

Contents

	Page
Tables	vii
Figures	ix
Chapter 1 Introduction	1-1
1.1 Project Background	1-1
1.2 The California Environmental Quality Act Process and Public Review	1-2
1.2.1 Purpose of the Environmental Impact Report	1-2
1.2.2 Scoping	1-2
1.2.3 Public Review and Comment Period for the Environmental Impact Report	1-4
1.3 Report Organization and Terminology	1-4
1.3.1 Organization	1-4
1.3.2 Terminology	1-5
1.4 Permit and Environmental Review and Consultation Requirement	1-6
Chapter 2 Description of Project Alternatives	2-1
2.1 Regional Location	2-1
2.2 Project Location	2-2
2.3 Sierra Pacific Power Company's Water Right	2-2
2.4 Statement of Objectives	2-2
2.5 Alternatives Screening Process	2-3
2.6 Alternative A: Proposed Project	2-4
2.6.1 Project Design	2-4
2.6.2 Construction Activities	2-10
2.6.3 Operational Activities	2-16
2.6.4 Maintenance Activities	2-17
2.7 Alternative B: In-Kind Replacement	2-19
2.7.1 Design Features	2-19
2.7.2 Construction Activities	2-19
2.7.3 Operational Activities	2-19
2.7.4 Maintenance Activities	2-20
2.8 Alternative C: No Project	2-20

Chapter 3	Hydrology	3-1
3.1	Introduction	3-1
3.2	Affected Environment.....	3-1
3.2.1	Sources of Information	3-1
3.2.2	Regional Setting	3-2
3.3	Impact Assessment Methodology	3-6
3.3.1	Analytical Approach.....	3-6
3.3.2	Criteria for Determining Significance	3-6
3.4	Future Conditions under Alternative A: Proposed Project	3-7
3.4.1	Surface Water.....	3-7
3.4.2	Groundwater.....	3-8
3.5	Impacts and Mitigation Measures of Alternative A: Proposed Project	3-8
3.5.1	Construction-Related Impacts	3-8
3.5.2	Operation-Related Impacts.....	3-9
Chapter 4	Water Quality.....	4-1
4.1	Introduction	4-1
4.2	Affected Environment.....	4-1
4.2.1	Sources of Information	4-1
4.2.2	Regional Setting	4-1
4.2.3	Regulatory Setting	4-3
4.3	Impact Assessment Methodology	4-12
4.3.1	Analytical Approach.....	4-12
4.3.2	Criteria for Determining Significance	4-12
4.4	Impacts and Mitigation Measures of Alternative A: Proposed Project	4-13
4.4.1	Construction-Related Impacts	4-13
4.4.2	Operation-Related Impacts.....	4-15
Chapter 5	Geology, Seismicity, and Soils.....	5-1
5.1	Introduction	5-1
5.2	Affected Environment.....	5-1
5.2.1	Sources of Information	5-1
5.2.2	Regional Setting	5-2
5.2.3	Regulatory Setting	5-6
5.3	Impact Assessment Methodology	5-6
5.3.1	Analytical Approach.....	5-6
5.3.2	Criteria for Determining Impact Significance.....	5-7
5.4	Impacts and Mitigation Measures of Alternative A: Proposed Project	5-7
Chapter 6	Aquatic Resources	6-1
6.1	Introduction	6-1

6.2	Affected Environment.....	6-1
6.2.1	Sources of Information	6-1
6.2.2	Regional Setting	6-2
6.2.3	Regulatory Setting	6-8
6.3	Impact Assessment Methodology	6-9
6.3.1	Analytical Approach.....	6-9
6.3.2	Criteria for Determining Impact Significance.....	6-11
6.4	Impacts and Mitigation Measures of Alternative A: Proposed Project	6-12
6.4.1	Constuction-Related Impacts	6-12
6.4.2	Operation-Related Impacts.....	6-15
Chapter 7	Vegetation and Wetland Resources	7-1
7.1	Introduction	7-1
7.2	Affected Environment.....	7-1
7.2.1	Sources of Information and Study Methods	7-1
7.2.2	Regional Setting	7-2
7.2.3	Regulatory Setting	7-7
7.3	Impact Assessment Methodology	7-10
7.3.1	Analytical Approach.....	7-10
7.3.2	Criteria for Determining Impact Significance.....	7-10
7.4	Impacts and Mitigation Measures of Alternative A: Proposed Project	7-11
7.4.1	Construction-Related Impacts	7-11
7.4.2	Operation-Related Impacts.....	7-13
Chapter 8	Wildlife	8-1
8.1	Introduction	8-1
8.2	Affected Environment.....	8-1
8.2.1	Sources of Information	8-1
8.2.2	Regulatory Setting	8-2
8.2.3	Regional Setting	8-2
8.3	Impact Assessment Methodology	8-7
8.3.1	Analytical Approach.....	8-7
8.3.2	Criteria for Determining Impact Significance	8-8
8.4	Impacts and Mitigation Measures of Alternative A: Proposed Project	8-9
8.4.1	Construction-Related Impacts	8-9
8.4.2	Operation-Related Impacts.....	8-9
Chapter 9	Recreation	9-1
9.1	Introduction	9-1
9.2	Affected Environment.....	9-1
9.2.1	Sources of Information	9-1

9.2.2	Regional Setting	9-2
9.2.3	Regulatory Setting	9-6
9.3	Impact Assessment Methodology	9-7
9.3.1	Analytical Approach	9-7
9.3.2	Criteria for Determining Impact Significance.....	9-9
9.4	Impacts and Mitigation Measures of Alternative A: Proposed Project	9-9
9.4.1	Construction-Related Impacts	9-9
9.4.2	Operation-Related Impacts.....	9-12
Chapter 10	Cultural Resources	10-1
10.1	Introduction	10-1
10.2	Affected Environment	10-1
10.2.1	Area of Potential Effects.....	10-1
10.2.2	Field and Research Methods	10-1
10.2.3	Regulatory Setting	10-2
10.2.4	Historic Setting.....	10-5
10.3	Impact Assessment Methodology	10-12
10.3.1	Criteria for Determining Impact Significance under California Law	10-12
10.3.2	Criteria for Determining Impact Significance under Federal Law	10-13
10.4	Impacts and Mitigation Measures of Alternative A: Proposed Project	10-13
Chapter 11	Noise	11-1
11.1	Introduction	11-1
11.2	Affected Environment.....	11-2
11.2.1	Regional Setting.....	11-2
11.2.2	Regulatory Setting.....	11-2
11.3	Impact Assessment Methodology	11-2
11.3.1	Analytical Approach	11-2
11.3.2	Criteria for Determining Impact Significance.....	11-3
11.4	Impacts and Mitigation Measures of Alternative A: Proposed Project	11-3
11.4.1	Construction-Related Impacts	11-3
11.4.2	Operation-Related Impacts	11-8
Chapter 12	Transportation	12-1
12.1	Introduction	12-1
12.2	Affected Environment.....	12-1
12.2.1	Regional Setting.....	12-1
12.2.2	Regulatory Setting.....	12-2
12.3	Impact Assessment Methodology	12-4
12.3.1	Analytical Approach	12-4

12.3.2	Criteria for Determining Impact Significance.....	12-5
12.4	Impacts and Mitigation Measures of Alternative A: Proposed Project	12-6
12.4.1	Construction-Related Impacts	12-6
12.4.2	Operation-Related Impacts	12-8
Chapter 13	Aesthetics.....	13-1
13.1	Introduction	13-1
13.2	Affected Environment.....	13-1
13.2.1	Methods	13-1
13.2.2	Criteria for Visual Assessment	13-2
13.2.3	Regional Setting.....	13-4
13.2.4	Regulatory Setting.....	13-7
13.3	Impact Assessment Methodology	13-11
13.3.1	Analytical Approach	13-11
13.3.2	Criteria for Determining Impact Significance.....	13-11
13.4	Impacts and Mitigation Measures of Alternative A: Proposed Project	13-12
13.4.1	Construction-Related Impacts.....	13-12
13.4.2	Operation-Related Impacts	13-13
Chapter 14	Evaluation of Alternatives to the Proposed Project	14-1
14.1	Introduction	14-1
14.2	Impacts and Mitigation Measures of Alternative B: In-Kind Replacement	14-1
14.2.1	Hydrology.....	14-1
14.2.2	Water Quality	14-2
14.2.3	Geology, Seismicity, and Soils.....	14-2
14.2.4	Aquatic Resources.....	14-3
14.2.5	Vegetation.....	14-3
14.2.6	Wildlife	14-4
14.2.7	Recreation.....	14-4
14.2.8	Cultural Resources	14-5
14.2.9	Noise.....	14-5
14.2.10	Transportation.....	14-5
14.2.11	Aesthetics	14-5
14.3	Impacts and Mitigation Measures of Alternative C: No Project	14-6
14.3.1	Hydrology.....	14-6
14.3.2	Water Quality	14-6
14.3.3	Geology, Seismicity, and Soils.....	14-6
14.3.4	Aquatic Resources.....	14-6
14.3.5	Vegetation.....	14-6
14.3.6	Wildlife	14-6
14.3.7	Recreation.....	14-7
14.3.8	Cultural Resources	14-7

14.3.9 Noise.....	14-8
14.3.10 Transportation.....	14-8
14.3.11 Aesthetics	14-8
Chapter 15 Cumulative and Growth-Inducing Effects	15-1
15.1 Introduction	15-1
15.2 Cumulative Impacts	15-2
15.2.1 Affected Environment.....	15-2
15.2.2 Cumulative Impact Assessment.....	15-7
15.3 Growth-Inducing Impacts.....	15-14
15.3.1 Affected Environment.....	15-14
15.3.2 Growth-Inducing Impact Assessment	15-14
Chapter 16 References Cited	16-1
Printed References	16-1
Personal Communications	16-12
Chapter 17. Preparers	17-1
Appendix A. Initial Study	
Appendix B. Summary of Truckee River Operations	
Appendix C. Storm Water Pollution Prevention Plan and Spill Prevention and Recovery Program	
Appendix D. Restoration Design Recommendations for the Farad Diversion Dam Replacement Project	
Appendix E. Supporting Data for Fish Analysis	
Appendix F. Analysis of Effects of Mitigation on Power Generation	
Appendix G. Species with Potential to Occur in the Project Area	

Tables

	Page
1-1 Permits, Approvals, and Consultations that May Be Required for Project Alternatives.....	follows 1-6
3-1 Selected Upper Truckee River Basin Truckee River Inflows Above the Farad Gaging Station (Average Annual Runoff Volumes in Acre-Feet [Flow Rates in Cubic Feet per Second])	3-2
3-2 Mean Monthly Flow Rates, Mean Monthly Runoff, and the Distribution of Annual Runoff at the Farad Gaging Station.....	3-4
3-3 Flow Distribution through Proposed Project Facilities and Resulting Flows in the Truckee River	3-8
4-1 Evaluation of Project Effects on Water Quality Objectives and Beneficial Uses	follows 4-14
5-1 Summary of Conditions under which Soil-Nail Walls and Mechanically Stabilized Earthwalls Would Be Used.....	5-10
6-1 Spawning Requirements of Some Fish Species Found in the Truckee River.....	follows 6-2
6-2 Instream Flow Recommendations for Fishery Resources in the Truckee River System, California	6-10
6-3 Average Number of Days and Percent Reduction that Minimum Flow Recommendations are Met for 60-, 100-, 150-, 200-, and 250-cfs Bypass Flow Scenarios.....	follows 6-16
7-1 Vegetation Communities in the Project Area	7-3
7-2 Special-Status Plants with Potential to Occur in the Project Area	7-6
9-1 International Scale of River Difficulty	follows 9-2

9-2	Recreation Thresholds.....	9-9
9-3	Recreational Flow Thresholds for the Hydrologic Record between the Months of March and September under Existing and With-Project Conditions, and Average Number of Days per Year on which Recreation Flows are Reduced	9-14
9-4	Recreational Flows for the Hydrologic Record under Existing and With-Project Conditions, and Reduction in Average Number of Days per Month during which the 400 cfs Level is Met.....	9-14
9-5	Recreational Flows for Normal, Driest, and Wettest Years of the Hydrologic Record by Month during which the 400 cfs Level is Met	9-14
9-6	Recreational Flows for the Hydrologic Record under Existing and With-Project Conditions, and Reduction in Average Number of Days per Month during which the 600 cfs Level is Met.....	9-15
9-7	Recreational Flows for Normal, Driest, and Wettest Years of the Hydrologic Record by Month during which the 600 cfs Level is Met	9-15
11-1	Noise Emission Levels Typical for Construction Equipment.....	11-4
11-2	Estimated Construction Noise in the Project Construction Area	11-5
11-3	Estimated Blasting Noise in the Project Construction Area	11-7
12-1	Level of Service Definitions.....	12-2
12-2	Construction Vehicle Trip Generation	12-5

Figures

	Follows Page
2-1	Regional Location 2-2
2-2	Proposed Project and Location..... 2-2
2-3	Project Diversion Elements..... 2-6
2-4	Boat/Debris Chute and Roughened Channels Cross Section 2-6
2-5	Intake Structure Concept 2-6
2-6	Fish Screen and Return 2-8
2-7	Construction Staging and Access 2-10
2-8	Flow Diversion Schematic..... 2-16
2-9	In-Kind Replacement 2-20
3-1	Major Tributaries above the Proposed Farad Diversion Dam..... 3-2
3-2	Flow at Floriston for the 3 Driest, Average, and Wettest Years..... 3-4
3-3	Annual Hydrograph at Floriston for Representative Normal, Wet, and Dry Years 3-4
3-4	Exceedance Probability at Floriston for the Driest, Average, and Wettest Years 3-6
3-5	Truckee River Diversions in the Operation Area..... 3-8
4-1	Simulated Average Daily Minimum, Mean, and Maximum Temperatures in the Truckee River for July and August..... 4-18
5-1	Geologic Map of the Construction Area 5-2
5-2	Existing Mass Movement Hazards..... 5-4

9-1	River Segments Used for Recreational Boating in the Vicinity of the Project Operation Area	9-2
9-2	Reduction in Average Number of Days per Month during which Kayaking and Rafting Flows are Met	9-14
10-1	Area of Potential Effect Map	10-2
13-1	Location of Existing Features within the Construction Study Area	13-6
13-2	Views of the Construction Area from River Left	13-6
13-3	Views of the Construction Area from River Right.....	13-6
13-4	Views of the Construction Area from the Community of Floriston	13-8

Acronyms and Abbreviations

ACHP	Advisory Council on Historic Preservation
af	acre-feet
aMW	average megawatts
APE	area of potential effects
BA	biological assessment
Basin Plans	water quality control plans
Black Eagle	Black Eagle Consulting
BMPs	best management practices
BO	biological opinion
Caltrans	California Department of Transportation
CCR	California Code of Regulations
CDA	California Department of Agriculture
CDMG	California Division of Mines and Geology
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
cfs	cubic feet per second
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CRHR	California Register of Historical Resources
CWA	Clean Water Act
dB	decibel
dBA	A-weighted decibel
Derby Dam	Truckee-Carson Diversion Dam
DFG	California Department of Fish and Game
DOI	Department of the Interior
EA	environmental assessment
EIR	environmental impact report
EIS	environmental impact statement
EPA	U.S. Environmental Protection Agency
ESA	federal Endangered Species Act
FHWA	Federal Highway Administration
FR	<i>Federal Register</i>
FTA	Federal Transit Administration
FWCA	Fish and Wildlife Coordination Act
HDPE	high-density polyethelene

HA	hydrologic area
HU	hydrologic unit
I-80	Interstate 80
IFIM	Instream Flow Incremental Methodology
kWh	kilowatt-hour
Ldn	day-night level
Leq	equivalent sound level
LOS	level of service
mg/L	milligrams per liter
mgd	million gallons per day
MOA	Memorandum of Agreement
MSE	mechanically stabilized earthwall
msl	mean sea level
NAHC	Native American Heritage Commission
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NOI	notice of intent
NOP	notice of preparation
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRHP	National Register of Historic Places
NTU	Nephelometric Turbidity Units
OCAP	Operating Criteria and Procedures
OHWM	ordinary high-water mark
PCWQCA	Porter-Cologne Water Quality Control Act of 1969
PG&E	Pacific Gas and Electric Company
PHABSIM	physical habitat simulation
PLPT	Pyramid Lake Paiute Tribe
PSH	proabilistic seismic hazard
RIP	road improvement plan
ROW	right-of-way
RWQCB	regional water quality control board
SHPO	State Historic Preservation Officer
SPPC	Sierra Pacific Power Company
SR	State Route
SWPPP	storm water pollution prevention plan
SWRCB	State Water Resources Control Board
TCID	Truckee-Carson Irrigation District
TDS	total dissolved solids
the Board	State Geology and Mining Board
TMWA	Truckee Meadows Water Authority
TNF	Tahoe National Forest
TROA	Truckee River Operating Agreement
TSP	traffic safety plan
TTSA	Tahoe-Truckee Sanitation Agency

UPRR	Union Pacific Railroad
USACE	U.S. Army Corps of Engineers
USBR	U.S. Bureau of Reclamation
USC	U.S. Government Code
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WDR	Waste Discharge Requirements
WUA	weighted usable area