

CHAPTER 6

Consultation, Coordination, and Public Participation

6.1 Scoping

The BLM, USFS and the GBUAPCD solicited internal and external input on the issues, impacts, and potential alternatives to be addressed in the Draft EIS/EIR for the CD-IV Project, as well as the extent to which those issues and impacts would be analyzed in the document. This process is called “scoping” under both NEPA and CEQA (40 CFR §1501.7; 14 CCR §15000 et seq.).

Internal input was provided by BLM, USFS, GBUAPCD, and cooperating agency staff, as an interdisciplinary process, to help define issues, alternatives, and data needs. External scoping involved notification and opportunities for feedback from other agencies, organizations, tribes, local governments, and the public. Formal public scoping begins following publication of a Notice of Intent (NOI) to prepare an EIS under NEPA and release of a Notice of Preparation (NOP) of an EIR under CEQA for a proposed project.

The NOI for the CD-IV Project was published in the Federal Register on March 25, 2011 (76 FR 1686). The GBUAPCD submitted the Notice of Preparation (NOP) to the State Clearinghouse, responsible and trustee agencies, and local jurisdictions on April 1, 2011, announcing the anticipated preparation of the Draft EIS/EIR for the project. The NOI and NOP were also posted on the BLM and GBUAPCD websites, respectively, and notice of scoping meetings was sent to local agencies and community organizations, Indian tribes, and radio, television, print, and internet news sources. Two scoping meetings were conducted on April 18-19, 2011 and written comments were accepted through May 9, 2011.

Following the scoping period, a scoping report was prepared in July 2011, collecting and summarizing the issues, impacts, and potential alternatives suggested in scoping comments for analysis in the Draft EIS/EIR. This scoping report is included as Appendix A.

The BLM also established a website that describes the CD-IV Project, the environmental review process, and various methods for providing public input, including the phone number where the BLM’s Project Manager for the Project (Collin Reinhardt) may be reached, physical addresses where Project documents may be reviewed, and an e-mail address where comments may be sent electronically: <http://www.blm.gov/ca/st/en/fo/bishop.html>

6.2 Organizations and Persons Consulted

6.2.1 Native American Government to Government Consultation

The BLM and USFS consult with Indian tribes on a government-to-government level in accordance with several authorities including NEPA, the NHPA, the American Indian Religious Freedom Act, and Executive Order 13007, and have initiated consultation with the tribes in the vicinity of the project area with respect to the CD-IV Project.

The USFS and BLM invited Indian tribes to consult on a government-to-government basis at the earliest stages of Project planning, and the Agencies and the Applicant have followed up with additional correspondence, communication, and other information since then. USFS contacted the California Native American Heritage Commission (NAHC) for a list of local Native Americans who might have concerns about the Project area and a search of the Sacred Lands File was requested to determine whether there were any known places of traditional importance in the vicinity of the Project. The NAHC responded with the list of individuals and organizations potentially interested in the Project. The list was generated from NAHC lists for Mono and Inyo Counties, earlier consultations regarding the project area, and from phone calls by Crystal West, USFS Zone Archaeologist (Personal Communication Sarah Johnson, USFS August 22 2012).

The USFS sent tribal scoping letters in April 2010 to individuals identified to provide information about the Project, solicit guidance about the scope and content of the EIS/EIR, and invite the tribes' participation in the environmental review process. Tribes also were invited, on a government-to-government basis, to a consultation meeting held on May 27, 2010 at the USFS/BLM office. Tribes and interested groups present at the meeting included the Benton, Mono Lake Kutzadika'a, Basketmakers, Big Pine and Lone Pine tribes. Table 6-1 presents a summary of USFS tribal consultation efforts.

Additionally, the BLM sent tribal scoping letters in June 2012 and were invited to join consultation on the Project and asked if areas of cultural or religious significance exist in the Project area. The BLM conducted a field trip to the Project area and held meetings with the various tribes to describe the CDIV Project and solicit input on the environmental review process. Table 6-2 summarizes the BLM tribal consultation efforts.

6.2.2 NHPA Section 106 Consultation

Federal agencies must demonstrate compliance with the NHPA (16 U.S.C. 470, et seq.). NHPA Section 106 requires a federal agency with jurisdiction over a project to evaluate the effect of the proposed project on properties included on, or eligible for, the NRHP. Federal agencies also must provide the ACHP an opportunity to comment on the effects of the proposed project to those properties. Under NHPA Section 106, the BLM and USFS consult with Indian tribes as part of its responsibilities to identify, evaluate, and resolve adverse effects on cultural resources affected by its undertakings.

**TABLE 6-1
SUMMARY OF USFS TRIBAL CONSULTATION EFFORTS**

Bishop	William Vega, Chair	4/22/2010	Certified Letter	Casa Diablo IV Geothermal expansion
Benton	Mike Keeler, Chair	4/22/2010	Certified Letter	Casa Diablo IV Geothermal expansion
Big Pine	David Moose, Chair	4/22/2010	Certified Letter	Casa Diablo IV Geothermal expansion
Mono Lake	C. Lange, Chair	4/22/2010	Certified Letter	Casa Diablo IV Geothermal expansion
Bridgeport	Joseph Sam, Chair	4/22/2010	Certified Letter	Casa Diablo IV Geothermal expansion
Mono Lake	Raymond Andrews, Vice Chair	5/27/2010	Meeting	Casa Diablo IV Geothermal expansion
Benton	Anita Dragon, Member	5/27/2010	Meeting	Casa Diablo IV Geothermal expansion
Big Pine	Alan Bacock, Env. Office	5/27/2010	Meeting	Casa Diablo IV Geothermal expansion
Lone Pine	Loretta Howard, member	5/27/2010	Meeting	Casa Diablo IV Geothermal expansion

**TABLE 6-2
SUMMARY OF BLM TRIBAL CONSULTATION EFFORTS**

Bishop	Chad Delgado, Chair	6/29/2012	Certified Letter	Casa Diablo IV Geothermal Expansion project. Invitation to join consultation. Asked if areas of cultural or religious significance to the tribes exist in the project area.
Benton	Jake Saulque, Chair	6/29/2012	Certified Letter	Casa Diablo IV Geothermal Expansion project. Invitation to join consultation. Asked if areas of cultural or religious significance to the tribes exist in the project area.
Big Pine	David Moose, Chair	6/29/2012	Certified Letter	Casa Diablo IV Geothermal Expansion project. Invitation to join consultation. Asked if areas of cultural or religious significance to the tribes exist in the project area.
Mono Lake	C. Lange, Chair	6/29/2012	Certified Letter	Casa Diablo IV Geothermal Expansion project. Invitation to join consultation. Asked if areas of cultural or religious significance to the tribes exist in the project area.
Bishop	Council, THPO ¹	8/7/2012	Council Meeting	Casa Diablo IV Geothermal expansion. Updated on survey results, asked for input of Sacred Sites, Traditional Cultural Properties (TCPs), culturally significant sites.
Big Pine, Bishop, Mono, Benton	THPOs	8/6/2012	Phone Call	Invite to CDIV Field Trip, scheduled for 8/21/2012
Bishop	Monty Bengochia, Council member; Raymond Andrews, THPO	8/21/2012	Meeting	Field Trip To CDIV Project Area
Big Pine	Council, THPO	8/21/2012	Meeting	Casa Diablo IV Geothermal expansion. Updated on survey results, asked for input of Sacred Sites, TCPs, culturally significant sites.
Bishop	Council	9/5/2012	Meeting	Presentation on geothermal development, focus on geology, plant specifics, differences from Coso.

NOTE:

¹ Tribal Historic Preservation Officer

Adverse effects that the Proposed Action or alternatives may have on cultural resources would be resolved through compliance with the terms of a Memorandum of Agreement (MOA) developed and agreed to in accordance with NHPA Section 106 and its implementing regulations (36 CFR §800.6(c)). Implementation of the Proposed Action also requires local and state agencies to demonstrate compliance with CEQA. Local agencies may use the NHPA process to demonstrate compliance with those CEQA requirements. Analysis of impacts in this document and implementation of the terms of the PA would provide evidence of BLM's compliance with NHPA Section 106 and NEPA as well as the GBUAPCD's compliance with CEQA with respect to cultural resources. The basic steps in the Section 106 process are described in Section 3.6, Cultural Resources.

6.2.3 Endangered Species Act

The USFWS has jurisdiction over threatened and endangered species listed under FESA (16 USC §1531 et seq.). Formal consultation with the USFWS under FESA Section 7 is required for any federal action that may adversely affect a federally listed species. Consultation will be initiated through the preparation and submittal of a Biological Assessment (BA) that describes the Proposed Action to the USFWS. Following review of the BA, the USFWS would be expected to issue a Biological Opinion (BO) that specifies conservation measures that must be implemented for any protected species. Compliance with those measures would be required to implement the CD-IV Project.

6.2.4 California Endangered Species Act

The CDFG has jurisdiction over state-listed threatened and endangered species listed under CESA (Fish and Game Code section 2050 et seq). Formal consultation with the CDFG is required with the state lead agency. State lead agencies are required to consult with CDFG to ensure that any action it undertakes is not likely to jeopardize the continued existence of any endangered or threatened species or result in destruction or adverse modification of essential habitat. Because this project may affect species that are both federally and state listed, consultation will be initiated through the preparation and submittal of a copy of the BA and a request for Consistency Determination.

6.3 Summary of Comments

NEPA and CEQA project scoping for the CD-IV project identified several issues to be considered during analysis. These include:

1. Air quality, odor, greenhouse gas emissions;
2. Archaeological and cultural resources, including the potential for interference with current culturally important uses;
3. Biological resources, including the potential for loss of habitat and wildlife movement corridors, and impacts to special-status species;

4. Hydrology and water resources, including surface and groundwater supply, flows, temperatures, and quality;
5. Public safety and health, related to well blowouts, pressurized pipeline releases and fires;
6. Recreational resources, such as effects on Nordic trail use, conflicts with pipelines and recreational opportunities in the Shady Rest area, and aesthetic, noise, and other potential safety impacts in and near recreation areas; and
7. Noise effects on local fauna and recreational users
8. Cumulative effects of project with the existing geothermal facilities at Casa Diablo.

6.3.1 Public Comment Process

The Draft EIS/EIR will be circulated for a 60-day public comment period. All comments must be postmarked no later than 60 days from the date the Notice of Availability for the Draft EIS/EIR published in the Federal Register by the USEPA.

To receive comments on the jointly prepared Draft EIS/EIR, the BLM is serving as the single point of contact. Accordingly, comments may be submitted in any of the following ways:

U.S. Post BLM Bishop Field Office
 Attn: Casa Diablo IV Development Project Draft EIS/EIR
 c/o Collin Reinhardt, Project Manager
 351 Pacu Lane, Suite 100, Bishop, California 93514

E-mail: cabipubcom@ca.blm.gov; Subject: Casa Diablo IV Geothermal

Fax: (760) 872-5050

Public meetings will be held in Mammoth Lakes and Crowley Lake, California, to allow written and oral comments to be presented to the Lead Agencies. Please see BLM's web page at <http://www.blm.gov/ca/st/en/fo/bishop.html> for information about the location, date, and time of these meetings. All substantive issues raised during the comment period will be considered, and modifications based on these comments may be made to develop the Final EIS/EIR.

The Draft EIS/EIR may be reviewed at the BLM Bishop Field Office and the Town of Mammoth Lakes Public Library. Additionally, CD-ROM versions of the Draft EIS/EIR may be obtained by contacting the Bishop Field Office. The document also will be available on the Internet at: <http://www.blm.gov/ca/st/en/fo/bishop.html>

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CHAPTER 7

List of Preparers

7.1 Lead Agencies

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Margie DeRose	CD-IV Project Manager, Minerals Program Manager
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Sue Weis	Botanist
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Erin Noesser	Hydrologist
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7.3 Consultants

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Claire Myers	Land Use, Population and Housing, Utilities and Service Systems
Cory Barringhaus	Land Use, Population and Housing, Utilities and Service Systems
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Heidi Koenig, RPA	Cultural Resources
Jack Hutchison	Traffic and Transportation
Josh Bolt	Biological Resources, Grazing
Kristina Tierney	Air Resources, Greenhouse Gas Emissions, Noise
Matt Fagundes	Air Resources, Greenhouse Gas Emissions, Noise
Pete Costa	Traffic and Transportation
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7.3.3 Recipients of the Draft Joint EIS/EIR

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Other Federal Agencies

Department of Energy
Federal Aviation Administration
Advisory Council on Historic Preservation
Natural Resources Conservation Service
NOAA Fisheries Service – SW Region
NOAA Office of Policy and Strategic Planning

US EPA, Region 9
U.S. Coast Guard, Commandant CG-47, Department of Homeland Security
U.S. Army Corps of Engineers
National Park Service
United States Fish and Wildlife Service – Mike Schlafmann

State Agencies

California State Clearinghouse
California Department of Fish and Game – Kimberly Nicol
California Department of Conservation – Tim Boardman
California Regional Water Quality Control Board – Doug Cushman
California State Office of Historic Preservation – Carol Roland-Nawi
Caltrans – Gayle Rosander and Tom Hallenbeck
California Department of Fish and Game – Steve Parmenter and Brad Hendersen
California Regional Water Quality Control Board – Keith Elliott and Christy Hunter

Local Agencies

Mono County – Vicki Bauer, Ted Schade, Dan Lyster, Courtney Weiche, Scott Burns and Gerry Le Francois
Long Valley Fire Protection District – Fred Stump
Mammoth Lakes Fire Protection District – Thom Heller
Town of Mammoth Lakes – Matthew Lehman, Jo Bacon, Ellen Clark, Marianna Marysheva-Martinez, Danna Stroud, Stuart Brown, and Steve Speidel
Mammoth Community Water District – Gregory Norby

Native American Tribes and Groups

Bishop Paiute Tribe – Monty Bengochia

Organizations and Individuals

Sierra Club – Malcolm Clark
High Sierra Energy Foundation – Rick Phelps
Advocates for Mammoth – John Walter
Mammoth Nordic Foundation – Brian Knox
Environmental Policy and Culture Program – Paul Friesema
Mammoth Lakes Trails and Public Access Foundation – John Wentworth
Eastern Sierra 4WD Club – Brent Allen
Friends of the Inyo – Stacy Corless
395 Fat Tire Council – Alex Fabbro
High Sierra Triathlon Club – Alana Levin
High Sierra Equestrian Club – Stacey Crockett
Eastern Sierra Land Trust – Karen Ferrell-Ingram
Mammoth Powersports – Ron Malm
Disabled Sports Eastern Sierra – Maggie Palchak

Mammoth Snowmobile Association/TOML Tourism & Recreation Commission – Bill Sauser

Mammoth Pet Shop – Stephanie Wolff

MLTPA – Drew Blankenbaker

Individuals – Matthew Meuser, Liz O’Sullivan, Michael O’Sullivan, Lisa Issacs, Rick Fez,
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CHAPTER 8

Acronyms and Abbreviations

$\mu\text{g}/\text{m}^3$	micrograms per cubic meter
$^{\circ}\text{C}$	degrees Celsius
$^{\circ}\text{F}$	degrees Fahrenheit
%	percent
A	ampere (amp)
AADT	Annual Average Daily Traffic
AAQS	ambient air quality standards
AB 32	California Global Warming Solutions Act of 2006
AB	Assembly Bill
ABAG	Association of Bay Area Governments
ABM	automatic bottle machine
ACHP	Advisory Council on Historic Preservation
ACOE	Army Corps of Engineers
ACTM	Airborne Toxic Control Measure
AEP	annual exceedance probability
AIRFA	American Indian Religious Freedom Act
a.m.	ante meridiem
amsl	above mean sea level
AP	Alquist Priolo
APE	Area of Potential Effects
APM	Applicant Proposed Measures
ASCE	American Society of Civil Engineers
AST	aboveground storage tank
ATV	all-terrain vehicle
BA	Biological Assessment
BE	Biological Evaluation
bgs	below ground surface
bhp	brake-horsepower
BLM	United States Bureau of Land Management
BLMS	BLM Sensitive

BMPs	best management practices
BO	Biological Opinion
BOPE	“blowout” prevention equipment
BP	Before Present
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CAISO	California Independent System Operator
CALFIRE	California Department of Forestry and Fire Protection
CalARP	California Accidental Release Program
CA DOF	California Department of Finance
CalEPA	California Environmental Protection Agency
Cal-IPC	California Invasive Plant Council
Cal/OSHA	California - Occupational Safety and Health Administration
Caltrans	California State Department of Transportation
CARB	California Air Resources Board
CBC	California Building Code
CCR	California Code of Regulations
CD-IV	Casa Diablo Geothermal Development Project
CDC	seismic design category
CDFA	California Department of Food and Agriculture
CDFG	California Department of Fish and Game
CDP	Census Designated Places
CEC	California Energy Commission
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
cfs	cubic feet per second
CGS	California Geological Survey
CH ₄	methane
CHP	California Highway Patrol
CMP	Congestion Management Plan
CNDDB	California Natural Diversity Database
CNEL	Community Noise Equivalent Level
CNPS	California Native Plant Society
CO	carbon monoxide
CO ₂	carbon dioxide
CO ₂ e	carbon dioxide-equivalent

CPUC	California Public Utilities Commission
CREST	Carson Ridgecrest Eastern Sierra Transit
CRHR	California Register of Historical Resources
CUP	Conditional Use Permit
CUPA	Certified Unified Program Authority
CWA	Clean Water Act
dB	decibels
dBA	A-weighted decibel scale
dbh	diameter at breast height
DCS	digital Control System
DHS	California Department of Health Services
DNA	Determination of NEPA Adequacy
DOI	United States Department of Interior
DPM	diesel particulate matter
DRECP	California Desert Renewable Energy Conservation Plan
DSN	Desert Side-Notch
DTSC	Department of Toxic Substances Control
DWR	California Department of Water Resources
EDD	California Employment Development Department
EFZ	Earthquake Fault Zone
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EO	Executive Order
EP Act	Energy Policy Act of 2005
EPCRA	Emergency Planning and Community Right-To-Know Act of 1986
EPS	Emission Performance Standard
ESA	Environmental Science Associates
ESTA	Eastern Sierra Transit Authority
FAA	Federal Aviation Administration
FACW	Faculative Wet
FC	Candidate for listing by the Federal Government
FE	Federally listed as endangered
FEIR	Final Environmental Impact Report
FEIS	Final Environmental Impact Statement
FEMA	Federal Emergency Management Agency
FESA	Federal Endangered Species Act
FGC	Fish and Game Code
FIRM	Flood Insurance Rate Map

FLPMA	Federal Land Policy and Management Act
FMMP	Farmland Mapping and Monitoring Program
FR	Federal Register
FSS	Forest Service Sensitive
FT	Federally listed as threatened
FTA	Federal Transit Administration
FYPC	Fossil Yield Potential Classification
GBUAPCD	Great Basin Unified Air Pollution and Control District
GBVAB	Great Basin Valleys Air Basin
GHG	greenhouse gas
GIS	Gas-insulated switchgear
gpd	gallons per day
gpm	gallons per minute
GRO	Geothermal Resources Operational
GWh	gigawatt-hour
GWP	Global warming potential
GWR	groundwater recharge
H ₂ S	hydrogen sulfide
HA	Herd Area
HABS	Historic American Building Survey
HAER	Historic American Engineering Record
HALS	Historic American Landscape Survey
HCP	Habitat conservation plan
HFCs	hydrofluorocarbons
HMA	Herd Management Area
HMBP	Hazardous Materials Business Plan
hp	horsepower
HPMP	Historic Properties Management Plan
HPTP	Historic Properties Treatment Plan
Hz	Hertz
IBC	International Building Code
ICAPCD	Imperial County Air Pollution Control District
ICC	Interagency Coordinating Committee
in/sec	inches per second
IPCC	International Panel on Climate Change
K	erosion factor
kg	kilogram

kg/hr/source	kilograms per hour per source
KGRA	Mono-Long Valley Known Geothermal Resource Area
KOPs	key observation points
kV	kilovolt
LADWP	Los Angeles Department of Water and Power
lbs	pounds
lbs/hr	pounds per hour
lb/yr	pounds per year
L _{dn}	day-night average noise level
L _{eq}	equivalent continuous sound level
LLC	Limited Liability Corporation
L _{max}	maximum sound level
LOS	level of service
LOU	Letter of Understanding
Low Threat WDRs	Statewide General Waste Discharge Requirements for Discharges to Land with a Low Threat to Water Quality
LRMP	Land and Resource Management Plan
LRWQCB	Lahontan Regional Water Quality Control Board
LVO	Long Valley Observatory
LVFPD	Long Valley Fire Protection District
LVHAC	Long Valley Hydrological Advisory Committee
m	meter
M	Magnitude
MBTA	Migratory Bird Treaty Act
MCL	Maximum Contaminant Level
MCMD	Mammoth Community Water District
MCEHD	Mono County Health Department Environmental Health Division
mg/L	milligrams per liter
mg/m ³	milligrams per cubic meter
MIS	Forest Service Management Indicator Species
ml	milliliters
MLFPD	Mammoth Lakes Fire Protection District
mm	millimeters
MM	Modified Mercalli
MND	Mitigated Negative Declaration
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
mph	miles per hour
MP-I	Mammoth Pacific I (MP-I) Replacement Project

MP-II	Mammoth Pacific II – Geothermal Project
MPLP	Mammoth Pacific LP.
MSDS	material safety data sheets
msl	mean sea level
MT	metric ton
MTCO ₂ e	metric tons of carbon dioxide equivalent
MW	megawatts
MW	Moment Magnitude
MWh	megawatt-hour
N/A	Not Applicable
N ₂ O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NAHC	Native American Heritage Commission
NEPA	National Environmental Policy Act
NF	National Forest
NFIP	National Flood Insurance Program
NFSR	National Forest System Road
NHPA	National Historic Preservation Act
NO	nitric oxide
NO ₂	nitrogen dioxide
NOA	Notice of Availability
NOI	Notice of Intent
NO _x	nitrogen oxides
NOP	Notice of Preparation
NPDES	National Pollutant Discharge Elimination System
NPPA	Native Plant Protection Act
NPS	United States National Park Service
NRCS	Natural Resources Conservation Service
NRHP or National Register	National Register of Historic Places
NSPS	New Source Performance Standard
NSR	New Source Review
NTP	Notice to Proceed
NWIS	National Water Information System
NWP	Nationwide Permits
O&M	operations and maintenance
O ₂	oxygen
O ₃	ozone
OBL	obligate

OEC	Ormat Energy Converter
OEHHA	Office of Environmental Health Hazard Assessment
OES	Office of Emergency Services
OHV	off-highway vehicle
ORNI 50	
OS	Open Space
OSHA	United States Occupational Safety and Health Administration
PA	Programmatic Agreement
PACs	protected activity centers
PAOT	Population at One Time
Pb	Lead
PDM	Project design measures
PERP	Portable Engine Registration Program
PFCs	perfluorocarbons
PGA	peak ground acceleration
PLC	Programmable Logic Controller
PLES-I	Mammoth Pacific PLES-I Geothermal Project
p.m.	post meridiem
PM	particulate matter
PM10	particulate matter less than 10 microns in diameter
PM2.5	particulate matter less than 2.5 microns in diameter
POA	Plan of Action
POD	Plan of Development
ppm	parts per million
ppmv	parts per million by volume
ppmvd	parts per million by volume, dry
PPV	peak particle velocity
PR	partial retention
PRC	Public Resources Code
PRPA	Paleontologic Resources Preservation Act
PSD	Prevention of Significant Deterioration
psi	pounds per square inch
PYFC	Potential Fossil Yield Classification
R	Retention
RCA	Riparian Conservation Area
RCRA	Resource Conservation and Recovery Act
RM	Resource Management
RM-INF	Inyo National Forest Land & Resource Management Plan
RMP	Resource Management Plan

RMS	root mean square
ROD	Record of Decision
RPS	Renewables Portfolio Standard
RTP	Regional Transportation Plan
RV	recreational vehicle
RWQCB	Regional Water Quality Control Board
SARA	Superfund Amendments and Reauthorization Act of 1986
SCAQMD	South Coast Air Quality Management District
SCE	Southern California Edison
SDC	Seismic Design Category
SDWA	Safe Drinking Water Act
SE	State listed as endangered
SF ₆	sulfur hexafluoride
SHPO	State Historic Preservation Officer
SIC	Scientist-in-Charge
SIP	State Implementation Plan
SMARA	Surface Mining and Reclamation Act of 1975
SNFPA	Sierra Nevada Forest Plan Amendment
SO ₂	sulfur dioxide
SO ₄	sulfate
SO _x	sulfur oxides
SPCC	Spill Prevention Control and Countermeasures
SR	Listed as Rare by the State of California
SSC	California Species of Special Concern
SSI	Forest Service of Special Interest
ST	State listed as threatened
SVP	Society of Vertebrate Paleontology
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TAC	Toxic Air Contaminants
TDS	Total Dissolved Solids
TEPS	Threatened, endangered, proposed, and sensitive
THC	total hydrocarbons
TMDLs	Total Maximum Daily Loads
TPS	Temperature, pressure, and spinner
TQ	Threshold Quantity
µg/L	micrograms per Liter
µg/m ³	micrograms per cubic meter

UGB	urban growth boundary
UK	United Kingdom
U.S.	United States
UCMP	University of California Museum of Paleontology
USC	United States Code
USDA	United States Department of Agriculture
USDOD	United States Department of Defense
USDOT	United States Department of Transportation
USEPA	United States Environmental Protection Agency
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UST	underground storage tank
V	volts
VdB	velocity decibel
VMT	vehicle-miles-traveled
VOC	volatile organic compound
VQO	Visual Quality Objective
VRU	Motive fluid vapor recovery system
WRCC	Western Regional Climate Center

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CHAPTER 9

Glossary

A

A-weighted decibel scale (dBA): The frequency weighting measure that simulates human perception that is cited in most noise criteria to describe environmental noise and to assess impacts on areas sensitive to community noise. The frequency weighting scale known as A-weighting best reflects the human ear's reduced sensitivity to low frequencies and correlates well with human perceptions of the annoying aspects of noise.

Adjacent: Defined by ASTM E1527-00 as any real property the border of which is contiguous or partially contiguous with that of the site or would be contiguous or partially contiguous with that of the site but for a street, road, or other public thoroughfare separating them.

Air Basin: A regional area defined for state air quality management purposes based on considerations that include topographic features that influence meteorology and pollutant transport patterns, and political jurisdiction boundaries that influence the design and implementation of air quality management programs.

Ambient Air Quality Standards (AAQS): A combination of air pollutant concentrations, exposure durations, and exposure frequencies that are established as thresholds above which adverse impacts to public health and welfare may be expected. Ambient air quality standards are set on a national level by the U.S. Environmental Protection Agency. Ambient air quality standards are set on a state level by public health or environmental protection agencies as authorized by state law.

Ambient Air: Outdoor air in locations accessible to the general public.

Anthropogenic: Resulting from human activity.

Archaeological district: A significant concentration, linkage, or continuity of sites, buildings, or features important in history or prehistory. There can be discontinuous districts composed of resources that are not in close proximity to one another.

Area of Critical Environmental Concern (ACEC): A designated area on public lands where special management attention is required: (1) to protect and prevent irreparable damage to fish and wildlife; (2) to protect important historic, cultural, or scenic values, or other natural systems or processes; or (3) to protect life and safety from natural hazards.

Attainment Area: An area that has air quality as good as or better than a national or state ambient air quality standard. A single geographic area may be an attainment area for one pollutant and a non-attainment area for others.

B

Basic Elements: The four design elements (form, line, color, and texture), which determine how the character of a landscape is perceived.

Blowout Prevention Equipment (BOPE): Equipment installed at the wellhead to prevent the escape of pressure either in the annular space between the casing and the drill pipe or in open hole (for example, hole with no drill pipe) during drilling or completion operations.

C

Cancer: A class of diseases characterized by uncontrolled growth of somatic cells. Cancers are typically caused by one of three mechanisms: chemically induced mutations or other changes to cellular DNA; radiation induced damage to cellular chromosomes; or viral infections that introduce new DNA into cells.

Carbon Monoxide (CO): A colorless, odorless gas that is toxic because it reduces the oxygen-carrying capacity of the blood.

Characteristic: A distinguishing trait, feature, or quality.

Characteristic Landscape: The established landscape within an area being viewed. This does not necessarily mean a naturalistic character. It could refer to an agricultural setting, an urban landscape, a primarily natural environment, or a combination of these types.

Climate: A statistical description of daily, seasonal, or annual weather conditions based on recent or long-term weather data. Climate descriptions typically emphasize average, maximum, and minimum conditions for temperature, precipitation, humidity, wind, cloud cover, and sunlight intensity patterns; statistics on the frequency and intensity of tornado, hurricane, or other severe storm events may also be included.

Community Noise Equivalent Level (CNEL): A 24-hour average noise level rating with a 5 dB penalty factor applied to evening noise levels and a 10 dB penalty factor applied to nighttime noise levels. The CNEL value is very similar to the Day-Night Average Sound Level (Ldn) value, but includes an additional weighting factor for noise during evening hours.

Contrast: Opposition or unlikeness of different forms, lines, colors, or textures in a landscape.

Contrast Rating: A method of analyzing the potential visual impacts of proposed management activities.

Corrosive Soils: Potential soil-induced electrochemical or chemical action that could corrode or deteriorate concrete, reinforcing steel in concrete structures, and bare-metal structures.

Cretaceous: In geologic history the third and final period of the Mesozoic era, from 144 million to 65 million years ago, during which extensive marine chalk beds formed.

Criteria Pollutant: An air pollutant for which there is a national ambient air quality standard (carbon monoxide, nitrogen dioxide, ozone, sulfur dioxide, inhalable particulate matter, fine particulate matter, or airborne lead particles).

Critical Habitat: Habitat designated by the U.S. Fish and Wildlife Service under §4 of the Endangered Species Act and under the following criteria: 1) specific areas within the geographical area occupied by the species at the time it is listed, on which are found those physical or biological features essential to the conservation of the species and that may require special management of protection; or 2) specific areas outside the geographical area by the species at the time it is listed but that are considered essential to the conservation of the species.

Cultural Landscape: A geographic area, including both natural and cultural resources, associated with a historic event, activity, group, or person; or, a geographic area that has been assigned cultural or social meaning by associated cultural groups.

Cultural Modification: Any man-caused change in the land form, water form, vegetation, or the addition of a structure which creates a visual contrast in the basic elements (form, line, color, texture) of the naturalistic character of a landscape.

Cultural Resource: A location of human activity, occupation, or use identifiable through field inventory, historical documentation, or oral evidence. Cultural resources include archaeological and historical sites, structures, buildings, objects, artifacts, works of art, architecture, and natural features that were important in past human events. They may consist of physical remains or areas where significant human events occurred, even though evidence of the events no longer remains. And they may include definite locations of traditional, cultural, or religious importance to specified social or cultural groups.

Cultural Resource Data: Cultural resource information embodied in material remains such as artifacts, features, organic materials, and other remnants of past activities. An important aspect of data is context, a concept that refers to the relationships among these types of materials and the situations in which they are found.

Cultural Resource Data Recovery: The professional application of scientific techniques of controlled observation, collection, excavation, and/or removal of physical remains, including analysis, interpretation, explanation, and preservation of recovered remains and associated records in an appropriate curatorial facility used as a means of protection. Data recovery may sometimes employ professional collection of such data as oral histories, genealogies, folklore, and related information to portray the social significance of the affected resources. Such data recovery is sometimes used as a measure to mitigate the adverse impacts of a ground-disturbing project or activity.

Cultural Resource Integrity: The condition of a cultural property, its capacity to yield scientific data, and its ability to convey its historical significance. Integrity may reflect the authenticity of a property's historic identity, evidenced by the survival or physical characteristics that existed during its historic or prehistoric period, or its expression of the aesthetic or historic sense of a particular period of time.

Cultural Resource Inventory (Survey): A descriptive listing and documentation, including photographs and maps of cultural resources. Included in an inventory are the processes of locating, identifying, and recording sites, structures, buildings, objects, and districts through library and archival research, information from persons knowledgeable about cultural resources, and on-the-ground surveys of varying intensity.

Class I: A professionally prepared study that compiles, analyzes, and synthesizes all available data on an area's cultural resources. Information sources for this study include published and unpublished documents, BLM inventory records, institutional site files, and state and National Register files. Class I inventories may have prehistoric, historic, and ethnological and sociological elements. These inventories are periodically updated to include new data from other studies and Class II and III inventories.

Class II: A professionally conducted, statistically based sample survey designed to describe the probable density, diversity, and distribution of cultural properties in a large area. This survey is achieved by projecting the results of an intensive survey carried out over limited parts of the target area. Within individual sample units, survey aims, methods, and intensities are the same as those applied in Class III inventories. To improve statistical reliability, Class II inventories may be conducted in several phases with different sample designs.

Class III: A professionally conducted intensive survey of an entire target area aimed at locating and recording all visible cultural properties. In a Class III survey, trained observers commonly conduct systematic inspections by walking a series of close interval parallel transects until they have thoroughly examined an area.

Cultural Resource Values: The irreplaceable qualities that are embodied in cultural resources, such as scientific information about prehistory and history, cultural significance to Native Americans and other groups, and the potential to enhance public education and enjoyment of the Nation's rich cultural heritage.

Cultural Site: A physical location of past human activities or events, more commonly referred to as an archaeological site or a historic property. Such sites vary greatly in size and range from the location of a single cultural resource object to a cluster of cultural resource structures with associated objects and features.

D

Day/Night Average Sound Level (Ldn): A 24-hour average noise level rating with a 10 dB penalty factor applied to nighttime noise levels. The Ldn value is very similar to the CNEL value, but does not include any weighting factor for noise during evening hours.

Decibel (dB): A generic term for measurement units based on the logarithm of the ratio between a measured value and a reference value. Decibel scales are most commonly associated with acoustics (using air pressure fluctuation data); but decibel scales sometimes are used for ground-borne vibrations or various electronic signal measurements.

Distance Zones: A subdivision of the landscape as viewed from an observer position. The subdivision (zones) includes foreground-middleground, background, and seldom seen.

E

Earthquake Fault Zones (EFZ): Zones regulated by the California Geological Survey around the surface traces of active faults where mapping demonstrates surface fault rupture has occurred within the past 11,000 years (Holocene time).

Enhancement: A management action designed to improve visual quality.

Equivalent Average Sound Pressure Level (Leq): The decibel level of a constant noise source that would have the same total acoustical energy over the same time interval as the actual time-varying noise condition being measured or estimated. Leq values must be associated with an explicit or implicit averaging time in order to have practical meaning.

Erosion: A natural process whereby soil and highly weathered rock materials are worn away and transported to another area, most commonly by wind or water.

Ethnographic Resources: Resources representing the heritage of a particular ethnic or cultural group, such as Native Americans or African, European, Latino, or Asian immigrants. They may include traditional resource-collecting areas, ceremonial sites, value-imbued landscape features, cemeteries, shrines, or ethnic neighborhoods and structures.

Excavation: The scientific examination of an archaeological site through layer-by-layer removal and study of the contents within prescribed surface units, e.g. square meters.

Expansive Soils: A soil which significantly changes its volume in horizontal and vertical planes with changes in moisture content.

F

Fault (active): A fault that has had surface displacement during Holocene time (last 11,000 years).

Fault (potentially active): A Quaternary-age (last 2.6 million years) fault that lacks evidence of Holocene-age displacement.

Form: The mass or shape of an object or objects which appear unified, such as a vegetative opening in a forest, a cliff formation, or a water tank.

G

Gas-insulated switchgear (GIS): Equipment in an electrical power system (including disconnect switches, fuses, or circuit breakers) used to control, protect and isolate electrical equipment that uses pressurized SF₆ gas as an insulator.

Geomorphic Province: Naturally defined geologic regions that display a distinct landscape or landform.

Geothermal energy: The natural heat of the earth that, if conveyed by water and depending on temperature, can be used in a range of applications for power generation.

Geothermal fluid: Gas, vapor and water found within a geothermal reservoir.

Geothermal reservoir: An underground system of fractured and permeable rocks and the hot water or steam trapped in that volume of rock.

Geothermal Resource: A hydrothermal system which is (or may be) capable of supporting geothermal energy development. Geothermal resources vary in size, temperature, permeability and chemistry depending primarily on the geologic setting and the rocks that make up a geothermal reservoir. Based on reservoir fluids, geothermal systems occur as either water-dominated or steam-dominated resources.

Geothermal System: See Geothermal Resource.

Graben structures: A depressed block of land bordered by parallel faults.

Greenhouse Gas (GHG): A gaseous compound that absorbs infrared radiation and re-radiates a portion of it back toward the earth's surface, thus trapping heat and warming the earth's atmosphere.

H

Habitat: A specific set of physical conditions that surround a single species, a group of species, or a large community. In wildlife management, the major components of habitat are considered to be food, water, cover, and living space.

Hazardous Air Pollutant (HAP): Air pollutants which have been specifically designated by relevant federal or state authorities as being hazardous to human health. Most HAP compounds are designated due to concerns related to: carcinogenic, mutagenic, or teratogenic properties; severe acute toxic effects; or ionizing radiation released during radioactive decay processes.

Hertz (Hz): A standard unit for describing acoustical frequencies measured as the number of air pressure fluctuation cycles per second. For most people, the audible range of acoustical frequencies is from 20 Hz to 20,000 Hz.

Historical Site: A location that was used or occupied after the arrival of Europeans in North America (ca. A.D. 1492). Such sites may consist of physical remains at archaeological sites or areas where significant human events occurred, even though evidence of the events no longer remains. They may have been used by people of either European or Native American descent.

Holocene: Of, denoting, or formed in the second and most recent epoch of the Quaternary period, which began 11,000 years ago at the end of the Pleistocene.

Hydrocarbons: Any organic compound containing only carbon and hydrogen, such as the alkanes, alkenes, alkynes, terpenes, and arenes.

Hydrocompaction: Generally is limited to young soils that were deposited rapidly in a saturated state, most commonly by a flash flood. The soils dry quickly, leaving an unconsolidated, low density deposit with a high percentage of voids.

Horst structures: A raised fault block bounded by normal faults or graben.

Hydrologic Resource: A useful or potentially useful source of water in the form of a liquid, solid, or gas on the Earth's surface, in the soil and underlying rocks, and in the atmosphere.

I

Igneous: Rock, such as granite and basalt that has solidified from a molten or partially molten state.

Indian Tribe: Any American Indian group in the United States that the Secretary of the Interior recognizes as possessing tribal status (listed periodically in the Federal Register).

Indigenous: Being of native origin (such as indigenous peoples or indigenous cultural features).

Interdisciplinary Team: A group of individuals with different training, representing the physical sciences, social sciences, and environmental design arts, assembled to solve a problem or perform a task. The members of the team proceed to a solution with frequent interaction so that each discipline may provide insights to any stage of the problem and disciplines may combine to provide new solutions.

Invasive Species: An exotic species whose introduction does or is likely to cause economic or environmental harm or harm to human health (Executive Order 13122, 2/3/99).

Isolate: Non-linear, isolated archaeological features without associated artifacts.

K

Key Observation Point (KOP): One or a series of points on a travel route or at a use area or a potential use area, where the view of a management activity would be most revealing.

Killing the well: The operation of placing a column of heavy fluid into a well bore in order to prevent the flow of reservoir fluids without the need for pressure control equipment at the surface. It works on the principle that the weight of the “kill fluid” or “kill mud” will be enough to suppress the pressure of the formation fluids.

L

Landscape Character: The arrangement of a particular landscape as formed by the variety and intensity of the landscape features and the four basic elements of form, line, color, and texture. These factors give the area a distinctive quality which distinguishes it from its immediate surroundings.

Landscape Features: The land and water form, vegetation, and structures which compose the characteristic landscape.

Landslide: A slope failure that involves downslope displacement and movement of material, either triggered by static (i.e., gravity) or dynamic (i.e., earthquake) forces.

Lead Agency: The public agency that has the primary responsibility for approving a project that may have a significant impact upon the environment.

Leasable Minerals: Minerals whose extraction from federally managed land requires a lease and the payment of royalties. Leasable minerals include coal, oil and gas, oil shale and tar sands, potash, phosphate, sodium, and geothermal steam.

Line: The path, real or imagined, that the eye follows when perceiving abrupt differences in form, color, or texture. Within landscapes, lines may be found as ridges, skylines, structures, changes in vegetative types, or individual trees and branches.

Liquefaction: A condition in which a saturated cohesionless soil may lose shear strength because of a sudden increase in pore water pressure caused by an earthquake.

Locatable Minerals: Minerals subject to exploration, development, and disposal by staking mining claims as authorized by the Mining Law of 1872, as amended. This includes deposits of gold, silver, and other uncommon minerals not subject to lease or sale.

Long Valley Caldera: A large-scale topographic depression 10 miles wide by 20 miles long created by a volcanic eruption ejecting 145 cubic miles of rock, and spreading a thick layer of ash over much of the Western United States (the layer is referred to as the “Bishop Tuff”).

M

Maintenance Area: An area that currently meets federal ambient air quality standards but which was previously designated as a nonattainment area. Federal agency actions occurring in a maintenance area are still subject to Clean Air Act conformity review requirements.

Management Activity: A surface disturbing activity undertaken on the landscape for the purpose of harvesting, traversing, transporting, protecting, changing, replenishing, or otherwise using resources.

Memorandum of Understanding (MOU): A written but noncontractual agreement between two or more agencies or other parties to take a certain course of action.

Mineral Material Disposal: The sale of sand, gravel, decorative rock, or other materials defined in 43 CFR 3600.

Mining Claim: A mining claim is a selected parcel of Federal Land, valuable for a specific mineral deposit or deposits, for which a right of possession has been asserted under the General Mining Law. This right is restricted to the development and extraction of a mineral deposit. The rights granted by a mining claim protect against a challenge by the United States and other claimants only after the discovery of a valuable mineral deposit. The two types of mining claims are lode and placer. In addition, mill sites and tunnel sites may be located to provide support facilities for lode and placer mining.

Mitigation: Mitigation includes: (a) Avoiding the impacts altogether by not taking an action or parts of an action, (b) Minimizing impacts by limiting the degree or magnitude of the action and its implementation, (c) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment, (d) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action, (e) Compensating for the impact by replacing or providing substitute resources or environments (40 CFR §1508.20).

Motive fluid vapor recovery system (VRU): Recovers vapors of the motive fluid which have formed and converts the recovered vapor into a usable product.

N

Nameplate Generation Capacity: The maximum rated output of a generator or other electric power production equipment under specific conditions designated by the manufacturer.

National Forest System: Includes all National Forest lands reserved or withdrawn from the public domain of the United States, all National Forest lands acquired through purchase, exchange, donation, or other means, the National Grasslands and land utilization projects administered under title III of the Bankhead-Jones Farm Tenant Act (50 Stat. 525, 7 U.S.C. 1010–1012), and other lands, waters or interests therein which are administered by the Forest Service or are designated for administration through the Forest Service as a part of the system.

National Forest System Road: A forest road other than a road which has been authorized by a legally documented right-of-way held by a State, county, or other local public road authority.

National Pollutant Discharge Elimination System (NPDES): The NPDES permit program has been delegated in California to the State Water Resources Control Board. These sections of the CWA require that an applicant for a federal license or permit that allows activities resulting in a discharge to waters of the United States must obtain a state certification that the discharge complies with other provisions of the Clean Water Act.

National Register District: A group of significant archaeological, historical, or architectural sites, within a defined geographic area, that is listed on the National Register of Historic Places. See National Register of Historic Places.

National Register of Historic Places: The official list, established by the National Historic Preservation Act, of the Nation's cultural resources worthy of preservation. The National Register lists archeological, historic, and architectural properties (i.e. districts, sites, buildings, structures, and objects) nominated for their local, state, or national significance by state and federal agencies and approved by the National Register Staff. The National Park Service maintains the National Register.

National Scenic Trail: One of the three categories of national trails defined in the National Trails System Act of 1968 that can only be established by act of Congress and are administered by federal agencies, although part or all of their land base may be owned and managed by others. National Scenic Trails are existing regional and local trails recognized by either the Secretary of Agriculture or the Secretary of the Interior upon application.

Native American: Indigenous peoples of the western hemisphere.

Nitric Oxide (NO): A colorless toxic gas formed primarily by combustion processes that oxidize atmospheric nitrogen gas or nitrogen compounds found in the fuel. A precursor of ozone, nitrogen dioxide, numerous types of photochemically generated nitrate particles (including PAN), and atmospheric nitrous and nitric acids. Most nitric oxide formed by combustion processes is converted into nitrogen dioxide by subsequent oxidation in the atmosphere over a period that may range from several hours to a few days.

Nitrogen Dioxide (NO₂): A toxic reddish gas formed by oxidation of nitric oxide. Nitrogen dioxide is a strong respiratory and eye irritant. Most nitric oxide formed by combustion processes is converted into nitrogen dioxide by subsequent oxidation in the atmosphere. Nitrogen dioxide is a criteria pollutant in its own right, and is a precursor of ozone, numerous types of photochemically generated nitrate particles (including PAN), and atmospheric nitrous and nitric acids.

Nitrogen Oxides (NO_x): A group term meaning the combination of nitric oxide and nitrogen dioxide; other trace oxides of nitrogen may also be included in instrument-based NO_x measurements. A precursor of ozone, photochemically generated nitrate particles (including PAN), and atmospheric nitrous and nitric acids.

Non-native Species: See Invasive Species and Noxious Weed.

Noxious Weed: According to the Federal Noxious Weed Act (PL 93-629), a weed that causes disease or has other adverse effects on man or his environment and therefore is detrimental to the agricultural and commerce of the United States and to the public health.

Nonattainment Area: An area that does not meet a federal or state ambient air quality standard. Federal agency actions occurring in a federal nonattainment area are subject to Clean Air Act conformity review requirements.

n-pentane: A colorless, odorless organic compound with the formula C₅H₁₂, with a low boiling point that is used as a working medium in geothermal power plants.

O

Off-Highway Vehicle (OHV): Any vehicle capable of or designed for travel on or immediately over land, water, or other natural terrain, deriving motive power from any source other than muscle. OHVs exclude: 1) any non-amphibious registered motorboat; 2) any fire, emergency, or law enforcement vehicle while being used for official or emergency purposes; 3) any vehicle whose use is expressly authorized by a permit, lease, license, agreement, or contract issued by an authorized officer or otherwise approved; 4) vehicles in official use; and 5) any combat or combat support vehicle when used in times of national defense emergencies.

Organic Compounds: Compounds of carbon containing hydrogen and possibly other elements (such as oxygen, sulfur, or nitrogen). Major subgroups of organic compounds include hydrocarbons, alcohols, aldehydes, carboxylic acids, esters, ethers, and ketones. Organic compounds do not include crystalline or amorphous forms of elemental carbon (graphite, diamond, carbon black, etc.), the simple oxides of carbon (carbon monoxide and carbon dioxide), metallic carbides, or metallic carbonates.

Ormat Energy Converter (OEC) binary generating units: An electrical generation unit that converts heat into electrical energy. OECs are self-contained, fully automatic and produce grid compatible power. The OEC is based on the Rankine Power Cycle but uses organic working fluid which has the advantage of being more efficient than steam when operating on low-to-moderate temperature heat sources. Under production conditions, the working fluid is vaporized by the heat of the stream flowing through the vaporizer and pre-heater. The vapor expands as it passes through the organic vapor turbine, which is coupled to the generator. The exhaust vapor is subsequently condensed and is recycled to the vaporizer by the motive fluid cycle pump.

Overdraft condition: A condition in which the total volume of water being extracted from the groundwater basin would be greater than the total recharge provided to the basin.

Overstory: Larger, taller trees that occupy a forest and shade young trees, brush and other plants that grow beneath the larger trees.

Ozone (O₃): A compound consisting of three oxygen atoms. Ozone is a major constituent of photochemical smog that is formed primarily through chemical reactions in the atmosphere involving reactive organic compounds, nitrogen oxides, and ultraviolet light. Ozone is a toxic chemical that damages various types of plant and animal tissues and which causes chemical oxidation damage to various materials. Ozone is a respiratory irritant, and appears to increase susceptibility to respiratory infections. A natural layer of ozone in the upper atmosphere absorbs high energy ultraviolet radiation, reducing the intensity and spectrum of ultraviolet light that reaches the earth's surface.

P

Paleontological Resources (Fossils): The physical remains of plants and animals preserved in soils and sedimentary rock formations. Paleontological resources are for understanding past environments, environmental change, and the evolution of life.

Paleontology: A science dealing with the life forms of past geological periods as known from fossil remains.

Paleozoic Era: An era of geologic time (542 million to 251 million years ago) between the Late Precambrian and the Mesozoic eras and comprising the Cambrian, Ordovician, Silurian, Devonian, Carboniferous, and Permian periods.

Particulate Matter: Solid or liquid material having size, shape, and density characteristics that allow the material to remain suspended in the atmosphere for more than a few minutes. Particulate matter can be characterized by chemical characteristics, physical form, or aerodynamic properties. Categories based on aerodynamic properties are commonly described as being size categories, although physical size is not used to define the categories. Many components of suspended particulate matter are respiratory irritants. Some components (such as crystalline or fibrous minerals) are primarily physical irritants. Other components are chemical irritants (such as sulfates, nitrates, and various organic chemicals). Suspended particulate matter also can contain compounds (such as heavy metals and various organic compounds) that are systemic toxins or necrotic agents. Suspended particulate matter or compounds adsorbed on the surface of particles can also be carcinogenic or mutagenic chemicals. See PM₁₀ and PM_{2.5}.

Peak Ground Acceleration (PGA): A common measure of ground motion during an earthquake. The PGA for a given component of motion is the largest value of horizontal acceleration obtained from a seismograph. PGA is expressed as the percentage of the acceleration due to gravity (g), which is approximately 980 centimeters per second squared. Unlike measures of magnitude, which provide a single measure of earthquake energy, PGA varies from place to place, and is dependent on the distance from the epicenter and the character of the underlying geology (e.g. hard bedrock, soft sediments, or artificial fills).

Peak Particle Velocity: A measure of ground-borne vibrations. Physical movement distances are typically measured in thousandths of an inch, and occur over a tiny fraction of a second. But the normal convention for presenting that data is to convert it into units of inches per second.

Permeability: The rate of flow of a liquid or gas through a porous material.

Petroglyph: Pictures, symbols, or other art work pecked, carved, or incised on natural rock surfaces.

pH (parts hydrogen): a measure of the acidity or basicity of a water-based solution. Pure water is considered neutral with a pH of 7, while solutions with a pH less than 7 are said to be acidic and solutions with a pH greater than 7 are basic or alkaline.

Physiographic Province: An extensive portion of the landscape normally encompassing many hundreds of square miles, which portrays similar qualities of soil, rock, slope, and vegetation of the same geomorphic origin (Fenneman 1946; Sahrhaftig 1975).

Pleistocene (Ice Age): An epoch in the Quarternary period of geologic history lasting from 2.6 million to 11,000 years ago. The Pleistocene was an epoch of multiple glaciation, during which continental glaciers covered nearly one fifth of the earth's land.

Pliocene: The Pliocene Epoch is the period in the geologic timescale that extends from 5.332 million to 2.588 million years before present.

PM10 (inhalable particulate matter): A fractional sampling of suspended particulate matter that approximates the extent to which suspended particles with aerodynamic equivalent diameters smaller than 50 microns penetrate to the lower respiratory tract (tracheo-bronchial airways and alveoli in the lungs). In a regulatory context, PM10 is any suspended particulate matter collected by a certified sampling device having a 50 percent collection efficiency for particles with aerodynamic equivalent diameters of 9.5 to 10.5 microns and an maximum aerodynamic diameter collection limit less than 50 microns. Collection efficiencies are greater than 50 percent for particles with aerodynamic diameters smaller than 10 microns and less than 50 percent for particles with aerodynamic diameters larger than 10 microns.

PM2.5 (fine particulate matter): A fractional sampling of suspended particulate matter that approximates the extent to which suspended particles with aerodynamic equivalent diameters smaller than 6 microns penetrate into the alveoli in the lungs. In a regulatory context, PM2.5 is any suspended particulate matter collected by a certified sampling device having a 50 percent collection efficiency for particles with aerodynamic equivalent diameters of 2.0 to 2.5 microns and an maximum aerodynamic diameter collection limit less than 6 microns. Collection efficiencies are greater than 50 percent for particles with aerodynamic diameters smaller than 2.5 microns and less than 50 percent for particles with aerodynamic diameters larger than 2.5 microns.

Precursor: A compound or category of pollutant that undergoes chemical reactions in the atmosphere to produce or catalyze the production of another type of air pollutant.

Prehistoric: Refers to the period wherein American Indian cultural activities took place before written records and not yet influenced by contact with nonnative culture(s).

Production well: A geothermal production well that produces fluid heated by the natural heat of the earth that is used to produce electricity.

Project area (Project Action area): The area in the immediate vicinity of all project components.

Project Design Measures: Measures or actions proposed by ORNI 50, LLC for their implementation to ensure the protection of the environment.

Protected Activity Center: A delineated area protecting important habitat for sensitive species.

Protocol Agreement (Protocol): A modified version of the NPA, adapted to the unique requirements of managing cultural resources on public lands in California, and is used as the primary management guidance for BLM offices in the state.

Q

Quaternary Age: The most recent of the three periods of the Cenozoic Era in the geologic time scale of the ICS. It follows the Tertiary Period, spanning 2.588 ± 0.005 million years ago to the present. The Quaternary includes two geologic epochs: the Pleistocene and the Holocene Epochs.

R

Rehabilitation: A management alternative and/or practice which restores landscapes to a desired scenic quality.

Riparian: Situated on or pertaining to the bank of a river, stream, or other body of water. Normally describes plants of all types that grow rooted in the water table or sub-irrigation zone of streams, ponds, and springs.

Road: A motor vehicle route over 50 inches wide, unless identified and managed as a trail.

Route: "Routes" represents a group or set of roads, trails, and primitive roads that represents less than 100 percent of the BLM transportation system. Generically, components of the transportation system are described as routes.

S

Saleable Minerals: Common variety minerals on the public lands, such as sand and gravel, which are used mainly for construction and are disposed by sales or special permits to local governments. See also Mineral Material Disposal.

Scale: The proportionate size relationship between an object and the surroundings in which the object is placed.

Scenery: The aggregate of features that give character to a landscape.

Scenic Area: An area whose landscape character exhibits a high degree of variety and harmony among the basic elements which results in a pleasant landscape to view.

Scenic Quality: The relative worth of a landscape from a visual perception point of view.

Scenic Quality Evaluation Key Factors: The seven factors (land form, vegetation, water, color, adjacent scenery, scarcity, and cultural modifications) used to evaluate the scenic quality of a landscape.

Scenic Quality Ratings: The relative scenic quality (A, B, or C) assigned a landscape by applying the scenic quality evaluation key factors; scenic quality A being the highest rating, B a moderate rating, and C the lowest rating.

Scenic Values: See Scenic Quality and Scenic Quality Ratings.

Secretary of the Interior: The U.S. Department of the Interior is in charge of the nation's internal affairs. The Secretary serves on the President's cabinet and appoints citizens to the National Park Foundation board.

Sedimentary Rocks: Rocks, such as sandstone, limestone, and shale, that are formed from sediments or transported fragments deposited in water.

Sensitivity Levels: Measures (e.g., high, medium, and low) of public concern for scenic quality.

Settlement: A process by which soils decrease in volume. Earthquake induced settlement results when relatively unconsolidated granular materials experience vibration associated with seismic events. Local settlement can occur when areas containing compressible soils are subject to foundation or fill loads.

Special Status Species: Federal- or state-listed species, candidate or proposed species for listing, or species otherwise considered sensitive or threatened by state and federal agencies.

State Historic Preservation Office (SHPO): The official within and authorized by each state at the request of the Secretary of the Interior to act as liaison for the National Historic Preservation Act.

State Implementation Plan (SIP): Legally enforceable plans adopted by states and submitted to EPA for approval, which identify the actions and programs to be undertaken by the State and its subdivisions to achieve and maintain national ambient air quality standards in a time frame mandated by the Clean Air Act.

State Water Resources Control Board (SWRCB): Created in 1967, joint authority of water allocation and water quality protection enables the SWRCB to provide comprehensive protection for California's waters. The mission of the nine Regional Water Quality Control Boards is to develop and enforce water quality objectives and implementation plans that will best protect the State's waters, recognizing local differences in climate, topography, geology, and hydrology.

Stratigraphy: The order and relative position of strata (a layer of rock in the ground) and their relationship to the geological time scale.

Subsurface: Of or pertaining to rock or mineral deposits which generally are found below the ground surface.

Sulfur Dioxide (SO₂): A pungent, colorless, and toxic oxide of sulfur formed primarily by the combustion of fossil fuels. It is a respiratory irritant, especially for asthmatics. A criteria pollutant in its own right, and a precursor of sulfate particles and atmospheric sulfuric acid.

T

Tertiary: The Tertiary Period marks the beginning of the Cenozoic Era. It began 65 million years ago and lasted more than 63 million years, until 2.6 million years ago. The Tertiary is made up of 5 epochs: the Paleocene Epoch, the Eocene Epoch, the Oligocene Epoch, the Miocene Epoch, and the Pliocene Epoch.

Texture: The visual manifestations of the interplay of light and shadow created by the variations in the surface of an object or landscape.

Toxic: Poisonous. Exerting an adverse physiological effect on the normal functioning of an organism's tissues or organs through chemical or biochemical mechanisms following physical contact or absorption.

Traditional Cultural Properties: Areas associated with the cultural practices or beliefs of a living community. These sites are rooted in the community's history and are important in maintaining cultural identity.

Trail: A linear route managed for human-powered, stock, or off-highway vehicle forms of transportation or for historical or heritage values. Trails are not generally managed for use by four-wheel drive or high-clearance vehicles.

U

Unauthorized Road. A road that is not a forest road or a temporary road and that is not included in a forest transportation atlas.

Understory: The area of a forest that grows below the mature trees. Plants in the understory consist of a mixture of seedlings and saplings of canopy trees together with understory grasses and shrubs.

V

Vandalism (Cultural Resource): Malicious damage or the unauthorized collecting, excavating, or defacing of cultural resources. §6 of the Archaeological Resources Protection Act states that "no person may excavate, remove, damage, or otherwise alter or deface any archaeological resource located on public lands or Indian lands...unless such activity is pursuant to a permit issued under section 4 of this Act."

Variables: Factors influencing visual perception including distance, angle of observation, time, size or scale, season of the year, light, and atmospheric conditions.

Variety: The state or quality of being varied and having the absence of monotony or sameness.

Vehicle Miles Traveled (VMT): The cumulative amount of vehicle travel within a specified or implied geographical area over a given period of time.

Viewshed: The landscape that can be directly seen under favorable atmospheric conditions, from a viewpoint or along a transportation corridor. Protection, rehabilitation, or enhancement is desirable and possible.

Visual Contrast: See Contrast.

Visual Quality: See Scenic Quality.

Visual Resources: The visible physical features on a landscape (e.g., land, water, vegetation, animals, structures, and other features).

Visual Resource Management Classes: Categories assigned to public lands based on scenic quality, sensitivity level, and distance zones. There are four classes. Each class has an objective which prescribes the amount of change allowed in the characteristic landscape.

Visual Resource Management (VRM): The inventory and planning actions taken to identify visual values and to establish objectives for managing those values; and the management actions taken to achieve the visual management objectives.

Visual Values: See Scenic Quality.

W

Wetlands: Permanently wet or intermittently water-covered areas, such as swamps, marshes, bogs, potholes, swales, and glades.

Wilderness Area: An area formally designated by Congress as part of the National Wilderness Preservation System as defined in the Wilderness Act of 1964 (78 Stat. 891), §2(c).

Wilderness Study Area: A roadless area or island that has been inventoried and found to have wilderness characteristics as described in §603 of FLPMA and §2(c) of the Wilderness Act of 1964 (78 Stat. 891). The source for both of these is BLM's IMP and Guidelines for Lands Under Wilderness Review (December 1979).

CHAPTER 10

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