEL/TLV.
PERSONAL PROTECTIVE EQUIPMENT: Not normally required for this product. Recommend chemical goggles, long-sleeved coveralls and rubber or neoprene boots, Nitrile gloves.
VENTILATION: Local exhaust ventilation recommended for manufacture and formulation operations.

X. SPECIAL PRECAUTIONS

Keep out of the reach of children. Read and follow all label instructions.
Keep away from open flame, heat or ignition sources.

XI. REGULATORY DATA

SARA HAZARD CLASS: [ ] Acute [ ] Chronic [X] Flammable
[ ] Pressure [ ] Reactive [ ] None
SARA 313: [X] Yes [ ] No Chemical: Butyl Alcohol
SARA 302: [ ] Yes [X] No Chemical:
TPQ:
CERCLA: [X] Yes [ ] No Chemical: Butyl Alcohol
RQ: 1*
RCRA: [X] Yes [ ] No

NFPA HAZARD RATING:
Health: [1]
Fire: [2]
Reactivity: [0]
Special: [0]

HMIS CODES:
Health: [1]
Fire: [2]
Reactivity: [0]

NFPA HAZARD RATING SCALE:
0 = Minimal 3 = Serious
1 = Slight 4 = Severe
2 = Moderate

HMIS HAZARD RATING SCALE:
0 = Minimal 3 = Serious
1 = Slight 4 = Severe
2 = Moderate

DATE PREPARED: May 8, 1985
REVISED DATE: July 21, 2005

Notice: This information was developed from information on the constituent materials. No warranty is expressed or implied regarding the completeness or continuing accuracy of the information contained herein, and Wilbur-Ellis disclaims all liability for reliance thereon. The user should satisfy himself that he has all current data relevant to his particular use.

*Technical Material NE - Not Established NA - Not Applicable

24 Hour Emergency Phone Number
CHEMTREC: (800) 424-9300

ATTACHMENT C7

IN-PLACE®

PRECAUTIONARY STATEMENTS

Causes eye irritation. In case of contact with eyes, immediately flush with water for at least 15 minutes. If irritation persists, get medical attention. May cause skin irritation. Harmful if swallowed. COMBUSTIBLE LIQUID. Keep away from heat, sparks and fire.

Do not cut or weld this container of IN-PLACE™. Combustible. Do not use this container or equipment contaminated with this product as a container for water to be used for domestic purposes, feed or food stuff.

NOTE: When using chemical mixture that has not been used before with IN-PLACE™ always try a small sample mix before making a full batch. Different adjuvants in the chemicals and salt in some water can cause flocking or excess thickening. If this occurs, add ammonia.

Follow mixing procedures, dose rates and cautions on all chemical labels.

Wilbur-Ellis Company warrants that this material conforms to the chemical description on the label and is reasonably fit for use as directed herein.

The use of this product is beyond the control of Wilbur-Ellis Company, therefore, Wilbur-Ellis Company urges that all chemicals be checked with Insist® before full scale use.

Buyer assumes all risks of use, storage and handling of this material not in strict accordance with directions given herewith. Buyer further agrees in event of damage arising from the use of this product to accept a replacement of the product or a refund of the purchase price of the product, at buyer's option, as full discharge of seller's liability.

NOTICE

U.S. Patent numbers, 3, 479, 176 and 4, 115, 098 covers use, other patent pending.

STORAGE AND DISPOSAL

1. PROHIBITIONS: Do not contaminate water, food or feed by storage, disposal or cleaning of equipment.
2. STORAGE: Store in original container only and keep sealed. Store in closed storage areas. Use caution when moving, opening, closing or pouring.
3. PESTICIDE DISPOSAL: Improper disposal of excess spray mixtures or rinsate is a violation of Federal Law. Wastes resulting from use of this product should be disposed of through on-site spray application or at an approved waste disposal facility.
4. CONTAINER DISPOSAL: Triple rinse (or equivalent), then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or other procedures approved by State and local authorities.

CONTENTS 1 U.S. GALLON (3.75 Liters)

WILBUR-ELLIS

IDEAS AT WORK WITH®

IN-PLACE™

DEPOSITION AND RETENTION AGENT

HERBICIDES, INSECTICIDES, FUNGICIDES AND HARVEST AIDS

*DRIFT RETARDANT

PRINCIPAL FUNCTIONING AGENTS	100%
Amine salts of organic acids	
Aromatic Acid	
Aromatic and Aliphatic petroleum distillate	

KEEP OUT OF REACH OF CHILDREN

CAUTION

CA Reg. No. 2935-50169 - WA Reg. No. AW2935-01003

WARRANTY STATEMENT

WILBUR-ELLIS COMPANY warrants that this product conforms to the chemical description on the label thereof and is reasonably fit for purposes stated on such label only when used in accordance with directions under normal use conditions. It is impossible to eliminate all risks inherently associated with use of this product. Crop injury, ineffectiveness or other unintended consequences may result because of such factors as weather conditions, presence of other materials or the manner of use or application, all of which are beyond the control of WILBUR-ELLIS COMPANY. In no case shall WILBUR-ELLIS COMPANY be liable for consequential, special or indirect damages resulting from the use or handling of this product. All such risks shall be assumed by the Buyer. The exclusive remedy of any buyer or user of this product for any and all losses, injuries, or damages resulting from or in any way arising from the use, handling or application of this product, whether in contract, warranty, tort, negligence, strict liability or otherwise, shall not exceed the purchase price paid for this product or at WILBUR-ELLIS COMPANY'S election, the replacement of this product. WILBUR-ELLIS COMPANY MAKES NO WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE NOR ANY OTHER EXPRESS OR IMPLIED WARRANTY EXCEPT AS STATED ABOVE.

GENERAL INFORMATION

IN-PLACE™ is specially formulated for use with conventional spray mixtures. IN-PLACE™ is a deposition and retention agent which reduces evaporation and drift of chemicals while increasing coverage and adherence on the target area.

GENERAL MIXING PROCEDURE

Mix the IN-PLACE™ and EMULSIFIABLE CONCENTRATE or AQUEOUS SOLUTION together; 1 part IN-PLACE™ to 4 parts chemical. Add to the total volume of water. (If some water is required for mixing with the emulsifiable concentrate or aqueous solution, DO NOT USE OVER 1 quart of water on a per acre basis.)

Mix the WETTABLE POWDER, SOLUBLE POWDER, FLOWABLE or SOLUBLE BAG in the total volume of WATER. Add the IN-PLACE™ last; 2 ozs. IN-PLACE™ to 1 pound or 1 quart of chemical.

Combinations of Emulsifiable Concentrates and/or Aqueous Solutions with Wettable Powders, Soluble Powders, Flowables, and/or Soluble Bags – should be added to the water first and mixed. Mix the IN-PLACE™ and the Emulsifiable Concentrate and/or Aqueous Solution together. Add to the total volume of water and powders. Always try a small sample mix before making a full batch.

When mixing multiple-loads at one time, RE-BLEND BEFORE EACH LOAD IS DRAWN OFF.

Small mixes in closed-systems: Put required IN-PLACE™ in can opener-portion. Add emulsifiable concentrate or aqueous solution to IN-PLACE™ and flush into closed mixing tank.

Large or multiple loads in closed-systems: Keep the initial water to a maximum of 1 quart on a per acre basis in the closed mixing tank. Add all of the emulsifiable concentrates or aqueous solutions to the closed mixing tank, followed by the required IN-PLACE™. BLEND VERY LIGHTLY, and add to the total volume of water. If a thick or lumpy load occurs from over-agitation or the wrong rate of IN-PLACE™, add HOUSEHOLD AMMONIA through the agitation system to break the condition and continue with normal spray activities.

FOR PESTICIDES/HERBICIDES THAT PERMIT USE OF AN ADJUVANT AT A HIGHER RATE, FOLLOW INSTRUCTIONS ON THAT PESTICIDE/HERBICIDE LABEL. HOWEVER, DO NOT ADD THIS PRODUCT AT A RATE WHICH EXCEEDS 5% OF THE FINISHED SPRAY VOLUME.

Use caution at the higher application rates. When applying to a sensitive crop, first treat a small area to determine if there may be adverse effects on the crop.

FOR AQUATIC USE: (EXCEPT IN WASHINGTON) Can be used with labeled aquatic products. Not to exceed 1 quart per surface acre of water.

STANDARD MIXING RATES

Liquid Chemicals - Emulsifiable Concentrates - EC
(Those not available as Wettable Powders)

Chemical Quarts	1	2	3	4	5	6	7	8	9	10	Example: 4 Parts Chemical
Ounces IN-PLACE™	8	16	24	32	40	48	56	64	72	80	1 Part IN-PLACE™

Mix E.C. and IN-PLACE™ together. Add to water

Liquid Chemicals - Flowables
(Those not available as Wettable Powders)

Chemical Quarts	1	2	3	4	5	6	7	8	9	10	Example: 1 Gallon (128 oz.) Chemical
Ounces IN-PLACE™	2	4	6	8	10	12	14	16	18	20	½ Pint (8 oz.) IN-PLACE™

Mix Flowables in the water. Add IN-PLACE™ last.

Wettable Powders

Chemical Pounds	1	2	3	4	5	6	7	8	9	10	Example: 8 Pounds Chemical
Ounces IN-PLACE™	2	4	6	8	10	12	14	16	18	20	1 Pint (16 oz.) IN-PLACE™

Mix Wettable Powders in water. Add IN-PLACE™ last

RATE EXCEPTIONS

ROUNDUP®

Roundup Quarts	1	2	3	4	5	6	7	8	9	10	Example: 4 Quarts (128 oz.) Roundup
Ounces IN-PLACE™	16	32	48	64	80	96	112	128	144	160	2 Quarts (64 oz.) IN-PLACE™

Pyrethroids (Ambush®, Pounce®, Ammo®, Etc.)

Pyrethroids Pints	1	2	3	4	5	6	7	8	9	10	Example: 1 Pint (16 oz.) Pyrethroids
Pints IN-PLACE™	1	2	3	4	5	6	7	8	9	10	1 Pint (16 oz.) IN-PLACE™

Asulox®

Asulox Gallons	1	2	3	4	5	6	7	8	9	10	Example: 1 Gallon (128 oz.) Asulox
Ounces IN-PLACE™	5	10	15	20	25	30	35	40	45	50	5 Ounces IN-PLACE™

Liquid Foliar Fertilizer

Liquid Fertilizer Quarts	1	2	3	4	5	6	7	8	9	10	Example: 8 Quarts (256 oz.) Liquid Fertilizer
Ounces IN-PLACE™	2	4	6	8	10	12	14	16	18	20	1 Pint (16 oz.) IN-PLACE™

Dipel®-4L, Thuricide

Chemical Quarts	1	2	3	4	5	6	7	8	9	10	Example: 4 Quarts (128 oz.) Chemical
Ounces IN-PLACE™	8	16	24	32	40	48	56	64	72	80	1 Quart (32 oz.) IN-PLACE™

Dimilin®

Dimilin Ounces	1	2	3	4	5	6	7	8	9	10	Example: Premix 2 oz. Dimilin per 16 oz. water. Then add proper rate of IN-PLACE™. Add premix to tank at total volume of water.
Ounces IN-PLACE™	1	2	3	4	5	6	7	8	9	10	

Granular Foliar Fertilizer

Granular Fertilizer Pounds	1	2	3	4	5	6	7	8	9	10	Example: 8 Pounds Granular Fertilizer
Ounces IN-PLACE™	2	4	6	8	10	12	14	16	18	20	1 Pint (16 oz.) IN-PLACE™

Zorial®

Zorial Pounds	1	2	3	4	5	6	7	8	9	10	Example: 16 Pounds Zorial
Ounces IN-PLACE™	1	2	3	4	5	6	7	8	9	10	1 Pint (16 oz.) IN-PLACE™

Sulfur Compounds

Sulfur Compounds Pounds	5	10	15	20	25	30	35	40	45	50	Example: 20 Pounds Sulfur
Ounces IN-PLACE™	4	8	12	16	20	24	28	32	36	40	1 Pint (16 oz.) IN-PLACE™

Propanil

Propanil Quarts	1	2	3	4	5	6	7	8	9	10	Example: 4 Quarts (128 oz.) Propanil
Ounces IN-PLACE™	4	8	12	16	20	24	28	32	36	40	1 Pint (16 oz.) IN-PLACE™

Furadan-4F®

Furadan-4F Pints	1	2	3	4	5	6	7	8	9	10	Example: 1 Pint (16 oz.) Furadan-4F
Pints IN-PLACE™	1	2	3	4	5	6	7	8	9	10	1 Pint (16 oz.) IN-PLACE™

Phenoxy Herbicides

Phenoxy Herbicides Pounds	1	2	3	4	5	6	7	8	9	10	Example: 4 Pounds Herbicide
Ounces IN-PLACE™	16	32	48	64	80	96	112	128	144	160	2 Quarts (64 oz.) IN-PLACE™

F-1003

Combinations:
Mix all Flowables and Wettable Powders in the water first.
Mix E.C.'s and IN-PLACE™ together. Add last.

1 Gallon = 4 Quarts = 8 Pints = 128 Fluid Ounces = 3.785 Liters
2 Tablespoons = 1 Fluid Ounce
1 U.S. Pound = 16 Ounces = .454 Kilograms

For more IN-PLACE™ Information Call
1-800-221-6580

Manufactured in the USA by:
WILBUR-ELLIS COMPANY
P.O. Box 16458 – Fresno, California 93755

ATTACHMENT D

USFWS Conservation Guidelines for the Valley Elderberry Longhorn Beetle

United States Department of the Interior

Fish and Wildlife Service

Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825

Conservation Guidelines for the Valley Elderberry Longhorn Beetle

Revised July 9, 1999

The following guidelines have been issued by the U.S. Fish and Wildlife Service (Service) to assist Federal agencies and non-federal project applicants needing incidental take authorization through a section 7 consultation or a section 10(a)(1)(B) permit in developing measures to avoid and minimize adverse effects on the valley elderberry longhorn beetle. The Service will revise these guidelines as needed in the future. The most recently issued version of these guidelines should be used in developing all projects and habitat restoration plans. The survey and monitoring procedures described below are designed to avoid any adverse effects to the valley elderberry longhorn beetle. Thus a recovery permit is not needed to survey for the beetle or its habitat or to monitor conservation areas. If you are interested in a recovery permit for research purposes please call the Service's Regional Office at (503) 231-2063.

Background Information

The valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*), was listed as a threatened species on August 8, 1980 (Federal Register 45: 52803-52807). This animal is fully protected under the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.). The valley elderberry longhorn beetle (beetle) is completely dependent on its host plant, elderberry (Sambucus species), which is a common component of the remaining riparian forests and adjacent upland habitats of California's Central Valley. Use of the elderberry by the beetle, a wood borer, is rarely apparent. Frequently, the only exterior evidence of the elderberry's use by the beetle is an exit hole created by the larva just prior to the pupal stage. The life cycle takes one or two years to complete. The animal spends most of its life in the larval stage, living within the stems of an elderberry plant. Adult emergence is from late March through June, about the same time the elderberry produces flowers. The adult stage is short-lived. Further information on the life history, ecology, behavior, and distribution of the beetle can be found in a report by Barr (1991) and the recovery plan for the beetle (USFWS 1984).

Surveys

Proposed project sites within the range of the valley elderberry longhorn beetle should be surveyed for the presence of the beetle and its elderberry host plant by a qualified biologist. The beetle's range extends throughout California's Central Valley and associated foothills from about the 3,000-foot elevation contour on the

east and the watershed of the Central Valley on the west (Figure 1). All or portions of 31 counties are included: Alameda, Amador, Butte, Calaveras, Colusa, Contra Costa, El Dorado, Fresno, Glenn, Kern, Kings, Lake, Madera, Mariposa, Merced, Napa, Nevada, Placer, Sacramento, San Benito, San Joaquin, San Luis Obispo, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Yolo, Yuba.

If elderberry plants with one or more stems measuring 1.0 inch or greater in diameter at ground level occur on or adjacent to the proposed project site, or are otherwise located where they may

be directly or indirectly affected by the proposed action, minimization measures which include planting replacement habitat (conservation planting) are required (Table 1).

All elderberry shrubs with one or more stems measuring 1.0 inch or greater in diameter at ground level that occur on or adjacent to a proposed project site must be thoroughly searched for beetle exit holes (external evidence of beetle presence). In addition, all elderberry stems one inch or greater in diameter at ground level must be tallied by diameter size class (Table 1). As outlined in Table 1, the numbers of elderberry seedlings/cuttings and associated riparian native trees/shrubs to be planted as replacement habitat are determined by stem size class of affected elderberry shrubs, presence or absence of exit holes, and whether a proposed project lies in a riparian or non-riparian area.

Elderberry plants with no stems measuring 1.0 inch or greater in diameter at ground level are unlikely to be habitat for the beetle because of their small size and/or immaturity. Therefore, no minimization measures are required for removal of elderberry plants with no stems measuring 1.0 inch or greater in diameter at ground level with no exit holes. Surveys are valid for a period of two years.

Avoid and Protect Habitat Whenever Possible

Project sites that do not contain beetle habitat are preferred. If suitable habitat for the beetle occurs on the project site, or within close proximity where beetles will be affected by the project, these areas must be designated as avoidance areas and must be protected from disturbance during the construction and operation of the project. When possible, projects should be designed such that avoidance areas are connected with adjacent habitat to prevent fragmentation and isolation of beetle populations. Any beetle habitat that cannot be avoided as described below should be considered impacted and appropriate minimization measures should be proposed as described below.

Avoidance: Establishment and Maintenance of a Buffer Zone

Complete avoidance (i.e., no adverse effects) may be assumed when a 100-foot (or wider) buffer is established and maintained around elderberry plants containing stems measuring 1.0 inch or greater in diameter at ground level. Firebreaks may not be included in the buffer zone. In buffer areas construction-

related disturbance should be minimized, and any damaged area should be promptly restored following construction. The Service must be consulted before any disturbances within the buffer area are considered. In addition, the Service must be provided with a map identifying the avoidance area and written details describing avoidance measures.

Protective Measures

1. Fence and flag all areas to be avoided during construction activities. In areas where encroachment on the 100-foot buffer has been approved by the Service, provide a minimum setback of at least 20 feet from the dripline of each elderberry plant.

2. Brief contractors on the need to avoid damaging the elderberry plants and the possible penalties for not complying with these requirements.

3. Erect signs every 50 feet along the edge of the avoidance area with the following information: "This area is habitat of the valley elderberry longhorn beetle, a threatened species, and must not be disturbed. This species is protected by the Endangered Species Act of 1973, as amended. Violators are subject to prosecution, fines, and imprisonment." The signs should be clearly readable from a distance of 20 feet, and must be maintained for the duration of construction.

4. Instruct work crews about the status of the beetle and the need to protect its elderberry host plant.

Restoration and Maintenance

Restore any damage done to the buffer area (area within 100 feet of elderberry plants) during construction. Provide erosion control and re-vegetate with appropriate native plants.

Buffer areas must continue to be protected after construction from adverse effects of the project. Measures such as fencing, signs, weeding, and trash removal are usually appropriate.

No insecticides, herbicides, fertilizers, or other chemicals that might harm the beetle or its host plant should be used in the buffer areas, or within 100 feet of any elderberry plant with one or more stems measuring 1.0 inch or greater in diameter at ground level.

The applicant must provide a written description of how the buffer areas are to be restored, protected, and maintained after construction is completed.

Mowing of grasses/ground cover may occur from July through April to reduce fire hazard. No mowing should occur within five (5) feet of elderberry plant stems. Mowing must be done in a manner that avoids damaging plants (e.g., stripping away bark through careless use of mowing/trimming equipment).

Transplant Elderberry Plants That Cannot Be Avoided

Elderberry plants must be transplanted if they can not be avoided by the proposed project. All elderberry plants with one or more stems measuring 1.0 inch or greater in diameter at ground level must be transplanted to a conservation area (see below). At the Service's discretion, a plant that is unlikely to survive transplantation because of poor condition or location, or a plant that would be extremely difficult to move because of access problems, may be exempted from transplantation. In cases where transplantation is not possible the minimization ratios in Table 1 may be increased to offset the additional habitat loss.

Trimming of elderberry plants (e.g., pruning along roadways, bike paths, or trails) with one or more stems 1.0 inch or greater in diameter at ground level, may result in take of beetles. Therefore, trimming is subject to appropriate minimization measures as outlined in Table 1.

1. Monitor. A qualified biologist (monitor) must be on-site for the duration of the transplanting of the elderberry plants to insure that no unauthorized take of the valley elderberry longhorn beetle occurs. If unauthorized take occurs, the monitor must have the authority to stop work until corrective measures have been completed. The monitor must immediately report any unauthorized take of the beetle or its habitat to the Service and to the California Department of Fish and Game.

2. Timing. Transplant elderberry plants when the plants are dormant, approximately November through the first two weeks in February, after they have lost their leaves. Transplanting during the non-growing season will reduce shock to the plant and increase transplantation success.

3. Transplanting Procedure.

a. Cut the plant back 3 to 6 feet from the ground or to 50 percent of its height (whichever is taller) by removing branches and stems above this height. The trunk and all stems measuring 1.0 inch or greater in diameter at ground level should be replanted. Any leaves remaining on the plant should be removed.

b. Excavate a hole of adequate size to receive the transplant.

c. Excavate the plant using a Vemeer spade, backhoe, front end loader, or other suitable equipment, taking as much of the root ball as possible, and replant immediately at the conservation area. Move the plant only by the root ball. If the plant is to be moved and transplanted off site, secure the root ball with wire and wrap it with burlap. Dampen the burlap with water, as necessary, to keep the root ball wet. Do not let the roots dry out. Care should be taken to ensure that the soil is not dislodged from around the roots of the transplant. If the site receiving the transplant does not have

adequate soil moisture, pre-wet the soil a day or two before transplantation.

d. The planting area must be at least 1,800 square feet for each elderberry transplant. The root ball should be planted so that its top is level with the existing ground. Compact the soil sufficiently so that settlement does not occur. As many as five (5) additional elderberry plantings (cuttings or seedlings) and up to five (5) associated native species plantings (see below) may also be planted within the 1,800 square foot area with the transplant. The transplant and each new planting should have its own watering basin measuring at least three (3) feet in diameter. Watering basins should have a continuous berm measuring approximately eight (8) inches wide at the base and six (6) inches high.

e. Saturate the soil with water. Do not use fertilizers or other supplements or paint the tips of stems with pruning substances, as the effects of these compounds on the beetle are unknown.

f. Monitor to ascertain if additional watering is necessary. If the soil is sandy and well-drained, plants may need to be watered weekly or twice monthly. If the soil is clayey and poorly-drained, it may not be necessary to water after the initial saturation. However, most transplants require watering through the first summer. A drip watering system and timer is ideal. However, in situations where this is not possible, a water truck or other apparatus may be used.

Plant Additional Seedlings or Cuttings

Each elderberry stem measuring 1.0 inch or greater in diameter at ground level that is adversely affected (i.e., transplanted or destroyed) must be replaced, in the conservation area, with elderberry seedlings or cuttings at a ratio ranging from 1:1 to 8:1 (new plantings to affected stems). Minimization ratios are listed and explained in Table 1. Stock of either seedlings or cuttings should be obtained from local sources. Cuttings may be obtained from the plants to be transplanted if the project site is in the vicinity of the conservation area. If the Service determines that the elderberry plants on the proposed project site are unsuitable candidates for transplanting, the Service may allow the applicant to plant seedlings or cuttings at higher than the stated ratios in Table 1 for each elderberry plant that cannot be transplanted.

Plant Associated Native Species

Studies have found that the beetle is more abundant in dense native plant communities with a mature overstory and a mixed understory. Therefore, a mix of native plants associated with the elderberry plants at the project site or similar sites will be planted at ratios ranging from 1:1 to 2:1 [native tree/plant species to each elderberry seedling or cutting (see Table 1)]. These native plantings must be monitored with the same survival criteria used for the elderberry seedlings

(see below). Stock of saplings, cuttings, and seedlings should be obtained from local sources. If the parent stock is obtained from a distance greater than one mile from the conservation area, approval by the Service of the native plant donor sites must be obtained prior to initiation of the revegetation work. Planting or seeding the conservation area with native herbaceous species is encouraged. Establishing native grasses and forbs may discourage unwanted non-native species from becoming established or persisting at the conservation area. Only stock from local sources should be used.

Examples

Example 1

> The project will adversely affect beetle habitat on a vacant lot on the land side of a river levee. This levee now separates beetle habitat on the vacant lot from extant Great Valley Mixed Riparian Forest (Holland 1986) adjacent to the river. However, it is clear that the beetle habitat located on the vacant lot was part of a more extensive mixed riparian forest ecosystem extending farther from the river's edge prior to agricultural development and levee construction. Therefore, the beetle habitat on site is considered riparian. A total of two elderberry plants with at least one stem measuring 1.0 inch or greater in diameter at ground level will be affected by the proposed action. The two plants have a total of 15 stems measuring over 1.0 inch. No exit holes were found on either plant. Ten of the stems are between 1.0 and 3.0 inches in diameter and five of the stems are greater than 5.0 inches in diameter. The conservation area is suited for riparian forest habitat. Associated natives adjacent to the conservation area are box elder (Acer negundo californica), walnut (Juglans californica var. hindsii), sycamore (Platanus racemosa), cottonwood (Populus fremontii), willow (Salix gooddingii and S. laevigata), white alder (Alnus rhombifolia), ash (Fraxinus latifolia), button willow (Cephalanthus occidentalis), and wild grape (Vitis californica).

Minimization (based on ratios in Table 1):

> • Transplant the two elderberry plants that will be affected to the conservation area.
>
> • Plant 40 elderberry rooted cuttings (10 affected stems compensated at 2:1 ratio and 5 affected stems compensated at 4:1 ratio, cuttings planted:stems affected)
>
> • Plant 40 associated native species (ratio of associated natives to elderberry plantings is 1:1 in areas with no exit holes):
>
> 5 saplings each of box elder, sycamore, and cottonwood
>
> 5 willow seedlings
>
> 5 white alder seedlings

5 saplings each of walnut and ash

3 California button willow

2 wild grape vines

Total: 40 associated native species

• Total area required is a minimum of 1,800 sq. ft. for one to five elderberry seedlings and up to 5 associated natives. Since, a total of 80 plants must be planted (40 elderberries and 40 associated natives), a total of 0.33 acre (14,400 square feet) will be required for conservation plantings. The conservation area will be seeded and planted with native grasses and forbs, and closely monitored and maintained throughout the monitoring period.

Example 2

The project will adversely affect beetle habitat in Blue Oak Woodland (Holland 1986). One elderberry plant with at least one stem measuring 1.0 inch or greater in diameter at ground level will be affected by the proposed action. The plant has a total of 10 stems measuring over 1.0 inch. Exit holes were found on the plant. Five of the stems are between 1.0 and 3.0 inches in diameter and five of the stems are between 3.0 and 5.0 inches in diameter. The conservation area is suited for elderberry savanna (non-riparian habitat). Associated natives adjacent to the conservation area are willow (Salix species), blue oak (Quercus douglasii), interior live oak (Q. wislizenii), sycamore, poison oak (Toxicodendron diversilobum), and wild grape.

Minimization (based on ratios in Table 1):

• Transplant the one elderberry plant that will be affected to the conservation area.

• Plant 30 elderberry seedlings (5 affected stems compensated at 2:1 ratio and 5 affected stems compensated at 4:1 ratio, cuttings planted:stems affected)

• Plant 60 associated native species (ratio of associated natives to elderberry plantings is 2:1 in areas with exit holes):

20 saplings of blue oak, 20 saplings of sycamore, and 20 saplings of willow, and seed and plant with a mixture of native grasses and forbs

• Total area required is a minimum of 1,800 sq. ft. for one to five elderberry seedlings and up to 5 associated natives. Since, a total of 90 plants must be planted (30 elderberries and 60 associated natives), a total of 0.37 acre (16,200 square feet) will be required for conservation plantings. The

conservation area will be seeded and planted with native grasses and forbs, and closely monitored and maintained throughout the monitoring period.

Conservation Area—Provide Habitat for the Beetle in Perpetuity

The conservation area is distinct from the avoidance area (though the two may adjoin), and serves to receive and protect the transplanted elderberry plants and the elderberry and other native plantings. The Service may accept proposals for off-site conservation areas where appropriate.

1. Size. The conservation area must provide at least 1,800 square feet for each transplanted elderberry plant. As many as 10 conservation plantings (i.e., elderberry cuttings or seedlings and/or associated native plants) may be planted within the 1800 square foot area with each transplanted elderberry. An additional 1,800 square feet shall be provided for every additional 10 conservation plants. Each planting should have its own watering basin measuring approximately three feet in diameter. Watering basins should be constructed with a continuous berm measuring approximately eight inches wide at the base and six inches high.

The planting density specified above is primarily for riparian forest habitats or other habitats with naturally dense cover. If the conservation area is an open habitat (i.e., elderberry savanna, oak woodland) more area may be needed for the required plantings. Contact the Service for assistance if the above planting recommendations are not appropriate for the proposed conservation area.

No area to be maintained as a firebreak may be counted as conservation area. Like the avoidance area, the conservation area should connect with adjacent habitat wherever possible, to prevent isolation of beetle populations.

Depending on adjacent land use, a buffer area may also be needed between the conservation area and the adjacent lands. For example, herbicides and pesticides are often used on orchards or vineyards. These chemicals may drift or runoff onto the conservation area if an adequate buffer area is not provided.

2. Long-Term Protection. The conservation area must be protected in perpetuity as habitat for the valley elderberry longhorn beetle. A conservation easement or deed restrictions to protect the conservation area must be arranged. Conservation areas may be transferred to a resource agency or appropriate private organization for long-term management. The Service must be provided with a map and written details identifying the conservation area; and the applicant must receive approval from the Service that the conservation area is acceptable prior to initiating the conservation program. A true, recorded copy of the deed transfer, conservation easement, or deed restrictions protecting the

conservation area in perpetuity must be provided to the Service before project implementation.

Adequate funds must be provided to ensure that the conservation area is managed in perpetuity. The applicant must dedicate an endowment fund for this purpose, and designate the party or entity that will be responsible for long-term management of the conservation area. The Service must be provided with written documentation that funding and management of the conservation area (items 3-8 above) will be provided in perpetuity.

3. Weed Control. Weeds and other plants that are not native to the conservation area must be removed at least once a year, or at the discretion of the Service and the California Department of Fish and Game. Mechanical means should be used; herbicides are prohibited unless approved by the Service.

4. Pesticide and Toxicant Control. Measures must be taken to insure that no pesticides, herbicides, fertilizers, or other chemical agents enter the conservation area. No spraying of these agents must be done within one 100 feet of the area, or if they have the potential to drift, flow, or be washed into the area in the opinion of biologists or law enforcement personnel from the Service or the California Department of Fish and Game.

5. Litter Control. No dumping of trash or other material may occur within the conservation area. Any trash or other foreign material found deposited within the conservation area must be removed within 10 working days of discovery.

6. Fencing. Permanent fencing must be placed completely around the conservation area to prevent unauthorized entry by off-road vehicles, equestrians, and other parties that might damage or destroy the habitat of the beetle, unless approved by the Service. The applicant must receive written approval from the Service that the fencing is acceptable prior to initiation of the conservation program. The fence must be maintained in perpetuity, and must be repaired/replaced within 10 working days if it is found to be damaged. Some conservation areas may be made available to the public for appropriate recreational and educational opportunities with written approval from the Service. In these cases appropriate fencing and signs informing the public of the beetle’s threatened status and its natural history and ecology should be used and maintained in perpetuity.

7. Signs. A minimum of two prominent signs must be placed and maintained in perpetuity at the conservation area, unless otherwise approved by the Service. The signs should note that the site is habitat of the federally threatened valley elderberry longhorn beetle and, if appropriate, include information on the beetle's natural history and ecology. The signs must be

repaired or replaced within 10 working days if they are found to be damaged or destroyed.

Monitoring

The population of valley elderberry longhorn beetles, the general condition of the conservation area, and the condition of the elderberry and associated native plantings in the conservation area must be monitored over a period of either ten (10) consecutive years or for seven (7) years over a 15-year period. The applicant may elect either 10 years of monitoring, with surveys and reports every year; or 15 years of monitoring, with surveys and reports on years 1, 2, 3, 5, 7, 10, and 15. The conservation plan provided by the applicant must state which monitoring schedule will be followed. No change in monitoring schedule will be accepted after the project is initiated. If conservation planting is done in stages (i.e., not all planting is implemented in the same time period), each stage of conservation planting will have a different start date for the required monitoring time.

Surveys. In any survey year, a minimum of two site visits between February 14 and June 30 of each year must be made by a qualified biologist. Surveys must include:

1. A population census of the adult beetles, including the number of beetles observed, their condition, behavior, and their precise locations. Visual counts must be used; mark-recapture or other methods involving handling or harassment must not be used.

2. A census of beetle exit holes in elderberry stems, noting their precise locations and estimated ages.

3. An evaluation of the elderberry plants and associated native plants on the site, and on the conservation area, if disjunct, including the number of plants, their size and condition.

4. An evaluation of the adequacy of the fencing, signs, and weed control efforts in the avoidance and conservation areas.

5. A general assessment of the habitat, including any real or potential threats to the beetle and its host plants, such as erosion, fire, excessive grazing, off-road vehicle use, vandalism, excessive weed growth, etc.

The materials and methods to be used in the monitoring studies must be reviewed and approved by the Service. All appropriate Federal permits must be obtained prior to initiating the field studies.

Reports. A written report, presenting and analyzing the data from the project monitoring, must be prepared by a qualified biologist in each of the years in which a monitoring survey is required. Copies of the report must be submitted by December 31 of the same year to the Service (Chief of Endangered Species, Sacramento Fish and Wildlife Office), and the Department of Fish and Game

(Supervisor, Environmental Services, Department of Fish and Game, 1416 Ninth Street, Sacramento, California 95814; and Staff Zoologist, California Natural Diversity Data Base, Department of Fish and Game, 1220 S Street, Sacramento, California 95814). The report must explicitly address the status and progress of the transplanted and planted elderberry and associated native plants and trees, as well as any failings of the conservation plan and the steps taken to correct them. Any observations of beetles or fresh exit holes must be noted. Copies of original field notes, raw data, and photographs of the conservation area must be included with the report. A vicinity map of the site and maps showing where the individual adult beetles and exit holes were observed must be included. For the elderberry and associated native plants, the survival rate, condition, and size of the plants must be analyzed. Real and likely future threats must be addressed along with suggested remedies and preventative measures (e.g. limiting public access, more frequent removal of invasive non-native vegetation, etc.).

A copy of each monitoring report, along with the original field notes, photographs, correspondence, and all other pertinent material, should be deposited at the California Academy of Sciences (Librarian, California Academy of Sciences, Golden Gate Park, San Francisco, CA 94118) by December 31 of the year that monitoring is done and the report is prepared. The Service's Sacramento Fish and Wildlife Office should be provided with a copy of the receipt from the Academy library acknowledging receipt of the material, or the library catalog number assigned to it.

Access. Biologists and law enforcement personnel from the California Department of Fish and Game and the Service must be given complete access to the project site to monitor transplanting activities. Personnel from both these agencies must be given complete access to the project and the conservation area to monitor the beetle and its habitat in perpetuity.

Success Criteria

A minimum survival rate of at least 60 percent of the elderberry plants and 60 percent of the associated native plants must be maintained throughout the monitoring period. Within one year of discovery that survival has dropped below 60 percent, the applicant must replace failed plantings to bring survival above this level. The Service will make any determination as to the applicant's replacement responsibilities arising from circumstances beyond its control, such as plants damaged or killed as a result of severe flooding or vandalism.

Service Contact

These guidelines were prepared by the Endangered Species Division of the Service's Sacramento Fish and Wildlife Office. If you have questions regarding these guidelines or to request a copy of the most recent guidelines, telephone (916) 414-6600, or write to:

U.S. Fish and Wildlife Service
Ecological Services

2800 Cottage Way, W-2605
Sacramento, CA 95825

Literature Cited

Barr, C. B. 1991. The distribution, habitat, and status of the valley elderberry longhorn beetle *Desmocerus californicus dimorphus*. U.S. Fish and Wildlife Service; Sacramento, California.

Holland, R.F. 1986. Preliminary descriptions of the terrestrial natural communities of California. Unpublished Report. State of California, The Resources Agency, Department of Fish and Game, Natural Heritage Division, Sacramento, California.

USFWS. 1980. Listing the valley elderberry longhorn beetle as a threatened species with critical habitat. Federal Register 45:52803-52807.

USFWS. 1984. Recovery plan for the valley elderberry longhorn beetle. U.S. Fish and Wildlife Service, Endangered Species Program; Portland, Oregon.

Table 1: Minimization ratios based on location (riparian vs. non-riparian), stem diameter of affected elderberry plants at ground level, and presence or absence of exit holes.

Location	Stems (maximum diameter at ground level)	Exit Holes on Shrub Y/N (quantify)[1]	Elderberry Seedling Ratio[2]	Associated Native Plant Ratio[3]
non-riparian	stems >=1" & =<3"	No:	1:1	1:1
		Yes:	2:1	2:1
non-riparian	stems >3" & <5"	No:	2:1	1:1
		Yes:	4:1	2:1
non-riparian	stems >=5"	No:	3:1	1:1
		Yes:	6:1	2:1
riparian	stems >=1" & <=3"	No:	2:1	1:1
		Yes:	4:1	2:1
riparian	stems > 3" & < 5"	No:	3:1	1:1
		Yes:	6:1	2:1
riparian	stems >=5"	No:	4:1	1:1
		Yes:	8:1	2:1

1 All stems measuring one inch or greater in diameter at ground level on a single shrub are considered occupied when exit holes are present anywhere on the shrub.

2 Ratios in the Elderberry Seedling Ratio column correspond to the number of cuttings or seedlings to be planted per elderberry stem (one inch or greater in diameter at ground level) affected by a project.

3 Ratios in the Associated Native Plant Ratio column correspond to the number of associated native species to be planted per elderberry (seedling or cutting) planted.

Figure 1: Range of the Valley Elderberry Longhorn Beetle

APPENDIX R

VEGETATION AND INTEGRATED PEST MANAGEMENT PLAN

VEGETATION AND INTEGRATED PEST MANAGEMENT PLAN

BIG CREEK HYDROELECTRIC SYSTEM

MAMMOTH POOL
BIG CREEK Nos. 1 AND 2
BIG CREEK Nos. 2A, 8, AND EASTWOOD
BIG CREEK No. 3

FERC Project Nos. 2085, 2175, 67, and 120

February 2007

SUBMITTED BY SOUTHERN CALIFORNIA EDISON COMPANY

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1.0 INTRODUCTION

This Vegetation and Integrated Pest Management Plan (Plan) has been developed for four Southern California Edison Company (SCE) hydroelectric projects included in the Big Creek Hydroelectric System, which is located in the Upper San Joaquin River Watershed. The Big Creek Hydroelectric System is comprised of four FERC licenses: Mammoth Pool (FERC No. 2085), Big Creek Nos. 1 and 2 (FERC No. 2175), Big Creek Nos. 2A, 8, and Eastwood (FERC No. 67), and Big Creek No. 3 (FERC No. 120). These Projects consist of seven powerhouses and four major reservoirs, and have a combined dependable operating capacity of about 890 megawatts (MW).

1.1 PREPARATION OF THE VEGETATION AND INTEGRATED PEST MANAGEMENT PLAN

SCE has prepared this Plan in consultation with U.S. Fish and Wildlife Service (USFWS), United States Department of Agriculture-Forest Service (USDA-FS), California Department of Fish and Game (CDFG) and other stakeholders involved in the Big Creek Alternative Licensing Process (ALP). The Plan is consistent with the Standards and Guidelines for Affected Management Areas in the Sierra National Forest Land and Resource Management Plan (USDA-FS 1991a) and the Sierra Nevada Forest Plan Amendment (USDA-FS 2004). This Plan covers only vegetation management. Road maintenance, sediment management, and transportation systems are covered in other plans developed for the four Big Creek Projects. This Plan, including the specified avoidance, protection, and mitigation measures, will supersede all previous documents developed by SCE for the four Big Creek Projects. The Plan will become effective upon the Federal Energy Regulatory Commission (FERC or Commission) approval.

The Draft Vegetation and Integrated Pest Management Plan was submitted to agencies and stakeholders on July 22, 2005. Comments on the plan were received from USDA-FS, CDFG, and USFWS.

2.0 EVALUATION AND IMPLEMENTATION OF MANAGEMENT ACTIVITIES

The following section describes the vegetation management and pesticide use that occurs in the vicinity of the four Big Creek Projects, the location of biological and cultural resources, noxious weeds and invasive ornamentals, and the potential effects of vegetation management on those resources. Additionally, this section identifies the appropriate measures to be implemented during the term of the license to avoid or protect resources.

2.1 VEGETATION MANAGEMENT

Vegetation management, including measures to prevent the establishment of noxious weeds, occurs at several locations in the vicinity of the four Big Creek projects (i.e., Project facilities, recreation facilities, roads, and trails). SCE conducts vegetation management in these areas in association with on-going operations and maintenance. Vegetation management includes trimming of vegetation by hand or equipment and the

use of herbicides. Refer to Attachment A, Vegetation Management in the Vicinity of the Big Creek Projects, for a list of vegetation management activities that occur at Project facilities, recreation facilities, roads, and trails, as well as the frequency at which a management activity typically occurs at a specific location. This list includes only locations where SCE implements vegetation management activities. A description of vegetation management activities is provided below. In general vegetation management activities occur during the spring and early summer to avoid work during high fire danger periods. Vegetation management implemented on a regular basis typically occurs one or more times in a 5-year period. Activities implemented on an infrequent basis tend to occur at least once during a 20-year period, but less than once every 5 years.

Vegetation management around Project facilities, recreation facilities, roads, and trails is limited to the area necessary to reduce fire hazard and provide worker/public health and safety. In general, vegetation management occurs within a 150 foot radius around Project facilities (dams, small and moderate diversions, gaging stations, powerhouses, transmission lines) and recreation facilities. Vegetation management occurs within 10 feet of roads and within 2 feet of trails.

SCE implements a combination of manual, mechanical, and chemical methods to control vegetation in the vicinity of the Big Creek Projects. Selection of an appropriate control method is based on an evaluation of worker/public health and safety, potential environmental effects, effectiveness of methods based on site characteristics, and economics. The methods used for general vegetation management are also useful for noxious weed control, when timed correctly and combined appropriately. The goal of noxious weed control efforts is to physically remove noxious weed plants and to prevent seed set for several consecutive years until there are no viable seeds remaining in the soil. Following is a summary of manual and mechanical management methods used in the vicinity of the Big Creek Projects. Chemical control (e.g., herbicide use) is described in Section 2.2, Pesticides.

2.1.1 VEGETATION TRIMMING BY HAND

One of the methods used to trim vegetation in the vicinity of the Big Creek Projects is with hand tools. This includes trimming of grasses and forbs with a string trimmer as well as removing or trimming of overhanging limbs of shrubs and trees with a chain saw or other handheld saw. This management activity is implemented on an as-needed basis in conjunction with facility inspections.

2.1.2 VEGETATION TRIMMING WITH EQUIPMENT

Vegetation in the vicinity of the Projects is also trimmed using mechanical equipment, including a flail-type mower. A flail mower is a cutting device attached to a tractor that is used to cut brush along roadsides. As with trimming of vegetation by hand, this activity is implemented on an as-needed basis.

2.2 PESTICIDES

SCE uses pesticides, in combination with other methods, to control unwanted vegetation and vertebrate pests at its Project facilities. The term pesticide refers to any substance or mixture of substances intended to prevent, destroy, or repel any pest, and for SCE includes herbicides and rodenticides. The use of pesticides at Project facilities is regulated by the U.S. Environmental Protection Agency (EPA), USDA-FS California Environmental Protection Agency (CEPA), California Department of Pesticide Regulation (CDPR), and local County Agricultural Commissioners.

2.2.1 HERBICIDE USE

Because the terrain in the vicinity of the Big Creek Projects is steep and difficult to walk, and hand-pulling or mowing are impractical and less safe in some areas, herbicides may be necessary in addition to manual and mechanical methods to effectively control weeds. Additionally, although there is sufficient vegetative cover on some of the slopes where noxious weeds are present, the soil on other slopes may be loose and easily dislodged, resulting in erosion or sedimentation into the San Joaquin River and other rivers and creeks in the vicinity of the Big Creek Projects. Manual and mechanical methods of vegetation control are described in Section 2.1, Vegetation Management. Application of herbicides requires far less time be spent walking these steep slopes, resulting in less risk to workers, and less soil disturbance including erosion and sedimentation. A description of herbicide use is provided below.

After vegetation has been cleared by manual or mechanical methods, herbicides may also be applied. Two methods of herbicide application—basal and foliar application—are utilized. Basal application is used for shrub species and includes cutting of a shrub and applying an oil-based herbicide directly to the stump. Foliar application techniques include hand spraying of an herbicide, with an additive or other agent, to control overspray. The herbicides and other agents used in the vicinity of the four Big Creek Projects are listed in Table 1. The label or Material Safety Data Sheet (MSDS) for each herbicide or other agent is provided as Attachment B. If more effective herbicides become available in the future, SCE will consult with USDA-FS and USFWS to obtain permission to substitute the herbicides listed in Table 1. The application of all herbicides is completed or supervised by a certified pesticide applicator in compliance with the specified herbicide application prescription.

Herbicides and other chemical agents used in the vicinity of the Big Creek Projects are as follows:

- Garlon 4® and Hasten® (a vegetable oil-based additive) are combined and applied using a basal bark application technique.

- Garlon 4® and Accord® are combined and applied using a foliar application technique.

- Accord® is used by itself or combined with either R-11® or In-Place® and applied using basal bark and foliar techniques.

- Pathfinder® is used as a spot treatment for individual plants.

- Velpar® is used as a pre-emergent and is applied directly to moist soil to treat grasses and broad-leaved plants.

2.2.2 RODENTICIDE USE

Regulations and requirements developed by the EPA, USDA-FS, CEPA, CDPR and local County Agricultural Commissioners allow for the use of rodenticides, including toxicants, anticoagulants and fumigants, for vertebrate pest control. SCE currently implements rodent control in the vicinity of the four Big Creek Projects under a 1993 Memorandum (*Rodent Control on Earth Filled Dams—Northern Hydro Region—Environmental Compliance*) and a Fresno County Agricultural Commissioner Operator Identification Number. Rodenticide use at the four Big Creek Projects is restricted to earthen dams and the interior of Project facilities, as described below.

Earthen Dams

Rodent control may be necessary on Project earthen dams, where rodent burrowing activity is considered a threat to dam integrity. Rodent control is implemented on the Mammoth Pool Spillway and Balsam Dam Diversion using habitat modification (vegetation control) in combination with rodenticide treatments including fumigants (i.e., gas cartridges) and anticoagulant-treated oats and grains, specifically 0.005% diphacinone. Attachment C provides the specimen label or MSDS for both gas cartridges and diphacinone.

Facility Interiors

Rodent populations inside Project facilities can pose a human health risk and may damage interior project components (control panels, wiring, etc). Therefore, rodent control is currently implemented in powerhouses, gaging stations, and other facilities in the vicinity of the four Big Creek Projects. SCE implements rodent control in facility interiors using non-restricted rodenticides and trapping (e.g., snap traps).

2.3 RESOURCES POTENTIALLY AFFECTED BY VEGETATION MANAGEMENT

This section provides information on resources potentially affected by vegetation management activities, including special-status terrestrial species and Native American plants of cultural concern. This section also addresses noxious weeds and invasive ornamental species. The presence of special-status resources, noxious weeds and invasive ornamental species in the vicinity of the four Big Creek Projects was determined based on extensive field surveys conducted in the Project area as part of the Big Creek ALP (SCE 2001; SCE 2003; SCE 2004; and SCE 2005).

Following completion of surveys, SCE and USDA-FS identified additional facilities (including roads and helicopter landing sites) to be included as Project facilities and/or to be included within FERC Project boundaries under the new license. These additional facilities are listed in Attachment D. SCE will survey these facilities within one year of FERC approval of this Plan to identify any special-status species (i.e., special-status plants and wildlife and Native American plants of cultural concern) that may be affected by vegetation management activities, and to identify the location of noxious weeds and invasive ornamental species.

2.3.1 TERRESTRIAL RESOURCES

Terrestrial resources present in the vicinity of the four Big Creek Projects include both special-status plant and wildlife species. Only those species identified as potentially being affected by on-going vegetation management are discussed further in this Plan.

Special-Status Plant Species

Vegetation management activities potentially affecting special-status plant species include trimming of vegetation by hand and equipment and herbicide use. There are known occurrences of upland special-status plant species which may be affected by vegetation management at several locations in the Mammoth Pool, Big Creek Nos. 1 and 2 and Big Creek Nos. 2A, 8, and Eastwood Project vicinities. There are known occurrences of aquatic, wetland, and riparian special-status plant species which may be affected by vegetation management in the Big Creek Nos. 2A, 8, and Eastwood Project vicinity. Refer to Attachment E for a list of specific facilities and management activities.

Special-Status Wildlife Species

Three special-status wildlife species could potentially be affected by vegetation management implemented in the vicinity of the four Big Creek Projects. These include the valley elderberry longhorn beetle (VELB), peregrine falcon, and osprey. The locations where vegetation management may affect these species (by Project) and potential effects are summarized below.

Valley Elderberry Longhorn Beetle

USFWS identifies potential VELB habitat as elderberry shrubs below 3,000 feet elevation. Implementation of vegetation management activities, including trimming of vegetation by hand and equipment and the use of herbicides, could result in adverse effects to VELB. Potential VELB habitat and vegetation management occurs in the vicinity of Mammoth Pool, Big Creek No. 3, and Big Creek Nos. 2A, 8 and Eastwood Projects. Refer SCE's VELB Management Plan (SCE 2007a) for the specific facilities and management activities.

Peregrine Falcon

There are several known peregrine falcon nests in the Big Creek Nos. 1 and 2 Project vicinity. However, only two nests were identified as being potentially disturbed by

vegetation management, if those management activities are implemented with equipment during the nesting season. These nests are located in the vicinity of Project roads 8S301, from the gate at 8S66T to penstock surge pipes and 8S302, from 8S66 (near Dam 2) to Big Creek No. 1 42-inch gate house.

Osprey

Several osprey nests are present in the vicinity of the Big Creek Projects. However, only two nests were identified as being potentially disturbed by vegetation management, if those management activities are implemented with equipment during the nesting season. These nests are located along the two Big Creek No. 2A, 8 and Eastwood access roads to Shaver Dam from Highway 168.

2.3.2 Native American Plants of Cultural Concern

Native American plants of cultural concern are considered to be cultural resources that may be potentially affected by vegetation management activities including trimming of vegetation by hand and equipment and herbicide use. A list of Native American plants of cultural concern and the location of gathering sites was developed through consultation with local tribes (SCE 2001; SCE 2003; SCE 2004; and SCE 2005). Because of the sensitive and confidential nature of all of these plant species, including two noxious weeds that are also considered to be Native American plants of cultural concern, a summary of the location of these resources is not provided in this Plan.

2.3.3 Noxious Weeds and Invasive Ornamentals

Several noxious weed infestations are present in the vicinity of the four Big Creek Projects. Vegetation management activities that could result in the spread or introduction of these species include trimming of vegetation by hand and equipment, and the entrance of SCE vehicles and equipment into the Project area from outside the watershed, or traveling through an existing infestation within the watershed. Refer to Attachment E for a list of facilities where vegetation management could result in the spread or introduction of noxious weeds. Invasive ornamental plant species, some of which are also considered noxious weeds, have also been identified at several locations in the vicinity of the four Big Creek Projects.

2.4 Avoidance and Protection Measures

SCE proposes to continue implementation of vegetation management practices, as needed, at the four Big Creek Projects. Avoidance and protection measures that SCE will implement during the term of the license are provided below.

2.4.1 Pesticide Use

SCE currently conducts pesticide (herbicide and rodenticide) management in accordance with Best Management Practices (BMPs). These BMPs are non-point source pollution control measures that were developed and documented cooperatively between the California Water Quality Control Board and Sierra National Forest (*Water*

Quality Management for Forest System Lands in California: Best Management Practices) (USDA-FS 2000). BMPs that are applicable and will continue to be implemented during the license for the four Big Creek Projects are listed below.

- **BMP 5.8—Pesticide Application According To Label Directions and Applicable Legal Requirements**

  This measure is designed to prevent water contamination by complying with all label instructions and restrictions. The Pesticide Applicator licensed by the State of California and assigned to supervise the project is responsible for ensuring that label directions are followed.

- **BMP 5.9—Pesticide Application Monitoring and Evaluation**

  This measure requires documentation of the amount and accuracy of pesticide application to help ensure that the pesticide has been applied safely to the intended target area and that there are no unexpected non-target results.

- **BMP 5.10—Pesticide Spill Contingency Planning**

  This measure is designed to ensure that contingency plans are prepared before project implementation in order to minimize contamination of water or non-target areas from accidental pesticide spills.

- **BMP 5.11—Cleaning and Disposal of Pesticide Containers and Equipment**

  This measure is intended to prevent the contamination of water or non-target areas from cleaning or disposal of pesticide containers. The Pesticide Applicator licensed by the State of California and assigned to supervise the project is responsible for ensuring that label directions are followed regarding cleaning and disposal of pesticide containers.

- **BMP 5.12—Streamside Wet Area Protection During Pesticide Spraying**

  This measure requires that an untreated buffer strip is left alongside Riparian Management Areas (RMAs) and Stream Management Zones (SMZs) when applying pesticides to minimize the risk of pesticide inadvertently entering water or unintentionally altering the RMA or SMZ.

- **BMP 5.13—Controlling Pesticide Drift During Spray Application**

  This measure is designed to minimize the risk of pesticide drift falling directly into water or non-target areas by using prescriptions that specify wind speed, application equipment and pattern, and pesticide formulation. The Pesticide Applicator licensed by the State of California and assigned to supervise the project is responsible for ensuring that the prescriptions for application are followed.

2.4.2 TERRESTRIAL RESOURCES

Special-Status Plant Species

To avoid and minimize impacts to upland, aquatic, wetland, and riparian special-status plant populations documented in the Project area, the following measures will be implemented.

- Prior to vegetation management activities, flagging will be placed forming a buffer area of at least 5 feet around documented special-status plant populations that are present in areas where vegetation management will occur.
- No herbicide use will occur within the 5-foot buffer area (flagged area).
- No mechanical vegetation removal will be implemented within 5 feet of a documented special-status plant population.

Special-Status Wildlife Species

Valley Elderberry Longhorn Beetle

To avoid and minimize impacts to VELB and their habitat (elderberry shrubs below 3,000 feet elevation), the following avoidance and protection measures will be implemented.

Protected Areas

- Each elderberry shrub, or group of shrubs, potentially affected by Project operation or management activities, with one or more stems measuring 1 inch in diameter or greater (≥1) at ground level, will be flagged prior to implementation of management activities.
- Signage will be installed in areas where elderberry shrubs are known to occur.

Vegetation Control

- No elderberry shrub with at least one stem ≥ 1" in diameter at ground level will be removed.
- No elderberry shrub branches or stems ≥ 1" will be trimmed.
- No flail-type mower will be used within an elderberry shrub dripline with one or more stems measuring ≥1 inch in diameter at ground level.
- Basal bark or foliar techniques will be utilized when herbicide application must occur within 100 feet of the dripline of an elderberry shrub with one or more stems measuring ≥1 in diameter or greater at ground level. Basal application techniques include cutting of a non-elderberry shrub and applying an oil-based herbicide

directly to the stump. Foliar application techniques include hand spraying of an herbicide with a deposition/retention additive to control overspray. The application of herbicides will be completed or supervised by a certified pesticide applicator in compliance with the herbicide application prescription. Herbicide application will occur from July through April on an as-needed basis.

Avoidance and protection measures for VELB and potential VELB habitat that cover all aspects of Project operations and management activities are included the VELB Management Plan (SCE 2007a) for the four Big Creek Projects.

American Peregrine Falcon

To avoid and minimize impacts to American peregrine falcon, the following measures will be implemented:

- Prior to initiating mechanical vegetation management with ¼ mile of a peregrine falcon nest, SCE will contact USDA-FS to obtain information on the status of the nest.

- If USDA-FS provides information that the nest in inactive, no further avoidance or protection measures are necessary.

- If USDA-FS provides information that the nest is active, and mechanical vegetation management must occur between February 15 and August 31 (peregrine falcon nesting season) within ¼ mile of the active nest, the following will be implemented.

  - All vegetation management activity, once begun, will continue without stopping, until maintenance personnel have left the bounds of the sensitive area (¼ mile around the nest).

  - All equipment staging areas will be located outside of the sensitive area.

Osprey

To avoid and minimize impacts to osprey, the following measures will be implemented.

- If mechanical vegetation management (use of a flail-type mower) must occur between March through September (osprey nesting season) within 500 feet of a known nest, SCE will locate equipment staging areas outside of the sensitive area and all vegetation management activity, once begun, will continue without stopping until maintenance personnel have left the bounds of the sensitive area (500 feet around the nest).

- Osprey nest surveys will be conducted in conjunction with bald eagle nest surveys. Refer to the Bald Eagle Management Plan (SCE 2005b) for nest survey schedules for the term of the license.

2.4.3 CULTURAL RESOURCES

To avoid and minimize impacts to Native American plants of cultural concern, the following measures will be implemented.

- SCE will schedule and attend an annual meeting with interested Native Americans to discuss vegetation management in the vicinity of the four Big Creek Projects. Refer to Section 3.3, Consultation, for more detail.

- SCE will implement Standard Operating Procedures (SOPs), as described in the Historic Properties Management Plan (HPMP), for the protection of Native American plants of cultural concern (SCE 2007c).

2.4.4 NOXIOUS WEEDS AND INVASIVE ORNAMENTALS

The USDA-FS Guide to Noxious Weed Prevention Practices was considered in the development of specific methods to control and prevent the spread of noxious weeds and the treatment of established infestations (USDA-FS 2001). Measures for preventing the spread of noxious weeds, treating new and existing noxious weed populations, preventing the spread of invasive ornamental plants, revegetating, and controlling erosion for the four Big Creek Projects are provided below.

Prevention of the Spread of Noxious Weeds

The following measures will be implemented to prevent the spread of noxious weeds in the vicinity of the four Big Creek Projects.

- All SCE field vehicles and equipment previously used on non-paved surfaces outside of the watershed will be thoroughly cleaned before entering the Project area. SCE will wash all vehicles/equipment with power or high pressure washers to remove soil, seeds, vegetation, or other seed bearing material before the equipment enters Project areas. However, this cleansing action is not required in an emergency. Instead, SCE will notify the USDA-FS of the location after the emergency so that the site can be checked for the introduction of noxious weeds the following year. Notification will include identifying the location of the equipment's most recent operations.

- SCE vehicles traveling through noxious weeds within the watershed will be cleaned as soon as practicable after leaving the infested area. Following washing of the vehicle/equipment, SCE will confirm through visual inspection that noxious weed material has been removed from the vehicle.

Treatment of New and Established Infestations

The Principles of Integrated Weed Management were considered in the development of specific treatment methods for noxious weeds and invasive non-native plants. Table 2 lists noxious weeds and invasive non-native plants of highest concern in the Sierra National Forest. Tables 3 and 4 list noxious weeds and invasive ornamental plants

(respectively) specific for the four Big Creek Projects. It should be noted that some invasive ornamentals are also considered to be noxious weeds. These species are indicated on the tables. The tables include a management priority for each species as follows:

- **Priority Level 1—**SCE will implement treatment immediately following FERC approval of this Plan. Management focus is the eradication of these species.
- **Priority Level 2—**SCE will implement treatment within one year of FERC approval of this Plan. Management focus is the eradication of these species.
- **Priority Level 3—**SCE will implement treatment prior to any vegetation management activity. Management focus is the eradication of this species.
- **Priority Level 4—**SCE will implement treatment in conjunction with regularly scheduled vegetation management at the Project facility, recreational feature, road or trail. Because these species are extremely widespread and impossible to eradicate, management focus is reducing abundance.

The specific treatment method to be implemented to eradicate or reduce the abundance of a noxious weed/invasive ornamental is highly dependent on the species and location. Attachment F provides examples of species-specific treatment methods for the reduction and/or eradication of these plant populations.

Prevention of the Spread of Invasive Ornamentals

Invasive ornamental plant species, some of which are also considered noxious weeds, have been planted around several of SCE's project facilities and roads. USDA-FS highest-priority invasive ornamentals are listed in Table 4. To prevent the spread of ornamental plant species to native habitat, the following measures will be implemented.

- SCE will not plant invasive ornamental plant species (including, but not limited to species shown in Table 4) at Project facilities during the term of the license.
- SCE will remove any invasive ornamental plant species (Table 4) which already exist around SCE's project facilities and recreation facilities. The schedule for the removal of these plants is dependent upon the management priority (Level 1 through Level 3) assigned to the particular plant species. The preceding section, Treatment of New and Established Infestations, provides a definition for each priority level.

Revegetation

When necessary and as approved by USDA-FS, SCE will revegetate all appropriate sites disturbed by Project operations and maintenance activities as defined below. Additionally, if new construction is proposed, revegetation will occur at sites disturbed by construction. Revegetation can be important in preventing the establishment of noxious weeds in areas that have been cleared or are subject to ground disturbance depending on the existing seed bank on the site. The Forest Service Manual, Pacific

Southwest Region (R5) Botanical Program Management Handbook, Chapter 50 (Revegetation) and USDA-FS Regional Native Plant Policy was used in development of specific revegetation measures (Attachments G and H).

- Revegetation or seeding conducted in the Project area will be approved by the USDA-FS, and will be implemented in accordance with the USDA-FS Regional Native Plant Policy and Botanical Program Management Handbook. Where appropriate and as available, culturally significant plants will be used for revegetation.

- SCE will use locally native species pre-approved by the USDA-FS for revegetation and seeding conducted in the Project area. Occasionally, it may be necessary to use a cereal grain or a sterile hybrid to accomplish erosion control objectives, but this exception will be approved by the USFS botanist. A good faith effort will be made to ensure a supply of locally native plant material is available over the long-term; and to plan at least a year ahead for known large construction projects where plant material will need to be collected and grown.

- Sources for lower elevation revegetation projects from which locally native plant material may be obtained include, but are not limited to:

SCE Nursery
(559) 841-3194
Contact: Terry Sandridge

Intermountain Nursery
30433 North Auberry Road
Prather, CA 93651
(559) 855-3113

Welker's Grove Nursery
42170 Cedar Springs Road
Auberry, CA 93602
(559) 855-3521

- If locally native plant materials are not available, SCE will consult with USDA-FS to identify alternatives.

- SCE will plan for and discuss the process to obtain locally native species for revegetation during the annual meeting with USDA-FS.

Erosion Control

SCE will use only certified weed-free products when mulch is required for erosion control. If certified weed-free products are not available, SCE will consult with USDA-FS to identify an alternative. Whether or not certified weed-free material is available, a

good-faith effort should be made and documented to obtain a mulch supply that is free of weeds.

2.5 SCE PROGRAMS

In addition to the above avoidance and protection measures, SCE also has established several programs to train personnel on the presence of special-status resources in the vicinity of the four Big Creek Projects. These programs will continue to be implemented during the term of the license. Each program is described below.

2.5.1 ENDANGERED SPECIES ALERT PROGRAM

The Endangered Species Alert Program (ESAP) was developed to provide SCE personnel with a means for identifying when they may be working within an area with the potential for occurrence of legally protected plants and animal species in the SCE Service Territory. This training is conducted on an annual basis. For each of these species within the SCE Service Territory, the ESAP Manual (SCE 2006a) includes a photograph, description, natural history information, and map showing the species' distribution in relation to SCE facilities. This manual and maps (or Geographic Information System (GIS) database) are reviewed prior to implementing any project that involves ground disturbing activities within the Project area. Should a proposed activity have the potential to conflict with a known sensitive species population, SCE's Northern Hydro Division Environmental Manager, SES, or other qualified personnel will be notified to evaluate the situation and, if needed, coordinate with and obtain appropriate permits from regulatory agencies.

2.5.2 NORTHERN HYDRO SPECIAL-STATUS SPECIES INFORMATION PROGRAM

SCE's Northern Hydro Division has developed a Special-Status Species Information Program (NHSSIP) to provide SCE personnel with a means of identifying when they may be working within an area that could support a Forest Service Sensitive (FSS) species. This Program will require the use of the Environmental Compliance Program described below and will enhance the ESAP described above. This program includes a photograph or line drawing, description, natural history information, and map showing the species' distribution in relation to SCE facilities for all FSS species potentially occurring in the Project vicinity (SCE 2006b).

2.5.3 AVIAN PROTECTION PROGRAM

SCE employees are informed about the SCE Avian Protection Program (APP) through posters, written literature, wallet-sized cards, formal training that discusses pertinent environmental regulations, general raptor identification, reporting procedures for the discovery of a dead raptor, protocols for how to deal with avian nests, and modifications that can be made to power line structures to lower the risk of avian electrocutions. A copy of SCE's Avian Protection (Specific Order) and Animal/Bird Mortality Reporting Form is provided as Attachment I. This training is conducted annually as part of the ESAP described above.

2.5.4 CULTURAL RESOURCES ENVIRONMENT AWARENESS PROGRAM

A Cultural Resources Environment Awareness Program will be conducted on an annual basis in conjunction with the ESAP program described above. The training would include personnel working in the vicinity of the four Big Creek Projects from Northern Hydro, Transmission and Distribution, and Carrier Solutions. The cultural resources component would include procedures for implementation of the HPMP and a section on awareness of Native American traditional cultural values.

2.5.5 ENVIRONMENTAL TRAINING PROGRAM

SCE employees attend environmental training sessions on a regular basis as well as on an as-needed basis. These training sessions include a review of background material, permit conditions, and instructions on how to avoid impacts on biological resources. Project-specific meetings may also be conducted in the field on a job-specific or activity-specific basis to review appropriate management protocols (avoidance and protection measures) in environmentally sensitive areas.

2.5.6 NOXIOUS WEED TRAINING PROGRAM

SCE personnel will receive training on the importance of noxious weed control in the Project area. Specifically, the Sierra-San Joaquin Noxious Weed Alliance's *Field Guide to Invasive Non-Native Weeds of Mariposa, Madera, and Fresno Counties* will be reviewed and provided to SCE personnel. This field guide is focused on prominent weed species in the Project vicinity and provides photographs, visual characteristics, a description of each species, mechanism of spread, impacts as a result of the species, origin of distribution, and important control measures. Personnel will also be trained on the measures which individual staff can implement to prevent the spread of noxious weeds. These include:

- Removal of weed seeds from clothing before leaving jobsites.
- Use of leather boots or gators over boots to shed weeds and their seeds.

2.5.7 COMPLIANCE PROGRAM

SCE will develop a compliance program that includes a process that must be followed prior to implementation of specific O/M activities. This is a program designed to track O/M activities implemented, update resource information, and guide personnel in implementation of O/M activities in compliance with A/P measures developed for the Big Creek Hydroelectric System. The compliance program consists of three components, the Northern Hydroelectric Environmental Compliance Database, GIS Database, and the Compliance Process, as described below.

<u>Northern Hydroelectric Environmental Compliance Database</u>

The Northern Hydroelectric Environmental Compliance Database (Compliance Database) will be developed and integrated with SCE's existing databases.

A component of the database will be designed for tracking the training records of SCE personnel, O/M activities that have been planned and completed, and noxious weed populations that have been identified and treated. The database will also include all A/P measures associated with this Plan. This database will be queried prior to implementation of specified O/M activities.

Geographic Information System Database

Several studies have been conducted for the Big Creek Hydroelectric System. The results of these studies, data obtained from the USDA-FS Special-status Species Database, the CNDDB, and other biological studies were incorporated into a GIS database. This information includes the locations of special-status species and their habitats, noxious weed population, and cultural resources in the vicinity of the Project. Because of the sensitive nature of the locations of some special-status species and cultural resources, some GIS data layers are confidential. Therefore, access to these layers will be limited to SCE employees who are trained in the sensitivity and proper use of the information.

Updating GIS Database

The GIS database will be evaluated annually during the term of the license to determine if updates are needed. Prior to updating the database, SCE will contact USDA-FS for the most recent version of its Special-status Species Database. SCE will also contact the USFWS for the current list of Threatened and Endangered Species and obtain any new versions of the CNDDB when they become available. Any new data on the location of resources (i.e., special-status species, cultural resources, and noxious weed populations) in the vicinity of the Project that are obtained during implementation of O/M activities or required monitoring will also be incorporated into the database on a regular basis. SCE will contact the agencies and obtain approval to use the newest available data sources if they become available.

Compliance Process

SCE will review all O/M work activity requests that are determined to be subject to environmental regulation. They will use the Database to determine which A/P measures are appropriate, given the timing and nature of the work to be conducted, and the proximity of special-status biological resources and/or cultural resources to the work location. SCE will require that contractors comply with all applicable A/P measures.

3.0 MITIGATION AND MITIGATION/RESOURCE MONITORING

The following section defines the mitigation and mitigation/resource monitoring and reporting requirements that will be implemented for the four Big Creek Projects. Additionally, agency consultation is also described.

3.1 MITIGATION

3.1.1 VALLEY ELDERBERRY LONGHORN BEETLE

Measures to mitigate impacts to VELB are included in the VELB Management Plan (SCE 2007a). These include replacement of branches and stems greater than or equal to 1 inch in diameter that would be trimmed during the term of the license with seedlings that will develop new branches and stems. The mitigation site for elderberry seedlings will be located on USDA-FS property adjacent to the elderberry shrubs, and will be selected through consultation with SCE, USFWS, and USDA-FS. Refer to the VELB Management Plan for a more detailed description of VELB mitigation measures.

3.2 MITIGATION/RESOURCE MONITORING AND REPORTING

Mitigation/resource monitoring and reporting will be completed for terrestrial species and noxious weeds. The methods and reporting requirements by resource are described below.

3.2.1 TERRESTRIAL RESOURCES

Special-status Plants

SCE will monitor the effectiveness of avoidance and protection measures for special-status plants in conjunction with long-term monitoring of noxious weeds. In addition, during surveys for noxious weeds, SCE will conduct special-status plant surveys within the boundaries of the four Big Creek Projects every 10 years, in accordance with *Guidelines for Assessing Effects of Proposed Projects on Rare Plants and Plants and Plant Communities* (CDFG 2000). Surveys will be initiated 10 years following FERC approval of this Plan.

Valley Elderberry Longhorn Beetle

Monitoring of the VELB mitigation site will be conducted in accordance with the VELB Management Plan (SCE 2007a). This includes monitoring the general condition of the mitigation site and the condition of the elderberry plantings. SCE elected to monitor the site seven times over a 15-year period. Refer to the VELB Management Plan for a more detailed description of VELB mitigation monitoring.

3.2.2 CULTURAL RESOURCES

Refer to the HPMP for a description of SOPs for the protection of Native American plants and cultural resources.

3.2.3 NOXIOUS WEEDS AND INVASIVE ORNAMENTALS

SCE will conduct monitoring of noxious weed treatment areas, erosion control and revegetation areas, and conduct long-term monitoring of noxious weeds in the Project area during the term of the license. Specific methods for each are described below.

Monitoring of Treatment Areas

SCE will monitor areas where manual, mechanical, or herbicide treatments have been implemented on noxious weed infestations to determine the effectiveness of the treatment. Monitoring will be conducted within one year of implementation of the initial treatment. If it is determined that the initial treatment method was not successful, SCE will consult with USDA-FS to identify an alternative or additional treatment. An annual report will be provided to USDA-FS that identifies the location of treatment areas, the treatment methods implemented, and the success of the treatments.

Long-term Monitoring of Noxious Weeds

SCE will conduct surveys to identify and record the presence of noxious weeds within the boundaries of the four Big Creek Projects every 10 years. Surveys will be conducted in accordance with Section 2083 of the Forest Service Manual *Information and Reporting Guidelines for Noxious Weeds* (USDA-FS 1991b). See Attachments A and D for a complete list of locations to be surveyed. Surveys will be initiated 10 years following FERC approval of this Plan. Additionally, SCE will provide a survey report to USDA-FS that identifies the location of noxious weed infestations in the Project area, proposed treatment methods, and an implementation schedule. The report will include the number of noxious weeds species, the locations of infestations, and acreage occupied as compared to results from all previous surveys.

3.2.4 Erosion Control and Revegetation Areas

SCE will monitor areas where erosion control or revegetation has been implemented to determine if noxious weeds have become established. Monitoring will be conducted within one year of completion of the activity. If noxious weeds have become established, SCE will implement an appropriate treatment method based on the species present and the location. An annual report will be provided to USDA-FS that identifies all erosion control and revegetation areas, plant materials used, and results of monitoring.

3.3 Agency Consultation

SCE will continue to schedule and attend an annual coordination meeting with USDA-FS. The focus of this meeting will be to inform the USDA-FS of proposed vegetation management activities (e.g., treatment methods), including the location and time of year the activities are to be implemented. In addition, every five years SCE will, in cooperation with USDA-FS, review the Vegetation and Integrated Pest Management Plan for adequacy.

SCE will also schedule and attend an annual consultation meeting with interested Native Americans as identified in the HPMP SOPs.

4.0 LITERATURE CITED

California Department of Fish and Game. 2000. *Guidelines for Assessing the Effects of Proposed Projects on Rare, Threatened, and Endangered Plants and Natural Communities*. Guidelines produced for CDFG December 9, 1983; revised May 8, 2000.

Southern California Edison Company (SCE). 2001. Final Technical Study Plan Package for the Big Creek Hydroelectric System Alternative Licensing Process prepared by Southern California Edison. August 3, 2001. *In* SCE's Amended Preliminary Draft Environmental Assessment (APDEA) for the Big Creek Alternative Licensing Process (ALP). Mammoth Pool Project (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). February 2007 (Supporting Document (SD)-B, Volume 4, Books 6 and 21).

SCE. 2003. 2002 Technical Study Report Package for the Big Creek Hydroelectric System Alternative Licensing Process prepared by Southern California Edison. October 10, 2003. *In* SCE's APDEA for the Big Creek ALP. Mammoth Pool Project (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). February 2007 (SD-C, Volume 4, Books 7-10, 21 and 22).

SCE. 2004. 2003 Technical Study Reports (First Distribution) for the Big Creek Hydroelectric System Alternative Licensing Process prepared by Southern California Edison. August 20, 2004. *In* SCE's APDEA for the Big Creek ALP. Mammoth Pool Project (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). February 2007 (SD-D, Volume 4, Books 11-17 and 23).

SCE. 2005. 2004 Draft Technical Study Reports for the Big Creek Hydroelectric System Alternative Licensing Process prepared by Southern California Edison. *In* SCE's APDEA for the Big Creek ALP. Mammoth Pool Project (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). February 2007 (SD-D, Volume 4, Books 18 and 24).

SCE. 2006a. Endangered Species Alert Program Manual; Species Accounts and Procedures. Environmental Affairs Division. *In* SCE's SCE Response to FERC's Additional Information Request (AIR) No. 6 (Schedule B). August 2006.

SCE. 2006b. Northern Hydro Special-Status Species Information Program. Environmental Affairs Division. *In* SCE's SCE Response to FERC's AIR No. 6 (Schedule B). August 2006.

SCE. 2007a. Valley Elderberry Longhorn Beetle (VELB) Management Plan, Big Creek Hydroelectric System, FERC Project Nos. 2085, 2175, 67, and 120. *In* SCE's APDEA for the Big Creek ALP. Mammoth Pool Project (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). February 2007 (SD-G, Volume 4, Books 18 and 24).

SCE. 2007b. Bald Eagle Management Plan, Big Creek Hydroelectric System, FERC Project Nos. 2085, 2175, 67, and 120. *In* SCE's APDEA for the Big Creek ALP. Mammoth Pool Project (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). February 2007 (SD-G, Volume 4, Books 18 and 24).

SCE. 2007c. Historic Properties Management Plan, Big Creek Hydroelectric System, FERC Project Nos. 2085, 2175, 67, and 120. *In* SCE's APDEA for the Big Creek ALP. Mammoth Pool Project (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). February 2007 (Volume 4, Book 26).

United States Department of Agriculture-Forest Service (USDA-FS). 1991a. Forest Land and Resource Management Plan (Sierra National Forest). Pacific Southwest Region.

USDA-FS. 1991b. Information and Reporting Guidelines for Noxious Weeds. Section 2083 in Forest Service Manual, June 1991.

USDA-FS. 2000. Water Quality Management for Forest System Lands in California: Best Management Practices, September 2000.

USDA-FS. 2001. USDA-Forest Service Guide to Noxious Weed Prevention Practices.

USDA-FS. 2004. Sierra Nevada Forest Plan Amendment – Final Supplemental Environmental Impact Statement. Record of Decision, January 21, 2004. USDA-FS, Pacific Southwest Region and Intermountain Region.

TABLES

Table 1. Herbicides and Other Agents Used in the Vicinity of the Big Creek Projects.

Herbicides				
	Garlon 4® at 0.6-1.5 lbs/ acre [1]	**Pathfinder II®**	**Accord® at 0.6-1.0 lbs/acre [2]**	**Velpar® at 2 lbs/acre**
Active Ingredient	triclopyr	triclopyr	glyphosate	Hexazinone
Other Agents				
	Hasten®	**R-11®**	**In-Place®**	
Properties	Spray Adjuvant Nonionic surfactant and esterified vegetable oils	Wetting Agent Nonionic surfactant Spreader Activator	Deposition and Retention Agent	

[1] These rates represent average coverage (20%) to maximum expected coverage (50%) using a 3.0 lbs. per acre mixture.

[2] These rates represent average coverage (30%) to maximum expected coverage (50%) using a 2.0 lbs. per acre mixture.

Table 2. Noxious Weeds and Invasive Non-native Plants of Highest Concern in the Sierra National Forest.

Common Name	Scientific Name	CDFA Rating[1]	Cal IPC Rating[2]
Bermudagrass	*Cynodon dactylon*	C	Moderate
Black locust	*Robinia pseudoacacia*	-	Limited
Black mustard	*Brassica nigra*	-	Moderate
Bull thistle	*Cirsium vulgare*	C	Moderate
Canada thistle	*Cirsium arvense*	B	Moderate
Cheatgrass	*Bromus tectorum*	-	High
Diffuse knapweed	*Centaurea diffusa*	A	Moderate
French broom	*Genista monspessulana*	C	High
Himalayan blackberry	*Rubus discolor*	-	High
Hydrilla	*Hydrilla verticillata*	A	High
Iberian starthistle	*Centaurea iberica*	A	-
Italian thistle	*Carduus pycnocephalus*	C	Moderate
Klamath weed	*Hypericum perforatum*	C	Moderate
Lens-podded hoary cress	*Cardaria chalepensis*	B	Moderate
Medusahead	*Taeniatherum caput-medusae*	C	High
Milk thistle	*Silybum marianum*	-	Limited
Oxeye daisy	*Leucanthemum vulgare*	-	Moderate
Perennial pepperweed	*Lepidium latifolium*	B	High
Periwinkle	*Vinca major*	-	Moderate
Puncture vine	*Tribulus terrestris*	C	-
Purple loosestrife	*Lythrum salicaria*	B	High
Purple starthistle	*Centaurea calcitrapa*	B	Moderate
Rush skeletonweed	*Chondrilla juncea*	A	Moderate
Russian knapweed	*Acroptilon repens*	B	Moderate
Russian thistle	*Salsola tragus (= S. iberica)*	C	Limited
Scotch broom	*Cytisus scoparius*	C	High
Spanish broom	*Spartium junceum*	-	High

Table 2. Noxious Weeds and Invasive Non-native Plants of Highest Concern in the Sierra National Forest.

Common Name	Scientific Name	CDFA Rating[1]	Cal IPC Rating[2]
Spotted knapweed	*Centaurea maculosa*	A	High
Tocalote	*Centaurea melitensis*	C	Moderate
Tree-of-heaven	*Ailanthus altissima*	C	Moderate
Tumbleweed	*Salsola paulsenii*	C	Limited
Woolly mullein	*Verbascum thapsus*	-	Limited
Yellow starthistle	*Centaurea solstitialis*	C	High

Based on materials provided by Joanna Clines, Sierra National Forest (November 18, 2004)

[1]**California State Department of Food and Agriculture Pest Ratings of Noxious Weeds (http://www.cdfa.ca.gov/phpps/ipc/encycloweedia/pdfs/noxiousweed_ratings.pdf) (CDFA 2006)**

A-rated pests: Weeds of known economic significance, subject to action by CDFA including eradication, quarantine, containment, rejection of shipments, or other holding action at the state-county level. Quarantine interceptions are to be rejected or treated at any point in the state.

B-rated pests: Weeds subject to action by CDFA only when found in a nursery, and otherwise subject to eradication, containment, control, or other holding action at the discretion of the local county agricultural commissioner.

C-rated pests: Not subject to state action except to provide for general pest cleanliness in nurseries; reject by CDFA only when found in a cropseed for planting or at the discretion of the commissioner, action to retard spread outside of nurseries at the discretion of the county agricultural commissioner.

[2]**California Invasive Plant Council Invasive Plant Inventory (http://www.cal-ipc.org/ip/index.php) (Cal-IPC 2006)**

High: These species have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment. Most are widely distributed ecologically.

Moderate: These species have substantial and apparent—but generally not severe—ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal, though establishment is generally dependent upon ecological disturbance. Ecological amplitude and distribution may range from limited to widespread.

Limited: These species are invasive but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score. Their reproductive biology and other attributes result in low to moderate rates of invasiveness. Ecological amplitude and distribution are generally limited, but these species may be locally persistent and problematic.

Table 3. USDA-FS Noxious Weed Priority List for the Big Creek Projects.

Scientific Name	Common Name	CDFA[1]	Cal-IPC rating[2]
Priority Level 1			
SCE will implement treatment immediately following FERC approval of Plan. Management focus: Eradication of species.			
Centaurea solstitialis	Yellow starthistle	C	High
Taeniatherum caput-medusae	Medusahead	C	High
Tribulus terrestris	Puncture vine	C	Not rated
Priority Level 2			
SCE will implement treatment within one year of FERC approval of Plan. Management focus: Eradication of species.			
Ailanthus altissima	Tree-of-heaven	C	Moderate
Carduus pycnocephalus	Italian thistle	C	Moderate
Centaurea melitensis	Tocalote	C	Moderate
Cytisus scoparius	Scotch broom	C	High
Genista monspessulana	French broom	C	High
Hypericum perforatum	Klamath weed	C	Moderate
Lepidium latifolium	Perennial pepperweed	B	High
Leucanthemum vulgare	Oxeye daisy	Not rated	Moderate
Vinca major	Periwinkle	Not rated	Moderate
Priority Level 3			
SCE will implement treatment prior to any vegetation maintenance activity. Management focus: Eradication of species.			
Brassica nigra	Black mustard	Not rated	Moderate
Cirsium vulgare	Bull thistle	C	Moderate
Robinia pseudoacacia	Black locust	Not rated	Limited
Rubus discolor	Himalayan blackberry	Not rated	High
Verbascum thapsus	Woolly mullein	Not rated	Limited
Priority Level 4			
SCE will implement treatment prior to any vegetation maintenance activity. Species extremely widespread and impossible to eradicate. Management focus: Reduction in species abundance			
Bromus tectorum	Cheatgrass	Not rated	High

[1]California State Department of Food and Agriculture, 2006

[2]California Invasive Plant Council, 2006

Table 4. USDA-FS Invasive Ornamental Do-Not-Plant List and Removal Schedule.[1]

Scientific Name	Common Name	Observed During Surveys
Priority Level 1		
SCE will implement treatment (removal) immediately following FERC approval of Plan		
Ailanthus altissima[2]	Chinese tree-of-heaven	Yes
Cytisus scoparius[2]	Scotch broom	Yes
Genista monspessulana[2]	French broom	Yes
Hypericum perforatum[2]	Klamathweed, St John's Wort	Yes
Leucanthemum vulgare[2]	Oxeye daisy	Yes
Pennisetum setaceum	Fountain grass	No
Spartium junceum	Spanish broom	Yes
Tanacetum vulgare	Common tansy	Yes
Cortaderia jubata	Jubata grass	No
Cortaderia selloana	Pampas grass	No
Lythrum salicaria	Purple loosestrife	No
Priority Level 2		
SCE will implement treatment (removal) within one year of FERC approval of Plan.		
Centaurea cyana	Bachelor's buttons, cornflower	Yes
Digitalis purpurea	Foxglove	Yes
Hedera helix	English ivy	Yes
Lathyrus latifolius	Perennial sweet pea	Yes
Lathyrus tingitanus	Tangier pea	Yes
Lychnis coronaria	Rose campion	Yes
Vinca major[2]	Periwinkle	Yes
Verbascum thapsus	Common mullein	Yes
Rubus discolor[2]	Himalayan blackberry	Yes
Priority Level 3		
SCE will implement treatment (removal) prior to any vegetation management activity.		
Robinia pseudoacacia[2]	Black locust	Yes

[1]If additional invasive ornamental plant species are identified during the term of the license, appropriate removal methods will be developed with USDA-FS during the annual meeting.
[2]This species is considered both an invasive ornamental and a noxious weed.

ATTACHMENT A

VEGETATION MANAGEMENT IN THE VICINITY OF THE FOUR BIG CREEK ALP PROJECTS

Attachment A

Vegetation Management in the Vicinity of the Four Big Creek ALP Projects.

	Vegetation Control		
	Trimming		
	Hand	Equipment	Herbicides
Mammoth Pool (FERC Project No. 2085)			
Dams and Diversions			
Mammoth Pool	A		A
Rock Creek		R	
Ross Creek	R	R	
Power Generation			
Mammoth Pool PH	R		R
Mammoth Pool Fish Water Generator	R		R
Gaging Stations			
Mammoth Pool Fish Water Generator	R		
Water Conveyance - Mammoth Pool Powerhouse			
Intake Gate House	R		R
Surge Chamber, Rock Trap	R		
Rock Trap Flushing Channel	I		
Valve House	R		
Penstocks	R		R
Power Transmission Lines			
MPPH - BC3 220KV	A		
Helicopter Landing Sites			
San Joaquin River above Shakeflat Creek	R	R	R
Mammoth Pool Dam	R	R	R
Project Roads			
6S25 Mammoth Pool Road, from 7S20, Shake Flat Creek access to end at east abutment (#30) *	R	R	R
6S25DA Spur to Windy Point Picnic Area from 6S25D (#164) *	I	I	I
6S25G Mammoth Pool Fish Water Generator access road from 6S25 (Mammoth Pool Road) to Base of Mammoth Pool Dam (#6)	R	R	R
7S47B Access road to Rock Creek Tunnel Muck Pile (#102) *	R	R	I
8S03 from PH No. 8 to Mammoth Pool PH (#33)	R	R	R
8S03B Access road from 8S03 to Mammoth Pool penstock (#80) *	R	R	R
8S03B Access road to Mammoth Pool Transmission Line from 8S03C (#145)	R	R	I
8S03C Access road from 8S03 to Mammoth Pool transmission line (#79)	R	R	
8S03CA Spur road to Mammoth Pool Transmission Line (#144) *	R	R	I
8S03CC Access road to Mammoth Pool Transmission Line from 8S03C (#146)	R	R	I
8S03D Access road from 8S03 to Mammoth Pool PH Surge Chamber (#78)	R	R	

Attachment A

Vegetation Management in the Vicinity of the Four Big Creek ALP Projects.

	Vegetation Control		
	Trimming		
	Hand	Equipment	Herbicides
Mammoth Pool (FERC Project No. 2085) (continued)			
Project Roads (continued)			
8S44 Mammoth Pool transmission line access road (#213)	R	R	
8S44Y Mammoth Pool PH Transmission Line access road from gate near 8S03 to 9S42 (#37)	R	R	
8S44YA Mammoth Pool transmission line access road (#138)	R	R	
8S44YB Mammoth Pool Transmission Line access road (#136) *	R	R	I
9S42 Mammoth Pool PH Transmission Line access road from gate near County Road 225, Italian Bar Road, to 8S44 (#18)	R	R	
9S42A Access road to Mammoth Pool transmission line from 9S42 (#135)	R	R	
Project Trail			
Trail to San Joaquin River Gage above Shakeflat Creek (#75)	I	I	I
Big Creek Nos. 1 and 2 (FERC Project No. 2175)			
Dams and Diversions			
Huntington Lake Dams 1, 2, 3, 3a	A		A
Dam 4	A		A
Balsam Creek	R	R	R
Ely Creek	R	R	R
Power Generation			
Big Creek PH No. 1	R		R
Big Creek PH No. 2	R		R
Gaging Stations			
Big Creek below Huntington Lake at Dam 1	R		
Balsam Creek at Diversion Dam	A		
Water Conveyance - Powerhouse No. 1			
Upper 84" Valve House below Huntington Lake	R		R
Upper 60" Valve House below Huntington Lake	R		R
60" & 84" Flowlines below Huntington Lake	R		R
Lower 84" Valve House at top of Ph 1 penstock	R		R
Lower 60" Valve House at top of Ph 1 penstock	R		R
42" Valve House at top of Ph 1 penstock	R		R
Vent Stacks	R		R
Penstocks	R		R

Attachment A

Vegetation Management in the Vicinity of the Four Big Creek ALP Projects.

	Vegetation Control		
	Trimming		
	Hand	Equipment	Herbicides
Big Creek Nos. 1 and 2 (FERC Project No. 2175) (continued)			
Water Conveyance - Powerhouse No. 2			
Vent Stacks below railroad grade	R		R
Penstocks	R		R
Adit 7&1/2, Tunnel 2	R		
Adit 8, Tunnel 2	R		R
Adit 7&1/2 Leakage Weir	R		
Balsam Creek Diversion Piping (Adit 3)	R		A
Ely Creek Diversion Piping (Adit 6)			R
Rock Trap/Surge Chamber (9' Gate House) on the railroad grade	R		R
42" Valve House and valves below railroad grade	R		R
Drain piping & Valves (10" & 24") from Surge Chamber, below railroad grade	R		R
Water Conveyance - Huntington-Pitman-Shaver			
Inlet Structure & Gate 1A and 1B at Dam 2 (10' Gate House)	R		
Weather Stations			
Big Creek No. 1	R		R
Huntington Lake	R		R
Buildings/Camps			
Big Creek PH No.1 Facilities	R		R
Storage Yards			
Big Creek PH No. 1	I		I
Utilities – Water Supply/Treatment			
Big Creek PH No. 1	R		R
Utilities – Sewage Treatment			
Big Creek PH No. 1 Community	A		A
Project Power Lines Less than 33kV			
Musick 7KV	A		A
East Incline 7KV (Not in Service)	A		A
Miscellaneous			
Fish Hatchery	R		
Helicopter Landing Sites			
Hodges (Big Creek) Heliport	R	R	R

Attachment A

Vegetation Management in the Vicinity of the Four Big Creek ALP Projects.

	Vegetation Control		
	Trimming		
	Hand	Equipment	Herbicides
Big Creek Nos. 1 and 2 (FERC Project No. 2175) (continued)			
Project Roads			
8S05 Canyon Road (from Huntington Lake Road to PH No. 2 and 8S05E) (#21)	R	R	
8S05C PH No.2 access road from Canyon Road (#81)	R	R	
8S05C Powerhouse No.2 access road from Canyon Road (#81)	R	R	R
8S05CA Access to Big Creek No. 2 switchyard (#160) *	R	R	R
8S05E Old housing road 1 adjacent to Powerhouse No. 2 from 8S05, Canyon Road (#16)		I	
8S05EA Old housing road 2 adjacent to Powerhouse No. 2 from 8S05E (#159)		I	
8S05EC Old housing road 3 adjacent to Powerhouse No. 2 from 8S05E (#158)		I	
8S082 Access to Hydro offices at Big Creek (#186) *	R		I
8S082A Access to Hydro offices at Big Creek (#1)	R		I
8S082B Access to Hydro offices at Big Creek (#185) *	R		I
8S082C Access to Hydro offices at Big Creek (#188) *	R		I
8S082D Access to Hydro offices at Big Creek (#187) *	R		I
8S082X Access to Hydro offices at Big Creek (#189) *	R		I
8S08A Access road south from Railroad Grade to West Portal (#69) *	R	R	R
8S13 from the gate to 8S05, the Canyon Road (#41)	R	R	
8S13K Access road to Powerhouse No. 2 penstock (#168) *	R	R	R
8S301 From gate with 8S66C to penstock surge pipes (#28)	R	R	R
8S302 Access to Big Creek No. 1 42-inch gatehouse (#47)	R	R	R
8S66 from gate to west end of Dam 2 (#23)	R	R	R
8S66 West end of Dam 2 to 8S66A (#22)	R	R	
8S66A Access road to gaging station on Big Creek below Huntington Lake (#207)	R	R	
8S66B from Dam 2 to end (#42)	R	R	R
8S66BA Short road between 8S66B and 8S66BC (#171) *	R	I	R
8S66BC East end of Dam 1 to Dam 1 drainage gates (#99) *	R	R	R
8S66C on public lands from 8S301 to gate to 8S302 (#107) *	R	R	R
8S66X Road over Dam 2 (#184)	R		R
8S82AA Access road to Warehouse (#249) *	R		I
8S82BA Upper access road to Wastewater treatment plant from 8S82B (#248) *	R	R	R
8S82BB Lower access road to Wastewater treatment plant from 8S82B (#247) *	R	R	R
8S82BC Access road to Fish Farm upper gate (#245) *	R		R
8S82E Upper access road to SCE company housing (#250) *	R		I
8S82EA Lower access road to SCE company housing (#252) *	R		I

Attachment A

Vegetation Management in the Vicinity of the Four Big Creek ALP Projects.

	Vegetation Control		
	Trimming		
	Hand	Equipment	Herbicides
Big Creek Nos. 1 and 2 (FERC Project No. 2175) (continued)			
Project Roads (continued)			
8S82F Access road to Domestic water treatment plant from FRE 2710 (#251) *	R		I
8S82J Upper access road to Powerhouse No. 1 from FRE 2710 (#246) *	R		I
8S83 segment from 8S66 to 8S83A (#48)	R	R	R
8S83A Connector road between 8S66C and 8S83 (#200)	R	R	R
Project Trail			
Trail to Scott Lake Domestic Diversion (#261)	I		I
Big Creek Nos. 2A, 8 and Eastwood (FERC Project No. 67)			
Dams and Diversions			
Florence Lake	A		A
Shaver Lake	A		A
Bear Creek Diversion	R		
Mono Creek Diversion	R		
Pitman Creek	R		
Balsam	A		A
Dam 5	A		A
Camp 62 Creek	R		A
Bolsillo Creek	R		
Power Generation			
Big Creek PH No. 2A	R		R
Big Creek PH No. 8	R		R
Gaging Stations			
Camp 62 Creek below Diversion Dam	R		
Huntington-Shaver Conduit gate 2 release	R		
Middle Fork Balsam Creek below Balsam Meadows Forebay	R		
Stevenson Creek below Shaver Lake	R		R
South Fork San Joaquin River above Hooper Creek (with cable crossing)	R		
Water Conveyance - Powerhouse No. 2A			
Intake Gate House at Shaver Lake	I		
Surge Chamber, Rock Trap	I		
102" Valve House	R		R
Penstocks	R		R
Water Conveyance - Powerhouse No. 8			
Intake structure at Dam 5	R		R

Attachment A

Vegetation Management in the Vicinity of the Four Big Creek ALP Projects.

	Vegetation Control		
	Trimming		
	Hand	Equipment	Herbicides
Big Creek Nos. 2A, 8 and Eastwood (FERC Project No. 67) (continued)			
Water Conveyance - Powerhouse No. 8 (continued)			
Adit 1, Tunnel 8		R	
Surge Chamber - includes trash drain and penstocks valves	R		R
Penstocks	R		R
Water Conveyance - Eastwood Power Station			
Inlet Structure (Gate 4)	R		R
Surge Chamber	R		A
Water Conveyance - Mono-Bear Siphon			
Combined Flow Line (siphon)	I		
Water Conveyance - Huntington-Pitman-Shaver			
Siphon w 4" and 10" Drain Valves	R		R
Vent Stacks	R		R
Gate 3 Outlet to Balsam Forebay	R		R
Gate 2 Outlet to NF Stevenson Creek	R		
Water Conveyance - Diversion Channel			
Crater Creek	I		
Water Conveyance - HB Valves			
Shaver Lake	R		R
Weather Stations			
Florence Lake	R		R
Kaiser Ridge/Mt Givens	R		R
Shaver Lake	R		R
Buildings/Camps			
Florence Work Camp	R		R
Big Creek 8 Facilities	R		R
Storage Yards			
Florence Lake Work Camp	I		
Camp 62	I		
Big Creek PH No.2 & PH No.2A	I		I
Eastwood School Site	I		I
Utilities - Water Supply/Treatment			
Camp Edison	R		R
Florence Work Camp	R		R

Attachment A

Vegetation Management in the Vicinity of the Four Big Creek ALP Projects.

	Vegetation Control		
	Trimming		
	Hand	Equipment	Herbicides
Big Creek Nos. 2A, 8 and Eastwood (FERC Project No. 67) (continued)			
Utilities - Fuel/Gasoline/Diesel			
Big Creek PH No. 8	A		A
Florence Work Camp	R		
Project Power Lines Less than 33kV			
Jumbo 12KV	A		A
Pitman 33KV (to diversion)	A		A
Power Transmission Lines			
EPS - BC1 220KV	A		
Switchyards			
Eastwood Switchyard	A		A
Recreation - Shaver Lake			
Camp Edison Campground	A	A	A
Camp Edison Boat Ramp/Launch	A	A	A
Day Use Areas on North Shore Roads 1 & 2	A	A	A
Day Use Area off Hwy 168 (The Point)	A	A	A
Eagle Point Boat Only Day-Use Area	A	A	A
Balsam Meadow Forebay			
Balsam Meadow Forebay Day-Use Picnic Area	A	A	A
Balsam Meadow Trailhead and Parking	A	A	A
Helicopter Landing Sites			
Eastwood School	R	R	R
Camp 62 at junction of Kaiser Pass Road	R	R	R
Bear Creek Diversion	R	R	R
Florence Lake Camp	R	R	R
Florence Lake Dam	R	R	R
Florence Lake Gaging Station	R	R	R
South Fork San Joaquin River Florence Spill Station	R	R	R
South Fork San Joaquin River below Hooper	R	R	R
Hooper Creek at Diversion	R	R	R
Mono Creek at Diversion	R	R	R
Mono Creek below Lake T.A. Edison	R	R	R
Mt. Givens Telecom Site	R	R	R
Summit at Shaver Hill	R	R	R
Tiffany Pines at Camp Edison	R	R	R

Attachment A

Vegetation Management in the Vicinity of the Four Big Creek ALP Projects.

	Vegetation Control		
	Trimming		
	Hand	Equipment	Herbicides
Big Creek Nos. 2A, 8 and Eastwood (FERC Project No. 67) (continued)			
Project Roads			
5S80Z Mono Creek Diversion access road (#68)	I	I	I
7S01B Florence Work Camp access road from gate on 7S01 near picnic area (#4)	R	R	
7S01BA Florence Work Camp road from 7S01B (#219) *	I	I	I
7S370D Access road to Florence Dam and water storage tank from 7S370 (#71) *	I	I	I
7S370F Access road to Florence Dam from 7S370 (#237) *	I	I	I
8S02 from Highway 168 to 8S02B (#54) *	I	I	I
8S02B Access to Huntington-Pitman-Shaver tunnel adit (#197) *	I	I	I
8S03, Canyon Road from PH No. 8 to Mammoth Pool PH (#33)	R	R	R
8S03A Access road to Powerhouse No. 8 from 8S03 (#166) *	R	R	R
8S05, Canyon Road (from PH No. 2 and 8S05E to 8S05A PH No. 8 access road) (#21)	R	R	R
8S05F Access road off 8S05, Canyon Road, that accesses Powerhouse No. 8 penstock (#77)	R	R	R
8S05FB Access road to Powerhouse No. 8 penstock from 8S05 (#157)	R	R	R
8S05L Road to communication line near Powerhouse No. 8 (#167) *	I	I	I
8S08A Access road south from Railroad Grade to West Portal (#69)	R	R	R
8S13 from the gate to 8S05, Canyon Road (#41)	R	R	R
8S13 from the gate to 8S05, the Canyon Road (#41)	R	R	
8S303 Access road to Eastwood Overflow Campground (#174) *	I	I	I
8S47 Access road to Eastwood Powerstation Transmission Line tower - from gate to end (#258) *	R	R	R
8S83 segment from 8S83A to Huntington-Shaver Siphon (#48)	R	R	R
8S94 Pitman Creek Diversion access road (#56)	I	I	I
9S03 from 8S08 to FRE 2710 (non-project segment on SCE private lands) (#156) *	I	I	I
9S17 Access road to Eastwood Transmission line from Hwy 168 (#262) *	I	I	I
9S24 from Hwy 168 to North Fork Stevenson Creek gate No. 2 (Tunnel No. 7 Outlet) (#55)	R	R	R
9S311 Access to Eastwood Powerstation Transmission Line tower (#243) *	R	R	R
9S311A Access to Eastwood Powerstation Transmission Line tower (#244) *	R	R	R
9S312 Access to Eastwood Substation from Highway 168 (#19)	R	R	R
9S32 from gate near Highway 168 to EPH Transmission Line (#89)	I	I	I
9S32A Spur from 9S32 to east side of Balsam Forebay (#50)	R	R	R

Attachment A

Vegetation Management in the Vicinity of the Four Big Creek ALP Projects.

	Vegetation Control		
	Trimming		
	Hand	Equipment	Herbicides
Big Creek Nos. 2A, 8 and Eastwood (FERC Project No. 67) (continued)			
Project Roads (continued)			
9S32AB Spur from 9S32A to Balsam Forebay (#153) *	R	R	R
9S32C Road below Balsam Forebay Dam to EPH transmission line (#170)	I	I	I
9S32CA Access road to Eastwood Powerstation Transmission Line tower (#208) *	R	R	R
9S32CB (#232) *	R	R	R
9S32CC (#242) *	R	R	R
9S32CD (#231) *	R	R	R
9S32CE (#230) *	R	R	R
9S32CF (#241) *	R	R	R
9S58 from Shaver Marina to NF Stevenson gage (#84)	R	R	R
9S58K Access road to Eastwood Power Tunnel entrance (#114)	R	R	R
Access road to Eagle Point Boat Only Day Use Area (off of 9S58) (#109)	R	R	
Access road to Eastwood Tailrace (off of 9S58) (#110)	I	I	I
Access road to Shaver Dam north (#83)	R	R	R
Access road to Shaver Dam south (#49)	R	R	
Camp Edison Roads (#2)	R	R	
Project Trails			
Trail to Big Creek Gage below Dam 5 (#74) *	R		R
Two trails to Stevenson Creek Gage below Shaver Lake Dam (#17)	R		R
Trail to Pitman Creek Gage near Tamarack Mountain (below shaft) (#108)	I		I
Trail to Bolsillo Creek Gage above Intake (#91)	I		I
Trail to Camp 62 Creek Gage and Diversion Dam (#12)	I		I
Trail to Chinquapin Creek Gage and Diversion Dam (#260)	I		I
Trails to North-South Slide Creek Diversions (#265)	I		I
Trail to South Fork San Joaquin River Gage downstream of Jackass Meadow (#259) *	I		I
Trail to Bear Creek Gage upstream of Bear Forebay (#92)	I		
Trail to Tombstone Creek Diversion (#14)	I		
Trail to Crater Creek Diversion Ditch (off of the Dutch Lake Trail) (#86)	I		
Big Creek No. 3 (FERC Project No. 120)			
Dams and Diversions			
Dam 6	R		R
Power Generation			
Big Creek PH No.3	R		R

Attachment A

Vegetation Management in the Vicinity of the Four Big Creek ALP Projects.

	Vegetation Control		
	Trimming		
	Hand	Equipment	Herbicides
Big Creek No. 3 (FERC Project No. 120) (continued)			
Water Conveyance - Powerhouse No. 3			
Valve House	R		R
Penstocks	R		R
Adit 1, Tunnel 3		R	
Adit 2, Tunnel 3		R	
Adit 3, Tunnel 3		R	
Rock/Sand Trap Drain Piping & Valves	R		R
Manifold Structure	R		R
Buildings/Camps			
Big Creek PH No.3 Facilities	R		R
Storage Yards			
Big Creek PH No.3	I		I
Utilities - Water Supply/Treatment			
Big Creek PH No. 3	R		R
Project Power Lines Less than 33kV			
Manifold 2.4KV	A		A
Project Roads			
8S05, Canyon Road (from junction with 8S03 to junction with Italian Bar Road) (#21)	R	R	R
8S05A Access road to Powerhouse No. 3 penstocks and gate house downhill from 8S05 (#72)	R	R	R
8S05B Access road to Powerhouse No. 3 penstock from 8S05 Canyon Road (#217) *	R	R	R
8S05G Access road to Powerhouse No. 3 penstocks and gate house uphill from 8S05 (#119)	R	R	R
8S05T Access to tailings (#24) *		I	
8S05TA Access to tailings (#29) *		I	
9S20 Access to Carpenter shop (#216) *	R		R
9S20A (#85) *	R		R
9S20B Access road to carpenter shop from Italian Bar Road (#62) *	R		R
9S20C Connector road between 9S20B loop (#64) *	R		R
9S20D Access to Carpenter Shop (#13) *	R		R
9S20DA Access to garage and shops (#257) *	R		R
9S20E (#52) *	R		R

Attachment A

Vegetation Management in the Vicinity of the Four Big Creek ALP Projects.

	Vegetation Control		
	Trimming		
	Hand	Equipment	Herbicides
Big Creek No. 3 (FERC Project No. 120) (continued)			
Project Roads (continued)			
9S20F Connector road between 9S20 loop (#87) *	R		R
9S88 from Italian Bar Road to old company housing (#127)	I		I
9S88A Access to old company housing (#5)	R		R
9S88X Access road to PH No. 3 water tank and shop (#256)	R	R	R
9S88XA Access road to old company housing from 9S88X (#215) *	R		R
9S89 Access road to Big Creek Powerhouse No. 3 and administrative buildings from Italian Bar Road (#61)	R	R	R
9S89BA Access road to PH3 and switchyard (#59) *	R		R

Notes:

A = Annual (activity typically occurs each year)

R = Regular (activity will occur one or more times in a 5-year period)

I = Infrequent (activity typically will occur during a 20-year period but less than once every 5 years)

Note: Only Project facilities, Project-related recreation features, Project roads, and trails where SCE currently implements vegetation management are included.

* Indicates Project roads and helicopter landing sites that were added to the Project after resource surveys for the Big Creek ALP Projects were conducted.

ATTACHMENT B

MATERIAL SAFETY DATA SHEETS OR LABELS FOR HERBICIDES AND OTHER AGENTS

ATTACHMENT B1

GARLON 4®

Specimen Label

Dow AgroSciences™

Garlon* 4

Specialty Herbicide

*Trademark of Dow AgroSciences LLC

For the control of woody plants and broadleaf weeds on rights-of-way, industrial sites, non-crop areas, non-irrigation ditch banks, forests, and wildlife openings, including grazed areas on these sites.

Active Ingredient:	
triclopyr: 3,5,6-trichloro-2-pyridinyloxyacetic acid, butoxyethyl ester	61.6%
Inert Ingredients	38.4%
Total	100.0%

Contains petroleum distillates
Acid Equivalent:
triclopyr - 44.3% - 4 lb/gal

EPA Reg. No. 62719-40

Precautionary Statements

Hazards to Humans and Domestic Animals

Keep Out of Reach of Children

CAUTION PRECAUCION

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand the label, find someone to explain it to you in detail.)

Harmful If Swallowed, Inhaled, Or Absorbed Through Skin

Avoid contact with eyes, skin, or clothing. Avoid breathing mists or vapors. Avoid contamination of food.

Personal Protective Equipment (PPE)

Some materials that are chemical-resistant to this product are listed below. If you want more options, follow the instructions for category E on an EPA chemical resistance category selections chart.

WPS Uses: Applicators and other handlers who handle this pesticide for any use covered by the Worker Protection Standard (40 CFR Part 170) – in general, agricultural-plant uses are covered – must wear:

- Long-sleeved shirt and long pants
- Chemical-resistant gloves such as Barrier Laminate, Nitrile Rubber, Neoprene Rubber, or Viton
- Shoes plus socks

Non-WPS Uses: Applicators and other handlers who handle this pesticide for any use NOT covered by the Worker Protection Standard (40 CFR Part 170) – in general, only agricultural-plant uses are covered by the WPS – must wear:

- Long-sleeved shirt and long pants
- Shoes plus socks

Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

User Safety Recommendations

Users should:
- Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.
- Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.

First Aid

If on skin: Flush skin with plenty of water. Get medical attention if irritation persists.
If swallowed: Do not induce vomiting. Call a physician.

Environmental Hazards

This pesticide is toxic to fish. Do not apply directly to water, to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwaters.

Physical or Chemical Hazards

Do not use or store near heat or open flame. Do not cut or weld container.

Notice: Read the entire label. Use only according to label directions. **Before buying or using this product, read "Warranty Disclaimer" and "Limitation of Remedies" elsewhere on this label.**

In case of emergency endangering health or the environment involving this product, call 1-800-992-5994. If you wish to obtain additional product information, visit our web site at www.dowagro.com.

Agricultural Chemical: Do not ship or store with food, feeds, drugs or clothing.

Directions for Use

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.
Read all Directions for Use carefully before applying.

Do not use for manufacturing or formulating.

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your state or tribe, consult the agency responsible for pesticide regulation.

Agricultural Use Requirements

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. This standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE) and restricted-entry interval. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 12 hours.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water, is:

- Coveralls
- Chemical-resistant gloves such as Barrier Laminate, Nitrile Rubber, Neoprene Rubber, or Viton
- Shoes plus socks

Storage and Disposal

Do not contaminate water, food, or feed by storage or disposal. Open dumping is prohibited.

Storage: Store above 28°F or agitate before use.

Pesticide Disposal: Pesticide, spray mixture, or rinse water that cannot be used according to label instructions must be disposed of according to applicable federal, state, or local procedures.

Plastic Container Disposal: Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

Metal Container Disposal: Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities.

Container Disposal for Refillable Containers: Replace the dry disconnect cap, if applicable, and seal all openings which have been opened during use. Return the empty container to a collection site designated by Dow AgroSciences. If the container has been damaged and cannot be returned according to the recommended procedures, contact the Dow AgroSciences Customer Service Center at 1-800-258-1470 to obtain proper handling instructions.

General: Consult federal, state, or local disposal authorities for approved alternative procedures.

General Information

Garlon* 4 herbicide is recommended for the control of unwanted woody plants and annual and perennial broadleaf weeds in forests, and on non-crop areas including industrial manufacturing and storage sites, rights-of-way such as electrical power lines, communication lines, pipelines, roadsides and railroads, fence rows, non-irrigation ditch banks, and around farm buildings. Use on these sites may include application to grazed areas as well as establishment and maintenance of wildlife openings.

General Use Precautions

Agricultural Use Requirements for Forestry Uses: For use of this product on forestry sites, follow PPE and Reentry restrictions in the Agricultural Use Requirements section of this label.

Use Requirements for Non-cropland Areas: No Worker Protection Standard worker entry restrictions or worker notification requirements apply when this product is applied to non-cropland.

In Arizona: The state of Arizona has not approved Garlon 4 for use on plants grown for commercial production; specifically forests grown for commercial timber production, or on designated grazing areas.

Chemigation: Do not apply this product through any type of irrigation system.

Other Precautions:

- When applying this product in tank mix combination, follow all applicable use directions and precautions on each manufacturer's label.
- Do not apply on ditches used to transport irrigation water. Do not apply where runoff or irrigation water may flow onto agricultural land as injury to crops may result.
- Do not apply this product using mist blowers unless a drift control additive, high viscosity inverting system, or equivalent is used to control spray drift.
- Sprays applied directly to Christmas trees may result in conifer injury. When treating unwanted vegetation in Christmas tree plantations, care should be taken to direct sprays away from conifers.
- Do not apply Garlon 4 directly to, or otherwise permit it to come into direct contact with grapes, tobacco, vegetable crops, flowers, or other desirable broadleaf plants and do not permit spray mists containing it to drift onto them.
- It is permissible to treat non-irrigation ditch banks, seasonally dry wetlands, flood plains, deltas, marshes, swamps, bogs, and transitional areas between upland and lowland sites. Do not apply to open water such as lakes, reservoirs, rivers, streams, creeks, salt water bays, or estuaries.

Avoid Injurious Spray Drift

Applications should be made only when there is little or no hazard from spray drift. Very small quantities of spray, which may not be visible may seriously injure susceptible plants. Do not spray when wind is blowing toward susceptible crops or ornamental plants near enough to be injured. It is suggested that a continuous smoke column at or near the spray site or a smoke generator on the spray equipment be used to detect air movement, lapse conditions, or temperature inversions (stable air). If the smoke layers or indicates a potential of hazardous spray drift, do not spray.

Aerial Application (Helicopter Only): For aerial application on rights-of-way or other areas near susceptible crops, use an agriculturally registered spray thickening drift control additive as recommended by the manufacturer or apply through the Microfoil® boom, Thru-Valve boom, or equivalent drift control system. Thickened sprays prepared by using high viscosity invert systems or other drift reducing systems may be utilized if they are made as drift-free as are mixtures containing an agriculturally registered thickening agent or applications made with the Microfoil boom or Thru Valve boom. If a spray thickening agent is used, follow all use recommendations and precautions on the product label. Do not use a thickening agent with the Microfoil boom, Thru Valve boom, or other systems that cannot accommodate thick sprays.

†Reference within this label to a particular piece of equipment produced by or available form other parties is provided without consideration for use by the reader at its discretion and subject to the reader's independent circumstances, evaluation, and expertise. Such reference by Dow AgroSciences is not intended as an endorsement of such equipment, shall not constitute a warranty (express or implied) of such equipment, and is not intended to imply that other equipment is not available and equally suitable. Any discussion of methods of use of such equipment does not imply that the reader should use the equipment other than is advised in directions available from the equipment's manufacturer. The reader is responsible for exercising its own judgment and expertise, or consulting with sources other than Dow AgroSciences, in selecting and determining how to use its equipment.

With aircraft, drift can be lessened by applying a coarse spray; by using a spray boom no longer than 3/4 the rotor length; by spraying only when wind velocities are low; or by using an approved drift control system. Keep operating spray pressures at the lower end of the manufacturer's recommended pressures for the specific nozzle type used. Low pressure nozzles are available from spray equipment manufacturers. Select nozzles and pressures which provide adequate plant coverage, but minimize the production of fine spray particles.

Ground Equipment: To aid in reducing spray drift potential when making ground applications near susceptible crops or other desirable broadleaf plants, Garlon 4 should be applied through large droplet producing equipment, such as the Radiarc sprayer or in thickened spray mixtures using an agriculturally registered drift control additive, or high viscosity invert systems. When using a spray thickening or inverting additive, follow all use directions and precautions on the product label. With ground equipment, spray drift can be reduced by keeping the spray boom as low as possible; by applying 20 gallons or more of spray per acre; and by spraying when wind velocity is low. Do not apply with nozzles that produce a fine droplet spray. Keep operating spray pressures at the lower end of the manufacturer's recommended pressures for the specific nozzle type used. Low pressure nozzles are available from spray equipment manufacturers. Select nozzles and pressures which provide adequate plant coverage, but minimize the production of fine spray particles.

High Volume Leaf-Stem Treatment: To minimize spray drift, keep sprays no higher than brush tops and keep spray pressures low enough to provide coarse spray droplets. A spray thickening agent may be used to reduce spray drift.

Grazing and Haying Restrictions

Grazing or harvesting green forage:

1) Lactating dairy animals
   Two quarts per acre or less: Do not graze or harvest green forage from treated area for 14 days after treatment.
   Greater than 2 to 6 quarts per acre: Do not graze or harvest green forage until the next growing season.
2) Other Livestock
   Two quarts per acre or less: No grazing restrictions.
   Greater than 2 to 6 quarts per acre: Do not graze or harvest green forage from treated area for 14 days after treatment. **Note:** If less than 25% of a grazed area is treated, there is no grazing restriction.

Haying (harvesting of dried forage):

1) Lactating dairy animals
   Do not harvest hay until the next growing season.
2) Other Livestock
   Two quarts per acre or less: Do not harvest hay for 7 days after treatment.
   Greater than 2 to 4 quarts per acre: Do not harvest hay for 14 days after treatment.
   Greater than 4 quarts per acre: Do not harvest hay until the next growing season.

Slaughter Restrictions:
Withdraw livestock from grazing treated grass or consumption of treated hay at least 3 days before slaughter. This restriction applies to grazing during the season following treatment or hay harvested during the season following treatment.

Plants Controlled by Garlon 4

Woody Plants Controlled

alder	chinquapin	madrone	scotch broom
arrowwood	choke cherry	maples	sumac
ash	cottonwood	mulberry	sweetbay magnolia
aspen	Crataegus (hawthorn)	oaks	sweetgum
bear clover (bearmat)	dogwood	persimmon	sycamore
beech	Douglas-fir	pine	tanoak
birch	elderberry	poison ivy	thimbleberry
blackberry	elm	poison oak	tree-of-heaven (*Ailanthus*)†
blackgum	gallberry	poplar	tulip poplar
boxelder†	gorse	salmonberry	wax myrtle
Brazilian pepper	hazel	salt-bush	wild rose
buckthorn	hickory	(*Braccharis* spp.)	willow
cascara	hornbeam	salt-cedar†	winged elm
Ceanothus	kudzu††	sassafras	
cherry	locust		

†For best control, use either a basal bark or cut stump treatment.
††For complete control, retreatment may be necessary.

Annual and Perennial Broadleaf Weeds Controlled

black medic	curly dock	matchweed	sweet clover
bull thistle	dandelion	mustard	vetch
burdock	field bindweed	Oxalis	wild carrot (Queen Anne's lace)
Canada thistle	goldenrod	plantain	wild lettuce
chicory	ground ivy	purple loosestrife	wild violet
clover	lambsquarters	ragweed	yarrow
creeping beggarweed	lespedeza	smartweed	

Table 1 (Maximum Application Rate): The following table is provided as a guide to the user to achieve the proper rate of Garlon 4 without exceeding the maximum use rate of 8 quarts per acre:

Spray Volume Per Acre	Quarts of Garlon 4 Per 100 Gallons of Spray (Not to Exceed 8 qt/Acre)
400	2
300	2.7
200	4
100	8
50	16
20	40
10	80

Approved Uses

Foliar Applications

Use Garlon 4 at rates of 1 to 8 quarts per acre to control broadleaf weeds and woody plants. In all cases use the amount specified in enough water to give uniform and complete coverage of the plants to be controlled. The recommended order of addition to the spray tank is water, spray thickening agent (if used), surfactant (if used), additional herbicide (if used), and Garlon 4. If a standard agricultural surfactant is used, use at a rate of 1 to 2 quarts per acre. Use continuous adequate agitation.

Before using any recommended tank mixtures, read the directions and all precautions on both labels.

For best results applications should be made when woody plants and weeds are actively growing. When hard-to-control species such as ash, blackgum, choke cherry, elm, maples (other than vine or big leaf), oaks, pines, or winged elm are prevalent, and during applications made during late summer when the plants are mature, or during drought conditions, use the higher rates of Garlon 4 alone or in combination with Tordon* 101 Mixture herbicide.

When using Garlon 4 in combination with 3.8 pounds per gallon 2,4-D low volatile ester herbicide generally the higher rates should be used for satisfactory brush control.

Use the higher dosage rates when brush approaches an average of 15 feet in height or when the brush covers more than 60% of the area to be treated. If lower rates are used on hard-to-control species, resprouting may occur the year following treatment.

On sites where easy to control brush species dominate, rates less than those recommended may be effective. Consult state or local extension personnel for such information.

Foliar Treatment With Ground Equipment

High Volume Foliar Treatment
For control of woody plants, use Garlon 4 at the rate of 1 to 3 quarts per 100 gallons of spray mixture, or Garlon 4 at 1 to 3 quarts may be tank mixed with labeled rates of 2,4-D low volatile ester herbicide, Tordon 101 Mixture herbicide, or Tordon K herbicide and diluted to make 100 gallons of spray. Apply at a volume of 100 to 400 gallons of total spray per acre depending on size and density of woody plants. Coverage should be thorough to wet all leaves, stems, and root collars. See Table 1 for relationship between spray volume and maximum application rate. When tank mixing, follow applicable use directions and precautions on each manufacturer's label.

Low Volume Foliar Treatment
To control susceptible woody plants, mix up to 20 quarts of Garlon 4 in 10 to 100 gallons of finished spray. The spray concentration of Garlon 4 and total spray volume per acre should be adjusted according to the size and density of target woody plants and kind of spray equipment used. With low volume sprays, use sufficient spray volume to obtain uniform coverage of target plants including the surfaces of all foliage, stems, and root collars (See General Use Precautions). For best results, a surfactant should be added to all spray mixtures. Match equipment and delivery rate of spray nozzles to height and density of woody plants. When treating tall, dense brush, a truck mounted spray gun with spray tips that deliver up to 2 gallons per minute at 40 to 60 psi may be required. Backpack or other types of specialized spray equipment with spray tips that deliver less than 1 gallon of spray per minute may be appropriate for short, low to moderate density brush. See Table 1 for relationship between mixing rate, spray volume and maximum application rate.

Tank Mixing: As a low volume foliar spray, up to 12 quarts of Garlon 4 may be applied in tank mix combination with labeled rates of Tordon K or Tordon 101 Mixture in 10 to 100 gallons of finished spray.

Broadcast Applications With Ground Equipment

Make application using equipment that will assure thorough and uniform coverage at spray volumes applied.

Woody Plant Control

Foliage Treatment: Use 4 to 8 quarts of Garlon 4 in enough water to make 5 or more gallons per acre of total spray, or Garlon 4 at 1 1/2 to 3 quarts may be combined with labeled rates of 2,4-D low volatile ester, Tordon 101 Mixture, or Tordon K in sufficient water to make 5 or more gallons per acre of total spray.

Broadleaf Weed Control
Use Garlon 4 at rates of 1 to 4 quarts in a total volume of 5 or more gallons per acre as a water spray mixture. Apply at any time weeds are actively growing. Garlon 4 at 0.25 to 3 quarts may be tank mixed with labeled rates of 2,4-D amine or low volatile ester, Tordon K, or Tordon 101 Mixture to improve the spectrum of activity. For thickened (high viscosity) spray mixtures, Garlon 4 can be mixed with diesel oil or other inverting agent. When using an inverting agent, read and follow the use directions and precautions on the product label.

Aerial Application (Helicopter Only)

Aerial sprays should be applied using suitable drift control (See "General Use Precautions").

Foliage Treatment (Utility and Pipeline Rights-of-Way)
Use 4 to 8 quarts of Garlon 4 alone, or 3 to 4 quarts Garlon 4 in a tank mix combination with labeled rates of 2,4-D low volatile ester Tordon 101 Mixture or Tordon K and apply in a total spray volume of 10 to 30 gallons per acre. Use the higher rates and volumes when plants are dense or under drought conditions.

Basal Bark and Dormant Brush Treatments

To control susceptible woody plants in rights-of-way, and other non-crop areas, and in forests, use Garlon 4 in oil or oil-water mixtures prepared and applied as described below. When preparing mixtures, use as oils either a commercially available basal oil, diesel fuel, No. 1 or No. 2 fuel oil, or kerosene. Substitute other oils or diluents only as recommended by the oil or diluent's manufacturer. When mixing with a basal oil or other oils or diluents, read and follow the use directions and precautions on the product label prepared by the oil or diluent's manufacturer.

Oil Mixture Sprays
Add Garlon 4 to the required amount of oil in the spray tank or mixing tank and mix thoroughly. If the mixture stands over 4 hours, reagitation is required.

Oil Mixtures of Garlon 4 and Tordon K: Tordon K and Garlon 4 may be used in tank mix combination for basal bark treatment of woody plants. These herbicides are incompatible and will not form a stable mixture when mixed together directly in oil. Stable tank mixtures for basal bark application can be made if each product is first combined with a compatibility agent prior to final mixing in the desired ratio.
(See product bulletin for mixing instructions.)

Oil-Water Mixture Sprays
First, premix the Garlon 4, oil and surfactant in a separate container. Do not allow any water or mixtures containing water to get into the Garlon 4 or the premix. Fill the spray tank about half full with water, then slowly add the premix with continuous agitation and complete filling the tank with water. Continue moderate agitation.

Note: If the premix is put in the tank without any water, the first water added may form a thick "invert" (water in oil) emulsion which will be hard to break.

Basal Bark Treatment
To control susceptible woody plants with stems less than 6 inches in basal diameter, mix 1 to 5 gallons of Garlon 4 in enough oil to make 100 gallons of spray mixture. Apply with knapsack sprayer or power spraying equipment using low pressure (20-40 psi). Spray the basal parts of brush and tree trunks to a height of 12 to 15 inches from the ground. Thorough wetting of the indicated area is necessary for good control. Spray until runoff at the ground line is noticeable. Old or rough bark requires more spray than smooth young bark. Apply at any time, including the winter months, except when snow or water prevent spraying to the ground line.

Low Volume Basal Bark Treatment
To control susceptible woody plants with stems less than 6 inches in basal diameter, mix 20 to 30 gallons of Garlon 4 in enough oil to make 100 gallons of spray mixture. Apply with a backpack or knapsack sprayer using low pressure and a solid cone or flat fan nozzle. Spray the basal parts of brush and tree trunks in a manner which thoroughly wets the lower stems, including the root collar area, but not to the point of runoff. Herbicide concentration should vary with size and susceptibility of species treated. Apply at any time, including the winter months, except when snow or water prevent spraying to the ground line or when stem surfaces are saturated with water.

Garlon 4 Plus Tordon K in Oil Tank Mix: Garlon 4 and Tordon K may be applied as a low volume basal bark treatment to improve control of certain woody species such as ash, elm, maple, poplar, aspen, hackberry, oak, oceanspray, birch, hickory, pine, tanoak, cherry, locust, sassafras, and multiflora rose. (See product bulletin for mixing instructions.)

Streamline Basal Bark Treatment (Southern States)
To control or suppress susceptible woody plants for conifer release, mix 20 to 30 gallons of Garlon 4 in enough oil to make 100 gallons of spray mixture. Apply with a backpack or knapsack sprayer using equipment which provides a directed straight stream spray. Apply sufficient spray to one side of stems less than 3 inches in basal diameter to form a treated zone that is 6 inches in height. When the optimum amount of spray mixture is applied, the treated zone should widen to encircle the stem within approximately 30 minutes. Treat both sides of stems which are 3 to 4 inches in basal diameter. Direct the spray at bark that is approximately 12 to 24 inches above ground. Pines (loblolly, slash, shortleaf, and Virginia) up to 2 inches in diameter breast height (dbh) can be controlled by directing the spray at a point approximately 4 feet above ground. Vary spray mixture concentration with size and susceptibility of the species being treated. Best results are achieved when applications are made to young vigorously growing stems which have not developed the thicker bark characteristic of slower growing, understory trees in older stands. This technique is not recommended for scrub and live oak species, including blackjack, turkey, post, live, bluejack and laurel oaks, or bigleaf maple. Apply from approximately 6 weeks prior to hardwood leaf expansion in the spring until approximately 2 months after leaf expansion is completed. Do not apply when snow or water prevent spraying at the desired height above ground level.

Low Volume Stem Bark Band Treatment (North Central and Lake States)
To control susceptible woody plants with stems less than 6 inches in basal diameter, mix 20 to 30 gallons of Garlon 4 in enough oil to make 100 gallons of spray mixture. Apply with a backpack or knapsack sprayer using low pressure and a solid cone or flat fan nozzle. Apply the spray in a 6 to 10 inch wide band that completely encircles the stem. Spray in a manner that completely wets the bark, but not to the point of runoff. The treatment band may be positioned at any height up to the first major branch. For best results apply the band as low as possible. Spray mixture concentration should vary with size and susceptibility of species to be treated. Applications may be made at any time, including winter months.

Thinline Basal Bark Treatment
To control susceptible woody plants with stems less than 6 inches in diameter, apply Garlon 4 either undiluted or mixed at 50-75% v/v with oil in a thin stream to all sides of the lower stems. The stream should be directed horizontally to apply a narrow band around each stem or clump. Use a minimum of 2 to 15 milliliters of Garlon 4 or oil mixture with Garlon 4 to treat single stems and from 25 to 100 milliliters to treat clumps of stems. Use an applicator metered or calibrated to deliver the small amounts required.

Dormant Stem Treatment
Dormant stem treatments will control susceptible woody plants and vines with stems less than 2 inches in diameter. Plants with stems greater than 2 inches in diameter may not be controlled and resprouting may occur. This treatment method is best suited for sites with dense, small diameter brush. Dormant stem treatments of Garlon 4 can also be used as a chemical side-trim for controlling lateral branches of larger trees that encroach onto roadside, utility, or other rights-of-way.

Mix 4 to 8 quarts of Garlon 4 in 2 to 3 gallons of crop oil concentrate or other recommended oil and add this mixture to enough water to make 100 gallons of spray solution. Use continuous adequate agitation. Apply with Radiarc, OC or equivalent nozzles, or handgun using 70 to 100 gallons of spray per acre to ensure uniform coverage of stems. Garlon 4 may be mixed with 4 quarts of Weedone 170 herbicide to improve the control of black cherry and broaden the spectrum of herbicidal activity. In western states, apply anytime after woody plants are dormant. In other areas apply anytime within 10 weeks of budbreak, generally February through April. Do not apply to wet or saturated bark as poor control may result.

Cut Stump Treatment
To control resprouting of cut stumps of susceptible species, mix 20 to 30 gallons of Garlon 4 in enough oil to make 100 gallons of spray mixture. Apply with a backpack or knapsack sprayer using low pressures and a solid cone or flat fan nozzle. Spray the root collar area, sides of the stump, and the outer portion of the cut surface including the cambium until thoroughly wet, but not to the point of runoff. Spray mixture concentration should vary with size and susceptibility of species treated. Apply at any time, including in winter months, except when snow or water prevent spraying to the ground line.

Treatment of Cut Stumps in Western States
To control resprouting of salt-cedar and other *Tamarix* species, bigleaf maple, tanoak, Oregon myrtle, and other susceptible species, apply undiluted

Garlon 4 to wet the cambium and adjacent wood around the entire circumference of the cut stump. Treatments may be applied throughout the year; however, control may be reduced with treatment during periods of moisture stress as in late summer. Use an applicator which can be calibrated to deliver the small amounts of material required.

Note: All basal bark and dormant brush treatment methods may be used to treat susceptible woody species on range and permanent pasture land provided that no more than 1.5 quarts of Garlon 4 are applied per acre. Large plants or species requiring higher rates of Garlon 4 may not be completely controlled.

Forest Management Applications

For broadcast applications apply the recommended rate of Garlon 4 in a total spray volume of 5 to 25 gallons per acre by air or 10 to 100 gallons per acre by ground. Use spray volumes sufficient to provide thorough coverage of treated foliage. Use application systems designed to prevent spray drift to off-target sites. Nozzles or additives that produce larger droplets may require higher spray volumes to provide adequate coverage.

Plant Back Interval for Conifers: Conifers planted sooner than 1 month after treatment with Garlon 4 at less than 4 quarts per acre or sooner than 2 months after treatment at 4 to 8 quarts per acre may be injured. When tank mixtures of herbicides are used for forest site preparation, labels for all products in the mixture should be consulted and the longest recommended waiting period observed.

Broadcast Treatments for Forest Site Preparation (Not For Conifer Release)

Southern States Including Alabama, Arkansas, Delaware, Florida, Georgia, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, and Virginia: To control susceptible woody plants and broadleaf weeds, apply Garlon 4 at a rate of 4 to 8 quarts per acre. To broaden the spectrum of woody plants and broadleaf weeds controlled, apply 2 to 4 quarts per acre of Garlon 4 in tank mix combination with labeled rates of Tordon 101 Mixture or Tordon K. Tordon 101 Mixture and Tordon K are not registered for use in the states of California and Florida. Where grass control is also desired, Garlon 4, alone or in combination with Tordon K or Tordon 101 Mixture, may be tank mixed with labeled rates of other herbicides registered for grass control in forests. Use of tank mix products must be in accordance with the most restrictive of label limitations and precautions. No label application rates should be exceeded. Garlon 4 cannot be tank mixed with any product containing a label prohibition against such mixing.

In Western, Northeastern, North Central, and Lake States (States Not Listed Above As Southern States): To control susceptible woody plants and broadleaf weeds, apply Garlon 4 at a rate of 3 to 6 quarts per acre. To broaden the spectrum of woody plants and broadleaf weeds controlled, apply 1.5 to 3.0 quarts per acre of Garlon 4 in tank mix combination with labeled rates of Tordon 101 Mixture, Tordon K, or 2,4-D low volatile ester. Tordon 101 Mixture and Tordon K are not registered for use in the states of California and Florida. Where grass control is also desired, Garlon 4, alone or in tank mix combination with Tordon 101 Mixture or Tordon K, may be applied with labeled rates of other herbicides registered for grass control in forests. When applying tank mixes, follow applicable use directions and precautions on each product label.

Applications for Site Preparation in Southern Coastal Flatwoods: To control susceptible broadleaf weeds and woody species such as gallberry and wax-myrtle, and for partial control of saw-palmetto, apply 2 to 4 quarts per acre of Garlon 4. To broaden the spectrum of species controlled to include fetterbush, staggerbush, titi, and grasses, apply 2 to 3 quarts per acre of Garlon 4 in tank mix combination with labeled rates of Arsenal Applicator's Concentrate herbicide. Where control of gallberry, wax-myrtle, broadleaf weeds, and grasses is desired, 2 to 3 quarts per acre of Garlon 4 may be applied in tank mix combination with labeled rates of Accord herbicide.

These treatments may be broadcast during site preparation of flat planted or bedded sites or, on bedded sites, applied in bands over the top of beds. For best results, make applications in late summer or fall. Efficacy may not be satisfactory when applications are made in early season prior to August. **Note: Do not apply after planting pines.**

Applications for Conifer Release

Note: Applications for conifer release may cause temporary damage and growth suppression where contact with conifers occurs; however, injured conifers should recover and grow normally. Over-the-top spray applications can kill pines.

Directed Sprays
To release conifers from competing hardwoods and brush such as red maple, sugar maple, striped maple, sweetgum, red and white oaks, ash, hickory, alder, birch, aspen, pin cherry, *Ceanothus* spp., blackberry, chinquapin, and poison oak, mix 4 to 20 quarts of Garlon 4 in enough water to make 100 gallons of spray mixture. This spray should be directed onto foliage of competitive hardwoods using knapsack or backpack sprayers with flat fan nozzles or equivalent any time after the hardwoods and brush have reached full leaf size, but before autumn coloration. The majority of treated hardwoods and brush should be less than 6 feet in height to ensure adequate spray coverage. Care should be taken to direct spray solutions away from conifer foliage, particularly foliage of desirable pines. See Table 1 for relationship between mixing rate, spray volume and maximum application rate.

Broadcast Applications for Mid-Rotation Understory Brush Control in Southern Coastal Flatwoods Pine Stands (Ground Equipment Only)
For control of susceptible species such as gallberry and wax-myrtle and broadleaf weeds, apply 2 to 4 quarts per acre of Garlon 4. To broaden the spectrum of woody plants controlled to include fetterbush, staggerbush, and titi, apply 2 to 3 quarts per acre of Garlon 4 in tank mix combination with labeled rates of Arsenal Applicator's Concentrate. Saw-palmetto will be partially controlled by use of Garlon 4 at 4 quarts per acre or by mixtures of Garlon 4 at 2 to 3 quarts per acre in tank mix combination with either Arsenal Applicator's Concentrate or Escort herbicide.

These mixtures should be broadcast applied over target understory brush species, **but to prevent injury to pines, make applications underneath the foliage of pines.** It is recommended that sprays be applied in 30 or more gallons per acre of total volume. For best results, make applications in late summer or fall. Efficacy may not be satisfactory when applications are made in early season prior to August.

Broadcast Applications for Conifer Release in the Pacific Northwest and California

On Dormant Conifers Before Bud Swell (Excluding Pines): To control or suppress deciduous hardwoods such as vine maple, bigleaf maple, alder, scotch broom, or willow **before leaf-out** or evergreen hardwoods such as madrone, chinquapin, and *Ceanothus* spp., use Garlon 4 at 1 to 2 quarts per acre. Diluents used may be diesel or fuel oil. Or, water plus 1 to 2 gallons per acre of diesel oil or a suitable surfactant or oil substitute at manufacturer's recommended rates may be used.

On Conifer Plantations (Excluding Pines) After Hardwoods Begin Growth and Before Conifer Bud Break ("Early Foliar" Hardwood Stage): Use Garlon 4 at 1.0 to 1.5 quarts alone or plus 2,4-D low volatile ester herbicide in water carrier to provide no more than 3 pounds acid

equivalent per acre from both products. After conifer bud break, these sprays may cause more serious injury to the crop trees. Use of a surfactant may cause unacceptable injury to conifers especially after bud break.

On Conifer Plantations (Excluding Pines) After Conifers Harden Off In Late Summer and While Hardwoods Are Still Growing Actively: Use Garlon 4 at rates of 1.0 to 1.5 quarts per acre alone or plus 2,4-D low volatile ester to provide no more than 3 pounds acid equivalent per acre from both products. Treat as soon after conifer bud hardening as possible so that hardwoods and brush are actively growing. Use of oil, oil substitute, or surfactant may cause unacceptable injury to the conifers.

Broadcast Applications for Conifer Release in the Eastern United States
To release spruce, fir, red pine, and white pine from competing hardwoods such as red maple, sugar maple, striped maple, alder, birch (white, yellow, and grey), aspen, ash, pin cherry, and *Rubus* spp. and perennial and annual broadleaf weeds, use Garlon 4 at rates of 1.5 to 3.0 quarts per acre alone or plus 2,4-D amine or low volatile ester to provide no more than 4 pounds acid equivalent per acre from both products. Applications should be made in late summer or early fall after conifers have formed their overwintering buds and hardwoods are in full leaf and prior to autumn coloration.

Broadcast Applications for Conifer Release in the Lake States Region
To release spruce, fir, and red pine from competing hardwoods such as aspen, birch, maple, cherry, willow, oak, hazel, and *Rubus* spp. and perennial and annual broadleaf weeds, use Garlon 4 at rates of 1.5 to 3.0 quarts per acre. Applications should be made in late summer or early fall after conifers have formed their overwintering buds and hardwoods are in full leaf and prior to autumn coloration.

Warranty Disclaimer

Dow AgroSciences warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes stated on the label when used in strict accordance with the directions, subject to the inherent risks set forth below. Dow AgroSciences MAKES NO OTHER EXPRESS OR IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY OTHER EXPRESS OR IMPLIED WARRANTY.

Inherent Risks of Use

It is impossible to eliminate all risks associated with use of this product. Plant injury, lack of performance, or other unintended consequences may result because of such factors as use of the product contrary to label instructions (including conditions noted on the label, such as unfavorable temperature, soil conditions, etc.), abnormal conditions (such as excessive rainfall, drought, tornadoes, hurricanes), presence of other materials, the manner of application, or other factors, all of which are beyond the control of Dow AgroSciences or the seller. All such risks shall be assumed by buyer.

Limitation of Remedies

The exclusive remedy for losses or damages resulting from this product (including claims based on contract, negligence, strict liability, or other legal theories), shall be limited to, at Dow AgroSciences' election, one of the following:

1. Refund of purchase price paid by buyer or user for product bought, or
2. Replacement of amount of product used

Dow AgroSciences shall not be liable for losses or damages resulting from handling or use of this product unless Dow AgroSciences is promptly notified of such loss or damage in writing. In no case shall Dow AgroSciences be liable for consequential or incidental damages or losses.

The terms of the "Warranty Disclaimer" above and this "Limitation of Remedies" cannot be varied by any written or verbal statements or agreements. No employee or sales agent of Dow AgroSciences or the seller is authorized to vary or exceed the terms of the "Warranty Disclaimer" or this "Limitation of Remedies" in any manner.

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Label Code: D02-102-023
Replaces Label: D02-102-022

EPA-Accepted 07/22/97

Revisions:
Minor corrections to EPA accepted text dated 7-22-97

ATTACHMENT B2

PATHFINDER II®

Specimen Label

Dow AgroSciences

Pathfinder* II

Specialty Herbicide

*Trademark of Dow AgroSciences LLC

A ready-to-use herbicide for the control of woody plants on:

- **Forests**
- **Non-crop areas including: Industrial manufacturing and storage sites, rights-of-way, non-irrigation ditch banks**
- **Rangeland and permanent pastures**
- **Grazed areas and maintenance of wildlife openings on those sites**

Active Ingredient:	
triclopyr: 3,5,6-trichloro-2-pyridinyloxyacetic acid, butoxyethyl ester	13.6%
Inert Ingredients	86.4%
Total	100.0%

Acid Equivalent: triclopyr – 9.81% – 0.75 lb/gal

EPA Reg. No. 62719-176

Keep Out of Reach of Children

CAUTION PRECAUCION

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand the label, find someone to explain it to you in detail.)

Precautionary Statements

Hazards to Humans and Domestic Animals

Harmful If Swallowed, Inhaled Or Absorbed Through The Skin

Avoid contact with skin, eyes or clothing. Avoid breathing vapor or spray mist. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.

Personal Protective Equipment (PPE)

Some materials that are chemical-resistant to this product are listed below. If you want more options, follow the instructions for category E on an EPA chemical resistance category selections chart.

Applicators and other handlers must wear:

- Long-sleeved shirt and long pants
- Chemical-resistant gloves such as Barrier Laminate, Nitrile Rubber, Neoprene Rubber, or Viton
- Shoes plus socks

Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

User Safety Recommendations

Users should:

- Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.
- Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.

First Aid

If on skin: Wash with plenty of soap and water. Get medical attention.
If inhaled: Remove victim to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. Get medical attention.
If swallowed: Call a physician or Poison Control Center. Drink 1 or 2 glasses of water and induce vomiting by touching back of throat with finger. Do not induce vomiting or give anything by mouth to an unconscious person.

Environmental Hazards

This pesticide is toxic to fish. Keep out of lakes, ponds or streams. Do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwaters.

Physical or Chemical Hazards

Combustible - Do not use or store near heat or open flame. Do not cut or weld container.

Notice: Read the entire label. Use only according to label directions. **Before buying or using this product, read "Warranty Disclaimer" and "Limitation of Remedies" elsewhere on this label.**

In case of emergency endangering health or the environment involving this product, call 1-800-992-5994. If you wish to obtain additional product information, visit our web site at www.dowagro.com.

Agricultural Chemical: Do not ship or store with food, feeds, drugs or clothing.

Directions for Use

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.
Read all Directions for Use carefully before applying.

Ready-To-Use, No Mixing Required.

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your state or tribe, consult the agency responsible for pesticide regulation.

Agricultural Use Requirements

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE) and restricted-entry interval. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 12 hours.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water, is:

- Coveralls
- Chemical-resistant gloves such as Barrier Laminate, Nitrile Rubber, Neoprene Rubber, or Viton
- Shoes plus socks

Storage and Disposal

Do not contaminate water, food or feed by storage or disposal. Open dumping is prohibited.
Storage: Store above 28°F or agitate before use.
Pesticide Disposal: Pesticide, spray mixture, or rinsate that cannot be used according to label instructions must be disposed of according to applicable federal, state, or local procedures.
Container Disposal: Triple rinse (or equivalent) with 10 drops or more of a liquid hand soap and water or an oil basal product such as kerosene or diesel fuel and spray rinsate on undesirable vegetation, in target area. Offer containers for recycling or reconditioning where allowed, or puncture and dispose of in a sanitary landfill, or by incineration if approved by state and local procedures.
Container Disposal for Refillable Containers: Close all openings which have been opened during use and replace all caps. Return the empty container to a collection site designated by Dow AgroSciences. If the container has been damaged and cannot be returned according to the recommended procedures, contact the Dow AgroSciences Customer Service Center at 1-800-258-1470 to obtain proper handling instructions.
General: Consult federal, state, or local disposal authorities for approved alternative procedures.

General Information

Pathfinder II herbicide is a ready-to-use product which is recommended for the control of unwanted woody plants through the use of basal bark application techniques in forests, rangeland and permanent pastures, and on non-crop areas including industrial manufacturing and storage sites, rights-of-way such as electrical power lines, communication lines, pipelines, road sides and railroads, fence rows, non-irrigation ditch banks and around farm buildings. Use on these sites may include application to grazed areas as well as establishment and maintenance of wildlife openings.

General Use Precautions

The state of Arizona has not approved Pathfinder II for use on plants grown for commercial production; specifically forests grown for commercial timber production, or on designated grazing areas.

Apply this product only as specified on this label.

Do not apply this product through any type of irrigation system.

It is permissible to treat non-irrigation ditch banks, seasonally dry wetlands, flood plains, deltas, marshes, swamps, bogs, and transitional areas between upland and lowland sites. Do not apply to open water (such as lakes, reservoirs, rivers, streams, creeks, salt water bays or estuaries) nor to water present in fresh water wetlands, deltas, marshes, swamps, bogs or potholes, or to salt water marshes below the mean high water mark.

Do not apply Pathfinder II herbicide directly to, or otherwise permit it to come into direct contact with grapes, tobacco, vegetable crops, flowers or other desirable broadleaf plants, and do not permit spray mists containing it to drift onto them.

Avoid Injurious Spray Drift: Applications should be made only when there is little or no hazard from spray drift. Very small quantities of spray, which may not be visible, may seriously injure susceptible plants. Do not spray when wind is blowing toward susceptible crops or ornamental plants near enough to be injured.

With ground equipment, spray drift can be reduced by using spray pressures no greater than are required to obtain adequate coverage; by using large droplet producing nozzle tips; and by spraying when wind velocity is low. Do not apply with nozzles that produce a fine droplet spray. Do not apply with an orchard type mist blower.

Do not apply on snow or frozen ground.

Untreated trees occasionally can be affected by movement of the herbicide through root grafting with the treated trees.

Since this herbicide moves within the treated plant, do not use Pathfinder II on parts of a multiple stem plant if injury to the untreated portions (cut or standing stems) cannot be tolerated.

Do not apply on ditches used to transport irrigation water. Do not apply where runoff or irrigation water may flow onto agricultural land as injury to crops may result.

Be sure that use of this product conforms to all applicable regulations.

Grazing and Haying Restrictions

Grazing or harvesting green forage:

1) Lactating dairy animals
   - 2.5 gallons/acre or less: Do not graze or harvest green forage from treated area for 14 days after treatment.
   - Greater than 2.5 gallons/acre: Do not graze or harvest green forage until the next growing season.
2) Other Livestock
   - 2.5 gallons/acre or less: No grazing restrictions.
   - Greater than 2.5 to 7.5 gallons/acre: Do not graze or harvest green forage from treated area for 14 days after treatment. **Note:** If less than 25% of a grazed area is treated, there is no grazing restriction.

Haying (harvesting of dried forage):

1) Lactating dairy animals
   - Do not harvest hay until the next growing season.

2) Other Livestock
   - 2.5 gallons/acre or less: Do not harvest hay for 7 days after treatment.
   - Greater than 2.5 to 5 gallons/acre: Do not harvest hay for 14 days after treatment.
   - Greater than 5 gallons/acre: Do not harvest hay until the next growing season.

Slaughter Restrictions: Withdraw livestock from grazing treated grass or consumption of treated hay at least 3 days before slaughter. This restriction applies to grazing during the season following treatment or hay harvested during the season following treatment.

Among The Woody Plant Species Controlled Are:

ailanthus	hackberry	oak, water
alder, red	hazel	oak, white
alder, speckled	hercules club	olive, autumn
ash, green	hickory, mockernut	olive, Russian
ash, white	hickory, pignut	persimmon, common
aspen†	honeylocust	pine, jack
Australian pine	hornbeam (blue beach)	pine, loblolly
basswood	locust, black†	pine, ponderosa
beech, American	madrone, Pacific	pine, red
birch, black	manzanita, greenleaf	pine, white
birch, gray	maple, bigleaf†	poison ivy
birch, paper	maple, mountain	poison oak
blackberry	maple, red	poplar, balsam
black locust	maple, silver	redcedar, eastern
blackgum	maple, striped	salt cedar†
boxelder	maple, sugar	sassafras†
Brazilian pepper	maple, vine	sumac, smooth†
cherry, black†	mesquite†/†††	sumac, staghorn†
cherry, choke	mountain-laurel	sweetgum
cherry, pin	oak, black††	sycamore
cottonwood	oak, blackjack††	tamarack
dogwood, flowering	oak, chestnut	tanoak
dogwood, red-osier	oak, post††	walnut
elm, American	tanoak	waxmyrtle
elm, winged†	walnut	willow
gallberry	oak, red	yaupon
guava	oak, scarlet	yellow poplar

† Some resprouting may occur.
†† Not recommended for streamline basal treatment.
††† Suppression only with streamline basal bark treatment.

Approved Uses

Forest Uses

Agricultural Use Requirements for Forest Use: For the following crop and forestry uses, follow PPE and Reentry instructions in the "Agricultural Use Requirements" section of this label.

Non-crop Uses Such As Rights-of-Way, Industrial Sites, Rangeland and Permanent Pastures, Non-irrigation Ditch Banks and Wildlife Openings.

Use Requirements for Non-cropland Areas: No Worker Protection Standard worker entry restrictions or worker notification requirements apply when this product is applied to non-cropland areas.

Low Volume Basal Bark Treatment
To control susceptible woody plants with stems less than 6 inches in basal diameter, apply Pathfinder II with a backpack or knapsack sprayer using low pressure and a solid cone or flat fan nozzle. Spray the basal parts of brush and tree trunks in a manner which thoroughly wets the lower 12 to 15 inches of stems, including the root collar area, but not to the point of runoff. Herbicide concentration should vary with size and susceptibility of species treated. Apply at any time, including the winter months, except when snow or water prevent spraying to the ground line.

Treatment of Cut Stumps
To control resprouting, apply undiluted Pathfinder II to wet the area adjacent to the cambium and bark around the entire circumference and the sides of cut stumps. Sides of stumps should be thoroughly wetted down to the root collar area, but not to the point of runoff. Treatments may be applied throughout the year, except when snow or water prevent spraying to the ground line. Control may be reduced with treatment during periods of moisture stress as in late summer.

Streamline Basal Bark Treatment (Southern States)
To control or suppress susceptible woody plants for conifer release or in rangeland and pasture, apply Pathfinder II with a backpack or knapsack sprayer using equipment which provides a directed straight-stream spray. Apply sufficient spray to one side of stems less than 3 inches in basal diameter to form a treated zone that is 6 inches in height. When the optimum amount of spray mixture is applied, the treated zone should widen to encircle the stem within approximately 30 minutes. Treat both sides of stems which are 3 to 4 inches in basal diameter. Direct the spray at bark that is approximately 12 to 24 inches above ground. Pines (loblolly, slash, shortleaf, and Virginia) up to 2 inches in diameter breast height (dbh) can be controlled by directing the spray at the point approximately 4 feet above ground. Best results are achieved when applications are made to young vigorously growing stems which have not developed the thicker bark characteristic of slower growing, understory trees in older stands. This technique is not recommended for scrub and live oak species, including blackjack, turkey, post, live, bluejack and laurel oaks. Apply from approximately 6 weeks prior to hardwood leaf expansion in the spring until approximately 2 months after leaf expansion is completed. Do not apply when snow or water prevent spraying at the desired height above ground level.

Warranty Disclaimer

Dow AgroSciences warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes stated on the label when used in strict accordance with the directions, subject to the inherent risks set forth below. Dow AgroSciences MAKES NO OTHER EXPRESS OR IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY OTHER EXPRESS OR IMPLIED WARRANTY.

Inherent Risks of Use

It is impossible to eliminate all risks associated with use of this product. Plant injury, lack of performance, or other unintended consequences may result because of such factors as use of the product contrary to label instructions (including conditions noted on the label, such as unfavorable temperature, soil conditions, etc.), abnormal conditions (such as excessive rainfall, drought, tornadoes, hurricanes), presence of other materials, the manner of application, or other factors, all of which are beyond the control of Dow AgroSciences or the seller. All such risks shall be assumed by buyer.

Limitation of Remedies

The exclusive remedy for losses or damages resulting from this product (including claims based on contract, negligence, strict liability, or other legal theories), shall be limited to, at Dow AgroSciences' election, one of the following:

1. Refund of purchase price paid by buyer or user for product bought, or
2. Replacement of amount of product used

Dow AgroSciences shall not be liable for losses or damages resulting from handling or use of this product unless Dow AgroSciences is promptly notified of such loss or damage in writing. In no case shall Dow AgroSciences be liable for consequential or incidental damages or losses.

The terms of the "Warranty Disclaimer" above and this "Limitation of Remedies" cannot be varied by any written or verbal statements or agreements. No employee or sales agent of Dow AgroSciences or the seller is authorized to vary or exceed the terms of the "Warranty Disclaimer" or this "Limitation of Remedies" in any manner.

*Trademark of Dow AgroSciences LLC
Dow AgroSciences LLC • Indianapolis, IN 46268 U.S.A.

Label Code: D02-104-007
Replaces Label: D02-104-006

EPA Accepted 05/17/94

Revisions:

1. General Use Precautions (The following statement was deleted from this section): "Do not use for manufacturing or formulating."

ATTACHMENT B3

ACCORD®

MATERIAL SAFETY DATA SHEET

Dow AgroSciences

Emergency Phone: 800-992-5994
Dow AgroSciences LLC
Indianapolis, IN 46268

ACCORD* CONCENTRATE HERBICIDE

Effective Date: 3/23/04
Product Code: 84820
MSDS: 006694

1. PRODUCT AND COMPANY IDENTIFICATION:

PRODUCT: Accord* Concentrate Herbicide

COMPANY IDENTIFICATION:
Dow AgroSciences LLC
9330 Zionsville Road
Indianapolis, IN 46268-1189

2. COMPOSITION/INFORMATION ON INGREDIENTS:

Glyphosate IPA: N-(phosphono-methyl) glycine, Isopropylamine Salt	CAS # 038641-94-0	53.8%
Balance, Total		46.2%

3. HAZARDOUS IDENTIFICATIONS:

EMERGENCY OVERVIEW

Clear, pale yellow liquid. May cause eye irritation. Slightly toxic to aquatic organisms.
EMERGENCY PHONE NUMBER: 800-992-5994

4. FIRST AID:

EYE: Flush eyes thoroughly with water for several minutes. Remove contact lenses after initial 1-2 minutes and continue flushing for several additional minutes. If effects occur, consult a physician, preferably an ophthalmologist.

SKIN: Wash skin with plenty of water.

INGESTION: No emergency medical treatment necessary.

INHALATION: Remove person to fresh air; if effects occur, consult a physician.

NOTE TO PHYSICIAN: No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

5. FIRE FIGHTING MEASURES:

FLASH POINT: >214°F (>101°C)
METHOD USED: Setaflash

FLAMMABLE LIMITS:
LFL: Not applicable
UFL: Not applicable

EXTINGUISHING MEDIA: Foam, CO_2, Dry Chemical

FIRE AND EXPLOSION HAZARDS: Foam fire extinguishing system is preferred because uncontrolled water can spread possible contamination. Toxic irritating gases may be formed under fire conditions.

FIRE-FIGHTING EQUIPMENT: Use positive-pressure, self-contained breathing apparatus and full protective equipment.

6. ACCIDENTAL RELEASE MEASURES:

ACTION TO TAKE FOR SPILLS: Absorb small spills with an inert absorbent material such as Hazorb, Zorball, sand, or dirt. Report large spills to Dow AgroSciences on 800-992-5994.

7. HANDLING AND STORAGE:

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Keep out of reach of children. Do not swallow. Avoid contact with eyes, skin, and clothing. Avoid breathing vapors and spray mist. Handle concentrate in ventilated area. Wash thoroughly with soap and water after handling and before eating, chewing gum, using tobacco, using the toilet or smoking. Keep away from food, feedstuffs, and water supplies. Store in original container with the lid tightly closed. Store above 10°F (-12°C) to keep from crystallizing.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION:

These precautions are suggested for conditions where the potential for exposure exists. Emergency conditions may require additional precautions.

EXPOSURE GUIDELINES: None established

ENGINEERING CONTROLS: Good general ventilation should be sufficient for most conditions. Local exhaust ventilation may be necessary for some operations.

RECOMMENDATIONS FOR MANUFACTURING, COMMERCIAL BLENDING, AND PACKAGING WORKERS:

EYE/FACE PROTECTION: Use safety glasses.

SKIN PROTECTION: No precautions other than clean body-covering clothing should be needed.

RESPIRATORY PROTECTION: For most conditions, no respiratory protection should be needed; however, if discomfort is experienced, use a NIOSH approved air-purifying respirator.

APPLICATIONS AND ALL OTHER HANDLERS: Please refer to the product label for personal protective clothing and equipment.

9. PHYSICAL AND CHEMICAL PROPERTIES:

APPEARANCE: Clear, pale yellow liquid
DENSITY: 10.0 - 10.5 lbs/gal
pH: 4.8 – 5.0
ODOR: None
SOLUBILITY IN WATER: Miscible
SPECIFIC GRAVITY: 1.21 gm/L
FREEZING POINT: -7°F - -10°F (-21°C - -25°C)

10. STABILITY AND REACTIVITY:

STABILITY: (CONDITIONS TO AVOID) Stable under normal storage conditions.

INCOMPATIBILITY: (SPECIFIC MATERIALS TO AVOID) Galvanized or unlined steel (except stainless steel) containers or spray tanks may produce hydrogen gas which may form a highly combustible gas mixture.

HAZARDOUS DECOMPOSITION PRODUCTS: None known.

HAZARDOUS POLYMERIZATION: Not known to occur.

11. TOXICOLOGICAL INFORMATION:

EYE: May cause slight temporary eye irritation. Corneal injury is unlikely.

SKIN: Essentially non-irritating to skin. Prolonged skin contact is unlikely to result in absorption of harmful amounts. The LD_{50} for skin absorption in rabbits is >5000 mg/kg. Did not cause allergic skin reactions when tested in guinea pigs.

INGESTION: Very low toxicity if swallowed. Harmful effects not anticipated from swallowing small amounts. The oral LD_{50} for rats is >5000 mg/kg.

INHALATION: Brief exposure (minutes) is not likely to cause adverse effects. The aerosol LC_{50} for rats is >6.37 mg/L for 4 hours.

SYSTEMIC (OTHER TARGET ORGAN) EFFECTS: For a similar material, glyphosate, in animals, effects have been reported on the following organ: liver.

CANCER INFORMATION: A similar material, glyphosate, did not cause cancer in laboratory animals.

TERATOLOGY (BIRTH DEFECTS): For glyphosate IPA, available data are inadequate for evaluation of potential to cause birth defects.

REPRODUCTIVE EFFECTS: For glyphosate IPA, available data are inadequate to determine effects on reproduction.

MUTAGENICITY: For a similar material, glyphosate, in-vitro and animal genetic toxicity studies were negative.

12. ECOLOGICAL INFORMATION:

ENVIRONMENTAL DATA:

ECOTOXICOLOGY:
Material is practically non-toxic to aquatic organisms on an acute basis (LC_{50} or EC_{50} is >100 mg/L in most sensitive species tested).
Acute LC_{50} for rainbow trout *(Oncorhynchus mykiss)* is >2500 mg/L.
Acute immobilization EC_{50} in water flea *(Daphnia magna)* is 918 mg/L.
Material is practically non-toxic to birds on an acute basis (LD_{50} is >2000 mg/kg).
Acute oral LD_{50} in bobwhite *(Colinus virginianus)* is >2000 mg/kg.
The LC_{50} in earthworm Eisenia foetida is >1000 mg/kg.
Acute contact LD_{50} in honey bee *(Apis mellifera)* is >100 µg/bee.
Acute oral LD_{50} in honey bee *(Apis mellifera)* is >100 µg/bee.
Growth inhibition EC_{50} in green alga *(Selenastrum capricornutum)* is 127 mg/L.
Growth inhibition EC_{50} in duckweed *(Lemna sp.)* is 24.4 mg/L.

13. DISPOSAL CONSIDERATIONS:

DISPOSAL METHOD: If wastes and/or containers cannot be disposed of according to the product label directions, disposal of this material must be in accordance with your local or area regulatory authorities.

MATERIAL SAFETY DATA SHEET

Dow AgroSciences

Emergency Phone: 800-992-5994
Dow AgroSciences LLC
Indianapolis, IN 46268

ACCORD* CONCENTRATE HERBICIDE

Effective Date: 3/23/04
Product Code: 84820
MSDS: 006694

This information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations.

If the material as supplied becomes a waste, follow all applicable regional, national and local laws and regulations.

14. TRANSPORT INFORMATION:

U.S. DEPARTMENT OF TRANSPORTATION (DOT) INFORMATION:

For all package sizes and modes of transportation:
This material is not regulated for transport.

15. REGULATORY INFORMATION:

NOTICE: The information herein is presented in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ from one location to another; it is the buyer's responsibility to ensure that its activities comply with federal, state or provincial, and local laws. The following specific information is made for the purpose of complying with numerous federal, state or provincial, and local laws and regulations.

U.S. REGULATIONS

SARA 313 INFORMATION: To the best of our knowledge, this product contains no chemical subject to SARA Title III Section 313 supplier notification requirements.

SARA HAZARD CATEGORY: This product has been reviewed according to the EPA "Hazard Categories" promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

Not to have met any hazard category

TOXIC SUBSTANCES CONTROL ACT (TSCA): All ingredients are on the TSCA inventory or are not required to be listed on the TSCA inventory.

STATE RIGHT-TO-KNOW: This product is not known to contain any substances subject to the disclosure requirements of

New Jersey
Pennsylvania

OSHA HAZARD COMMUNICATION STANDARD: This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY ACT (CERCLA, or SUPERFUND): To the best of our knowledge, this product contains no chemical subject to reporting under CERCLA.

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) RATINGS:

CATEGORY	RATING
Health	1
Flammability	1
Reactivity	0

16. OTHER INFORMATION:

MSDS STATUS: Revised Sections: 3,4,11,12,13,14 & 15
Reference: DR-0361-8028
Replaces MSDS Dated: 1/12/00
Document Code: D03-145-002
Replaces Document Code: D03-145-001

The Information Herein Is Given In Good Faith, But No Warranty, Express Or Implied, Is Made. Consult Dow AgroSciences For Further Information.

*Trademark of Dow AgroSciences LLC

ATTACHMENT B4

VELPAR®

The MSDS format adheres to the standards and regulatory requirements of the United States and may not meet regulatory requirements in other countries.

"DuPont" "VELPAR" DF HERBICIDE
M0000325 Revised 25-JUN-2003

CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Material Identification

VELPAR is a registered trademark of DuPont.

"DuPont" is a trademark of DuPont.

Corporate MSDS Number : DU008210

Tradenames and Synonyms

"Velpar" F
"VELPAR" 75WG
DUPONT VELPAR 75WG

Company Identification

MANUFACTURER/DISTRIBUTOR
DuPont
1007 Market Street
Wilmington, DE 19898

PHONE NUMBERS
Product Information : 1-800-441-7515 (outside the U.S. 302-774-1000)
Transport Emergency : CHEMTREC 1-800-424-9300(outside U.S. 703-527-3887)
Medical Emergency : 1-800-441-3637 (outside the U.S. 302-774-1000)

COMPOSITION/INFORMATION ON INGREDIENTS

Components

Material	CAS Number	%
*HEXAZINONE (3-cyclohexyl-6-(dimethylamino)-1-methyl-1,3,5-triazine-2,4(1H,3H)-dione)	51235-04-2	75
INERT INGREDIENTS		25

* Disclosure as a toxic chemical is required under Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.

HAZARDS IDENTIFICATION

Emergency Overview

DANGER Corrosive, causes irreversible eye damage. Harmful if swallowed. Do not get in eyes or on clothing. Avoid contact with skin. Wash thoroughly with soap and water after handling.

Potential Health Effects

HUMAN HEALTH EFFECTS OF OVEREXPOSURE TO HEXAZINONE:

Overexposure to hexazinone by eye contact may initially include eye irritation with discomfort, tearing, or blurring of vision.

Ingestion may include abnormal liver function as detected by laboratory tests.

Significant skin permeation and systemic toxicity after contact appears unlikely. Individuals with preexisting diseases of the liver may have increased susceptability to the toxicity of excessive exposures.

Carcinogenicity Information

None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, OSHA or ACGIH as a carcinogen.

FIRST AID MEASURES

First Aid

IF IN EYES: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

IF ON SKIN OR CLOTHING: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

IF SWALLOWED: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Do not give anything by mouth to an unconscious person.

INHALATION: No specific intervention is indicated, as the compound is not likely to be hazardous by inhalation. Consult a physician if necessary.

(FIRST AID MEASURES - Continued)

Notes to Physicians

Probable mucosal damage may contraindicate the use of gastric lavage.

Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-800-441-3637 for emergency medical treatment information.

FIRE FIGHTING MEASURES

Flammable Properties

Not a fire or explosion hazard.

Extinguishing Media

Use media appropriate for surrounding material.

Fire Fighting Instructions

Keep personnel removed and upwind of fire. Wear self-contained breathing apparatus. Wear full protective equipment.

If area is exposed to fire and conditions permit, let fire burn itself out. Burning chemicals may produce by-products more toxic than the original material. If product is on fire, wear self-contained breathing apparatus and full protective equipment. Use water spray. Control runoff.

ACCIDENTAL RELEASE MEASURES

Safeguards (Personnel)

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

Emergency Response - Chemical resistant coveralls, waterproof gloves, waterproof boots and face/eye protection. If dusting occurs, use NIOSH approved respirator protection.

Initial Containment

Dike spill. Prevent material from entering sewers, waterways, or low areas.

Spill Clean Up

Shovel or sweep up.

HANDLING AND STORAGE

Handling (Personnel)

Do not get in eyes. Avoid breathing dust. Avoid contact with skin. Avoid contact with clothing.

USERS SHOULD: Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.

Storage

Store product in original container only. Do not contaminate water, other pesticides, fertilizer, food or feed in storage.

EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls

Use only with adequate ventilation.

Personal Protective Equipment

Applicators and other handlers must wear:

Long-sleeved shirt and long pants.
Shoes plus socks.
Protective eye wear

Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them.

Follow manufacturer instructions for cleaning and maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water is:

- Coveralls.
- Chemical resistant gloves in Category A (such as
- butyl rubber, natural rubber, neoprene rubber, or
- Nitrile rubber) all greater than or equal to 14
- mils.
- Shoes plus socks.
- Protective eyewear.

Exposure Guidelines

Applicable Exposure Limits
HEXAZINONE

PEL	(OSHA)	: None Established
TLV	(ACGIH)	: None Established
AEL *	(DuPont)	: 10 mg/m3, 8 Hr. TWA

* AEL is DuPont's Acceptable Exposure Limit. Where governmentally imposed occupational exposure limits which are lower than the AEL are in effect, such limits shall take precedence.

PHYSICAL AND CHEMICAL PROPERTIES

Physical Data

Odor	: Acrid (slight).
Form	: Dry Flowable Granules.
Color	: Tan (light).
pH	: 8.4 (1% wt/wt in water)
Density	: 0.58 g/mL
Solubility in Water¸	: Water Dispersible

STABILITY AND REACTIVITY

Chemical Stability

Stable at normal temperatures and storage conditions.

Incompatibility with Other Materials

Incompatible or can react with strong bases.

Decomposition

Decomposition will not occur.

Polymerization

Polymerization will not occur.

TOXICOLOGICAL INFORMATION

Animal Data

Acute Oral LD50¸: calculated to be 1310 mg/kg in rats.

Acute Dermal LD50¸: > 5000 mg/kg in rabbits.

Inhalation 4 hour LC50¸: > 5.2 mg/L in rats.

Eye Irritation: In tests with rabbits, product caused conjunctival chemosis, conjunctival redness, and corneal opacity. Positive irritant effects were present in 1 rabbit

(TOXICOLOGICAL INFORMATION - Continued)

21 days after treatment.

Skin irritation and Sensitization: According to criteria established by the U.S. EPA this product is considered to be a moderate skin irritant. According to criteria established by EEC Directive 93/21 this product can be classified a non-irritant. Product is not a skin sensitizer in tests on guinea pigs.

OTHER STUDIES - Hexazinone

Oral (rat): In a 2-year feeding study with the 90% powder, the no-observable-effect level (NOEL) was 200 ppm a.i.; nutritional and body weight effects were seen in females at 1000 ppm a.i. and in both sexes at 2500 ppm a.i. Biochemical effects were noted in both sexes at 2500 ppm a.i.

Oral (mouse): In a 2-year feeding study with technical material, the no-observable-effect level (NOEL) was 200 ppm. Decreased body weight gain was observed in both sexes at 2500 ppm and 10000 ppm. This effect was severe at 10000 ppm, the highest level tested. Non-neoplastic liver effects were noted in males at 2500 ppm and in both sexes at 10000 ppm. Based on recent pathology review, hyperplastic liver nodules diagnosed at 10000 ppm when this study was initially conducted have been reclassified as liver adenomas. This effect was only significant among female mice in this dose group. This change reflects the current scientific concensus regarding the classification of this benign lesion in the mouse liver.

Oral (dog): In a 1-year feeding study with technical material, the NOEL was 200 ppm. Reduced food consumption and body weight gains were significant at the high dose, 6000 ppm. These nutritional effects were associated with mild but reversible changes in hematological parameters at the high dose. Increased liver weights and other non-neoplastic liver effects as indicated by histopathology and changes in clinical chemical parameters were observed at 1500 and/or 60000 ppm.

Reproduction (rat): In a 3-generation, 3-litter study with 90% powder, no adverse reproduction or lactation effects were seen at any level; slightly depressed average weanling weights were noted in the second and third litters at the high dose, 2500 ppm. A second rat reproduction study (2-generation, 3-litter study) was conducted at dietary doses from 200 to 5000 ppm. There were no adverse effects on fertility. The NOEL was 200 ppm. Decreased food consumption, parental body weight gain and decreased offspring weights were observed at the higher doses.

Teratogenicity: Not teratogenic or embrryo-fetal toxic to

(TOXICOLOGICAL INFORMATION - Continued)

rats by dietary administration at levels as high as 5000 ppm, the highest dose tested. Administration to rats by oral intubation resulted in a NOEL for maternal and fetal effects of 100 mg/kg body wt./day. Maternal toxicity (reduced food consumption and lower body weights) was observed at 400 and 900 mg/kg. Lower fetal weights and indications of general delayed development associated with maternal toxicity were also observed at these doses. When hexazinone was administered to rabbits via oral intubation, there were no teratogenic or embryo-fetal toxic effects at the highest dose tested, 125 mg/kg/day. Only a transient reduction in maternal food consumption was observed at the high dose. The maternal and fetal NOELs are considered to be 125 mg/kg.

Mutagenicity: Not mutagenic in Ames bacterial assay, Chinese hamster ovary cell point mutation assay, or rat liver DNA repair assay; positive in the in vitro Chinese hamster ovary cell cytogenetic assay but negative in the in vivo rat bone marrow cytogenic assay.

ECOLOGICAL INFORMATION

Ecotoxicological Information

Aquatic Toxicity

For the active ingredient hexazinone:

- 96 Hour LC50, bluegill sunfish: >370 ppm
  96 Hour LC50, rainbow trout : >320 ppm
- 96 hour LC50, fathead minnow : 274 ppm

DISPOSAL CONSIDERATIONS

Waste Disposal

Do not contaminate water, food, or feed by disposal. Waste resulting from the use of this product may be disposed of on the site or at an approved waste disposal facility.

Environmental Hazards
Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwaters.
The active ingredient, hexazinone, in this product is known to leach through soil into ground water under certain conditions as a result of agricultural use. Use of this chemical in areas where soils are permeable, particularly where the water table is shallow, may result in ground-water

(DISPOSAL CONSIDERATIONS - Continued)

contamination.

Container Disposal

For Plastic Containers: Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or incineration, or, if allowed by State and local authorities, by burning. If burned, stay out of smoke.

For Fiber Sacks: Completely empty fiber sack by shaking and tapping sides and bottom to loosen clinging particles. Empty residue into manufacturing or application equipment. Then dispose of sack in a sanitary landfill or by incineration if allowed by State and local authorities.

For Fiber Drums with Liners: Completely empty liners by shaking and tapping sides and bottom to loosen clinging particles. Empty residue into manufacturing or application equipment. Then dispose of liner in a sanitary landfill or by incineration if allowed by State and local authorities. If the drum is contaminated and cannot be reused, dispose of in the same manner.

For Paper and Plastic Bags: Completely empty bag into application equipment. Then dispose of empty bag in a sanitary landfill or by incineration or, if allowed by State and local authorities, by burning. If burned, stay out of smoke.

TRANSPORTATION INFORMATION

Shipping Information

DOT/IMO
Proper Shipping Name : Not Regulated

REGULATORY INFORMATION

U.S. Federal Regulations

TITLE III HAZARD CLASSIFICATIONS SECTIONS 311, 312

Acute : Yes
Chronic : No
Fire : No
Reactivity : No
Pressure : No

(REGULATORY INFORMATION - Continued)

In the United States this product is regulated by the US Environmental Protection Agency under the Federal Insecticide, Fungicide and Rodenticide Act. It is a violation of federal law to use this product in a manner inconsistent with its labeling.

EPA Reg. No. 352-581

OTHER INFORMATION

NFPA, NPCA-HMIS

NFPA Rating
Health : 2
Flammability : 1
Reactivity : 0

NPCA-HMIS Rating
Health : 2
Flammability : 1
Reactivity : 0

Personal Protection rating to be supplied by user depending on use conditions.

The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.

Responsibility for MSDS : DuPont Crop Protection
Address : Wilmington, DE 19898
Telephone : 1-888-638-7668

# Indicates updated section.

This information is based upon technical information believed to be reliable. It is subject to revision as additional knowledge and experience is gained.

End of MSDS

ATTACHMENT B5

HASTEN®

WILBUR-ELLIS
IDEAS TO GROW WITH®
PO BOX 16458 • FRESNO CA 93755

MATERIAL SAFETY DATA SHEET

PRODUCT/TRADE NAME:

HASTEN

I. NAME

PRODUCT/TRADE NAME: HASTEN
EPA REGISTRATION #: NONE
CHEMICAL NAME/COMMON NAME:
Nonionic Surfactant/Nonionic Surfactant

II. HAZARDOUS INGREDIENTS

	CAS#	OSHA PEL	ACGIH TLV
Nonionic Surfactant	Mixture	NE	NE

III. PHYSICAL DATA

SPECIFIC GRAVITY (H2O = 1): .9
MELTING POINT: NA
VAPOR DENSITY (AIR = 1): NE
% VOLATILES BY VOL.: NE
ODOR: Fatty
APPEARANCE: Amber Liquid
FLASH POINT/METHOD: >150 Deg. C
VAPOR PRESSURE (mmHg): NE
SOLUBILITY IN H2O: Emulsifiable

IV. FIRE & EXPLOSION HAZARD

EXTINGUISHING MEDIA: [ ] Water Fog [X] Foam [ ]Alcohol Foam
[X] CO2 [X] Dry Chemical [ ] Other
FIRE FIGHTING PRECAUTIONS & HAZARDS:
Fight fire upwind. Wear positive pressure self-contained breathing apparatus and full protective clothing. Do not breathe smoke or spray mist. Avoid fallout and runoff. Dike to prevent entering drains, sewers, or water courses. Evacuate people downwind from fire.

V. CARCINOGEN STATUS

[ ] OSHA [ ] NTP [ ] IARC [X] No Listing Type

VI. REACTIVITY

[X] Stable HAZARDOUS POLYMERIZATION
[ ] Unstable [ ] May Occur [X] Will Not Occur
AVOID: Strong oxidizers, organic material
HAZARDOUS DECOMPOSITION PRODUCTS: COx

VII. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE OF SPILL: Absorb with inert material and sweep or vacuum into disposal container.
DECONTAMINATION: Treat spill area with detergent and water. Absorb with inert material. Place in disposal container and repeat procedure as necessary until area is clean.
ENVIRONMENTAL HAZARDS: Dike to prevent entering drains, sewers or water courses.
DISPOSAL: Dispose of in accordance with Federal, State and local regulations.

VIII. HEALTH PRECAUTION DATA

INGESTION: Do not ingest. Acute Oral LD50 (Rat) >5000 mg/kg (WECO). Wash thoroughly before eating, drinking or smoking.
INHALATION: No PEL/TLV established for this product. Do not inhale mist. Use proper respiratory protective equipment for the exposures encountered.
SKIN ABSORPTION: Acute Dermal LD50 (Rabbit) >2000 mg/kg (WECO). May cause slight skin irritation. Wear proper personal protective equipment to reduce skin exposure.
EYE EXPOSURE: Keep out of eyes. Minimally irritating to the eyes. If exposed, flush eyes for a minimum of 15 minutes with water. Wear proper eye protection to reduce splash exposure.
EFFECTS OF OVEREXPOSURE: Material is not toxic or irritating to the skin. No known chronic effects. No known preexisting medical conditions will be aggravated by exposure.
FIRST AID: In all cases, get prompt medical attention. If ingested, give several glasses of water and induce vomiting. Do not induce vomiting if person is unconscious. For skin exposure, remove contaminated clothing and wash with soap and water. For eye contact, irrigate for a minimum of 15 minutes with water. If inhaled, remove victim to fresh air, and administer CPR if necessary.

IX. SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION: Use NIOSH/MSHA - approved respirator for organic vapors for the exposures encountered. Positive pressure self-contained breathing apparatus should be used for confined space entry and excessive exposures.
PERSONAL PROTECTIVE EQUIPMENT: Neoprene or rubber gloves and safety goggles.
VENTILATION: General ventilation.

X. SPECIAL PRECAUTIONS

Keep out of the reach of children. Read and follow all label instructions.

XI. REGULATORY DATA

SARA HAZARD CLASS: [X] Acute [ ] Chronic [ ] Flammable
[ ] Pressure [ ] Reactive [ ] None
SARA 313: [ ] Yes [X] No Chemical:
SARA 302: [ ] Yes [X] No Chemical:
TPQ:
CERCLA: [ ] Yes [X] No Chemical:
RQ:
RCRA: [ ] Yes [X] No

NFPA HAZARD RATING:
Health: [1]
Fire: [1]
Reactivity: [0]
Special: [ ]

NFPA HAZARD RATING SCALE:
0 = Minimal 3 = Serious
1 = Slight 4 = Severe
2 = Moderate

HMIS CODES:
Health: [1]
Fire: [1]
Reactivity: [0]

HMIS HAZARD RATING SCALE:
0 = Minimal 3 = Serious
1 = Slight 4 = Severe
2 = Moderate

DATE PREPARED: March 22, 1994
REVISED DATE: July 22, 2005

Notice: This information was developed from information on the constituent materials. No warranty is expressed or implied regarding the completeness or continuing accuracy of the information contained herein, and Wilbur-Ellis disclaims all liability for reliance thereon. The user should satisfy himself that he has all current data relevant to his particular use.

*Technical Material NE - Not Established NA - Not Applicable

24 Hour Emergency Phone Number
CHEMTREC: (800) 424-9300

ATTACHMENT B6

R-11®

WILBUR-ELLIS

IDEAS TO GROW WITH®

PO BOX 16458 • FRESNO CA 93755

MATERIAL SAFETY DATA SHEET

PRODUCT/TRADE NAME:

R-11

I. NAME

PRODUCT/TRADE NAME: R-11
EPA REGISTRATION #: NONE
CHEMICAL NAME/COMMON NAME:
1-Butanol/Butyl Alcohol
Octyl Phenoxy Polyethoxy Ethanol/Nonionic Surfactants

II. HAZARDOUS INGREDIENTS

	CAS#	OSHA PEL	ACGIH TLV
Butyl Alcohol	71-36-3	50 ppm c	50 ppm c
Nonionic Surfactants	Mixture	NE	NE

III. PHYSICAL DATA

SPECIFIC GRAVITY (H2O = 1): 1.02
MELTING POINT: NA
VAPOR DENSITY (AIR = 1): NE
% VOLATILES BY VOL.: NE
ODOR: Alcohol
APPEARANCE: Clear Liquid
FLASH POINT/METHOD: 130 Deg. F TCC
VAPOR PRESSURE (mmHg): NE
SOLUBILITY IN H2O: 10%

IV. FIRE & EXPLOSION HAZARD

EXTINGUISHING MEDIA: [X] Water Fog [X] Foam [ ]Alcohol Foam
[X] CO2 [X] Dry Chemical [ ] Other

FIRE FIGHTING PRECAUTIONS & HAZARDS:
Fight fire upwind. Wear positive pressure self-contained breathing apparatus and full personal protective equipment. Cool exposed containers with water. Dike area to prevent entering drains, sewers or water courses. Evacuate people downwind from fire.

V. CARCINOGEN STATUS

[ ] OSHA [ ] NTP [ ] IARC [X] No Listing Type

VI. REACTIVITY

[X] Stable HAZARDOUS POLYMERIZATION
[ ] Unstable [ ] May Occur [X] Will Not Occur

AVOID: Oxidizers, Liquid chlorine and Concentrated 02
HAZARDOUS DECOMPOSITION PRODUCTS: COx

VII. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE OF SPILL: Wear appropriate respiratory and personal protective equipment. Absorb with inert material and sweep or vacuum into approved disposal container.
DECONTAMINATION: Treat area with detergent and water. Absorb with inert material and place in approved container. Repeat as necessary until area is clean.
ENVIRONMENTAL HAZARDS: Dike to prevent entering drains, sewers or water courses.
DISPOSAL: Place in DOT-approved container and dispose of in an approved disposal site.

VIII. HEALTH PRECAUTION DATA

INGESTION: Acute oral LD50 (rat) Butyl Alcohol 790 mg/kg (SAX*). Wash thoroughly before eating, drinking or smoking. Do not ingest. Do not store near food or feed.
INHALATION: PEL/TLV Butyl Alcohol 100 ppm. Can cause respiratory irritation in high concentrations. Wear appropriate respiratory protection for exposures above the PEL/TLV.
SKIN ABSORPTION: Acute dermal LD50 (rabbit) for Butyl Alcohol 4200 mg/kg (SAX*). Can cause mild skin irritation or dermatitis. Wear proper personal protective equipment to reduce exposure.
EYE EXPOSURE: May be mildly irritating to the eyes. If exposed, flush eyes a minimum of 15 minutes with water. Wear proper eye protection to reduce splash exposure.
EFFECTS OF OVEREXPOSURE: May cause eye irritation and corneal inflammation. High concentrations can cause respiratory irritation. May cause skin irritation, scaling or dermatitis. No known chronic effects. Preexisting medical conditions involving the above symptoms may be aggravated by exposure.
FIRST AID: In all cases, get prompt medical attention. If ingested, give several glasses of water. Do not induce vomiting. For skin exposure, remove contaminated clothing and wash with soap and water. For eye contact, irrigate eyes a minimum of 15 minutes with water. For inhalation, remove victim to fresh air, and administer CPR if necessary.

IX. SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION: Use only NIOSH/MSHA - approved respiratory protection for organic vapors up to 10 times the PEL/TLV. Positive pressure self-contained breathing apparatus should be used for confined space entry and high exposures above 10 times the PEL/TLV.
PERSONAL PROTECTIVE EQUIPMENT: Not normally required for this product. Recommend chemical goggles, long-sleeved coveralls and rubber or neoprene boots, Nitrile gloves.
VENTILATION: Local exhaust ventilation recommended for manufacture and formulation operations.

X. SPECIAL PRECAUTIONS

Keep out of the reach of children. Read and follow all label instructions.
Keep away from open flame, heat or ignition sources.

XI. REGULATORY DATA

SARA HAZARD CLASS: [ ] Acute [ ] Chronic [X] Flammable
[ ] Pressure [ ] Reactive [ ] None
SARA 313: [X] Yes [ ] No Chemical: Butyl Alcohol
SARA 302: [ ] Yes [X] No Chemical:
TPQ:
CERCLA: [X] Yes [ ] No Chemical: Butyl Alcohol
RQ: 1*
RCRA: [X] Yes [ ] No

NFPA HAZARD RATING:
Health: [1]
Fire: [2]
Reactivity: [0]
Special: [0]

HMIS CODES:
Health: [1]
Fire: [2]
Reactivity: [0]

NFPA HAZARD RATING SCALE:
0 = Minimal 3 = Serious
1 = Slight 4 = Severe
2 = Moderate

HMIS HAZARD RATING SCALE:
0 = Minimal 3 = Serious
1 = Slight 4 = Severe
2 = Moderate

DATE PREPARED: May 8, 1985
REVISED DATE: July 21, 2005

Notice: This information was developed from information on the constituent materials. No warranty is expressed or implied regarding the completeness or continuing accuracy of the information contained herein, and Wilbur-Ellis disclaims all liability for reliance thereon. The user should satisfy himself that he has all current data relevant to his particular use.

*Technical Material NE - Not Established NA - Not Applicable

24 Hour Emergency Phone Number
CHEMTREC: (800) 424-9300

ATTACHMENT B7

IN-PLACE®

PRECAUTIONARY STATEMENTS

Causes eye irritation. In case of contact with eyes, immediately flush with water for at least 15 minutes. If irritation persists, get medical attention. May cause skin irritation. Harmful if swallowed. COMBUSTIBLE LIQUID. Keep away from heat, sparks and fire.

Do not cut or weld this container of IN-PLACE™. Combustible. Do not use this container or equipment contaminated with this product as a container for water to be used for domestic purposes, feed or food stuff.

NOTE: When using chemical mixture that has not been used before with IN-PLACE™ always try a small sample mix before making a full batch. Different adjuvants in the chemicals and salt in some water can cause flocking or excess thickening. If this occurs, add ammonia.

Follow mixing procedures, dose rates and cautions on all chemical labels.

Wilbur-Ellis Company warrants that this material conforms to the chemical description on the label and is reasonably fit for use as directed herein.

The use of this product is beyond the control of Wilbur-Ellis Company, therefore, Wilbur-Ellis Company urges that all chemicals be checked with Insist® before full scale use.

Buyer assumes all risks of use, storage and handling of this material not in strict accordance with directions given herewith. Buyer further agrees in event of damage arising from the use of this product to accept a replacement of the product or a refund of the purchase price of the product, at buyer's option, as full discharge of seller's liability.

NOTICE

U.S. Patent numbers, 3, 479, 176 and 4, 115, 098 covers use, other patent pending.

STORAGE AND DISPOSAL

1. PROHIBITIONS: Do not contaminate water, food or feed by storage, disposal or cleaning of equipment.
2. STORAGE: Store in original container only and keep sealed. Store in closed storage areas. Use caution when moving, opening, closing or pouring.
3. PESTICIDE DISPOSAL: Improper disposal of excess spray mixtures or rinsate is a violation of Federal Law. Wastes resulting from use of this product should be disposed of through on-site spray application or at an approved waste disposal facility.
4. CONTAINER DISPOSAL: Triple rinse (or equivalent), then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or other procedures approved by State and local authorities.

CONTENTS 1 U.S. GALLON (3.75 Liters)

WILBUR-ELLIS

IDEAS AT WORK WITH®

IN-PLACE™

DEPOSITION AND RETENTION AGENT

HERBICIDES, INSECTICIDES, FUNGICIDES AND HARVEST AIDS

*DRIFT RETARDANT

PRINCIPAL FUNCTIONING AGENTS	100%
Amine salts of organic acids	
Aromatic Acid	
Aromatic and Aliphatic petroleum distillate	

KEEP OUT OF REACH OF CHILDREN

CAUTION

CA Reg. No. 2935-50169 - WA Reg. No. AW2935-01003

WARRANTY STATEMENT

WILBUR-ELLIS COMPANY warrants that this product conforms to the chemical description on the label thereof and is reasonably fit for purposes stated on such label only when used in accordance with directions under normal use conditions. It is impossible to eliminate all risks inherently associated with use of this product. Crop injury, ineffectiveness or other unintended consequences may result because of such factors as weather conditions, presence of other materials or the manner of use or application, all of which are beyond the control of WILBUR-ELLIS COMPANY. In no case shall WILBUR-ELLIS COMPANY be liable for consequential, special or indirect damages resulting from the use or handling of this product. All such risks shall be assumed by the Buyer. The exclusive remedy of any buyer or user of this product for any and all losses, injuries, or damages resulting from or in any way arising from the use, handling or application of this product, whether in contract, warranty, tort, negligence, strict liability or otherwise, shall not exceed the purchase price paid for this product or at WILBUR-ELLIS COMPANY'S election, the replacement of this product. WILBUR-ELLIS COMPANY MAKES NO WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE NOR ANY OTHER EXPRESS OR IMPLIED WARRANTY EXCEPT AS STATED ABOVE.

GENERAL INFORMATION

IN-PLACE™ is specially formulated for use with conventional spray mixtures. IN-PLACE™ is a deposition and retention agent which reduces evaporation and drift of chemicals while increasing coverage and adherence on the target area.

GENERAL MIXING PROCEDURE

Mix the IN-PLACE™ and EMULSIFIABLE CONCENTRATE or AQUEOUS SOLUTION together; 1 part IN-PLACE™ to 4 parts chemical. Add to the total volume of water. (If some water is required for mixing with the emulsifiable concentrate or aqueous solution, DO NOT USE OVER 1 quart of water on a per acre basis.)

Mix the WETTABLE POWDER, SOLUBLE POWDER, FLOWABLE or SOLUBLE BAG in the total volume of WATER. Add the IN-PLACE™ last; 2 ozs. IN-PLACE™ to 1 pound or 1 quart of chemical.

Combinations of Emulsifiable Concentrates and/or Aqueous Solutions with Wettable Powders, Soluble Powders, Flowables, and/or Soluble Bags – should be added to the water first and mixed. Mix the IN-PLACE™ and the Emulsifiable Concentrate and/or Aqueous Solution together. Add to the total volume of water and powders. Always try a small sample mix before making a full batch.

When mixing multiple-loads at one time, RE-BLEND BEFORE EACH LOAD IS DRAWN OFF.

Small mixes in closed-systems: Put required IN-PLACE™ in can opener-portion. Add emulsifiable concentrate or aqueous solution to IN-PLACE™ and flush into closed mixing tank.

Large or multiple loads in closed-systems: Keep the initial water to a maximum of 1 quart on a per acre basis in the closed mixing tank. Add all of the emulsifiable concentrates or aqueous solutions to the closed mixing tank, followed by the required IN-PLACE™. BLEND VERY LIGHTLY, and add to the total volume of water. If a thick or lumpy load occurs from over-agitation or the wrong rate of IN-PLACE™, add HOUSEHOLD AMMONIA through the agitation system to break the condition and continue with normal spray activities.

FOR PESTICIDES/HERBICIDES THAT PERMIT USE OF AN ADJUVANT AT A HIGHER RATE, FOLLOW INSTRUCTIONS ON THAT PESTICIDE/HERBICIDE LABEL. HOWEVER, DO NOT ADD THIS PRODUCT AT A RATE WHICH EXCEEDS 5% OF THE FINISHED SPRAY VOLUME.

Use caution at the higher application rates. When applying to a sensitive crop, first treat a small area to determine if there may be adverse effects on the crop.

FOR AQUATIC USE: (EXCEPT IN WASHINGTON) Can be used with labeled aquatic products. Not to exceed 1 quart per surface acre of water.

STANDARD MIXING RATES

Liquid Chemicals - Emulsifiable Concentrates - EC
(Those not available as Wettable Powders)

Chemical Quarts	1	2	3	4	5	6	7	8	9	10	Example: 4 Parts Chemical
Ounces IN-PLACE™	8	16	24	32	40	48	56	64	72	80	1 Part IN-PLACE™

Mix E.C. and IN-PLACE™ together. Add to water

Liquid Chemicals - Flowables
(Those not available as Wettable Powders)

Chemical Quarts	1	2	3	4	5	6	7	8	9	10	Example: 1 Gallon (128 oz.) Chemical
Ounces IN-PLACE™	2	4	6	8	10	12	14	16	18	20	½ Pint (8 oz.) IN-PLACE™

Mix Flowables in the water. Add IN-PLACE™ last.

Wettable Powders

Chemical Pounds	1	2	3	4	5	6	7	8	9	10	Example: 8 Pounds Chemical
Ounces IN-PLACE™	2	4	6	8	10	12	14	16	18	20	1 Pint (16 oz.) IN-PLACE™

Mix Wettable Powders in water. Add IN-PLACE™ last

RATE EXCEPTIONS

ROUNDUP®

Roundup Quarts	1	2	3	4	5	6	7	8	9	10	Example: 4 Quarts (128 oz.) Roundup
Ounces IN-PLACE™	16	32	48	64	80	96	112	128	144	160	2 Quarts (64 oz.) IN-PLACE™

Pyrethroids (Ambush®, Pounce®, Ammo®, Etc.)

Pyrethroids Pints	1	2	3	4	5	6	7	8	9	10	Example: 1 Pint (16 oz.) Pyrethroids
Pints IN-PLACE™	1	2	3	4	5	6	7	8	9	10	1 Pint (16 oz.) IN-PLACE™

Asulox®

Asulox Gallons	1	2	3	4	5	6	7	8	9	10	Example: 1 Gallon (128 oz.) Asulox
Ounces IN-PLACE™	5	10	15	20	25	30	35	40	45	50	5 Ounces IN-PLACE™

Liquid Foliar Fertilizer

Liquid Fertilizer Quarts	1	2	3	4	5	6	7	8	9	10	Example: 8 Quarts (256 oz.) Liquid Fertilizer
Ounces IN-PLACE™	2	4	6	8	10	12	14	16	18	20	1 Pint (16 oz.) IN-PLACE™

Dipel®-4L, Thuricide

Chemical Quarts	1	2	3	4	5	6	7	8	9	10	Example: 4 Quarts (128 oz.) Chemical
Ounces IN-PLACE™	8	16	24	32	40	48	56	64	72	80	1 Quart (32 oz.) IN-PLACE™

Dimilin®

Dimilin Ounces	1	2	3	4	5	6	7	8	9	10	Example: Premix 2 oz. Dimilin per 16 oz. water. Then add proper rate of IN-PLACE™. Add premix to tank at total volume of water.
Ounces IN-PLACE™	1	2	3	4	5	6	7	8	9	10	

Granular Foliar Fertilizer

Granular Fertilizer Pounds	1	2	3	4	5	6	7	8	9	10	Example: 8 Pounds Granular Fertilizer
Ounces IN-PLACE™	2	4	6	8	10	12	14	16	18	20	1 Pint (16 oz.) IN-PLACE™

Zorial®

Zorial Pounds	1	2	3	4	5	6	7	8	9	10	Example: 16 Pounds Zorial
Ounces IN-PLACE™	1	2	3	4	5	6	7	8	9	10	1 Pint (16 oz.) IN-PLACE™

Sulfur Compounds

Sulfur Compounds Pounds	5	10	15	20	25	30	35	40	45	50	Example: 20 Pounds Sulfur
Ounces IN-PLACE™	4	8	12	16	20	24	28	32	36	40	1 Pint (16 oz.) IN-PLACE™

Propanil

Propanil Quarts	1	2	3	4	5	6	7	8	9	10	Example: 4 Quarts (128 oz.) Propanil
Ounces IN-PLACE™	4	8	12	16	20	24	28	32	36	40	1 Pint (16 oz.) IN-PLACE™

Furadan-4F®

Furadan-4F Pints	1	2	3	4	5	6	7	8	9	10	Example: 1 Pint (16 oz.) Furadan-4F
Pints IN-PLACE™	1	2	3	4	5	6	7	8	9	10	1 Pint (16 oz.) IN-PLACE™

Phenoxy Herbicides

Phenoxy Herbicides Pounds	1	2	3	4	5	6	7	8	9	10	Example: 4 Pounds Herbicide
Ounces IN-PLACE™	16	32	48	64	80	96	112	128	144	160	2 Quarts (64 oz.) IN-PLACE™

F-1003

Combinations:
Mix all Flowables and Wettable Powders in the water first.
Mix E.C.'s and IN-PLACE™ together. Add last.

1 Gallon = 4 Quarts = 8 Pints = 128 Fluid Ounces = 3.785 Liters
2 Tablespoons = 1 Fluid Ounce
1 U.S. Pound = 16 Ounces = .454 Kilograms

For more IN-PLACE™ Information Call
1-800-221-6580

Manufactured in the USA by:
WILBUR-ELLIS COMPANY
P.O. Box 16458 – Fresno, California 93755

ATTACHMENT C

MATERIAL SAFETY DATA SHEETS OR LABELS FOR RODENTICIDES

E X T O X N E T

Extension Toxicology Network

A Pesticide Information Project of Cooperative Extension Offices of Cornell University, Michigan State University, Oregon State University, and University of California at Davis. Major support and funding was provided by the USDA/Extension Service/National Agricultural Pesticide Impact Assessment Program.

Pesticide
Information
Profile

Diphacinone

Publication Date: 9/93

TRADE OR OTHER NAMES

Common names include diphacin (Italy and Turkey), ratindan (USSR), dipazin, diphenadione and diphenacin (2). Trade names include Diphacine, Ditrac, Gold Crest, Kill-Ko, P.C.Q., Promar, Ramik, Rat Killer, Rodent Cake.

REGULATORY STATUS

All formulations containing 3% or more of diphacinone are classified as Restricted Use Pesticides (RUP) by the EPA. RUPs may be purchased and used only by certified applicators. The signal word required on products containing diphacinone varies, depending on the type of formulation. "Danger" is required for the technical material. "Warning" is required for concentrate formulations and "Caution" is required for bait formulations (3).

INTRODUCTION

Diphacinone is an anti-coagulant rodenticide bait used for control of rats, mice, voles and other rodents. It is available in meal, pellet, wax block, and liquid bait formulations, as well as in tracking powder and concentrate formulations.

TOXICOLOGICAL EFFECTS

ACUTE TOXICITY

Diphacinone is highly toxic to humans and other mammals by inhalation, dermal absorption, and ingestion (4). It causes internal hemorrhaging that can lead to death. It acts by inhibiting enzymes involved in blood clotting (2). Animals given lethal doses exhibited labored breathing, muscular weakness, excitability, fluid in the lungs, and irregular heartbeats. Other signs of poisoning include spitting of blood, bloody urine or stools, internal hemorrhaging, and widespread bruising or bleeding into the joints. When a lethal dose does not cause immediate death, then death tends to be delayed and due to massive hemorrhage (4).

Diphacinone does not irritate the skin and it is not a skin sensitizer (2). It is a mild eye irritant.

The amount of a chemical that is lethal to one-half (50%) of experimental animals fed the material is referred to as its acute oral lethal dose fifty, or LD50. The oral LD50 for technical diphacinone in rats is 0.3 to 7 mg/kg, 3.0

to 7.5 mg/kg in dogs, 14.7 mg/kg in cats, 150 mg/kg in pigs, 50 to 300 mg/kg in mice, and 35 mg/kg in rabbits (2, 3, 4). The dermal LD50 in rats is 200 mg/kg (4), and in rabbits is greater than 3.6 mg/kg. The lethal concentration fifty, or LC50, is that concentration of a chemical in air or water that kills half of the experimental animals exposed to it for a set time period. The 4-hr inhalation LC50 in rats is 2 mg/m3 (4, 6).

CHRONIC TOXICITY

EPA does not require data on the chronic health effects of diphacinone because this pesticide is used in a manner which poses only a minimal hazard of chronic human exposure.

Reproductive Effects

Because diphacinone is used in a manner which poses no hazard of chronic exposure to humans, EPA does not require testing for potential effects on reproduction.

Teratogenic Effects

Tests results regarding potential teratogenicity of diphacinone will be submitted to EPA by June of 1993.

Mutagenic Effects

Diphacinone was not mutagenic in the Ames test (2). Mutagenicity data was under review by EPA during October 1992.

Carcinogenic Effects

Because diphacinone is used in a manner which poses only a minimal hazard of chronic exposure to humans, EPA does not require testing for potential carcinogenic effects.

Organ Toxicity

Poisoning by diphacinone may affect the heart and gastrointestinal system (4).

Fate in Humans and Animals

Three to 7.5 hours after radio-labeled diphacinone was given orally to mice, the highest concentrations appeared in the liver and lungs. In another study, rats given oral doses eliminated 70% of the dose in the feces and 10% in the urine within 8 days. A similar pattern of elimination occurred in mice given the same treatment. Levels of diphacinone were highest in the liver and significant in the kidneys and lungs 4 and 8 days after treatment for rats and mice respectively. Diphacinone is not extensively metabolized in rats, with less than 1% of the dose expired as carbon dioxide (2).

The half-life of diphacinone in humans is 15 to 20 days (2).

ECOLOGICAL EFFECTS

Effects on Birds

Diphacinone is slightly toxic to birds. The oral LD50 for diphacinone in mallard ducks is 3158 mg/kg (2, 5),

and in bobwhite quail is 1630 mg/kg.

Effects on Aquatic Organisms

Diphacinone is slightly to moderately toxic to fish. The 96-hour LC50 for technical diphacinone in channel catfish is 2.1 mg/l, for bluegills is 7.6 mg/l, and for rainbow trout is 2.8 mg/l (1, 5). The 48-hour LC50 in Daphnia, a small freshwater crustacean, is 1.8 mg/l.

Effects on Other Animals (Nontarget species)

No information available.

ENVIRONMENTAL FATE

Breakdown of Chemical in Soil and Groundwater

Diphacinone has a low potential to leach in soil (6).

Breakdown of Chemical in Water

Diphacinone is rapidly decomposed in water by sunlight (2).

Breakdown of Chemical in Vegetation

No information available.

PHYSICAL PROPERTIES AND GUIDELINES

Technical diphacinone is an odorless, pale yellow powder (3). Diphacinone is stable under normal temperatures and pressures. It may burn, but does not ignite readily. Thermal decomposition of diphacinone may release carbon monoxide and carbon dioxide (4, 1).

Exposure Guidelines:

No occupational exposure limits have been established for diphacinone by OSHA, NIOSH or ACGIH (4).

Physical Properties:

CAS #:	82-66-6
Specific gravity:	1.6
H20 solubility:	almost insoluble; 0.3 mg/l (2, 4)
Solubility in other solvents:	soluble in acetone (29 gm/l), acetic acid and toluene (73 gm/l). slightly soluble in benzene (2, 4)
Melting point:	295-297 degrees F (146-147 degrees C) (4)
Decomposition temperature:	Technical material decomposes at 338 degrees C without boiling (5)
Vapor pressure:	13.7 mm Hg at 25 degrees C (technical) (5)

Chemical Class/Use: anticoagulant rodenticide

BASIC MANUFACTURER

Bell Laboratories, Inc.
3699 Kinsman Blvd.
Madison, WI 53704

Hacco Inc.
P.O. Box 7190
537 Atlas Ave.
Madison, WI 53707
Telephone: 608-221-6200

Review by Basic Manufacturer - Bell Labs:

Comments solicited: October, 1992.
Comments received: November, 1992.

Review by Basic Manufacturer - Hacco Inc.:

Comments solicited: October, 1992.
Comments received: November, 1992.

REFERENCES

1. Bell Laboratories, Inc. July, 1990. Diphacinone Technical: MSDS. Bell Labs, Madison, WI.
2. Hayes, W.J. and E.R. Laws (ed.). 1990. Handbook of Pesticide Toxicology, Vol. 3, Classes of Pesticides. Academic Press, Inc., NY.
3. Meister, R.T. (ed.). 1992. Farm Chemicals Handbook '92. Meister Publishing Company, Willoughby, OH.
4. Occupational Health Services, Inc. 1991 (Sept. 16). MSDS for Diphacinone. OHS Inc., Secaucus, NJ.
5. Worthing, C.R., ed. 1983. The Pesticide Manual: A World Compendium, 7th Ed. British Crop Protection Council, Croydon, England.
6. US Environmental Protection Agency. 1991 (Feb 25). Pesticide Environmental Fate One Line Summary: Diphacinone. Environmental Fate and Effects Div., US EPA, Washington DC.

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For more information relative to pesticides and their use, please contact the PMEP staff at:

5123 Comstock Hall
Cornell University
Ithaca, New York 14853-0901
(607)-255-1866

Last Modified: 12/18/2001
Questions regarding the development of this web site should be directed to the PMEP Webmaster.

pesticide label. Trade names used herein are for convenience only. No endorsement of products is intended, nor is criticism of unnamed products implied.

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS AND DOMESTIC ANIMALS

WARNING

After ignition, cartridge produces toxic gases. Fumes may be harmful if inhaled.

ENVIRONMENTAL HAZARDS

This product is highly toxic to wildlife. Check all burrows for signs of nontarget species. If present, do not treat burrows.

CHEMICAL HAZARDS

Once ignited by the fuse, this cartridge will burn vigorously until completely spent and is capable of causing severe burns to exposed skin and clothes, and of igniting dry grass, leaves and other combustible materials.

ENDANGERED SPECIES CONSIDERATIONS

NOTICE: It is a Federal offense to use any pesticide in a manner that results in the death of a member of an endangered species.

Black-Footed Ferret: Do not use this product in the range of the black-footed ferret. Contact the nearest U.S. Fish and Wildlife Service office (Endangered Species Specialist) before the product is used. They will arrange for a survey of the proposed use site.

Utah Prairie Dog: Do not use this product in the range of the Utah prairie dog. (Garfield, Iron, Kane, Piute, Sevier, and Wayne Counties, Utah).

San Joaquin Kit Fox: This pesticide should not be used within 1 mile of active dens of the San Joaquin Kit Fox in the following California counties: Kern, Kings, Fresno, San Luis Obispo, Merced, Monterey, Santa Barbara, Ventura, Tulare, and San Benito. Prior to use, contact the California Department of Fish and Game for recommendations.

Blunt-Nosed Leopard Lizard: This pesticide should not be used in the range of the blunt-nosed leopard lizard in the following California counties: Kern, Fresno, Kings, Madera, Merced, and Tulare. Prior to use, contact the California Department of Fish and Game for recommendations.

Eastern Indigo Snake: Do not use this product in the range of the eastern indigo snake in the following states: Mississippi, Alabama, South Carolina, Georgia, and Florida.

Desert Tortoise: This pesticide should not be used in the critical habitat of the Beaver Dam Slope population of the desert tortoise in Utah. This comprises an area extending from the southwest facing slope of the Beaver Dam Mountains, across Highway 91, west along the Arizona border and 10 miles to the Nevada border.

GAS CARTRIDGE

For control of woodchucks, ground squirrels, prairie dogs and pocket gophers.

NOT FOR SALE TO PERSONS UNDER 16 YEARS OLD

ACTIVE INGREDIENTS:

Sulphur	10.84%
Charcoal	17.34%
Red Phosphorus	3.25%
Sodium Nitrate	43.36%
Sawdust	3.52%
Total	78.31%
INERT INGREDIENTS:	21.69%
TOTAL	100.00%

KEEP OUT OF REACH OF CHILDREN

WARNING

STATEMENT OF PRACTICAL TREATMENT

CALL A PHYSICIAN OR POISON CONTROL CENTER IMMEDIATELY!

If inhaled and person has poisoning symptoms (headache, nausea, dizziness, weakness), transfer victim to fresh air. Have victim lie down and keep warm. If respiration is adequate, recovery will be rapid. If breathing has stopped, use artificial respiration. If available, pure oxygen should be given.

SEE LEFT SIDE PANEL FOR ADDITIONAL PRECAUTIONARY STATEMENTS

UNITED STATES DEPARTMENT OF AGRICULTURE
ANIMAL AND PLANT HEALTH INSPECTION SERVICE
ANIMAL DAMAGE CONTROL
Hyattsville, MD 20782
EPA Est. No. 58228-ID-1
EPA Reg. No. 58228-2
Net Weight 85 grams

20
Rev. 1/91

STORAGE AND DISPOSAL

Do not contaminate water, food or feed by storage or disposal.

STORAGE: Store in cool, dry place away from fire, heat and direct sunlight.

PESTICIDE DISPOSAL: To dispose of unused cartridges, soak in water, crush and bury at least 6" in loose soil.

CONTAINER DISPOSAL: Place in trash collection.

DIRECTIONS FOR USE

It is a violation of Federal Law to use this product in a manner inconsistent with its labeling.

USE RESTRICTIONS

For control of woodchucks, ground squirrels, prairie dogs, and pocket gophers in open fields, non-crop areas, rangelands, reforested areas, lawns, and golf courses. For use only inside of burrows. Do not use near flammable material or inside buildings.

APPLICATION DIRECTIONS

Select burrow for treatment and obtain material to plug the entrance. Then, with a nail at least 1/8" in diameter, puncture cap at end of cartridge at points marked. Insert fuse in one of center holes. Insure that there is a minimum of 3 inches of exposed fuse. Hold cartridge away from face and body, then light.

NOTE: The minimum burn time for these fuses is 5 seconds.

Place cartridge, fuse-end first, as far into the burrow as possible. Close entrance to burrow immediately.

TARGET-SPECIFIC DIRECTIONS FOR USE

WOODCHUCKS: Locate all burrow entrances if possible. Select one for treatment and close all others with rock and soil. Light fuse and insert cartridge fuse-end first. Cover opening with rock and soil, being careful not to smother cartridge. Consult state game laws before using this product for woodchuck control.

GROUND SQUIRRELS and PRAIRIE DOGS: Collect soil and other material to close burrow openings. Treat each burrow opening by lighting fuse and inserting cartridge into burrow, fuse-end first (make sure burrow is large enough for easy insertion of cartridge before lighting fuse). Cover burrow immediately, taking care not to smother cartridge with loose soil. Immediately cover all nearby cracks in soil of openings from which gases escapes. Proceed to nearest open burrow and follow same procedure.

POCKET GOPHERS: Locate fan-shaped soil mounds with signs of recent activity. Find the horseshoe-shaped depression on one side of the mound. To locate the main runway, probe ground 15-18 inches from mound on the same side as depression. The main runway has been located when friction on probe is released and it falls into runway. Dig down to main runway, taking care not to block it with soil. Locate an opening large enough for easy insertion of the cartridge. Collect enough soil and other material to close opening. Light fuse and insert cartridge fuse-end first. Immediately cover opening, taking care not to smother cartridge with loose soil. Cover all nearby cracks in soil where gas escapes. Treat all active mounds.

ATTACHMENT D

BIG CREEK ALP PROJECT ROADS, TRAILS, AND HELICOPTER LANDING SITES NOT YET SURVEYED

Attachment D

Big Creek ALP Project Roads, Trails, and Helicopter Landing Sites Not Yet Surveyed.

Mammoth Pool (FERC Project No. 2085)
Roads
6S25DA, Spur to Windy Point Picnic Area from 6S25D (#164)
7S47B Access road to Rock Creek Tunnel Muck Pile (#102)
8S03B Access road from 8S03 to Mammoth Pool penstock (#80)
8S03CA, Spur road to Mammoth Pool Transmission Line (#144)
8S44YB, Mammoth Pool Transmission Line access road (#136)
Helicopter Landing Sites
San Joaquin River above Shake Flat Creek
Mammoth Pool Dam
Big Creek Nos. 1 and 2 (FERC Project No. 2175)
Roads
8S05CA Access to Big Creek No. 2 switchyard (#160)
8S082 Access to Hydro offices at Big Creek (#186)
8S082B Access to Hydro offices at Big Creek (#185)
8S082C Access to Hydro offices at Big Creek (#188)
8S082D Access to Hydro offices at Big Creek (#187)
8S082X Access to Hydro offices at Big Creek (#189)
8S08A Access road south from Railroad Grade to West Portal (#69)
8S13K Access road to Powerhouse No. 2 penstock (#168)
8S66BA Short road between 8S66B and 8S66BC (#171)
8S66BC East end of Dam 1 to Dam 1 drainage gates (#99)
8S66C On public lands from 8S301 to gate to 8S302 (#107)
8S82AA Access road to Warehouse (#249)
8S82BA Upper access road to Wastewater treatment plant from 8S82B (#248)
8S82BB Lower access road to Wastewater treatment plant from 8S82B (#247)
8S82BC Access road to Fish Farm upper gate (#245)
8S82E Upper access road to SCE company housing (#250)
8S82EA Lower access road to SCE company housing (#252)
8S82F Access road to Domestic water treatment plant from FRE 2710 (#251)
8S82J Upper access road to Powerhouse No. 1 from FRE 2710 (#246)
Helicopter Landing Sites
Hodges (Big Creek Heliport)
Big Creek Nos. 2A, 8 and Eastwood (FERC Project No. 67)
Roads
7S01BA Florence Work Camp road from 7S01B (#219)
7S370D Access road to Florence Dam and water storage tank from 7S370 (#71)
7S370F Access road to Florence Dam from 7S370 (#237)
8S02 From Highway 168 to 8S02B (#54)

Attachment D

Big Creek ALP Project Roads, Trails, and Helicopter Landing Sites Not Yet Surveyed.

Big Creek Nos. 2A, 8 and Eastwood (FERC Project No. 67) (continued)
Roads (continued)
8S02B Access to Huntington-Pitman-Shaver tunnel adit (#197)
8S03A Access road to Powerhouse No. 8 from 8S03 (#166)
8S05L Road to communication line near Powerhouse No. 8 (#167)
8S303 Access road to Eastwood Overflow Campground (#174)
8S47 Access road to Eastwood Powerstation Transmission Line tower - from gate to end (#258)
9S03 From 8S08 to FRE 2710 (non-project segment on SCE private lands) (#156)
9S17 Access road to Eastwood Transmission line from Hwy 168 (#262)
9S311 Access to Eastwood Powerstation Transmission Line tower (#243)
9S311A Access to Eastwood Powerstation Transmission Line tower (#244)
9S32AB, Spur from 9S32A to Balsam Forebay (#153)
9S32CA Access road to Eastwood Powerstation Transmission Line tower (#208)
9S32CB (#232)
9S32CC (#242)
9S32CD (#231)
9S32CE (#230)
9S32CF (#241)
Trail to South Fork San Joaquin River Gage downstream of Jackass Meadow (#259)
Helicopter Landing Sites
Eastwood School
Camp 62 at junction of Kaiser Pass Road
Bear Creek Diversion
Florence Lake Camp
Florence Lake Dam
Florence Lake Gauging Station
South Fork San Joaquin River Florence Spill Station
South Fork San Joaquin River Below Hooper
Hooper Creek at Diversion
Mono Creek at Diversion
Mono Creek below Lake T.A. Edison
Mt. Givens Telecom Site
Summit at Shaver Hill
Tiffany Pines at Camp Edison
Big Creek No. 3 (FERC Project No. 120)
Roads
8S05B Access road to Powerhouse No. 3 penstock from 8S05 Canyon Road (#217)
8S05T Access to tailings (#24)
8S05TA Access to tailings (#29)

Attachment D

Big Creek ALP Project Roads, Trails, and Helicopter Landing Sites Not Yet Surveyed.

Big Creek No. 3 (FERC Project No. 120) (continued)
Roads (continued)
9S20 Access to carpenter shop (#216)
9S20B Access road to carpenter shop from Italian Bar Road (#62)
9S20BA (#85)
9S20BC Connector road between 9S20B loop (#64)
9S20D Access to carpenter shop (#13)
9S20DA Access to garage and shops (#257)
9S20E (#52)
9S20F Connector road between 9S20 loop (#87)
9S88A Access to old company housing (#5)
9S88XA Access road to old company housing from 9S88X (#215)
9S89BA Access road to PH 3 and switchyard (#59)

ATTACHMENT E

LOCATION OF SPECIAL-STATUS AND NOXIOUS WEEDS AND INVASIVE ORNAMENTAL SPECIES WHERE VEGETATION MANAGEMENT OCCURS

Attachment E. Location of Special-status and Noxious Weeds and Invasive Ornamental Species Where Vegetation Management Occurs.

	Upland Special-status Plant Species	Aquatic, Wetland, and Riparian Special-status Plant Species		Noxious Weeds and Invasive Ornamental Species		
	Loss of Individuals	Loss of Individuals	Substantial Change in Habitat	Spread of Existing Populations	Introduction of New Species/ Individuals/Populations	Introduction of Invasive Ornamental Plant Species
Mammoth Pool (FERC Project No. 2085)						
Large Dams						
Mammoth Pool				Noxious weed species known to occur; trimming by hand and herbicide use		
Power Generation						
Mammoth Pool Powerhouse				Noxious weed species known to occur; trimming by hand and herbicide use		
Mammoth Pool Fishwater Generator				Noxious weed species known to occur; trimming by hand and herbicide use		
Gaging Stations–Streams						
Mammoth Pool Fish Water Generator				Noxious weed species known to occur; trimming by hand		
Water Conveyance–Mammoth Pool Powerhouse						
Intake Gate House				Noxious weed species known to occur; trimming by hand and herbicide use		
Rock Trap Flushing Channel				Noxious weed species known to occur; trimming by hand		
Valve House				Noxious weed species known to occur; trimming by hand		
Penstocks				Noxious weed species known to occur; trimming by hand and herbicide use		
Power Transmission Lines						
MPPH - BC3 220kV				Noxious weed species known to occur; trimming by hand		

Attachment E. Location of Special-status and Noxious Weeds and Invasive Ornamental Species Where Vegetation Management Occurs.

	Upland Special-status Plant Species	Aquatic, Wetland, and Riparian Special-status Plant Species		Noxious Weeds and Invasive Ornamental Species		
	Loss of Individuals	Loss of Individuals	Substantial Change in Habitat	Spread of Existing Populations	Introduction of New Species/ Individuals/Populations	Introduction of Invasive Ornamental Plant Species
Mammoth Pool (FERC Project No. 2085) (Continued)						
Project Roads						
6S25 Mammoth Pool Road, from 7S20, Shakeflat Creek access, to end at east abutment				Noxious weed species known to occur; trimming by hand and with equipment, herbicide use		
6S25G Mammoth Pool Fishwater Generator access road from 6S25, Mammoth Pool Road, to base of Mammoth Pool Dam				Noxious weed species known to occur; trimming by hand and with equipment, herbicide use		
8S03 from Powerhouse No. 8 to Mammoth Pool Powerhouse	*Camissonia sierra* ssp. *alticola* known to occur; trimming by hand and with equipment, herbicide use			Noxious weed species known to occur; trimming by hand and with equipment, herbicide use		
8S44 Mammoth Pool Transmission Line access road				Noxious weed species known to occur; trimming by hand and with equipment		
9S42 Mammoth Pool Powerhouse Transmission Line access road from gate near County Road 225, Italian Bar Road, to 8S44				Noxious weed species known to occur; trimming by hand and with equipment		
Big Creek Nos. 1 and 2 (FERC Project No. 2175)						
Large Dams						
Huntington Lake Dams 1, 2, 3, & 3a				Noxious weed species known to occur; trimming by hand and with equipment		
Moderate Diversion Dams						
Dam 4	*Leptosiphon serrulatus* known to occur; trimming by hand and herbicide use			Noxious weed species known to occur; trimming by hand and with equipment		Invasive ornamentals are known to occur and could or have spread to adjacent native habitats
Power Generation						
Big Creek Powerhouse No. 1	*Leptosiphon serrulatus* known to occur; trimming by hand and herbicide use					Invasive ornamentals are known to occur and could or have spread to adjacent native habitats
Big Creek Powerhouse No. 2				Noxious weed species known to occur; trimming by hand and herbicide use		Invasive ornamentals are known to occur and could or have spread to adjacent native habitats
Gaging Stations–Streams						
Big Creek below Huntington Lake at Dam 1				Noxious weed species known to occur; trimming by hand		

Attachment E. Location of Special-status and Noxious Weeds and Invasive Ornamental Species Where Vegetation Management Occurs.

	Upland Special-status Plant Species	Aquatic, Wetland, and Riparian Special-status Plant Species		Noxious Weeds and Invasive Ornamental Species		
	Loss of Individuals	Loss of Individuals	Substantial Change in Habitat	Spread of Existing Populations	Introduction of New Species/ Individuals/Populations	Introduction of Invasive Ornamental Plant Species
Big Creek Nos. 1 and 2 (FERC Project No. 2175) (Continued)						
Water Conveyance–Powerhouse No. 1						
60" & 84" Flowlines below Huntington Lake	*Leptosiphon serrulatus* known to occur; trimming by hand and herbicide use					
Lower 84" Valve House at top of Powerhouse No.1 Penstock	*Leptosiphon serrulatus* known to occur; trimming by hand and herbicide use					
Lower 60" Valve House at top of Powerhouse No.1 Penstock	*Leptosiphon serrulatus* known to occur; trimming by hand and herbicide use					
42" Valve House at top of Powerhouse No.1 Penstock	*Leptosiphon serrulatus* known to occur; trimming by hand and herbicide use					
Vent Stacks	*Leptosiphon serrulatus* known to occur; trimming by hand and herbicide use					
Penstocks	*Leptosiphon serrulatus* known to occur; trimming by hand and herbicide use			Noxious weed species known to occur; trimming by hand and herbicide use		Invasive ornamentals are known to occur and could or have spread to adjacent native habitats
Water Conveyance–Powerhouse No. 2						
Penstocks				Noxious weed species known to occur; trimming by hand and herbicide use		Invasive ornamentals are known to occur and could or have spread to adjacent native habitats
Water Conveyance–Huntington-Pitman-Shaver						
Inlet Structure & Gate 1A and 1B at Dam 2 (10' Gate House)				Noxious weed species known to occur; trimming by hand		
Weather Stations						
Big Creek No. 1	*Leptosiphon serrulatus* known to occur; trimming by hand and herbicide use			Noxious weed species known to occur; trimming by hand and herbicide use		Invasive ornamentals are known to occur and could or have spread to adjacent native habitats

Attachment E. Location of Special-status and Noxious Weeds and Invasive Ornamental Species Where Vegetation Management Occurs.

	Upland Special-status Plant Species	Aquatic, Wetland, and Riparian Special-status Plant Species		Noxious Weeds and Invasive Ornamental Species		
	Loss of Individuals	Loss of Individuals	Substantial Change in Habitat	Spread of Existing Populations	Introduction of New Species/ Individuals/Populations	Introduction of Invasive Ornamental Plant Species
Big Creek Nos. 1 and 2 (FERC Project No. 2175) (Continued)						
Buildings/Camps						
Big Creek Powerhouse No.1 Facilities	*Leptosiphon serrulatus* known to occur; trimming by hand and herbicide use			Noxious weed species known to occur; trimming by hand and herbicide use	Potential resource issue: If construction equipment from outside of the watershed is transported into the watershed, it could potentially introduce new invasive exotic species or populations	Invasive ornamentals are known to occur and could or have spread to adjacent native habitats
Storage Yards						
Big Creek Powerhouse No. 1	*Leptosiphon serrulatus* known to occur; trimming by hand and herbicide use					
Utilities–Water Supply/Treatment						
Big Creek Powerhouse No. 1	*Leptosiphon serrulatus* known to occur; trimming by hand and herbicide use			Noxious weed species known to occur; trimming by hand and herbicide use		
Utilities–Sewage Treatment						
Big Creek Powerhouse No. 1 Community	*Leptosiphon serrulatus* known to occur; trimming by hand and herbicide use			Noxious weed species known to occur; trimming by hand and herbicide use		
Project Power Lines Less Than 33kV						
Musick 7kV				Noxious weed species known to occur; trimming by hand and herbicide use		
Project Roads						
8S05 Canyon Road (from Huntington Lake Road to Powerhouse No. 2 and 8S05E)				Noxious weed species known to occur; trimming by hand and with equipment		Invasive ornamentals are known to occur and could or have spread to adjacent native habitats
8S05C Powerhouse No. 2 access road from Canyon Road				Noxious weed species known to occur; trimming by hand and with equipment		
8S05EA Old housing road 3 adjacent to Powerhouse No. 2 from 8S05E				Noxious weed species known to occur; trimming with equipment		Invasive ornamentals are known to occur and could or have spread to adjacent native habitats
8S082A Access to Hydro offices at Big Creek				Noxious weed species known to occur; trimming by hand and herbicide use		

Attachment E. Location of Special-status and Noxious Weeds and Invasive Ornamental Species Where Vegetation Management Occurs.

	Upland Special-status Plant Species	Aquatic, Wetland, and Riparian Special-status Plant Species		Noxious Weeds and Invasive Ornamental Species		
	Loss of Individuals	Loss of Individuals	Substantial Change in Habitat	Spread of Existing Populations	Introduction of New Species/ Individuals/Populations	Introduction of Invasive Ornamental Plant Species
Big Creek Nos. 1 and 2 (FERC Project No. 2175) (Continued)						
Project Roads (Continued)						
8S13 from the gate to 8S05, the Canyon Road				Noxious weed species known to occur; trimming by hand and with equipment		
8S302 Access to Big Creek No. 1 42" gatehouse	*Leptosiphon serrulatus* known to occur; trimming by hand and herbicide use					
8S66 from gate to west end of Dam 2				Noxious weed species known to occur; trimming by hand and with equipment, herbicide use		
8S66 from west end of Dam 2 to 8S66A				Noxious weed species known to occur; trimming by hand and with equipment		
8S66B from Dam 2 to end				Noxious weed species known to occur; trimming by hand and with equipment, herbicide use		
8S66X Road over Dam 2				Noxious weed species known to occur; trimming by hand and herbicide use		
Big Creek Nos. 2A, 8 and Eastwood (FERC Project No. 67)						
Large Dams						
Florence Lake	*Camissonia sierra* ssp. *alticola* known to occur; trimming by hand and use of herbicides			Noxious weed species known to occur; trimming by hand and herbicide use		Invasive ornamentals are known to occur and could or have spread to adjacent native habitats
Shaver Lake				Noxious weed species known to occur; trimming by hand and herbicide use		
Moderate Diversion Dams						
Bear Creek Diversion	*Camissonia sierra* ssp. *alticola* known to occur; trimming by hand			Noxious weed species known to occur; trimming by hand		
Mono Creek Diversion				Noxious weed species known to occur; trimming by hand		
Pitman Creek						Invasive ornamentals are known to occur and could or have spread to adjacent native habitats

Attachment E. Location of Special-status and Noxious Weeds and Invasive Ornamental Species Where Vegetation Management Occurs.

	Upland Special-status Plant Species	Aquatic, Wetland, and Riparian Special-status Plant Species		Noxious Weeds and Invasive Ornamental Species		
	Loss of Individuals	Loss of Individuals	Substantial Change in Habitat	Spread of Existing Populations	Introduction of New Species/ Individuals/Populations	Introduction of Invasive Ornamental Plant Species
Big Creek Nos. 2A, 8 and Eastwood (FERC Project No. 67) (Continued)						
Small Diversions						
Camp 62 Creek						Invasive ornamentals are known to occur and could or have spread to adjacent native habitats
Power Generation						
Big Creek Powerhouse No. 2A				Noxious weed species known to occur; trimming by hand and herbicide use		
Big Creek Powerhouse No. 8				Noxious weed species known to occur; trimming by hand and herbicide use		
Gaging Stations–Streams						
Camp 62 Creek below Diversion Dam						Invasive ornamentals are known to occur and could or have spread to adjacent native habitats
Huntington-Shaver Conduit gate 2 release				Noxious weed species known to occur; trimming by hand		
Middle Fork Balsam Creek below Balsam Meadows Forebay				Noxious weed species known to occur; trimming by hand		
South Fork San Joaquin River above Hooper Creek (with Cable Crossing)				Noxious weed species known to occur; trimming by hand		
Stevenson Creek below Shaver Lake				Noxious weed species known to occur; vegetation control, trimming by hand		Invasive ornamentals are known to occur and could or have spread to adjacent native habitats
Water Conveyance–Powerhouse No. 2A						
Intake Gate House at Shaver Lake				Noxious weed species known to occur; trimming by hand		
Surge Chamber, Rock Trap				Noxious weed species known to occur; trimming by hand		
Penstocks				Noxious weed species known to occur; trimming by hand		Invasive ornamentals are known to occur and could or have spread to adjacent native habitats

Attachment E. Location of Special-status and Noxious Weeds and Invasive Ornamental Species Where Vegetation Management Occurs.

	Upland Special-status Plant Species	Aquatic, Wetland, and Riparian Special-status Plant Species		Noxious Weeds and Invasive Ornamental Species		
	Loss of Individuals	Loss of Individuals	Substantial Change in Habitat	Spread of Existing Populations	Introduction of New Species/ Individuals/Populations	Introduction of Invasive Ornamental Plant Species
Big Creek Nos. 2A, 8 and Eastwood (FERC Project No. 67) (Continued)						
Water Conveyance–Powerhouse No. 8						
Adit 1, Tunnel 8				Noxious weed species known to occur; trimming with equipment		Invasive ornamentals are known to occur and could or have spread to adjacent native habitats
Penstocks				Noxious weed species known to occur; trimming by hand and herbicide use		Invasive ornamentals are known to occur and could or have spread to adjacent native habitats
Water Conveyance–Eastwood Power Station						
Inlet Structure (Gate 4)				Noxious weed species known to occur; Trimming by hand and herbicide use		
Surge Chamber				Noxious weed species known to occur; trimming by hand and herbicide use		
Water Conveyance–Mono-Bear Siphon						
Combined Flow Line (Siphon)	*Camissonia sierra* ssp. *alticola* known to occur; trimming by hand			Noxious weed species known to occur; trimming by hand		
Water Conveyance–Huntington-Pitman-Shaver						
Gate 3 Outlet to Balsam Forebay				Noxious weed species known to occur; trimming by hand and herbicide use		
Water Conveyance–Diversion Channels						
Crater Creek	*Camissonia sierra* ssp. *alticola* known to occur; trimming by hand			Noxious weed species known to occur; trimming by hand		
Water Conveyance–HB Valves						
Shaver Lake				Noxious weed species known to occur; trimming by hand and herbicide use		
Weather Stations						
Florence Lake	*Camissonia sierra* ssp. *alticola* known to occur; trimming by hand and use of herbicides			Noxious weed species known to occur; trimming by hand and herbicide use		Invasive ornamentals are known to occur and could or have spread to adjacent native habitats

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	Upland Special-status Plant Species	Aquatic, Wetland, and Riparian Special-status Plant Species		Noxious Weeds and Invasive Ornamental Species		
	Loss of Individuals	Loss of Individuals	Substantial Change in Habitat	Spread of Existing Populations	Introduction of New Species/ Individuals/Populations	Introduction of Invasive Ornamental Plant Species
Big Creek Nos. 2A, 8 and Eastwood (FERC Project No. 67) (Continued)						
Weather Stations (Continued)						
Shaver Lake				Noxious weed species known to occur; trimming by hand and herbicide use		
Buildings/Camps						
Florence Work Camp	*Camissonia sierra* ssp. *alticola* known to occur; trimming by hand and use of herbicides			Noxious weed species known to occur; trimming by hand and herbicide use		Invasive ornamentals are known to occur and could or have spread to adjacent native habitats
Big Creek 8 Facilities				Noxious weed species known to occur; trimming by hand and herbicide use		Invasive ornamentals are known to occur and could or have spread to adjacent native habitats
Storage Yards						
Florence Lake Work Camp	*Camissonia sierra* ssp. *alticola* known to occur; trimming by hand			Noxious weed species known to occur; trimming by hand	Potential resource issue: If construction equipment from outside of the watershed is transported into the watershed, it could potentially introduce new invasive exotic species or populations.	Invasive ornamentals are known to occur and could or have spread to adjacent native habitats
Big Creek Powerhouse No. 2 & Powerhouse No. 2A				Noxious weed species known to occur; trimming by hand and herbicide use		Invasive ornamentals are known to occur and could or have spread to adjacent native habitats
Utilities–Water Supply/Treatment						
Camp Edison				Noxious weed species known to occur; trimming by hand and herbicide use		
Florence Work Camp	*Camissonia sierra* ssp. *alticola* known to occur; trimming by hand and use of herbicides			Noxious weed species known to occur; trimming by hand and herbicide use		Invasive ornamentals are known to occur and could or have spread to adjacent native habitats
Utilities–Fuel- Gasoline & Diesel						
Big Creek Powerhouse No. 8				Noxious weed species known to occur; trimming by hand and herbicide use		Invasive ornamentals are known to occur and could or have spread to adjacent native habitats
Florence Work Camp	*Camissonia sierra* ssp. *alticola* known to occur; trimming by hand			Noxious weed species known to occur; trimming by hand		Invasive ornamentals are known to occur and could or have spread to adjacent native habitats

Attachment E. Location of Special-status and Noxious Weeds and Invasive Ornamental Species Where Vegetation Management Occurs.

	Upland Special-status Plant Species	Aquatic, Wetland, and Riparian Special-status Plant Species		Noxious Weeds and Invasive Ornamental Species		
	Loss of Individuals	Loss of Individuals	Substantial Change in Habitat	Spread of Existing Populations	Introduction of New Species/ Individuals/Populations	Introduction of Invasive Ornamental Plant Species
Big Creek Nos. 2A, 8 and Eastwood (FERC Project No. 67) (Continued)						
Project Power Lines Less Than 33KV						
Jumbo 12kV				Noxious weed species known to occur; trimming by hand and herbicide use		Invasive ornamentals are known to occur and could or have spread to adjacent native habitats
Power Transmission Lines						
EPS - BC1 220kV	*Hulsea brevifolia* and *Leptosiphon serrulatus* known to occur; trimming by hand			Noxious weed species known to occur; trimming by hand		
Switchyards						
Eastwood Switchyard				Noxious weed species known to occur; trimming by hand and herbicide use		
Recreation–Shaver Lake						
Camp Edison Campground				Noxious weed species known to occur; trimming by hand and with equipment, herbicide use		
Camp Edison Boat Ramp/Launch				Noxious weed species known to occur; trimming by hand and with equipment, herbicide use		
Day Use Areas on North Shore Roads 1 & 2				Noxious weed species known to occur; trimming by hand and with equipment, herbicide use		
Day Use Area off Hwy 168 (The Point)				Noxious weed species known to occur; trimming by hand and with equipment, herbicide use		
Eagle Point Boat Only Day-Use Area				Noxious weed species known to occur; trimming by hand and with equipment, herbicide use		
Balsam Meadow Forebay						
Balsam Meadow Forebay Day-Use Picnic Area				Noxious weed species known to occur; trimming by hand and with equipment, herbicide use		
Balsam Meadow Trailhead and Parking						

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	Upland Special-status Plant Species	Aquatic, Wetland, and Riparian Special-status Plant Species		Noxious Weeds and Invasive Ornamental Species		
	Loss of Individuals	Loss of Individuals	Substantial Change in Habitat	Spread of Existing Populations	Introduction of New Species/ Individuals/Populations	Introduction of Invasive Ornamental Plant Species
Big Creek Nos. 2A, 8 and Eastwood (FERC Project No. 67) (Continued)						
Project Roads						
7S01B Access road to Florence Work Camp	*Camissonia sierra* ssp. *alticola* known to occur; trimming by hand and with equipment			Noxious weed species known to occur; trimming by hand and with equipment		Invasive ornamentals are known to occur and could or have spread to adjacent native habitats
7S01BA Florence Work Camp road from 7S01B	*Camissonia sierra* ssp. *alticola* known to occur; trimming by hand and with equipment, herbicide use			Noxious weed species known to occur; trimming by hand and with equipment, herbicide use		
7S370F Access road to Florence Dam from 7S370	*Camissonia sierra* ssp. *alticola* known to occur; trimming by hand and with equipment, herbicide use	*Utricularia intermedia* known to occur; trimming by hand and with equipment, herbicide use				
8S03 Canyon Road from Powerhouse 8 to Mammoth Pool Powerhouse				Noxious weed species known to occur; trimming by hand and with equipment, herbicide use		
8S05 Canyon Road (from Powerhouse No. 2 and 8S05E to 3S05A Powerhouse No.8 access road)				Noxious weed species known to occur; trimming by hand and with equipment, herbicide use		Invasive ornamentals are known to occur and could or have spread to adjacent native habitats
8S05F Access road to Powerhouse No. 8 penstock from 8S05				Noxious weed species known to occur; trimming by hand and with equipment, herbicide use		
8S08A Access road south from railroad grade to West Portal				Noxious weed species known to occur; trimming by hand and with equipment, herbicide use		
8S094 Pitman Creek Diversion access road	*Hulsea brevifolia* known to occur; trimming by hand and with equipment, herbicide use			Noxious weed species known to occur; trimming by hand and with equipment, herbicide use		
8S13 from the gate to 8S05, the Canyon Road				Noxious weed species known to occur; trimming by hand and with equipment, herbicide use		
9S32 from gate near Highway 168 to EPH Transmission Line				Noxious weed species known to occur; trimming by hand and with equipment, herbicide use		
9S32A spur from 9S32 to east side of Balsam Forebay				Noxious weed species known to occur; trimming by hand and with equipment, herbicide use		

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	Upland Special-status Plant Species	Aquatic, Wetland, and Riparian Special-status Plant Species		Noxious Weeds and Invasive Ornamental Species		
	Loss of Individuals	Loss of Individuals	Substantial Change in Habitat	Spread of Existing Populations	Introduction of New Species/ Individuals/Populations	Introduction of Invasive Ornamental Plant Species
Big Creek Nos. 2A, 8 and Eastwood (FERC Project No. 67) (Continued)						
Project Roads (Continued)						
9S58 from Shaver Marina to North Fork Stevenson Gage				Noxious weed species known to occur; trimming by hand and with equipment, herbicide use		
Access road to Eagle Point Boat Only Day Use Area from 9S58				Noxious weed species known to occur; trimming by hand and with equipment		
Access road to Eastwood Tailrace				Noxious weed species known to occur; trimming by hand and with equipment, herbicide use		
Access road to Shaver Dam north				Noxious weed species known to occur; trimming by hand and with equipment, herbicide use		
Access road to Shaver Dam south				Noxious weed species known to occur; trimming by hand and with equipment		
Camp Edison Roads				Noxious weed species known to occur; trimming by hand and with equipment, herbicide use		
Trails						
Trail to South Fork San Joaquin River gage downstream of Jackass Meadow		*Utricularia intermedia* known to occur; trimming by hand and herbicide use				
Trail to Bear Creek Gage upstream of Bear Forebay	*Camissonia sierra* ssp. *alticola* known to occur; trimming by hand			Noxious weed species known to occur; trimming by hand		
Trail to Big Creek Gage below Dam 5	*Leptosiphon serrulatus* known to occur; trimming by hand and herbicide use			Noxious weed species known to occur; trimming by hand and herbicide use		
Trail to Chinquapin Creek Gage and Diversion Dam						Invasive ornamentals are known to occur and could or have spread to adjacent native habitats
Trails to North-South Slide Creek Diversions	*Camissonia sierra* ssp. *alticola* known to occur; trimming by hand and herbicide use					

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	Upland Special-status Plant Species	Aquatic, Wetland, and Riparian Special-status Plant Species		Noxious Weeds and Invasive Ornamental Species		
	Loss of Individuals	Loss of Individuals	Substantial Change in Habitat	Spread of Existing Populations	Introduction of New Species/ Individuals/Populations	Introduction of Invasive Ornamental Plant Species
Big Creek Nos. 2A, 8 and Eastwood (FERC Project No. 67) (Continued)						
Trails (Continued)						
Trail to Tombstone Creek Diversion	*Camissonia sierra* ssp. *alticola* known to occur; trimming by hand					
Two trails to Stevenson Creek Gage below Shaver Lake Dam				Noxious weed species known to occur; trimming by hand and herbicide use		Invasive ornamentals are known to occur and could or have spread to adjacent native habitats
Trail to Camp 62 Creek Gage and Diversion Dam				Noxious weed species known to occur; trimming by hand and herbicide use		Invasive ornamentals are known to occur and could or have spread to adjacent native habitats
Big Creek No. 3 (FERC Project No. 120)						
Moderate Diversion Dams						
Dam 6				Noxious weed species known to occur; trimming by hand and herbicide use		Invasive ornamentals are known to occur and could or have spread to adjacent native habitats
Storage Yards						
Big Creek Powerhouse No.3				Noxious weed species known to occur; trimming by hand and herbicide use		
Project Roads						
8S05, Canyon Road (from junction with 8S03 to junction with Italian Bar Road)				Noxious weed species known to occur; trimming by hand and with equipment, herbicide use		Invasive ornamentals are known to occur and could or have spread to adjacent native habitats
9S88 from Italian Bar Road to old company housing				Noxious weed species known to occur; trimming by hand and herbicide use		
9S89 from Italian Bar Road east to Powerhouse No. 3 and administrative building				Noxious weed species known to occur; trimming by hand and with equipment, herbicide use		Invasive ornamentals are known to occur and could or have spread to adjacent native habitats

ATTACHMENT F

TREATMENT METHODS FOR NOXIOUS WEEDS AND NON-NATIVE PLANTS OF HIGHEST CONCERN IN THE SIERRA NATIONAL FOREST

Attachment F

Treatment Methods for Noxious Weeds and Non-native Plants of Highest Concern in the Sierra National Forest

Noxious weed is a term used by government agencies which applies to invasive plants that have been defined as pests by law or regulation (California Department of Food and Agriculture (CDFA) 2000). Invasive plants are defined as those exotic species, which are not native to a region, persist without human intervention, and have serious impacts on their environment (Simberloff et al. 1997, Davis and Thompson 2000).

The following provides a summary of treatment methods (manual, mechanical, and herbicide use) for noxious weeds and invasive non-native plants species of highest concern in the Sierra National Forest (SNF). The specific treatment method to be implemented in the Big Creek ALP study area is dependent on the species and location in the study area.

KNAPWEED

Several species of knapweed are of high concern in the SNF. Specific control measures differ by species and the sensitivity of the location of the species. Control measures include chemical application, bio-control, and manual plant removal. Species specific control measures are defined below.

Russian knapweed (*Acroptilon repens*). Russian knapweed is the only perennial of the noxious knapweeds and is the most difficult to control. Russian knapweed emerges in the spring from roots and, once established, spreads mainly by underground root stocks, as seed production is limited compared to other knapweed species. Flowering occurs from June to September. The key to Russian knapweed control is to stress the weed and cause it to expend nutrient stores in its root system. Hand pulling and mowing are not effective because Russian knapweed roots can grow 6 to 8 feet deep the first season, and deeper the second season. Most of the root system must be removed or plants will re-sprout. Seeding competitive, perennial grass species after Russian knapweed has been stressed by other control measures is essential. Treatments may include chemical or mechanical methods. Research has shown that chemical treatments are superior to mowing. Sow perennial grasses in late fall as a dormant seeding. Tillage is necessary to overcome the residual allelopathic (the suppression of growth of one plant species by another due to the release of toxic substances) effects of Russian knapweed. Apply chemicals at the bud-growth stage and again about 8 weeks later.

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Treatment Methods for Noxious Weeds and Non-native Plants of Highest Concern in the Sierra National Forest

Diffuse knapweed *Centaurea diffusa*) and **Spotted knapweed** (*Centaurea maculosa*). Diffuse knapweed is generally a short-lived perennial or biennial and invades habitats similar to spotted knapweed. The physical appearance of diffuse knapweed is similar to spotted knapweed, except diffuse knapweed is generally shorter and more highly branched. Also, rosettes of diffuse knapweed have more finely divided leaves than those of spotted knapweed. Spotted knapweed is a short-lived perennial, reproducing solely by seeds. It is a prolific seed producer, with 1,000 or more seeds per plant. Seeds remain viable in the soil five years or more, so knapweed infestations may occur a number of years after vegetative plants have been eliminated. The seeds can germinate from spring through early fall. Seedlings emerging in the fall often overwinter as a rosette of leaves, resuming growth again in the spring. Spotted and diffuse knapweed confined to small, well-defined areas should be pulled by hand or treated with a herbicide as soon as detected to avoid spread of the weed. First, all visible knapweed plants should be removed and destroyed. Then the areas should be treated with a herbicide to prevent reinfestation from seedlings.

THISTLES

Four species of thistles are of high concern in the SNF. The primary control strategy for annual and biennial thistles is seed management, while the control strategy for perennials must include depletion of plant reserves. A brief summary of the life history and control methods for each species is provided below.

Italian thistle (*Carduus pycnocephalus*). Italian thistle is a summer annual or may be biennials in dry habitats. Flowering is May–July.

Canada thistle (*Cirsium arvense*). Canada thistle is a perennial that flowers June–October.

Bull thistle (*Cirsium vulgare*). Bull thistle is a biennial that flowers July–September.

Milk thistle (*Silybum marianum*). Milk thistle is an annual thistle that flowers June–September.

Cutting or removing thistles (where feasible) can be effective in reducing thistle populations. Annual and biennial thistles, if mowed within two days of flowering of the terminal blooms, will not produce seed or regenerate significantly. Timing in mowing is important; if mowing occurs four days after terminal bloom antithesis (full flowering), significant amounts of seed are produced. Since thistle stands mature at different times, careful monitoring and proper timing are necessary for mowing to be a viable option. However, even if mowing is done late and seed is produced, mowing the stalks will reduce seed dispersal and seed production, keeping infestations from spreading widely.

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Treatment Methods for Noxious Weeds and Non-native Plants of Highest Concern in the Sierra National Forest

Canada thistle, a perennial, is difficult to control by mechanical methods. Occasional cultivation (soil tillage) may increase sprouting from broken roots due to its ability to propagate vegetatively. However, repeated cultivation can significantly reduce infestations if begun when plant reserves are at their lowest stage in early spring (early bud stage), before the shoot leaves can furnish energy to the roots in amounts greater than the roots require for production of new growth. Cultivation should start in early spring by plowing and disking. When new shoots appear, the area should be cultivated 3 to 4 inches deep every 20 to 21 days to destroy new shoots. Up to 90% or more of a Canada thistle infestation can be eliminated in a single season of cultivation when properly performed.

Several herbicides are useful for thistle control. Chemical control for annuals, biennials, and perennials must be initiated before the plants blossom and produce seeds. Young plants are most susceptible to control with chemicals. Best results are obtained when plants are in their initial and heaviest growth stage. The use of herbicides provides a quick and easy method to control thistles.

STARTHISTLE

Four species of star-thistle are of high concern in California. Treatment methods differ among these species and are described below.

Yellow starthistle (*Centaurea solstitialis*). Yellow starthistle typically begins flowering in late May and continues through September and sometimes much later

Starthistle is widespread and difficult to control. There are entire websites dedicated to the subject. Visit http://wric.ucdavis.edu/yst/yst.html for more information. Control of yellow starthistle cannot be accomplished with a single treatment or in a single year. Effective control requires suppression of the weed combined with establishment of competitive desirable vegetation. Cultivation and deep tillage with fall rain effectively controls seedlings of yellow starthistle. Repeated cultivations are generally needed to control each new flush of seedlings. Mowing can be used to manage yellow starthistle provided it is well timed and repeated as needed. Mowing early growth stages results in regrowth of the weed and additional mowing will be needed a second time, about 4 to 6 weeks later. To encourage growth of desirable vegetation, let the desirable vegetation set seed before mowing, but be sure to mow well before starthistle is in full flower. In general, mowing is most effective when soil moisture is low and no irrigation or rainfall follows the mowing.

Both post- and pre-emergent herbicides are available to control starthistle. Post-emergent herbicide treatments generally work best on seedlings. Follow an initial treatment with successive applications when new rosettes appear. The long germination

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Treatment Methods for Noxious Weeds and Non-native Plants of Highest Concern in the Sierra National Forest

period of yellow starthistle requires that a pre-emergent material have a lengthy residual activity. Herbicide applications should occur before a rainfall, which will move the material into the soil.

Purple starthistle (*Centaurea calcitrapa)*. Purple starthistle is a biennial that flowers from June to August. Under some conditions they may behave as annuals or short-lived perennials.

Iberian starthistle (*Centaurea iberica*). Iberian starthistle is a biennial that flowers July-October. Under some conditions they may behave as annuals or short-lived perennials.

Tocalote (*Centaurea melitensis*). Also known as Malta or Napa starthistle, tocalote is a winter annual that flowers April–September.

Grubbing or digging can control small infestations. This is most effective for young rosettes. To control these species, cut plants at least 2 inches below the soil surface early in the growing season after seed head production but before flowering. Root pulling is not generally successful. Remove and destroy plants. Do not mow purple or Iberian starthistles. Rosettes are too low to be mowed. Mowing older plants encourages development of multiple rosettes from one root base, and spreads purple starthistle by throwing seed heads. Herbicides are most effective if applied in the spring when plants are in the sensitive seedling or rosette stages, are actively growing, and soil moisture is high.

OTHERS NOXIOUS WEEDS

Black mustard (*Brassica nigra*). Black mustard can be removed from small areas by pulling or cutting with hand tools. However, hand removal alone must be performed more than once in a growing season. Best timing for hand removal is after seed head production but before flowering. Hand removal will stop seed production and remove the vegetative portions of the plant. Mechanical removal with ground-mowing or tilling equipment will remove foliage and prevent the plant from setting viable seed, as well as inhibiting the plant's ability to produce food and weakening the root stocks. Repeated herbicide applications have failed to exhaust the seed bank. Flail-mowing, followed by raking into windrows or leaving the stems in place does not control black mustard. Herbicide application from sprayers and from a tractor-mounted wick applicator does not control black mustard. Visit (http://www.landandwater.com/features/vol42no4/vol42no4_1.html) for information on herbicide application, flail-mowing, imprinting, organic mulching, and removal of soluble nitrogen through microbial immobilization.

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Treatment Methods for Noxious Weeds and Non-native Plants of Highest Concern in the Sierra National Forest

Black locust (*Robinia pseudoacacia*). Black locust is a tree that blooms in late spring and reproduces through distinct hanging pods. Every part of the tree is considered toxic. Non-chemical control of black locust is largely ineffective because of the plant's vigorous re-sprouting ability and suckering from stumps and roots. Cutting or burning generally increase sucker and sprout productivity. Most management efforts have concentrated on the use of chemical controls. However, seedlings may be hand-pulled if the entire root is removed. Repeated cutting or mowing may achieve some level of control but likely will not result in eradication. Some herbicides are more effective than others. Where possible, use of foliar sprays is effective when the leaves are fully expanded. Larger trees should be cut down and an undiluted herbicide applied to the freshly cut surfaces of the stump; or the tree should be girdled and undiluted herbicide applied to the cut encircling the trunk. Repeated treatments will likely be necessary.

Bermuda grass (*Cynodon dactylon*). Bermuda grass reproduces by seed, rhizome and underground runners. Control requires killing the whole plant, roots and all. Application of a non-selective herbicide in July and August, with two follow-up applications, is the most effect method to eliminate this species. Various mulching methods may also control this species if diligently applied.

Cheatgrass (*Bromus tectorum*). Cheatgrass, also known as downy brome, is a winter annual grass that germinates in the early spring. Mow to prevent the formation of the seed head and seed production. Use a post-emergent herbicide when downy brome is young and actively growing.

Common or woolly mullein (*Verbascum thapsus*). Woolly mullein is a biennial. Its first year is spent as a rosette and no seeds are produced. In the second year, it produces a single, thick stem with yellow flowers from the center of the rosette. This plant is a prolific seed-producer and thus control requires prevention of seed production by spraying with an herbicide during the rosette stage. Herbicide uptake by this plant is difficult due to the woolly leaves. Use of mechanical control such as mowing or handpulling before seed production (early bud stage) is also an important treatment method.

Lens-podded hoary cress (*Cardaria chalepensis*). Hoary cress is an herbaceous, relatively long-lived, rhizomatous perennial weed that blooms in April and May and begins producing seeds about a month later. Hand pulling and mowing are not effective controls for hoary cress. Cultivation (soil tillage) may spreads root pieces that will later sprout. A better control method is to combine mowing, chemical use, and planting grasses and shrubs. Successful cultivation requires removal of the plant within 10 days after weed emergence throughout the growing season for two to four years. Cultivation 6 inches deep must be repeated within 10 days of weed emergence throughout the growing season for two to four years. Effective chemical control requires multiple

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Treatment Methods for Noxious Weeds and Non-native Plants of Highest Concern in the Sierra National Forest

applications. Timing and application rate are crucial for successful control. Chemical control can be effective, but must be maintained for several years to obtain long-term control. The most effective timing of herbicide application appears to be in the bud to early flower stage.

Himalayan blackberry (*Rubus discolor*). Himalayan blackberries are able to regenerate from the crown or rhizomes following mowing, burning, or herbicide treatment. This makes them difficult to control, and control measures often require follow-up treatment. Because of the extensive underground root system, digging is not an alternative. Mowing is not effective as it stimulates sucker growth from lateral roots and induces branching. Burning, like mowing, is not an effective long-term strategy because wild blackberry plants vigorously resprout from rhizomes. Biocontrol is not a practical method of control and plants usually regrow following herbicide application; and repeated treatments may be necessary for effective long-term control. Large stands of blackberry are difficult to control due their impenetrability and the plant's variety of reproductive tactics, but with proper management, infested areas can be restored to desirable vegetation. Control is usually a two phase process which includes removal of above ground vegetation, and killing or removing the root crowns and major side roots (not necessarily in that order). Mechanical removal, whether by hand or machine, and burning, are effective options for removing the above ground portion of mature plants. There are six primary options for long-term (i.e. root) control:

- Grubbing out the root crowns and major roots has proven to be effective but expensive.
- Repeated cutting of above-ground vegetation can also be effective but is expensive and requires multiple years of treatment.
- Foliar treatment in the fall following summer clearing has proven effective in some cases.
- Treating freshly cut stumps with appropriate concentrated herbicide.
- Uncut Himalayan blackberry can be effectively treated in late summer or fall with broadcast application of a variety of herbicides including triclopyr and/or glyphosate. Although effective control can be achieved by this method, the extensive, standing, dry and hard canes then need to be removed to allow access for effective restoration.
- Dense planting of shade-producing vegetation is a long-term solution for some instances. Planted vegetation may need to be protected from being overtopped by blackberry.

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Hydrilla (*Hydrilla verticillata*). California law requires the control hydrilla, which is not an easy job. Scientific research and 30 years of practical experience by aquatic plant managers using herbicides, biological agents, mechanical removal, and physical habitat manipulation have produced relatively successful management programs in other states. However, in spite of long-term intensive management efforts, hydrilla is still a major weed problem in the states where it has become well established. Some common eradication methods such as cutting should not be used and only hydrilla-specific herbicides should be used. Visit the many websites dedicated to hydrilla control for more information.

Klamath weed (*Hypericum perforatum*). Klamath weed, also known at St. John's wort (used in herbal medicine), is a difficult weed to eradicate because of its extensive root system and long lived seeds. A perennial that flowers from June–September, Klamath weed is difficult to eradicate because of its extensive root system and long lived seeds. Small infestations may be controlled by repeatedly hand-pulling or digging. Mowing has little effect on existing plants, but may reduce seed production. Burning favors the further spread of Klamath weed.

Medusahead (*Taeniatherum caput-medusae*). Medusahead is a winter annual with seedling stages occurring in late or early spring. Seedbed tillage will control existing medusahead plants but may also bury seeds and break up deep thatch layers. Therefore careful consideration should be made before utilizing tillage. Mowing is not recommended after seed set due to the increased potential for seed dispersal. Very little work has focused on utilizing classical biological control for medusahead. Chemical control options for medusahead are currently very limited, but are likely the best treatment method.

Oxeye daisy (*Leucanthemum vulgare*). Oxeye daisy is a perennial herb that can spread both vegetatively and by seed. The plant flowers during its second year. Flowering occurs June to August, with seeds dispersing in August and September. Seeds will germinate as soon as they are dispersed. Because of its shallow root system, oxeye daisy is easily killed by intensive cultivation. Mowing as soon as the first flowers open can eliminate seed production. However, mowing may stimulate shoot production and subsequent flowering in areas with adequate growing seasons. Seeds germinate readily on bare soil. Some herbicides are effective; however, application of nitrogen fertilizer is almost as effective as the herbicides at reducing canopy cover of oxeye daisy.

Perennial pepperweed (*Lepidium latifolium*). Pepperweed is a perennial with dense clusters of white flowers that are produced from late spring and throughout summer. Although perennial pepperweed produces viable seed, there is little evidence of

Attachment F

Treatment Methods for Noxious Weeds and Non-native Plants of Highest Concern in the Sierra National Forest

seedling germination in the field. Its main method of spread appears to be the lateral production of new shoots via the root system**.** Established perennial pepperweed populations are difficult to control and require multiple years of intensive management. Suppressing the extensive root system is critical for successful control. Establishing and maintaining competitive perennial vegetation can dramatically slow the introduction and spread of perennial pepperweed. Seedlings are easily controlled by hand-pulling or tillage, but these techniques do not control established plants because shoots quickly resprout from vast root reserves. Root segments as small as 1 inch are capable of producing new shoots. Mowing and burning are not effective at reducing perennial pepperweed stands. Combining mowing with herbicides has been shown to be an effective control strategy. For best results, mow plants at the flower bud stage and apply herbicides to resprouting shoots once they have reached the flower bud stage. Several post-emergent herbicides control perennial pepperweed, but repeat applications are usually necessary for several years to treat resprouting shoots and seedlings. Extended control with herbicides is greatly enhanced by establishing competitive vegetation at the site. In areas with a dense buildup of thatch, mow or burn old shoots before applying herbicides. Herbicide application timing is critical. Herbicides work best when applied at the flower bud stage and worst at the rosette or early bolting stage.

Periwinkle (*Vinca major*). Periwinkle is a common garden plant that has spread to forested areas. It is a scrambling, low-growing perennial, with long trailing stems which may root at the nodes. Small infestations should be dug up and disposed of. Roots and rhizomes can resprout if material is left lying about. Check cleared sites for regrowth. Because this plant is extremely hard to kill or control with herbicides, multiple applications will be necessary.

Puncture vine (*Tribulus terrestris)*. This plant is a summer annual that blooms from July to September and matures from August to October. Puncture vine can be controlled by hand pulling in moist soil. Mowing is not effective because the plants grow close to the ground. Herbicides can also provide effective control if they're applied when the plants are young and small. Certain pre-emergent herbicides, if applied in early April, can kill seedlings as they germinate. Annual re-application may be necessaryl to achieve good control.

Biocontrol has been very successful in reducing large puncture vine populations. There are two biocontrol organisms available for purchase; *Microlarinus lareynii*, a seed-feeding weevil, and *Microlarinus lypriformis,* a stem- and crown-mining weevil, both collected from wild populations near the Mediterranean Sea in Europe and northern Africa. The two biocontrol weevils have been successfully released in Arizona, Nevada, and California.

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Treatment Methods for Noxious Weeds and Non-native Plants of Highest Concern in the Sierra National Forest

Purple loosestrife (*Lythrum salicaria*). Purple loosestrife is an herbaceous, wetland perennial that grows in a wide range of habitats. Small infestations can be controlled by removing all roots and underground stems. This method is most useful on young infestations. Removal of all plant material is important. Small segments of purple loosestrife stems can become rooted and reestablish the infestation. Herbicides can be used to control purple loosestrife in areas too large to be controlled by digging.

Rush skeletonweed (*Chondrilla juncea*). Rush skeletonweed is an herbaceous perennial or biennial with a long taproot. Herbicide treatment and planting of competitive vegetation are critical for effective management of this species. Herbicides, if applied consistently each year, can control this weed after 3 to 5 years.

Scotch broom (*Cytisus scoparius*) and **Spanish broom** (*Spartium junceum*). An aggressive, deciduous, perennial shrub often started as an ornamental, broom is now listed as a noxious weed. Broom may be controlled by hand pulling, digging, hoeing, or by cutting the above-ground portion (about half the roots will resprout, but if cutting is done before seeds are set, spreading will be contained). Chopping or mowing has been used in some locations; however, this treatment is likely to result in pastures of broom because of resprouting of the roots. Spot herbicides, applied to either stems or cut stumps, are labor intensive but have proven effective. Various broadcast herbicides have also been effective in controlled circumstances.

Russian thistle (*Salsola tragus*) and **Tumbleweed** (*Salsola paulsenii*). Both Russian thistle and tumbleweed members of the Goosefoot family. The plant has inconspicuous green flowers from March–April

Control methods such as mowing or destroying young plants can prevent seed production. However, it is important to avoid disking or loosening the soil in because loose soil is necessary for Russian thistle germination. Planting competitive, more desirable species can be an effective method of preventing Russian thistle. There are many herbicides that will control Russian thistle. Many of these herbicides are focused on controlling the immature plants and preventing them from reaching the seed production stage. The selection of an appropriate herbicide is site and growth stage dependent (preemergent or postemergent). Herbicide application during these growth stages is summarized below.

For best results, post-emergent herbicides must be applied while the weed is in its early growth stages (preferably the early seedling stage) before it starts producing its spiny branches. Post-emergent herbicides are not effective in the control of these species. If rain or irrigation occurs after a post-emergent application, additional seedlings may emerge and require future treatments.

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Treatment Methods for Noxious Weeds and Non-native Plants of Highest Concern in the Sierra National Forest

Tree of heaven (*Ailanthus altissima*). Tree of heaven is a dioecious species which bears yellowish-green flowers from mid-April to July. The flowers are arranged in large panicles at the ends of new shoots. Male trees produce three to four times more flowers than are female trees. Furthermore, male flowers are more conspicuous and emit a disagreeable odor that attracts numerous insects.

Elimination of this species requires diligence, due to its abundant seed production, high seed germination rate, and vegetative reproduction. Targeting large female trees for control will help reduce spread of seed. Young seedlings may be pulled or dug up, preferably when soil is moist. Care must be taken to remove the entire plant including all roots and fragments, as these will almost certainly regrow. Treatment of this species by cutting alone is usually counterproductive because it produces large numbers of stump sprouts and root suckers. Effective treatment will include an initial cutting in early summer followed by herbicide application. Foliar, basal bark, or injection herbicide application will damage the root system. Basal bark application of herbicides is most effective late winter/early spring and in summer on trees that are less than 6 inches in diameter. The injection method is very effective and minimizes sprouting and suckering when applied during the summer.

References

Davis, M.A. and K Thompson. 2000. Eight ways to be a colonizer; two ways to be an invader: A proposed nomenclature scheme for invasion ecology. *Bulletin of the Ecological Society of American 81: 226-230.*

Simberloff, D. D. C. Schmitz, and T.C. Brown. 1997. Strangers in Paradise: Impact and Management of Non-indigenous species in Florida. Island Press, Washington D.. U.S.D.A. Forest Service (USDA-FS). 1991. Section 2083, Information and Reporting Guidelines for Noxious Weeds. *In*: Forest Service Manual Section 2080, dated June 1991.

Attachment F

Treatment Methods for Noxious Weeds and Non-native Plants of Highest Concern in the Sierra National Forest

The following websites were accessed on June 23 and 24, 2005:

http://cru.cahe.wsu.edu/CEPublications/pnw0350/pnw0350.html

http://danr.ucop.edu/uccelr/range01.htm

http://www.co.larimer.co.us/publicworks/weeds/askedweeds/mullein.htm

http://tncweeds.ucdavis.edu/esadocs/documnts/arundon.html

http://www.ipm.ucdavis.edu/PMG/PESTNOTES/pn7486.html

http://el.erdc.usace.army.mil/pmis/mechanical/html/brassica.html

http://www.landandwater.com/features/vol42no4/vol42no4_1.html

http://www.nwcb.wa.gov/weed_info/Written_findings/ Hydrilla_verticillata.html

http://wric.ucdavis.edu/yst/yst.html

ATTACHMENT G

THE FOREST SERVICE MANUAL
PACIFIC SOUTHWEST REGION (R5)
BOTANICAL PROGRAM MANAGEMENT HANDBOOK
CHAPTER 50 (REVEGETATION)

FOREST SERVICE MANUAL
PACIFIC SOUTHWEST REGION (R5)
VALLEJO, CA

FSH 2609.25 – BOTANICAL PROGRAM MANAGEMENT HANDBOOK

CHAPTER 50 – REVEGETATION

Supplement No.: Do not fill in number. Directives does this after it is signed.

Effective Date: Do not fill in number. Directives does this after it is signed.

Duration: Effective until superseded or removed

Approved: NAME OF SIGNER
Title of Signer

Date Approved: mm/dd/yyyy

Posting Instructions: Amendments are numbered consecutively by Handbook number and calendar year. Post by document name. Remove entire document and replace with this amendment. Retain this transmittal as the first page of this document.

New Document(s):		9 Pages
Superseded Document(s): (Last amendment was .)		XX Pages

Digest: Insert digest information here

This directive formalizes the Native Plant Policy Letter, reference 1330/2070, written to Forest Supervisors, Staff Directors, and the Pacific Southwest Research Station Director on June 30, 1994.

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50 - REVEGETATION.

50.01 - AUTHORITY.

1. The National Forest Management Act of 1976 (Sec. 6, 90 Stat. 2949) is the principal legislative mandate that directs the conservation of biological diversity and thus recognizes the value of adapted plant and animal communities.

2. Further direction is provided in Title 36, Code of Federal Regulations, Part 219, Section 27, Subsection G which states: "Management prescriptions, where appropriate and to the extent practicable, shall preserve and enhance the diversity of plant and animal communities, including endemics and desirable naturalized plant and animal species, so that it is at least as great as that which would be expected in a natural forest and the diversity of tree species similar to that existing in the planning area. Reductions in diversity of plant and animal species from that which would be expected in a natural forest, or from that similar to the existing diversity in the planning area, may be prescribed only where needed to meet overall multiple-use objectives. Planned site conversion shall be justified by an analysis showing biological, economic, social, and environmental design consequences, and the relation of such conversions to the process of natural change."

50.02 - OBJECTIVES

1. To conserve the native biological diversity and adaptive capacity of plant and fungi communities, species, and populations. This includes maintaining the integrity of the natural pattern of adaptive genetic structure within and among populations of a species.

2. To reduce the adverse impacts of management activities on the basic natural resources of soil, water, and plant and fungi gene pool diversity.

3. To stabilize soil after major disturbances while concurrently avoiding long-term adverse effects on the composition, structure, and function of natural plant and fungi communities.

4. To maintain or enhance water quality by controlling the composition and structure of plant and fungi communities through use of appropriate plant materials.

5. To prevent the displacement of native species through the introduction of aggressive, long lasting, undesirable vegetation into managed or natural plant communities.

6. To move rapidly toward the general use of locally adapted native plant species in ecosystem management.

7. To guide the program development for acquiring, propagating, and using native plant materials for interdisciplinary ecosystem management projects. These include wildlife, riparian, watershed, road-side, emergency post-fire soil stabilization, and other revegetation and restoration projects.

8. To stimulate development of new ways to achieve ecosystem management objectives that consider multidisciplinary long-term effects. This includes the evaluation of alternatives that provide economical as well as practical means to restore plant and fungi communities.

50.03 - POLICY.

Maintaining the rich native flora and associated vegetative communities of the Pacific Southwest Region is a critical element of ecosystem management. The use of native plants for revegetation and restoration is integral to the overall national goal of conserving the biodiversity, health, productivity, and sustainable use of forest, rangeland and aquatic ecosystems. Maintaining biodiversity includes retaining the inherent genetic variability within plant populations. Therefore, conservation of local germplasm is a desired outcome of our activities.

To the extent practicable, seeds and plants used in erosion control, fire rehabilitation, riparian restoration, forage enhancement, and other vegetation projects shall originate from genetically local sources of native plants. Native plants are intrinsically valuable, biologically diverse, and ecologically adapted to their habitats. They are key factors in sustaining resilient, healthy, and productive ecosystems. This policy supports management for sustainable use of ecosystems. A key element of sustainability is the conservation of natural biological diversity.

1. Prescriptions for use of plant materials must be developed for revegetation by knowledgable plant resource specialists prior to implementation to ensure that the project is feasible and that suitable plant material is used.

2. All revegetation facets must be evaluated EARLY in the planning process for Forest projects. For projects that involve soil disturbance, special consideration must be given to stockpiling of duff or topsoil (with seedbank and mycorrhizae) for later use in restoration of soil and vegetation, and where erosion control is required, mechanical methods must also be evaluated. All revegetation projects must consider both natural and artificial regeneration alternatives including collection of local sources of suitable native plant seed or cuttings, nursery propagation, and on-site planting and maintenance activities.

3. To the extent practicable, plant materials (seed, cuttings, and whole plants) used in all revegetation projects shall originate from genetically local sources of native species.

a. Encourage natural regeneration where seed source and soil conditions are favorable. Where natural regeneration is likely to fail within the desired time frame and soil protection is necessary, evaluate the use of non-vegetative techniques that

allow natives to return, *e.g.* weed- and disease-free mulching, erosion blankets, or sterile straw waddles.

b. Alternatively, collect seed as near to the site as possible within an adaptive (seed) zone, follow genetic guidelines, and grow in the appropriate nursery. If a genetically local or similarly adapted stock of native species is not available for revegetation, consider either eliminating, delaying, or modifying the project to plant natives in stages as they become available.

c. When project objectives justify the use of non-native plant materials, documentation explaining why non-natives are preferred must be part of the project planning process.

4. Do not use plant materials of species sold as natives if the genetic origin and physiological quality is not known. Use only those commercial sources of native plant materials collected within the same ecological section (National Hierarchy of Ecological Units) or geographic district level, as mapped in the Jepson Manual (1993), as the project area. Use the seed zoning rules and the genetic guidelines (see Exhibit 01.) for further guidance. Avoid the use of plant material bred and/or grown outside of California.

5. Carefully evaluate plant materials collected or purchased for Forest projects to ensure that these materials are healthy, free of pests, and that they are properly handled, stored, and conditioned for successful use.

6. Constraints to use of natives species. Many factors such as: cost; availability of plant materials; the capability of propagating a wide variety of native plants; as well as budgeting constraints where the project spans multiple years, yet funding is linked to a single year target; may be barriers to the use of native species. If after other alternatives have been thoroughly evaluated, the use of exotics is deemed necessary, the revegetation plan must include a justification for the use of non-native species. In such circumstances, favor exotics with low reproductive fitness, short longevity, or self-pollination to reduce gene pollution and undesirable long-term effects on the ecosystem.

50.04 - RESPONSIBILITIES

1. Forest Botanist or Forest Sensitive Plant Coordinator.

The Forest Botanist or Forest Sensitive Plant Coordinator shall develop the botanical section of all revegetation plans developed on a Forest.

50.05 - DEFINITIONS.

1. Revegetation - a general term for renewing the vegetation on a project site, which may include restoration and rehabilitation.

2. Rehabilitation - improving a project site to a more desired condition than previously existed usually as a result of a major disturbance.

3. Restoration - reestablishing a project site to a previously existing natural condition using similar or identical native vegetation.

4. Native plant - one that occurs and has evolved naturally in the Region as determined by climate, soil, and biotic factors.

5. Genetically local source - plant materials that originated at or within the same seed zone and elevation band as the project site.

6. Exotic or non-native species - one that was introduced through human activity.

7. Undesirable plant - may be non-native species, non-adapted source, genetically changed through selection in a foreign dissimilar environment, or possesses trait(s) that conflict with accomplishment of objectives.

Exhibit 01. Genetic Guidelines for Plant Collections

Genetic Guidelines for Plant Collections

1) Origin is known

a) Document location of parent plants (see FSH 2409.42)
b) Identify and track collections from origin to nursery and back to field using a database management system.
c) Monitor survival, health, and growth performance over time.

2) Locally adapted

a) Seed origin should be as close as possible to the project site.
b) Use California tree seed zones to guide the transfer of plant materials.

1. For grasses, forbs, and shrubs, follow locally developed transfer guidelines where available, such as *Native Plant Seed Zones of the Klamath Mountains and Southern Cascades Section.*

2. Where locally developed guidelines are not available and for conifers or other trees, see California tree seed zone map and rules established in 1970 (Buck, *et. al.).* These provide a framework for determining gene transfer priorities based on geoclimatic factors, when other information is lacking.

2. Collect and use plant materials within local 500 ft elevation bands where possible and never transfer woody plants more than 1000 ft up or down in elevation in the same seed zone.

3. Avoid transferring plant materials from one geographic district to another. Geographic districts are those described in the Jepson Manual.

c) Where possible, within seed zones and elevation bands collect and use plant materials within the same vegetation series, or for riparian species, within watershed delineations.

d) Collect and use plant materials in more localized area in certain situations where site-specific ecotypes may develop, including:

1. populations on unusual soils (e.g. serpentine)

2. populations from extreme or marginal environments for the species (tolerance limits to temperature, precipitation, nutrients, etc).

3. populations with known or suspected unique genetic characteristics.

3) Genetically diverse

a) Plant materials should be collected from the project site. If not possible, plant materials should be collected from several sub-populations that are well-distributed within an adaptive (seed) zone.

b) Separate collections by 100 ft or greater for most outcrossing woody plants to ensure unrelatedness. Note: closer spacing may be appropriate for certain forbs and grasses that are highly specialized to their microenvironments.

c) Collect an approximately equal number of seeds/cuttings from each parent representative of that population. Ensure that the collection comes from a large number (30-50 but number depends on exact species) unrelated parents.

4) High quality

a) Select healthy, vigorous parent stock.

b) Collect at appropriate time (e.g. when seeds are mature and cuttings are dormant).

c) Use optimal collection, processing, and storage procedures.

d) Use cultural practices that will maximize the success rate (minimize losses) from collection to nursery and on through project completion.

Exhibit 02. Quality Control Guidelines

Quality Control Guidelines

1) Acquisition of plant material

a) Nursery and other appropriate resource personnel provide advice on quality standards for the acquisition of plant materials (force account, contract, or purchase) that will ensure that the plant materials are in a suitable physiological condition when delivered for whatever cultural activity (sowing, growing, storing, outplanting, etc) is required.

2) Plans for using plant material

a) Prior to receipt of plant material, handling procedures must be "in place" to ensure proper storage conditions for seeds, cuttings, or plants and to ensure proper care and tending during seeding, grafting, or planting operations.

Exhibit 03. Project Coordination Guidelines

Project Coordination Guidelines

1) Project Implementation

a) All projects should be carefully reviewed prior to implementation by appropriate biological professionals for advice on how to obtain suitable genetic sources and how to care for local, native plant materials (geneticists, nursery managers), on help to prepare and administer contracts for planting (contracting personnel), and to ensure the suitability of species and resource objectives (botanists, ecologists, silviculturists, etc.).

b) The review process should evaluate whether objectives are sound and that they can feasibly be met.

2) Monitoring process

a) Project monitoring should include assessing the effectiveness of the use of native plants for restoration and/or rehabilitation.

ATTACHMENT H

USDA-FS REGIONAL NATIVE PLANT POLICY

United States Department of Agriculture
Forest Service
Pacific Southwest Region
Regional Office, R5
630 Sansome Street
San Francisco, CA
94111-2214

415-705-1098 Text

(TTY)

Reply To: 1330/2070

Date: June 30, 1994

Subject: Policy on the Use of Native Plant Material in Restoration other Revegetation Projects

To: Forest Supervisors, Staff Directors and Station Director, PSW

Maintaining the rich native flora and associated vegetative communities of the Pacific Southwest Region is a critical element of Ecosystem Management. The use of native plants for revegetation and restoration is integral to the overall national goal of conserving the biodiversity, health, productivity, and sustainable use of forest, rangeland, and aquatic ecosystems. Maintaining biodiversity includes retaining the inherent genetic variability within plant populations. Therefore, conservation of local germplasm is a desired outcome of our activities.

We will begin to broaden the base of local native plant materials through careful collection, storage, and production efforts to meet current need and to anticipate the future demand for revegetation. We must move as rapidly as possible toward the use of local native plant material and away from the use of exotics and non-local sources. Forests will follow the set of operational guides (enclosed) to avoid irreversible impacts on native ecosystems. This policy includes the restoration of historic ranges.

The following policy supports ecosystem management efforts. A key element of sustainability is the conservation of natural biological diversity. Native plants are intrinsically valuable, biologically diverse, and ecologically adapted to their habitats. They are key factors in sustaining resilient, healthy, and productive ecosystems.

Effective immediately, R5 policy on the use of native vegetative materials on National Forests will be:

> To the extent practicable, seeds and plants used in erosion control, fire rehabilitation, riparian restoration, forage enhancement, and other vegetation projects shall originate from genetically local sources of native plants.

1. Prescriptions for use of plant materials for revegetation must be developed by knowledgable plant resource specialists prior to implementation to ensure that the project is feasible and suitable plant material is used.

2. All revegetation facets must be evaluated early in the planning process for Forest projects.

3. Plant materials (seed, cutting, and whole plants) used in all revegetation projects shall originate from genetically local sources of native species, to the extent practicable.

4. Do not use plant materials of species sold as natives if the genetic origin is not known.

5. Plant materials collected or purchased for Forest projects must be carefully evaluated to ensure that these materials are healthy, free of pests, and that they are properly handled, stored, and conditioned for successful use.

The enclosed document is further guidance for implementing this policy. Much of the enclosed material will become part of the Forest Service manual as an R5 supplement. Questions regarding this policy should be referred to David Diaz at D.Diaz:R05a (415-705-1891) or Jay Kitzmiller, Genetic Resource Center Chico at J.Kitzmiller:R05f08d52a (916-895-1176).

/s/ Joyce T. Muraoka, for
RONALD E. STEWART
Regional Forester

Enclosure

Use of Native Vegetative Materials on National Forests

Maintaining the rich native flora and associated vegetative communities of the Pacific Southwest Region is a critical element of ecosystem management. The use of native plants for revegetation and restoration is integral to the overall national goal of conserving the biodiversity, health, productivity, and sustainable use of forest, rangeland and aquatic ecosystems. Maintaining biodiversity includes retaining the inherent genetic variability within plant populations. Therefore, conservation of local germplasm is a desired outcome of our activities. These guidelines provide direction for planning and implementing revegetation projects including rehabilitation and restoration of forest, range, and aquatic ecosystems.

1 - Authority.

1. The National Forest Management Act of 1976 (Sec. 6, 90 Stat. 2949) is the principal legislative mandate that directs the conservation of biological diversity and thus recognizes the value of adapted plant and animal communities.

2. Further direction is provided in Title 36, Code of Federal Regulations, Part 219, Section 27, Subsection G which states: "Management prescriptions, where appropriate and to the extent practicable, shall preserve and enhance the diversity of plant and animal communities, including endemics and desirable naturalized plant and animal species, so that it is at least as great as that which would be expected in a natural forest and the diversity of tree species similar to that existing in the planning area. Reductions in diversity of plant and animal species from that which would be expected in a natural forest, or from that similar to the existing diversity in the planning area, may be prescribed only where needed to meet overall multiple-use objectives. Planned site conversion shall be justified by an analysis showing biological, economic, social, and environmental design consequences, and the relation of such conversions to the process of natural change."

2 - Goals.

1. To conserve the native biological diversity and adaptive capacity of plant communities, species, and populations. This includes maintaining the integrity of the natural pattern of adaptive genetic structure within and among populations of a species.

2. To reduce the adverse impacts of management activities on the basic natural resources of soil, water, and plant gene pool diversity.

3. To stabilize soil after major disturbances while concurrently avoiding long-term adverse effects on the composition, structure, and function of natural plant communities.

4. To maintain or enhance water quality by controlling the composition and structure of plant communities through use of appropriate plant materials.

5. To prevent the displacement of native species through the introduction of aggressive, long lasting, undesirable vegetation into managed or natural plant communities.

6. To move rapidly toward the general use of locally adapted native plant species in ecosystem management.

7. To guide the program development for acquiring, propagating, and using native plant materials for interdisciplinary ecosystem management projects. These include wildlife, riparian, watershed, road-side, emergency post-fire soil stabilization, and other revegetation and restoration projects.

8. To stimulate development of new ways to achieve ecosystem management objectives that consider multidisciplinary long-term effects. This includes the evaluation of alternatives that provide economical as well as practical means to restore plant communities.

3 - Policy.

To the extent practicable, seeds and plants used in erosion control, fire rehabilitation, riparian restoration, forage enhancement, and other vegetation projects shall originate from genetically local sources of native plants. Native plants are intrinsically valuable, biologically diverse, and ecologically adapted to their habitats. They are key factors in sustaining resilient, healthy, and productive ecosystems. This policy supports management for sustainable use of ecosystems. A key element of sustainability is the conservation of natural biological diversity.

1. Prescriptions for use of plant materials must be developed for revegetation by knowledgable plant resource specialists prior to implementation to ensure that the project is feasible and that suitable plant material is used.

2. All revegetation facets must be evaluated EARLY in the planning process for Forest projects. For projects that involve soil disturbance, special consideration must be given to stockpiling of duff or topsoil (with seedbank and mycorrhizae) for later use in restoration of soil and vegetation, and where erosion control is required, mechanical methods must also be evaluated. All revegetation projects must consider both natural and artificial regeneration alternatives including collection of local sources of suitable native plant seed or cuttings, nursery propagation, and on-site planting and maintenance activities.

3. Plant materials (seed, cuttings, and whole plants) used in all revegetation projects shall originate from genetically local sources of native species, to the extent practicable.

a. Encourage natural regeneration where seed source and soil conditions are favorable. Where natural regeneration is likely to fail within the desired time frame and soil protection is necessary, evaluate the use of non-vegetative techniques that

allow natives to return, such as weed- and disease-free mulching, erosion blankets, or sterile straw waddles.

b. Alternatively, collect seed as near to the site as possible within an adaptive (seed) zone, follow genetic guidelines, and grow in the appropriate nursery. If a genetically local or similarly adapted stock of native species is not available for revegetation, consider either eliminating, delaying, or modifying the project such as planting natives in stages as they become available.

c. When project objectives justify the use of non-native plant materials, documentation explaining why non-natives are preferred will be part of the project planning process.

4. Do not use plant materials of species sold as natives if the genetic origin and physiological quality is not known. For now use only those commercial sources of native plant materials collected within the same ecological section (National Hierarchy of Ecological Units) or geographic subdivisions at the district level as mapped in the Jepson Manual (1993) as your project area. Refer to the genetic guidelines and the use the seed zoning rules for further guidance. Avoid the use of plant material bred and/or grown outside of California.

5. Plant materials collected or purchased for Forest projects must be carefully evaluated to ensure that these materials are healthy, free of pests, and that they are properly handled, stored, and conditioned for successful use.

4 - Explanation.

1. Intent. Policies and procedures for reforestation of conifer trees are well documented and are based on decades of research and practice. In addition, seeds are now readily available for most local sources of native conifers due to on-going seed collection and storage practices. However, for other native plant species such documentation and seed availability do not generally exist. This new policy is aimed at moving rapidly toward the general use of locally adapted native plant species in ecosystem management and for revegetation of any project area that has reasonable reestablishment potential. Through natural selection, native species have become well-adapted to their native environments, including both the biotic and abiotic elements.

2. Use of Exotics. Non-native species or populations of natives that are adapted to a different locale may sometimes be extremely useful, especially in the short-term for revegetating to stabilize severely disturbed sites. Common examples include wildfires, road-building, and mining activities. However, selection of the proper species and genetic source for use in these situations should be carefully decided, because many commercially available stocks are

persistent, invasive, and also may have great potential for disrupting natural communities and processes for a long time. For example, certain non-native grass species have been selectively bred for rapid establishment which makes them aggressive competitors and causes displacement of native woody plant species.

The introduction of plant species or seed sources that are not adapted to the planting site or are not compatible with the native species may adversely affect ecosystem integrity. Exotics or non-locally adapted populations may be poorly adapted to certain locales, resulting in low survival, slow growth, and high susceptibility to environmental extremes and to endemic pests. Furthermore, new insects or diseases may be unknowingly introduced into our forest ecosystems by use of non-native species or by use of native stock grown in foreign nurseries. Such events could permanently alter ecosystems beyond the range of natural variability.

3. Constraints to Use of Natives. In certain cases, reliance on non-native species can be reduced only gradually over time. Major barriers to the use of natives may exist. Cost factors, availability of plant materials, and capability of propagating a wide variety of native plants will have to be developed through experience and research. Current budgeting constraints present a challenge because project planning, seed collection, and nursery propagation span multiple years, yet funding linked to targets involves a single year perspective. In the short term, these limitations could lead to a decision to use alternative methods for a project. After other alternatives have been thoroughly evaluated, if use of exotics is deemed necessary, favor exotics with low reproductive fitness, short longevity, or self-pollination to reduce gene pollution and undesirable long-term effects on the ecosystem.

5 - Definitions.

1. Revegetation - a general term for renewing the vegetation on a project site, which may include restoration and rehabilitation.

2. Rehabilitation - improving a project site to a more desired condition than previously existed usually as a result of a major disturbance.

3. Restoration - reestablishing a project site to a previously existing natural condition using similar or identical native vegetation.

4. Native plant - one that occurs and has evolved naturally in the Region as determined by climate, soil, and biotic factors.

5. Genetically local source - plant materials that originated at or within the same seed zone and elevation band as the project site.

6. Exotic or non-native species - one that was introduced through human activity.

7. Undesirable plant - may be non-native species, non-adapted source, genetically changed through selection in a foreign dissimilar environment, or possesses trait(s) that conflict with accomplishment of objectives.

Genetic Guidelines for Plant Collections

1) Origin is known

a)Document location of parent plants (see FSH 2409.42)
b)Identify and track collections from origin to nursery and back to field using a database management system.
c)Monitor survival, health, and growth performance over time.

2) Locally adapted

a)Seed origin should be as close as possible to the project site.
b)Use California tree seed zones to guide the transfer of plant materials.

1.See California tree seed zone map and rules established in 1970 (Buck, et. al.). These provide a framework for determining gene transfer priorities based on geoclimatic factors, when other information is lacking.
2.Collect and use plant materials within local 500 ft elevation bands where possible and never transfer woody plants more than 1000 ft up or down in elevation in the same seed zone.
3.Avoid transferring plant materials from one geographic district to another. Geographic districts are those described in the Jepson Manual.

c)Where possible, within seed zones and elevation bands collect and use plant materials within the same vegetation series, or for riparian species, within watershed delineations.
d)Collect and use plant materials in more localized area in certain situations where site-specific ecotypes may develop, including:

1.populations on unusual soils (e.g. serpentine)
2.populations from extreme or marginal environments for the species (tolerance limits to temperature, precipitation, nutrients, etc).
3.populations with known or suspected unique genetic characteristics.

3) Genetically diverse

a)Plant materials should be collected from the project site. If not possible, plant materials should be collected from several sub-populations that are well-distributed within an adaptive (seed) zone.
b)Separate collections by 100 ft or greater for most outcrossing woody plants to ensure unrelatedness. Note: closer spacing may be appropriate for certain forbs and grasses that are highly specialized to their microenvironments.

c)Collect an approximately equal number of seeds/cuttings from each parent representative of that population. Ensure that the collection comes from a large number (30-50 but number depends on exact species) unrelated parents.

4) High quality

a)Select healthy, vigorous parent stock.
b)Collect at appropriate time (e.g. when seeds are mature and cuttings are dormant).
c)Use optimal collection, processing, and storage procedures.
d)Use cultural practices that will maximize the success rate (minimize losses) from collection to nursery and on through project completion.

Quality Control Guidelines

1) Acquisition of plant material

a)Nursery and other appropriate resource personnel provide advice on quality standards for the acquisition of plant materials (force account, contract, or purchase) that will ensure that the plant materials are in a suitable physiological condition when delivered for whatever cultural activity (sowing, growing, storing, outplanting, etc) is required.

2) Plans for using plant material

a)Prior to receipt of plant material, handling procedures must be "in place" to ensure proper storage conditions for seeds, cuttings, or plants and to ensure proper care and tending during seeding, grafting, or planting operations.

Project Coordination Guidelines

1) Project Implementation

a)All projects should be carefully reviewed prior to implementation by appropriate biological professionals for advice on how to obtain suitable genetic sources and how to care for local, native plant materials (geneticists, nursery managers), on help to prepare and administer contracts for planting (district reforestation personnel), and to ensure the suitability of species and resource objectives (botanists, ecologists, silviculturists, etc.).

b)The review process should evaluate whether objectives are sound and that they can feasibly be met.

2) Monitoring process

a)Project monitoring should include assessing the effectiveness of the use of native plants for restoration and/or rehabilitation.

ATTACHMENT I

SCE AVIAN PROTECTION (SPECIFIC ORDER) AND ANIMAL/BIRD MORTALITY REPORTING FORM

Avian Protection
(Specific Order)

1. PURPOSE

The purpose of this Department Order is to:

- Provide a standard procedure for reporting and monitoring avian mortality or other activities (i.e., nesting) in the vicinity of Power Production Department (PPD) structures;
- Facilitate efficient communication among the PPD Divisions (Eastern and Northern Hydro, Mohave and Mountainview Generating Stations), other entities within SCE [i.e., the Corporate Environment, Health, and Safety Division (EH&S)], and appropriate regulatory agencies;
- Ensure PPD structures are maintained in a manner that reduces adverse effects on bird species in accordance with federal and state regulations, while protecting public health and safety.

2. RAPTOR MORTALITY REPORTING

Raptor electrocutions and power line collisions shall be reported via telephone to the Division's Environmental Manager or Safety and Environmental Specialist (SES) within 24 (twenty-four) hours of discovery of a carcass. Either the Environmental Manager or SES will in turn promptly notify EH&S by telephone and will immediately follow up that notification with a written raptor mortality report. (See Attachment A)

3. RETROFITTING OF EXISTING STRUCTURES

Any PPD structure involved in the electrocution of any raptor, or other endangered/threatened bird species, will be evaluated to determine the feasibility of retrofitting or modifying that structure so that the probability of future bird electrocutions is minimized. Such evaluation of that structure will be performed within 30 (thirty) business days or sooner (for eagles or listed species), and the results of that evaluation will be reported to either the Division's Environmental Manager or SES, and EH&S. If structures of a similar design and in similar habitat are located in the same vicinity of any electrocution, the responsible Manager will determine if these other structures should also be retrofitted to make them more raptor safe. All other electrical structures in any area where clusters of electrocutions have occurred will be examined for possible retrofitting. Each Division, in consultation with EH&S, will identify these clusters and determine which structures may need to be retrofitted and the appropriate retrofit required. As opportunities arise during routine operation and maintenance activities, field personnel will assess

exposed wires and surfaces for possible retrofitting if they are capable of electrocuting raptors and other birds/wildlife. The Division's Environmental Manager or SES must be advised of any retrofitting activity. Retrofits may include, but are not limited to, installing approved bushing covers on transformers, insulator hoods, protective covering on jumper wires or taps, and making other modifications.

4. NEW CONSTRUCTION

All new or rebuilt structures within Raptor Concentration Areas (RCAs) will be of a raptor-safe construction. An RCA is an area designated by EH&S as likely to have a high concentration of raptors. All new or rebuilt structures on land administered by the federal government (USFS, BLM, etc.) shall be designed to be raptor safe whenever possible. Each new structure installed that has potential to electrocute birds and other wildlife will be evaluated by both the Division and EH&S to determine if the structure can be made raptor-safe. The Division's Environmental Manager or SES will be contacted regarding the replacement of structures.

5. NEST PROTECTION

Protected nests include:

- Active nests (nest contains eggs, young birds or adult birds sitting on the nest) of raptors and other bird species protected by the Migratory Bird Treaty Act;
- Active and inactive nests of all eagles and other threatened or endangered bird species.

All vegetation maintenance and work activities involving protected nests on PPD structures will be coordinated with the Division's Environmental Manager or SES. The Division's Environmental Manager or SES will assess the work activity and, if deemed necessary, coordinate with EH&S and appropriate governmental agencies in accordance with SCE's Federal Fish and Wildlife Permit (See Attachment B).

In the event of an emergency (threat to public health or safety, or to the safety of the birds and nests), nesting material and/or nearby trees may be trimmed, conductors or other structures may be moved away from the nest, or other appropriate measures taken as listed in SCE's Federal Fish and Wildlife Permit, to ensure safety of birds and provide safe electrical operations. The Division's Environmental manager or SES shall be contacted before conducting these emergency activities, whenever possible. Contact with the agencies is required before the relocation of any protected bird nest. All personnel with potential to discover birds injured or killed by SCE facilities or with potential to work near active or inactive nests in the course of their work should carry the current Federal Fish and Wildlife and Permit in their

possession. A copy of the valid permit is necessary to carry out procedures outlined in this avian protection department order.

6. TRAINING

All PPD personnel whose jobs may have some involvement with environmental resources such as wildlife habitat or water quality will receive regular training on special-status species, including avian protection issues, at a frequency to be determined by each Division. All contractors will receive training on environmental resource issues depending on the work to be performed, and will have contractual obligations to abide by applicable laws, regulations and SCE permits.

Appropriate personnel will receive guidance on correct measures to take should an encounter with protected nests impact project activities.

Animal/Bird Mortality Report

To: Jill Fariss Date: _____
Biological & Archaeological Resources Group
Corporate EH&S Division, RP&A Department
Quad 3A, G.O.1

From: Name _____
Work Location _____ PAX _____

Describe the species of the Animal or Bird that was mortally injured by SCE facilities (electrocuted/hit by a SCE vehicle, etc.).

_____
_____

Describe how the Animal or Bird was mortally injured by SCE facilities (bird contacted transformer bushings, etc.).

_____
_____
_____
_____

Weather Conditions (e.g. rainy and cold, sunny and warm, etc.)

_____
_____
_____

Circuit Name & Voltage _____

Specific Problem Location (e.g. Pole #/Address/Cross Streets, etc.)

_____
_____
_____

Description of Terrain and Vegetation in Area (e.g. near agriculture area, dense city area, residential housing, etc.)

_____

_____

_____

Please attach picture of the Bird or Animal, if possible.