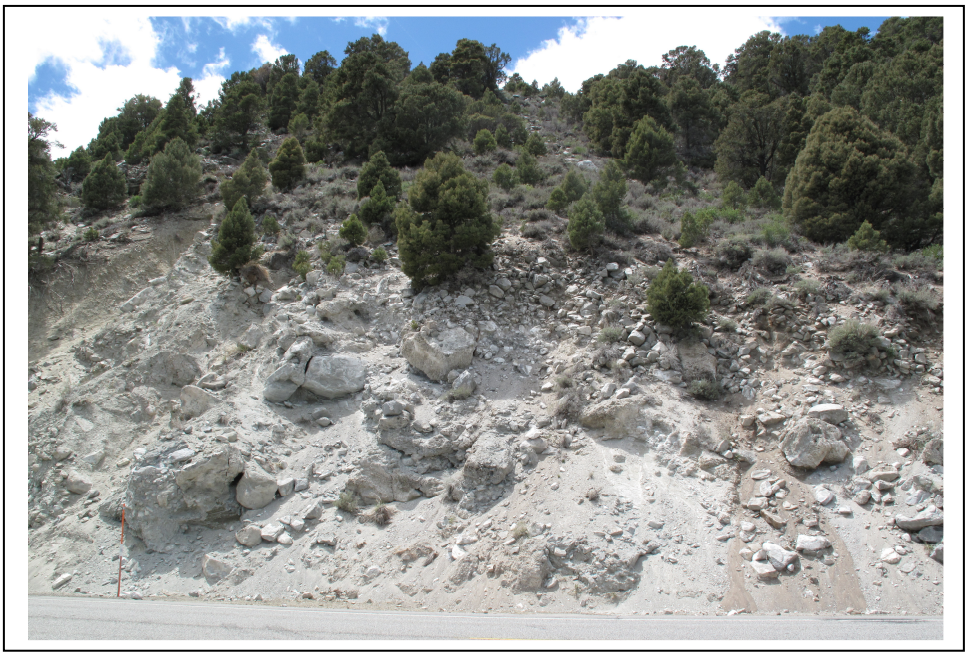
Lee Vining Rockfall Safety Project

On U.S. 395 near Lee Vining from 0.4 mile north of National Forest Visitor Center Road to 0.7 mile north of Picnic Grounds Road

09-MNO-395-PM 52.3/53.7

Project No. 0900020002

Initial Study with Proposed Negative Declaration/ Environmental Assessment



Prepared by the
State of California Department of Transportation

The environmental review, consultation, and any other action required in accordance with applicable federal laws for this project is being, or has been, carried out by the California Department of Transportation under its assumption of responsibility pursuant to 23 U.S. Code 327.

July 2012

Caltrans

General Information About This Document

What's in this document?

The California Department of Transportation (Caltrans), as assigned by the Federal Highway Administration, has prepared this Initial Study/Environmental Assessment, which examines the potential environmental impacts of alternatives being considered for the proposed project in Mono County, California. The document describes why the project is being proposed, alternatives for the project, the existing environment that could be affected by the project, potential impacts from each of the alternatives, and proposed avoidance, minimization, and/or mitigation measures.

What should you do?

- Please read this document. Additional copies of this document as well as the technical studies are available for review at the following locations: the Caltrans district office at 500 South Main Street, Bishop, CA 93514; the Mono Basin Scenic Area Visitor Center at 1 Visitor Center Drive, Lee Vining, CA 93541; the Lee Vining Branch of the Mono County Library at 51710 U.S. 395, Lee Vining, CA 93541; and the Mono Lake Committee Information Center and Bookstore at the corner of U.S. 395 and Third Street, Lee Vining, CA 93541. The document can also be accessed electronically at the following website: http://www.dot.ca.gov/dist6/environmental/envdocs/d9/.
- Attend the public hearing on August 7, 2012 in Lee Vining.
- We welcome your comments. If you have any concerns about the proposed project, please attend the public hearing or send your written comments to Caltrans by the deadline. Submit comments via U.S. mail to Caltrans at the following address:

  Scott Smith, Branch Chief
  Central Sierra Environmental Analysis
  California Department of Transportation
  855 M Street, Suite 200
  Fresno, CA 93721

- Submit comments via email to: scott_smith@dot.ca.gov.
- Submit comments by the deadline: August 25, 2012.

What happens next?

After comments are received from the public and reviewing agencies, Caltrans, as assigned by the Federal Highway Administration, may 1) give environmental approval to the proposed project, 2) do additional environmental studies, or 3) abandon the project. If the project is given environmental approval and funding is appropriated, Caltrans could design and build all or part of the project.

Printing this document: To save paper, this document has been set up for two-sided printing (to print the front and back of a page). Blank pages occur where needed throughout the document to maintain proper layout of the chapters and appendices.

For individuals with sensory disabilities, this document is available in Braille, in large print, on audiocassette, or on computer disk. To obtain a copy in one of these alternate formats, please call or write to Caltrans, Attn: Scott Smith, Central Sierra Environmental Analysis, 855 M Street, Suite 200, Fresno, CA 93721; 559-445-6172 Voice, or use the California Relay Service TTY number, 1-800-735-2929 or dial 711.

09-MNO-395-PM 52.3/53.7
0900020002

Install rockfall protection measures on U.S. 395 from post mile 52.3 to 53.7 in Mono County

INITIAL STUDY
with Proposed Negative Declaration
/ENVIRONMENTAL ASSESSMENT

Submitted Pursuant to: (State) Division 13, California Public Resources Code
(Federal) 42 U.S. Code 4332(2)(C) and 23 U.S. Code 327

THE STATE OF CALIFORNIA
Department of Transportation

7/24/12
Date of Approval

Thomas P. Hallenbeck
District 9 Director
California Department of Transportation
NEPA Lead Agency

7/23/12
Date of Approval

Margaret R. Lawrence
Margaret R. Lawrence
Office Chief, Central Region
Environmental North
California Department of Transportation
CEQA Lead Agency

Proposed Negative Declaration

Pursuant to: Division 13, Public Resources Code

Project Description

The California Department of Transportation (Caltrans) proposes to reduce rockfall at six slopes along U.S. 395 north of Lee Vining in Mono County. The proposed project begins at post mile 52.3 and ends at post mile 53.7. The main purpose of the project is to improve safety for the traveling public and maintenance personnel by reducing rockfall from the existing steep slopes between these post miles.

Determination

This proposed Negative Declaration is included to give notice to interested agencies and the public that it is Caltrans' intent to adopt a Negative Declaration for this project. This does not mean that Caltrans' decision on the project is final. This Negative Declaration is subject to change based on comments received by interested agencies and the public.

Caltrans has prepared an Initial Study for this project and, pending public review, expects to determine from this study that the project would not have a significant effect on the environment for the following reasons:

The proposed project would have no effect on: agriculture and forest resources, air quality, biological resources, cultural resources, geology and soils, hazards and hazardous materials, hydrology and water quality, land use and planning, mineral resources, noise, population and housing, public services, recreation, transportation/traffic, utilities and service systems.

In addition, the proposed project would have no significant effect on aesthetics.

_____ _____

Margaret L. Lawrence
Office Chief Central Region
Environmental North

Date

Table of Contents

List of Figures

List of Tables

List of Abbreviated Terms

Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
FHWA	Federal Highway Administration
NEPA	National Environmental Policy Act
PM	post mile
EPA	Environmental Protection Agency

Chapter 1 Proposed Project

1.1 Introduction

The California Department of Transportation (Caltrans), as the California Environmental Quality Act lead agency and National Environmental Policy Act lead agency, proposes to reduce rockfall at six steep slopes along U.S. 395 north of Lee Vining in Mono County. The project begins at post mile 52.3, about 0.4 mile north of National Forest Visitor Center Road, and ends at post mile 53.7, about 0.7 mile north of Picnic Grounds Road. Figures 1-1 and 1-2 show the project vicinity and location.

The project is programmed in the 2012 State Highway Operation and Protection Program (SHOPP) Collision Severity Reduction Program (20.10.201.015) and is scheduled to begin construction in fiscal year 2014.

1.2 Purpose and Need

1.2.1 Purpose

The purpose of this project is to improve safety to the traveling public and maintenance workers by minimizing rockfall from existing steep slopes.

1.2.2 Need

A study done by the Caltrans Engineering Service Center in fall 1997 identified six slopes in the project area that are producing a large amount of rockfall. The review consisted of three days in the field making general observations about each cut slope. No subsurface studies or stability analyses were performed.

The slopes are composed mostly of stream-deposited sediments, including sands, silts, clays or gravels, and/or loose sediment deposited by gravity and loose lake deposits, with some weathered and fractured granite rock in some spots. Rockfall catch areas exist along U.S. 395 at the base of some of these slopes. They consist of a combination of the 2 to 3 feet of paved shoulder and the 5 to 10 feet of unpaved soil next to the shoulder. The shoulder widths of the existing highway are not consistent throughout the project limits, so the catch (or, retention) areas are not consistent. This results in debris reaching the highway and creating potential hazards for motorists.

Table 1-1 indicates the relative hazard posed by each slope in the project area. The larger the Rockfall Hazard Rating value, the higher the probability of rockfall and the more potentially hazardous the slope.

Table 1-1 Rockfall Hazard Rating by Slope

Slope Number	Post Miles	Slope Area (square feet)	Maximum Height (feet)	Rockfall Hazard Rating	Comments
1	52.34 to 52.43	7,400	37	92	Rock 8 inches to 2 feet in size
2	52.50 to 52.54	7,400	36	87	Rock 6 inches to 1.5 feet in size
3	52.91 to 52.97	6,530	35	69	Rock 8 inches to 2 feet in size
4	53.03 to 53.23	42,300	22-85	190	Rock 8 inches to 2 feet in size
5	53.28 to 53.44	41,000	116	262	Rock 8 inches to 2 feet and greater in size
6	53.51 to 53.62	15,300	58	567	Least amount of site distance and containment area, rock 18 inches to greater than 4 feet in size

Source:Lee Vining Rockfall Geotechnical Design Report June 2012

Notes: 1. Areas and height measurements are approximate values of the existing condition.

2. The larger the Rockfall Hazard Rating value, the higher the probability of rockfall and the more potentially hazardous the slope.

District 9 Maintenance workers have indicated that vehicular collisions with rocks are common. However, the traffic accident data do not provide conclusive evidence on this (see Table 1-2). Given the reports by District 9 Maintenance workers of frequent collisions and the relatively few documented accidents, most collisions with rocks are minor and do not cause major damage; nevertheless, reducing the presence of rocks on the highway would improve safety for the traveling public and maintenance workers.

Table 1-2 2000-2010 Traffic Accidents

U.S 395 Post miles 52.3 to 53.7				
Type and Number of Accidents		**Accident Rate/Million Vehicle Miles**		
Fatal	0		Actual	Statewide Average
Injury	6	Fatal	0	0.026
Property Damage Only	8	Fatal + Injury	0.33	0.41
Total	14	Total	0.76	0.94

Source:Lee Vining Draft Project Report July 2012

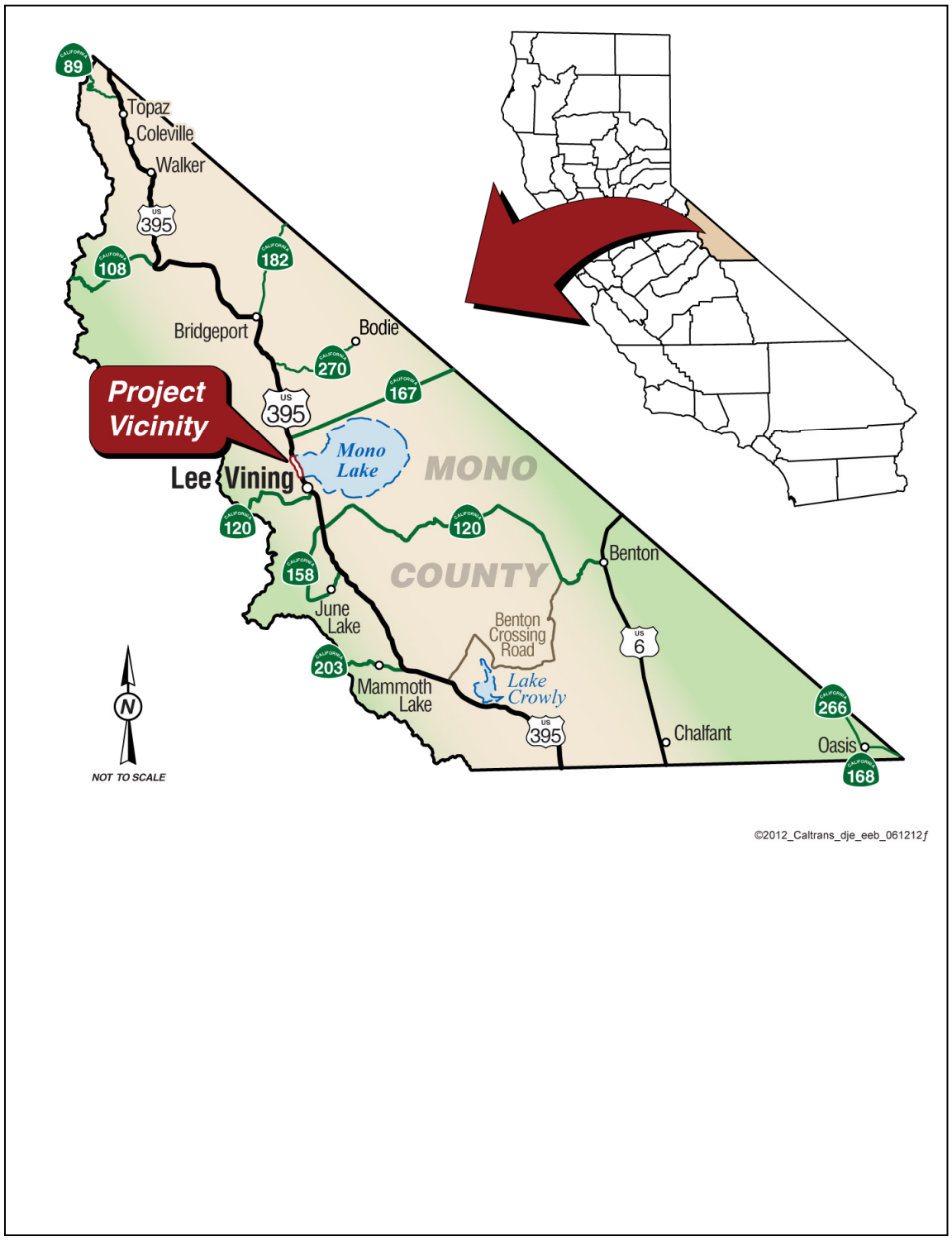


Figure 1-1 Project Vicinity Map

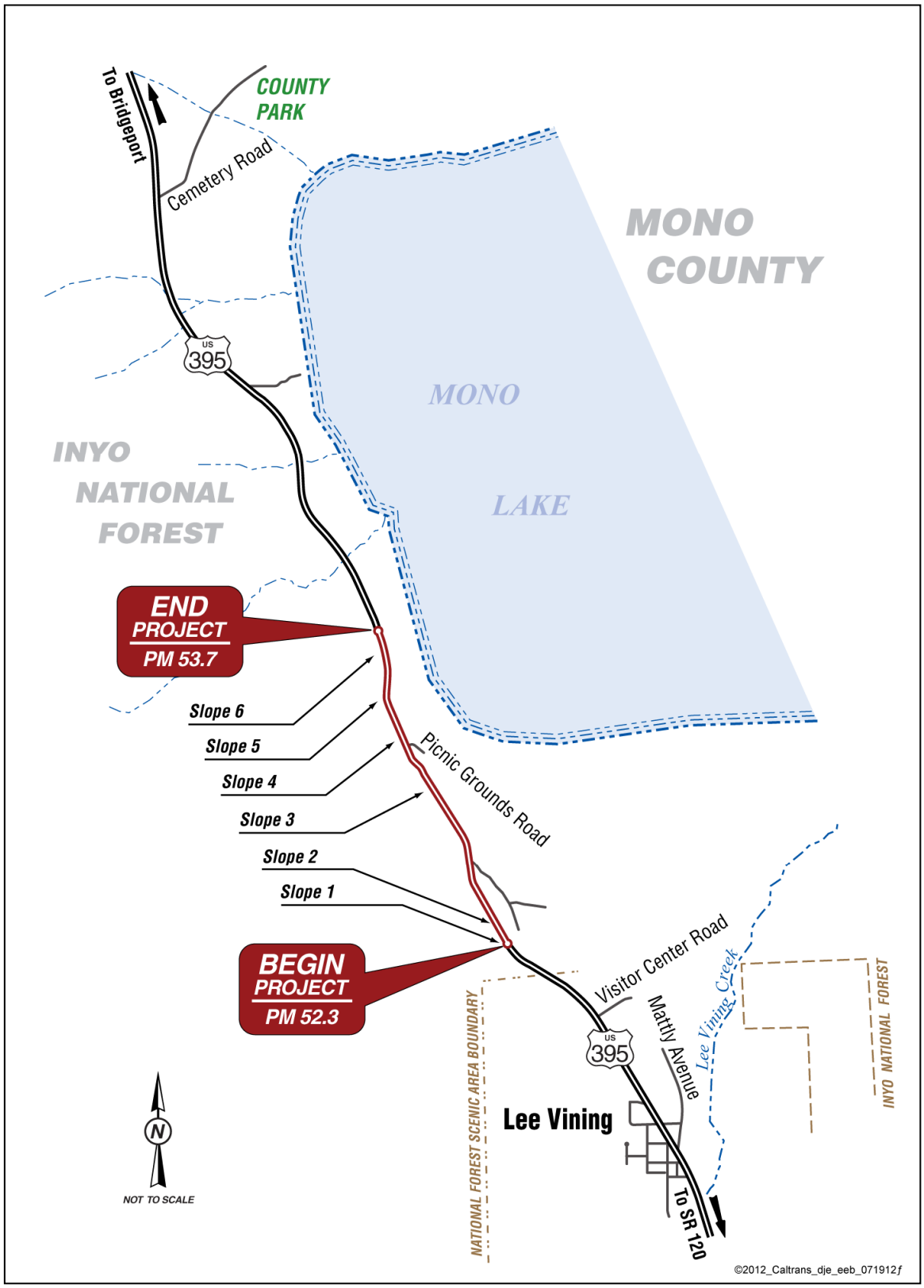


Figure 1-2 Project Location Map

The overall traffic accident rates along this stretch of road are below the statewide average for a similar type of road. But, because rockfall is the single largest contributor in officially reported accidents, and given the large amount of anecdotal information from District 9 Maintenance workers, Caltrans has determined that this project is a safety project.

1.3 Alternatives

Two alternatives are proposed for this project: a build alternative and a no-build alternative. The alternatives were developed by an interdisciplinary project development team consisting of Caltrans staff from the divisions of Design, Traffic Operations, Environmental Analysis, Maintenance, and Right-of-Way. The U.S. Forest Service, California State Parks and the Mono Lake Committee were also consulted during the process.

1.3.1 Build Alternative

Two design options are proposed for the build alternative. The impacts created by the design options were not distinct enough to warrant separate analysis as separate alternatives. Table 1-3 highlights the differences of each option by slope. See *Appendix E Viable Rockfall Solutions* for a detailed technical description of each type of solution.

Table 1-3 Design Options by Slope under the Build Alternative

Design Option	Slope 1	Slope 2	Slope 3	Slope 4	Slope 5	Slope 6
Design Option 1	Cut	Cut	Revegetate	Hybrid System and Drapery	Hybrid System	Anchored Mesh
Design Option 2	Cut	Cut	Revegetate	Anchored Mesh	Anchored Mesh	Anchored Mesh

Common Design Features of the Design Options

Proposed solutions for Slopes 1, 2, 3 and 6 are the same under both design options:

- Slopes 1 and 2 would be cut back to a less steep angle of 1.5:1 (horizontal to vertical ratio). A new berm (dike) would be added to the bottom of the slope to replace the existing dike (which would be removed) and maintain the flow line and prevent undermining the bottom of the slope. Existing topsoil and duff

(organic material from the area) would be collected before grading operations and stockpiled for placement on the finished slope. The perimeter of the new slope would be rounded to reduce erosion and enhance the look of the slope. Seed would be sprayed (hydroseeded), and a rolled erosion-control product (such as a straw and coconut fiber erosion-control blanket) would be applied to the finished slopes. This erosion-control procedure would act as both a short-term storm water best management solution and a long-term storm water design solution. The hydroseed treatment would contain additives and a native seed mix approved by a Caltrans landscape architecture representative.

- Slope 3 would receive a vegetated solution applied to the existing slope. Under this alternative, the existing slope would not be laid back to a lesser angle as proposed for Slopes 1 and 2. The top of the slope would be rounded, and the slope itself would be rock scaled (see Appendix E for description). Existing topsoil and duff would be collected before any grading or rock scaling operations and be stockpiled for placement on the finished slope. Hydroseeding and a rolled erosion-control product (such as a straw and coconut fiber erosion control blanket) would be applied to the finished slopes. The hydroseed treatment would contain additives and a native seed mix approved by a Caltrans landscape architecture representative. A new dike would replace the existing deficient dike to prevent undermining of the slope and to maintain the flow line.

- Slope 6 would receive an anchored-cable mesh system with double-twisted wire mesh (Figure 1-4). Hydroseeding and a rolled erosion-control product (such as a straw and coconut fiber erosion-control blanket) would then be applied to the slope to promote revegetation and act as a storm water best management practice. The hydroseed treatment would contain additives and a native seed mix approved by a Caltrans landscape architecture representative.

The Lee Vining Revegetation Project is a planned project scheduled for construction before the Lee Vining Rockfall Project during the 2013 fiscal year. It will use experimental techniques to revegetate three smaller eroding cut slopes between Slopes 2 and 3 on the west side of the highway. Using experimental erosion control and revegetation strategies, the project would stabilize the slope surface through minor slope rounding and revegetation efforts. Should revegetation efforts take root and do so before design work is finished, those results would be applied to the Lee Vining Rockfall Project

Figure 1-3 Example of Anchored Cable Mesh

Figure 1-4 Example of Cable Mesh over Double Twisted Wire Mesh

Unique Features of the Design Options

Design Option 1

Design Option 1 would cost $3,184,000. It would require 5.4 acres of right-of-way from the U.S. Forest Service and require 10,400 cubic yards of material to be disposed of by the contractor. Option 1 would have moderately adverse visual impacts at Slopes 4 and 5 and a moderately beneficial visual impact on Slopes 1, 2, 3 and 6.

For Slope 4, the southern half of the slope would receive a hybrid system composed of double-twisted wire mesh; the northern half would receive double-twisted wire mesh drapery. Erosion control such as hydroseeding may be applied to the surface to promote revegetation and act as a storm water best management practice. The hydroseed treatment would contain a native seed mix approved by Caltrans landscape architecture representative.

For Slope 5, the slope would receive a hybrid system composed of cable mesh with double-twisted wire mesh. As an option, double-twisted wire mesh could be placed over the cable mesh instead of beneath it to provide a uniform look with other double-twisted wire mesh drapery installed on Slope 4. Erosion control such as hydroseeding may be applied to the surface to promote revegetation and act as a storm water best management practice. The hydroseed treatment would contain a native seed mix approved by a Caltrans landscape architecture representative.

Design Option 2

Design Option 2 would cost $5,316,000. It would require 6 acres of right-of-way from the U.S. Forest Service and require 11,100 cubic yards of material to be disposed of by the contractor. Option 2 would have a moderately beneficial visual impact at each of the six project slopes.

Slopes 4 would receive an anchored double-twisted wire mesh system. Slope 5 would receive an anchored cable mesh system with double-twisted wire mesh. Hydroseeding and a rolled erosion control product (such as a straw and coconut fiber erosion-control blanket) would then be applied to the slope to promote revegetation and act as a storm water best management practice. The hydroseed treatment would contain additives and a native seed mix approved by a Caltrans landscape architecture representative. Because of a deep narrow gulley on Slope 5, additional grading beyond rock scaling may be required to install the cable mesh system. The mesh must remain in contact with the ground to work properly.

1.3.2 No-Build Alternative

The no-build alternative would leave the slopes as they are. No improvements would be made. This alternative would not address the project purpose and need to improve safety for the traveling public and highway maintenance workers by minimizing rockfall from existing slopes.

1.3.3 Alternatives Considered but Eliminated from Further Discussion

U.S. 395 Offset to the East

This alternative would realign U.S. 395 east of its existing location to move the highway away from the slopes producing rockfall. It would also build a rockfall containment ditch to collect fallen debris and prevent the debris from getting on the highway. An offset of 50 feet from Slopes 4, 5 and 6 was used for the analysis. Additional benefits of this alternative include an increase in stopping sight distance, less potential for ice to form on the roadway, and additional snow storage space in winter. This alternative was rejected because of its significant environmental impacts and excessive costs:

- It would potentially affect foraging habitat used by the willow flycatcher, a California Endangered Species.
- It would require acquisition 4(f) public park and recreational lands as defined by federal Department of Transportation law (49 U.S. Code 303).
- It would require placement of fill in the future footprint of the management high water level of Mono Lake as set by the Mono Lake Basin Water Right Decision 1631. The State Water Resources Control Board mandated the Los Angeles Department of Power and Water to raise the level of Mono Lake to a median elevation of 6,392 feet above sea level. The lake may occasionally rise to as high as 6,400 feet.
- The length of realignment would be over 1 mile, extending beyond the rockfall sites.
- Fill slopes would be up to 40 feet tall.
- Up to 200,000 cubic yards of imported material would be needed to build the fill slopes.

- The cost is estimated at $9 million for capital construction only (mitigation costs were not estimated).

Shotcrete Wall with Soil Nails or Tie-Backs

This type of wall is an effective rockfall and erosion-reduction strategy. A structural shell is built over the degraded cut slope enclosing the slope and preventing soil movement or erosion. With the use of soil nailing, the ground is reinforced and strengthened by installing closely spaced steel bars, known as "nails," into a slope or excavation as construction of a retaining wall proceeds from the top down. This creates a reinforced section that is stable and able to retain the ground behind it. This alternative was proposed for Slope 6, but was rejected for the following reasons:

- It was excessively costly.
- There was potential for erosion at the structure boundaries.
- The walls were considered too aesthetically inappropriate compared to other viable options.

Graded or Benched Slope

Grading a slope to an angle where rocks are stable and not prone to movement is an effective rockfall and erosion-reduction strategy. Benching a slope can be effective, too, if a steeper slope is required because the cost of acquiring additional right-of-way could be prohibitive. Flattening (grading) or benching Slopes 4, 5, and 6 was rejected for the following reasons:

- This alternative was technically infeasible. Slopes could not sufficiently be angled so that rockfall could be mitigated without a massive amount of excavation.
- The disturbed area would be excessive.
- The cost would be excessive based on the excessive amount of material generated.

Rock Shed

Rock sheds function similarly to tunnels—traffic passes though a structure and rockfall is channeled over the structure. This alternative was rejected for the following reasons:

- There is not enough concentrated rockfall to warrant a rock shed.

- The cost is excessive at $140 million.

Viaduct

A viaduct functions similarly to a highway realignment in that the roadway is moved away from the rockfall. A viaduct is a structure that is either elevated off the ground or has a portion of the roadway structure cantilevered over the ground. A viaduct can be designed to allow rockfall to pass under the structure, or catchment ditches can be built in addition to a cantilevered viaduct. A viaduct around Slopes 4, 5 and 6 was rejected for the following reasons:

- The cost was excessive. A viaduct would cost more than $30 million.
- The concrete piers and box sections of a viaduct would be highly visible.
- It would potentially affect foraging habitat used by the willow flycatcher, a California Endangered Species.
- This alternative would require the acquisition of 4(f) public park and recreational lands as defined by federal Department of Transportation law (49 U.S. Code 303).

Flexible Rockfall Barriers

Flexible rockfall barriers are designed to catch and ensnare rocks within an energy-absorbing mesh to prevent rocks from reaching the roadway. If rockfall does occur, the rocks would have to be removed from the mesh quickly to reestablish the barrier's effectiveness. This barrier would likely be installed high up-slope, making removal of the rockfall difficult and costly. The flexible rockfall barrier would have to be taken apart to release the rock from the mesh. The rockfall debris would then fall to the road where maintenance workers or contractors would then remove it. Though technically feasible and effective at preventing rocks from reaching the road, this barrier method was rejected for the following reasons:

- It would increase maintenance workers' exposure to rockfall and traffic during rock removal and would likely require traffic control.
- It is a more complicated method of rockfall debris removal, compared to draped, hybrid, or current rock control methods.
- Because it is more costly and time-consuming, this barrier method may require a maintenance contract.

- Depending on the frequency and size of the rockfall event, the barrier system may need recurring replacement of various components or whole sections at a time.
- It was considered visually inappropriate compared to other viable options.

Rigid Barriers

Rigid barriers such as concrete walls, timber walls, k-rail, and earthen berms provide a protective barrier between the roadway and rockfall. The size, height and width of the barrier, plus the construction materials used, depend on the size of the potential rockfall, width of catchment area between the toe of slope and the barrier, and the barrier's proximity to the roadway. Over time, as rockfall occurs, debris would accumulate behind the wall and need to be removed. This usually requires an area large enough behind the barrier to accommodate removal equipment, such as front-end loaders. This allows maintenance workers to remove the debris as quickly as possible, reducing traffic impacts (lane closures) and exposure to rockfall. Without adequate access behind a barrier, debris would have to be scooped out from behind, increasing the time involved to remove the rock. This could create longer traffic impacts and increase maintenance workers' exposure to rockfall and traffic.

The rigid barrier alternative was rejected for the following reasons:

- Catchment areas at the project site vary in width from 2 feet to 10 feet, making removal methods difficult or nearly impossible.
- The close proximity to the traveled way could pose a traffic hazard.
- A barrier may be feasible at only some spots because of limited catchment area.
- Walls were considered visually inappropriate compared to other viable options.

1.4 Permits and Approvals Needed

The following permits, reviews, and approvals would be required for project construction:

Agency	Permit/Approval	Status
U.S. Forest Service	Review of project to determine compliance with the Mono Basin National Forest Scenic Area Comprehensive Management Plan	Will occur during review of the Initial Study/Environmental Assessment

Chapter 2 Affected Environment, Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures

This chapter explains the impacts that the project would have on the human, physical, and biological environments in the project area. It describes the existing environment that could be affected by the project, potential impacts from each of the alternatives, and proposed avoidance, minimization, and/or mitigation measures. Any indirect impacts are included in the general impacts analysis and discussions that follow.

As part of the scoping and environmental analysis for the project, the following environmental issues were considered, but no adverse impacts were identified. Consequently, there is no further discussion of these issues in this document.

- Land Use—The project complies with both the Mono Basin National Forest Scenic Area Comprehensive Management Plan (1989) and the Mono County General Plan (2009).

- Growth—The project is not expected to cause unplanned growth because the build alternative would provide no additional carrying capacity to U.S. 395 (Project Study Report, June 2007).

- Farmlands/Timberlands—No farmland or timberland lie within the project area (Field visit, January 19, 2012, and Mono County General Plan).

- Community Impacts—The project is not located in a community and would not require the relocation of any homes or businesses (Field visit, January 19, 2012, and Project Study Report, June 2007). Caltrans relocation services and benefits are administered without regard to race, color, national origin, or sex in compliance with Title VI of the Civil Rights Act (42 U.S. Code 2000d, et seq.). All considerations under Title VI of the Civil Rights Act of 1964 and related statutes have been considered in this project. Caltrans' commitment to upholding the mandates of Title VI is evidenced by its Title VI Policy Statement, signed by the Director, which can be found in Appendix C of this document.

- Utilities/Emergency Services—No utilities sit within the project footprint. The roadway would remain open for emergency vehicles during construction (Right of Way Data Sheet, February 8, 2007).

- Traffic and Transportation/Pedestrian and Bicycle Facilities—The project would have no long-term impact on traffic and transportation facilities (Traffic Index Calculation and Design Designation, September 20, 2011).

- Cultural Resources—The project would have no potential to affect historic properties (Cultural Clearance Memo, April 17, 2012).

- Hydrology and Floodplain—The project would not encroach on or affect any floodplains (Location Hydraulic Study, January 29, 2007).

- Water Quality and Storm Water Runoff—The project has been determined to be at low risk to increase sediment flow into Mono Lake. A Stormwater Management Plan would be used during construction (Water Quality Report, June 14, 2012, and Lahontan Water Board Communication, June 6, 2012).

- Geology/Soils/Seismic/Topography—The rock underlying the project area is globally stable. The project would improve the local stability of the cut slopes (Geotechnical Design Report, March 15, 2012).

- Paleontology—The project would not affect paleontological resources (Paleontological Identification Report March 26, 2007).

- Hazardous Waste or Materials—No hazardous materials exist within the project limits (Initial Site Assessment, June 11, 2012).

- Air Quality—According to 40 Code of Federal Regulations Section 93.126 Table 2, the project falls under the category of "hazard elimination program" and is exempt from the requirement that a conformity determination be made (Air Quality Report, June 14, 2012).

- Noise and Vibration—There are no noise receptors in the vicinity of the project area, and the project would not increase the existing traffic capacity or alter the location of the existing road (Noise Report, June 14, 2012).

- Natural Communities—No natural communities of special concern were found within the project footprint (Natural Environment Study, June 26, 2012).

- Wetlands and other Waters—The project would have no impact on any wetlands or waters of the U.S. (Natural Environment Study, June 26, 2012, and 404 Determination Letter, June 14, 2012).

- Plant Species—No protected plant species were found within the project footprint (Natural Environment Study, June 26, 2012).

- Animal Species—No protected animal species were found within the project footprint (Natural Environment Study, June 26, 2012).

- Threatened and Endangered Species—No threatened or endangered species were found within the project footprint (Natural Environment Study, June 22, 2012).

- Invasive Species—No invasive species were found within the project footprint (Field Surveys, June-July, 2011).

2.1 Human Environment

2.1.1 Visual/Aesthetics

Regulatory Setting

The National Environmental Policy Act of 1969 as amended establishes that the federal government use all practicable means to ensure all Americans safe, healthful, productive, and *aesthetically* (emphasis added) and culturally pleasing surroundings (42 U.S. Code 4331[b][2]). To further emphasize this point, the Federal Highway Administration in its implementation of the National Environmental Policy Act (23 U.S. Code 109[h]) directs that final decisions on projects are to be made in the best overall public interest taking into account adverse environmental impacts, including among others, the destruction or disruption of aesthetic values.

Likewise, the California Environmental Quality Act establishes that it is the policy of the state to take all action necessary to provide the people of the state "with . . . enjoyment of aesthetic, natural, scenic and historic environmental qualities" (California Public Resources Code Section 21001[b]).

Affected Environment

A Visual Impact Assessment for the project was completed in June 2012.

The regional landscape of the project area consists of the Mono Lake Basin, located near the base of the eastern Sierra Nevada. Mono Lake is a roughly 65-square-mile

body of water surrounded on all sides by mountains and hills. Because of the unique high desert setting and natural beauty, Mono Lake and its surroundings are designated as a National Forest Scenic Area, the first of its kind in the United States.

Mono Lake is the saltiest inland lake in the Eastern Sierra and is a nesting area for many migratory birds, including the California gull, Wilson's phalarope, and eared grebe.

Plant communities of the project area consist of pinyon pine, upland sage scrub, riparian associations, and native grasses. Pinyon pine is found on the upper slopes, with scrub brush in the foreground and riparian areas in the middle distance along the lakeshore and in drainages. The colors and textures of the distant features are slightly muted by haze, blowing dust and water vapor from the lake surface due to the down slope winds common to this area.

The six existing eroded cut slopes which make up the project are situated along the western, uphill slopes along the southbound lanes of the highway. U.S. 395 is somewhat constrained through the project limits, with the shores of Mono Lake immediately to the east and the base slopes of the Warren Bench and Sierra Nevada range immediately to the west. U.S. 395 is somewhat elevated above Mono Lake which allows generally sweeping vistas of the area from the roadway. U.S. 395 through this portion Mono County is classified as an Officially Designated State Scenic Highway.

Landscape Assessment Units

A framework for understanding and disclosing the potential visual effects of highway project alternatives is provided in Federal Highway Administration visual methodology (see Appendix G). The methodology recommends that the regional landscape be divided into sub-units for analysis.

Landscape Assessment Units are not based on jurisdictional boundaries such as city or county limits, but rather on distinct areas or zones that have certain common visual characteristics. The units divide the project into manageable segments that may share visual attributes, potential project effects, and if necessary, impact reduction strategies. The visual resources of the units can be assessed, compared, and assigned priorities for planning, siting, and design decisions.

The general landform and vegetative cover throughout the project limits are visually consistent, and no atypical visual features are present. Although this project is

composed of six separate construction locations over a distance of 1.4 miles, the work locations are relatively close to one another. Most casual observers would perceive the project area as being somewhat the same or similar throughout its length. Therefore, this analysis looked at the project setting as one single landscape unit.

See Appendix G *Visual Analysis Methodology* for more details on the criteria used for the analysis.

Viewer Response

To understand and predict how viewers will respond to the appearance of a highway project, you must know something about the viewers who may see the project and the aspects of the visual environment to which they are likely to respond. Major viewer groups may be differentiated by physical factors that change their perception, such as views from the road and views of the road, the physical location of each viewer group, the number of people in each group, and the duration of the view. How these different viewers receive or perceive the visual environment is not the same. This variability is defined as viewer sensitivity and is strongly related to visual preference. The visual experience can be affected directly depending on viewer activity and awareness, and indirectly by means of values, opinions, and preconceptions.

Assumptions about viewer response take in the viewing proximity, duration of views, activity while viewing, and overall viewing context. Local values based on visual preferences, historical associations, and community aspirations and goals are also factors in predicting viewer sensitivity and response to change.

Based on the project's proximity to high quality visual resources—as well the importance of the visual environment, highway and community aesthetics as identified in local, state and national planning documents—this analysis assumes an overall high level of viewer sensitivity throughout the project's length and in the surrounding area. At any given viewpoint, this high level of viewer sensitivity can be affected by the previously mentioned factors (viewing distance, location and availability). The overall number of viewers and duration of views can also increase or decrease the degree of visual sensitivity assumed for a certain viewpoint.

For the visual analysis, eight observer viewpoints were picked to represent views throughout the project area. Then each viewpoint was rated for its viewer response. A numerical rating between 0 and 7 was assigned for the expected viewer sensitivity and response from each viewpoint, with 0 having the lowest value and 7 the highest. Table 2-1 shows the range of viewer response ratings, with descriptions of the ratings.

Table 2-1 Viewer Response Ratings

Viewer Response Numerical Rating	Viewer Response Narrative Rating
0	Low
1	Low
2	Moderate Low
3	Moderate
4	Moderate
5	Moderate High
6	High
7	High

Source:Lee Vining Rockfall Visual Impact Assessment June 2012

Viewer Sensitivity

U.S. 395 through Mono County has long been recognized for its scenic qualities. Planning policy emphasizes the protection of visual resources along U.S. 395 and underscores the concern and sensitivity to aesthetic issues along this route.

Public opinion and policy on the visual character of the regional landscape are important factors in assessing the baseline values given to the setting. These national and state designations and community-based goals can serve as a guide for predicting the likely reaction the viewing public would have concerning changes that may result from the project.

In addition to the general aesthetic criteria, the following guidelines and policies were considered for this project.

Mono Basin National Forest Scenic Area

The Mono Basin National Forest Scenic Area was designated by Congress in 1984 to protect the natural, cultural and scenic resources of the Mono Basin. The scenic area encompasses 116,000 acres and includes the Mono Basin Visitor Center in Lee Vining. The Mono Basin Scenic Area was the first of its kind in the National Forest System. California State Parks and the U.S. Forest Service work cooperatively to manage public lands around Mono Lake.

State Scenic Highway Designation

U.S. 395 through the project limits is classified as an officially designated State Scenic Highway. The state scenic highway program designates routes based on high-

quality views of the natural landscape along the route and on the local governing body's implementation of a Corridor Protection Plan. The Corridor Protection Plan includes policies and ordinances addressing land use, design review, billboards, earthwork and landscaping, and utility structures. The State Scenic Highway designation recognizes the route's visual quality, which indicates a higher level of interest in the aesthetic character of the highway corridor. The scenic highway program does not preclude development.

Mono Lake Tufa State Natural Reserve

Mono Lake Tufa State Natural Reserve consists of state-owned lakebed lands below the elevation of 6,417 feet above sea level. The reserve was established in 1982 to preserve the spectacular tufa formations and other natural features of Mono Lake. California State Parks and the U.S. Forest Service work cooperatively to manage the public lands around Mono Lake.

Mono County General Plan Conservation/Open Space Element

The Visual Resources Issues/Opportunities/Constraints section of the Mono County General Plan Conservation/Open Space Element states:

> The Mono County General Plan also includes visual resource goals and policies such as:
>
> Goal – Protect and enhance the visual resources and landscapes of Mono County.
>
> Objective A - Maintain and enhance visual resources in the county.
>
> Policy 5 – Restore visually degraded areas where possible.
>
> Objective B - Maintain a countywide system of state and county designated scenic highways.
>
> Objective C - Ensure that development is visually compatible with the surrounding community, adjacent cultural resources, and/or natural environment.

Observer Viewpoints

As noted earlier, observer viewpoints were picked to best represent the typical visual character of the project, unique project components or affected resources, and affected viewer groups. Viewpoints include U.S. Forest Service Scenic Basin Sensitivity Level One visual resource views introduced by the U.S. Forest Service Mono Basin Environmental Impact Study done for the Mono Basin National Scenic Area Comprehensive Management Plan.

Observer viewpoints consist of viewing locations both from the highway as well as from the surrounding area. Sixteen viewing locations were identified (see Table 2-2 and Figure 2-1). Of the 16 viewpoints, eight were selected to best reveal the project features and any potential visual character change: observer viewpoints 1 through 8 were selected for photo-simulation locations and subject to further analysis.

Photo simulations from Observer Viewpoints 9 to 16 can be found in the separate Visual Impact Analysis. These viewpoints are either too far from the proposed project to be seen from such a long distance or the view is blocked by other landscape features.

Table 2-2 Observer Viewpoint Locations

Observer Viewpoint Number **Photo-simulation spot*	**Observer Viewpoint Location**
1*	Slope 1 - From U.S. 395 near Slope 1 looking northbound
2*	Slope 2 - From U.S. 395 near Slope 2 looking northbound
3*	Slope 3 - From near U.S. 395 near Slope 3 looking northbound
4*	Slope 4 - From U.S. 395 near Slope 4 at the Marina entrance
5*	Slope 5 - From U.S. 395 near Slope 5 at the turnout
6*	Slope 6 - From U.S. 395 near Slope 6 looking southbound
7*	From the U.S. Forest Service Visitor's Center
8*	From the Old Marina
9	From U.S. 395 approximately 500 feet north of the project looking south
10	From U.S. 395 at Lundy Lake Road
11	From U.S. 395 at Cemetery Road
12	From the South Tufa Area
13	From the rim of Panum Crater
14	From Navy Beach
15	From County Park
16	From near Black Point

Source:Lee Vining Rockfall Visual Impact Assessment June 2012

Figure 2-1 Observer Viewpoint Location Map

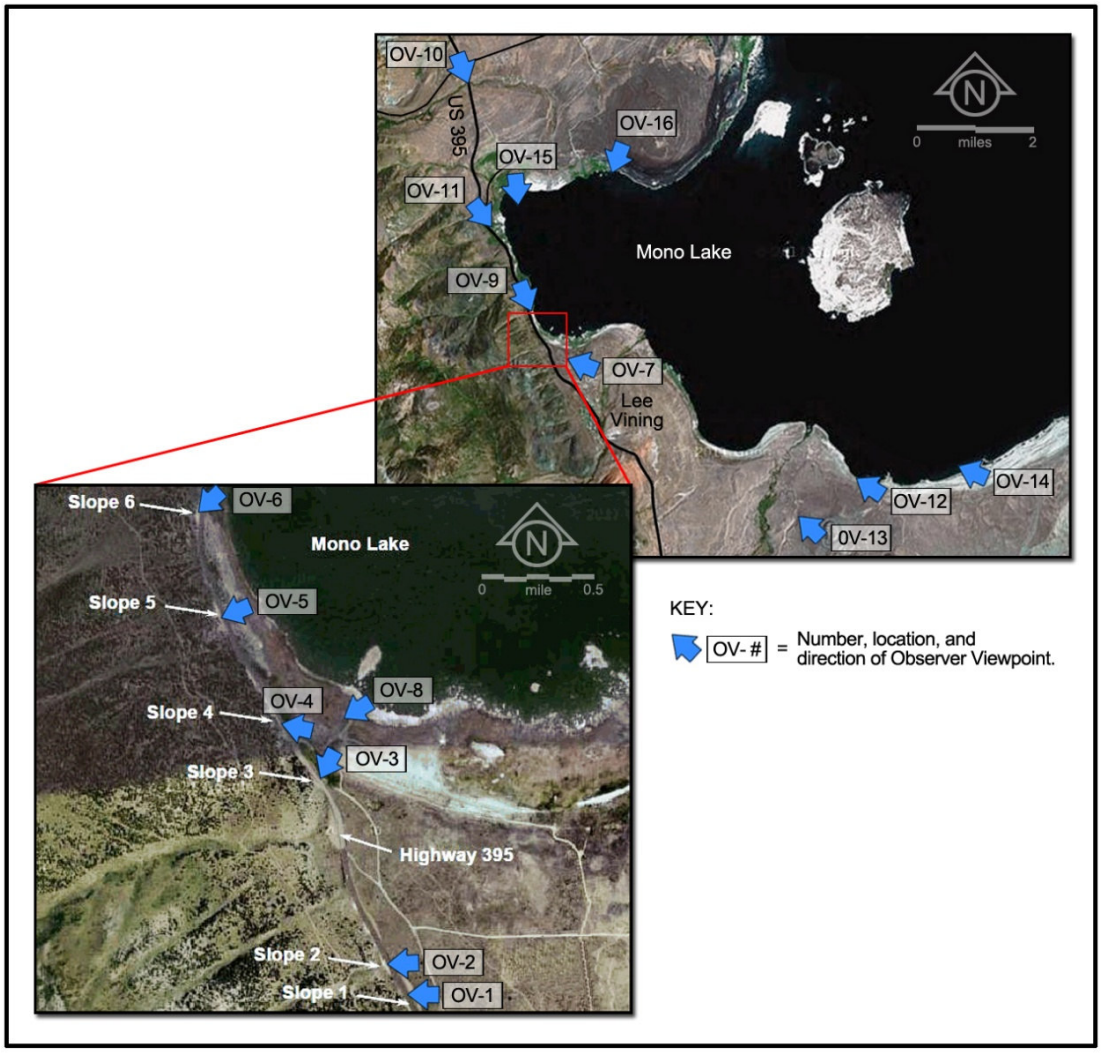


Photo-Simulations and Project Representations

Photo-simulations show the visual character from the observer viewpoints and provide an overview of the visual setting of the project area. In each case, the "existing" image shows how the view looked at the time of this study, and the "proposed" simulation shows how that location might appear with the project in place. The known dimensions of existing onsite elements were used as visual scale references to increase accuracy of the photo-simulations. For the purpose of this visual study, new vegetative growth in the photo-simulations shows plant growth at about three to five years after project construction.

Environmental Consequences

This section explains the numerical ratings assigned to the existing and proposed views as seen from each observer viewpoint. Photographs of the existing conditions along with photo-simulations of the project are included to give you an understanding of the visual changes proposed by the project.

The following viewpoint breakdowns analyze the project in terms of the numerical difference in physical change (Resource Change) combined with the expected sensitivities and responses of potential viewer groups (Viewer Response rating). The Visual Quality Evaluation rating is combined with the Viewer Response rating to indicate the potential visual impacts of the project. Table 2-3 summarizes the visual impacts for each design option from each Observer Viewpoint. More detailed tables can be found in the June 2012 Lee Vining Rockfall Visual Impact Assessment.

Table 2-3 Visual Impact Ratings as Seen from Each Observer Viewpoint

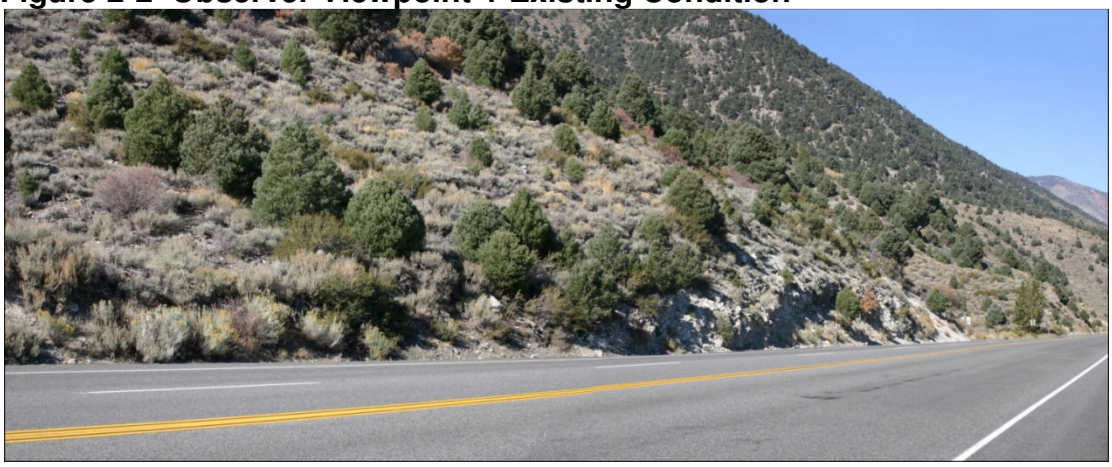
Observer Viewpoint (OV)	Project Option	Resource Change					Viewer Response	Visual Impact Rating*
		Vividness (V)	Intactness (I)	Unity (U)	(=V+I+U/3)	Difference		
1	Existing	3.5	3.0	3.0	3.2			
	Option 1 and 2	3.5	4.2	4.2	4.0	+0.8 (low)	6.0 (high)	+3.4 (moderate-positive)
2	Existing	3.5	3.0	3.0	3.2			
	Option 1and 2	3.5	4.2	4.2	4.0	+0.8 (low)	6.0 (high)	+3.4 (moderate-positive)
3	Existing	3.5	3.0	3.0	3.2			
	Option 1and 2	3.5	4.2	4.2	4.0	+0.8 (low)	6.0 (high)	+3.4 (moderate-positive)
4	Existing	5.0	2.5	2.5	3.3			
	Option 1	3.0	2.0	2.5	2.5	-0.8 (low)	6.2 (high)	-3.5 (moderate-negative)
	Option 2	3.2	3.7	3.7	3.5	+0.2 (low)	6.2 (high)	+3.2 (moderate-positive)
5	Existing	3.0	2.3	2.3	2.5			
	Option 1	3.0	2.2	2.2	2.4	-0.1 (low)	6.1 (high)	-3.1 (moderate-negative)
	Option 2	3.3	3.7	3.7	3.6	+1.1 (low)	6.1 (high)	+3.6 (moderate-positive)
6	Existing	3.1	2.8	2.8	2.9			
	Option 1 and 2	3.4	3.7	3.7	3.6	+0.7 (low)	6.0 (high)	+3.4 (moderate-positive)
7	Existing	6.0	5.8	5.9	5.8			
	Option 1	6.0	6.0	6.1	6.0	+0.2 (low)	6.5 (high)	+3.3 (moderate-positive)
	Option 2	6.0	6.2	6.2	6.1	+0.3 (low)	6.5 (high)	+3.4 (moderate-positive)
8	Existing	5.0	4.0	4.2	4.4			
	Option 1	5.0	4.2	4.4	4.5	+0.1 (low)	6.3 (high)	+3.2 (moderate-positive)
	Option 2	5.0	4.6	4.9	4.8	+0.4 (low)	6.3 (high)	+3.4 (moderate-positive)

Visual Impact = *[(Absolute value of RC) + VR]/2, with plus or minus sign applied to the resulting numeral depending on whether the resource change (RC) was positive or negative.*
Source:Lee Vining Rockfall Visual Impact Assessment June 2012

Vividness (V) is the visual power or memorability of the landscape components as they combine in striking and distinctive visual patterns.
Intactness (I) is the visual integrity of the landscape and its freedom from non-typical encroaching elements. If all of the various elements of a landscape seem to "belong" together, there will be a high level of intactness.
Unity (U) is the visual harmony of the landscape considered as a whole. Unity represents the degree to which potentially diverse visual elements maintain a coherent visual pattern.

Observer Viewpoint 1 – Slope 1 - From U.S. 395 looking northbound

Figure 2-2 Observer Viewpoint-1 Existing Condition



Observer Viewpoint 1 has relatively high baseline visual quality, but the eroded and scarred earth of Slope 1 appears unnatural and inconsistent with the undisturbed surrounding landform and land cover. As a result of this visual scarring, all three rating criteria (vividness, intactness, and unity) are reduced to a somewhat moderate level.

Viewer Response

Based on the project's proximity to high-quality visual resources—as well the importance of the visual environment, highway and community aesthetics as identified in local, state and national planning documents—this analysis assumes an overall high level of viewer sensitivity throughout the project's length and in the surrounding area. This high level of viewer sensitivity is supported at Observer Viewpoint 1 because of the close viewing proximity to the project along the highway and number of travelers along this route.

Figure 2-3 Observer Viewpoint-1 Proposed Condition – Options 1 and 2

For Slope 1, both project options propose the same treatment: laying the slope back and replanting. With implementation of the project, the addition of native vegetation would blend with the surrounding area. Removal of eroded surfaces would reduce the contrast with the adjacent slopes and contribute to a more natural visual harmony, increasing both the visual intactness and unity ratings. Building Option 1 or 2 would lead to a moderate-positive visual impact change.

Observer Viewpoint 2 – Slope 2 - From U.S. 395 looking northbound

Figure 2-4 Observer Viewpoint-2 Existing Condition

Similar to Slope 1, Observer Viewpoint 2 is considered to be of relatively high baseline visual quality. The eroded and scarred earth of Slope 2, however, appears unnatural and contrasts with the surrounding native landform and land cover. As a result of this visual scarring, all three rating criteria are reduced to a somewhat moderate level.

Viewer Response

A high level of viewer sensitivity is expected at Observer Viewpoint 2 because of the road's scenic designations, close viewing proximity to the project along the highway and number of travelers along the route.

Figure 2-5 Observer Viewpoint-2 Proposed Condition – Options 1 and 2

For Slope 2, both project options propose the same treatment: laying the slope back and replanting. With Options 1 and 2, the planting of native vegetation would blend with the surrounding area. Removal of eroded surfaces would reduce the contrast with the adjacent slopes and contribute to a more natural visual harmony, increasing both the visual intactness and unity ratings. Building Option 1 or 2 would lead to a moderate-positive visual impact change.

Observer Viewpoint 3 – Slope 3 - From near U.S. 395 looking northbound

Figure 2-6 Observer Viewpoint-3 Existing Condition

Observer Viewpoint 3 is considered to be generally of relatively high visual quality. The visual quality is moderated, however, because of the eroded and scarred earth of

Slope 3. This visual scarring appears unnatural and inconsistent with the surrounding native landform and land cover, resulting in a lowering of all three rating criteria.

Viewer Response

A high level of viewer sensitivity is expected at Observer Viewpoint 3 because of the road's scenic designations, close viewing proximity to the project along the highway and number of travelers along the route.

Figure 2-7 Observer Viewpoint-3 Proposed Condition – Options 1 and 2

At this viewpoint of Slope 3, both project options propose the same treatment: replanting. With implementation of the project, adding native vegetation would help the slope visually blend with the surrounding area. Removal of eroded surfaces would reduce the contrast with the adjacent slopes and would contribute to a more natural visual harmony, increasing both the visual intactness and unity ratings. Building Option 1 or 2 would lead to a moderate-positive visual impact change.

Observer Viewpoint 4 – Slope 4 - From U.S. 395 at the Marina entrance

Figure 2-8 Observer Viewpoint-4 Existing Condition

As seen from Observer Viewpoint 4, the existing memorability or vividness of the view is somewhat high because of the remnant rock outcropping on Slope 4. The disturbance of the remainder of the existing slope appears unnatural and visually inconsistent with the surrounding native landform and vegetative cover. As a result, the intactness and unity ratings would be reduced to moderate.

Viewer Response

From Observer Viewpoint 4, viewer response is expected to be somewhat increased because of the road's scenic designations as well as the proximity of Slope 4 to the entrance to the Old Marina recreation area. Potential viewers would be oriented toward the slope while exiting the Marina.

Figure 2-9 Observer Viewpoint-4 Proposed Condition – Option 1

As seen from this viewpoint, Slope 4 Option 1 would place a hybrid system of wire mesh suspended at the top by metal attenuator posts. This method attempts to minimize the footprint of affected area (relative to Option 2) that is necessary to contain the rockfall. But, the posts, attenuator system and wire mesh drapery would introduce new visual elements into the view. The drapery and attenuator structures would be colored to minimize their contrast with the existing terrain. Most of the existing rock outcropping, loose rocks and a few remnant pine trees would be removed to accommodate the mesh drapery placement. Although some native plants would be expected to grow under the mesh drapery, the regularly moving slope surface would not support a significant amount of vegetation.

At the northern end of Slope 4, the project would use anchored wire mesh, which would allow a greater amount of plant growth.

Because of the introduction of the new human-made elements and limited plant growth, Option 1 would result in a reduction of vividness and intactness as seen from this viewpoint. The visual unity would remain the same because the mesh, although unnatural, would provide a minor uniformity to the slope. Building Option 1 would lead to a moderate-negative visual impact change.

Figure 2-10 Observer Viewpoint-4 Proposed Condition – Option 2

As seen from this viewpoint, Slope 4 Option 2 would attach anchored wire mesh to the slope. This method would require a larger (0.25 acre) initial project footprint (relative to Option 1) for the double-twisted wire mesh attachment. The anchored wire mesh would introduce a new visual element into the view. The mesh would be colored to minimize its contrast with the existing terrain. With Option 2, a portion of the existing rock outcropping, loose rocks and a few remnant pine trees would be removed. The anchored wire mesh would provide the opportunity for a greater amount of slope replanting to occur, compared to Option 1. Over a period of 3 to 5 years, the slope vegetation would be expected to hide visibility of much of the human-made mesh system. Because of the removal of most of the distinct rock outcropping, the vividness rating would be reduced. Despite the larger project footprint of Option 2, the eventual replanting of the slope would increase both the visual unity and intactness ratings as seen from Observer Viewpoint 4. Building Option 2 would lead to a moderate-positive visual impact change.

Observer Viewpoint 5 – Slope 5 - From U.S. 395 at the northbound turnout

Figure 2-11 Observer Viewpoint-5 Existing Condition

Slope 5 is the tallest cut slope of the six project locations. The existing slope face is highly disturbed and very noticeable as seen from the highway and surrounding viewpoints. The eroded slope contrasts substantially with the existing adjacent pine-covered slope. As a result of the scale, extent of disturbance and visual contrast, the existing view of Slope 5 receives a reduced rating for all three visual criteria.

Viewer Response

From Observer Viewpoint 5, viewer response is expected to be somewhat increased because of the road's scenic designations as well as the proximity of Slope 5 to the paved northbound turnout on the highway and potentially increased viewer exposure.

Figure 2-12 Observer Viewpoint-5 Proposed Condition – Option 1

Slope 5 Option 1 would use a hybrid system of cable mesh suspended at the top of the slope by metal attenuator posts. This method would minimize the footprint of affected area (relative to Option 2) that is necessary to contain the rockfall. But, the posts, attenuator system and cable drapery would introduce new visual elements into the view. The drapery and attenuator structures would be colored to minimize their contrast with the existing terrain. Boulders, loose rocks and a few remnant pine trees and scrub would be removed to accommodate the cable mesh drapery. Although

some native plants would be expected to grow under the cable mesh drapery, the regularly moving slope surface would not support a great amount of vegetation.

Because of the introduction of the new human-made elements and limited plant growth, Option 1 would result in a reduction of intactness and unity as seen from this viewpoint. Building Option 1 would lead to a moderate-negative visual impact change.

Figure 2-13 Observer Viewpoint-5 Proposed Condition – Option 2

Slope 5 Option 2 would attach anchored cable mesh to the slope. This method would require a larger (0.5 acre) initial project footprint (relative to Option 1) for the cable mesh attachment. The anchored cable mesh would introduce a new visual element into the view. The mesh would be colored to minimize its contrast with the existing terrain. With Option 2, boulders, loose rocks and a few remnant pine trees and scrub on the slope and the perimeter would be removed. The anchored cable mesh would allow a greater amount of slope replanting to occur, compared to Option 1.

Over a period of 3 to 5 years, the slope plants would be expected to hide much of the human-made cable mesh system. The overall memorability of the slope would remain about the same, though noticeability would be based on the mesh rather than scarring and disturbance. Despite the larger project footprint of Option 2, the eventual replanting of the slope would increase the vividness, the visual unity and intactness ratings as seen from Observer Viewpoint 5. Building Option 2 would lead to a moderate-positive visual impact change.

Observer Viewpoint 6 – Slope 6 - From U.S. 395 looking southbound

Figure 2-14 Observer Viewpoint-6 Existing Condition

Observer Viewpoint 6 is considered to be of relatively high visual quality. The visual quality is moderated, however, because of the eroded and scarred earth of Slope 6. This visual scarring appears unnatural and inconsistent with the surrounding native landform and land cover, resulting in a lowering of all three rating criteria.

Viewer Response

A high level of viewer sensitivity is expected at Observer Viewpoint 6 because of the road's scenic designations, close viewing proximity to the project along the highway and number of travelers along the route.

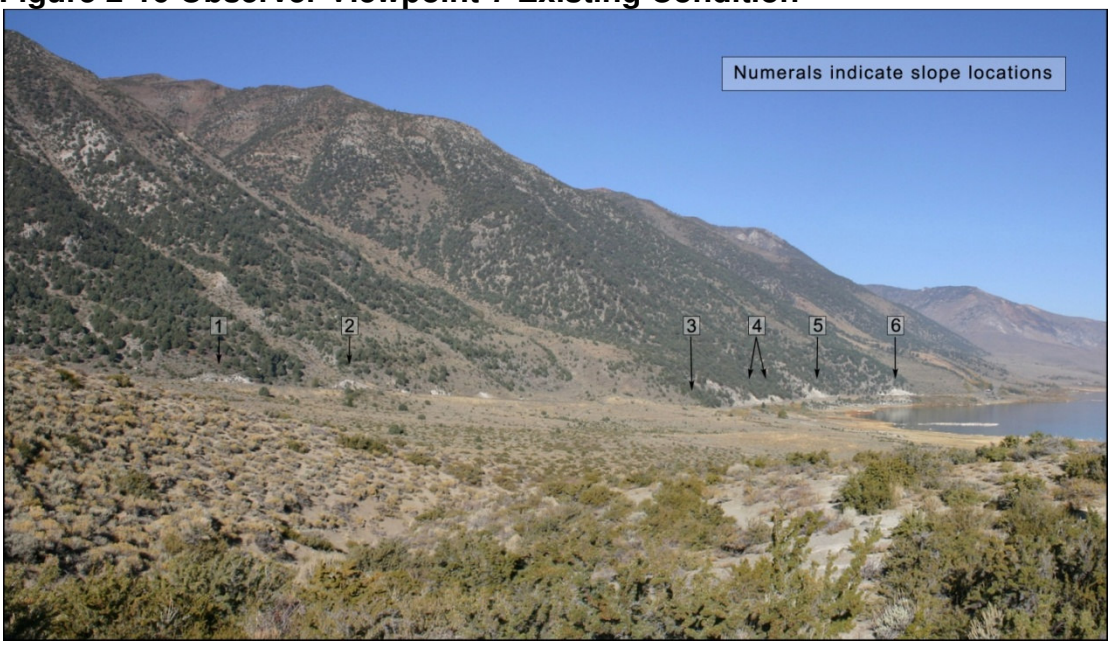
Figure 2-15 Observer Viewpoint-6 Proposed Condition – Options 1 and 2

For Slope 6, both project options offer the same treatment: anchored cable mesh. The anchored cable mesh would introduce a new visual element into the view. The mesh would be colored to minimize the contrast with the existing terrain. The project would remove much of the existing remnant trees, scrub, boulders and rock from the slope, but the anchored wire mesh would allow a greater amount of slope replanting to occur. Over a period of 3 to 5 years, the slope plants would be expected to hide much of the human-made cable/mesh system.

Because of the reduced visibility of slope disturbance and scarring due to replanting, the visual unity, intactness and vividness ratings would increase as seen from Observer Viewpoint 6. Building Option 1 or 2 would lead to a moderate-positive visual impact change.

Observer Viewpoint 7 - From the U.S. Forest Service Visitor's Center

Figure 2-16 Observer Viewpoint-7 Existing Condition



The sweeping vista provided from Observer Viewpoint 7 is considered of high quality. The panoramic views of Mono Lake, the surrounding hills and mountains, and natural open space combine for high visual quality ratings for vividness, intactness and unity. The existing disturbed project slopes along U.S. 395 can be seen in the distance, resulting in a minor negative effect on the view. Generally, however, the project occupies a very small part of the overall view, and the project slopes are visually subordinate to the larger scenic vista.

Viewer Response

A high level of sensitivity is expected at Observer Viewpoint 7 because of viewer expectations at the Visitor's Center vantage point, related interpretive opportunities, and potential longer duration of viewer exposure. Although moderated by viewing distance, the project would be visible from this location.

Figure 2-17 Observer Viewpoint-7 Proposed Condition – Option 1

The view toward the project from this viewpoint includes all six project slope locations. Option 1 would apply cut and replanting strategies to Slopes 1 and 2, replanting to Slope 3, a hybrid and drapery system to Slope 4, a hybrid system to Slope 5, and anchored mesh to Slope 6.

As seen from this viewing distance, these strategies would reduce visibility of the slopes to some extent. Slopes 1, 2, 3 and 6 would substantially blend with the adjacent natural slopes due to the amount of proposed slope replanting. Slopes 4 and 5 would remain the most visible due to the relative lack of slope replanting, though as seen from this distance the drapery fabric would slightly reduce slope glare and noticeability.

As a result, Option 1 would have no effect on the memorability or visibility of the view, and the intactness and unity ratings would be slightly increased. Building Option 1 would lead to a moderate-positive visual impact change.

Figure 2-18 Observer Viewpoint-7 Proposed Condition – Option 2

Option 2 would apply cut and replanting strategies to Slopes 1 and 2, replanting to Slope 3, and anchored mesh to Slopes 4, 5 and 6. For Slopes 4, 5 and 6, the anchored cable/wire mesh would allow a greater amount of slope replanting to occur. Over a period of 3 to 5 years, the slope plants would hide much of the existing slopes. Slopes 1, 2, and 3 would be the least visible due to the amount of proposed slope replanting. Slopes 4, 5 and 6 would be slightly visible, but would be mostly unnoticeable from this distance.

As a result, Option 2 would have no effect on the memorability or visibility of the view, and the intactness and unity ratings would be slightly increased. Building Option 2 would lead to a moderate-positive visual impact change.

Observer Viewpoint 8 – From the Old Marina

Figure 2-19 Observer Viewpoint-8 Existing Condition

The existing view from the Old Marina is considered of high quality. Although the area of greatest visual interest at this viewpoint is eastward to Mono Lake and beyond, the western view toward the adjacent mountains is also an important component of the visual context. From this viewpoint, the project slopes can be seen as part of the larger hillsides, which allows the visual contrast of the eroded and scarred earth to be more evident. The existing disturbed project slopes along U.S. 395 can be clearly seen in the mid-ground, resulting in a negative effect on the view. As a result, the otherwise high ratings for vividness, intactness and unity are moderately reduced.

Viewer Response

A high degree of viewer sensitivity is expected at Observer Viewpoint 8 because of the road's scenic designations and the moderately close viewing distance to Slopes 3, 4 and 5. In addition, the generally passive recreation activities at the Old Marina increase the opportunities for longer-duration views of the project as seen from this location.

Figure 2-20 Observer Viewpoint-8 Proposed Condition – Option 1

As seen from the Old Marina recreation area, views facing west would include all six project slope locations. Of these, Slopes 3, 4 and 5 would be the most visible. Option 1would apply cut and replanting strategies to Slopes 1 and 2, replanting to Slope 3, a hybrid and drapery system to Slope 4, a hybrid system to Slope 5, and anchored mesh to Slope 6.

These strategies would reduce visibility of the slopes to some extent. Slopes 1, 2, 3 and 6 would substantially blend with the adjacent natural slopes due to the amount of proposed slope replanting. Slopes 4 and 5 would remain the most visible due to the relative lack of slope replanting and minor visibility of the hybrid attenuator posts, though the drapery fabric would slightly reduce slope glare and noticeability.

As a result, Option 1 would have no effect on the memorability or visibility of the view, and the intactness and unity ratings would be slightly increased. Building Option 1 would lead to a moderate-positive visual impact change.

Figure 2-21 Observer Viewpoint-8 Proposed Condition – Option 2

Option 2 would apply cut and replanting strategies to Slopes 1, 2 and 3, and anchored mesh to Slopes 4, 5 and 6. Option 2 would initially require larger areas of disturbance on Slopes 4, 5 and 6, compared to Option 1. But, on these slopes, the anchored mesh would allow for a greater amount of slope replanting to occur. Over a period of 3 to 5 years, the slope plants would hide much of the existing slopes. After replanting, these slopes would visually blend with the setting more than the hybrid/drapery systems proposed with Option 1. Slopes 1, 2 and 3 would be the least visible due to the amount of proposed slope replanting. Slopes 4, 5 and 6 would be somewhat visible, but their noticeability would be greatly reduced.

As a result, Option 2 would have no effect on the memorability or visibility of the view, but the intactness and unity ratings would improve. Building Option 2 would lead to a moderate-positive visual impact change.

Summary

The ratings show that successful replanting of the slopes would be the most effective way to visually blending the project with its natural setting. As seen from all viewpoints, slopes that included successful replanting would contrast less with the surrounding native landscape. The replanted slopes would appear generally consistent with the adjacent non-disturbed areas, draw less of the viewers' attention from close range, and be less noticeable when seen from a distance.

Implementation of Option 1 would result in moderately beneficial visual impacts at four of the six project slopes due to the ability to successfully replant the slopes and

visually blend with the natural setting. But, Option 1 would cause moderately adverse visual impacts at Slopes 4 and 5.

Option 2 would have moderately beneficial visual impacts at each of the six project slopes due to the ability to successfully replant the slopes and visually blend with the natural setting.

Avoidance, Minimization, and/or Mitigation Measures

The following measures would reduce the project's potential visual impact as seen from U.S. 395, the adjacent National Forest and State Park, and the surrounding area. The intent of these measures would be to minimize the effect of the project caused mainly by the noticeability of the disturbed areas and new human-made elements:

- Preserve as much existing vegetation as possible. Use prescriptive clearing and grubbing and grading techniques, which save the most existing vegetation possible considering the function of the applicable rockfall prevention strategy.
- Preserve as much of the existing landform as possible. Where feasible, avoid the creation of completely flat slope-planes. Instead, as product installation allows, create graded slopes with undulations or facets to mimic natural topography.
- Limit the use of slope-rounding at specific locations where slope-rounding would result in the removal of mature trees and large vegetation.
- Color the cross-connectors within the cable mesh fabric to match the color of the cabling and the surrounding natural setting. The color of the system elements would be approved by a Caltrans Landscape Architect.
- Where replanting strategies are applied, plant species selection would be based in part on the native land cover immediately adjacent to the slope planting area. As appropriate, include as large a plant species as possible, considering the function of the rockfall prevention strategy and the adjacent natural slopes.

2.2 Construction Impacts

Construction activities for the project would cause temporary impacts for access/traffic circulation, air quality, water quality and biology. These impacts would not be substantial.

Traffic

The project would interfere with local traffic causing minor delays. Fire and safety service providers, and local businesses, would therefore not experience substantial impacts. A detailed Traffic Management Plan would be required for the Build Alternative because of the need to maintain traffic flow through the project site. All work would need to be performed without detours to minimize land disturbance. The Traffic Management Plan would cover the coordination of activities with locals, establishment of a community outreach plan, and potential for temporary lane closures.

Air Quality

During construction, the project would generate temporary noise, dust, and air pollutants. Exhaust from construction equipment contains hydrocarbons, oxides of nitrogen, carbon monoxide, suspended particulate matter, and odors.

Caltrans Standard Specifications pertaining to dust control and dust palliative requirement are a required part of all construction contracts and should effectively reduce and control emission impacts during construction. The provisions of Caltrans Standard Specifications, Section 14-9.02 of "Air Pollution Control" and Section 14.9.03 "Dust Control," require the contractor to comply with the Great Basin Unified Air Pollution Control District's rules, ordinances, and regulations. With all the appropriate Caltrans measures in place, temporary construction-related impacts would be minimized.

Water Quality

The project is expected to have no impacts to water quality in Mono Lake. The following construction measures would be used:

Erosion Control

Erosion control blankets, hydroseeding, and/or other measures would be used to prevent erosion of newly completed slopes and encourage native seed germination before the photo-degradation or bio-degradation of the erosion control blanket. Standard best management practices would be used to prevent erosion and storm water impacts during construction. Permanent best management practices, such as contour-grading and slope-rounding, would be used where applicable to prevent long-term erosion impacts.

Materials used during construction (such as concrete curing compounds) may have chemicals that are potentially harmful to aquatic resources and water quality.

Accidents or improper use of these materials could release contaminants into the environment. Additionally, oil and other petroleum products used to maintain and operate construction equipment could be accidentally released. To prevent the release of these compounds, mitigation measures and best management practices would be used to minimize any potential impacts. Implementation of best management practices and compliance with the requirements of the Construction General Permit's (see the next subsection) substantive requirements would reduce short-term impacts to water resources.

To comply with the Construction General Permit, Caltrans developed the Statewide Storm Water Management Plan to address storm water pollution controls related to highway planning, design, construction, and maintenance activities throughout California. The Statewide Storm Water Management Plan assigns responsibilities within Caltrans for implementing storm water management procedures and practices as well as training, public education and participation, monitoring and research, program evaluation, and reporting activities. The plan describes the minimum procedures and practices Caltrans uses to reduce pollutants in storm water and non-storm water discharges. It outlines procedures and responsibilities for protecting water quality, including the selection and implementation of best management practices. The project would be programmed to follow the guidelines and procedures outlined in the latest Statewide Storm Water Management Plan to address storm water runoff.

Construction General Permit

The Construction General Permit (Order No. 2009-009-DWQ, as amended by 2010-0014-DWG), adopted on November 16, 2010, became effective on February 14, 2011. The permit regulates storm water discharges from construction sites that result in a disturbed soil area of 1 acre or greater, and/or are smaller sites that are part of a larger common plan of development. For all projects subject to the Construction General Permit, applicants are required to develop and implement an effective Water Pollution Control Plan or Storm Water Pollution Prevention Plan. In accordance with Caltrans' Standard Specifications, a Water Pollution Control Plan is required for projects with disturbed soil area less than 1 acre or a project that has a disturbed soil area of 1 to 5 acres and qualifies for an Environmental Protection Agency Erosivity Waiver. A Storm Water Pollution Prevention Plan is expected for this project because it would disturb more than 1 acre of soil and does not have an Erosivity Waiver.

By law, all storm water discharges associated with construction activity where clearing, grading, and excavation results in soil disturbance of at least 1 acre must comply with the provisions of the Construction General Permit. Construction activity that results in soil disturbances of less than 1 acre is subject to this Construction General Permit if there is potential for significant water quality impairment resulting from the activity as determined by the Regional Water Quality Control Board. Operators of regulated construction sites are required to do the following: develop storm water pollution prevention plans; implement sediment, erosion, and pollution prevention control measures; and obtain coverage under the Construction General Permit.

By incorporating proper and accepted engineering practices and best management practices, the project would not produce substantial impacts to water quality during construction or its operation.

Biology

Field surveys done for the Natural Environment Study determined there would be no direct impacts to threatened or endangered species. A preconstruction survey would be done to ensure that no threatened or endangered species have moved into the project area.

Disturbance impacts caused by heavy machinery, noise, vibration, movement, the presence of work personnel, congested traffic, and localized air quality impacts due to dust and equipment exhaust at Slopes 3, 4 and 6 could result in disturbance impacts to any willow flycatchers, yellow warblers, or long-eared owls occupying patches of willow habitat nearby.

The intensity and duration of construction-related disturbance across from Slope 3 (willow stand 1) will be less than that of Slopes 4 and 6 (willow stands 2 and 3, respectively) because treatments there are going to be restricted to rounding the top of the slope, some rock scaling, and vegetation treatments consisting of hydroseeding and the placement of erosion-control blankets. The work at Slope 3 is estimated to take one week to complete.

The greater amount of work involved at Slopes 4 and 6 result from slope grading activity, a greater amount of rock scaling required, and the installation of the double-twisted wire mesh drapery and/or anchored cable mesh, as well as hydroseeding and erosion-control blankets. This work is estimated to take two weeks to complete for

each area. Therefore, willow stands 2 and 3 will experience project-related disturbance of greater intensity and duration than that expected for willow stand 1.

For willow stands 1–3, which are next to the proposed construction zones and may contain special-status species, four measures could be used to avoid and minimize potential impacts to species occupying the willow stands.

1. Restrict construction activities until after the breeding season when it is unlikely that breeding birds will be in the area. This measure would also allow nesting birds time to fledge young, thus complying with the Migratory Bird Treaty Act. A seasonal work restriction between March 1 and August 15, or preconstruction bird surveys of the project site, should be adequate to protect nesting birds.

2. Perform preconstruction surveys before construction activities on a weekly basis. This would allow construction to start earlier than with measure 1; however, should special-status species be identified, construction disturbances within that area may be delayed until subsequent surveys indicated that the species were no longer present.

3. Biological monitoring of the willow stands would provide for the detection of special-status species and determine if individuals are being negatively affected by construction-related disturbance. Construction may be stopped on a temporary basis until the species are no longer in the area.

4. No construction personnel or equipment would be allowed to enter the willow habitat during the course of the project.

2.3 Climate Change (California Environmental Quality Act)

Climate change refers to long-term changes in temperature, precipitation, wind patterns, and other elements of the earth's climate system. An ever-increasing body of scientific research attributes these climatological changes to greenhouse gases, particularly those generated from the production and use of fossil fuels.

While climate change has been a concern for several decades, establishment of the Intergovernmental Panel on Climate Change (IPCC) by the United Nations and World Meteorological Organization in 1988 has led to increased efforts devoted to greenhouse gas emissions reduction and climate change research and policy. These efforts are mainly concerned with the emissions of greenhouse gases related to human

activity that include carbon dioxide (CO_2), methane, nitrous oxide, tetrafluoromethane, hexafluoroethane, sulfur hexafluoride, HFC-23 (fluoroform), HFC-134a (s, s, s, 2 –tetrafluoroethane), and HFC-152a (difluoroethane).

There are typically two terms used when discussing the impacts of climate change. "Greenhouse Gas Mitigation" is a term for reducing greenhouse gas emissions in order to reduce or "mitigate" the impacts of climate change. "Adaptation" refers to the effort of planning for and adapting to impacts due to climate change (such as adjusting transportation design standards to withstand more intense storms and higher sea levels) [1].

Transportation sources (passenger cars, light-duty trucks, other trucks, buses and motorcycles) in the state of California make up the largest source (second to electricity generation) of greenhouse gas-emitting sources. Conversely, the main source of greenhouse gas emissions in the U.S. is electricity generation, followed by transportation. The dominant greenhouse gas emitted is carbon dioxide, mostly from fossil fuel combustion.

There are four main strategies for reducing greenhouse gas emissions from transportation sources: 1) improve system and operation efficiencies, 2) reduce growth of vehicle miles traveled, 3) transition to lower greenhouse gases fuels, and 4) improve vehicle technologies. To be most effective, all four should be pursued collectively. The following regulatory setting section outlines state and federal efforts to comprehensively reduce greenhouse gases emissions from transportation sources.

Regulatory Setting

State

With passage of several pieces of legislation, including State Senate and Assembly Bills and Executive Orders, California launched an innovative and proactive approach to dealing with greenhouse gas emissions and climate change at the state level.

Assembly Bill 1493 (AB 1493), Pavley. Vehicular Emissions: Greenhouse Gases (AB 1493), 2002: This bill requires the California Air Resources Board to develop and implement regulations to reduce automobile and light truck greenhouse gas emissions. These stricter emissions standards were designed to apply to automobiles and light trucks beginning with the 2009-model year. In June 2009, the U.S. Environmental Protection Agency Administrator granted a Clean Air Act waiver of

[1] http://climatechange.transportation.org/ghg_mitigation/

preemption to California. This waiver allowed California to implement its own greenhouse gas emission standards for motor vehicles beginning with model year 2009. California agencies will be working with federal agencies to conduct joint rulemaking to reduce greenhouse gas emissions for passenger cars model years 2017-2025.

Executive Order S-3-05 (signed on June 1, 2005, by then-Governor Arnold Schwarzenegger): The goal of this order is to reduce California's greenhouse gas emissions to: 1) 2000 levels by 2010, 2) 1990 levels by the 2020, and 3) 80 percent below the 1990 levels by the year 2050. In 2006, this goal was further reinforced with the passage of Assembly Bill 32.

Assembly Bill 32 (AB 32), the Global Warming Solutions Act of 2006: AB 32 sets the same overall greenhouse gas emissions reduction goals as outlined in Executive Order S-3-05, while further mandating that the California Air Resources Board create a plan, which includes market mechanisms, and implement rules to achieve "real, quantifiable, cost-effective reductions of greenhouse gases." Executive Order S-20-06 further directs state agencies to begin implementing AB 32, including the recommendations made by the State's Climate Action Team.

Executive Order S-01-07: Then-Governor Schwarzenegger set forth the low carbon fuel standard for California. Under this order, the carbon intensity of California's transportation fuels is to be reduced by at least 10 percent by 2020.

Senate Bill 97 (Chapter 185, 2007): This bill required the Governor's Office of Planning and Research to develop recommended amendments to the State's California Environmental Quality Act Guidelines for addressing greenhouse gas emissions. The amendments became effective on March 18, 2010.

Caltrans Director's Policy 30 (DP-30) Climate Change (approved June 22, 2012): is intended to establish a Department policy that will ensure coordinated efforts to incorporate climate change into Departmental decisions and activities. This policy contributes to the Department's stewardship goal to preserve and enhance California's resources and assets.

Federal

Although climate change and greenhouse gas reduction are concerns at the federal level, currently there are no regulations or legislation that have been enacted specifically addressing greenhouse gas emissions reductions and climate change at

the project level. Neither the U.S. Environmental Protection Agency nor the Federal Highway Administration has promulgated explicit guidance or methodology to conduct project-level greenhouse gas analysis.

As stated on the Federal Highway Administration's climate change website (http://www.fhwa.dot.gov/hep/climate/index.htm), climate change considerations should be integrated throughout the transportation decision-making process, from planning through project development and delivery. Addressing climate change mitigation and adaptation up front in the planning process will facilitate decision-making and improve efficiency at the program level, and will inform the analysis and stewardship needs of project level decision-making. Climate change considerations can easily be integrated into many planning factors, such as supporting economic vitality and global efficiency, increasing safety and mobility, enhancing the environment, promoting energy conservation, and improving the quality of life.

The four strategies set forth by the Federal Highway Administration to lessen climate change impacts do correlate with efforts that the State has undertaken and is undertaking to deal with transportation and climate change; the strategies include improved transportation system efficiency, cleaner fuels, cleaner vehicles, and reduction in the growth of vehicle hours traveled.

Climate change and its associated effects are also being addressed through various efforts at the federal level to improve fuel economy and energy efficiency, such as the "National Clean Car Program" and Executive Order 13514-Federal Leadership in Environmental, Energy and Economic Performance.

Executive Order 13514 is focused on reducing greenhouse gases internally in federal agency missions, programs and operations, but also directs federal agencies to participate in the interagency Climate Change Adaptation Task Force, which is engaged in developing a U.S. strategy for adaptation to climate change.

On April 2, 2007, in Massachusetts v. EPA, 549 U.S. 497 (2007), the Supreme Court found that greenhouse gases are air pollutants covered by the Clean Air Act and that the U.S. Environmental Protection Agency has the authority to regulate greenhouse gas. The court held that the U.S. Environmental Protection Agency Administrator must determine whether or not emissions of greenhouse gases from new motor vehicles cause or contribute to air pollution that may reasonably be anticipated to endanger public health or welfare, or whether the science is too uncertain to make a reasoned decision.

On December 7, 2009, the U.S. Environmental Protection Agency Administrator signed two distinct findings on greenhouse gas under Section 202(a) of the Clean Air Act:

- Endangerment Finding: The Administrator found that the current and projected concentrations of the six key well-mixed greenhouse gases—carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6)—in the atmosphere threaten the public health and welfare of current and future generations.

- Cause or Contribute Finding: The Administrator found that the combined emissions of these well-mixed greenhouse gases from new motor vehicles and new motor vehicle engines contribute to the greenhouse gas pollution, which threatens public health and welfare.

Although these findings did not themselves impose any requirements on industry or other entities, this action was a prerequisite to finalizing the U.S. Environmental Protection Agency's Proposed Greenhouse Gas Emission Standards for Light-Duty Vehicles, which was published on September 15, 2009[2]. On May 7, 2010, the final Light-Duty Vehicle Greenhouse Gas Emissions Standards and Corporate Average Fuel Economy Standards were published in the Federal Register.

The U.S. Environmental Protection Agency and the National Highway Traffic Safety Administration are taking coordinated steps to enable the production of a new generation of clean vehicles with reduced greenhouse gas emissions and improved fuel efficiency from on-road vehicles and engines. These next steps include developing the first-ever greenhouse gas regulations for heavy-duty engines and vehicles, as well as additional light-duty vehicle greenhouse gas regulations. These steps were outlined by President Barack Obama in a memorandum on May 21, 2010.[3]

The final combined U.S. Environmental Protection Agency and National Highway Traffic Safety Administration standards that make up the first phase of this national program apply to passenger cars, light-duty trucks, and medium-duty passenger vehicles, covering model years 2012 through 2016. The standards require these vehicles to meet an estimated combined average emissions level of 250 grams of carbon dioxide per mile, equivalent to 35.5 miles per gallon if the automobile industry were to meet this carbon dioxide level solely through fuel economy

[2] http://www.epa.gov/climatechange/endangerment.html
[3] http://epa.gov/otaq/climate/regulations.htm

improvements. Together, these standards will cut greenhouse gas emissions by an estimated 960 million metric tons and 1.8 billion barrels of oil over the lifetime of the vehicles sold under the program (model years 2012-2016).

On January 24, 2011, the U.S. Environmental Protection Agency along with the U.S. Department of Transportation and the State of California announced a single timeframe for proposing fuel economy and greenhouse gas standards for model years 2017-2025 cars and light-trucks. Proposing the new standards in the same timeframe (September 1, 2011) signals continued collaboration that could lead to an extension of the current National Clean Car Program.

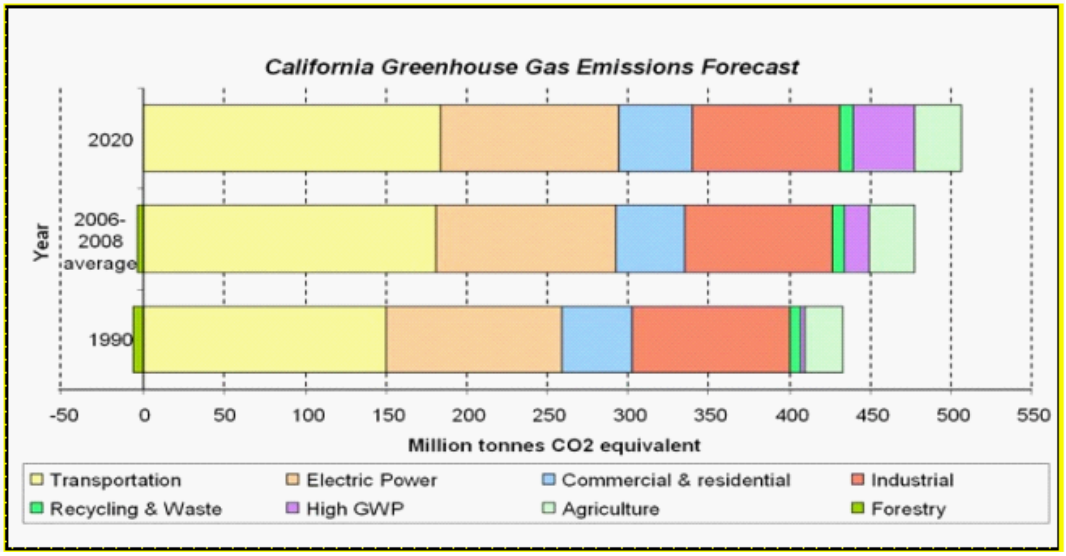
Project Analysis

An individual project does not generate enough greenhouse gas emissions to significantly influence global climate change. Rather, global climate change is a cumulative impact. This means that a project may participate in a potential impact through its incremental contribution combined with the contributions of all other sources of greenhouse gas.[4] In assessing cumulative impacts, it must be determined if a project's incremental effect is "cumulatively considerable." See California Environmental Quality Act Guidelines Sections 15064(h)(1) and 15130. To make this determination, the incremental impacts of the project must be compared with the effects of past, current, and probable future projects. To gather sufficient information on a global scale of all past, current, and future projects in order to make this determination is a difficult if not impossible task.

The AB 32 Scoping Plan contains the main strategies California will use to reduce greenhouse gas. As part of its supporting documentation for the Draft Scoping Plan, the Air Resources Board released the greenhouse gas inventory for California (Forecast last updated: 28 October 2010). The forecast (see Figure 2-22) is an estimate of the emissions expected to occur in the year 2020 if none of the foreseeable measures included in the Scoping Plan were implemented. The base year used for forecasting emissions is the average of statewide emissions in the greenhouse gas inventory for 2006, 2007, and 2008.

[4] This approach is supported by the AEP: *Recommendations by the Association of Environmental Professionals on How to Analyze GHG Emissions and Global Climate Change in CEQA Documents* (March 5, 2007), as well as the SCAQMD (Chapter 6: The CEQA Guide, April 2011) and the US Forest Service (Climate Change Considerations in Project Level NEPA Analysis, July 13, 2009).

Figure 2-22 California Greenhouse Gas Forecast



Source: http://www.arb.ca.gov/cc/inventory/data/forecast.htm

Caltrans and its parent agency, the Business, Transportation, and Housing Agency, have taken an active role in addressing greenhouse gas emission reduction and climate change. Recognizing that 98 percent of California's greenhouse gas emissions are from the burning of fossil fuels and 40 percent of all human-made greenhouse gas emissions are from transportation, the Department has created and is implementing the Climate Action Program at Caltrans that was published in December 2006 (see Climate Action Program at Caltrans (December 2006).[5]

The project would have low to no potential for increase in greenhouse gas emissions. Construction emissions would be unavoidable, but there would likely be long-term greenhouse gas benefits by reducing the amount of rockfall removal that maintenance crews would have to perform.

Construction Emissions

Greenhouse gas emissions for transportation projects can be divided into those produced during construction and those produced during operations. Construction greenhouse gas emissions include emissions produced as a result of material processing, emissions produced by onsite construction equipment, and emissions

[5] Caltrans Climate Action Program is located at the following web address: http://www.dot.ca.gov/hq/tpp/offices/ogm/key_reports_files/State_Wide_Strategy/Caltrans_Climate_Action_Program.pdf

arising from traffic delays due to construction. These emissions would be produced at different levels throughout the construction phase; their frequency and occurrence can be reduced through innovations in plans and specifications and by implementing better traffic management during construction phases.

In addition, with innovations such as longer pavement lives, improved traffic management plans, and changes in materials, the greenhouse gas emissions produced during construction can be mitigated to some degree by longer intervals between maintenance and rehabilitation events.

California Environmental Quality Act Conclusion

While construction would result in a slight increase in greenhouse gas emissions during construction, it is anticipated that the project would not result in any increase in operational greenhouse gas emissions. While it is Caltrans' determination that in the absence of further regulatory or scientific information related to greenhouse gas emissions and California Environmental Quality Act significance, it is too speculative to make a significance determination regarding the project's direct impact and its contribution on the cumulative scale to climate change, Caltrans is firmly committed to implementing measures to help reduce greenhouse gas emissions. These measures are outlined in the following section.

Greenhouse Gas Reduction Strategies

AB 32 Compliance

Figure 2-23 The Mobility Pyramid

The Department continues to be actively involved on the Governor's Climate Action Team as the Air Resources Board works to implement Executive Orders S-3-05 and S-01-07 and help achieve the targets set forth in AB 32. Many of the strategies Caltrans is using to help meet the targets in AB 32 come from the California Strategic Growth Plan, which is updated each year. Former Governor Arnold Schwarzenegger's Strategic Growth Plan calls for a $222 billion infrastructure improvement program to fortify the state's transportation system, education, housing, and waterways, including $100.7 billion in transportation funding during the next decade. The Strategic Growth

Plan targets a significant decrease in traffic congestion below today's level and a corresponding reduction in greenhouse gas emissions. The Strategic Growth Plan proposes to do this while accommodating growth in population and the economy. A suite of investment options has been created that combined together are expected to reduce congestion. The Strategic Growth Plan relies on a complete systems approach to attain carbon dioxide reduction goals: system monitoring and evaluation, maintenance and preservation, smart land use and demand management, and operational improvements as shown in Figure 2-23 The Mobility Pyramid.

The Department is supporting efforts to reduce vehicle miles traveled by planning and implementing smart land use strategies: job/housing proximity, developing transit-oriented communities, and high-density housing along transit corridors. The Department is working closely with local jurisdictions on planning activities; however, the Department does not have local land use planning authority.

The Department is also supporting efforts to improve the energy efficiency of the transportation sector by increasing vehicle fuel economy in new cars, light- and heavy-duty trucks; the Department is doing this by supporting ongoing research efforts at universities, by supporting legislative efforts to increase fuel economy, and by its participation on the Climate Action Team. It is important to note, however, that the control of the fuel economy standards is held by the U.S. Environmental Protection Agency and Air Resources Board.

Lastly, the use of alternative fuels is also being considered; the Department is participating in funding for alternative fuel research at the University of California at Davis.

Table 2-4 summarizes the Department and statewide efforts that Caltrans is implementing to reduce greenhouse gas emissions. More detailed information about each strategy is included in the Climate Action Program at Caltrans (December 2006).

Table 2-4 Climate Change/Carbon Dioxide Reduction Strategies

Strategy	Program	Partnership		Method/Process	Estimated CO_2 Savings (MMT)	
		Lead	Agency		2010	2020
Smart Land Use	Intergovernmental Review (IGR)	Caltrans	Local Governments	Review and seek to mitigate development proposals	Not Estimated	Not Estimated
	Planning Grants	Caltrans	Local and regional agencies & other stakeholders	Competitive selection process	Not Estimated	Not Estimated
	Regional Plans and Blueprint Planning	Regional Agencies	Caltrans	Regional plans and application process	0.975	7.8
Operational Improvements & Intelligent Trans. System (ITS) Deployment	Strategic Growth Plan	Caltrans	Regions	State ITS; Congestion Management Plan	0.07	2.17
Mainstream Energy & GHG into Plans and Projects	Office of Policy Analysis & Research; Division of Environmental Analysis	Interdepartmental effort		Policy establishment, guidelines, technical assistance	Not Estimated	Not Estimated
Educational & Information Program	Office of Policy Analysis & Research	Interdepartmental, CalEPA, CARB, CEC		Analytical report, data collection, publication, workshops, outreach	Not Estimated	Not Estimated
Fleet Greening & Fuel Diversification	Division of Equipment	Department of General Services		Fleet Replacement B20 B100	0.0045	0.0065 0.045 0.0225
Non-vehicular Conservation Measures	Energy Conservation Program	Green Action Team		Energy Conservation Opportunities	0.117	0.34
Portland Cement	Office of Rigid Pavement	Cement and Construction Industries		2.5 % limestone cement mix 25% fly ash cement mix > 50% fly ash/slag mix	1.2 0.36	4.2 3.6
Goods Movement	Office of Goods Movement	Cal EPA, CARB, BT&H, MPOs		Goods Movement Action Plan	Not Estimated	Not Estimated
Total					2.72	18.18

To the extent that it is applicable or feasible for the project and through coordination with the project development team, the following measures would also be included in the project to reduce the greenhouse gas emissions and potential climate change impacts from the project:

According to the Department's Standard Specifications, the contractor must comply with all local Air Pollution Control District's rules, ordinances, and regulations in regard to air quality restrictions.

Adaptation Strategies

"Adaptation strategies" refer to how the Department and others can plan for the effects of climate change on the state's transportation infrastructure and strengthen or protect the facilities from damage. Climate change is expected to produce increased variability in precipitation, rising temperatures, rising sea levels, storm surges and intensity, and the frequency and intensity of wildfires. These changes may affect the transportation infrastructure in various ways, such as damaging roadbeds by longer periods of intense heat; increasing storm damage from flooding and erosion; and inundation from rising sea levels. These effects will vary by location and may, in the most extreme cases, require that a facility be relocated or redesigned. There may also be economic and strategic ramifications as a result of these types of impacts to the transportation infrastructure.

At the federal level, the Climate Change Adaptation Task Force, co-chaired by the White House Council on Environmental Quality, the Office of Science and Technology Policy, and the National Oceanic and Atmospheric Administration, released its interagency report October 14, 2010 outlining recommendations to the president for how federal agency policies and programs can better prepare the U.S. to respond to the impacts of climate change. The Progress Report of the Interagency Climate Change Adaptation Task Force recommends that the federal government implement actions to expand and strengthen the nation's capacity to better understand, prepare for, and respond to climate change.

Climate change adaptation must also involve the natural environment as well. Efforts are underway on a statewide level to develop strategies to cope with impacts to habitat and biodiversity through planning and conservation. The results of these efforts will help California agencies plan and implement mitigation strategies for programs and projects.

On November 14, 2008, then-Governor Schwarzenegger signed Executive Order S-13-08, which directed a number of state agencies to address California's vulnerability to sea level rise caused by climate change. This order set in motion several agencies and actions to address the concern of sea level rise.

The California Natural Resources Agency (Resources Agency) was directed to coordinate with local, regional, state and federal public and private entities to develop the California Climate Adaptation Strategy (December 2009)[6], which summarizes the best-known science on climate change impacts to California, assesses California's vulnerability to the identified impacts, and then outlines solutions that can be implemented within and across state agencies to promote resiliency.

The strategy outline is in direct response to Executive Order S-13-08 that specifically asked the Resources Agency to identify how state agencies can respond to rising temperatures, changing precipitation patterns, sea level rise, and extreme natural events. Numerous other state agencies were involved in the creation of the Adaptation Strategy document, including Environmental Protection; Business, Transportation and Housing; Health and Human Services; and the Department of Agriculture. The document is broken down into strategies for different sectors that include: public health; biodiversity and habitat; ocean and coastal resources; water management; agriculture; forestry; and transportation and energy infrastructure. As data continues to be developed and collected, the State's adaptation strategy will be updated to reflect current findings.

The Resources Agency was also directed to request the National Academy of Science to prepare a Sea Level Rise Assessment Report by December 2010[7] (the completion date was later revised to 2012) to advise how California should plan for future sea level rise. The report is to include:

- The relative sea level rise projections for California, Oregon and Washington, taking into account coastal erosion rates, tidal impacts, El Niño and La Niña events, storm surge and land subsidence rates.

- The range of uncertainty in selected sea level rise projections.

---

[6] http://www.energy.ca.gov/2009publications/CNRA-1000-2009-027/CNRA-1000-2009-027-F.PDF

[7] Pre-publication copies of the report, *Sea Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future*, were made available from the National Academies Press on June 22, 2012. For more information, please see http://www.nap.edu/catalog.php?record_id=13389.

- A synthesis of existing information on projected sea level rise impacts to state infrastructure (such as roads, public facilities and beaches), natural areas, and coastal and marine ecosystems.

- A discussion of future research needs regarding sea level rise.

Before the release of the final Sea Level Rise Assessment Report, all state agencies that are planning to build projects in areas vulnerable to future sea level rise were directed to consider a range of sea level rise scenarios for the years 2050 and 2100 to assess project vulnerability and, to the extent feasible, reduce expected risks and increase resiliency to sea level rise. Sea level rise estimates should also be used in conjunction with information on local uplift and subsidence, coastal erosion rates, predicted higher high water levels, storm surge and storm wave data.

Interim guidance has been released by The Coastal Ocean Climate Action Team (CO-CAT) as well as the Department as a method to initiate action and discussion of potential risks to the states infrastructure due to projected sea level rise.

All projects that have filed a Notice of Preparation, and/or are programmed for construction funding from 2008 through 2013, or are routine maintenance projects as of the date of Executive Order S-13-08 may, but are not required to, consider these planning guidelines. The project is programmed for construction in 2014; however, the proposed project is outside the coastal zone, and direct impacts to transportation facilities due to projected sea level rise are not expected.

Executive Order S-13-08 directed the Business, Transportation, and Housing Agency to prepare a report to assess vulnerability of transportation systems to sea level affecting safety, maintenance and operational improvements of the system and economy of the state. Caltrans continues to work on assessing the transportation system vulnerability to climate change, including the effect of sea level rise.

Currently, Caltrans is working to assess which transportation facilities are at greatest risk from climate change effects. However, without statewide planning scenarios for relative sea level rise and other climate change impacts, Caltrans has not been able to determine what change, if any, may be made to its design standards for its transportation facilities. Once statewide planning scenarios become available, Caltrans will be able review its current design standards to determine what changes, if any, may be warranted to protect the transportation system from sea level rise.

Climate change adaptation for transportation infrastructure involves long-term planning and risk management to address vulnerabilities in the transportation system from increased precipitation and flooding; the increased frequency and intensity of storms and wildfires; rising temperatures; and rising sea levels. Caltrans is an active participant in the efforts being conducted in response to Executive Order S-13-08 and is mobilizing to be able to respond to the National Academy of Science Sea Level Rise Assessment Report.

Chapter 3 Comments and Coordination

Early and continuing coordination with the general public and appropriate public agencies is an essential part of the environmental process to determine the scope of environmental documentation, level of analysis, potential impacts and mitigation measures, and related environmental requirements. Agency consultation and public participation for this project have been accomplished through a variety of formal and informal methods, including project development team meetings and interagency coordination meetings. This chapter summarizes the results of Caltrans' efforts to identify, address, and resolve project-related issues through early and continuing coordination.

Because of its location within the Mono Basin National Forest Scenic Area and proximity to Mono Lake, the project has garnered further interest by community groups and organizations that have concerns or responsibilities to the area. In addition to the community at large, several key organizations provided input on the project: the U.S. Forest Service, California State Parks, and the Mono Lake Committee. The following explains these organizations' involvement:

- The U.S. Forest Service is charged with oversight and management of the Mono Basin National Forest Scenic Area. Since the project proposes right-of-way acquisition from the U.S. Forest Service, the Service was contacted early on about the project. On March 17, 2011 and January 19, 2012, Caltrans met with the U.S. Forest Service to provide an initial project overview and discuss the project. The January 19, 2012 meeting took place at the project site.

- California State Parks has jurisdiction over Mono Lake, including the Old Marina site, across from Slope 4. Though no work that directly affects State Parks-managed lands is being proposed, the project would affect visitors to those lands as they travel through the project area. So, to inform California State Parks about the project, California State Parks representatives were invited to a site visit, which they attended on December 13, 2011.

- The Mono Lake Committee is a non-profit citizens group dedicated to protecting and restoring the Mono Basin. An initial informal site meeting with the group, along with California State Parks, occurred on December 13, 2011. An overview of the project and the project details for each slope were discussed. As a result of this initial meeting, the Mono Lake Committee drafted a letter to Caltrans dated

March 13, 2012 recognizing the need for the project and stating what the committee would like to see the project accomplish. The committee's letter expressed a desire to see a solution that promoted a more successful replanting of the slopes.

- Caltrans met with the Mono County Local Transportation Commission. On August 13, 2007, an initial presentation was given to the commission. Since that time, Caltrans has kept the commission updated regularly on the project status.
- Caltrans presented the project twice to the Mono Basin Regional Planning Advisory Committee: on July 13, 2011 and on November 9, 2011.
- Caltrans contacted both the Mono Lake Indian Community and the Kutzadika Indian Community; both tribes confirmed they have no concerns with the project.

Chapter 4 List of Preparers

This document was prepared by the following Caltrans Central Region staff:

Brandon Badeker, Engineering Geologist. B.S., Geological Sciences, University of California at Santa Barbara; 12 years experience in the geotechnical field. Contribution: Geotechnical Design Report.

Andrew Brandt, Transportation Engineer. 10 years of experience in floodplain evaluation and hydrology studies. Contribution: Floodplain Evaluation.

Angela Calloway, Associate Environmental Planner (Archaeology). B.S., Anthropology, Indiana State University; 9 years of experience in California and Great Basin archaeology. Contribution: Cultural Studies.

Robert Carr, Registered Landscape Architect 3473. B.S., Landscape Architecture, California Polytechnic State University San Luis Obispo; 24 years of experience in landscape architecture. Contribution: Visual Impact Assessment

Ronald Cummings, Wildlife Biologist, URS Corporation. B.S., Biology, Oregon State University, Corvallis, OR; 20 years of biology experience. Contribution: Natural Environment Study.

Rajeev Dwivedi, Associate Engineering Geologist. Ph.D., Environmental Engineering, Oklahoma State University, Stillwater; 19 years of environmental technical studies experience. Contribution: Noise Study Report, Air Quality Report and Water Quality Report.

David Ewing, Graphic Designer III. B.A., Graphic Design, Minor in Business Administration, California State University, Fresno; 18 years of graphic design, transportation graphics, and public participation experience. Contribution: Document graphics.

Cory Freeman, Transportation Engineer. B.S., Civil Engineering, Long Beach State University; 12 years of experience as a licensed Civil Engineer, 5 years experience in transportation engineering. Contribution: Project Engineer

Susan Greenwood, Associate Environmental Planner. B.S., Environmental Health Science, California State University, Fresno; 20 years environmental health,

hazardous waste, and hazardous material management experience. Contribution: Hazardous Waste Initial Site Assessment.

R. Steve Miller, District Landscape Architect. Bachelor of Landscape Architecture, University of Idaho; 35 years of experience landscape architecture. Contribution: Visual Impact Assessment.

Ken J. Romero, Senior Transportation Engineer. B.S., Civil Engineering, California State University, Fresno; 7 years of environmental technical studies experience. Contribution: Oversight review of the Noise Study Reports, Air Quality Reports and Water Quality Reports.

Jane Sellers, Research Writer. B.A., Journalism, California State University, Fresno; more than 25 years of writing/editing experience, 11.5 years at Caltrans. Contribution: Edited Initial Study/Environmental Assessment.

Richard C. Stewart, Engineering Geologist, P.G. B.S., Geology, California State University, Fresno; 21 years of hazardous waste and water quality experience; 5 years of paleontology/geology experience. Contribution: Paleontological Identification Report.

Carrie Swanberg, Senior Environmental Planner (Acting). B.S., Biology, California State University, Fresno; 11 years of biology experience. Contribution: Oversight review of the Natural Environment Study.

John Thomas, Associate Environmental Planner. B.A., Geography, California State University, Fresno; 13 years of environmental planning experience. Contribution: Environmental coordination and document preparation.

Juergen Vespermann, Senior Environmental Planner. Engineering Degree, Fachhochschule Muenster, Germany; 23 years of transportation planning/environmental planning. Contribution: Senior Review.

Cedrik Zemitis, Senior Transportaion Planner. M.A. History, California State University, Sacramento; B.A. Exercise Physiology, University of California at Davis; 19 years finance, budgeting and management experience. Contribution: Project Manager.

Appendix A California Environmental Quality Act Checklist

The following checklist identifies physical, biological, social, and economic factors that might be affected by the project. The California Environmental Quality Act impact levels include “potentially significant impact,” “less than significant impact with mitigation,” “less than significant impact,” and “no impact.”

Supporting documentation of all California Environmental Quality Act checklist determinations is provided in Chapter 2 of this document. Documentation of “No Impact” determinations is provided at the beginning of Chapter 2. Discussion of all impacts, avoidance, minimization, and/or mitigation measures is under the appropriate topic headings in Chapter 2.

	Potentially significant impact	Less than significant impact with mitigation	Less than significant impact	No impact
I. AESTHETICS: Would the project:				
a) Have a substantial adverse effect on a scenic vista	☐	☐	☒	☐
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway	☐	☐	☒	☐
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☒	☐
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☐	☒
II. AGRICULTURE AND FOREST RESOURCES: In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project; and the forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒
III. AIR QUALITY: Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:				

	Potentially significant impact	Less than significant impact with mitigation	Less than significant impact	No impact
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☒
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☐	☐	☒
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non- attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☐	☐	☒
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☐	☒
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☐	☒

IV. BIOLOGICAL RESOURCES: Would the project:

a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☐	☒
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?	☐	☐	☐	☒
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☒
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☐	☒
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

V. CULTURAL RESOURCES: Would the project:

a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	☐	☐	☒

	Potentially significant impact	Less than significant impact with mitigation	Less than significant impact	No impact
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☐	☐	☒
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☐	☒
d) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☐	☒

VI. GEOLOGY AND SOILS: Would the project:

a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42?	☐	☐	☐	☒
ii) Strong seismic ground shaking?	☐	☐	☐	☒
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☐	☒
iv) Landslides?	☐	☐	☐	☒
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☐	☒
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☐	☒
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	☐	☒
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒

VII. GREENHOUSE GAS EMISSIONS: Would the project:

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	An assessment of the greenhouse gas emissions and climate change is included in the body of environmental document. While Caltrans has included

	Potentially significant impact	Less than significant impact with mitigation	Less than significant impact	No impact
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	this good faith effort in order to provide the public and decision-makers as much information as possible about the project, it is Caltrans' determination that in the absence of further regulatory or scientific information related to greenhouse gas emissions and CEQA significance, it is too speculative to make a significance determination regarding the project's direct and indirect impact with respect to climate change. Caltrans does remain firmly committed to implementing measures to help reduce the potential effects of the project. These measures are outlined in the body of the environmental document.			
VIII. HAZARDS AND HAZARDOUS MATERIALS: Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☐	☒
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☐	☒
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☐	☒
IX. HYDROLOGY AND WATER QUALITY: Would the project:				
a) Violate any water quality standards or waste discharge requirements?	☐	☐	☐	☒

	Potentially significant impact	Less than significant impact with mitigation	Less than significant impact	No impact
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☐	☒
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	☐	☐	☐	☒
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	☐	☐	☐	☒
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☐	☒
f) Otherwise substantially degrade water quality?	☐	☐	☐	☒
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☐	☒
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☐	☒
j) Result in inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☒
X. LAND USE AND PLANNING: Would the project:				
a) Physically divide an established community?	☐	☐	☐	☒
b)Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☒
XI. MINERAL RESOURCES: Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒

	Potentially significant impact	Less than significant impact with mitigation	Less than significant impact	No impact
XII. NOISE: Would the project result in:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☐	☒
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☐	☒
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☒
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☒
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒
(f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒
XIII. POPULATION AND HOUSING: Would the project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
XIV. PUBLIC SERVICES:				
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:	☐	☐	☐	☒
Fire protection?	☐	☐	☐	☒
Police protection?	☐	☐	☐	☒
Schools?	☐	☐	☐	☒
Parks?	☐	☐	☐	☒
Other public facilities?	☐	☐	☐	☒

	Potentially significant impact	Less than significant impact with mitigation	Less than significant impact	No impact
XV. RECREATION:				
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒
XVI. TRANSPORTATION/TRAFFIC: Would the project:				
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☐	☐	☒
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	☐	☐	☐	☒
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
e) Result in inadequate emergency access?	☐	☐	☐	☒
f) Conflict with adopted policies, plans or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	☐	☐	☐	☒
XVII. UTILITIES AND SERVICE SYSTEMS: Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☒
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☐	☒

	Potentially significant impact	Less than significant impact with mitigation	Less than significant impact	No impact
e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☐	☒
g) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	☒
XVIII. MANDATORY FINDINGS OF SIGNIFICANCE				
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☐	☐	☒
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☐	☐	☒
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☐	☒

Appendix B Resources Evaluated Relative to the Requirements of Section 4(f)

This section of the document discusses parks, recreational facilities, wildlife refuges and historic properties found within or adjacent to the project area that do not trigger Section 4(f) protection either because: 1) they are not publicly owned, 2) they are not open to the public, 3) they are not eligible historic properties, 4) the project does not permanently use the property and does not hinder the preservation of the property, or 5) the proximity impacts do not result in constructive use.

One public park—the Mono Lake Tufa State Reserve—is near the project study area. It sits outside the project limits and would not be affected by the proposed build alternative. No construction activities would take place in the park, and it would remain open during construction.

The project would not cause a constructive use of the Mono Lake Tufa State Reserve because the proximity impacts would not substantially impair the protected activities, features, or attributes of the park.

Appendix C Title VI Policy Statement

STATE OF CALIFORNIA—BUSINESS, TRANSPORTATION AND HOUSING AGENCY ARNOLD SCHWARZENEGGER, Governor

DEPARTMENT OF TRANSPORTATION
OFFICE OF THE DIRECTOR
P.O. Box 942873, MS-49
SACRAMENTO, CA 94273-0001
PHONE (916) 654-5266
FAX (916) 654-6608
TTY 711

Flex your power!
Be energy efficient!

July 20, 2010

TITLE VI
POLICY STATEMENT

The California Department of Transportation, under Title VI of the Civil Rights Act of 1964 and related statutes, ensures that no person in the State of California shall, on the grounds of race, color, national origin, sex, disability, or age, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity it administers.

For information or guidance on how to file a complaint based on the grounds of race, color, national origin, sex, disability, or age, please visit the following web page: http://www.dot.ca.gov/hq/bep/title_vi/t6_violated.htm.

Additionally, if you need this information in an alternate format, such as in Braille or in a language other than English, please contact Charles Wahnon, Manager, Title VI and Americans with Disabilities Act Program, California Department of Transportation, 1823 14th Street, MS-79, Sacramento, CA 95811. Phone: (916) 324-1353 or toll free 1-866-810-6346 (voice), TTY 711, fax (916) 324-1869, or via email: charles_wahnon@dot.ca.gov.

CINDY McKIM
Director

"Caltrans improves mobility across California"

Appendix D Minimization and/or Mitigation Summary

The following table summarizes the minimizations and/or mitigation measures required to do the project.

Summary of Minimization and Monitoring

Area	Issue	Minimization
Visual Resources	Alteration of scenic landscape and a short-term decrease in the visual quality of the area	Preserve as much existing vegetation as possible. Preserve as much existing landform as possible. Limit the amount of slope rounding. Use colorized cable mesh and connectors to match the natural coloring. Revegetate with native species that match existing slopes.
Traffic and Transportation/Pedestrian and Bicycle Facilities	Temporary traffic delays and roadway closures from construction activities	Use limited short-term road closures.
Water Quality and Storm water Runoff	Short-term impacts related to construction	Apply erosion control. Implement a Storm Water Pollution Prevention Plan during construction and a Storm Water Management Plan after construction.
Threatened and Endangered Species	Construction activities across the highway from historical foraging habitat of willow flycatcher	Conduct preconstruction surveys. Biological monitors would be used if any willow flycatchers are discovered.
Invasive Species	Distribution of invasive plant species through ground disturbance	Implement a revegetation plan for erosion control to prevent the spread of invasive plant species.

Appendix E Viable Rockfall Solutions

There are many solutions and methods from which to choose to mitigate rockfall hazards, some more appropriate than others due to the nature of the rockfall problem. There are four general rockfall solution strategies that Caltrans promotes: 1) Relocation, 2) Stabilization, 3) Protection, and 4) Management. Any one or a combination of the four may be applicable to a given rockfall problem. The following is a brief discussion of the various rockfall solutions that are appropriate for the Lee Vining Rockfall Project.

Rock Scaling *(Stabilization)**:*** Scaling is an often-used rockfall mitigation method to remove intermittent and marginally loose rock from the slope and is considered a form of stabilization. It is often used as a first step in rockfall mitigation and often combined with other methods (those discussed below). Scaling can be done by hand, with workers physically removing rocks from the slope, or by mechanical methods with the use of a long reach excavator. Scaling alone and in and of itself is usually considered a short-term stabilization treatment. To be considered a long-term stabilization method, recurring scaling activities would need to be implemented. Because scaling activities would likely require lane closures and impacts to traffic, the viability of scaling as a long-term stabilization method would need to be evaluated carefully due to the impacts to the traveling public, risk to personnel, and recurring costs.

Cut (Stabilization): Generally, slopes with loose material and rock that are steeper than 1.5:1 (horizontal: vertical) are more difficult to revegetate and more prone to producing rockfall. Ideally, when site conditions and right-of-way allow, cutting back or "laying back the slope" to a less steep angle than the current slope would help stabilize the surface and prevent or reduce the amount of rockfall. Therefore, cutting a slope back is considered a form of stabilization. Laying back a slope to a naturally stable slope is not always feasible due to any one or a combination of the following: very tall slopes, right-of-way issues, environmental impacts, or the logistics of disposing of the potentially large volumes of material produced in laying back the slope. An important benefit gained from cutting back a slope to a more naturally stable slope is the increased probability of revegetating the slope. Revegetation strategies can be more successfully used to minimize future erosion potential and aid in providing long-term slope stability. The inclination to which a slope is flattened is based on many factors, including but not limited to material composition and stratification, height, proximity to the roadway, potential to revegetate, and aspect. If a slope cannot be cut back to a naturally stable slope inclination but can be cut back to a flatter slope, additional protection

methods maybe used to mitigate rockfall. For example, a catchment ditch located below the cut slope and between the roads could be built for rockfall storage, where space allows.

Wire/Cable Mesh Drapery *(Protection):* Draped mesh is considered a form of protection and, depending on the rock size, consists of wire mesh or cable netting that is anchored only at the top of the installation and draped over the face of the slope. The bottom edge of the drapery is unattached to the slope and usually ends 3-5 feet above the ground, allowing material to deposit at the toe of slope without loading the drapery and anchors above. This also allows maintenance crews to remove the debris without hitting the drapery. Drapery by design allows controlled movement of rock to continue beneath the drapery. As rockfall occurs, the drapery lessens the kinetic energy and prevents any launching of rock away from the slope. Rockfall is deposited at the toe of slope in a controlled manner for later removal by maintenance crews. A drapery solution requires a minimum amount of catchment area for deposition of rockfall material and requires removal by maintenance crews on a recurring basis to prevent the bottom of the drapery from getting buried; the frequency of removal depends on the rate of erosion that is actively occurring. Any debris or snow that buries the bottom of the drapery could impose substantial tension loads on the system and anchors that they were not designed for. This could lead to failure of the whole system. This is especially important in snow country and may require additional care and monitoring by maintenance crews during winter.

The more contact the drapery can make with the slope, the less visible it will be and the more effective it will be at controlling the rockfall. Closer contact also increases the ability to prevent erosion and allow a greater chance that vegetation will grow. However, since drapery allows for the movement of the slope surface, a revegetative treatment like erosion control blankets generally are not applied to the slope beneath the drapery, though seeding could be an option. Light rock scaling is recommended before most draped mesh installations, but major grading or slope smoothing is not necessary. Draped mesh can be strategically placed to allow some of the larger existing vegetation such as trees to remain. Generally draped mesh is sized according to the size of rock on the slope and can be effective at mitigating rockfall yields below 10 cubic yards of debris. Double twisted wire mesh is generally specified for rocks of up to 2 feet in size. Cable mesh is usually used where rocks are 4 feet in size or larger.

Vegetation that grows below the drapery would need to be monitored to prevent it from lifting the drapery up and away from the slope.

To reduce its visibility, draped mesh can be PVC-dipped or powder-coated to match the color/tone of the surrounding environment. Because of the minimum number of anchors required with a drapery solution, draped mesh can be installed more quickly and with less cost than an anchored mesh solution.

Hybrid Wire/Cable Mesh Draped System/ *(Protection):*
A hybrid wire/cable mesh system, also called a hybrid system, is composed of drapery raised above the slope and suspended vertically between steel posts (attenuators). By raising the drapery above the slope it guides up-slope rockfall under the drapery, which reduces the kinetic energy of the rockfall and allows the rock to be funneled below the drapery and deposited at the toe of slope in a controlled manner. A major advantage of the hybrid system is the minimized area of disturbance to the slope as compared to a draped or anchored solution. Because the hybrid system can "catch" rock from above, the system can be installed down lower on the slope, which creates less environmental disturbance and potentially less right-of-way acquisition. Like the drapery solution, rockfall debris would be deposited at the toe of slope and require continual removal by maintenance crews. The hybrid wire/cable mesh draped system is designed for the potential rockfall that could occur on the slope. Rock size, trajectory of rockfall, slope inclination, slope orientation, proximity to the highway, snow loading, nature of erosive soils, quantity and quality of existing vegetation, and local topography are all factors that would be considered in the final design.

example

Anchored Mesh *(Stabilization):* Unlike the draped mesh solution which is only anchored from above and draped loosely over the slope which allows material to continuously erode off the slope, anchored mesh is secured to the face of the slope along its perimeter and its interior. This anchoring around the perimeter and interior holds the rock in place on the slope, reducing erosion of the slope and loss of material. Anchored mesh uses similar wire or cable mesh as drapery, and in most cases a combination of the two. The efficacy of this system is predicated on the slope being graded or contoured to a more uniform plane, free of numerous and abrupt topographic irregularities.

Basically, the more contact the anchored mesh makes with the surface, the more effective it will be at retaining the slope and increasing the chances of revegetation. The anchored mesh is more effective at preventing erosion than draped mesh systems, but may require more grading/contouring of the existing natural topography, which would create a larger impact to the environment temporarily until the slope revegetates. Since the strength and integrity of an anchored system depends heavily on its interior anchors, openings for established vegetation are not recommended. Any openings made within the anchored mesh could cause localized stresses to form on the mesh and potentially cause nearby anchors to fail. Debris that has accumulated behind the mesh could then affect adjacent anchors, causing failure of the anchored mesh system. As a consequence of this, a larger amount of established vegetation, such as existing trees, would need to be removed from within the area to receive anchored mesh compared to a draped mesh solution.

Since the slope is more stabilized with the anchored mesh system, a number of revegetative treatments can be applied to the slope that may further help in stabilizing the surface. Because rock and debris are contained on the slope and not deposited on the shoulder of the road, some immediate advantages of an anchored system, aside from an increase in safety of the traveling public, are the following: 1) substantially reduced or eliminated maintenance costs associated with rockfall removal/cleanup, 2) increased safety to maintenance crews as there is no need for them to stop and remove rockfall debris alongside the road, and 3) debris is not deposited along the shoulder requiring removal. Anchored mesh systems cost more initially and take longer to install compared to draped mesh solutions.

Though there is no need to continuously remove debris with an anchored mesh system compared to drapery, the anchored mesh does need to be occasionally monitored visually for "pillowing" of debris. Pillowing of debris occurs when rockfall debris piles up behind the mesh and around an interior anchor. Should a large pillow of debris occur, the anchored mesh may need to be partially disassembled so the debris can be removed. If left unchecked and the pillow of debris becomes large enough, it could overload the anchor, causing failure which in turn would allow the debris to affect and overload subsequent anchors below, possibly compromising the entire system. Like drapery, anchored mesh can be PVC- or powder-coated to blend with the general color of the surrounding environment.

Appendix F 404 Determination

DEPARTMENT OF THE ARMY
LOS ANGELES DISTRICT, CORPS OF ENGINEERS
VENTURA FIELD OFFICE
2151 ALESSANDRO DRIVE, SUITE 110
VENTURA, CALIFORNIA 93001

June 4, 2012

REPLY TO
ATTENTION OF
Office of the Chief
Regulatory Division

Mr. Miguel Perez
California Department of Transportation
District 9
500 South Main Street
Bishop, California 93514

SUBJECT: Determination regarding requirement for Department of the Army Permit

Dear Mr. Perez:

I am responding to your request (File No. SPL-2012-00363-AOA) dated May 22, 2012, for clarification on whether a Department of the Army Permit is required for stabilizing side-slopes immediately west of Highway 395 from Milepost 52.3 to 53.7 (-119.14211, 37.99039) located near Lee Vining, Mono County, California.

The Corps' evaluation process for determining whether or not a Department of the Army permit is needed involves two tests. The first test determines whether or not the proposed project is located within or contains a water of the United States (i.e., it is within the Corps' geographic jurisdiction). The second test determines whether or not the proposed project includes an activity potentially regulated under Section 10 of the River and Harbor Act or Section 404 of the Clean Water Act. If both tests are met, and the activities in question are located within the Corps' geographic jurisdiction, then a permit would be required. As part of our evaluation process, we have made the determination below.

Geographic jurisdiction:

Based on the information dated March 20, 2012, we have determined that the proposed Lee Vining Rockfall Prevention Highway Safety Project is located at least 250 feet from the nearest waters of the United States (Mono Lake) pursuant to 33 C.F.R. §325.9.

Activity:

Based on the information you have provided, we have determined the proposed work, were it to occur in waters of the U.S. (see above, *"Geographic jurisdiction"*), would involve a discharge of dredged or fill material and therefore, would be regulated under Section 404 of the Clean Water Act if the activity is performed in the manner described in the information submitted on May 22, 2012.

Requirement for a Department of the Army Permit:

Based on the discussion above, we have determined your proposed project **is not** subject to our jurisdiction under Section 404 of the Clean Water Act and a Section 404 permit **would not** be required from our office if the activity is performed in the manner described. Please note, until a jurisdictional determination is approved by the Corps for the project area, we cannot rule out that waters of the U.S. occur on-site. Notwithstanding our determination above, your proposed project may be regulated under other Federal, State, and local laws.

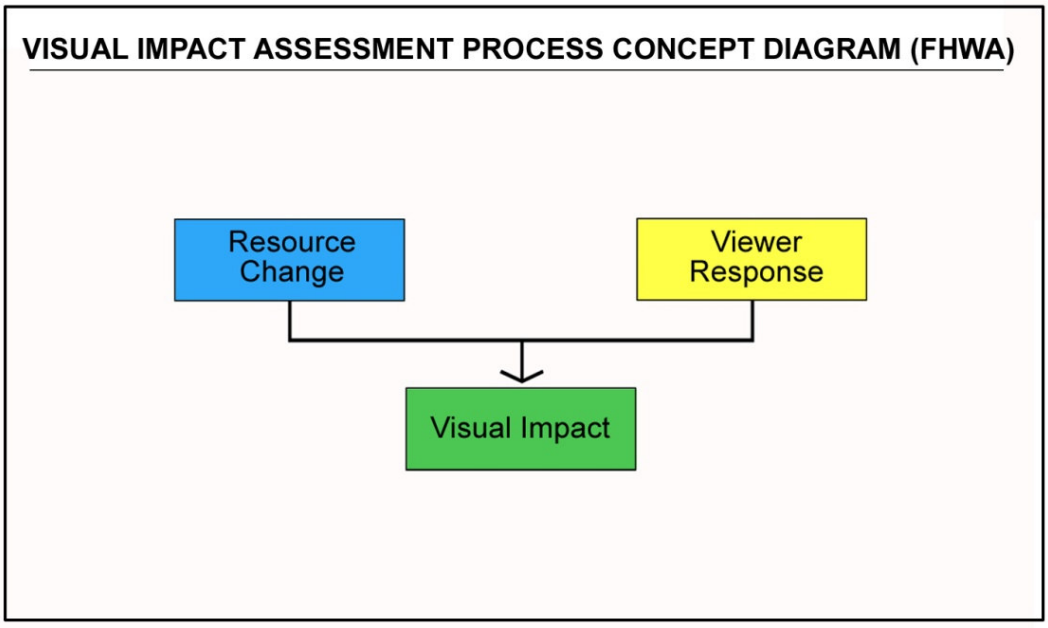
If you have any questions, please contact me at 805-585-2148 or via e-mail at Aaron.O.Allen@usace.army.mil. Please be advised that you can now comment on your experience with Regulatory Division by accessing the Corps web-based customer survey form at: http://per2.nwp.usace.army.mil/survey.html.

Sincerely,

Aaron O. Allen, Ph.D.
Chief, North Coast Branch
Regulatory Division

Appendix G Visual Analysis Methodology

The following information is from the June 2012 Lee Vining Rockfall Visual Impact Assessment: To assess the visual resources potentially affected by a project, Caltrans uses an analysis model developed by the Federal Highway Administration in conjunction with the American Society of Landscape Architects. The major components of this process include establishing the visual environment of the project, assessing the visual resources of the project area, and identifying viewer response to those resources. Those components define the existing or baseline conditions. Resource change introduced by the project and the associated viewer response is then assessed, providing a basis for determination of potential visual impacts. Visual impact is a function of assessing the extent of physical change (resource change) and comparing that with the degree of viewer sensitivity (viewer response). A generalized visual impact assessment process is shown in the figure below.



Visual Resource Change

Physical changes caused by the project manifest themselves in terms mainly of form, line, color and texture as well as the associated relational aspects of scale, dominance, diversity and continuity. These physical attributes are visually experienced as an integrated whole, defining the perceived visual character of the landscape. How these

attributes relate to one another and their setting is assessed in part by analyzing what is defined in the Federal Highway Administration methodology guidance as the view's *vividness, intactness and unity*. These three visual rating criteria are described as follows:

- Vividness is the visual power or memorability of the landscape components as they combine in striking and distinctive visual patterns.

- Intactness is the visual integrity of the landscape and its freedom from non-typical encroaching elements. If all of the various elements of a landscape seem to "belong" together, there will be a high level of intactness.

- Unity is the visual harmony of the landscape considered as a whole. Unity represents the degree to which potentially diverse visual elements maintain a coherent visual pattern.

To assess the degree of resource change caused by the project, the Federal Highway Administration methodology recommends a numerical rating process that compares the visual quality in terms of vividness, intactness and unity (described above), of both the existing and proposed conditions for each project alternative and option under consideration. Resource change evaluations were done from each of the eight representative Observer Viewpoints. A numerical rating from 1 to 7 was assigned for the visual quality of existing conditions from each viewpoint, with 1 having the lowest value and 7 the highest. Photo simulations were then prepared showing the likely appearance of each view after project construction. After a combination of field reviews and photo simulation study, numerical ratings were then assigned to each of the "proposed" views. The numerical difference, if any, between the existing and proposed conditions quantifies the degree of resource change that may occur as a result of the project. The following table shows the range of visual resource change ratings and the corresponding descriptions.

Visual Resource Change Ratings and Descriptions											
	Negative Visual Resource Change						**Positive Visual Resource Change**				
Visual Resource Change (RC) Rating	-5.0	-4.0	-3.0	-2.0	-1.0	0	1.0	2.0	3.0	4.0	5.0
Equivalent Narrative Rating	High	Moderately High	Moderate	Moderately Low	Low	No Change	Low	Moderately Low	Moderate	Moderately High	High

The resource change evaluation determines which specific criteria contribute most to the existing quality of each view and if change would occur to that criteria as a result of the project. If a numerical change in visual criteria was identified, this change was analyzed for its potential effect on the existing visual quality.

Ultimately, the degree of resource change (as determined by the resource change evaluation) must be combined with the anticipated viewer response to understand and determine potential levels of visual impact.

Viewer Response

To understand and predict viewer response to the appearance of a highway project, we must know something about the viewers who may see the project and the aspects of the visual environment to which they are likely to respond. We can differentiate major viewer groups by physical factors that change perception. For highway projects, we begin with the basic distinction of the views from the road, the views of the road, the physical location of each viewer group, the number of people in each group, and the duration of their view. Receptivity of different viewer groups to the visual environment is not the same. This variable receptivity is defined as *viewer sensitivity* and is strongly related to visual preference. It affects visual experience directly by means of viewer activity and awareness; it affects visual experience indirectly as sensitivity modifies experience by means of values, opinions, and preconceptions.

Viewer response assumptions include consideration of viewing proximity, duration of views, activity while viewing, and overall viewing context. Local values based on visual preferences, historical associations, and community aspirations and goals are also important factors of predicting viewer sensitivity and response to change.

Based on the project's proximity to high-quality visual resources—as well the importance of the visual environment, highway and community aesthetics as identified in local, state and national planning documents—this analysis assumes an overall high level of viewer sensitivity throughout the project's length and in the surrounding area. At any given viewpoint, this generally high level of viewer sensitivity is affected by the previously mentioned factors (such as viewing distance, location and availability). The overall number of viewers and duration of views can also increase or decrease the high degree of visual sensitivity generally assumed for a certain viewpoint.

Viewer response ratings were done for each of the eight representative Observer Viewpoints. A numerical rating from 0 to 7 was assigned for the expected viewer sensitivity and response from each viewpoint, with 0 having the lowest value and 7 the highest. The table below shows the range of viewer response ratings and the corresponding descriptions.

Viewer Response Ratings and Corresponding Narrative Descriptions								
Viewer Response (VR) Numerical Rating	0	1	2	3	4	5	6	7
Viewer Response Narrative Rating	Low	Low	Moderate Low	Moderate	Moderate	Moderate-High	High	High

List of Technical Studies that are Bound Separately

Air Quality Report

Noise Study Report

Water Quality Report

Natural Environment Study

Location Hydraulic Study

Cultural Clearance Memo

Hazardous Waste Initial Site Assessment

Visual Impact Assessment

Paleontological Identification Report

Geotechnical Design Report