LAST CHANCE GRADE
PERMANENT RESTORATION PROJECT

Draft Environmental Impact Report/
Environmental Impact Statement
Appendices

DEL NORTE COUNTY, CALIFORNIA
DISTRICT 1 – DN – 101 (Post Miles 12.7 to 16.5)
EA 01-0F280 / EFIS 0115000099



APPENDIX A. Project Layouts



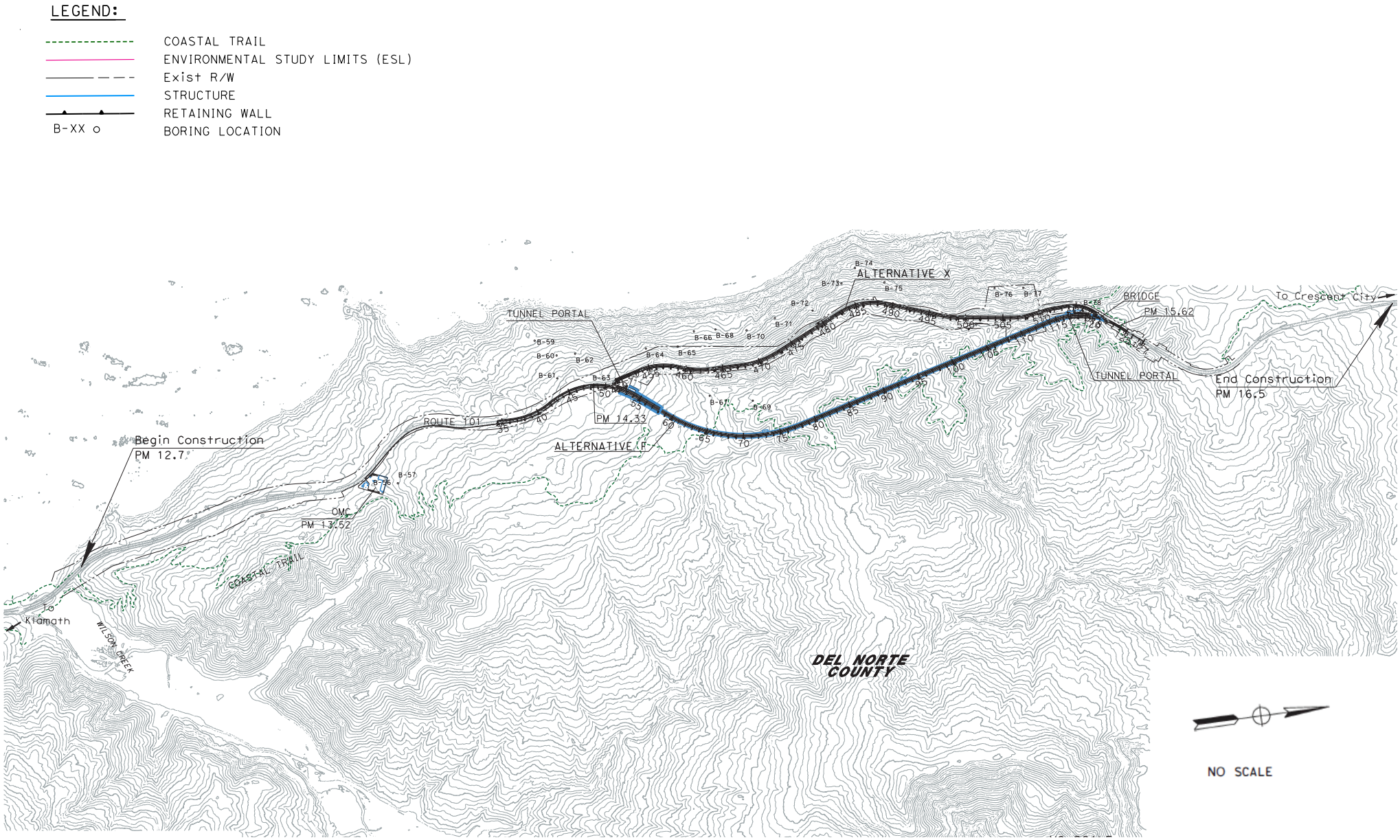


FIGURE 3b – Project Alternative Overview

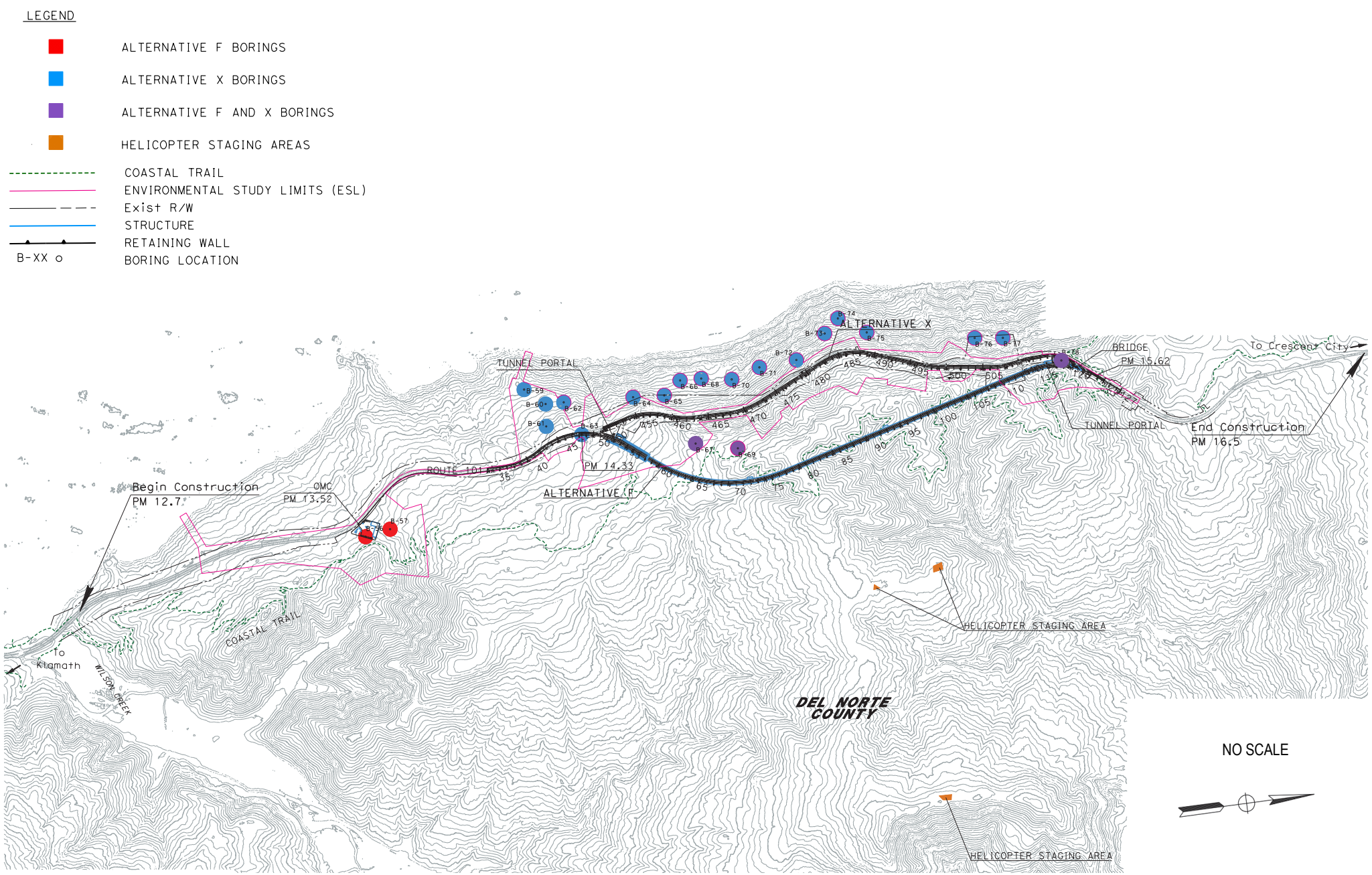
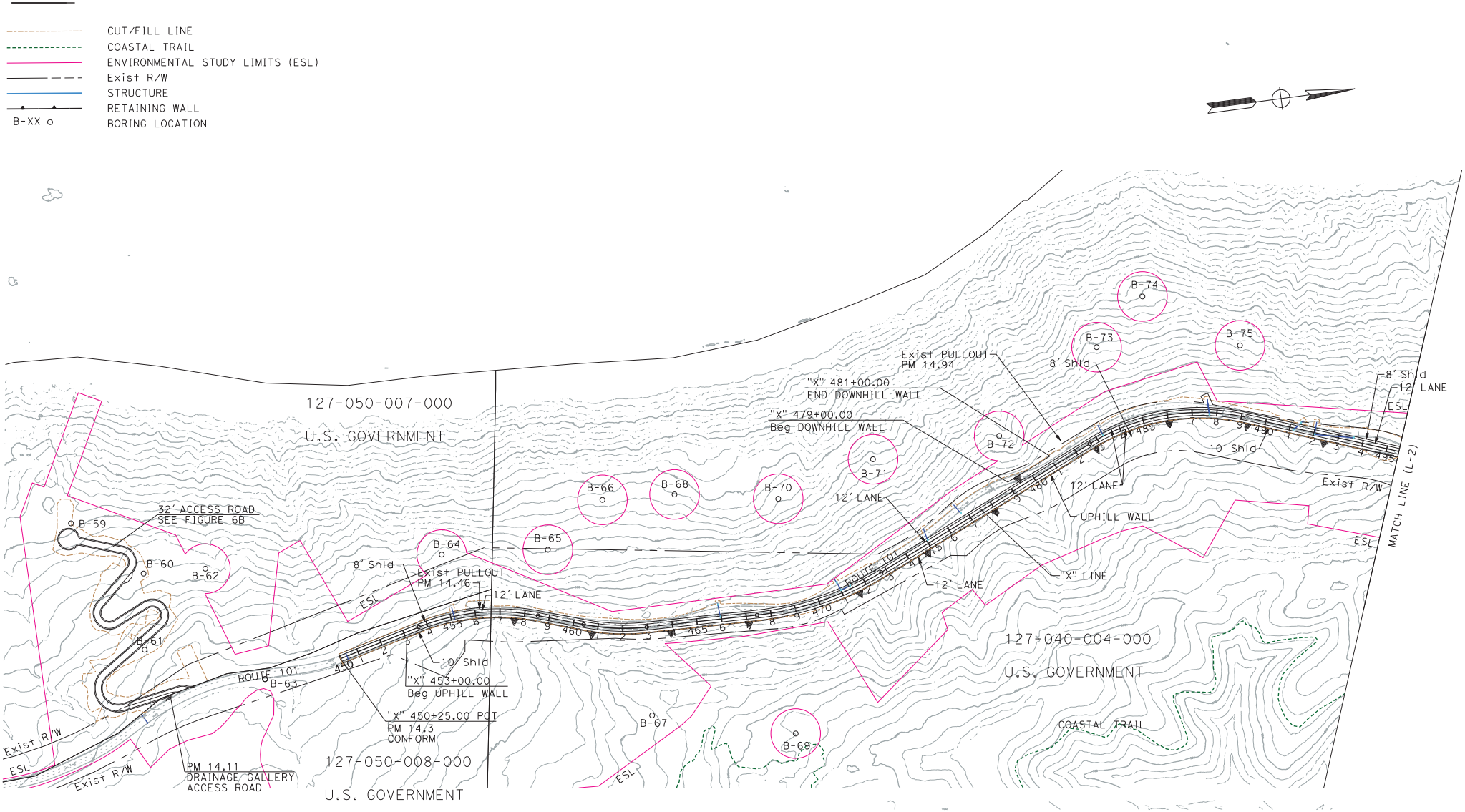


FIGURE 4 – Geotech Investigation Layout

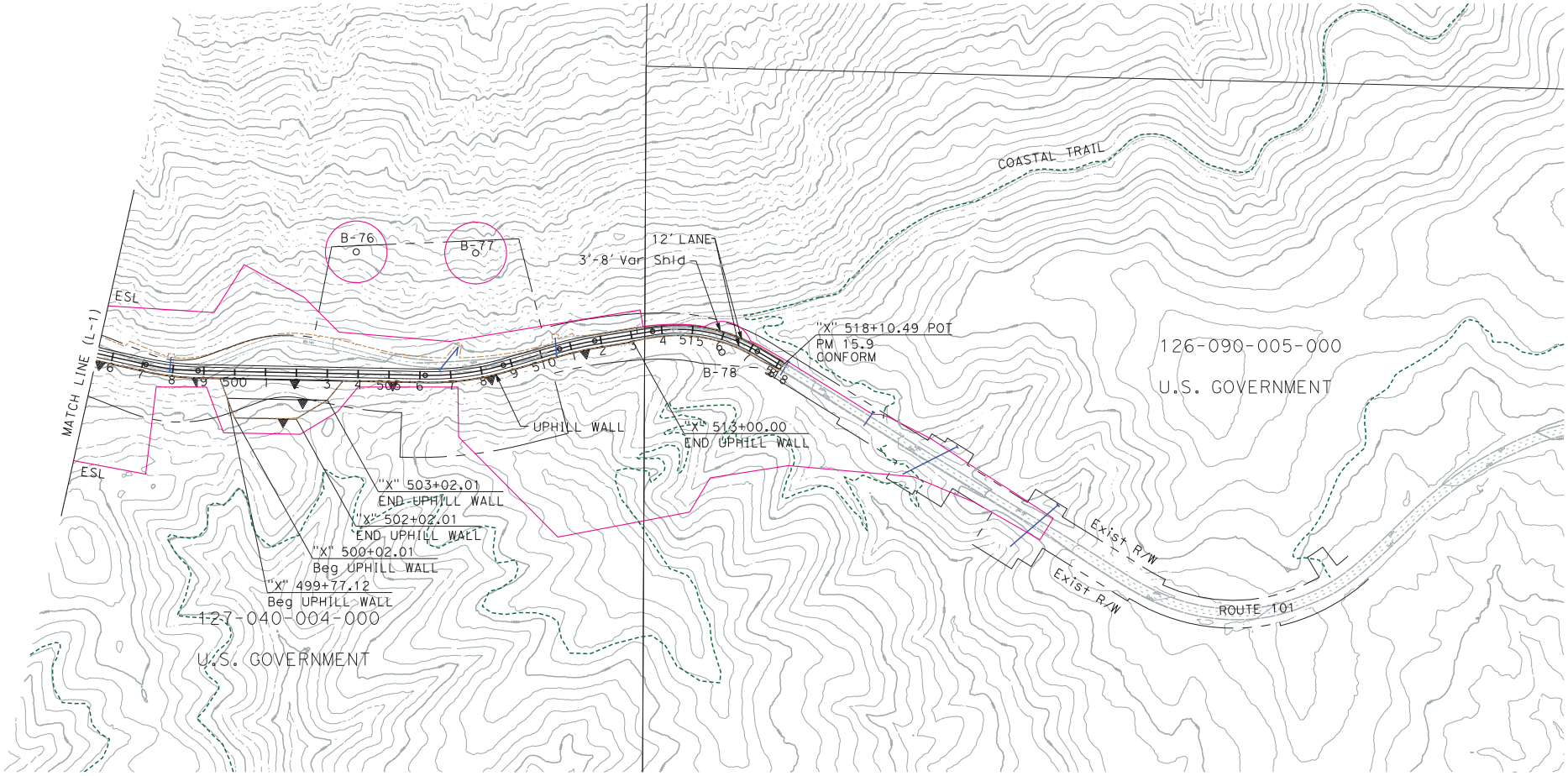


SCALE: 1" = 200'

FIGURE 5a –Alternative X Detailed Layout

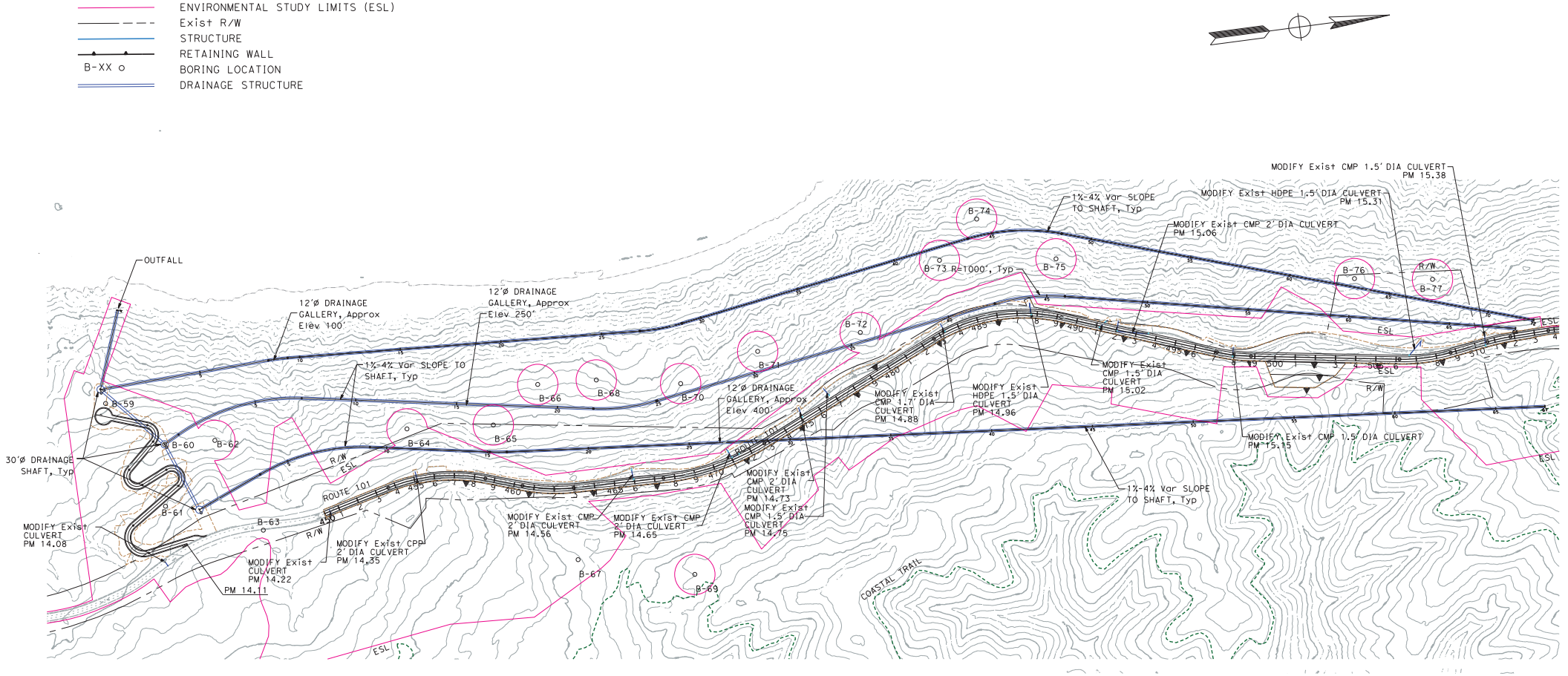
LEGEND:

- CUT/FILL LINE
- COASTAL TRAIL
- ENVIRONMENTAL STUDY LIMITS (ESL)
- Exist R/W
- STRUCTURE
- RETAINING WALL
- B-XX o BORING LOCATION



SCALE: 1" = 200'

Figure 5b – Alternative X Detailed Layout



SCALE: 1" = 250'

FIGURE 6a – Alternative X Drainage Gallery Plan

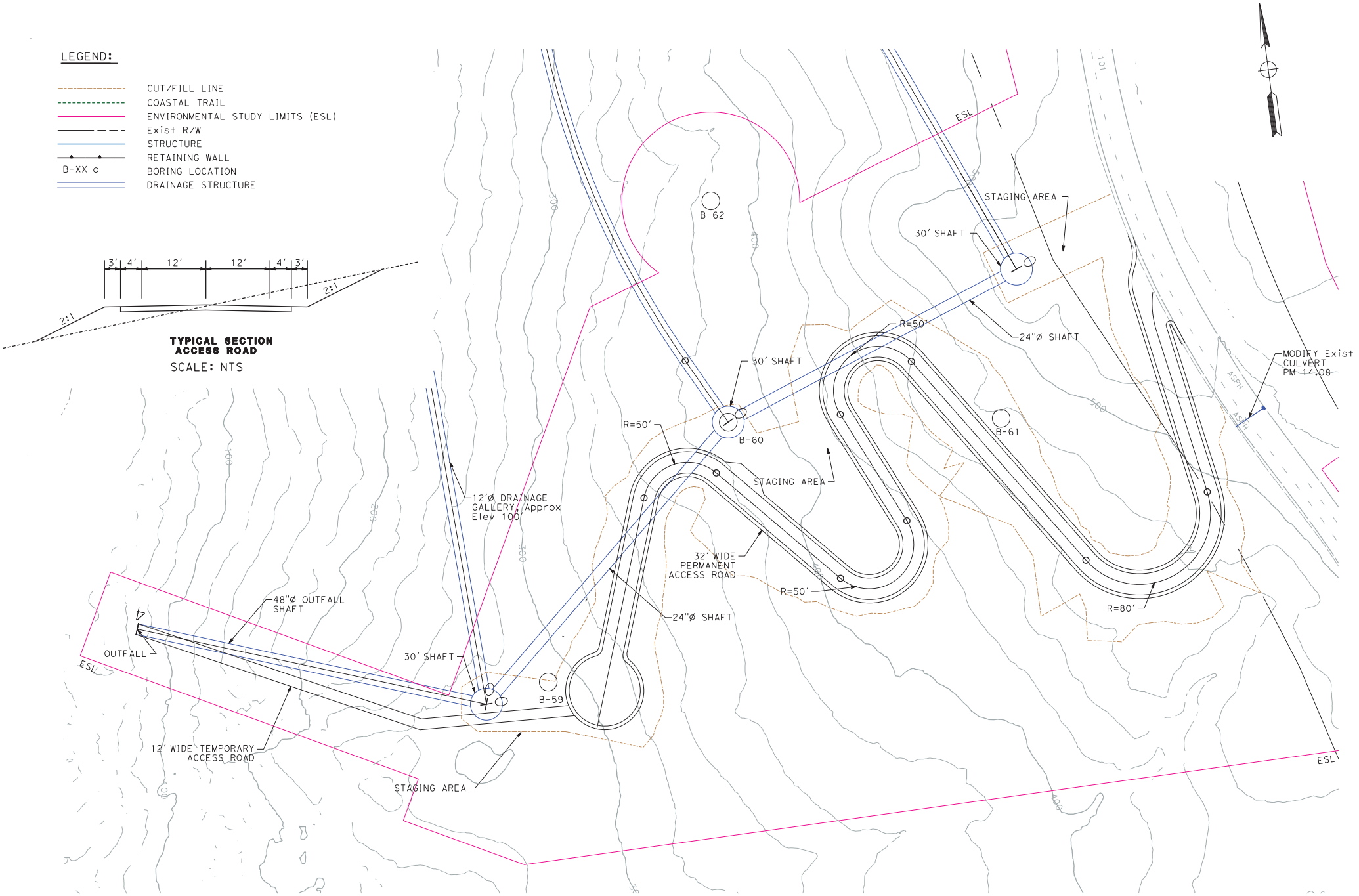
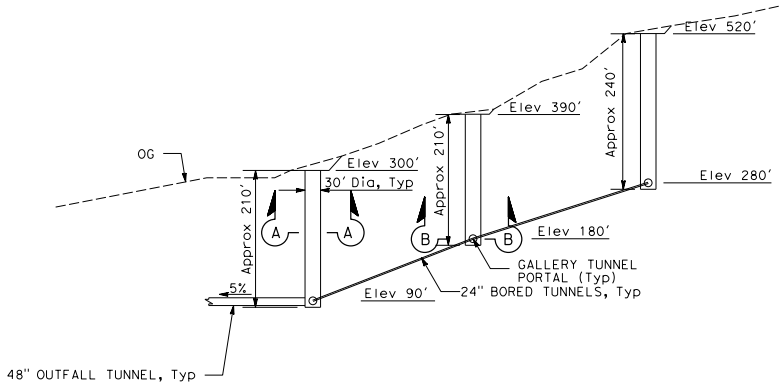
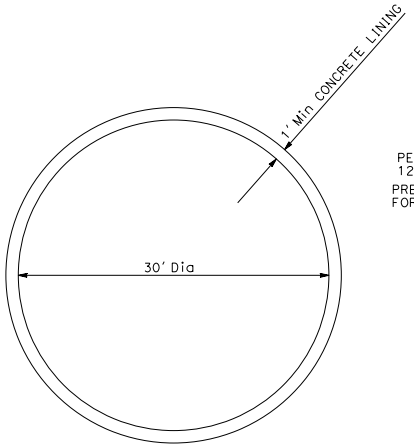


FIGURE 6b – Alternative X Drainage Gallery Access Road, Outfall, and Shaft Layout

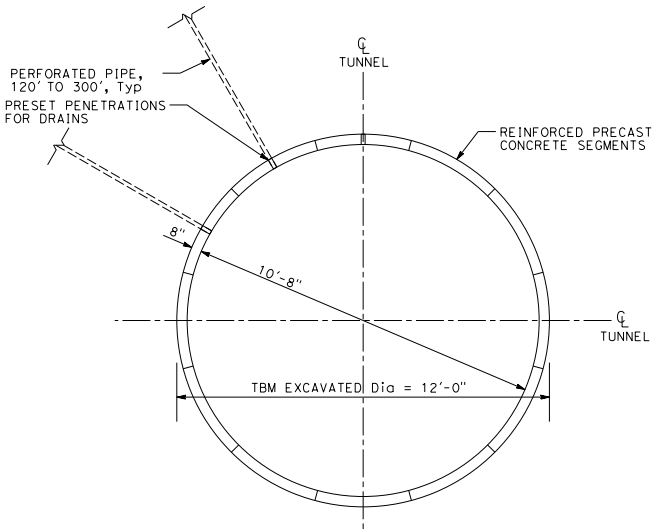


ELEVATION
NO SCALE



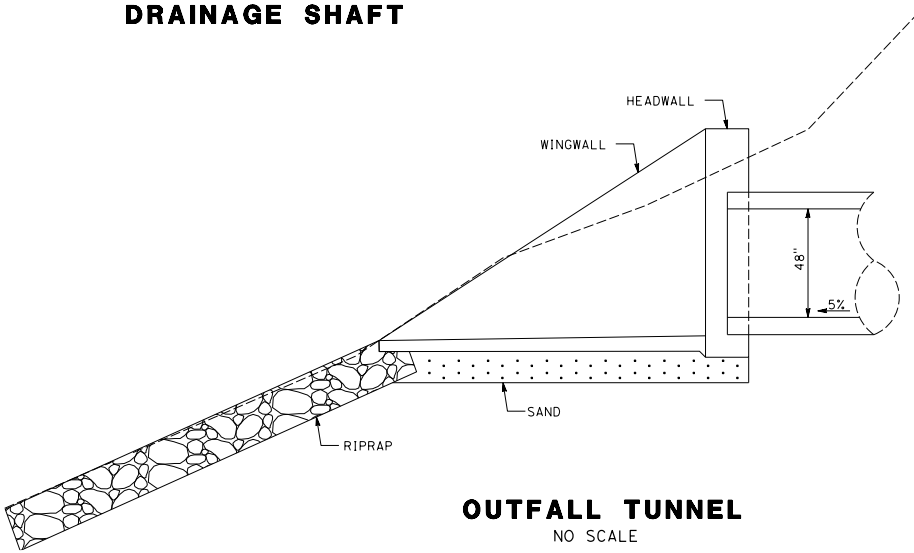
SECTION A-A
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DRAINAGE SHAFT



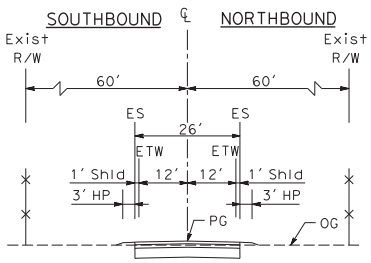
SECTION B-B
NO SCALE

DRAINAGE GALLERY



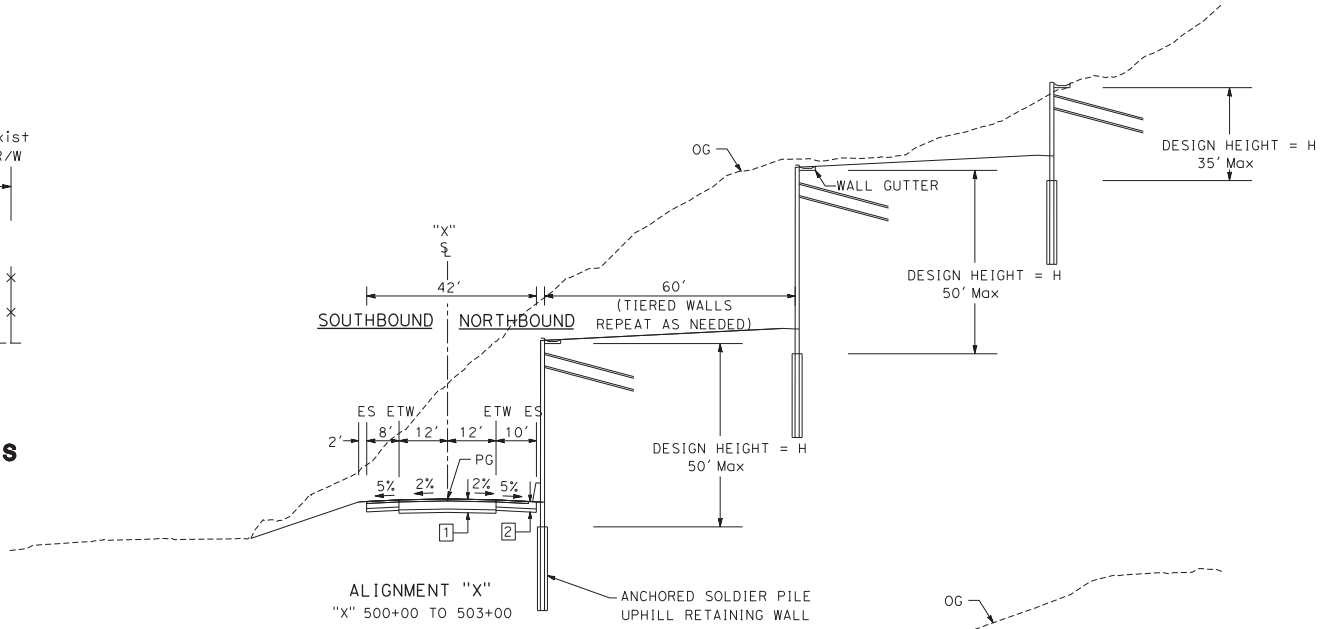
OUTFALL TUNNEL
NO SCALE

FIGURE 7a - Alternative X Drainage Gallery Cross-Sections

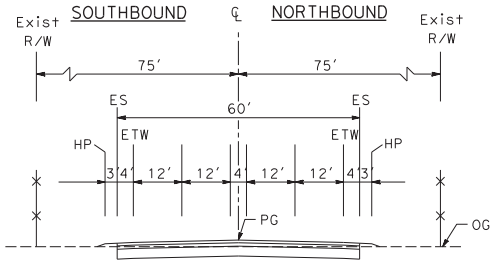


ROUTE 101
ALT X: PM 15.9
ALT F: PM 15.7

EXISTING CONDITIONS NORTH CONFORM

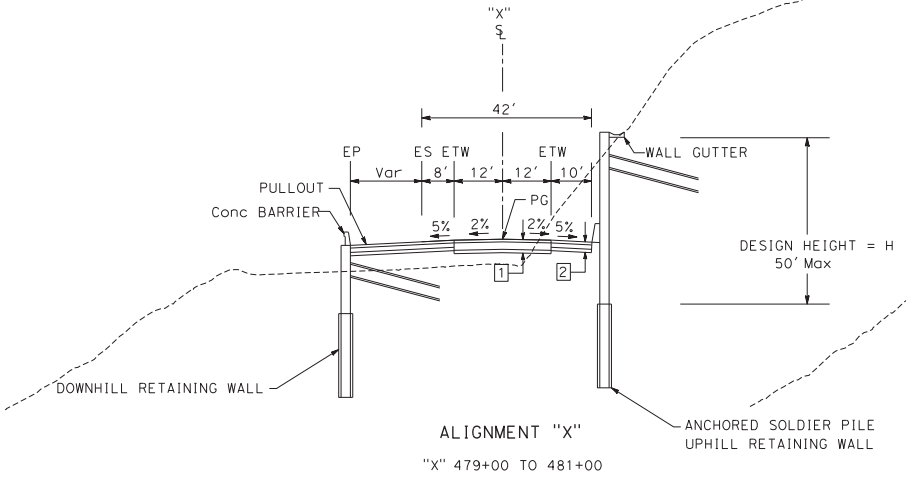


TIERED WALL SECTION

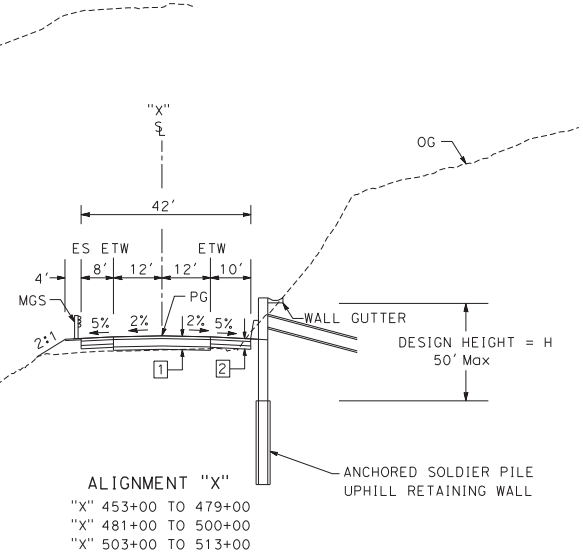


ROUTE 101
ALT X: PM 14.3
ALT F: PM 14.1

EXISTING CONDITIONS SOUTH CONFORM

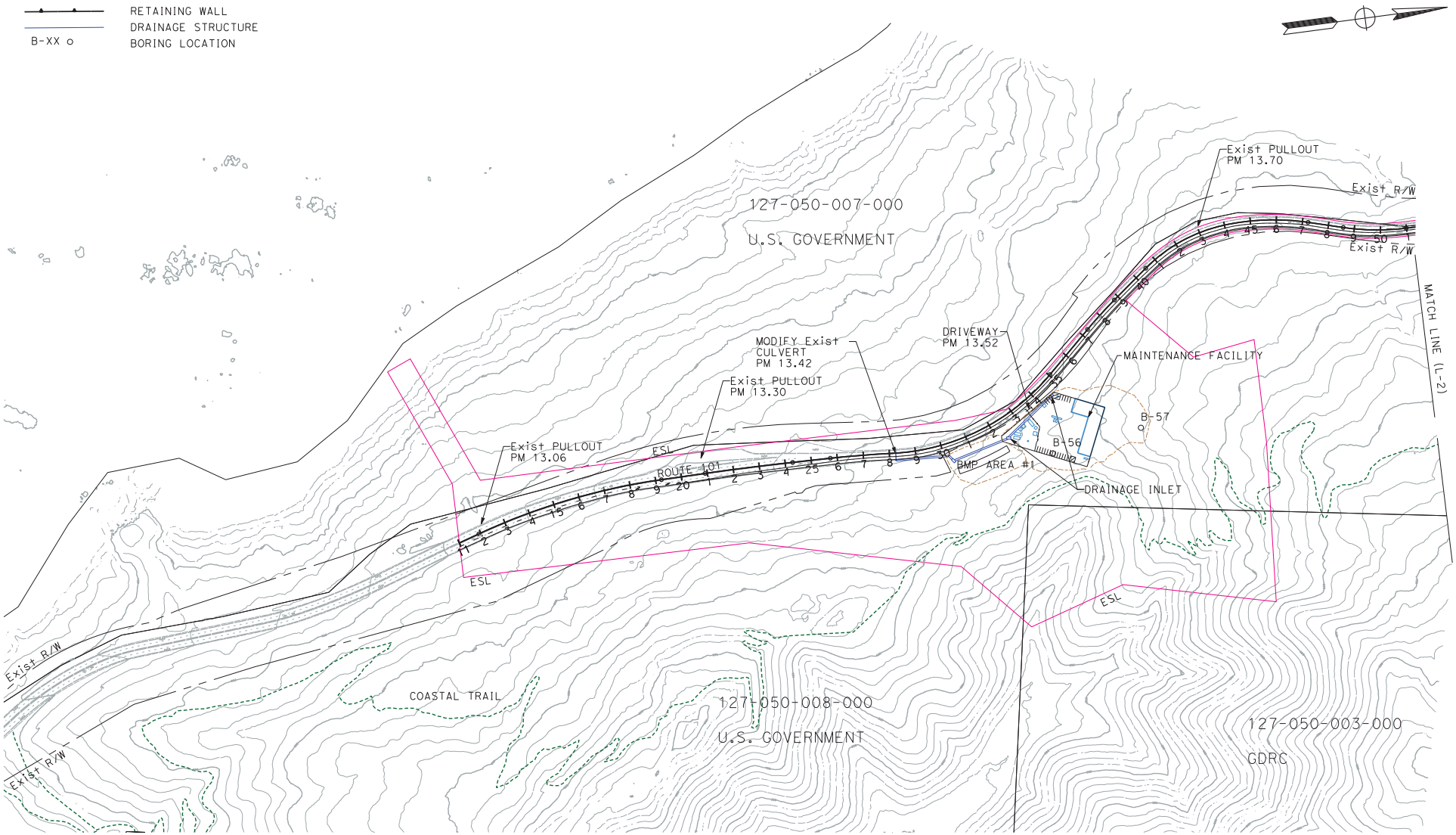


DUAL WALL SECTION



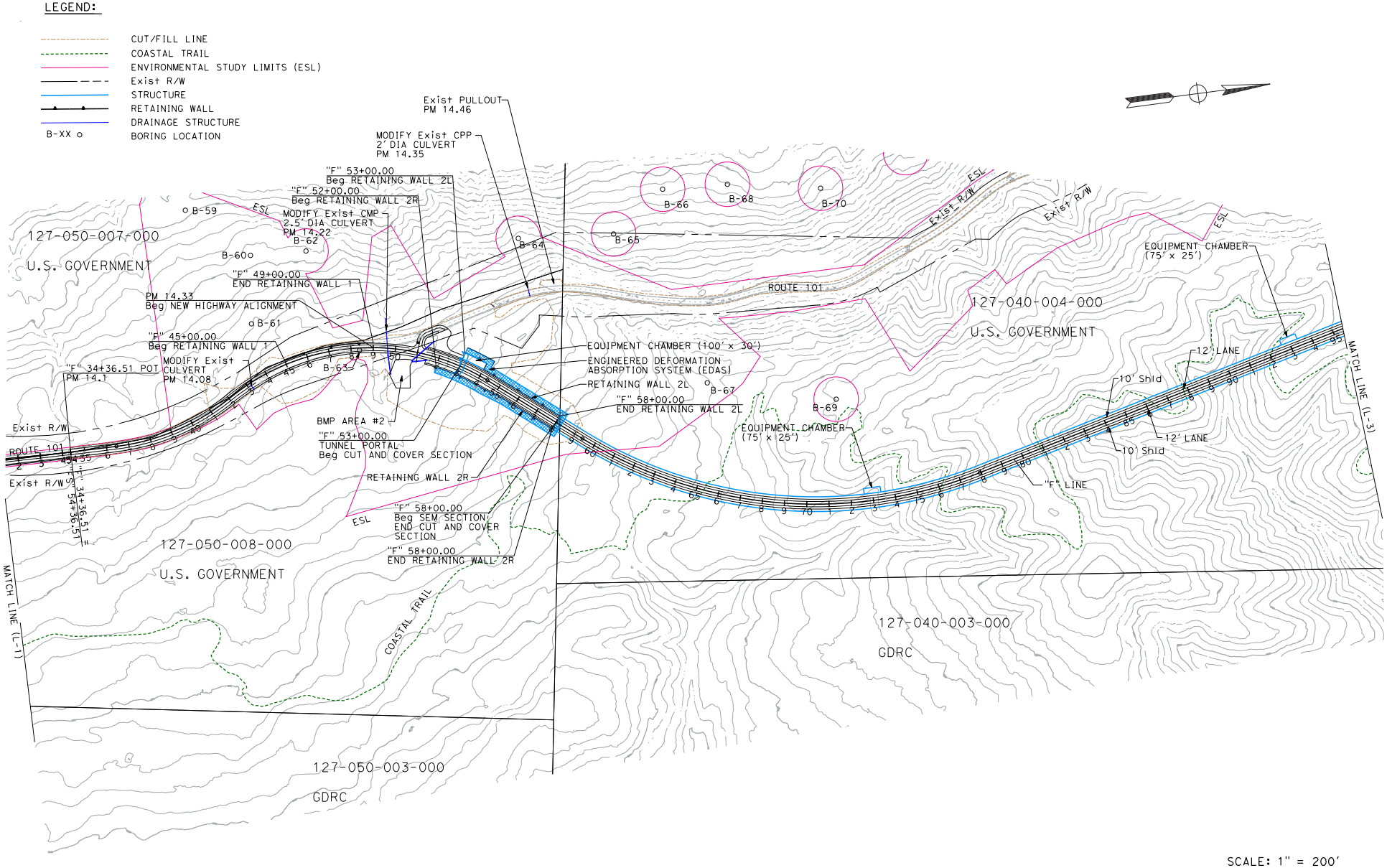
SINGLE WALL SECTION

Figure 7b – Alternative X Typical Cross Sections



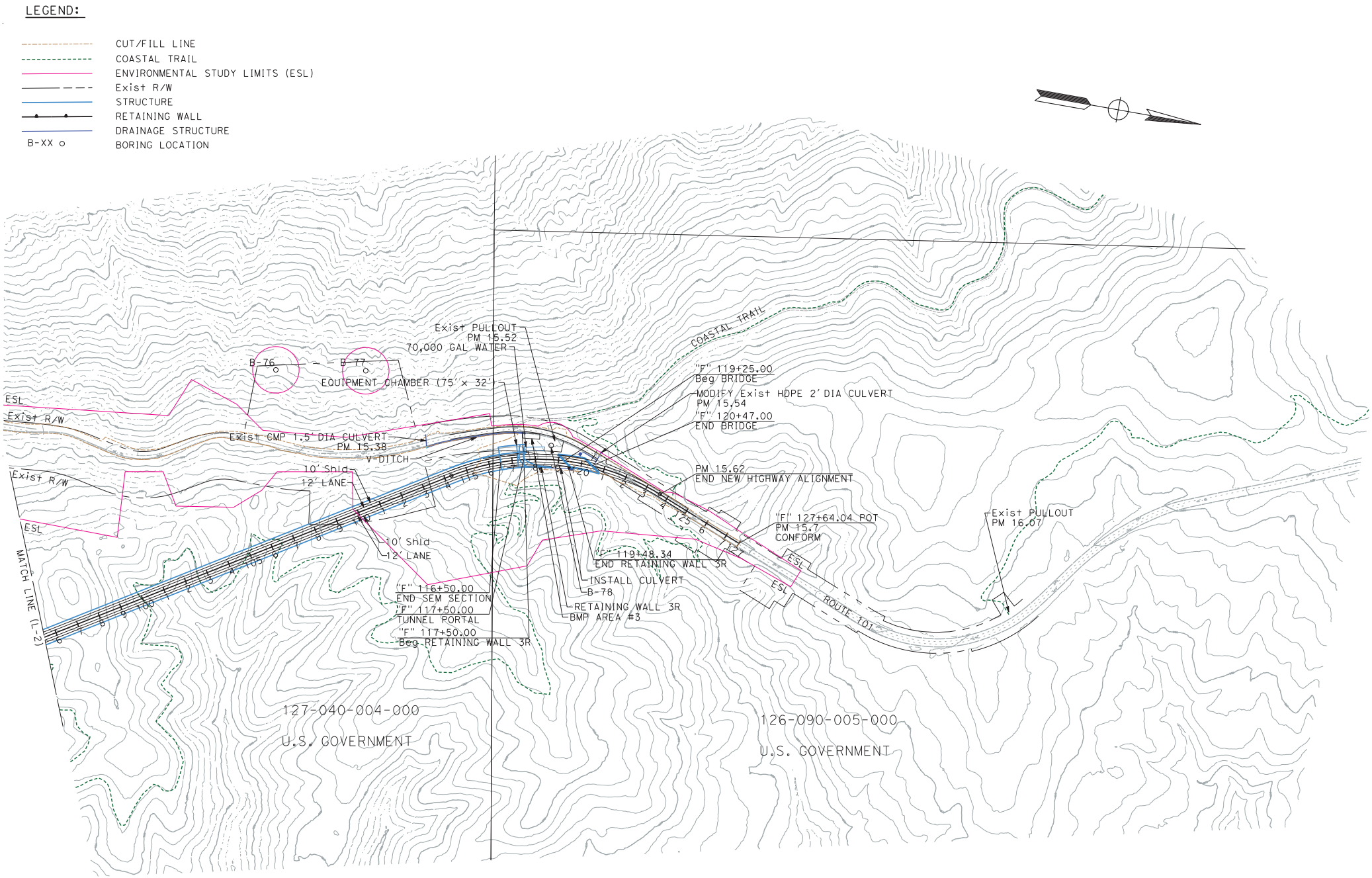
SCALE: 1" = 200'

FIGURE 8a – Alternative F Detailed Plan



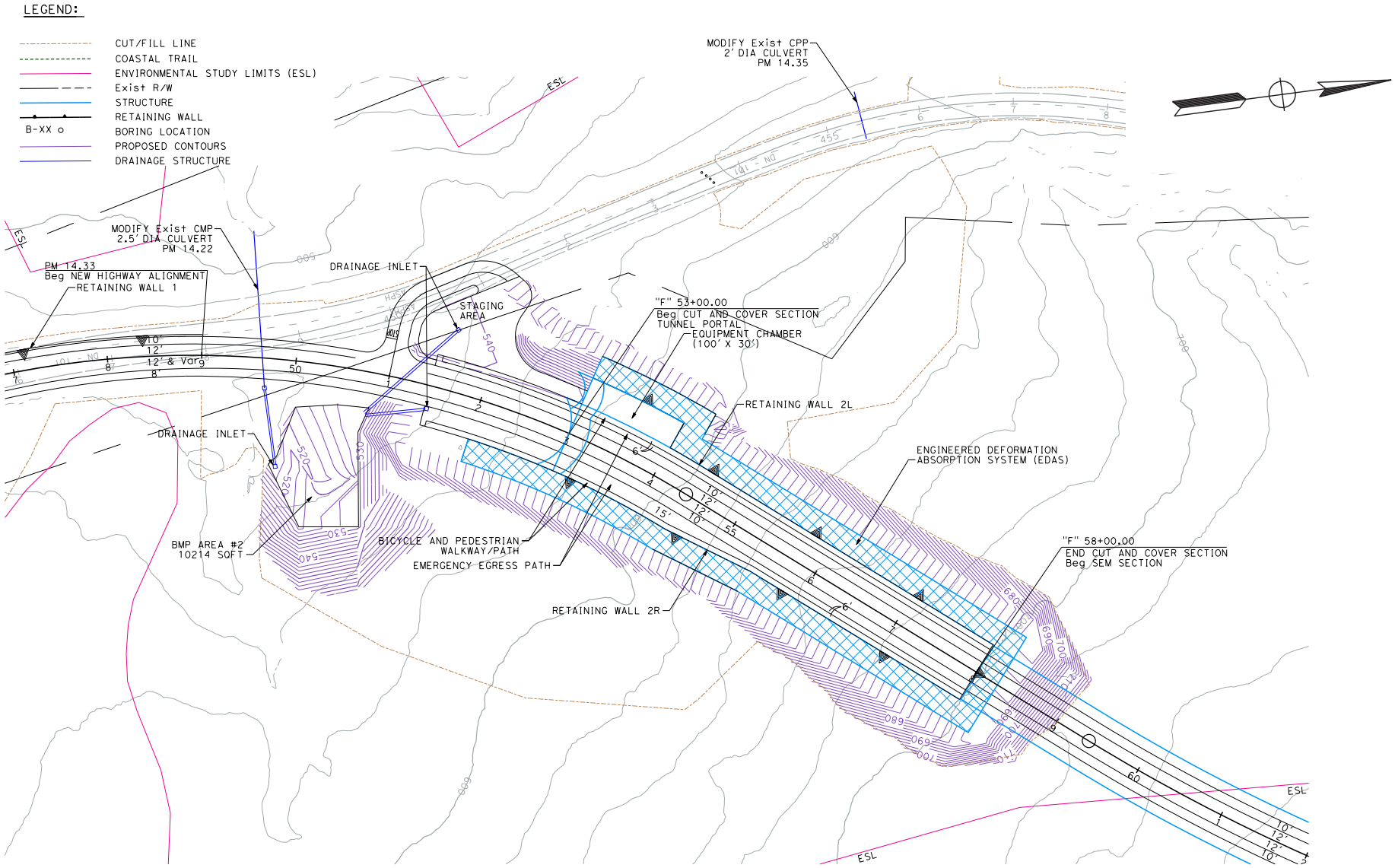
SCALE: 1" = 200'

FIGURE 8b - Alternative F Detailed Plan



Scale: 1" = 200'

Figure 8c – Alternative F Detailed Plan



SCALE: 1" = 50'

FIGURE 9 - Alternative F South Portal Layout

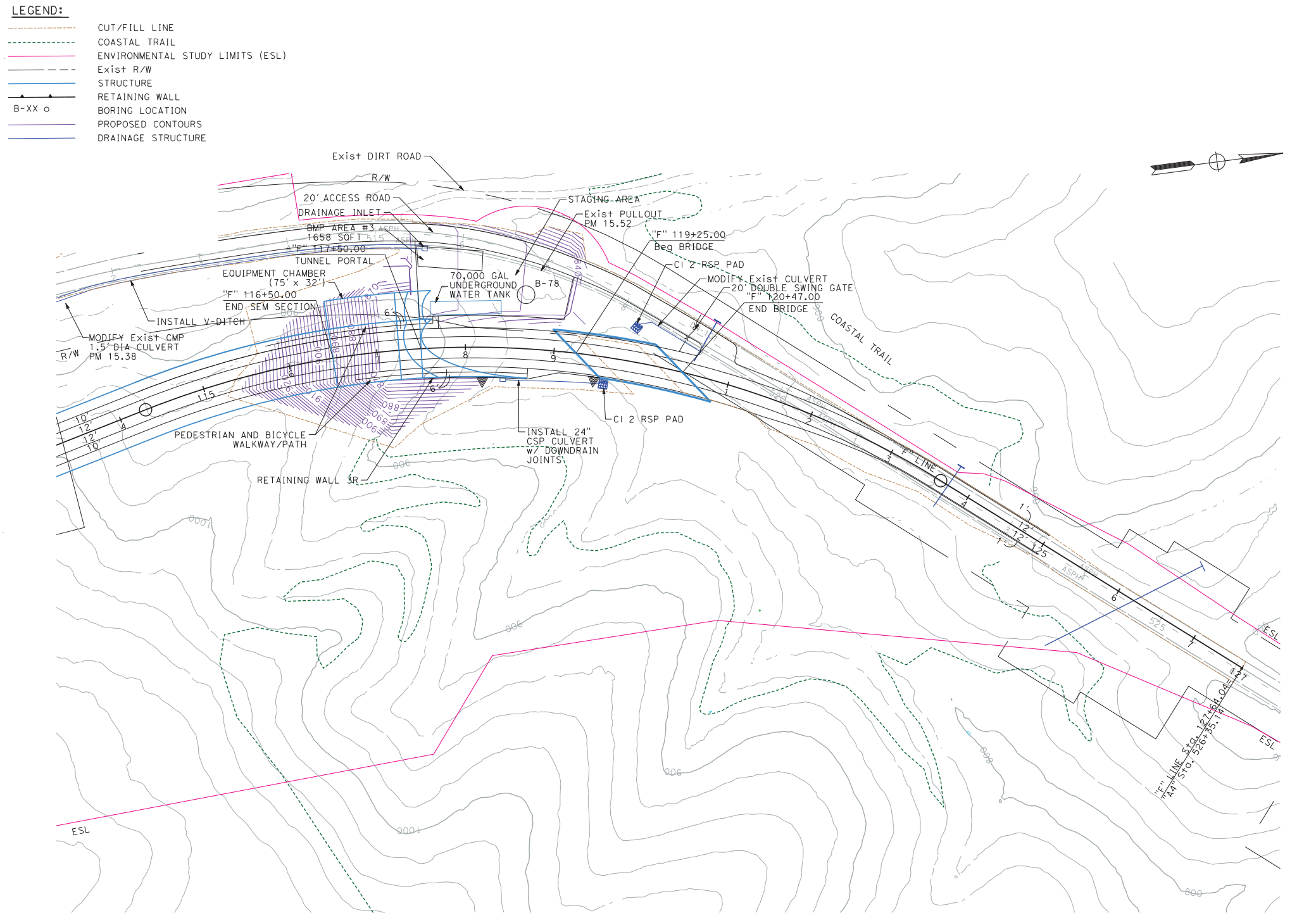
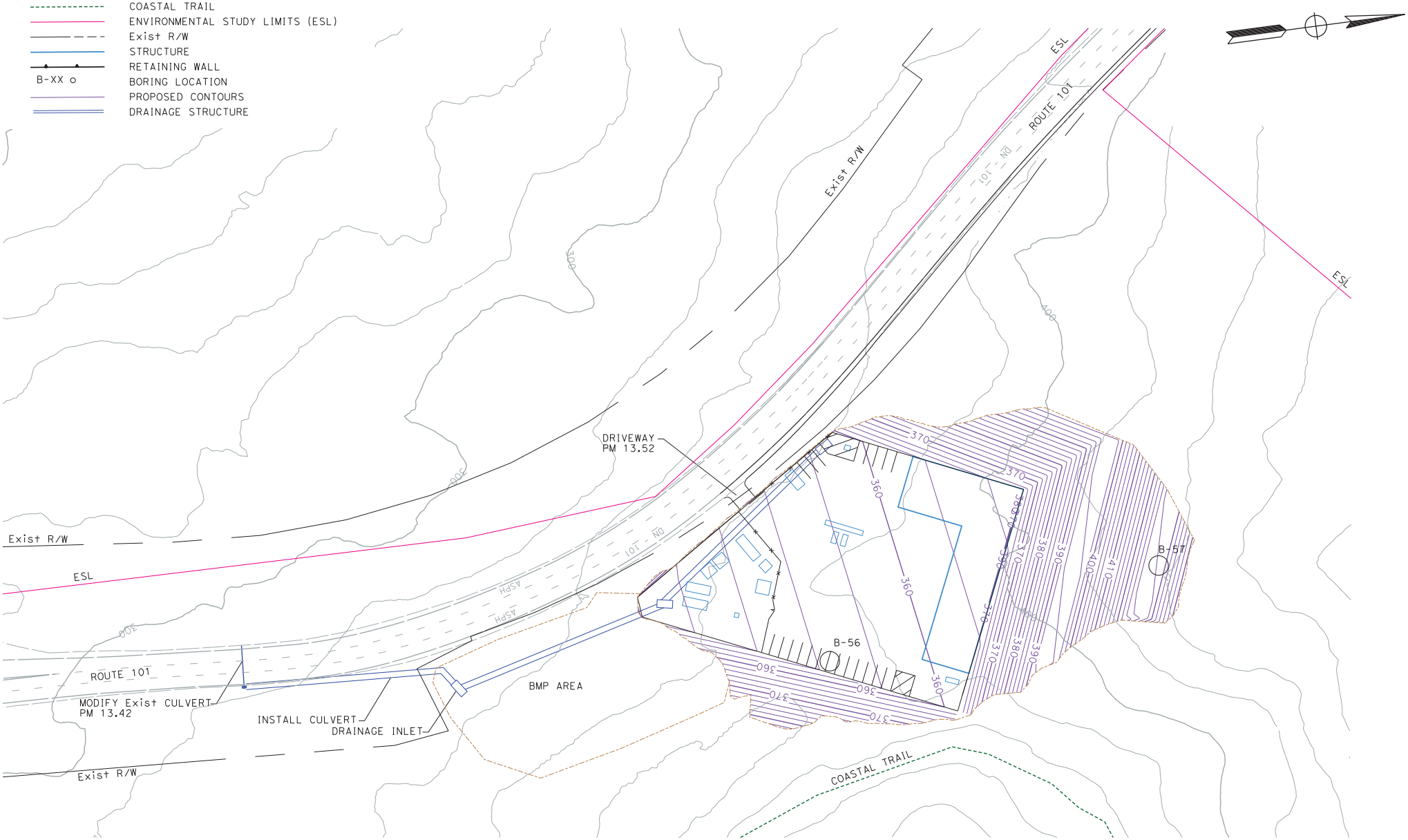
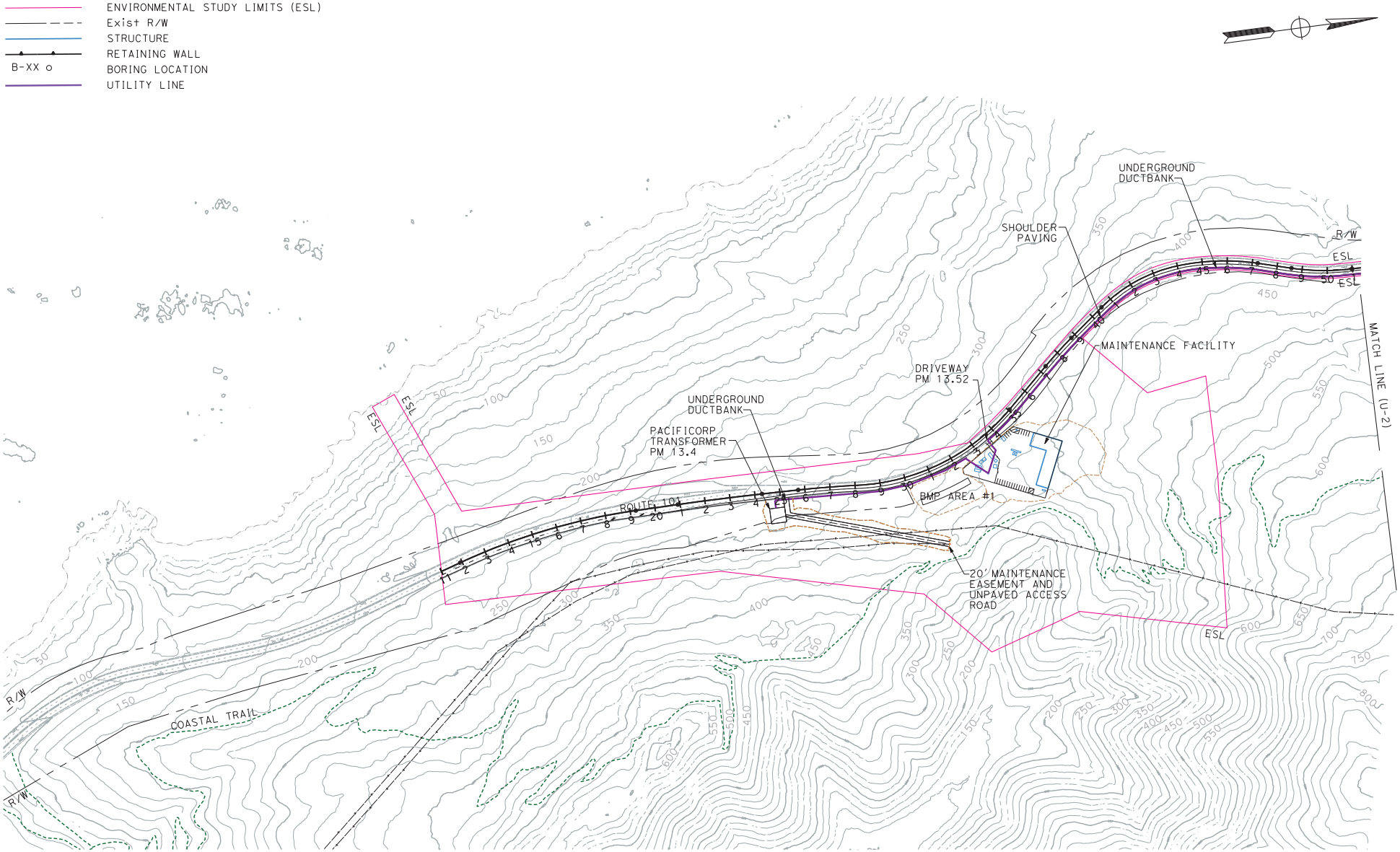


Figure 10 – Alternative F North Portal and Bridge Layout



SCALE: 1" = 50'

FIGURE 11 – Alternative F Maintenance Facility Layout



SCALE: 1" = 200'

FIGURE 12a – Alternative F Utilities Layout

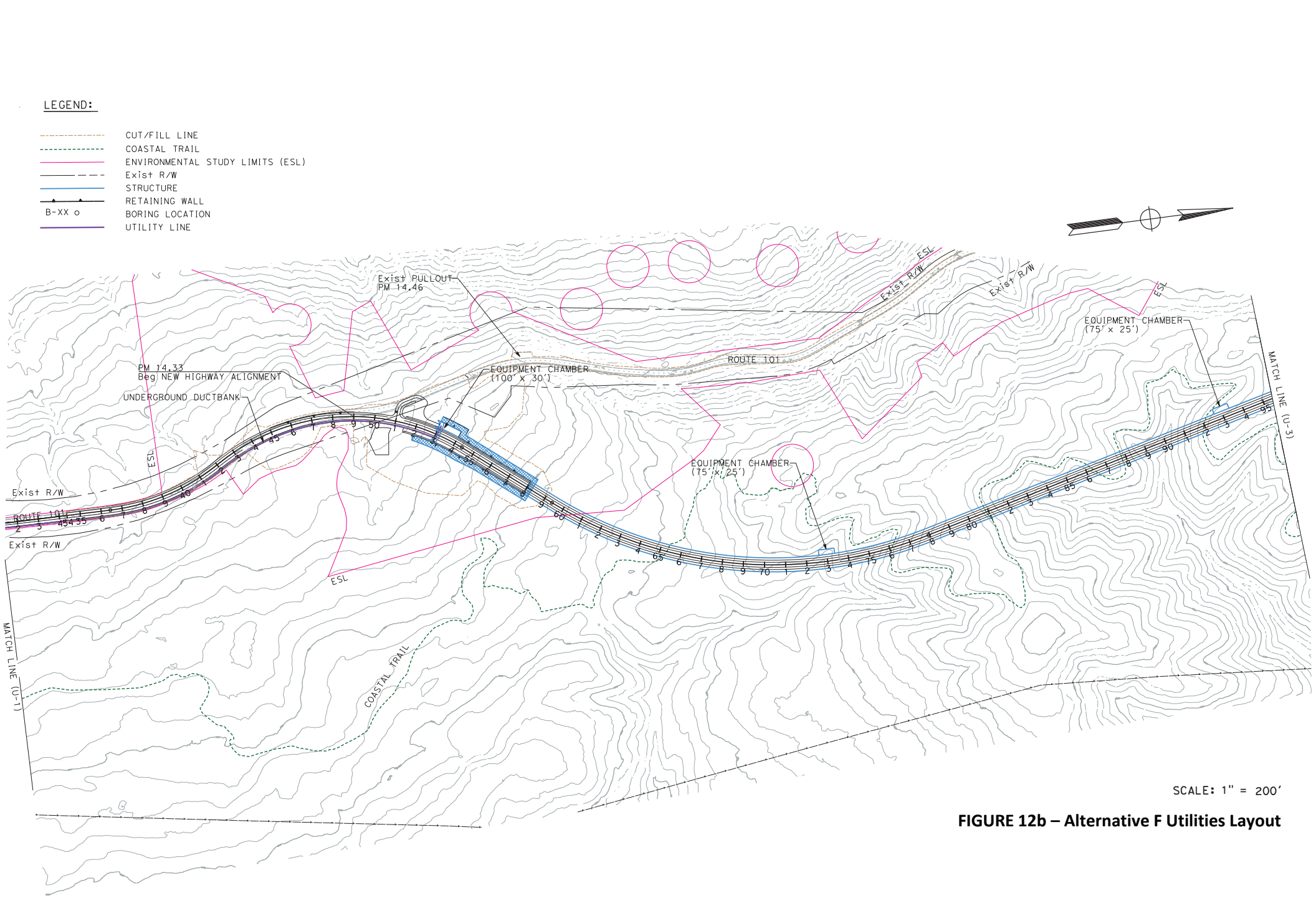
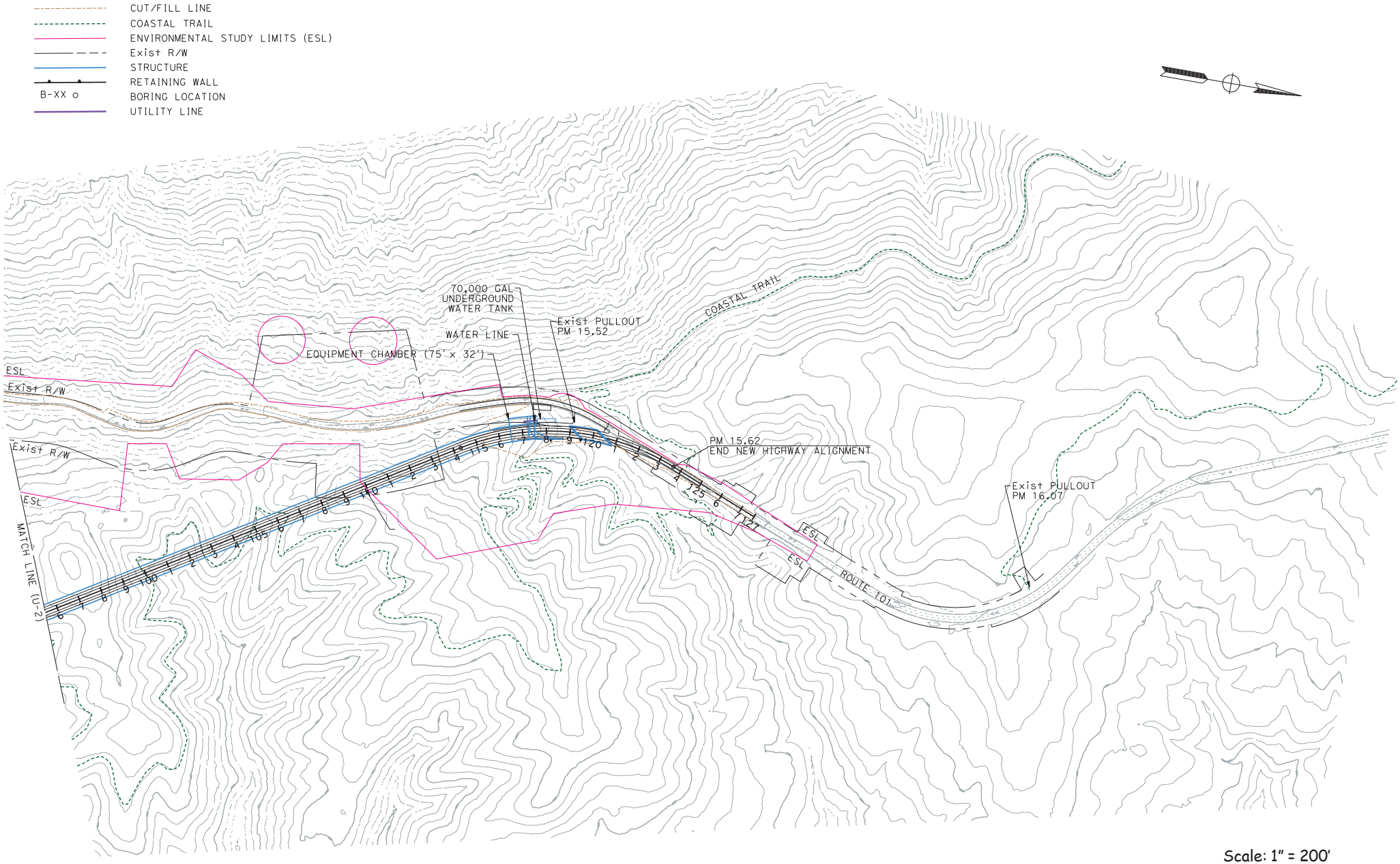
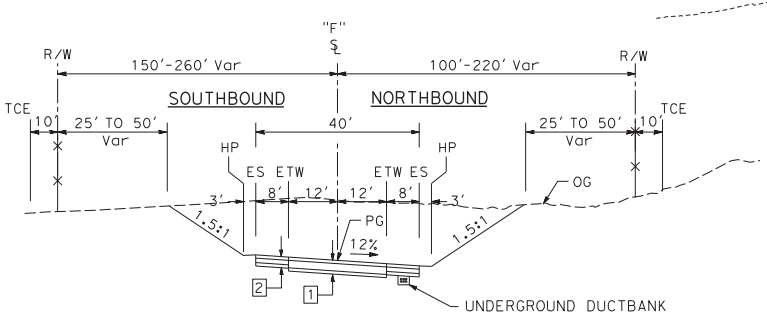


FIGURE 12b – Alternative F Utilities Layout



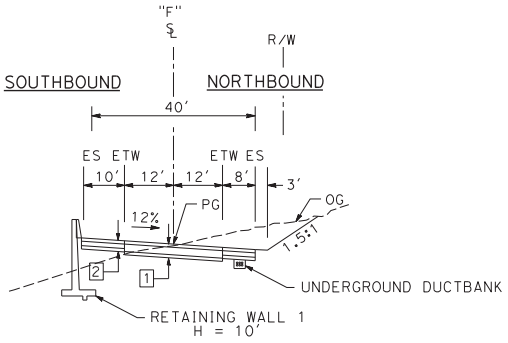
Scale: 1" = 200'

Figure 12c – Alternative F Utilities Layout



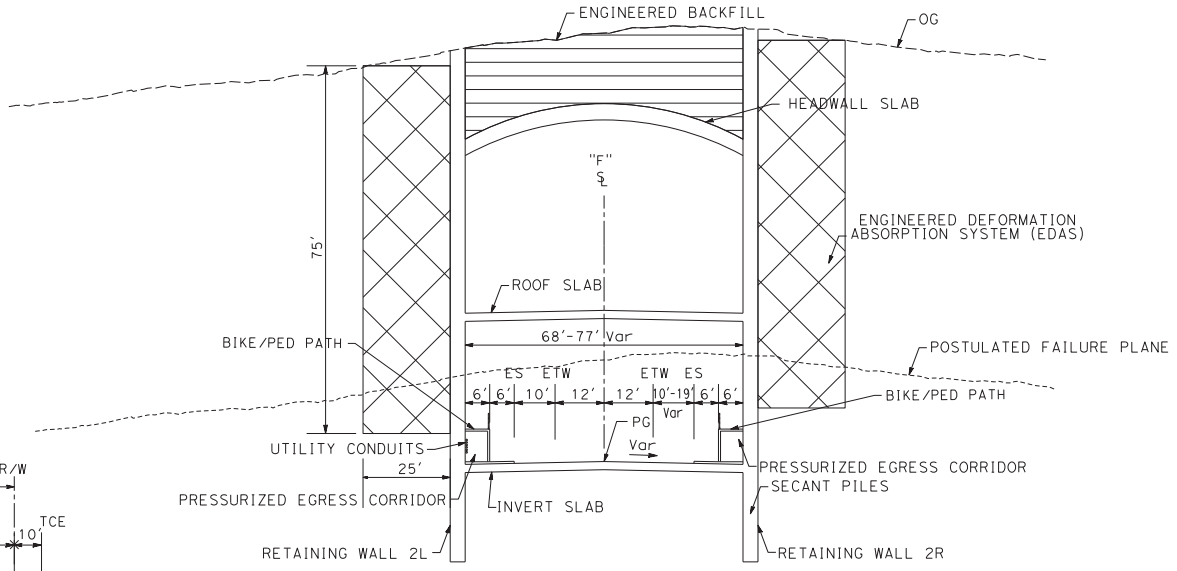
"F" 49+00.00 TO 52+00.00

CUT SECTION



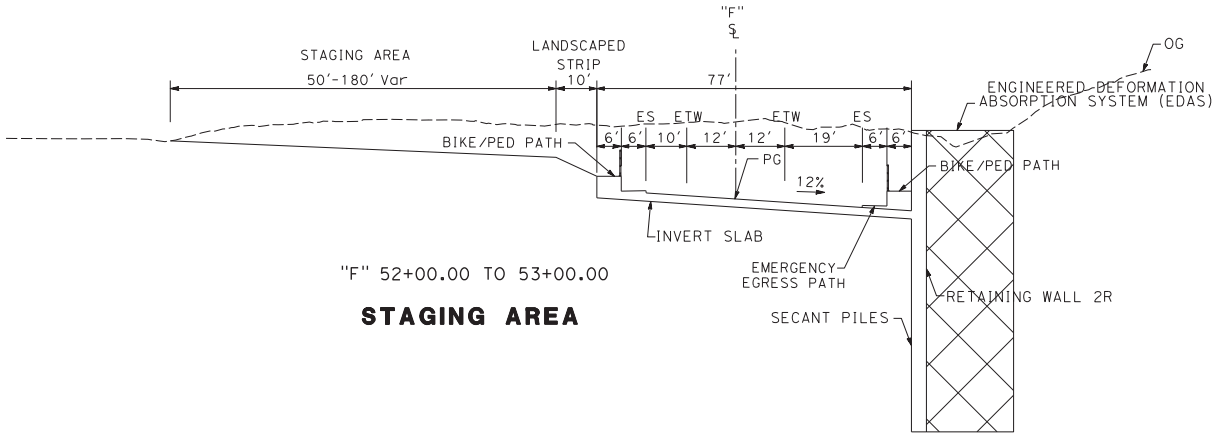
"F" 45+00.00 TO 49+00.00

FILL WALL SECTION



"F" 53+00.00 TO 58+00.00

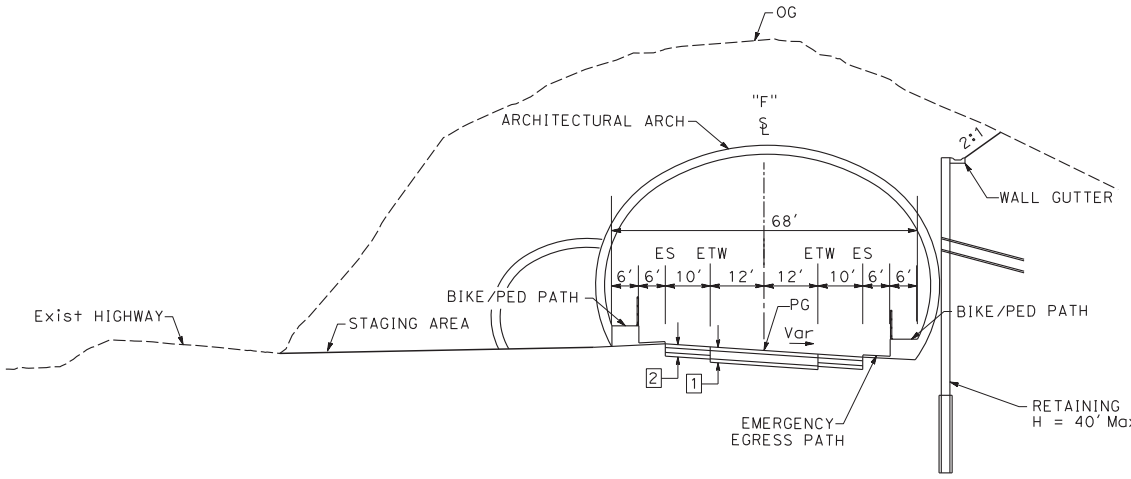
CUT AND COVER / ENGINEERED DEFORMATION ABSORPTION SYSTEM



"F" 52+00.00 TO 53+00.00

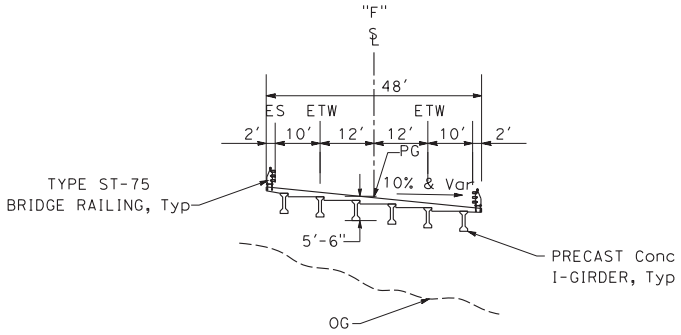
STAGING AREA

Figure 13a – Alternative F Typical Cross Sections



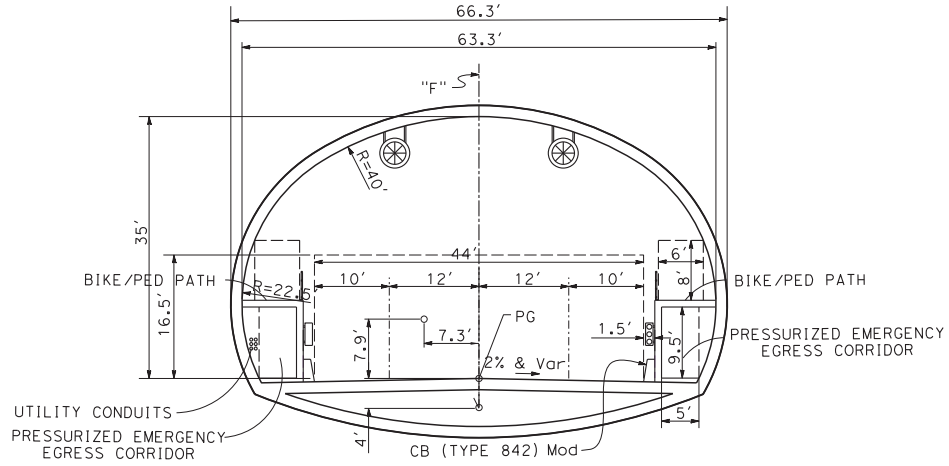
"F" 117+50.00 TO 119+25.00

TUNNEL APPROACH



"F" 119+25.00 TO 120+47.00

BRIDGE



"F" 58+00.00 TO 116+50.00

TUNNEL - SEM SECTION

Figure 13b – Alternative F Typical Cross Sections

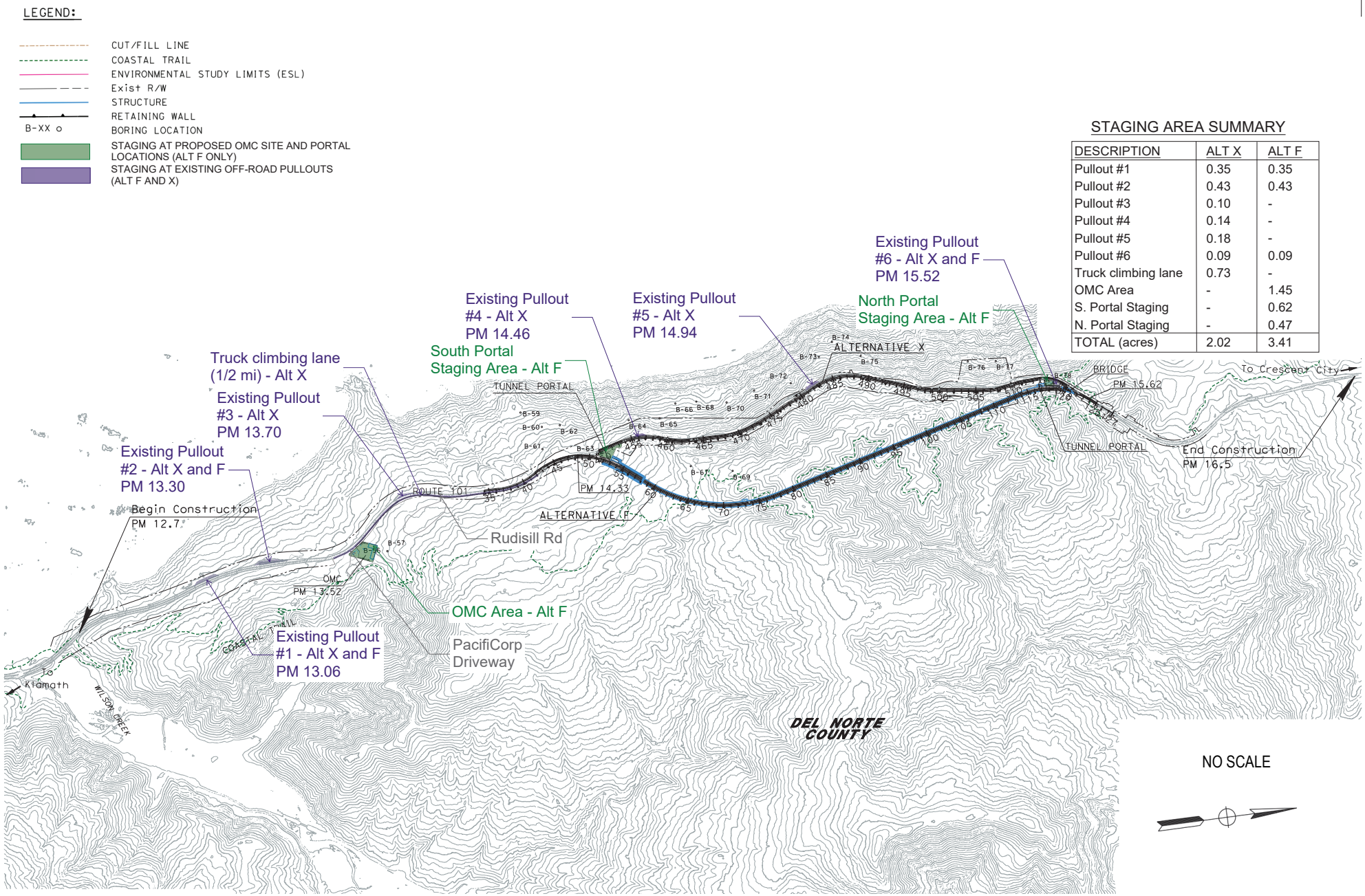
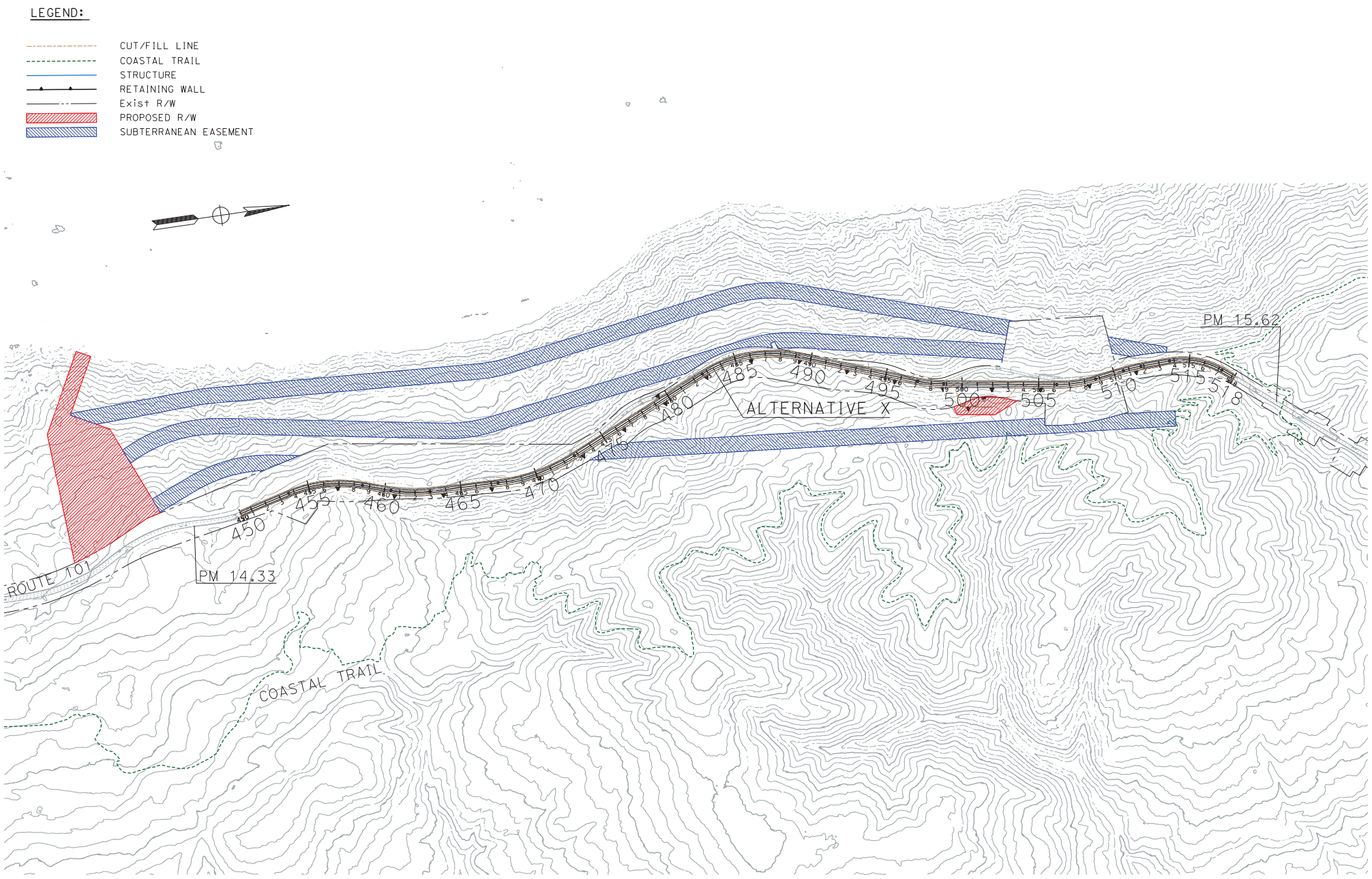
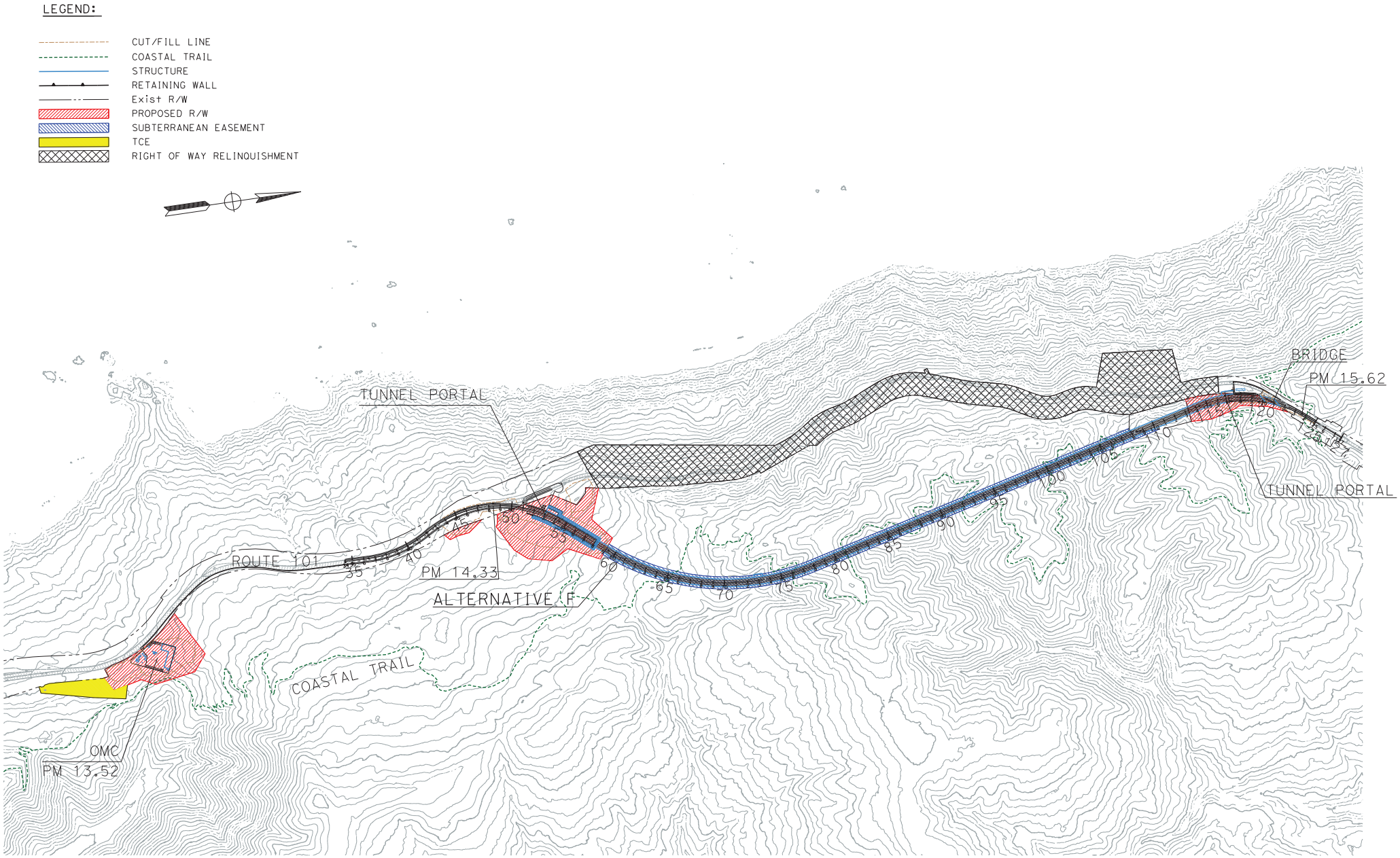


FIGURE 14 – Staging Areas Layout



SCALE: 1" = 300'

FIGURE 15a – Alternative X ROW



SCALE: 1" = 400'

FIGURE 15b – Alternative F ROW/Relinquishment



APPENDIX B. Section 4(f)



LAST CHANCE GRADE
PERMANENT RESTORATION PROJECT

DEL NORTE COUNTY, CALIFORNIA
DISTRICT 1 – DN – 101 (Post Miles 12.7 to 16.5)
EA 01-0F280 / EFIS 0115000099



Draft Section 4(f)

December 2023

The environmental review, consultation, and any other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by Caltrans pursuant to 23 USC 327 and the Memorandum of Understanding dated May 27, 2022, and executed by FHWA and Caltrans.



TABLE OF CONTENTS

Table of Contents ..... **i**

List of Figures ..... **iii**

List of Tables ..... **iii**

Acronyms and Abbreviations ..... **v**

Chapter 1. Introduction **1**

1.1 Section 4(f) of the Department of Transportation Act 1

1.1.1 Use of Section 4(f) Resources 2

1.2 Organization of the Section 4(f) Analysis 3

Chapter 2. Description of the Proposed Project **5**

2.1 Project Location 5

2.2 Project Purpose and Need 5

2.3 Project Description 7

2.3.1 Geotechnical Investigations 7

2.3.2 Alternative X 7

2.3.3 Alternative F 8

2.3.4 No-Build Alternative 9

Chapter 3. Overview of Section 4(f) Resources **15**

3.1 Determining Section 4(f) Resources 15

3.2 Section 4(f) Resources in the Study Area 15

3.3 Summary of Section 4(f) Use 16

Chapter 4. Redwood National and State Parks Draft Individual Section 4(f) Evaluation **19**

4.1 Section 4(f) Resource Description 19

4.2 Proposed Use 23

4.2.1 Alternative X 23

4.2.2 Alternative F 27

4.3 Avoidance Alternatives Analysis 32

4.3.1 Avoidance Alternatives 32

4.3.2 Feasible and Prudent Analysis 36

4.4 Measures to Minimize Harm....39
4.5 Coordination....41
Chapter 5. Crescent City to Trinidad Wagon Road Draft Individual Section 4(f) Evaluation....43
5.1 Section 4(f) Resource Description....43
5.2 Proposed Use....44
5.2.1 Alternative X....44
5.2.2 Alternative F....45
5.3 Avoidance Alternatives Analysis....46
5.4 Measures to Minimize Harm....47
5.5 Coordination....47
Chapter 6. Traditional Cultural Landscape Draft Individual Section 4(f) Evaluation....49
6.1 Section 4(f) Resource Description....49
6.2 Proposed Use....50
6.2.1 Alternative X....50
6.2.2 Alternative F....51
6.3 Avoidance Alternatives Analysis....52
6.4 Measures to Minimize Harm....52
6.5 Coordination....53
Chapter 7. Resources Evaluated Relative to the Requirements of Section 4(f): No-Use Determinations....55
7.1 Wildlife and Waterfowl Refuges....55
7.2 Historic Sites....56
Chapter 8. Least Overall Harm Analysis....59
Chapter 9. Section 6(f) Consideration....61
Chapter 10. References....63

LIST OF FIGURES

Figure 1. Project Location and Overview Map 6
Figure 2. Alternative X Overview, North 10
Figure 3. Alternative X Overview, South 11
Figure 4. Alternative F Overview, North 12
Figure 5. Alternative F Overview, Center 13
Figure 6. Alternative F Overview, South 14
Figure 7. RNSP Overview, North 20
Figure 8. RNSP Overview, South 21
Figure 9. RNSP and Six Rivers National Forest in Del Norte County 35
Figure 10. LCG Full-Closure Detour 38

LIST OF TABLES

Table 1. Summary of Properties Subject to Section 4(f) Consideration 16
Table 2. Summary of Section 4(f) Use by Alternative 17
Table 3. Summary of Use of the Crescent City to Trinidad Wagon Road for Alternative F 46
Table 4. Summary of Redwood Trees Removed for Alternative X 51
Table 5. Summary of Redwood Trees Removed for Alternative F 51



ACRONYMS AND ABBREVIATIONS

ABBREVIATION / ACRONYM	DESCRIPTION
APE	Area of Potential Effects
Caltrans	California Department of Transportation
CCT	California Coastal Trail
CDPR	California Department of Parks and Recreation
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CSP	California State Parks
DBH	diameter at breast height
DNCRSP	Del Norte Coast Redwoods State Park
DOI	Department of Interior
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
ESL	Environmental Study Limits
FHWA	Federal Highway Administration
FOE	Finding of Effect
HPTP	Historic Property Treatment Plan
GDRC	Green Diamond Resource Company
GIS	Geographic Information System
GMP	General Management Plan
GP	General Plan
LCG	Last Chance Grade
LWCF	Land and Water Conservation Fund
MOA	Memorandum of Agreement
NHPA	National Historic Preservation Act
NRHP	National Register of Historic Places
NEPA	National Environmental Policy Act
NOI	Notice of Intent
NOP	Notice of Preparation
NPS	National Park Service
NRHP	National Register of Historic Places
OMC	Operations and Maintenance Center
PA	Programmatic Agreement
PM(s)	Post Mile(s)
RNP	Redwood National Park
RNSP	Redwood National and State Parks
ROW	right of way

ABBREVIATION / ACRONYM	DESCRIPTION
SHPO	State Historic Preservation Officer
TCE	Temporary Construction Easement
TCL	Traditional Cultural Landscape
U.S. 101	United States Highway 101
UNESCO	United Nations Educational, Scientific, and Cultural Organization
USC	United States Code

CHAPTER 1. INTRODUCTION

The Last Chance Grade (LCG) Permanent Restoration Project, often referred to as Last Chance Grade, is a project proposed by the California Department of Transportation (Caltrans) to develop a long-term solution to the instability and potential roadway failure at LCG between post miles (PMs) 12.7 and 16.5.

In support of the project, this analysis was prepared to address Section 4(f) of the U.S. Department of Transportation Act, which requires that proposed transportation use of any land from a significant publicly owned land of a public park, recreation area, wildlife and waterfowl refuge, or public or private historic site that is on or eligible for the National Register of Historic Places (NRHP) be avoided, if avoidance is feasible and prudent. In addition, a full evaluation of measures to minimize harm to that property must be made and documented.

This document identifies Section 4(f) resources in the LCG study area and describes the nature and extent of the potential effects on and uses of these properties, and discusses avoidance alternatives, measures to minimize harm, and coordination with the officials with jurisdiction.

1.1 Section 4(f) of the Department of Transportation Act

Section 4(f) of the Department of Transportation Act of 1966, codified in federal law at 49 United States Code (USC) 303, declares that "it is the policy of the United States Government that special effort should be made to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites."

Section 4(f) specifies that the Secretary of Transportation may approve a transportation program or project "…requiring the use of publicly owned land of a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance, or land of an historic site of national, state, or local significance (as determined by the federal, state, or local officials having jurisdiction over the park, area, refuge, or site) only if:

1. There is no prudent and feasible alternative to using that land; and
2. The program or project includes all possible planning to minimize harm to the park, recreation area, wildlife and waterfowl refuge, or historic site resulting from the use."

Section 4(f) further requires coordination with the Department of the Interior and, as appropriate, the involved offices of the Department of Agriculture and the Department of Housing and Urban Development in developing transportation projects and programs that use lands protected by Section 4(f). If historic sites are involved, then coordination with the State Historic Preservation Officer is also needed.

Responsibility for compliance with Section 4(f) has been assigned to the Department pursuant to 23 USC 326 and 327, including determinations and approval of Section 4(f) evaluations, as well as coordination with those agencies that have jurisdiction over a Section 4(f) resource that may be affected by a project action.

1.1.1 Use of Section 4(f) Resources

The term "use"—as it relates to Section 4(f)—is an adverse impact to, or occupancy of, a Section 4(f) resource, and is defined in 23 Code of Federal Regulations (CFR) 774.17. In general, a "use" occurs when there is permanent incorporation, temporary occupancy, or constructive use of a Section 4(f) resource.

Permanent Incorporation

Land is considered permanently incorporated into a transportation project when right of way (ROW) has been acquired, or if sufficient property interests otherwise have been obtained, such as a permanent easement.

Temporary Occupancy

Temporary occupancy is considered a use when a Section 4(f) property is required for project construction-related activities, and the activity is considered to be adverse in terms of the preservation purpose of Section 4(f). If temporary occupancies of properties are minimal, such as temporary construction easements, they may not constitute a use. Under 23 CFR 774.13(d), there is no Section 4(f) use if the following criteria are met:

1. The duration is temporary; i.e., less than the time needed for construction of the project, and there should be no change in ownership of the land;
2. The scope of the work is minor; i.e., both the nature and the magnitude of the changes to the Section 4(f) property are minimal;
3. There are no anticipated permanent adverse physical impacts, nor will there be interference with the protected activities, features, or attributes of the property on either a temporary or permanent basis;

4. The land being used must be fully restored; i.e., the property must be returned to a condition which is at least as good as that which existed prior to the project; and
5. There must be documented agreement of the official(s) with jurisdiction over the Section 4(f) resource regarding the above conditions.

Constructive Use

A constructive use of a Section 4(f) resource occurs when a transportation project does not permanently incorporate or temporarily use a protected resource, but the proximity of the project results in impacts (e.g., noise, vibration, visual, access restrictions, ecological intrusions) that are so severe that the protected activities, features, or attributes that qualify the resource for protection under Section 4(f) are substantially impaired, even after the incorporation of mitigation (23 CFR 774.15).

1.2 Organization of the Section 4(f) Analysis

Because there are multiple Section 4(f) properties within the LCG project area, and these properties require separate assessments, this Section 4(f) has been organized as follows:

- **Chapter 2: *Project Description*.** This section describes the purpose and need of the project and provides a description of project alternatives.
- **Chapter 3: *Section 4(f) Resources*.** This section provides an overview of Section 4(f) resources considered in this analysis.
- **Chapter 4: *Redwood National And State Park Draft Individual Section 4(f) Evaluation*.** This section describes the use of the parks, analyzes avoidance alternatives, assesses measures to minimize harm, and discusses coordination conducted for this resource.
- **Chapter 5: *Crescent City To Trinidad Wagon Road Draft Individual Section 4(f) Evaluation.*** This section describes the use of the wagon road, analyzes avoidance alternatives, assesses measures to minimize harm, and discusses coordination conducted for this resource.
- **Chapter 6: *Traditional Cultural Landscape Draft Individual Section 4(F) Evaluation*.** This section describes the use of the traditional cultural landscape, analyzes avoidance alternatives, assesses measures to minimize harm, and discusses coordination conducted for this resource.

- **Chapter 7:** ***Resources Evaluated Relative To The Requirements Of Section 4(f): No-Use Determinations*****.** This section discusses resources that were investigated but determined not to trigger protection under Section 4(f).
- **Chapter 8:** ***Least Overall Harm Analysis*****.** This section describes what is needed to determine the alternative with the least overall harm, which is identified in the final Section 4(f).
- **Chapter 9:** ***Section 6(f) Consideration*****.** This section discusses why Section 6(f) is not triggered for this project.
- **Chapter 10:** ***References*****.** This section lists the references used in preparing this document.

CHAPTER 2. DESCRIPTION OF THE PROPOSED PROJECT

The following sections provide a brief overview of the Last Chance Grade Permanent Restoration Project, including the project's location, purpose and need, and a discussion of the project alternatives. More detailed information on these can be found in Chapters 1 and 2 of the Environmental Impact Report (EIR)/Environmental Impact Statement (EIS).

2.1 Project Location

The proposed project is located on a section of U.S. Highway 101 (U.S. 101) known as Last Chance Grade in southern Del Norte County, California, approximately 10 miles south of Crescent City (Figure 1). Within the project limits (PMs 12.7 to 16.5), U.S. 101 is a two- to four-lane conventional highway that winds through mountainous terrain just east of the Pacific Ocean. It is bordered by Redwood National and State Parks (RNSP) and is the only viable route between Crescent City and Klamath.

2.2 Project Purpose and Need

The purpose of the LCG Permanent Restoration Project is to develop a long-term solution to the instability and potential roadway failure at LCG. The project would consider alternatives that provide a more reliable connection, reduce maintenance costs, and protect the economy, natural resources, and cultural landscapes.

A long-term sustainable solution at LCG is needed to address:

- Economic ramifications of a long-term failure and closure
- Risk of delay/detour to the traveling public
- Increasing maintenance and emergency project costs
- Increases in the frequency and severity of large storm events caused by climate change

See Chapter 1 of the EIR/EIS for more detailed information on the project's purpose and need.

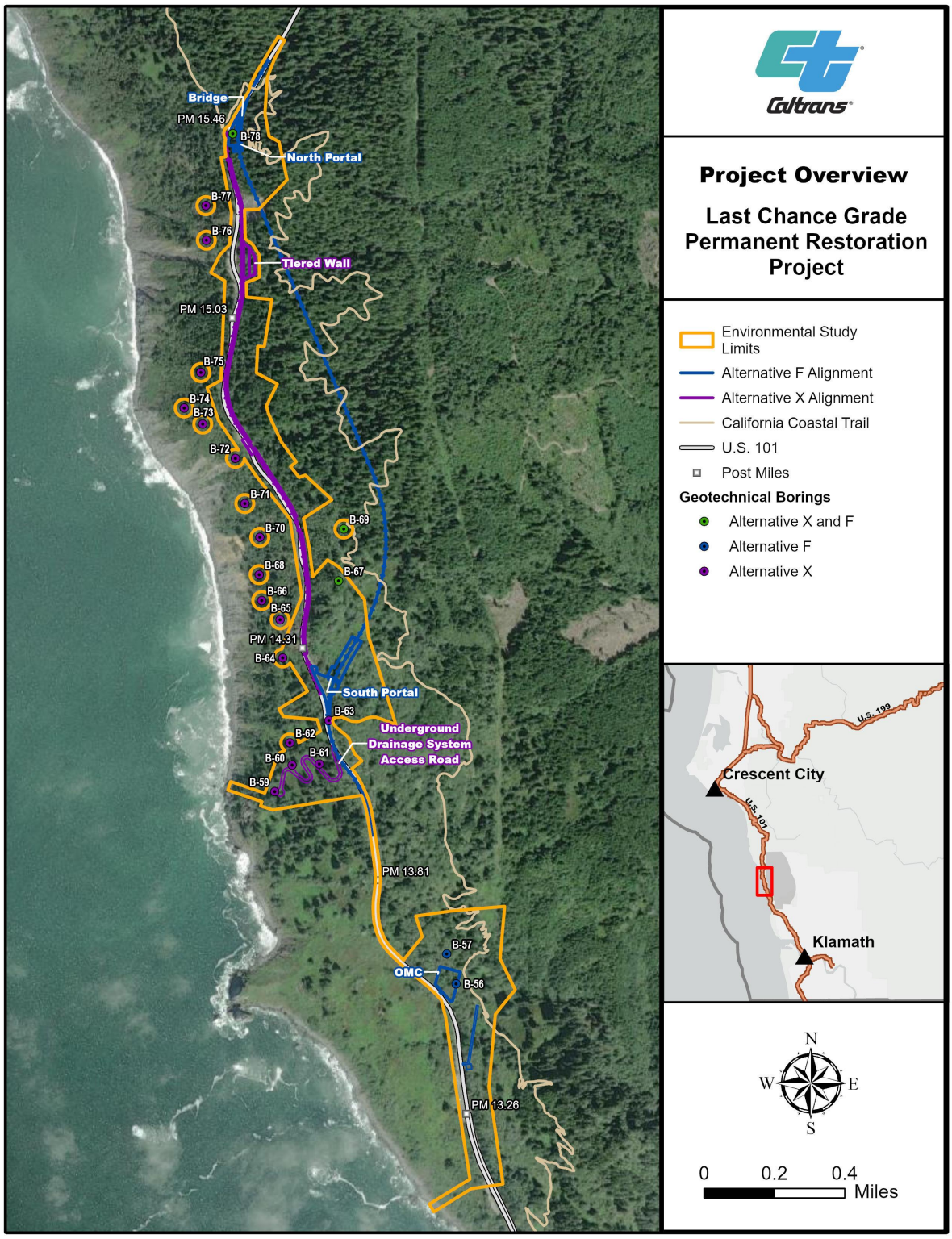


Figure 1. Project Location and Overview Map

2.3 Project Description

The LCG Permanent Restoration Project proposes two build alternatives—Alternative X and Alternative F—in addition to the No-Build Alternative (Figure 1). Both of the build alternatives would require geotechnical investigations to inform project design. A brief overview of geotechnical investigations and the build alternatives are discussed below; see Chapter 2 of the EIR/EIS for more detailed information.

2.3.1 Geotechnical Investigations

Though some previous geotechnical investigations have been conducted for the project, additional geotechnical work would be needed for the build alternatives to help inform project design. Geotechnical investigations would be completed prior to the construction of the main project components.

Alternative X is anticipated to require twenty boreholes (B-59 to B-78), while Alternative F would require five boreholes (B-56, B-57, B-67, B-69, and B-78). Additional boreholes may be needed, but these would be drilled within the project footprint.

Four borehole locations would be accessed by old or existing roads (B-56, B-57, B-63, and B-78), while the remainder would be accessed by helicopter, staged to the east on Green Diamond Resource Company (GDRC) property. Boreholes by roads may require some minor disturbance and vegetation trimming, while those accessed by helicopter would require creation of access trails and clearing of 50-by-50-foot areas for drilling activities. The potential helicopter drilling sites were identified based on openings in the forest canopy. Tree removal would be limited to trimming, or removal of small diameter trees if necessary.

Instrumentation, such as inclinometers, would be installed in the boreholes and monitored for several years prior to decommissioning.

2.3.2 Alternative X

Alternative X would involve reengineering a 1.6-mile-long section of the existing highway to minimize the risk of landslides. Main project components would include an underground drainage system, a series of retaining walls, and strategic eastward retreats (Figure 2 and Figure 3).

The underground drainage system would require the construction of three vertical shafts from which underground drainage galleries would be installed, parallel to the slope. This system

would ultimately redirect groundwater from the slope to the Pacific Ocean. A permanent access road would be constructed for access to this system.

An approximately 6,000-foot-long retaining wall would be constructed on the uphill (east) side of the highway. An approximately 300-foot section of wall would be tiered. On the downhill (west) side of the highway, a single wall, approximately 300 feet long, would be installed between existing walls.

Overall, the reengineered highway would be shifted to the east by up to 130 feet at spot locations.

It is anticipated that this alternative would require up to 11.16 acres of new right of way, and a subterranean easement of approximately 37.76 acres.

Construction is anticipated to start in 2031 and take 3 to 5 years to complete.

2.3.3 Alternative F

Alternative F would involve constructing a 6,000-foot (1.1-mile) tunnel to the east of the existing highway to avoid the most intense areas of known landslides and geologic instability. Main components would include a tunnel and its portals, a bridge, and an Operations and Maintenance Center (OMC) (Figure 4, Figure 5, and Figure 6).

At the southern end, the new alignment would diverge from the existing highway and cut into the hillside. The southern portal area would require retaining walls and the construction of a system to absorb earthflow movement. The tunnel itself would be a single cavern, with separated bike/pedestrian lanes and various safety features.

The tunnel would exit to the hillside in the north, requiring additional retaining walls, before crossing over a single-span, pre-cast concrete-girder bridge and reconnecting to the existing highway.

The OMC would be built south of the southern portal and would contain equipment and facilities for tunnel maintenance, operations, and emergency response.

It is anticipated this alternative would require approximately 18.71 acres of new right of way for the OMC and the tunnel portals. In addition, a subterranean easement of 12.07 acres would be needed for below-ground portions of the tunnel, and a temporary construction easement (TCE) of approximately 2.06 acres for utility work south of the OMC. Approximately 35.09 acres of existing right of way bypassed by the tunnel would be

decommissioned and potentially relinquished to RNSP. Relinquishment would depend on discussions with the parks.

Construction is anticipated to start in 2031 and take 6 to 8 years to complete.

2.3.4 No-Build Alternative

Under the No-Build Alternative, no work would be done on the existing highway; existing conditions would persist, including the continuation of emergency repairs and enhanced maintenance.

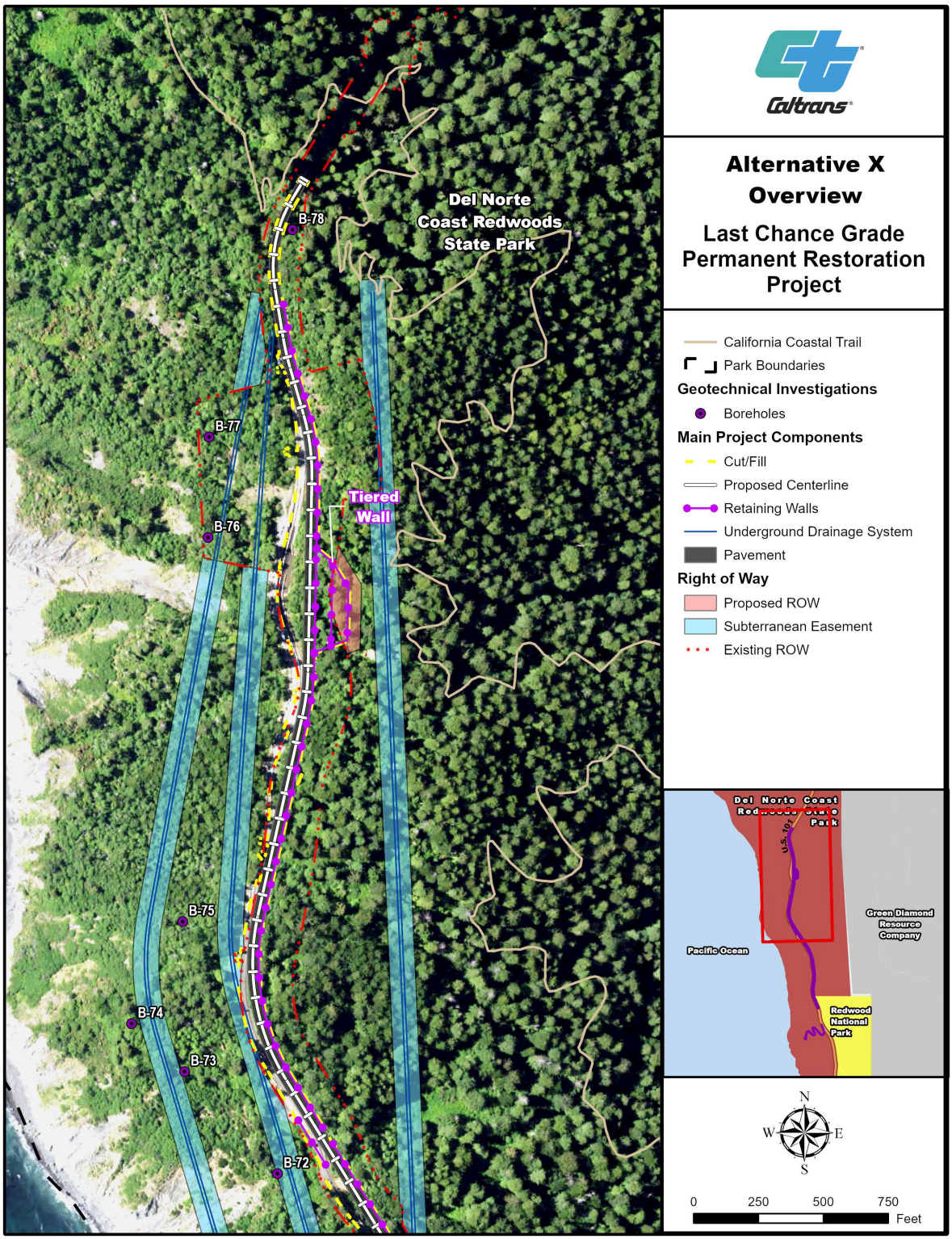


Figure 2. Alternative X Overview, North

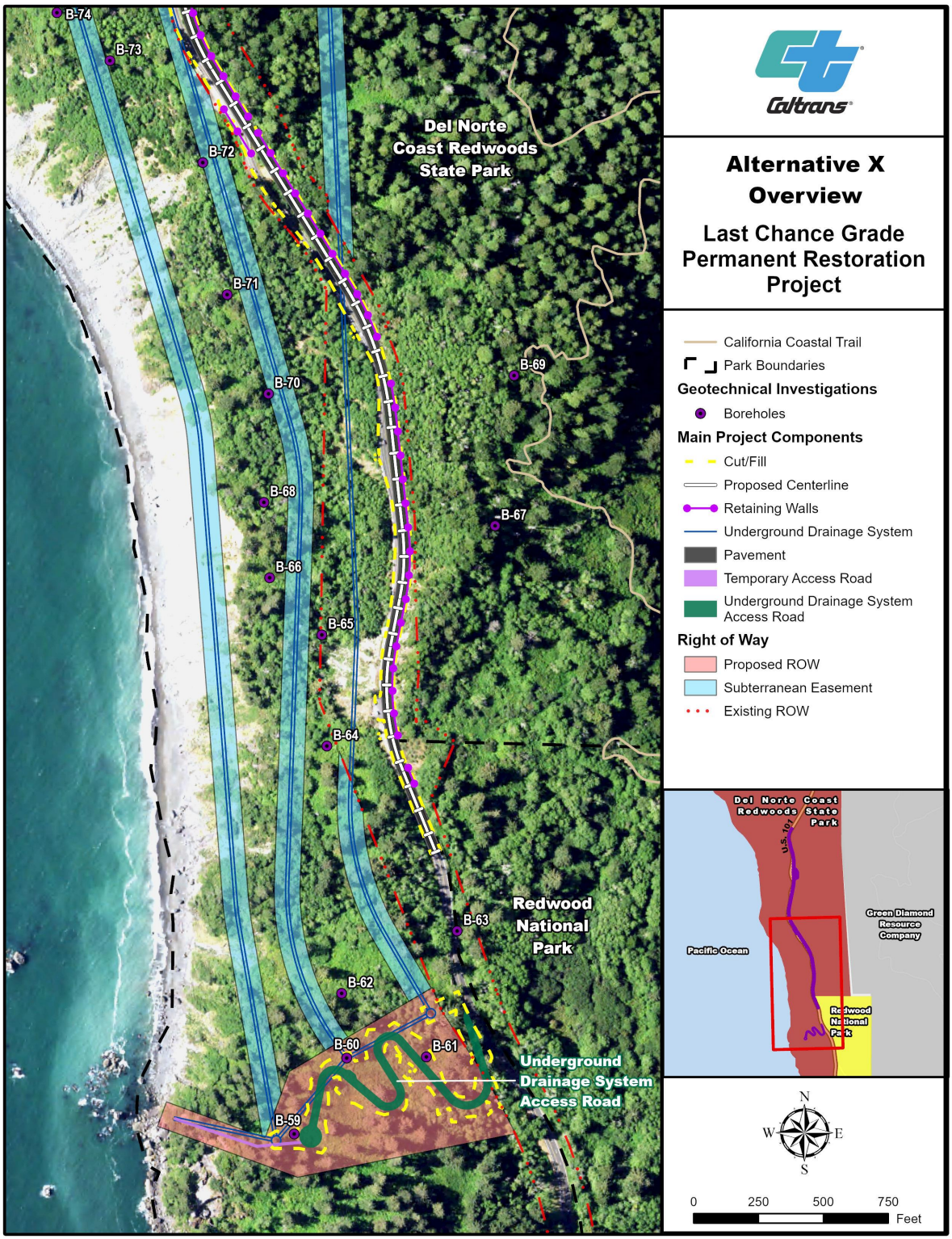


Figure 3. Alternative X Overview, South

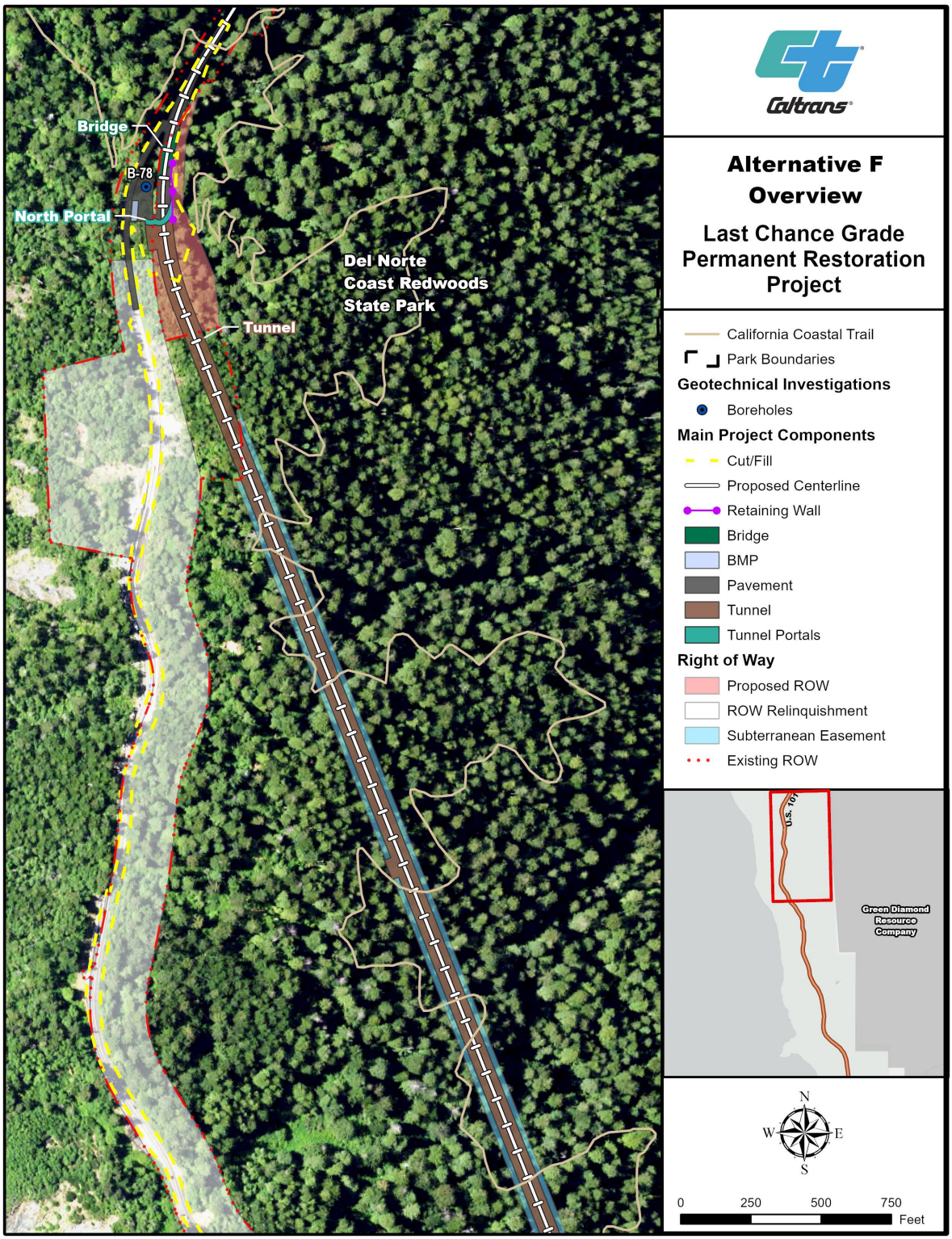


Figure 4. Alternative F Overview, North

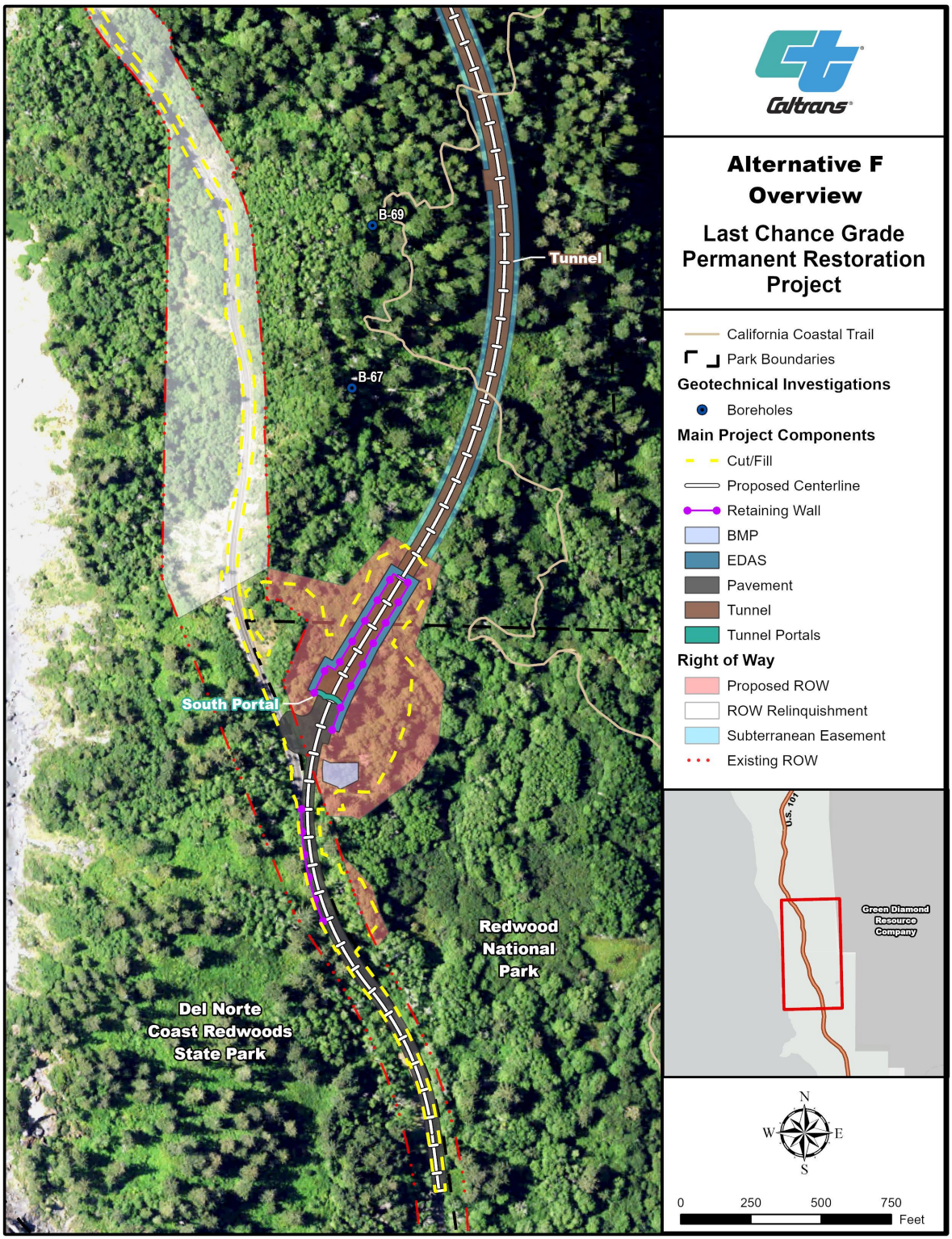


Figure 5. Alternative F Overview, Center

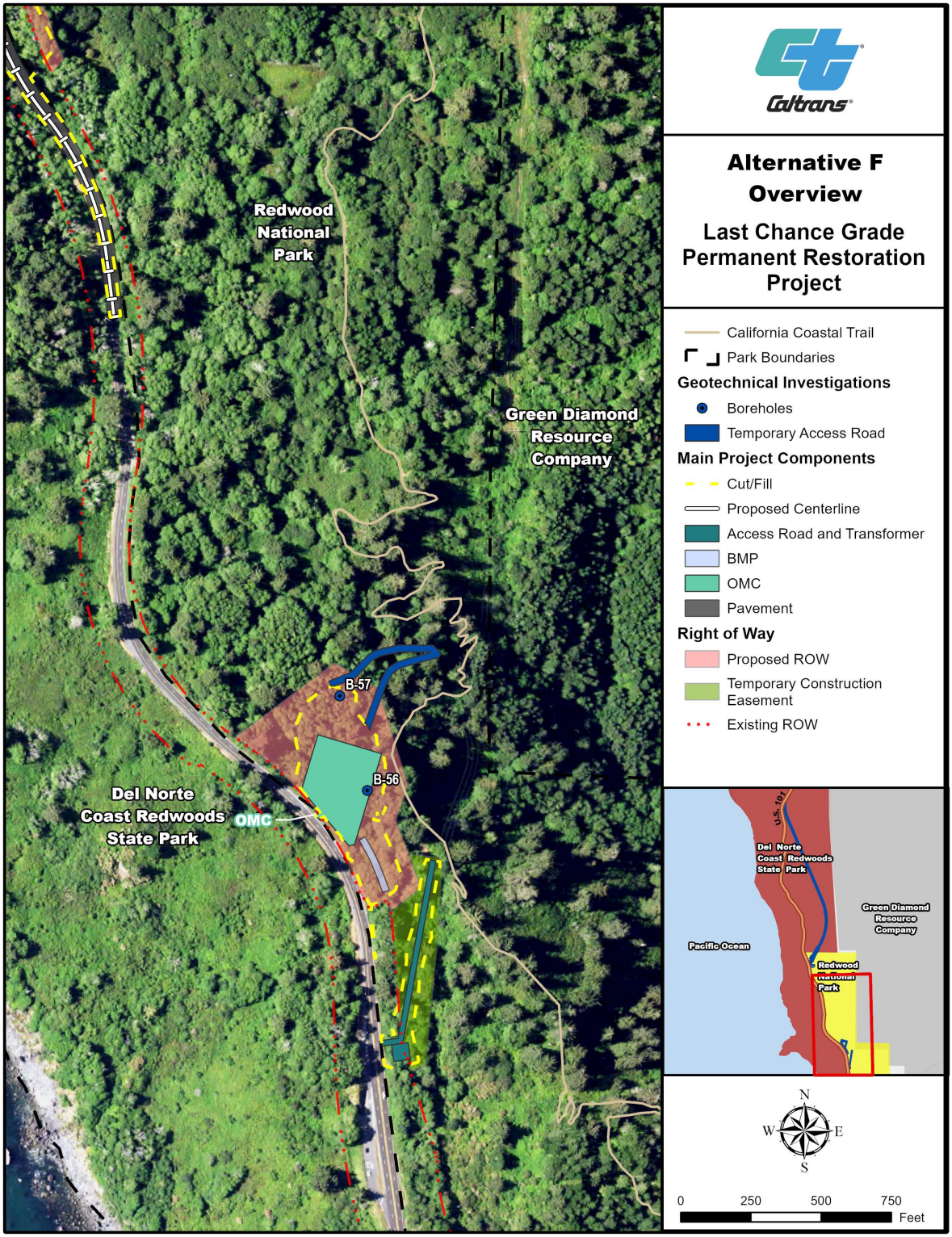


Figure 6. Alternative F Overview, South

CHAPTER 3. OVERVIEW OF SECTION 4(F) RESOURCES

This chapter provides an overview of Section 4(f) resources that were identified within the Last Chance Grade Permanent Restoration Project study area and summarizes the use of these resources. Resources that were within the vicinity of the project but did not trigger Section 4(f) are discussed in Chapter 7.

3.1 Determining Section 4(f) Resources

For Section 4(f) to apply to a federally funded transportation project, 1) the project must involve a resource that is protected by the provisions of Section 4(f) and 2), there must be a use of that resource.

Protected resources include publicly-owned public parks, recreational areas of national, state or local significance, wildlife or waterfowl refuges, or lands from a historic site of national, state or local significance.

"Historic sites" includes any prehistoric or historic district, site, building, structure, or object included in or eligible for inclusion in the National Register of Historic Places (NRHP) (23 CFR 774.17). Unlike other Section 4(f) properties, historic sites do not require public ownership to qualify for protection under Section 4(f). Archaeological sites may be exempt for Section 4(f) if the sites do not warrant protection in place (23 CFR 774.13).

3.2 Section 4(f) Resources in the Study Area

An inventory of Section 4(f) resources was conducted within and near the study area. The Environmental Study Limits (ESL)—the area where there could be potential direct and/or indirect project activities, with space to accommodate potential changes—was used as the study area for Section 4(f) resources (Figure 1). This area is larger than the project footprint, which is the area within the ESL that would be impacted by the project, both temporarily and permanently. In addition to the Caltrans right of way, the ESL includes portions of Redwood National and State Parks (which includes Redwood National Park [RNP] and Del Norte Coast Redwoods State Park [DNCRSP]), and Green Diamond Resource Company (GDRC) timberland.

Typically, the area of potential effects (APE) would be used for determining effects to historic sites under Section 4(f). An APE, as defined under Section 106 of the National Historic Preservation Act (NHPA) and codified in 36 CFR 800.16(d), includes the area within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties. However, for this project, the APE will be finalized after the draft environmental document, as coordinated with the State Historic Preservation Officer (SHPO). It is anticipated that the APE would extend beyond the ESL due to the potential indirect effects to a Traditional Cultural Landscape (TCL), the extent of which is being further researched. Because the APE is not currently defined, the ESL was used for reviewing historic sites for the purposes of Section 4(f).

Research was conducted to identify Section 4(f) resources within and near the ESL. Research included reviewing websites, published maps, and mapping and data from Geographic Information System (GIS) data layers.

A total of three Section 4(f) resources were identified within the ESL, as summarized in Table 1 below. This included one public park and recreation area and two historic sites. Additional potential resources near the project area that did not trigger the provisions of Section 4(f) are discussed in Chapter 7.

Table 1. Summary of Properties Subject to Section 4(f) Consideration

Type of Resource	Number of Resources Identified	Resource Name
Public Parks and Recreation Areas	1	Redwood National and State Parks (includes California Coastal Trail)
Wildlife and Waterfowl Refuges	0	N/A
Historic Sites	2	Crescent City to Trinidad Wagon Road; Traditional Cultural Landscape

3.3 Summary of Section 4(f) Use

Types of use, as defined by 23 CFR 774.17, include a type of direct use (permanent incorporation), temporary use (temporary occupancy that is adverse), and constructive use. These types of uses are described in Section 1.1.1.

The project would result in a temporary and/or permanent use of the three Section 4(f) resources identified above, as summarized in Table 2. The project would not have a constructive use of any resource.

Table 2. Summary of Section 4(f) Use by Alternative

Resource Name	Alternative X		Alternative F	
	Temporary Use	Permanent Use	Temporary Use	Permanent Use
Redwood National and State Parks	0.63–0.86 acre (DNCRSP)	11.16 acres (DNCRSP)	0.44 acre (0.33 acre RNP; 0.11 acre DNCRSP)	20.77 acres (15.60 acres RNP; 5.17 acres DNCRSP)
Crescent City to Trinidad Wagon Road	None	None	621 feet	786 feet
TCL Contributing Element: Redwoods and Other Conifers	None	116 trees	None	104 trees

Consistent with Question and Answer #28A of the FHWA Section 4(f) Policy Paper (FHWA 2012), subterranean easements and underground portions of tunnels have not been included as uses since those project activities would not: 1) disturb archaeological sites that are on or eligible for the National Register which warrant preservation in place; 2) cause disruption which would permanently harm the purposes for which the park, recreation, wildlife or waterfowl refuge was established; 3) substantially impair the historic values of a historic site.

However, because of the at-grade (surface) temporary and/or permanent uses of the Section 4(f) resources, the three identified resources each require an individual evaluation; these evaluations are included in Chapters 4 through 6.



CHAPTER 4. REDWOOD NATIONAL AND STATE PARKS DRAFT INDIVIDUAL SECTION 4(F) EVALUATION

Redwood National and State Parks are publicly-owned recreational parks that are open to the public. Therefore, they trigger the provisions of Section 4(f). See Figure 7 and Figure 8 for an overview of RNSP in the project vicinity.

4.1 Section 4(f) Resource Description

Redwood National and State Parks are located in northwestern California, within Del Norte and Humboldt counties, and are primarily accessed from U.S. 101. RNSP are a complex of parks—one national and three state—that are cooperatively managed by the National Park Service (NPS) and the California Department of Parks and Recreation (CDPR) (also known as California State Parks [CSP]). Parks in the complex include:

- Prairie Creek Redwoods State Park (established 1923)
- Del Norte Coast Redwoods State Park (established 1925)
- Jedediah Smith Redwoods State Park (established 1929)
- Redwood National Park (established 1968)

In 1994, NPS and CDPR signed a Memorandum of Understanding to jointly manage the parks, and in 2000 the RNSP General Management Plan/General Plan (GMP/GP) was established to provide a clearly defined, coordinated direction for resource preservation and visitor use and a basic foundation for decision making and park management (NPS and CDPR 2000). As stated in the GMP/GP, the purpose of Redwood National and State Parks is to preserve significant examples of the primeval coastal redwood forests and the prairies, streams, seashore, and woodlands with which they are associated for the purposes of public inspiration, enjoyment, and scientific study, and to preserve all related scenic, historical, and recreational values. Because the RNSP is publicly owned and open to the public for recreational activities, the RNSP is protected by the provisions of Section 4(f).

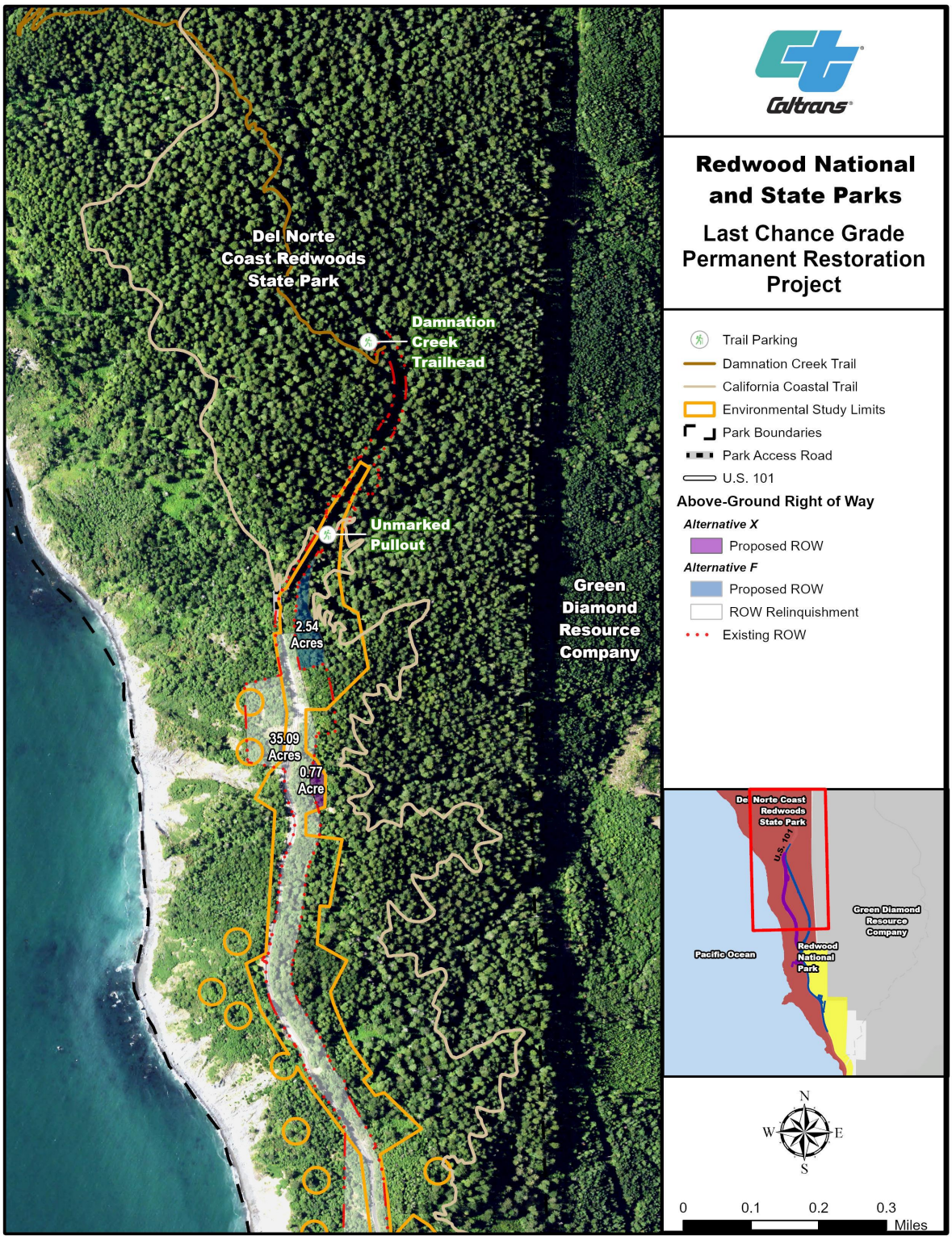


Figure 7. RNSP Overview, North

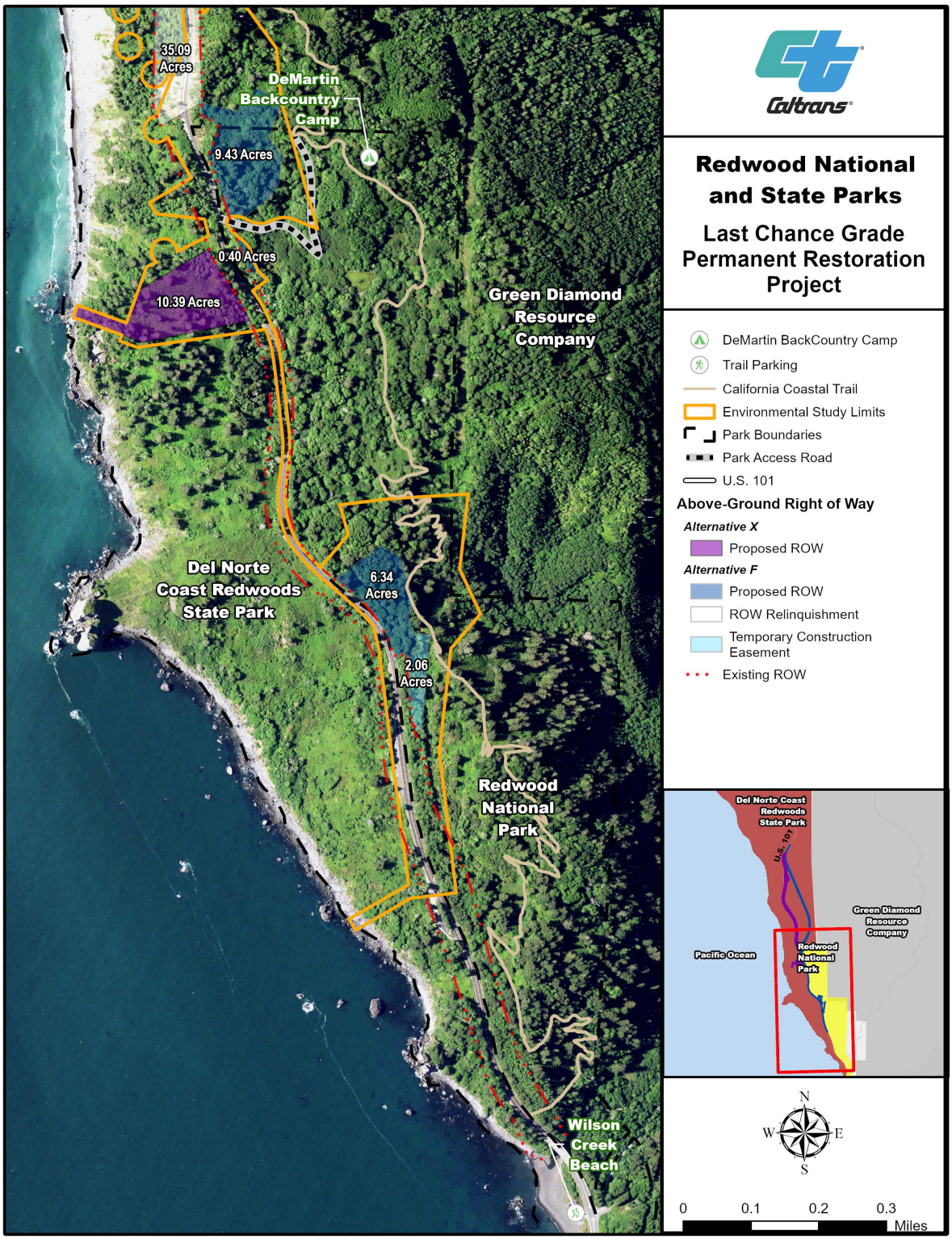


Figure 8. RNSP Overview, South

Currently, the parks total 131,983 acres, of which 71,715 acres is federal land and 60,268 acres is state land (NPS 2021). RNSP contains about 45% of the remaining protected old-growth redwoods in California, with almost 40,000 acres of old-growth forest. The parks were designated as a United Nations Educational, Scientific, and Cultural Organization (UNESCO) World Heritage Site in 1980, with its outstanding universal values related to redwood forests (UNESCO 2012).

The LCG project's ESL includes land within two of the units that make up RNSP—DNCRSP and RNP—in addition to the Caltrans right of way and a small portion of Green Diamond Resource Company land. According to the RNSP GMP/GP, there are two management zones within the ESL outside of the transportation corridor: the Backcountry (Mechanized) Zone, primarily to the east of the highway, and the Primitive Zone to the west. Backcountry zones[1] are mostly natural, with generally pristine conditions and previously disturbed areas that have been or will be restored to natural conditions, while primitive zones are the most natural of all, and have areas with pristine conditions as well as areas with dense vegetation that are extremely difficult to enter or move through without trails.

While the parks are known and valued for their biological diversity, mature redwood ecosystem, and general lack of development, the parks have significant recreational value and there are some key developed recreational facilities within and near the ESL within RNSP boundaries. These include the California Coastal Trail (CCT), the Damnation Creek Trail, and the DeMartin Backcountry Camp. All of these have been included as part of the Section 4(f) for RNSP.

The CCT is an interconnected public trail system that is being developed along the California coastline from Oregon to Mexico. The "DeMartin" section of the CCT is the only recreational feature present within the LCG ESL. This section passes through both DNCRSP and RNP; it provides views of the forests of RNSP and serves as access to the DeMartin Backcountry Camp. The CCT is long, spanning the coastline within Del Norte County, and can be accessed from various locations. However, the closest access points are from U.S. 101, by either parking at Wilson Creek Beach, which is south of the ESL, or by parking in an unmarked pullout in the northern part of the ESL, where the trail crosses the highway. The trail can also be accessed by parking at the Damnation Creek trailhead and following that trail until it intersects with the CCT. The trail and its intersection with the CCT are both north of the ESL (Figure 7).

[1] Backcountry mechanized and nonmechanized zones are similar. However, facilities in mechanized zones are less primitive than nonmechanized zones, and mechanized forms of visitor transport for recreation, such as bicycles, are allowed on trails designated for such use, while in nonmechanized zones, no form of mechanical transport for visitor recreation is allowed (NPS and CDPR 2000).

As stated above, the Damnation Creek Trail is north of the ESL, within DNCRSP. The trailhead is located in a pullout along U.S. 101. This is an out-and-back trail that passes through redwood forest, crossing the CCT approximately 0.7 miles in, and down to the ocean, though access to the coast has been closed for years due to the structural failure of a bridge approximately 1.75 miles in (NPS 2015).

The DeMartin Backcountry Camp is located along the CCT within RNP and is accessed by parking at one of the trailheads for the CCT and hiking in approximately 2-3 miles. Permits are required to camp in one of the 10 sites, which have access to composting pit toilets, food storage lockers, tables, and designated fire rings.

4.2 Proposed Use

Both project build alternatives are anticipated to have a use of RNSP. Both would involve permanent incorporation through the acquisition of right of way and would also have temporary uses of the properties associated with the project's geotechnical investigations.

Both alternatives would also require subterranean easements. However, for parks, Section 4(f) would only apply to the subterranean easement areas if it caused a disruption that would permanently harm the purpose for which the park was established (Federal Highway Administration [FHWA] 2012). Because the tunnels would not affect the property's major activities, features, or attributes, they would not constitute a use of the property.

Constructive use only occurs when a transportation project does not incorporate land from a Section 4(f) property but has severe proximity impacts (23 CFR 774.15). Because there is incorporation of RNSP land, there is no constructive use of this property (FHWA 2012).

The following sections provide further information on each alternative's use of RNSP.

4.2.1 Alternative X

Alternative X would involve both permanent and temporary use of RNSP. This includes the acquisition of approximately 11.16 acres of at-grade ROW for the construction and maintenance of the transportation facility, as well as temporary use of 0.63 to 0.86 at-grade acres associated with the project's geotechnical investigations.

Impacts to RNSP from Alternative X are detailed further below.

Temporary Use: Geotechnical Investigations

Geotechnical investigations would be conducted prior to construction of the alternative and would involve work on RNSP land, primarily in DNCRSP. The geotechnical investigations would not change access to park facilities or attributes of recreational developments for the reasons discussed below.

The investigations involve the drilling of 20 boreholes, 2 of which would be along U.S. 101 within the existing ROW (B-63 and B-78) and would not affect the parks. Fourteen of the remaining boreholes would be within DNCRSP (B-59 to B-62 and B-66 to B-75), and the remaining four (B-64, B-65, B-76, and B-77) would either be in DNCRSP or the existing ROW depending on final borehole placement, which would depend on site accessibility and safety and the avoidance of environmental resources (Figure 2 and Figure 3).

All boreholes potentially within DNCRSP would be accessed by a helicopter staged in clearings on GDRC land. Other than B-67 and B-69, the remaining boreholes would be west of the highway, on steep forested terrain that is not generally accessible. For drilling activities, 50-by-50-foot areas of vegetation would be trimmed, and minor ground disturbance would be needed for the drilling platform legs. As boreholes would be located in areas accessible to helicopters, effects to trees would be limited, and no larger-diameter trees would be removed. For the 14 to 18 boreholes in DNCRSP, approximately 0.80 to 1.03 acres of vegetation would be temporarily disturbed. However, three of the locations (B-59 to B-61), accounting for approximately 0.17 acre, would be in areas that would also be disturbed by main project components; therefore, areas with just temporary impacts would account for approximately 0.63 to 0.86 acre.

Trails would be needed for access to borehole locations. Disturbance associated with the trails would include vegetation trimming and moving and cutting downed debris. In addition, due to the steep terrain, measures such as temporary stairs (e.g., rebar with boards to hold soil) or ropes may be needed at some locations. These trails would be within the existing ROW and/or DNCRSP depending on final borehole location and access route. However, trails would only be wide and long enough to provide access to the borehole and are anticipated to have a limited overall footprint on park land.

The trails to the boreholes would need to be maintained for several years to allow monitoring of instrumentation, after which all materials would be removed and disturbed areas restored.

The geotechnical investigations would not change access to park facilities or cause a substantial impairment to the attributes of the recreational developments. However, because

the helicopter is flying over the parks from GRDC land, park users in the vicinity of the project may be affected by the noise from the helicopter, including those using the CCT or the DeMartin Backcountry Camp. In addition, one borehole, B-69, is close to the CCT—vegetation trimming at this location may be visible to the public, and there may be short delays for the safety of trail users along this section of the CCT when helicopters are dropping off or picking up equipment. Noise from drilling activities from B-69 and B-67 (which is also east of U.S. 101) may be audible to trail users. It is not anticipated that vegetation trimming would be visible or delays along the CCT would be needed for any other location, nor would the drilling activities at other locations be audible, as the other boreholes would be on the opposite side of U.S. 101 from the recreational features of the parks.

The CCT and the DeMartin Backcountry Camp are not high-use areas, and it is anticipated that the geotechnical investigations would be completed in the off-season (September to February) due to environmental restrictions. In addition, trimmed areas would be revegetated, and the vegetation to be trimmed (such as brambles) grows back quickly, within 6 to 12 months. Any noise associated with investigations would be temporary and short-term. Therefore, these investigations are anticipated to have limited, if any, impacts to the park recreational resources and park users.

Permanent Use: Main Project Components

Alternative X involves the reengineering of a 1.6-mile-long section of the existing highway. Main project components would include an underground drainage system and associated access roads, as well as strategic retreats to the east and associated construction of retaining walls.

Though Alternative X would primarily be along the existing alignment, approximately 11.16 acres of at-grade right of way would be required from DNCRSP. This acreage would mainly be to the west of the highway for access to the underground drainage galleries (approximately 10.39 acres), with a small portion to the east of the highway to accommodate the shifting of the highway to the east and construction of tiered walls (approximately 0.77 acre) (Figure 7 and Figure 8).

The ROW to be acquired are in undeveloped sections of steep, forested terrain that are generally inaccessible. All direct impacts, such as tree removal, would be within the acquired ROW.

Areas of at-grade acquisition would include 0.10 acre of late successional Douglas-fir forest, 0.03 acre of late successional redwood forest, 3.60 acres of late successional Sitka spruce

forest, 2.50 acres of red alder forest, 4.86 acres of coastal brambles, and 0.07 acres of other areas, such as erosional and rocky areas. These areas include approximately 84 trees over 24 inches in diameter at breast height (DBH), of which 25 would be removed, including 7 redwoods, 8 Sitka spruce, and 10 red alder.

Alternative X would not change access to the parks. As described above, the parks are accessed by pullouts along U.S. 101, which would not be affected by the project. During construction, park users would be subject to the same delays as all highway users, and delay times would depend on starting point and destination. For this alternative, it is anticipated there would be regular delays of up to 30 minutes at LCG, with the occasional longer closure (2–3 hours).

None of the developed recreational areas within the parks would be acquired. However, the portion of the CCT that crosses U.S. 101 in the northern part of the ESL is just north of the Alternative X project footprint. The unmarked pullout may be closed to parking for short durations due to traffic control for work on the northernmost portion of the project. Trail users crossing the highway at this location could be delayed or re-routed for safety. Any parking closures or delays to trail users at the pullout would be temporary, and not last the entire length of construction. Even though trail users may find their access to the trail at this location temporarily disrupted, there would be no work on the CCT itself, and the trail would remain accessible during construction. In addition, the main trail access points—Wilson Creek Beach to the south and the Damnation Creek trailhead to the north—would not be impacted by the project.

Under existing conditions, highway noise is audible to varying degrees along portions of the CCT and within the DeMartin Backcountry Camp, and during construction, park visitors at these locations may hear construction noise (Caltrans 2023c). However, this would depend on the work being done, and the location of the work. In addition, though there may occasionally be construction at night to limit impacts to the traveling public, no night work is planned other than tunnel boring associated with the drainage galleries, which would operate continuously. However, due to the location of this work, to the west of the highway and primarily underground, it is not anticipated that it would affect overnight campers in the DeMartin Backcountry Camp. In addition, Caltrans Standard Specification 14-8.02 restricts the maximum instantaneous sound level of noise at night to 86 A-weighted decibels and below at 50 feet. See Section 3.3.6 of the EIR/EIS for more information on noise.

Due to the location of the recreational features in relationship to the project, it is not anticipated that construction work and associated vegetation removal would be visible to

park users on the CCT. However, travelers on U.S. 101 would see construction activities and vegetation removal associated with the project. Effects of vegetation removal would be reduced through replanting post construction. Permanent visual changes would be related to changes in views from roadway retreats, and the installation of a large wall on the east side of the highway; measures would be included to reduce effects associated with these changes to the extent feasible. Additional information on visuals/aesthetics of the project as a whole are discussed in Section 3.2.9 of the EIR/EIS.

While construction of the project could disturb wildlife within the park, including through noise associated with construction and through habitat removal, the area is under frequent construction associated with maintenance and repair (see Chapter 1 of the EIR/EIS). Given this, and the suitable adjacent habitat in which to move to, substantial changes to most wildlife species are not anticipated within the park. However, the project may have additional impacts on some special status animal species; these are covered in Section 3.4.4 and 3.4.5 of the EIR/EIS.

Overall, Alternative X would require the acquisition of 11.16 at-grade acres of DNCRSP, which would be from undeveloped areas adjacent to the highway that are generally not publicly accessible. The park would remain accessible during construction, though there may be limited accessibility to CCT users in the northern portion of the ESL, and noise from construction may be audible to park users, depending on location and type of work. However, these impacts would be short-term and temporary, and would not greatly affect park visitors.

4.2.2 Alternative F

Like Alternative X, Alternative F would involve both permanent and temporary use of RNSP. This includes the acquisition of approximately 18.71 acres of at-grade ROW (13.54 acres from NPS and 5.17 acres from CDPR) for the construction and maintenance of the transportation facility. In addition, an approximately 2.06-acre at-grade temporary construction easement would be needed for construction. Pending future project refinement, a maintenance easement may be needed for this location, which would require permanent access. Therefore, for the purposes of analysis, it is assumed that the TCE would be considered permanent incorporation, bringing the total permanent use to approximately 20.77 acres (Figure 7 and Figure 8). In addition to permanent uses, there would be temporary use of approximately 0.44 acre (approximately 0.33 from NPS and 0.11 from CDPR) for activities associated with geotechnical investigations.

Once the new highway alignment is operational, it is anticipated that the portion of U.S. 101 bypassed by the tunnel (up to 35.09 acres) would be decommissioned. This decommissioned area may be relinquished to the parks, depending on discussions with RNSP.

Impacts to RNSP from Alternative F are discussed further below.

Temporary Use: Geotechnical Investigations

Similar to Alternative X, Alternative F would require geotechnical investigations prior to the construction of primary project components, which would involve work in both RNP and DNCRSP.

The investigations would involve the drilling of five boreholes, one of which would be within the existing ROW (B-78) and would not affect parks. Of the remaining four, two would be within RNP (B-56 and B-57) and two within DNCRSP (B-67 and B-69) (Figure 5 and Figure 6).

Both of the boreholes in RNP are within the cut and fill area of the OMC. One, B-56, would be on or adjacent to an existing road, which may require minor limbing and trimming of vegetation due to the size of the drilling equipment and the exact placement of the borehole. The other, B-57, would require the use of an old, overgrown road, a portion of which is outside the OMC impact area and may require clearing and grading for access. Outside of the ROW acquisition area, there may be temporary impacts to approximately 0.33 acre. Because both boreholes are within areas of permanent incorporation, only the 0.33 acre associated with the access road would be considered a temporary use of the park.

The two Alternative F boreholes within DNCRSP—B-67 and B-69—would also be used for Alternative X, and impacts would be similar; see *Geotechnical Investigations* in Section 4.2.1 for additional information. These two locations are to the east of U.S. 101 and would be accessed by helicopter. Up to 0.11 acre of vegetation would be trimmed for drilling, in addition to minor ground disturbance for drilling platform legs. Trails would be needed to access the locations and would be maintained for several years before the locations are decommissioned and fully restored.

The geotechnical investigations would not change access to park facilities or attributes of the recreational developments. Though the borehole locations within RNP are near the CCT, they are not in locations generally accessed by the public and are not anticipated to affect the use of the CCT, though drilling activities may be audible on a short section of the trail. Within DNCRSP, as with Alternative X, B-69 is close to the CCT. Vegetation trimming may

be visible, and there may be short delays to trail users when helicopters are over the borehole location. Drilling activities may be audible to trail users at this location, and at B-67.

The CCT and the DeMartin Backcountry Camp are not high-use areas and, due to environmental restrictions, it is anticipated the geotechnical investigations would be completed in the off-season. In addition, trimmed areas would be revegetated, and the vegetation to be trimmed (such as brambles) grows back quickly, within 6–12 months. Any noise associated with investigations would be temporary and short-term. Therefore, these investigations are anticipated to have limited, if any, impacts to the parks and park users.

Permanent Use: Main Project Components

Alternative F would involve constructing a 1.1-mile-long tunnel. Main project components include the construction of the tunnel and tunnel portals, a bridge, and an OMC. This alternative would be along a new alignment, bypassing the existing highway to the east.

As described above, approximately 18.71 acres of at-grade ROW would be acquired from NPS and CDPR to the east of the highway for the construction and maintenance of the tunnel portals and the OMC. An additional 2.06 at-grade acres would be required from NPS just south of the OMC as an easement for utilities (Figure 7 and Figure 8). After construction, up to 35.09 acres of existing ROW would potentially be relinquished to RNSP, pending discussions, which would leave the parks with a net gain of up to 14.32 acres.

Areas to be acquired include approximately 0.22 acre of early and late successional Douglas-fir forest, 2.31 acres of early and late successional redwood forest, 2.04 acres of late successional Sitka spruce forest, 11.76 acre of red alder forest, 4.15 acres of coastal brambles, 0.20 acre of cascara, and minor amounts of ruderal and non-vegetated areas. The ROW acquisition areas include 199 large trees, 119 of which would be removed, including 29 redwoods, 6 Douglas-firs, 43 Sitka spruces, 7 western hemlocks, and 34 red alders.

Alternative F would not change access to the parks. The trails within the project vicinity are accessed by pullouts along U.S. 101, which would not be affected by the project. There is a road used for park maintenance just south of the proposed north portal, but the project would maintain access to this road. During construction, park visitors would be subject to the same delays as highway users, though these are anticipated to be minimal—occasional partial or full closures (30 minutes to 1 hour) would be needed for some activities, but otherwise the highway could operate uninterrupted throughout the construction period.

The CCT is the only developed recreational feature in the project's ESL, and portions of the trail would be close to work activities, particularly near the north portal, where it crosses the U.S. 101 and zigzags near the proposed portal. However, while the trail is not within areas of permanent incorporation, it is anticipated that the trail near U.S. 101 and associated pullout would be temporarily closed for work associated with connecting the new highway alignment to the existing roadway, which would be of short duration. The trail itself would remain open and accessible from the primary access points, including to the south at Wilson Creek Beach and to the north at the Damnation Creek Trailhead. In addition, a portion of the trail would be close to construction of the north portal. If deemed necessary for safety, there may be delays on this section of trail as people are guided through. Otherwise, the CCT would remain open and accessible during construction of the project.

As with Alternative X, park visitors using the CCT and the DeMartin Backcountry Camp may hear noise from construction, particularly in areas close to construction, such as near the northern portal or the OMC (Caltrans 2023c). However, this would depend on the work being done, and the location of the work. Any increase in noise would be temporary, not lasting beyond construction. Though tunneling activities may continue at night, this work would primarily be underground and it is therefore not anticipated that it would affect overnight campers in the DeMartin Backcountry Camp, and Caltrans Standard Specifications limit noise at night. After construction, operation of the OMC would require the occasional use of maintenance vehicles and heavy equipment. These types of equipment would only be used intermittently and during the daytime. Emergency generators would be used in the event of a power outage, but these would be housed in an enclosure to reduce noise levels. These noises may be heard on portions of the CCT, as it is close to U.S. 101 and the OMC, but the noise would only be intermittent and short-term, and not anticipated to cause substantial disturbance.

In addition to noise, there may be visual impacts to hikers along a short section of the CCT at the northern portal (Caltrans 2023d). At this location, the trail is close to the highway, which is periodically visible through the trees. The realigned highway would be shifted even closer to the CCT; work activities associated with construction, including vegetation removal, would be visible to trail users. Upon completion, the highway, including structures such as the north portal and the bridge, would be visible on these portions of the trail, making the highway more prominent to trail users. However, the duration of exposure would be low, as only a small portion of the trail is in the vicinity of these features; less than a quarter to a half mile would periodically be exposed to changes (the DeMartin Section of the CCT, where the project is located, is approximately 10.7 miles long). Structures would have context-

sensitive visual character attributes, including curvilinear and more natural forms, colors, and textures, to soften visual changes. Areas of tree removal would reduce canopy cover and introduce natural light, and would be visible post-construction, but partially reduced by the remaining vegetation and/or revegetated areas between the highway and the trail. Additionally, loss of vegetation would be less noticeable after revegetated areas mature.

The OMC is also located close to the CCT. However, at the closest point, it is on the opposite side of a ridge, and so the OMC would not be visible. Portions of the trail on the same side of the ridge as the OMC are farther away, and views of the OMC location are obscured by vegetation. It is not anticipated that there would be visual changes at this location.

There would also be temporary and permanent effects to visuals for travelers along U.S. 101. These include views of construction equipment and construction activity, which would end upon project completion. In addition, areas of vegetation removal would be visible, though these changes would be reduced through revegetation post-construction. There would also be visual changes from realigning the highway through a tunnel and the associated loss of views of park lands, as well as changes related to the construction of features associated with the tunnel, such as the OMC. The tunnel and associated features would introduce new forms, lines and textures, though these features would be designed to be visually compatible with the setting to minimize impacts. See Section 3.2.9 of the EIR/EIS for additional information on the visual impacts of the overall project.

While construction of the project could disturb wildlife within the park, including through noise associated with construction and through habitat removal, the area is under frequent construction associated with maintenance and repair (see Chapter 1 of the EIR/EIS). Given this and the suitable adjacent habitat in which to move to, substantial changes to most wildlife species are not anticipated within the park. However, the project may have additional impacts on some special status animal species; these are covered in Section 3.4.4 and 3.4.5 of the EIR/EIS.

Overall, Alternative F would require the acquisition of at-grade right of way. This acquisition would be from undeveloped portions of the park—no portions of the CCT would be acquired. The park would remain accessible during construction, though there may be limited impacts to CCT users trying to cross the highway near the northern portal, and noise from construction activities may be audible. However, these impacts would be short-term and temporary, not lasting beyond construction. There would be a change in visual environment at the northern portal due to closer proximity of the highway; however, this is

on a short section of trail and would be reduced by the remaining vegetation and/or native plantings between the highway and the trail.

4.3 Avoidance Alternatives Analysis

The intent of Section 4(f) is to avoid and, where avoidance is not feasible and prudent, minimize the use of Section 4(f) properties. An analysis must be conducted to determine if a feasible and prudent avoidance alternative exists.

The sections below discuss the evaluation of avoidance alternatives, and whether the avoidance alternatives are feasible and prudent.

4.3.1 Avoidance Alternatives

The first step in determining whether a feasible and prudent avoidance alternative exists is to identify alternatives that avoid Section 4(f) properties. Avoidance alternatives are those that would not use any Section 4(f) property, no matter the degree of impact. An alternative that avoids one Section 4(f) property by using another is not an avoidance alternative.

U.S. 101 is the only viable route between Crescent City and Klamath in Del Norte County. However, the section of highway at Last Chance Grade has a history of issues relating to the instability of the area, as it is located within a series of landslides and faces coastal erosion from below. Projects dating back to 1987 worked to find alternative solutions to the problems at LCG. These various alternatives are discussed in Chapter 2 of the EIR/EIS. However, while impacts to RNSP were taken into consideration in the discussion of alternatives, no alternative completely avoided RNSP. This is due to its size and position adjacent to the highway, and the costs and environmental impacts that would be required to completely avoid the resource.

As mentioned previously, U.S. 101 serves as the main access to RNSP. The park complex is large—131,983 acres—and borders long stretches of the highway. In the vicinity of LCG, the highway is surrounded by park property from approximately PM 11.0 to PM 23.4. Just north of LCG, the complex extends up to 7.5 miles east of U.S. 101, where it borders Six Rivers National Forest (Figure 9).

In the most recent alternatives analysis, as summarized in Chapter 2 of the EIR/EIS, several alternatives, including Alternatives A, B, C, D, E, G, and their variations, departed from the existing highway in a narrower section of parks, near Wilson Creek, and traveled north within timberlands. However, these alternatives were all eliminated due to a combination of

project costs, geotechnical risks, and environmental impacts, among other factors. Environmental impacts included impacts to parks and associated resources, such as natural vegetation communities, wildlife, wildlife connectivity, watershed integrity, and cultural landscapes. The longest of the studied alternatives, E5, was approximately 15.5 miles long, with an estimated cost between $1.4 and $1.6 billion.

Because ROW is limited, and the project is surrounded by parks, any shifting of the alignment or localized retreat would require the use of park land (Figure 9). The only other option for this area is to retreat behind the slide plane. However, to completely avoid use of the park, a major detour would be needed—the realigned highway would have to bypass at least 11 to 12 miles of the existing U.S. 101, in addition to retreating over 7.5 miles to the east. To avoid use of parks at the southern end of the project, a new alignment would have to start at Wilson Creek Road, near PM 12.6, where RNSP land is narrow and existing ROW may allow for the avoidance of park land, or south of the RNSP boundaries near PM 11.0. At the north, the shortest route would likely require connecting to U.S. 199 rather than U.S. 101, bypassing Crescent City (Figure 9).

At the southern end of a realignment starting at Wilson Creek, a high-level review of an alignment that bypasses RNSP (generally following Wilson Creek and skirting the RNSP boundary) would be approximately 27 miles long, and cost over $3 billion, with a cost per mile estimated at $114-132 million. A highway of this size could have a construction footprint of over 670 acres. In addition to extraordinary costs, any alignment near Wilson Creek would likely impact contributing elements of the Traditional Cultural Landscape present within the area, which would constitute a use of an additional Section 4(f) resource. Therefore, although it would bypass RNSP, any alternative with access along Wilson Creek would not be considered an avoidance alternative for the purposes of Section 4(f).

An alternative that starts south of RNSP boundaries, near PM 11.0, would be longer than an alignment starting at Wilson Creek, and therefore costlier and with a larger footprint. It may avoid the Traditional Cultural Landscape near Wilson Creek, but due to its length and footprint would have the potential to impact other resources eligible for protection under Section 106 of the NHPA and Section 4(f).

Regardless of the southern starting point, due to the length of the realignment and size of the associated footprint, there would likely be substantial impacts to wetlands and waters, riparian areas, and other sensitive natural communities, as any alignment would have to cross multiple waterways (such as Wilson Creek and its tributaries, and tributaries of the Smith River), as well as through forests within Six Rivers National Forest. In addition, there would

likely be substantial impacts to various special status animal species and their habitats, such as the Southern Oregon/Northern California Coast Evolutionarily Significant Unit of coho salmon (federally and state listed as threatened) and their critical habitat, which are present in Wilson Creek and the Smith River, and northern spotted owl (federally and state listed as threatened), which has habitat within the vicinity of the realignment and critical habitat near the RNSP boundary that is adjacent to Six Rivers National Forest. In addition, an alignment of this length would likely add new barriers to wildlife movement.

The northern portion of any realignment would likely have to connect to U.S. 199, rather than U.S. 101, effectively bypassing Crescent City. While increasing the length of the road and associated travel time would likely have social and economic impacts, particularly to underserved communities south of the project area, bypassing Crescent City could have additional severe social and economic impacts.

In addition to substantial costs and environmental impacts, to avoid the parks, any bypass of RNSP would have to pass through the Smith River National Recreation Area within Six Rivers National Forest, which borders long sections of RNSP and would be considered a Section 4(f) resource (Figure 9). Therefore, regardless of route, all possible realignment routes would eventually necessitate the use of a Section 4(f) property.

Therefore, based on the above, the No-Build Alternative is the only Section 4(f) avoidance alternative.

For the No-Build Alternative, no work would be done on the existing highway. Regular maintenance and operations would continue, with emergency restoration projects conducted as needed to address landslides and roadway failures. As the highway would remain within the existing ROW, there would be no use of park land; therefore, the No-Build Alternative would be the only avoidance alternative. However, it should be noted that engineering solutions such as retaining walls have not been able to provide long-term stability to the highway. Future failures of the road would likely necessitate emergency retreats, which would require the use of RNSP land.

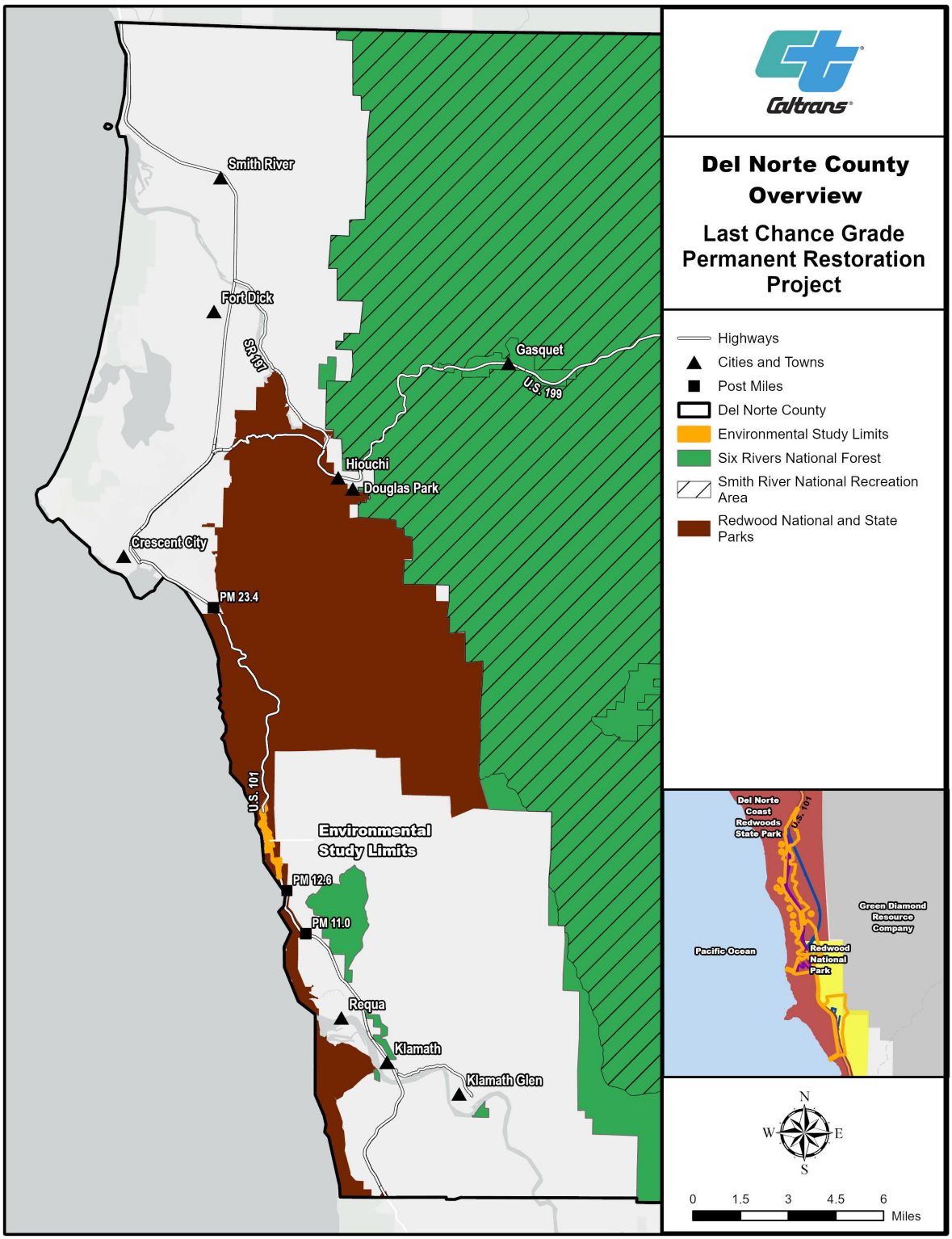


Figure 9. RNSP and Six Rivers National Forest in Del Norte County

4.3.2 Feasible and Prudent Analysis

The second step in the avoidance alternative analysis is to determine if any potential avoidance alternative is feasible and prudent. As defined in 23 CFR 774.17, feasible and prudent alternatives are those that avoid using any Section 4(f) resource and do not cause other severe problems of a magnitude that substantially outweighs the importance of protecting the Section 4(f) resource.

An alternative is not feasible if it cannot be built as a matter of sound engineering judgement.

An alternative is not prudent if:

1. It compromises the project to a degree that it is unreasonable to proceed with the project in light of its stated purpose and need;
2. It results in unacceptable safety or operational problems;
3. After reasonable mitigation, it still causes severe social, economic, or environmental impacts; severe disruption to established communities; severe disproportionate impacts to minority or low-income populations; or severe impacts to environmental resources protected under other Federal statutes;
4. It results in additional construction, maintenance, or operational costs of an extraordinary magnitude;
5. It causes other unique problems or unusual factors; or
6. It involves multiple factors outlined above that, while individually minor, cumulatively cause unique problems or impacts of extraordinary magnitude.

The only potential avoidance alternative is the No-Build Alternative. However, this alternative has preliminarily been determined to not be prudent for the following reasons:

1. ***Compromises the project to a degree that it is unreasonable to proceed with the project in light of its stated purpose and need.*** The No-Build Alternative does not meet the purpose and need of the project, as it would not provide a long-term solution to the instability and potential roadway failure at LCG needed to address economic ramifications of a long-term failure and closure, risk of delay/detour to the traveling public, increasing maintenance and emergency project costs, and the increases in in frequency and severity of large storm events caused by climate change. U.S. 101 in this area would likely continue to experience slides and would be subject to closures, possibly even full closures. The possibility for more catastrophic roadway failure is potentially greater due to the increase in frequency and severity of large storm events

caused by climate change. As detailed in #3 below, closure of U.S. 101 at this location requires an approximate 449-mile detour as there are no parallel routes that service the area. The risk for economic ramifications and delays and detours to the traveling public would remain, as would the continuance of maintenance and emergency projects, and the associated costs.

2. ***Unacceptable safety or operational problems.*** Roadway failure and landslides present risks to the traveling public. Caltrans, in alignment with FHWA, is advancing a goal of having zero roadway fatalities and serious injuries by 2050; a key part of meeting this goal is being proactive in protecting and improving our roadway system for users and workers alike (Caltrans 2022b). The No-Build Alternative would continue to put highway workers and the traveling public at risk in the event of slides and roadway failures.

3. ***Causes other severe social, economic, or environmental impacts.*** With the No-Build Alternative, there is also the possibility that landslide movement could cause a major roadway failure, resulting in a long-term closure of the highway. Closures have occurred in the past, such as in 2021, when a February landslide forced the highway to shut down. Even when the highway reopened, repairs required hours-long delays through the summer months.

   Any closures at LCG require a detour of approximately 449 miles for those traveling between Crescent City and Klamath (Figure 10). This would have severe social and economic impacts on those who rely on the highway remaining open. The communities to the south of LCG would be more severely affected, as these areas are rural, requiring more frequent travel to the areas to the north of the project. These areas have high concentrations of minority and low-income populations, which would be disproportionately affected (Caltrans 2023b); for additional information, see the Environmental Justice section of the EIR/EIS, Section 3.2.5.

   An analysis of economic impacts found that an emergency one-year closure at LCG would include the loss of approximately 3,800 jobs and the reduction of business output by nearly half a billion dollars (Caltrans 2015a). Such a closure would also lead to an estimated $236 million in travel costs to be collectively borne by individuals, businesses, and government institutions.

4. ***Additional maintenance and operational costs of extraordinary magnitude.*** Emergency repairs and enhanced maintenance, which have cost millions (over $85 million between 1997 and 2021), would continue. There is no foreseeable end to such expenditures, and effects of climate change may exacerbate conditions.

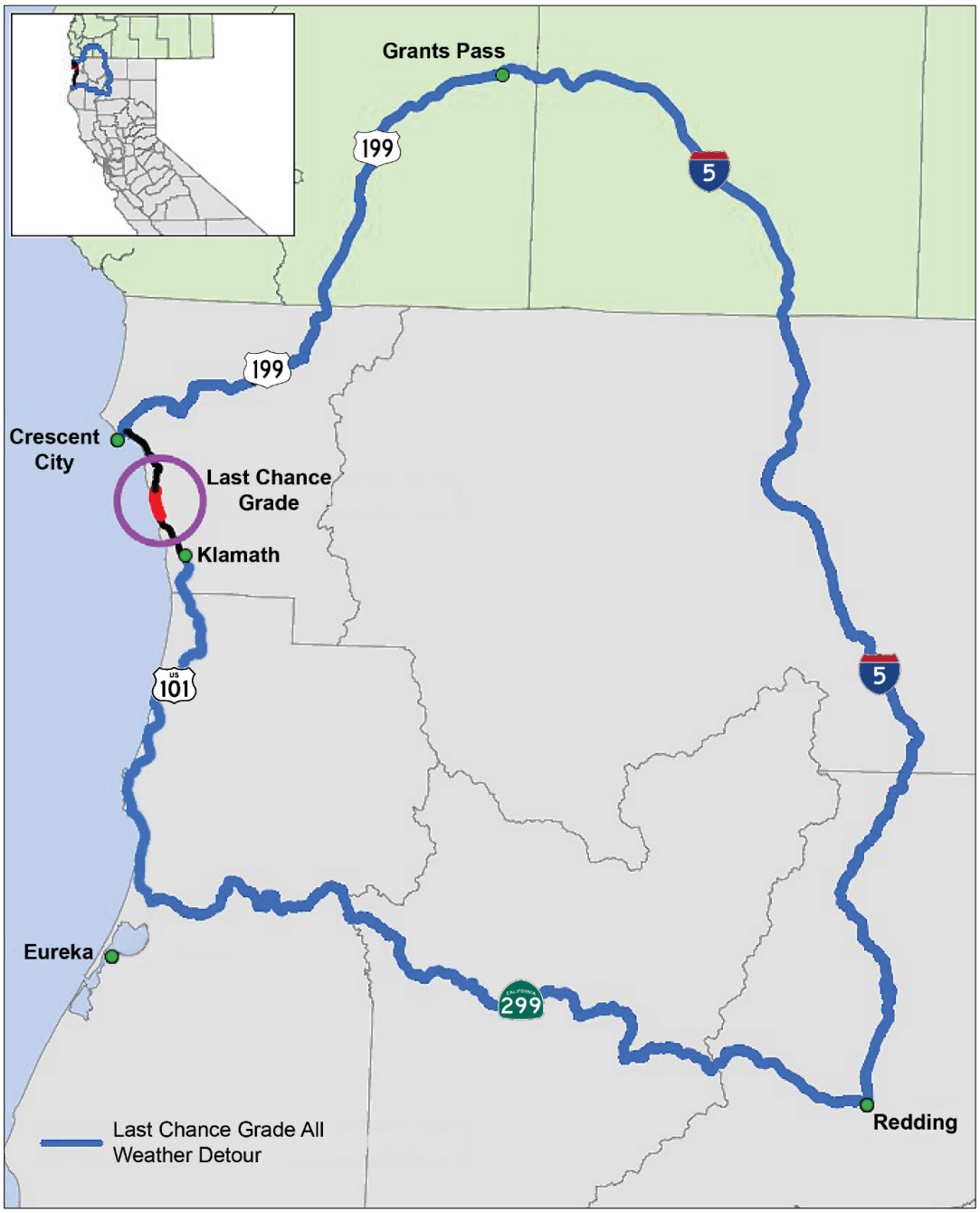


Figure 10. LCG Full-Closure Detour

5. ***Involves multiple factors outlined above that cumulatively cause unique problems or impacts of extraordinary magnitude.*** While each of the factors discussed above are in themselves reasons for the No-Build Alternative being not prudent, the cumulation of the factors provides even more weight to the determination that the No-Build Alternative is not prudent. The extraordinary expenses involved with repairing emergency after emergency rather than constructing a long-term solution, as well as the continued safety and economic risks, render the No-Build Alternative not prudent.

Based on the discussions above, it appears there is no feasible and prudent avoidance alternative. However, determinations of whether avoidance alternatives are not feasible and prudent are not made in draft evaluations; a final decision will not be made until after the draft document has been circulated for public review.

If there is no feasible and prudent avoidance alternative, and multiple alternatives that use Section 4(f) remain under consideration, then the alternative that causes the least overall harm must be identified. The Least Overall Harm Analysis is discussed in Chapter 8.

4.4 Measures to Minimize Harm

Under 23 CFR 774.3, a use of a Section 4(f) property must include all possible planning to minimize harm to the property; i.e., all reasonable measures to minimize harm must be included in the project.

Throughout the life of the project, Caltrans has been working to minimize impacts to park land. This has included coordinating with RNSP from an early stage, evaluating various alternatives with respect to parks, and refining project alternatives to minimize impacts to park resources.

For the LCG project, Caltrans has been coordinating with NPS and CDPR since 2014, including assessment of project alternatives. A brief summary is provided in Section 4.5 of this document, with more detail on coordination in Chapter 5 of the EIR/EIS.

Alternatives to address the instability at LCG have been considered in various projects since 1987. In reviewing alternatives, impacts to parks and park resources were evaluated, such as length of roadway in parks, impacts to redwood forests and other habitat types, creation of edge habitat, and wildlife impacts, among other factors such as construction and mitigation costs, time to construct, cut/fill, and risk of road closures.

Analysis of alternatives for the Last Chance Grade project itself started in 2015 with the Engineered Feasibility Study (Caltrans 2015b), which reviewed alternatives considered prior to 2015 as well as new build alternatives. Between the 2015 report and 2021, alternatives were analyzed and refined or eliminated, culminating in the Alternative Analysis Report in 2021 (Caltrans 2021), which recommended that Alternatives X and F be carried forward for further study. Summaries of these reports and the previous alignments considered are discussed in more detail in Section 2.5 of the EIR/EIS. The Engineered Feasibility Study and Alternative Analysis Report are incorporated into this report by reference[2].

With respect to the current build alternatives, consideration has been given to further reducing impacts to parks and park resources, such as limiting the tiering of walls for Alternative X and shifting the north portal of Alternative F to avoid impacts to larger redwood trees. Background on the history and refinement of the build alternatives can be found in Section 2.4 of the EIR/EIS. In addition to refinements, project design has also taken into account other factors for both alternatives, including maintaining access to the parks' maintenance roads and limiting impacts to the CCT during construction.

In addition to designing the project to minimize impacts to the parks, standard measures included in the project would also serve to reduce impacts to park resources, including fencing/flagging around sensitive areas where no work would occur, preparing a revegetation plan, limiting work within root zones of large trees where feasible and, where possible, using root-friendly excavation and severance methods around the roots of large trees. More detail on these and other standard measures can be found in Section 2.6 of the EIR/EIS.

Other measures for the project to minimize harm to parks and park resources may include:

- Measures to offset potential temporary impacts on Section 4(f) recreational resources. This may include CCT improvements or funding to support other park projects or trail management activities. Implementation of this measure would depend on the level of impacts under each alternative and would be determined in consultation with RNP and CDPR.
- Posting signage at trailheads and on websites to notify park users of construction activities when there is work near the CCT.
- Having an arborist on site during construction work around roots of large trees.

[2] The 2015 Engineered Feasibility Study, 2021 Alternatives Analysis Report (as attached to the project's 2022 Agency Coordination Plan), and other reports that assessed alternatives as described in the EIR/EIS are available for review on the LCG Project website's document library: https://lastchancegrade.com/.

- A measure to offset potential effects to late successional forest may include forest restoration projects and/or the preservation of existing late successional forest habitat See Section 3.4.1 of the EIR/EIS for details.

4.5 Coordination

Since 2014, Caltrans has created active, working relationships with the agencies and groups that have management responsibilities for lands and resources that would be directly impacted by the project, including NPS and CDPR (Caltrans 2020).

Coordination with NPS and CDPR has been ongoing to address the issues at LCG, including project updates, alternative selection, project impacts, and project mitigation and minimization. Major communication points include:

- In 2015, a white paper was established for initial consensus on moving forward and finding the best project alternatives (Caltrans 2015c).
- Between December 2020 and April 2021, a series of three alternatives analysis workshops were held with stakeholders, including NPS and CDPR, to discuss the project purpose and need, range of alternatives, evaluation of alternatives, and alternative screening methodologies.
- In November 2021, Caltrans posted its Notice of Preparation (NOP) to prepare an EIR under the California Environmental Quality Act (CEQA) and a Notice of Intent (NOI) to prepare an EIS pursuant to the National Environmental Policy Act (NEPA), which were sent to appropriate agencies, including NPS and CDPR. In addition, under NEPA, invitations for NPS to be a participating and cooperating agency and CDPR to be a cooperating agency were also sent out in November, and both agencies accepted their role(s). An Agency Coordination Plan was prepared and sent to NPS and CDPR in January 2022, which discussed coordination points, responsibilities, and the target schedule for the project (Caltrans 2022a).
- Between November 2021 and May 2023, four meetings were held to provide project updates and discuss project impacts and potential avoidance, minimization, and mitigation measures.

In addition to the above, and various meetings to discuss project updates, impacts, and potential minimization measures, there have been meetings to discuss surveys in the project area, and the preliminary preferred alternative. These meeting points are provided in the coordination log in Chapter 5 of the EIR/EIS.

This Section 4(f) document will be provided to NPS and CDPR for coordination and comment in accordance with 23 CFR 774.5 prior to the Final EIR/EIS.



CHAPTER 5. CRESCENT CITY TO TRINIDAD WAGON ROAD DRAFT INDIVIDUAL SECTION 4(F) EVALUATION

The Crescent City to Trinidad Wagon Road is a linear cultural resource that extends well beyond the project's ESL. Because of the route's length, and the resources needed to evaluate it in its entirety, it is assumed that the road is eligible for the National Register of Historic Places (NRHP) for the purposes of this project. As such, this resource would trigger the provisions of Section 4(f).

5.1 Section 4(f) Resource Description

The Crescent City to Trinidad Wagon Road functioned as the primary overland route between Crescent City and northern Humboldt from its construction in 1894 until it was replaced in the 1920s.

In compliance with Section 106 of the NHPA, segments of a linear cultural resource are assessed to determine if they contribute to the resources' overall eligibility for the NRHP[3]. However, as only a small portion of the wagon road is within the ESL, it is outside the scope and scale of the project to record and assess the integrity of the entire length of the wagon road. As there was not enough information to support the wagon roads eligibility or lack thereof, the State Historic Preservation Officer (SHPO) did not concur that the wagon road is eligible. However, the SHPO did recommend assuming the road is eligible for the NRHP for the purposes of this project. See Appendix F of the EIR/EIS for correspondence with the SHPO. The resource is assumed to be eligible under Criterion A[4] at the local level for its significance as a primary transportation corridor connecting Crescent City with communities to the south. Its period of significance is 1894 to circa 1920, when it was bypassed.

Within the ESL, the wagon road is largely overgrown with vegetation, and many segments have undergone substantial change due to earth movements/landslides and alterations by landowners over time. Only discontinuous portions of the road remain, with a total of 31

[3] Section 106 is the process used to identify historic properties to be considered under Section 4(f). The eligibility of resources for listing on the NRHP is identified under Section 106 (36 CFR 800,4), while historic sites for section 4(f) includes resources included in or eligible for inclusion in the National Register of Historic Places (NRHP) (23 CFR 774.17).

[4] As outlined in 36 CFR 60.4, resources that meet Criterion A are resources that possess integrity and that "are associated with events that have made a significant contribution to the broad patterns of our history."

segments documented within the ESL and the project vicinity; of these segments, only 10 are intact and show sufficient integrity to contribute to the eligibility of the wagon road (Caltrans 2022c).

Six of the contributing segments are within the ESL, both inside and outside of the existing ROW.

5.2 Proposed Use

Alternative X is not anticipated to have a use of the wagon road, while Alternative F is anticipated to have both temporary and permanent uses.

Constructive use only occurs when there is no incorporation of a Section 4(f) property, but proximity impacts are severe (23 CFR 774.15). Because Alternative X does not involve incorporation, it was reviewed for constructive use. However, constructive use would not apply to Alternative F, as the alternative involves incorporation of the Section 4(f) property.

Under Section 106 of the NHPA, it is anticipated that Alternative X would not affect the wagon road, while Alternative F would have an adverse effect[5].

See the following sections for additional information.

5.2.1 Alternative X

Alternative X would not involve a temporary or permanent use of the wagon road. Although the wagon road is within the ESL, it is not within the project footprint, which is the area the project is anticipated to impact, nor is it in the areas of ROW acquisition.

The wagon road is assumed to be eligible for the NRHP due to its significance as an early transportation corridor. Contributing segments are important for their intactness and integrity, which would not be sensitive to proximity impacts such as changes to visuals, air quality, noise, wildlife, water quality, hydrology, or other factors. Therefore, because there would be no proximity impacts that would affect the intactness and integrity of the presumed eligible wagon road segments, there would be no constructive use of this Section 4(f) resource.

[5] As defined under 36 CFR 800.5, an adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the NRHP in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association.

5.2.2 Alternative F

Alternative F would involve both a permanent and temporary use of the wagon road. This includes permanent incorporation of portions of three separate road segments—known as Segments 1, 10, and M—through the acquisition of ROW. In addition, portions of Segments 10 and M would be subject to temporary occupancy due to geotechnical investigations. Impacts to the contributing wagon road segments are summarized in Table 3.

There would be a use of approximately 36% of the first contributing segment, Segment 1, at the northern portal. An estimated 303 feet of the 852-foot-long[6] segment would be within the areas of ROW acquisition. Of this 303 feet, approximately 205 feet would be within the limits of the cut for the portal and would be removed, and an additional 60 feet may be affected by vegetation disturbance beyond the cut. Therefore, an approximately 265-foot-long segment would be used by the project. It is anticipated there would be no impact to the portions of the road outside of the ROW acquisition area.

The remaining two segments, Segments 10 and M, were recorded at separate times, but are part of one continuous section of the wagon road. An estimated 483 feet of the combined 1,104-foot-long[6] road would be within the area of ROW acquisition, within which approximately 199 feet would be within the construction footprint of the OMC and would be completely removed. The remaining 284 feet in the ROW acquisition area and the 621 feet outside of this area would be temporarily disturbed—by vegetation removal and/or grading—for access of geotechnical drilling equipment for B-57, or minor disturbances to vegetation beyond the cut section needed for the OMC. Though Segments 10 and M of the wagon road would be adversely affected under Section 106, the section outside of the ROW acquisition area would not be permanently incorporated into the transportation project and would therefore be considered a temporary use under Section 4(f).

No other contributing segments of the wagon road would be impacted by the project, including through proximity impacts, as the road is not sensitive to changes other than direct disturbance that affects its integrity and intactness.

[6] Spatial data was used to estimate potential impacts. However, there were discrepancies between the lengths in the official records and the lengths in the spatial data. This is due, in part, to the limitations in GPS accuracy from the dense tree canopy and topography in the project area, which can limit the ability of field equipment's access to satellites. According to official records, Segment 1 is 865 feet compared to spatial data estimates of 852 feet and Segments 10 and M are a combined 935 feet, compared to spatial data estimates of 1,104 feet.

Table 3. Summary of Use of the Crescent City to Trinidad Wagon Road for Alternative F[3]

	Segment 1	Segments 10 and M
Permanent Incorporation	303 feet	483 feet
Cut/Fill	205 feet	199 feet
Vegetation Disturbance / Grading	60 feet	284 feet
Undisturbed	38 feet	0 feet
Temporary Occupancy	0 feet	621 feet
Vegetation Disturbance / Grading	0 feet	621 feet
Total Use	**303 feet**	**1,104 feet**
Total Segment Length	**852 feet**	**1,104 feet**

5.3 Avoidance Alternatives Analysis

As discussed in Section 4.3.1, an analysis must be conducted to determine if the project has any feasible and prudent avoidance alternatives. Avoidance alternatives are those that would not result in a use of any Section 4(f) property. If there are any avoidance alternatives, it must be determined if any of them are feasible and prudent, which means they can be built as a matter of sound engineering judgement and would not result in other issues, as listed in Section 4.3.1, such as not meeting the purpose and need of the project or causing severe impacts.

Section 4.3.1 documents potential feasible and prudent avoidance alternatives. While there are build alternatives that would avoid the use of the wagon road, such as Alternative X, due to the size and location of RNSP, only the No-Build Alternative would potentially avoid the use of the parks and other Section 4(f) resources. However, the No-Build Alternative is not likely prudent, as it does not meet the purpose and need of the project, among other factors discussed in Section 4.3.1. The determination on whether avoidance alternatives are feasible and prudent are not made in draft evaluations. However, based on preliminary analysis, it appears there is no feasible and prudent avoidance alternative.

After completion of the Draft EIR/EIS, and if multiple alternatives remain, the alternative with the least overall harm will be identified; this analysis will be documented in Chapter 8 of this document.

5.4 Measures to Minimize Harm

As mentioned previously, all reasonable measures to minimize harm to a Section 4(f) property must be included in a project.

As much of the wagon road near the project is within RNSP, efforts to minimize impacts to the parks, as discussed in Section 4.4, also help to minimize impacts to contributing segments of the wagon road. However, avoiding the wagon road completely, such as by relocating the north portal for Alternative F, would result in greater impacts to RNSP and potentially to redwood trees, a contributing element of the Traditional Cultural Landscape, another Section 4(f) resource.

Once the effects of the project on the wagon road are determined, as outlined in 36 CFR 800.5, and documented in a Finding of Effect (FOE), measures to minimize harm to the wagon road, pursuant to 36 CFR 800.6, would be included in a Historic Property Treatment Plan (HPTP) and attached to a project-specific Programmatic Agreement (PA) or a Memorandum of Agreement (MOA). These documents would be completed prior to the final environmental document. Potential measures to minimize harm for the wagon road could include interpretive displays and/or the preparation of a detailed historic context which would be available to the public. Measures would be based on discussions with NPS, CDPR, and SHPO.

5.5 Coordination

Caltrans initiated consultation with the SHPO pursuant to Section 106 of NHPA in 2019. In December 2020, Caltrans began consultation with the SHPO on a project-specific PA pursuant to 36 CFR 800.14(b). The PA permits a phased approach for the project, allowing the Section 106 consultation process to occur over an established extended timeframe, though an MOA may be used rather than the PA, depending on results of consultation with SHPO. In November 2022, Caltrans evaluated the eligibility of the Crescent City to Trinidad Wagon Road and sought SHPO concurrence, and in January 2023, the SHPO recommended the wagon road be treated as eligible for the NRHP for the purposes of this project. Additional detail on coordination with the SHPO can be found in Chapter 5 of the EIR/EIS, and correspondence can be found in Appendix F of the EIR/EIS.

A FOE will be prepared for this project and provided to the SHPO for review prior to the final EIR/EIS. Under Section 106 of the NHPA, it is anticipated the project would result in an adverse effect for the Crescent City to Trinidad Wagon Road under Alternative F, while there would be no effect to the wagon road under Alternative X.



CHAPTER 6. TRADITIONAL CULTURAL LANDSCAPE DRAFT INDIVIDUAL SECTION 4(F) EVALUATION

Consultations with local tribes are being conducted to ensure all culturally important locations or resources related to tribal use and perspectives have been addressed. While consultations have not been completed, it is anticipated the Last Chance Grade project area falls into a Traditional Cultural Landscape (TCL), which is a form of Traditional Cultural Property. It is assumed the TCL would be eligible for the NRHP, with contributing and non-contributing elements. As such, this resource triggers the provisions of Section 4(f).

6.1 Section 4(f) Resource Description

Extensive consultation with five local tribes—the Yurok Tribe, Elk Valley Rancheria, Tolowa Dee-ni' Nation, Resighini Rancheria, and Tolowa Nation—indicates the presence of a Traditional Cultural Landscape[7] within the project ESL. Ethnographic research and interviews are currently underway to determine the boundaries and contributing elements of this landscape, as defining these elements is solely based on the perspectives of those whose culture is tied to that landscape. However, it is assumed that the TCL encompasses the entire ESL and extends well beyond it. Contributing elements would likely include old-growth redwoods and other conifers, Wilson Creek and areas adjacent to Wilson Creek, coastal sea stacks, caves, and rock outcrops. It is anticipated the TCL will be eligible for the NRHP under Criterion A, B, and D[8].

Of the known potential contributing elements identified by the local tribes, only old-growth redwoods and other conifers are within the ESL. Old-growth redwood trees are considered living beings that are directly connected to the cultural continuity of the local tribes, and are therefore anticipated to be considered eligible to the NRHP under Criterion B. In addition,

[7] According to NPS Preservation Brief 36, a cultural landscape is defined as a geographic area, including both cultural and natural resources and the wildlife or domestic animals therein, associated with a historic event, activity, or person, or exhibiting other cultural or aesthetic values (NPS 1994).

[8] As outlined in 36 CFR 60.4, resources eligible for the inclusion in the National Register must have integrity. Under Criterion A, these resources "are associated with events that have made a significant contribution to the broad patterns of our history", while Criterion B are resources that "are associated with the lives of persons significant in our past," and Criterion D are resources "that have yielded or may be likely to yield, information important in prehistory or history."

the life of old-growth redwoods continues after they have fallen or been cut, as they are used for traditional purposes, which ties directly into the transference of traditional knowledge within tribes. Other old-growth trees, such as Douglas-fir, Sitka spruce, and western hemlock may likewise be of importance to the tribe, and eligible under NRHP under Criterion B.

There is no agreed-upon definition for an old-growth; for the project, all trees 2 feet (24 inches) in DBH and greater, considered "large trees", were mapped (Caltrans 2023a). In placing a thumb on the scale of protecting Section 4(f) resources, because there is no agreed-upon definition for an old-growth tree, for the purposes of the evaluation, all large conifers were considered contributing elements of the TCL. In addition, all conifers, whether inside the existing ROW or in areas of ROW acquisition, were counted and included in the calculation of use.

6.2 Proposed Use

Both Alternative X and Alternative F are anticipated to have a permanent use of the TCL due to impacts to contributing elements: redwoods and other conifers. The other potentially contributing elements are outside of the ESL and, due to distance, topography and/or resource type, are not anticipated to be affected by proximity impacts.

Under Section 106, it is anticipated that both project alternatives would have an adverse effect on the TCL due to impacts to redwoods and other conifers.

See the following sections for a summary of potential use of conifers for each alternative.

6.2.1 Alternative X

Alternative X is anticipated to have a permanent use of large redwood trees and other conifers (2 feet [24 inches] in DBH and greater)—contributing elements of the TCL. Conifers are present within the ROW acquisition area needed for the tiered wall and the underground drainage system access road and would be affected by construction. In addition, large conifers within the existing ROW would be removed due to shifting of the highway, and wall construction and the associated cut/fill and ground disturbance.

Approximately 116 large conifers that are considered contributing elements to the TCL are anticipated to be removed for this alternative, including 95 trees between 2.0 and 3.9 feet in DBH, and 21 trees 4.0 feet and over in DBH. The total includes 15 trees within the area of

ROW acquisition and 101 trees within the existing ROW. See Table 4 for a summary of large redwoods removed for the project by size and location.

Table 4. Summary of Conifer Trees Removed for Alternative X by Species

Conifer Species	Number of Trees within ROW Acquisition Areas			Number of Trees within the Existing ROW			Total Removed
	Tree 2.0' to 3.9' DBH	Tree 4.0' DBH or Greater	*Total*	Tree 2.0' to 3.9' DBH	Tree 4.0' DBH or Greater	*Total*	
Redwood	5	2	7	40	5	45	***52***
Douglas-fir	0	0	0	39	5	44	***44***
Sitka Spruce	2	6	8	9	3	12	***20***
Total	***7***	***8***	***15***	***88***	***13***	***101***	***116***

6.2.2 Alternative F

Alternative F is anticipated to have a permanent use of large redwood trees and other conifers—contributing elements of the TCL. Conifers within the existing ROW and those in the areas to be acquired are primarily located at the portals and would be affected by construction of the portals, bridge, and associated features and activities.

Approximately 104 conifers that are considered contributing elements to the TCL are anticipated to be removed for this alternative, including 65 trees between 2.0 and 3.9 feet in DBH and 39 trees 4.0 feet and over in DBH. This includes 85 large trees in the ROW to be acquired and 19 trees within the existing ROW. See Table 5 for a summary of large trees to be removed by size and location.

Table 5. Summary of Conifer Trees Removed for Alternative F by Species

Conifer Species	Number of Trees within ROW Acquisition Areas			Number of Trees within the Existing ROW			Total Removed
	Tree 2.0' to 3.9' DBH	Tree 4.0' DBH or Greater	*Total*	Tree 2.0' to 3.9' DBH	Tree 4.0' DBH or Greater	*Total*	
Redwood	15	14	29	8	2	10	***39***
Douglas-fir	3	3	6	3	0	3	***9***
Sitka Spruce	28	15	43	4	2	6	***49***
Western Hemlock	4	3	7	0	0	0	***7***
Total	***50***	***35***	***85***	***15***	***4***	***19***	***104***

6.3 Avoidance Alternatives Analysis

As discussed in Section 4.3.1, an analysis must be conducted to determine if the project has any feasible and prudent avoidance alternatives. Avoidance alternatives are those that would not result in a use of any Section 4(f) property. If there are any avoidance alternatives, it must be determined if any of them are feasible and prudent, which means they can be built as a matter of sound engineering judgement and would not result in other issues, as listed in Section 4.3.1, such as not meeting the purpose and need of the project or causing severe impacts.

Section 4.3.1 documents potential feasible and prudent avoidance alternatives. While the boundaries of the TCL have not been defined, the majority of large conifers in the vicinity of the project are within RNSP. Therefore, avoidance alternatives for RNSP would likely be similar to avoidance alternatives for this contributing element of the TCL. While determinations on feasible and prudent avoidance alternatives are not made in draft evaluations, as discussed previously, it appears that only the No-Build Alternative would potentially avoid the use of RNSP. However, this alternative would not likely be prudent, as it does not meet the purpose and need of the project, among other factors. Therefore, because it appears there are no alternatives that avoid all Section 4(f) resources that are also feasible and prudent, it is likely there is no feasible and prudent avoidance alternative.

After completion of the Draft EIR/EIS, and if multiple alternatives remain, the alternative with the least overall harm will be identified; this analysis will be documented in Chapter 8 of this document.

6.4 Measures to Minimize Harm

Under 23 CFR 774.3, all reasonable measures to minimize harm to a Section 4(f) resource must be included in the project.

As old-growth redwoods are an important feature within RNSP, which contains 45% of the remaining protected old-growth redwood forest in California, minimizing harm to the parks also serves to minimize impacts to this contributing element of the TCL. As discussed in Section 4.4 in this document and in Chapter 2 of the EIR/EIS, the impact to old-growth redwoods, in addition to other large conifers, was an important factor in evaluating the alternatives considered for the project and for refining the project design, such as shifting the north portal of Alternative F to avoid impacts to the largest trees.

In addition to considering impacts to larger trees in the project design, several standard measures included as part of the project would lessen impacts to large trees. These include measures such as flagging or fencing off environmentally sensitive areas (such as redwood forests) to prevent work within the area; restricting work within the structural root zones of large trees where feasible; and, when possible, using root-friendly excavation and severance methods around the roots of large trees. See Section 2.6 of the EIR/EIS for more information on the project's standard measures.

In addition to the above, an arborist would be on site during construction work around roots of large trees.

Any additional measures for minimizing harm, if needed, would be determined through consultation with the local tribes, National and State Parks, and the SHPO. Once the Effects Finding for the project is determined, prior to the final environmental document, measures would be agreed upon and documented in a Historic Property Treatment Plan (HPTP) that will be attached to the PA or a MOA.

6.5 Coordination

Caltrans began consultation for this project with the local tribes in 2014. This included close coordination with Tribal Historic Preservation Officers and other representatives from the Yurok Tribe, Elk Valley Rancheria, Tolowa Dee-ni' Nation, Resighini Rancheria, Tolowa Nation, and National and State Parks. A cultural resources working group that included representatives from the five tribes and cultural resources staff from NPS and CDPR was formed in 2017 to address cultural resource concerns. This group meets on a quarterly basis. In addition, in 2018, Caltrans began attending tribal council meetings with each tribe on an annual basis. Consultation with tribes is ongoing, including coordination for ethnographic research and interviews to identify areas of cultural importance.

In addition, as discussed in Section 5.5, Caltrans initiated consultation with the SHPO pursuant to Section 106 of the NHPA in 2019 and is working on a PA with the SHPO and other consulting parties for the project, though an MOA may be used, depending on the results of consultation with SHPO. Once ethnographic research and interviews are complete, the SHPO and other consulting parties would be consulted on the eligibility of the TCL, and the FOE and the HPTP (an attachment to the PA or MOA) would be prepared, prior to the final environmental document. It is anticipated the project would result in an adverse effect to the TCL for both Alternative X and Alternative F.

A summary of coordination with the local tribes and other agencies is summarized in Chapter 5 of the EIR/EIS.

CHAPTER 7. RESOURCES EVALUATED RELATIVE TO THE REQUIREMENTS OF SECTION 4(F): NO-USE DETERMINATIONS

Section 4(f) of the Department of Transportation Act of 1966, codified in federal law at 49 United States Code (USC) 303, declares that "it is the policy of the United States Government that special effort should be made to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites."

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

Within the project vicinity, one wildlife and waterfowl refuge and eight potential historic-era cultural resources were assessed relative to the requirements of Section 4(f). Other than RNSP, there were no other parks or recreational facilities within or next to the project area.

7.1 Wildlife and Waterfowl Refuges

The California National Coastal Monument is located in the vicinity of the project. The monument is protected by the Bureau of Land Management as National Conservation Lands. The mission of National Conservation Lands is to conserve, protect, and restore nationally significant landscapes that have outstanding cultural, ecological, and scientific values for the benefit of current and future generations. The California Coastal Monument includes off-shore rocks that are exposed above mean high tide within 12 nautical miles of the mainland along the California coastline. While the monument can be viewed from the shore, there are no visitor facilities for the monument in the vicinity of the project.

The California National Monument is over 700 feet from the ESL. Due to the distance and proposed project activities closest to the resource, it would not be subject to permanent, temporary, or constructive use by either project alternative. Therefore, the provisions of Section 4(f) do not apply.

7.2 Historic Sites

Within the study area, an additional eight potential historic-era cultural resources were evaluated in accordance with Section 106 of the NHPA. Of these, six sites were determined not to be eligible for the NRHP, while the remaining two were determined to be eligible or assumed to be eligible for inclusion in the NRHP.

The six ineligible sites include a road segment and drainage ditch, two log stacks, two former subdivisions, and a portion of the modern redwood highway. SHPO concurrence on the ineligibility of the road segment and drainage ditch was received in 2019, with the remaining resources receiving concurrence in 2023 (see Appendix F of the EIR/EIS). Because these sites are not eligible for the NRHP, they are not Section 4(f) properties; therefore, the provisions of Section 4(f) do not apply.

The two remaining resources include the Old Redwood Highway District and the Joseph DeMartin Barn Site.

A portion of the Old Redwood Highway District (P-08-000550/REDW00162)—Last Chance Grade to Damnation Creek Segment, which was constructed in 1919 and replaced the Crescent City to Trinidad Wagon Road, is present within and adjacent to the ESL, extending northwest from the current U.S. 101 alignment. This resource was previously listed in the NRHP in 1979, and in 2020, after NPS recorded and evaluated decommissioned segments within RNP, it was concluded that the roadway meets NRHP eligibility under Criterion A, with a period of significance from 1919 to 1952. However, pursuant to 23 CFR 774.13(a)(3), Section 4(f) approval for historic transportation facilities is only required if it is adversely affected by the project and the official with jurisdiction over the resource has not objected to this conclusion. It is assumed there would be no adverse effect to this resource; SHPO concurrence on the Finding of Effect for the project as a whole is anticipated prior to the final environmental document. Because of the above, while the resource is a Section 4(f) property, the provisions of Section 4(f) would not apply.

The Joseph DeMartin Barn Site (CA-DNO-263H/P-08000258/REDW00100) is a historic-era ranching and barn site established by Joseph DeMartin in 1901, which continued under other ownership (Miriam Rudisill) until 1965. The site was not evaluated but, for the purposes of this project, it is assumed that it would be eligible for the NRHP, likely under Criterion D. The site would be avoided during construction. However, Criterion D properties are important for the information they yield.

Pursuant to 23 CFR 774.3, because the site would be important chiefly because of what can be learned by data recovery and has minimal value for preservation in place, this resource would be exempt from Section 4(f). As such, the provisions of Section 4(f) would not apply.



CHAPTER 8. LEAST OVERALL HARM ANALYSIS

After circulation of the draft environmental document, if it is determined that there is no feasible and prudent alternative that completely avoids Section 4(f) properties, pursuant to 23 CFR 774.3(c), the alternative that causes the least overall harm in light of the statute's preservation purpose can be chosen. This alternative would be determined by balancing the following factors:

- Ability to mitigate adverse impacts on each Section 4(f) resource;
- The relative severity of the remaining harm, after mitigation, to the protected activities, attributes, or features that qualify each Section 4(f) resource for protection;
- The relative significance of each Section 4(f) resource;
- The views of the officials with jurisdiction over each Section 4(f) resource;
- The degree to which each alternative meets the purpose and need for the project;
- After reasonable mitigation, the magnitude of any adverse impacts on resources not protected by Section 4(f); and
- Substantial differences in costs among alternatives.

Input from agencies (officials with jurisdiction) and members of the public are important to a least overall harm analysis. The analysis will be included in the Final Section 4(f), incorporating input resulting from circulation of the draft environmental document.



CHAPTER 9. SECTION 6(F) CONSIDERATION

The Land and Water Conservation Fund (LWCF) Act was established by Congress in 1964 to fulfill a bipartisan commitment to safeguard natural areas, water resources and cultural heritage, and to provide recreation opportunities to all Americans. The LWCF program provides matching grants to States and local governments for the acquisition and development of public outdoor recreation areas and facilities. Section 6(f) of this Act prohibits the conversion of property acquired or developed with these grants to a non-recreational purpose without the approval of the Department of Interior's (DOI) National Park Service.

CDPR was contacted about LWCF-funded lands in the Last Chance Grade area, and confirmed that the lands around LCG were not acquired with the LWCF and no development of public outdoor recreation areas and facilities have used LWCF grants.

NPS lands in the area may have been acquired by LWCF funds. However, the "conversion analysis" required under Section 6(f) only applies to the state assistance program—it does not apply to federal lands. A separate process, through the grant of a highway deed, would be needed for acquisition of park lands



CHAPTER 10. REFERENCES

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APPENDIX C. Title VI Policy Statement



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NON-DISCRIMINATION POLICY STATEMENT

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To obtain this information in an alternate format such as Braille or in a language other than English, please contact the California Department of Transportation, Office of Civil Rights, at PO Box 942874, MS-79, Sacramento, CA 94274-0001; (916) 879-6768 (TTY 711); or at Title.VI@dot.ca.gov.

TONY TAVARES
Director



APPENDIX D. Draft Mitigation Summary and Environmental Commitments Record



Introduction

The purpose of this Draft Mitigation Monitoring and Reporting Program (MMRP) is to provide a summary of conceptual measures that would offset the potential impacts associated with the Last Chance Grade Permanent Restoration Project (LCG). The project is located on U.S. Highway 101 (U.S. 101) in Del Norte County between Post Miles (PMs) 12.7 and 16.5 and travels through Redwood National and State Parks. The purpose of the project is to develop a long-term solution to the instability and potential roadway failure at LCG. The project would result in temporary and permanent impacts to resources administered by the California Department of Parks and Recreation (CDPR), National Park Service (NPS), California Coastal Commission (CCC), California Department of Fish and Wildlife (CDFW), North Coast Regional Water Quality Control Board (NCRWQCB), and the U.S. Army Corps of Engineers (USACE).

Project Impacts and Proposed Mitigation

Both alternatives would temporarily and permanently impact wetlands and/or waters, Environmentally Sensitive Habitat Areas (ESHAs), and late successional forest. Suitable locations may exist within the project area that could provide opportunities to offset impacts on these resources. There are no mitigation banks or In-Lieu Fee Programs currently available in the project area. As a result, measures to offset impacts would be performed through permittee-responsible mitigation.

To be sure that all the environmental measures identified are executed at the appropriate times, the mitigation program (as articulated on the proposed Environmental Commitments Record [ECR] which follows) would be implemented. During project design, avoidance, minimization, and/or mitigation measures would be incorporated into the project's final plans, specifications, and cost estimates, as appropriate. All permits would be obtained prior to implementation of the project. During construction, environmental and construction/engineering staff would ensure that the commitments contained in this ECR are fulfilled. Following construction and appropriate phases of project delivery, long-term mitigation maintenance and monitoring would take place, as applicable. As the following ECR is a draft, some fields have not been completed, and would be filled out as each of the measures is implemented.

A final MMRP for the project would be completed and submitted to the appropriate administering agencies as an attachment to the permit applications for the project. Any permitting required for the project and updated environmental impact analysis would be

included in the final MMRP and the Final Environmental Impact Report/Environmental Impact Statement (FEIR/EIS) would be updated accordingly.

The monitoring period for impacts to wetlands and other waters is expected to be between five and ten years. Likely success criteria would include at least 85% cover of appropriate native vegetation, and any wetland re-establishment or mitigation areas would meet the 3-parameter wetland definition by the final monitoring year.

The monitoring period and success criteria for the mitigation of impacts to late successional redwood, Sitka spruce, and Douglas-fir forest would be determined in a Habitat Mitigation and Monitoring Plan. This plan would be established prior to application of project permits and would take into consideration input from project stakeholders and identification of requirements from federal/state regulators.

Environmental Commitments Record

Task and Brief Description	Responsible Branch/Staff	Timing/ Phase
Measures to Avoid or Minimize Non-Significant Impacts		
Bio-2: During construction, when the roots of large diameter trees are being severed, an arborist shall be on-site to assess the extent of damage to the Structural Root Zone (SRZ) and Root Health Zone (RHZ) to ensure that any roots damaged during grading or construction would be exposed to sound tissue and cut cleanly with a saw, and to make a decision on tree removal.	Resident Engineer (RE) Environmental Construction Liaison (ECL), and Arborist	During Construction
Bio- 3: In temporary impacts areas, permeable fill materials would be used where feasible.	RE, ECL	During/Post Construction
Bio-4: In compliance with state and federal wetlands policies, which establish guidelines for wetland conservation (e.g., no net loss), Caltrans anticipates pursuing permit-driven compensation for impacts on wetlands, as well as on riparian and other waters. Compensation may include a combination of on- and off-site restoration efforts. Compensation efforts, and appropriate ratios, would be determined in coordination with appropriate agencies. Ratios are typically a minimum of 1:1, and are often dependent on the quality of the wetlands, and on whether an impact is temporary or permanent.	RE, ECL, Biologist	During/Post Construction

Task and Brief Description	Responsible Branch/Staff	Timing/ Phase
Measures to Avoid or Minimize Non-Significant Impacts		
Bio-5: Noise control practices would be followed to minimize construction noise and disturbance to sensitive habitat areas: • Require all construction equipment powered by gasoline or diesel engines has sound control devices, such as exhaust mufflers, that are at least as effective as those originally provided by the manufacturer and that all equipment be operated and maintained to minimize noise generation. • Use equipment powered by electric motors instead of gasoline- or diesel-powered engines where feasible. • Prevent excessive noise by shutting down idling vehicles or equipment, when feasible.		
Cultural-1: Prepare and Implement an Historic Property Treatment Plan (HPTP) to address potential effects on contributing elements of Traditional Cultural Landscape (TCL) and Wagon Road. Measures to address potential effects on the contributing elements of the TCL would be developed in consultation with the Elk Valley Rancheria, Resighini Rancheria, Tolowa Dee-ni' Nation, Tolowa Nation, Yurok Tribe, National Park Service (NPS), California Department of Parks and Recreation (CDPR), and the State Historic Preservation Officer (SHPO). For those old-growth redwood trees that would be removed as part of the project, each tribe has expressed interest in utilizing the old-growth redwood trees for construction of traditional canoes and structures. Potential actions to address TCL effects could include coordinating the delivery of old-growth redwood trees removed during construction to each tribe, onsite interpretive panels, and scholarships. Other measures may be considered as consultation continues. Potential measures to address effects on the Wagon Road may include interpretative displays and/or the preparation of a detailed historic context which would be available to the public. Further discussion is required with NPS, CDPR, and the SHPO to determine the most appropriate mitigation if an adverse effect finding is determined for this resource.	RE, ECL, Archaeologist	Pre/During/Post Construction

Task and Brief Description	Responsible Branch/Staff	Timing/ Phase
Measures to Avoid or Minimize Non-Significant Impacts		
Once an alternative is selected and effects on historic properties for the alternative are determined, specific measures would be agreed upon and documented in an HPTP, which would be attached to the LCG Programmatic Agreement (PA). Due to the nature of the project area, which consists of steep terrain that is difficult to access and has limited ground visibility, a late discovery plan would be incorporated into the HPTP to address additional buried cultural resources or unanticipated discoveries that could be identified during construction. The HPTP will be discussed in greater detail in the final environmental document.		
Park-1: Where feasible, boreholes near the Californian Coast Trail (CCT) would be placed in areas that would be screened from view from trail users.	RE, ECL	During Construction
Park-2: Signage would be posted at trailheads and on websites to notify park users of construction activities when there is work near the CCT.	RE, ECL	Pre/During Construction
Park-3: To offset potential temporary impacts on Section 4(f) recreational resources, funding would be provided to enhance the CCT where it crosses U.S. 101 or provided to support other park projects or trail management activities. Implementation of this measure would depend on the level of impacts under each alternative and would be determined in consultation with the NPS and CDPR.	RE, ECL	Pre-Construction
Visual-1: All replanting would use a variety of techniques, such as native seeding and container stock plantings, to provide a natural feel for the planting area(s).	RE, ECL, Biologist, Landscape Architect	During/Post Construction
Visual-2: As feasible, construction topsoil would be salvaged and stockpiled for use within planting areas to increase vegetation success.	RE, ECL	During/Post Construction
Visual-3: As needed, a Caltrans-approved landscape architect or other appropriate specialist would be on-site during activities to oversee clearing and grubbing activities, tree and landscape preservation, structural aesthetic applications, and revegetation. The landscape architect would be on call as a resource for any aesthetic-related concerns that arise during construction.	RE, ECL, Landscape Architect	During Construction

Task and Brief Description	Responsible Branch/Staff	Timing/ Phase
Mitigation for Significant Impacts under CEQA		
Bio-1: Caltrans would undertake one or more mitigation projects to compensate for the loss of late successional (mature to old-growth) redwood, Douglas-fir, and Sitka spruce conifer forest and associated large trees. The project(s) would attempt to offset impacts based on acreage removed and temporal loss of function. Typically, mitigation for Caltrans projects is established by applying ratios to compensate for the temporal loss of function of impacted habitat (e.g., 2:1, 3:1, etc.). However, these ratios are for resources where functional equivalency can be achieved within the foreseeable future. Mitigating for late successional forests is more complex, as the unique character and qualities of these forests cannot be replaced in the near-term. These forests, particularly those that support long-lived species such as coast redwood, can take hundreds of years to establish on their own. Caltrans anticipates that the mitigation strategy for late successional forest communities would include one or both of the following options: • **Option One: Fund forest restoration projects that accelerate the development of late successional characteristics in younger-aged stands**. Funding thinning projects in dense, early successional stands would accelerate tree growth, increase tree vigor, increase biodiversity for botanical and wildlife species, buffer remaining late successional stands from high intensity stand-damaging fires, and increase carbon sequestration. Current available research supports that thinning young stands could accelerate the formation of late successional characteristics and functions in approximately 100 years for Sitka spruce, 150 years for Douglas-fir, and 200 years for redwood stands, though this is highly variable based on the treated stand's age, location, and position within the landscape. In addition to funding thinning projects, this mitigation option may include: • An endowment for the long-term management of treated stands, including additional actions to accelerate the development of late successional characteristics such as additional thinning,	RE, ECL, Biologist	Pre/During/ Post Construction

Task and Brief Description	Responsible Branch/Staff	Timing/ Phase
crown modification to improve structural complexity, etc. • A research endowment to fund studies to guide forest management, monitor the efficacy of the thinning treatments, and identify appropriate adaptive management strategies. Specific objectives related to forest thinning treatments for mitigation include but are not limited to: • Accelerate the recovery of previously logged young successional conifer stands to mature forest structure and function. • Create connectivity between the remaining fragments of late successional forest communities. • Improve stream habitat, reduce erosion, restore hydrology, and enhance landscape resiliency. Impacts to sensitive natural communities and ESHA are typically mitigated at a 3:1 ratio; however, given that the time it may take for treated stands to reach functional equivalency of the stands impacted by the project, the amount of mitigation required may be based on the length of time it would take to restore functional equivalency of late-successional forest impacted by the proposed project, i.e., the number of years it would take for the treated stands to reach the functional equivalency of the impacted habitat. It is therefore anticipated that in-kind mitigation would be 100:1 for late successional Sitka spruce forest, 150:1 for late successional Douglas-fir forest, and 200:1 for late successional coast redwood forest, though these ratios may increase or decrease depending on various factors, such as quality and age of stands being impacted, or if selected mitigation stands are off-site or out-of-kind. This is a preliminary review and final ratios would be determined through the permitting process and stakeholder coordination. Current opportunities exist to provide funding to one or more organizations, such as Redwoods Rising, that are leading direct efforts to rehabilitate/restore late successional conifer forests using these methods in Del Norte and Humboldt counties.		

Task and Brief Description	Responsible Branch/Staff	Timing/ Phase
• **Option Two: Preservation of existing late successional forest habitat**. Preservation would be accomplished through the purchase of existing late successional conifer forests in Del Norte or Humboldt counties that are threatened by logging or development, with the intent of conveying such acreage to an agency or organization that would manage it in perpetuity. Preservation ratios are typically greater than restoration ratios and would be coordinated with administering agencies. Preservation of existing late successional forest habitat for mitigation may also include: • An endowment for the long-term management/maintenance of preserved habitats. • A deed restriction or conservation easement that restricts future land use practices that could adversely affect the protected habitat, thereby ensuring protection of the habitat in perpetuity. The final strategy for mitigating for late successional forest, using one or both of the options above, would be outlined in a Habitat Mitigation and Monitoring Plan. This plan would be established prior to application of project permits and would take into consideration input from project stakeholders and identification of requirements from federal/state regulators.		

Task and Brief Description	Responsible Branch/Staff	Timing/ Phase
Bio-6: Tree removal would be conducted outside of the maternity season (March 1 through September 1) and the winter torpor period (December 1 through February 28), to the extent possible. The limited operating periods may be modified at the recommendation of a biologist based on regional bat roosting data, site-specific roost status, and/or annual climate variation. [Maternity season for bats in California varies and may begin as early as early March through the end of August, in the hottest and coldest of environments, respectively (H.T. Harvey & Associates 2019).]	RE, ECL, Biologist	During Construction
Bio-7: Prior to tree removal, a qualified bat biologist would examine trees to be removed or trimmed for suitable bat roosting habitat. Trees greater than 24 inches diameter-at-breast height (DBH) or any size with habitat features (e.g., tree cavities, basal hollows, loose or peeling bark, larger snags) would be further evaluated for the potential to support roosting habitat, and the area within accessible cavities (and on the outside of the tree, as feasible) for bat sign (e.g., guano, culled insect parts, staining), as feasible. The qualified bat biologist would be approved by Caltrans and be knowledgeable on bat life history, species identification, and identification of potential roosting habitat. Where suitable cavity bat roosting habitat is identified, the qualified bat biologist would further evaluate the potential use of the tree by bats by conducting an evening emergence survey and/or using a directional night-vision camera to view into the cavity to identify presence of bats at cavities accessible from the ground. Emergence surveys would be conducted no more than 2 weeks prior to start of tree removal activities. Surveys would be conducted 30 minutes before sunset to 1 hour after sunset (or until there is no visibility) and during favorable weather conditions (calm nights with temperatures conducive to bat activity and no precipitation predicted). Acoustic detectors may be used to detect emerging bats and identify species. If bats are documented and the site is conducive, the roost is safely accessible from the ground, and it is feasibly appropriate (limited access points), an exclusion device may be installed prior to tree removal. Any exclusion device would be installed under the guidance of a qualified bat biologist and when weather	RE, ECL, Biologist	Pre/During Construction

Task and Brief Description	Responsible Branch/Staff	Timing/ Phase
is fair. No exclusion would occur during the maternity season.		
Bio-8: If the bat biologist determines during the preconstruction tree surveys (Bio-7) that the tree is suitable for bat roosting, the biologist would use feasible site-specific means to modify and disturb the habitat to allow bats to wake and leave the roost prior to tree felling. These disturbances may include (1) modifying habitat conditions such as removing smaller non-habitat trees at least a day prior to removing habitat trees; (2) creating a vibrational disturbance over the course of a few minutes with a chainsaw, knocking the tree with a sledgehammer, using equipment to shake the tree, or removing the tree in pieces (sections or limbs) over the course of a few days; (3) changing the structure of the potential roost by lifting bark to modify temperature, wind, light, and precipitation; and/or (4) using ultrasound deterrents. The tree disturbance would be monitored by the construction monitor (Bio-9).	RE, ECL, Biologist	Pre/During/ Construction
Bio-9: A qualified construction monitor would be present on site to conduct monitoring during removal of the trees identified during preconstruction surveys (Bio-7) as having the potential to support bat roosting in tree cavities. Following tree removal, the construction monitor would search downed vegetation for dead and injured bats. Injured bats would be transported to the nearest wildlife rehabilitation facility (Humboldt Wildlife Care Center near Arcata). The qualified construction monitor would be approved by Caltrans and be knowledgeable on bat life history, species identification, and roosting habitat.	RE, ECL, Biologist	Pre/During/ Construction

Anticipated Agency Permits and Environmental Review

Depending on the measures implemented, a proposed mitigation may require its own environmental clearance, mitigation requirements, and potential approvals by the agencies listed below. While the mitigation projects themselves would likely be self-mitigating, additional mitigation measures would be captured on-site within the mitigation projects themselves, to the maximum extent feasible.

1. State Historic Preservation Officer – Section 106 Concurrence for potential impacts associated with restoration activities
2. California Coastal Commission – Coastal Development Permit
3. North Coast Regional Water Quality Control Board – 401 Water Quality Certification.
4. U.S. Army Corps of Engineers – 404 Nationwide Permit
5. National Marine Fisheries Service (NMFS) – Letter of Concurrence
6. U.S. Fish and Wildlife Service (USFWS) – ESA Section 7 Biological Opinion
7. CDFW 1600 Lake and Streambed Alteration Agreement

APPENDIX E. Notice of Preparation and Notice of Intent



Notice of Preparation of an Environmental Impact Report
Last Chance Grade Permanent Restoration Project

The California Department of Transportation (Caltrans) District 1 is Lead Agency for the California Environmental Quality Act (CEQA) process for the Last Chance Grade Permanent Restoration Project (Project). As Lead Agency under CEQA, Caltrans is issuing this Notice of Preparation (NOP) for an Environmental Impact Report (EIR) consistent with all CEQA requirements.

Caltrans is also serving as federal lead agency under the National Environmental Policy Act (NEPA), as assigned by the Federal Highway Administration (FHWA) and has separately published a Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS) in the ***Federal Register*** announcing its intention to initiate the federal environmental review process for this Project, pursuant to NEPA.

The purpose of this NOP is to notify agencies, organizations, and individuals of this intent, and request input on the scope and content of the proposed joint EIR/EIS.

Scoping Period for Receipt of Comments
Comments must be received by 5:00 p.m. PST on **December 6, 2021**.
Please submit written comments by either of the following ways.

1. By mail to:
Caltrans District 1
Attn: Steve Croteau
1656 Union Street
Eureka, CA 95501

2. By email to: ScopingComments@lastchancegrade.com

Virtual Scoping Meeting
A virtual scoping meeting will be held on **THURSDAY, NOVEMBER 18** from 6:00 to 7:30 PM PST. At the meeting, Caltrans will provide a brief overview of the project and the environmental review process. Attendees will have an opportunity to ask questions. However, questions and discussion at the meeting will not be considered scoping comments. All scoping comments must be submitted by mail or e-mail. Attendance at the virtual scoping meeting is **not** necessary to submit comments.

Please visit **lastchancegrade.com** for more information about the project and to join the virtual scoping meeting via Zoom. If you wish to join by phone only, call **+1-669-900-6833** and use **Meeting ID: 898 2790 5460**.

Project Description
Caltrans is the lead agency under CEQA and NEPA, as assigned by FHWA for the project. As shown in Figure 1, Last Chance Grade is the 3.5-mile-long section of U.S. Highway 101 (US 101) in Del Norte County (post mile [PM] 12.0 to 15.5) that runs between Wilson Creek to about 9 miles south of Crescent City. The Project area is almost entirely within portions of Redwood National and State Parks.

The Project would realign the highway in response to landslide and roadway failures which have caused damage for decades. The objectives of the project are to:

- Provide a more reliable connection

- Reduce maintenance costs
- Protect the economy, natural resources, and cultural resources.

A geologic study in 2000 conducted for Caltrans by the California Geological Survey mapped over 200 historical and active landslides (both deep-seated and shallow) within the corridor between Wilson Creek and Crescent City. Over the years, Caltrans has conducted a considerable number of construction projects and maintenance activities in the Last Chance Grade area to keep the roadway open. Since 1997, landslide mitigation efforts, including retaining walls, drainage improvements, and roadway repairs have cost over $85 million. A long-term sustainable solution at Last Chance Grade is needed to address:

- Economic ramifications of a long-term failure and closure
- Risk of delay/detour to traveling public
- Increasing maintenance and emergency project costs
- Increase in frequency and severity of large storm events caused by climate change

Over the past several years, Caltrans has considered multiple alignment alternatives with input from numerous project partners in seeking a long-term feasible and sustainable solution suitable for the unique geologic and natural features of the project area. As a result of these past alternatives screening processes, Caltrans has elected to move forward with the environmental review of two build alternatives, alternatives X and F (Figure 2).

Alternative X would involve reengineering the existing roadway. Within a portion of Alternative X, the roadway would retreat inland (to the east) by approximately 130 feet to improve geotechnical stability and longevity. Alternative X would involve constructing a series of retaining walls (single and terraced) to minimize the potential for landslides on the roadway. Depending on feasibility, drainage improvements might also be included for this alternative.

Alternative F would construct a 10,000 foot-long tunnel that would diverge from the existing roadway near PM 14.06 and reconnect to US 101 near PM 15.5, thereby avoiding the portion of existing roadway most prone to landslides and geologic instability.

The EIR/EIS will also study a **No Project Alternative**, which would entail no new long-term feasible and sustainable solution for Last Chance Grade but would instead be a continuation of ongoing maintenance and repair activities needed to enable ongoing roadway operations.

Permits and approvals from the following agencies may be required but are not limited to: U.S. Fish and Wildlife Service (USFWS), U.S. Army Corps of Engineers (USACE), National Marine Fisheries Service (NMFS), North Coast Regional Water Quality Control Board (RWQCB), the California Coastal Commission, and California Department of Fish and Wildlife (CDFW).

Potential Environmental Effects/Topics to Be Evaluated

Based on preliminary surveys and information, Caltrans identified the following main subject areas for analysis in the EIR/EIS. The EIR/EIS will consider impacts associated with construction and ongoing operation. The scope of environmental analysis could be modified based on input from this NOP, the NOI, project scoping, or the project development process.

Environmental effects anticipated for study include, but are not limited to:

- Aesthetics
- Agriculture and Forestry
- Air Quality
- Biological Resources ((including trees, plants, animals, and wetlands/aquatic features))
- Cultural Resources
- Energy
- Geology /Soils (including paleontology)
- Greenhouse Gas Emissions
- Hazards & Hazardous Materials
- Hydrology / Water Quality
- Land Use / Planning
- Mineral Resources
- Noise
- Population / Housing
- Public Services
- Recreation
- Transportation/Traffic
- Tribal Cultural Resources
- Utilities / Service Systems
- Wildfire
- Cumulative Impacts

The EIR/EIS also will address NEPA-required issues such as compliance with applicable federal executive orders (e.g., Environmental Justice) and federal regulations (e.g., Section 4(f) of the Department of Transportation Act).

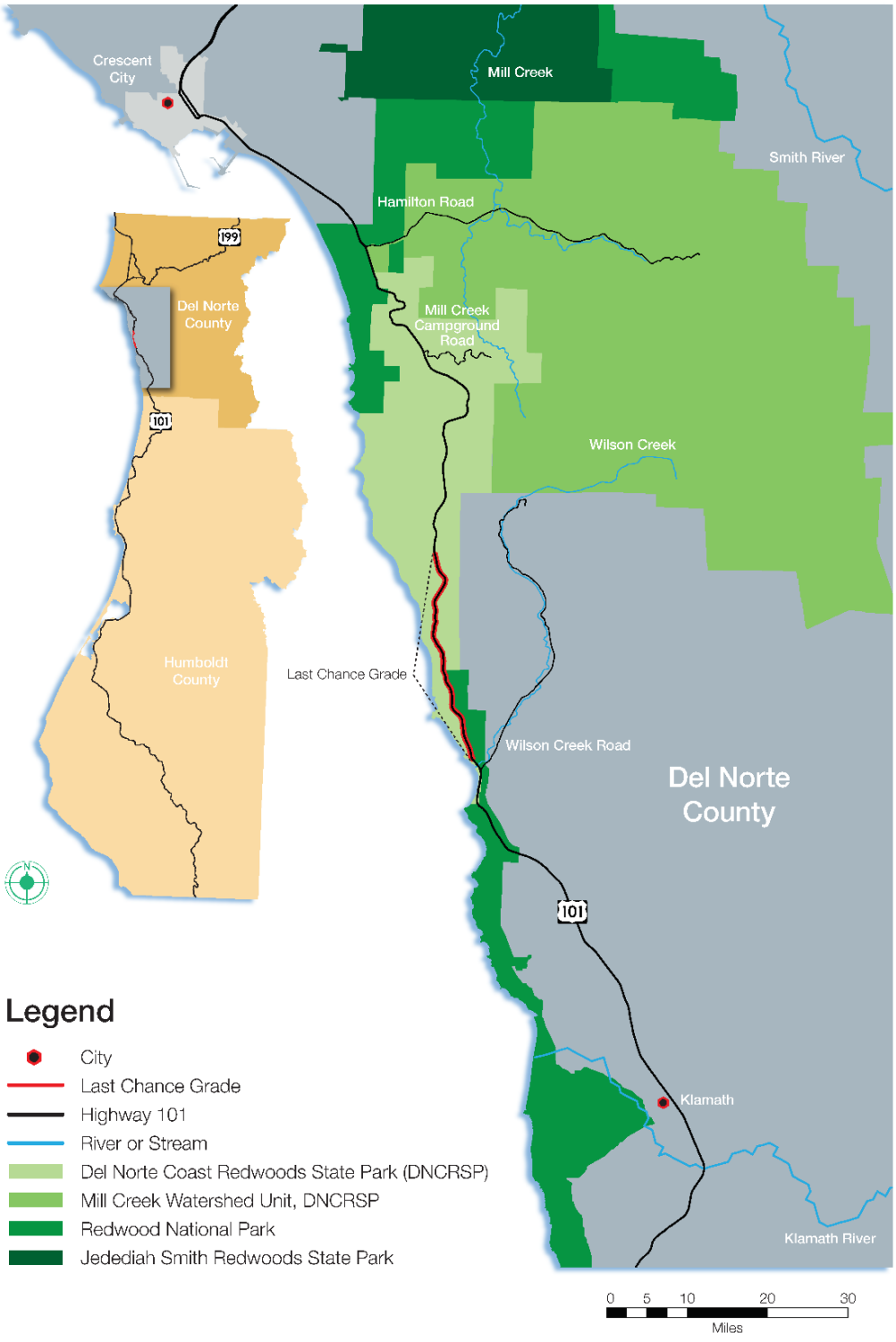


FIGURE 1 – Location Map

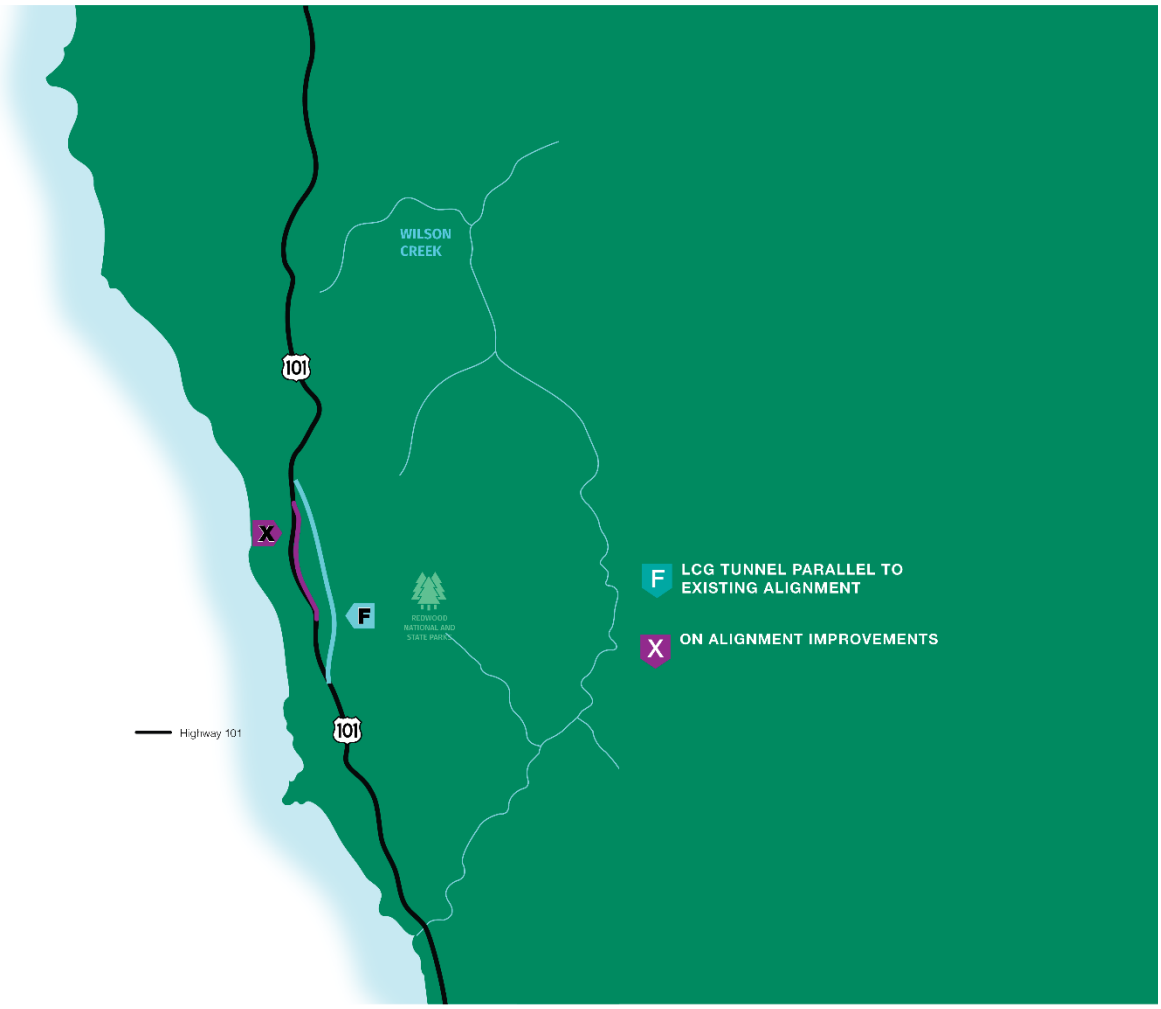


FIGURE 2 –Build Alternatives to be Considered in the Draft EIR/EIS

DEPARTMENT OF TRANSPORTATION **[4910-RY]**

Federal Highway Administration

Notice of Intent to prepare a draft Environmental Impact Statement for the Last Chance Grade Permanent Restoration Project on Interstate 101, in Del Norte County, California

AGENCY: Federal Highway Administration (FHWA), U.S. Department of Transportation (DOT)

ACTION: Notice of Intent (NOI) to prepare a Draft Environmental Impact Statement (Draft EIS) for the Last Chance Grade Restoration Project on Interstate 101 (I-101).

SUMMARY: The FHWA, on behalf of the California Department of Transportation (Caltrans), is issuing this notice to advise the public that a Draft EIS will be prepared for the Last Chance Grade Permanent Restoration Project (Project), a proposed roadway improvement project on I-101, in Del Norte County, California. A separate Notice of Preparation of the Draft Environmental Impact Report (Draft EIR) has been issued by Caltrans to meet the requirements of the California Environmental Quality Act (CEQA).

DATES: This notice will be accompanied by a 30-day public scoping comment period from November 5, 2021 to December 6, 2021. The deadline for public comments is 5:00 p.m. (PST) on December 6, 2021. The Virtual scoping meeting will be held from 6:00 pm to 7:30 pm PST on Thursday, November 18, 2021.

ADDRESSES: Project information is available on the internet at lastchancegrade.com.

FOR FURTHER INFORMATION CONTACT: For Caltrans: contact Steve Croteau, Senior Environmental Planner, Caltrans District 1, 1656 Union Street, Eureka, CA 95501, telephone 707-572-7149, or email ScopingComments@lastchancegrade.com. For FHWA, contact David Tedrick, telephone (916) 498-5024, or email david.tedrick@dot.gov.

SUPPLEMENTARY INFORMATION:

Effective July 1, 2007, the FHWA assigned, and Caltrans assumed, environmental responsibilities for this project pursuant to 23 U.S.C. 327. Caltrans as the assigned National Environmental Policy Act (NEPA) agency and CEQA lead agency, will prepare a joint EIR/EIS on a proposal for improvements along a portion of I-101 known as "Last Chance Grade" in Del Norte County, California.

Last Chance Grade is the 3.5-mile-long section of I-101 (post mile [PM] 12.0 to 15.5) that runs between Wilson Creek to about 9 miles south of Crescent City. The Project area is almost entirely within portions of Redwood National and State Parks.

The Project would realign the highway in response to landslide and roadway failures which have caused damage for decades. The purpose of the project is to:

- Provide a more reliable connection
- Reduce maintenance costs
- Protect the economy, natural resources, and cultural resources.

A geologic study in 2000 conducted for Caltrans by the California Geological Survey mapped over 200 historical and active landslides (both deep-seated and shallow) within the corridor between Wilson Creek and Crescent City. Over the years, Caltrans has conducted a considerable number of construction projects and maintenance activities in the Last Chance Grade area to keep the roadway open. Since 1997, landslide

mitigation efforts, including retaining walls, drainage improvements, and roadway repairs have cost over $85 million. A long-term sustainable solution at Last Chance Grade is needed to address:

- Economic ramifications of a long-term failure and closure
- Risk of delay/detour to traveling public
- Increasing maintenance and emergency project costs
- Increase in frequency and severity of large storm events caused by climate change

Over the past several years, Caltrans has considered multiple alignment alternatives with input from numerous project partners in seeking a long-term feasible and sustainable solution suitable for the unique geologic and natural features of the project area. As a result of these past alternatives screening processes, Caltrans has elected to move forward with the environmental review of two action alternatives, Alternatives X and F.

Alternative X would involve reengineering the existing roadway. Within a portion of Alternative X, the roadway would retreat inland (to the east) by approximately 130 feet to improve geotechnical stability and longevity. Alternative X would involve constructing a series of retaining walls (single and terraced) to minimize the potential for landslides on the roadway. Depending on feasibility, drainage improvements might also be included for this alternative.

Alternative F would construct an approximately 10,000-foot-long tunnel that would diverge from the existing roadway near PM 14.06 and reconnect to US 101 near PM 15.5, thereby avoiding the surface portion of existing roadway most prone to landslides and geologic instability.

The Draft EIR/EIS will also study a No Project Alternative, which would entail no new long-term feasible and sustainable solution for Last Chance Grade but would instead be a continuation of ongoing maintenance and repair activities needed to enable ongoing roadway operations.

Letters describing the proposed action and soliciting comments will be sent to appropriate Federal, State, Participating Agencies, Tribal governments, and local agencies, and to private organizations and citizens who have previously expressed or are known to have interest in this proposal. The Scoping period to submit comments is from November 5, 2021 to December 6, 2021. A public scoping meeting will be held virtually from 6:00 pm to 7:30 pm PST on November 18, 2021 from link at lastchancegrade.com. Comments on the NOI may be submitted by email: ScopingComments@lastchancegrade.com; or letter to 1656 Union Street, Eureka, CA, 95501 with Attention to Steve Croteau, Senior Environmental Planner. In addition, a public hearing will be held once the Draft EIR/EIS is completed. Public notice will be given with the time and place of the meeting and hearing.

To ensure that the full range of issues related to this proposed action are addressed and all significant issues identified, comments and suggestions are invited from all interested parties. Comments or questions concerning this proposed action and the EIS should be directed to Caltrans at the address provided above.

(Catalog of Federal Domestic Assistance Program Number 20.205, Highway Planning and Construction. The regulations implementing Executive Order 12372 regarding intergovernmental consultation on Federal programs and activities apply to this program.)

Issued on: October 28, 2021

Rodney Whitfield <Electronically Signed>

Director

Financial Services

Federal Highway Administration

California Division

APPENDIX F. Cultural Resource Correspondence



DEPARTMENT OF TRANSPORTATION
DIVISION OF ENVIRONMENTAL ANALYSIS
1120 N STREET
SACRAMENTO, CA 94274-0001
PHONE (916) 653-0516
FAX (916) 653-7757
TTY (916) 653-4086

Making Conservation a California Way of Life.

December 15, 2020

Julianne Polanco
State Historic Preservation Officer
Office of Historic Preservation
1725 23rd Street, Suite 100
Sacramento, CA 95816

RE: Draft Programmatic Agreement for the Last Chance Grade Project in Del Norte County

Dear Ms. Polanco:

The California Department of Transportation (Caltrans) is initiating consultation with the State Historic Preservation Officer (SHPO) regarding the Last Chance Grade Project on U.S. Highway 101 in Del Norte County (Undertaking). At the request of the National Park Service, on whose land a portion of the project will be constructed, Caltrans will not utilize the First Amended Section 106 Programmatic Agreement (January 2014) for this undertaking. Caltrans is thus currently consulting with you pursuant to 36 CFR 800.14(b)(2)(i) regarding the development of a project-specific programmatic agreement.

Caltrans proposes to re-align a section of U.S. Highway 101 between Wilson Creek and Crescent City in Del Norte County. The existing alignment runs through a highly active landslide complex and is damaged multiple times a year, endangering the travelling public and cutting off an important travel route with few alternate options. This Undertaking would construct a long-term solution to the instability and potential roadway failure caused by the landslides. There are currently eight proposed alternatives, including one no-build alternative. A project description with details for each proposed alternative is included with this submittal. Project mapping can be found in Attachment A of the enclosed Draft Programmatic Agreement (PA).

The Undertaking includes multiple alternatives over a very large area, including locations of restricted access and extreme mountainous terrain. These conditions preclude Caltrans from completing its responsibilities for identification, evaluation, and assessment of effects on historic properties within the Undertaking's footprint at this time. Additionally, there are several interested stakeholders, including federally and non-federally recognized tribes and state and federal agencies, who have expressed the desire to be consulting parties through the life of the Undertaking. The number of interested parties and nature of the Undertaking create a complex consultation network and calls for a unique system to ensure that stakeholder views and concerns are taken into account in a meaningful and sensitive manner.

As a result of these conditions, **Caltrans District 1 proposes to phase identification, evaluation, and the application of the Criteria of Adverse Effect according to the methods in the attached project-specific PA.** Caltrans is currently seeking your review, comment, and approval of the PA. If you have any questions, please do not hesitate to contact me at david.price@dot.ca.gov.

Sincerely,



David Price
Section 106 Coordinator
Cultural Studies Office
Caltrans Division of Environmental Analysis

Enc. Draft Programmatic Agreement, with Attachments, for the Last Chance Grade Project in Del Norte County

State of California • Natural Resources Agency
Gavin Newsom, *Governor*

DEPARTMENT OF PARKS AND RECREATION
OFFICE OF HISTORIC PRESERVATION
Armando Quintero, *Director*

Julianne Polanco, State Historic Preservation Officer
1725 23rd Street, Suite 100, Sacramento, CA 95816-7100
Telephone: (916) 445-7000 FAX: (916) 445-7053
calshpo.ohp@parks.ca.gov www.ohp.parks.ca.gov

March 17, 2021

In reply refer to: FHWA_2019_1015_002

Mr. David Price
Section 106 Coordinator
Cultural Studies Office
Caltrans Division of Environmental Analysis
1120 N Street, MS-27
Sacramento, CA 95814

Subject: Draft Programmatic Agreement for the Last Chance Grade Project in Del Norte County.

Dear Mr. Price:

On December 15, 2020, the Office of Historic Preservation (OHP) received a letter from the California Department of Transportation (Caltrans) for the above referenced undertaking. Caltrans is continuing consultation with the State Historic Preservation Officer (SHPO) for this undertaking. At the request of the National Park Service (NPS), on whose land a portion of the undertaking will be constructed, Caltrans will not utilize the First Amended Section 106 Programmatic Agreement (January 2014) for this undertaking. Caltrans is thus consulting with the SHPO pursuant to 36 CFR 800.14(b)(2)(i) in accordance with Section 106 of the National Historic Preservation Act of 1966 (as amended) and its implementing regulation at 36 CFR Part 800 regarding the development of a project-specific programmatic agreement (PA) for this undertaking.

Caltrans proposes to re-align a section of U.S. Highway 101 between Wilson Creek and Crescent City in Del Norte County. The existing alignment runs through a highly active landslide complex and is damaged multiple times a year, endangering the travelling public and cutting off an important travel route with few alternate options. This undertaking would construct a long-term solution to the instability and potential roadway failure caused by the landslides. There are currently eight proposed alternatives, including one no-build alternative.

As stated in Caltrans' December 15, 2020 letter, and in information submitted from Caltrans via email on February 17, 2021, the undertaking includes multiple alternatives over a very large area, including locations of restricted access and extreme mountainous terrain. These conditions preclude Caltrans from completing efforts to identify, assess adverse effects, and resolve adverse effects to historic properties. The urgent need to address the problems with Last Chance Grade through the development of a bypass has garnered immense political pressure from state and federal representatives, the Chairpersons of the four affected federally

recognized Indian tribes in the area, the leadership of both Redwood National Park and the Redwood Coast State Park District, local business leaders and residents, and local environmental group leaders. Caltrans states that the execution of this PA is an important mechanism to ensure the effective early engagement of interested parties, particularly their tribal consulting parties. It is Caltrans' goal for the PA to provide a method for the parties to meaningfully participate in the project development process as early as possible. According to Caltrans, the consulting parties have expressed a significant desire to institute this PA to accomplish this goal.

Following review of the draft PA, the below general comments are provided. Specific comments will be submitted once these larger issues are resolved and a revised draft PA is submitted for SHPO review and comment.

1. A whereas clause should be included that states that for this undertaking, Caltrans is consulting with the SHPO in accordance with Section 106 of the National Historic Preservation Act of 1966 (as amended) and its implementing regulation at 36 CFR Part 800.
2. Provide clarification as to whether Caltrans has requested the Advisory Council on Historic Preservation's (ACHP) participation in the PA pursuant to 800.6(a)(1)(i)(C).
3. Include a process that provides the SHPO with the opportunity to provide early and substantive input into the selection of the preferred alternative under the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA) for this undertaking/project.
4. The roles and responsibilities of the PA parties needs to be better defined throughout the document. Most notably, clarification as to Caltrans, District 1's role and responsibility in the undertaking and how it differs from Caltrans's role and responsibility as the lead federal agency should be provided.
5. The following comments are provided with regards to consulting Federally recognized Indian tribes as invited signatories to the PA:
    a. Caltrans has indicated that the consulting Indian tribes: Elk Valley Rancheria, California; Resighini Rancheria; Tolowa Dee-ni' Nation; and Yurok Tribe, are invited signatories because they are responsible for participating in a Cultural Resources Working Group (CRWG) under the PA, and have a responsibility to consult with their Tribe and represent their own tribal membership throughout the measures stipulated in the PA. Please provide clarification as to why a consulting Indian tribe's participation in a working group is an invited signatory responsibility, and why the non-federally recognized tribe's participation and consultation in the group is not considered an invited signatory responsibility. It seems more appropriate that the Indian tribes' involvement in the CRWG affords them with opportunities to participate and consult throughout the PA rather than assigns them responsibilities to fulfill under the PA as an invited signatory as defined in the regulations. It is therefore recommended that Caltrans confer with the ACHP as to whether an Indian tribe's participation and consultation in an agreement that would otherwise be considered consultation under 36 CFR

§800.2(c)(2)(B), are invited signatory responsibilities as defined in 36 CFR §800.6(c)(2)(iii).

b. An additional responsibility assigned to the Indian tribes as an invited signatory is to "consult in good faith with Caltrans". A definition as to what constitutes an Indian tribe's efforts to consult in good faith under the PA should be included. Please note that 36 CFR §800.4(b)(1) defines good faith effort as the agency official's responsibility to carrying out appropriate identification efforts. As currently written in the PA, it is implied that a party to the PA is responsible for deciding whether the Indian tribe has consulted in good faith. Please provide information as to whether Caltrans has discussed this text with the consulting Indian tribes as it has many implications, most of which may be viewed as unfavorable by consulting Indian tribes.

6. A whereas clause states that the PA is necessary because Caltrans cannot complete their identification efforts prior to the selection of a preferred alternative. However, Stipulation V.A of the PA states that Caltrans will complete preliminary identification efforts prior to and assist in the selection of the preferred alternative. Therefore, it is unclear as to why Caltrans cannot perform the preliminary efforts now to better inform the development of the PA.
7. A significant portion of the PA pertains to the CRWG that is composed of Caltrans District 1, NPS, State Agencies (State Parks), and Native American tribes (Federally and non-Federally recognized). General comments regarding the CRWG include:
    a. A key purpose of this working group should be to provide substantive input into the selection of the preferred alternatives under NEPA and CEQA. Consider including a process for how the CRWG will formally submit comments to Caltrans about what the CRWG's perspective is on a preferred alternative, and how Caltrans will formally respond, for the administrative record, to the CRWG's stated perspective on the preferred alternative.
    b. The purpose of the CRWG needs to be better defined. Although "inclusive approach" is used throughout the PA to describe the purpose and intent of the CRWG, the CRWG has excluded important consulting parties, including the Caltrans Cultural Studies Office (CSO), the SHPO, and additional consulting parties such as identified historic organizations. The CRWG is consulting and making decisions without the involvement of the CSO, SHPO, and ACHP, if they choose to participate.
    c. The PA states that Caltrans will identify historic properties and decide on treatment measures to resolve adverse effects in consultation with the CRWG through a process referred as "consultation on a historic-property-by-historic property basis". For each resource identified within the area of potential effects (APE), Caltrans will organize "focused meetings" with the CRWG to discuss how each resource will be evaluated. This approach seems to be dated and has the potential to eliminate efforts at identifying cultural landscapes, traditional cultural properties, and ultimately historic districts in the APE. A more holistic contextual approach is recommended.
    d. Treatment measures to resolve adverse effects to historic properties will also be decided in CRWG "focused meetings" on a "historic-property-by-historic property

basis". The CRWG has quite an influential role throughout the PA and to not include all parties to the PA is a cause for concerns. It is also important to note that the consultation that occurs as part of this CRWG does not fulfill Caltrans' requirements to *formally* consult with the SHPO, ACHP (if applicable), Indian tribes, and additional consulting parties per the regulations.

e. The CRWG only pertains to historic properties with archaeological significance or tribal cultural and religious significance, and in general the PA does not consider built environment resources. If "the purpose of the CRWG is to provide an inclusive approach to informed decision making" in the identification and evaluation, assessment of adverse effects, and resolution of adverse effects to historic properties within the APE, Caltrans should make a reasonable and good faith effort to identify historic organizations and/or individuals who might have an interest in the known built environment resources (Old Redwood Highway, the Wagon Road and cabin site) in the APE.

f. Based on the comments listed above, it is recommended that Caltrans consult with ACHP about the purpose and intent of the CRWG to help better define its applicability to the PA. As currently written, it is implied that the intent of the CRWG is to solely address Caltrans' responsibilities under the regulations to consult with Indian tribes and other consulting parties (non-federally recognized tribes) to address historic properties of religious and cultural tribal significance for this undertaking. As such, Caltrans might also consider developing a separate memorandum of agreement or understanding with consulting Indian tribes in accordance with 36 CFR §800.2(c)(2)(ii)(E) to better facilitate Caltrans' efforts to consult with Indian tribes throughout the undertaking. Most of the processes outlined in the CRWG may be more appropriate in this type of document and more helpful in memorializing roles and responsibility of both Caltrans and consulting Indian tribes throughout the phased process to better help avoid future disagreements or objections during the life of the undertaking. This is solely provided as a general comment for Caltrans to consider, and for more information, please refer to the ACHP's Handbooks on Consultation with Indian tribes and Native Hawaiian Organizations.

8. Overall, the PA contains references to vague environmental start dates.
9. Aside from a pedestrian survey and resource recording, no other identification efforts pursuant to 36 CFR §800.4(a)(2), such as a record search, historical/archival research, consultation with other interested parties (historical societies), etc. are discussed.
10. The words "historic" and "cultural" are used incorrectly throughout the PA. As defined in 36 CFR 800.16(l)(1), the term historic property has a clear definition under the regulations, and the PA should be revised accordingly.
11. The PA could benefit from a definitions section.
12. There is not a clear process for what will occur if CSO or the SHPO disagrees/objects to Caltrans District 1's determinations, assessment of adverse effects, and/or resolution of adverse effects.
13. There is no annual meeting in the reporting provisions, and a duration needs to be specified. It should be noted that the five-year duration is the preferred duration for agreements executed by the SHPO.

As stated earlier, the SHPO has provided the above general comments for Caltrans to begin revising the draft PA accordingly. The SHPO anticipates submitting more detailed comments to the draft PA itself upon receipt of the revised PA for further SHPO review and comment. If you have any questions, please contact State Historian Natalie Lindquist at natalie.lindquist@parks.ca.gov or Associate State Archaeologist Alicia Perez at alicia.perez@parks.ca.gov .

Sincerely,

Julianne Polanco
State Historic Preservation Officer

California Department of Transportation

DIVISION OF ENVIRONMENTAL ANALYSIS
1120 N STREET
P.O. BOX 942874
SACRAMENTO, CA 94274-0001
PHONE (510) 504-1937
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November 23, 2022

Julianne Polanco
State Historic Preservation Officer
1725 23rd Street, Suite 100
Sacramento, CA 95816-1700

RE: Determination of Eligibility for the Last Chance Grade Permanent Restoration Project on United States Highway 101, Del Norte County, California (FHWA_2019_1015_002)

Dear Ms. Polanco:

The California Department of Transportation (Caltrans), as assigned by the Federal Highway Administration (FHWA), is continuing consultation with the State Historic Preservation Officer (SHPO) regarding the Last Chance Grade Permanent Restoration Project on US Highway 101, in Del Norte County, California (Undertaking). At the request of the National Park Service, Caltrans is conducting compliance with Section 106 of the National Historic Preservation Act pursuant to its implementing regulations at 36 CFR § 800.

Caltrans District 1 proposes to develop a long-term solution to the instability and potential roadway failure at Last Chance Grade (LCG) by constructing a new alignment. The existing alignment requiring replacement is located between post miles (PM) 12.7 and 16.5 on US highway 101 in Del Norte County. There are currently two built alternative alignments under consideration. A description of each alternative is available in the enclosed Historic Property Survey Report (HPSR).

Enclosed with this letter are an HPSR with attached Archaeological Survey Report (ASR), Historic Resources Evaluation Report (HRER), and Ethnographic Overview of the proposed project Study Area.

Caltrans' consultation and identification efforts have resulted in the documentation of six potential historic properties with the Undertaking's Environmental Study Limits (ESL) that require evaluation. **Caltrans has determined that the following property is eligible for listing on the National Register of Historic Places and requests your concurrence, pursuant to 36 CFR §800.4(c)(2):**

- **Crescent City to Trinidad Wagon Road (P-08-000470/ REDW00169).**

This property was the primary route between Crescent City and Trinidad from its construction in 1894 until the advent of the Redwood Highway in the 1920s. The wagon road currently exists as discrete segments that vary in length and condition. A total of 31 segments of the wagon road were identified within the cultural study area for the current project. Segments 1 through 13 were originally recorded in 2019 as part of the identification efforts for Phase 2B geotechnical studies. In 2020, the record was

updated to include seventeen additional segments (A-Q). In 2022, Caltrans identified one additional segment (C-1).

Caltrans has determined that the following properties are not eligible for listing on the National Register of Historic Places and requests your concurrence, pursuant to 36 CFR §800.4(c)(2):

- **Ocean View Terraces Subdivision (TD-1). T**he remains of a residential development (ca. 1950-1983) situated east of US 101 at PM 13.51 in Del Norte County on land currently owned by NPS.
- **Del Norte Palisades Subdivision (TD-4).** A mid-century residential development situated east of US 101 at P.M. 13.83 in Del Norte County on land currently owned by NPS.
- **Log Stack TO118-17.** A historic-era stacked redwood log feature associated with the "modern" Redwood Highway.
- **Log Stack TO118-18.** A historic-era stacked redwood log feature associated with the "modern" Redwood Highway.
- **Modern Redwood Highway (US 101), PM 12.5-13.3 (P-08-000552). T**he currently in-use Redwood Highway (US 101). Caltrans previously evaluated a segment between PM 13.3 and 22.58 and found that it did not meet NRHP/CRHR criteria. SHPO concurred with this determination on May 15, 2014 (SHPO Reference # FHWA_2014_0320_001). The current project update adds PM 12.5 through 13.3.

The enclosed HRER provides support for these proposed determinations. If you require any additional information or have any questions or concerns please do not hesitate to contact me or Caltrans District 1 Project Archaeologists Stacey Zolnoski at (707) 815-6815 or Stacey.Zolnoski@dot.ca.gov. Thank you for your assistance with this Undertaking.

Sincerely,

Julia Huddleson, for Kathryn Rose

KATHRYN ROSE
Office Chief, Acting
Cultural Studies Office
Caltrans Division of Environmental Analysis

enc: Historic Property Survey Report, with Attachments, for the Last Chance Grade Permanent Restoration Project on US Highway 101 in Del Norte County, California

cc: David Price, Section 106 Coordinator, Caltrans Cultural Studies Office
Stacey Zolnoski, Project Archaeologist, Caltrans District 1

State of California • Natural Resources Agency
Gavin Newsom, *Governor*

DEPARTMENT OF PARKS AND RECREATION
OFFICE OF HISTORIC PRESERVATION
Armando Quintero, *Director*

Julianne Polanco, State Historic Preservation Officer
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Telephone: (916) 445-7000 FAX: (916) 445-7053
calshpo.ohp@parks.ca.gov www.ohp.parks.ca.gov

January 5, 2023

VIA EMAIL

In reply refer to: FHWA_2019_1015_002

Ms. Kathryn Rose, Office Chief, Acting
Cultural Studies Office
Caltrans Division of Environmental Analysis
PO Box 942874
Sacramento, CA 94274

Subject: Determinations of Eligibility for the Proposed Last Chance Grade Permanent Restoration Project on US Highway 101, Del Norte County, CA

Dear Ms. Rose:

Caltrans, as assigned by the Federal Highway Administration, is continuing consultation regarding the above project in accordance with Section 106 of the National Historic Preservation Act and implementing regulations codified at 36 CFR Part 800. As part of your documentation, Caltrans submitted a Historic Property Survey Report (HPSR), an Archaeological Survey Report, an Ethnographic Research Report, and a Historic Resources Evaluation Report for the proposed project.

Caltrans District 1 proposes to develop a long-term solution to the instability and potential roadway failure at Last Chance Grade (LCG) by constructing a new alignment. The existing alignment requiring replacement is located between post miles (PM) 12.7 and 16.5 on US highway 101 in Del Norte County. There are currently two built alternative alignments under consideration. A description of each alternative is available in the HPSR.

Pursuant to 36 CFR 800.4(c)(2), Caltrans requests concurrence that the Crescent City to Trinidad Wagon Road (P-08-000470) is eligible for the National Register of Historic Places (NRHP) under Criterion A for its association with the development of Crescent City and as the only major overland wagon road until the Redwood Highway was constructed in the late 1910s and 1920s. The period of significance is 1894 to circa 1920s.

Caltrans has also determined that the following properties are not eligible for the NRHP and is requesting concurrence:

- Ocean View Terraces Subdivision (TD-1)
- Del Norte Palisades Subdivision (TD-4)
- Log Stack TO118-17
- Log Stack TO118-18
- Modern Redwood Highway

Based on review of the submitted documentation, the SHPO has the following comments:

1. With regards to the Crescent City to Trinity Wagon Road, I do not have enough information currently to either agree or disagree with Caltrans' determination of eligibility for the NRHP. I recommend that Caltrans treat the property as eligible for the purposes of the project. For segments with compromised integrity, Caltrans can take these factors into account as part of the effects analysis.
2. I concur that the five properties listed above are not eligible for the NRHP.

If you have any questions, please contact Natalie Lindquist at natalie.lindquist@parks.ca.gov .

Sincerely,



Julianne Polanco
State Historic Preservation Officer



APPENDIX G. Species Lists



Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Crescent City (4112472) OR Hiouchi (4112471) OR Gasquet (4112378) OR Cant Hook Mtn. (4112368) OR Childs Hill (4112461) OR Sister Rocks (4112462) OR Requa (4112451) OR Klamath Glen (4112358) OR Fern Canyon (4112441) OR Ah Pah Ridge (4112348) OR Orick (4112431) OR Rodgers Peak (4112421))
 AND Taxonomic Group IS (Ferns OR Gymnosperms OR Monocots OR Dicots OR Lichens OR Bryophytes OR Fungi)

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Abronia umbellata var. breviflora pink sand-verbena	PDNYC010N4	None	None	G4G5T2	S2	1B.1
Anthoxanthum nitens ssp. nitens vanilla-grass	PMPOA35041	None	None	G5T5	S2	2B.3
Arabis mcdonaldiana McDonald's rockcress	PDBRA06150	Endangered	Endangered	G3	S3	1B.1
Asplenium trichomanes ssp. trichomanes maidenhair spleenwort	PPASP021K2	None	None	G5T5	S1	2B.1
Boechera koehleri Koehler's stipitate rockcress	PDBRA060Z0	None	None	G3G4	S3	1B.3
Calamagrostis crassiglumis Thurber's reed grass	PMPOA17070	None	None	G3Q	S2	2B.1
Calamagrostis foliosa leafy reed grass	PMPOA170C0	None	Rare	G3	S3	4.2
Calicium adspersum spiral-spored gilded-head pin lichen	NLT0005640	None	None	G3G4	S1	2B.2
Calystegia atriplicifolia ssp. buttensis Butte County morning-glory	PDCON04012	None	None	G5T3	S3	4.2
Cardamine angulata seaside bittercress	PDBRA0K010	None	None	G4G5	S3	2B.1
Cardamine nuttallii var. gemmata yellow-tubered toothwort	PDBRA0K0R3	None	None	G5T3Q	S2	3.3
Carex arcta northern clustered sedge	PMCYP030X0	None	None	G5	S1	2B.2
Carex lenticularis var. limnophila lagoon sedge	PMCYP037A7	None	None	G5T5	S1	2B.2
Carex leptalea bristle-stalked sedge	PMCYP037E0	None	None	G5	S1	2B.2
Carex lyngbyei Lyngbye's sedge	PMCYP037Y0	None	None	G5	S3	2B.2
Carex praticola northern meadow sedge	PMCYP03B20	None	None	G5	S2	2B.2
Carex saliniformis deceiving sedge	PMCYP03BY0	None	None	G2	S2	1B.2

California Natural Diversity Database Species List

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Carex serpenticola serpentine sedge	PMCYP03KM0	None	None	G4	S3	2B.3
Carex viridula ssp. viridula green yellow sedge	PMCYP03EM5	None	None	G5T5	S2	2B.3
Cascadia nuttallii Nuttall's saxifrage	PDSAX0U160	None	None	G4?	S1	2B.1
Castilleja ambigua var. humboldtiensis Humboldt Bay owl's-clover	PDSCR0D402	None	None	G4T2	S2	1B.2
Castilleja elata Siskiyou paintbrush	PDSCR0D213	None	None	G3	S2S3	2B.2
Castilleja litoralis Oregon coast paintbrush	PDSCR0D012	None	None	G3	S3	2B.2
Cochlearia groenlandica Greenland cochlearia	PDBRA0S020	None	None	G4	S1	2B.3
Coptis laciniata Oregon goldthread	PDRAN0A020	None	None	G4?	S3?	4.2
Discelium nudum naked flag moss	NBMUS2E010	None	None	G4G5	S1	2B.2
Downingia willamettensis Cascade downingia	PDCAM060E0	None	None	G4	S2	2B.2
Empetrum nigrum black crowberry	PDEMP03020	None	None	G5	S1?	2B.2
Eriogonum nudum var. paralinum Del Norte buckwheat	PDPGN08498	None	None	G5T2	S1	2B.2
Eriogonum pendulum Waldo wild buckwheat	PDPGN084Q0	None	None	G4	S2S3	2B.2
Erysimum concinnum bluff wallflower	PDBRA160E3	None	None	G3	S2	1B.2
Erythronium hendersonii Henderson's fawn lily	PMLIL0U070	None	None	G4	S2	2B.3
Erythronium howellii Howell's fawn lily	PMLIL0U080	None	None	G3G4	S2	1B.3
Erythronium oregonum giant fawn lily	PMLIL0U0C0	None	None	G5	S2	2B.2
Erythronium revolutum coast fawn lily	PMLIL0U0F0	None	None	G4G5	S3	2B.2
Fissidens pauperculus minute pocket moss	NBMUS2W0U0	None	None	G3?	S2	1B.2
Gentiana setigera Mendocino gentian	PDGEN060S0	None	None	G2	S2	1B.2
Gilia capitata ssp. pacifica Pacific gilia	PDPLM040B6	None	None	G5T3	S2	1B.2

California Natural Diversity Database Species List

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Gilia millefoliata dark-eyed gilia	PDPLM04130	None	None	G2	S2	1B.2
Hesperevax sparsiflora var. brevifolia short-leaved evax	PDASTE5011	None	None	G4T3	S3	1B.2
Iliamna latibracteata California globe mallow	PDMAL0K040	None	None	G2G3	S2	1B.2
Kopsiopsis hookeri small groundcone	PDORO01010	None	None	G4?	S1S2	2B.3
Lasthenia californica ssp. macrantha perennial goldfields	PDAST5L0C5	None	None	G3T2	S2	1B.2
Lathyrus japonicus seaside pea	PDFAB250C0	None	None	G5	S2	2B.1
Lathyrus palustris marsh pea	PDFAB250P0	None	None	G5	S2	2B.2
Layia carnosa beach layia	PDAST5N010	Threatened	Endangered	G2	S2	1B.1
Lewisia oppositifolia opposite-leaved lewisia	PDPOR040B0	None	None	G3	S2	2B.2
Lilium occidentale western lily	PMLIL1A0G0	Endangered	Endangered	G1G2	S1	1B.1
Lomatium martindalei Coast Range lomatium	PDAPI1B140	None	None	G5	S2	2B.3
Lycopodium clavatum running-pine	PPLYC01080	None	None	G5	S3	4.1
Lysimachia europaea arctic starflower	PDPRI0A020	None	None	G5	S1	2B.2
Mitellastra caulescens leafy-stemmed mitrewort	PDSAX0N020	None	None	G5	S4	4.2
Moneses uniflora woodnymph	PDPYR02010	None	None	G5	S2	2B.2
Monotropa uniflora ghost-pipe	PDMON03030	None	None	G5	S2	2B.2
Montia howellii Howell's montia	PDPOR05070	None	None	G3G4	S2	2B.2
Oenothera wolfii Wolf's evening-primrose	PDONA0C1K0	None	None	G2	S1	1B.1
Packera bolanderi var. bolanderi seacoast ragwort	PDAST8H0H1	None	None	G4T4	S2S3	2B.2
Packera hesperia western ragwort	PDAST8H1L0	None	None	G3	S1	2B.2
Phacelia argentea sand dune phacelia	PDHYD0C070	Proposed Threatened	None	G2	S1	1B.1

California Natural Diversity Database Species List

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Pinguicula macroceras horned butterwort	PDLNT01040	None	None	G4	S2	2B.2
Piperia candida white-flowered rein orchid	PMORC1X050	None	None	G3?	S3	1B.2
Polemonium carneum Oregon polemonium	PDPLM0E050	None	None	G3G4	S2	2B.2
Potamogeton foliosus ssp. fibrillosus fibrous pondweed	PMPOT030B1	None	None	G5T2T4	S1S2	2B.3
Prosartes parvifolia Siskiyou bells	PMLIL0R014	None	None	G5T2?	S2	1B.2
Pyrrocoma racemosa var. congesta Del Norte pyrrocoma	PDASTDT0F4	None	None	G5T4	S2	2B.3
Ramalina thrausta angel's hair lichen	NLLEC3S340	None	None	G5?	S2S3	2B.1
Rhynchospora alba white beaked-rush	PMCYP0N010	None	None	G5	S2	2B.2
Romanzoffia tracyi Tracy's romanzoffia	PDHYD0E030	None	None	G4	S2	2B.3
Rosa gymnocarpa var. serpentina Gasquet rose	PDROS1J1V1	None	None	G5T3T4	S2	1B.3
Sabulina howellii Howell's sandwort	PDCAR0G0F0	None	None	G4	S3	1B.3
Sagittaria sanfordii Sanford's arrowhead	PMALI040Q0	None	None	G3	S3	1B.2
Sanguisorba officinalis great burnet	PDROS1L060	None	None	G5?	S2	2B.2
Sedum citrinum Blue Creek stonecrop	PDCRA0A200	None	None	G2	S2	1B.2
Sedum patens Smith River stonecrop	PDCRA0A250	None	None	G2	S2	1B.2
Sidalcea malachroides maple-leaved checkerbloom	PDMAL110E0	None	None	G3	S3	4.2
Sidalcea malviflora ssp. patula Siskiyou checkerbloom	PDMAL110F9	None	None	G5T2	S2	1B.2
Sidalcea oregana ssp. eximia coast checkerbloom	PDMAL110K9	None	None	G5T1	S1	1B.2
Silene hookeri Hooker's catchfly	PDCAR0U2M0	None	None	G4	S2	2B.2
Silene scouleri ssp. scouleri Scouler's catchfly	PDCAR0U1MC	None	None	G5T4T5	S2S3	2B.2
Silene serpentinicola serpentine catchfly	PDCAR0U2B0	None	None	G3	S3	1B.2

California Natural Diversity Database Species List

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Streptanthus howellii Howell's jewelflower	PDBRA2G0N0	None	None	G2G3	S2	1B.2
Sulcaria spiralifera twisted horsehair lichen	NLT0042560	None	None	G3G4	S2	1B.2
Thermopsis robusta robust false lupine	PDFAB3Z0D0	None	None	G2	S2	1B.2
Trichodon cylindricus cylindrical trichodon	NBMUS7N020	None	None	G4G5	S2	2B.2
Triquetrella californica coastal triquetrella	NBMUS7S010	None	None	G2	S2	1B.2
Usnea longissima Methuselah's beard lichen	NLLEC5P420	None	None	G4	S4	4.2
Vaccinium scoparium little-leaved huckleberry	PDERI180Y0	None	None	G5	S3	2B.2
Viola langsdorffii Langsdorf's violet	PDVIO04100	None	None	G4	S1	2B.1
Viola palustris alpine marsh violet	PDVIO041G0	None	None	G5	S1S2	2B.2
Viola primulifolia ssp. occidentalis western white bog violet	PDVIO040Y2	None	None	G5T2	S2	1B.2

Record Count: 90

*The nine-quad lists for Requa and Childshill quadrangles were obtained from the CNDDB Quick View Tool on October 19, 2023. The Tool list contains unprocessed records that do no show up on this list above. These records are included in the project special-status species tables in Appendix H and Appendix I.

California Natural Diversity Database Species List

Selected Elements by Common Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Crescent City (4112472) OR Hiouchi (4112471) OR Gasquet (4112378) OR Sister Rocks (4112462) OR Childs Hill (4112461) OR Cant Hook Mtn. (4112368) OR Requa (4112451) OR Klamath Glen (4112358) OR Fern Canyon (4112441) OR Ah Pah Ridge (4112348))
 AND Taxonomic Group IS (Fish OR Amphibians OR Reptiles OR Birds OR Mammals OR Mollusks OR Arachnids OR Crustaceans OR Insects)

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
American peregrine falcon *Falco peregrinus anatum*	ABNKD06071	Delisted	Delisted	G4T4	S3S4	FP
bald eagle *Haliaeetus leucocephalus*	ABNKC10010	Delisted	Endangered	G5	S3	FP
Behrens' snail-eating beetle *Scaphinotus behrensi*	IICOL4L070	None	None	G2G4	S2S4	
black swift *Cypseloides niger*	ABNUA01010	None	None	G4	S2	SSC
black-crowned night heron *Nycticorax nycticorax*	ABNGA11010	None	None	G5	S4	
cackling (=Aleutian Canada) goose *Branta hutchinsii leucopareia*	ABNJB05035	Delisted	None	G5T3	S3	WL
Chace juga *Juga chacei*	IMGASK4180	None	None	G1	S1	
coast cutthroat trout *Oncorhynchus clarkii clarkii*	AFCHA0208A	None	None	G5T4	S3	SSC
Del Norte salamander *Plethodon elongatus*	AAAAD12050	None	None	G4	S3	WL
double-crested cormorant *Nannopterum auritum*	ABNFD01020	None	None	G5	S4	WL
eulachon *Thaleichthys pacificus*	AFCHB04010	Threatened	None	G5	S1	
Fisher *Pekania pennanti*	AMAJF01020	None	None	G5	S2S3	SSC
foothill yellow-legged frog - north coast DPS *Rana boylii pop. 1*	AAABH01051	None	None	G3TNRQ	S4	SSC
fork-tailed storm-petrel *Hydrobates furcatus*	ABNDC04010	None	None	G5	S1	SSC
Fort Dick limnephilus caddisfly *Limnephilus atercus*	IITRI15020	None	None	G3G4	S1	
fringed myotis *Myotis thysanodes*	AMACC01090	None	None	G4	S3	
great blue heron *Ardea herodias*	ABNGA04010	None	None	G5	S4	

California Natural Diversity Database Species List

Selected Elements by Common Name

California Department of Fish and Wildlife

California Natural Diversity Database

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
highcap lanx *Lanx alta*	IMGASL7010	None	None	G2G3	S3	
hooded lancetooth *Ancotrema voyanum*	IMGAS36130	None	None	G1G2	S1S2	
Humboldt marten *Martes caurina humboldtensis*	AMAJF01012	Threatened	Endangered	G4G5T1	S1	SSC
Humboldt mountain beaver *Aplodontia rufa humboldtiana*	AMAFA01017	None	None	G5TNR	SNR	
long-eared myotis *Myotis evotis*	AMACC01070	None	None	G5	S3	
longfin smelt *Spirinchus thaleichthys*	AFCHB03010	Candidate	Threatened	G5	S1	
Lower Klamath marbled sculpin *Cottus klamathensis polyporus*	AFC4E02153	None	None	G4T2T4	S2S4	SSC
marbled murrelet *Brachyramphus marmoratus*	ABNNN06010	Threatened	Endangered	G3	S2	
mardon skipper *Polites mardon*	IILEP66030	None	None	G2	S1	
marsh walker *Pomatiopsis chacei*	IMGASJ9030	None	None	G1	S2	
North American porcupine *Erethizon dorsatum*	AMAFJ01010	None	None	G5	S3	
northern harrier *Circus hudsonius*	ABNKC11011	None	None	G5	S3	SSC
northern red-legged frog *Rana aurora*	AAABH01021	None	None	G4	S3	SSC
obscure bumble bee *Bombus caliginosus*	IIHYM24380	None	None	G2G3	S1S2	
Oregon silverspot butterfly *Speyeria zerene hippolyta*	IILEPJ6087	Threatened	None	G5T1	S1	
osprey *Pandion haliaetus*	ABNKC01010	None	None	G5	S4	WL
Pacific tailed frog *Ascaphus truei*	AAABA01010	None	None	G4	S3S4	SSC
rhinoceros auklet *Cerorhinca monocerata*	ABNNN11010	None	None	G5	S3	WL
rocky coast Pacific sideband *Monadenia fidelis pronotis*	IMGASC7032	None	None	G4G5T1	S1	
ruffed grouse *Bonasa umbellus*	ABNLC11010	None	None	G5	S3S4	WL
silver-haired bat *Lasionycteris noctivagans*	AMACC02010	None	None	G3G4	S3S4	

California Natural Diversity Database Species List

Selected Elements by Common Name

California Department of Fish and Wildlife

California Natural Diversity Database

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Sonoma tree vole *Arborimus pomo*	AMAFF23030	None	None	G3	S3	SSC
southern torrent salamander *Rhyacotriton variegatus*	AAAAJ01020	None	None	G3G4	S2S3	SSC
Steller sea lion *Eumetopias jubatus*	AMAJC03010	Delisted	None	G3	S2	
tidewater goby *Eucyclogobius newberryi*	AFCQN04010	Endangered	None	G3	S3	
Townsend's big-eared bat *Corynorhinus townsendii*	AMACC08010	None	None	G4	S2	SSC
tufted puffin *Fratercula cirrhata*	ABNNN12010	None	None	G5	S1S2	SSC
Wawona riffle beetle *Atractelmis wawona*	IICOL58010	None	None	G3	S1S2	
western bumble bee *Bombus occidentalis*	IIHYM24252	None	Candidate Endangered	G3	S1	
western pearlshell *Margaritifera falcata*	IMBIV27020	None	None	G4G5	S1S2	
western pond turtle *Emys marmorata*	ARAAD02030	None	None	G3G4	S3	SSC
western ridged mussel *Gonidea angulata*	IMBIV19010	None	None	G3	S1S2	
western snowy plover *Charadrius nivosus nivosus*	ABNNB03031	Threatened	None	G3T3	S3	SSC
white-tailed kite *Elanus leucurus*	ABNKC06010	None	None	G5	S3S4	FP
Yontocket satyr *Coenonympha tullia yontockett*	IILEPN6035	None	None	G5T1T2	S1	
Yuma myotis *Myotis yumanensis*	AMACC01020	None	None	G5	S4	

Record Count: 53

*The nine-quad lists for the Requa and Childshill quadrangles were obtained form the CNDDB Quick View Tool on October 19, 2023. The Tool list contains unprocessed records that do not show up on the list above. These records are included in the project special-status species tables in Appendix H and I.

California Natural Diversity Database Species List

CNPS Rare Plant Inventory

CALIFORNIA NATIVE PLANT SOCIETY

Search Results

150 matches found. Click on scientific name for details

Search Criteria: Quad is one of [**4112472:4112471:4112378:4112368:4112461:4112462:4112451:4112358:4112441:4112348:4112431:4112421**]

▲ SCIENTIFIC NAME	COMMON NAME	BLOOMING PERIOD	FED LIST	STATE LIST	CA RARE PLANT RANK	LOWEST ELEVATION (FT)	HIGHEST ELEVATION (FT)
Abronia umbellata var. *breviflora*	pink sand-verbena	Jun-Oct	None	None	1B.1	0	35
Angelica lucida	sea-watch	Apr-Sep	None	None	4.2	0	490
Antennaria suffrutescens	evergreen everlasting	Jan-Jul	None	None	4.3	1640	5250
Anthoxanthum nitens ssp. *nitens*	vanilla-grass	Apr-Jul	None	None	2B.3	4920	6215
Arabis mcdonaldiana	McDonald's rockcress	May-Jul	FE	CE	1B.1	445	5905
Arctostaphylos hispidula	Howell's manzanita	Mar-Apr	None	None	4.2	395	4100
Arctostaphylos nortensis	Del Norte manzanita	Feb	None	None	4.3	1640	2625
Arnica cernua	serpentine arnica	Apr-Jul	None	None	4.3	1640	6300
Arnica spathulata	Klamath arnica	May-Aug	None	None	4.3	2100	5905
Asplenium trichomanes ssp. *trichomanes*	maidenhair spleenwort	May-Jul	None	None	2B.1	605	655
Boechera koehleri	Koehler's stipitate rockcress	(Mar)Apr-Jul	None	None	1B.3	510	5445
Buxbaumia viridis	green shield-moss		None	None	2B.2	3200	7220
Calamagrostis bolanderi	Bolander's reed grass	May-Aug	None	None	4.2	0	1495
Calamagrostis crassiglumis	Thurber's reed grass	May-Aug	None	None	2B.1	35	195
Calamagrostis foliosa	leafy reed grass	May-Sep	None	CR	4.2	0	4005
Calicium adspersum	spiral-spored gilded-head pin lichen		None	None	2B.2	655	655
Callitropsis nootkatensis	Alaska cedar		None	None	4.3	2135	8205
Calystegia atriplicifolia ssp. *buttensis*	Butte County morning-glory	May-Jul	None	None	4.2	1855	5000
Cardamine angulata	seaside bittercress	(Jan)Mar-Jul	None	None	2B.2	50	3000
Cardamine nuttallii var. *gemmata*	yellow-tubered toothwort	Apr-May(Jun)	None	None	3.3	330	2295
Carex arcta	northern clustered sedge	Jun-Sep	None	None	2B.2	195	4595
Carex buxbaumii	Buxbaum's sedge	Mar-Aug	None	None	4.2	10	10825
Carex lenticularis var. *limnophila*	lagoon sedge	Jun-Aug	None	None	2B.2	0	20
Carex leptalea	bristle-stalked sedge	Mar-Jul	None	None	2B.2	0	2295
Carex lyngbyei	Lyngbye's sedge	Apr-Aug	None	None	2B.2	0	35
Carex praticola	northern meadow sedge	May-Jul	None	None	2B.2	0	10500
Carex saliniformis	deceiving sedge	(May)Jun(Jul)	None	None	1B.2	10	755
Carex scabriuscula	Siskiyou sedge	May-Jul	None	None	4.3	2330	7695
Carex serpenticola	serpentine sedge	Mar-May	None	None	2B.3	195	3935
Carex sheldonii	Sheldon's sedge	May-Aug	None	None	2B.2	3935	6600
Carex viridula ssp. *viridula*	green yellow sedge	(Jun)Jul-Sep(Nov)	None	None	2B.3	0	5250

California Native Plant Society Species List

Cascadia nuttallii	Nuttall's saxifrage	May	None	None	2B.1	130	245
Castilleja ambigua var. *ambigua*	johnny-nip	Mar-Aug	None	None	4.2	0	1425
Castilleja ambigua var. *humboldtiensis*	Humboldt Bay owl's-clover	Apr-Aug	None	None	1B.2	0	10
Castilleja brevilobata	short-lobed paintbrush	Apr-Jul	None	None	4.2	395	5580
Castilleja elata	Siskiyou paintbrush	May-Aug	None	None	2B.2	0	5740
Castilleja litoralis	Oregon coast paintbrush	Jun	None	None	2B.2	50	330
Chrysosplenium glechomifolium	Pacific golden saxifrage	Feb-Jun	None	None	4.3	35	1770
Cochlearia groenlandica	Greenland cochlearia	May-Jul	None	None	2B.3	0	165
Coptis laciniata	Oregon goldthread	(Feb)Mar-May(Sep-Nov)	None	None	4.2	0	3280
Cypripedium californicum	California lady's-slipper	Apr-Aug(Sep)	None	None	4.2	100	9025
Cypripedium montanum	mountain lady's-slipper	Mar-Aug	None	None	4.2	605	7300
Darlingtonia californica	California pitcherplant	Apr-Aug	None	None	4.2	0	8480
Dicentra formosa ssp. *oregana*	Oregon bleeding heart	Apr-May	None	None	4.2	1395	4870
Discelium nudum	naked flag moss		None	None	2B.2	35	165
Doellingeria glabrata	Siskiyou aster	Jun-Sep	None	None	4.3	395	8875
Downingia willamettensis	Cascade downingia	Jun-Jul(Sep)	None	None	2B.2	50	3640
Eleocharis parvula	small spikerush	(Apr)Jun-Aug(Sep)	None	None	4.3	5	9910
Empetrum nigrum	black crowberry	Apr-Jun	None	None	2B.2	35	655
Epilobium rigidum	Siskiyou Mountains willowherb	Jul-Aug	None	None	4.3	490	3935
Erigeron cervinus	Siskiyou daisy	Jun-Aug	None	None	4.3	80	6235
Eriogonum nudum var. *paralinum*	Del Norte buckwheat	Jun-Sep	None	None	2B.2	15	260
Eriogonum pendulum	Waldo wild buckwheat	Aug-Sep	None	None	2B.2	755	3280
Eriogonum ternatum	ternate buckwheat	Jun-Aug	None	None	4.3	1000	7300
Erysimum concinnum	bluff wallflower	Feb-Jul	None	None	1B.2	0	605
Erythronium citrinum var. *citrinum*	lemon-colored fawn lily	Mar-May	None	None	4.3	490	4265
Erythronium hendersonii	Henderson's fawn lily	Apr-Jul	None	None	2B.3	985	5250
Erythronium howellii	Howell's fawn lily	Apr-May	None	None	1B.3	655	3755
Erythronium oregonum	giant fawn lily	Mar-Jun(Jul)	None	None	2B.2	330	3775
Erythronium revolutum	coast fawn lily	Mar-Jul(Aug)	None	None	2B.2	0	5250
Fissidens pauperculus	minute pocket moss		None	None	1B.2	35	3360
Gentiana setigera	Mendocino gentian	(Apr-Jul)Aug-Sep	None	None	1B.2	1100	3495
Gilia capitata ssp. *pacifica*	Pacific gilia	Apr-Aug	None	None	1B.2	15	5465
Gilia millefoliata	dark-eyed gilia	Apr-Jul	None	None	1B.2	5	100
Glehnia littoralis ssp. *leiocarpa*	American glehnia	May-Aug	None	None	4.2	0	65
Hesperevax sparsiflora var. *brevifolia*	short-leaved evax	Mar-Jun	None	None	1B.2	0	705
Horkelia congesta var. *nemorosa*	Josephine horkelia	May-Jul	None	None	2B.1	985	2625
Horkelia sericata	silky horkelia	Jun-Aug	None	None	4.3	590	3935
Hosackia gracilis	harlequin lotus	Mar-Jul	None	None	4.2	0	2295
Iliamna latibracteata	California globe mallow	Jun-Aug	None	None	1B.2	195	6560

California Native Plant Society Species List

Iris bracteata	Siskiyou iris	May-Jun	None	None	3.3	590	3510
Iris innominata	Del Norte County iris	May-Jun	None	None	4.3	985	6560
Iris tenax ssp. klamathensis	Orleans iris	Apr-May	None	None	4.3	330	4595
Iris thompsonii	Thompson's iris	(Mar-Apr)May-Jun(Jul-Aug)	None	None	4.3	295	1970
Kopsiopsis hookeri	small groundcone	Apr-Aug	None	None	2B.3	295	2905
Lasthenia californica ssp. macrantha	perennial goldfields	Jan-Nov	None	None	1B.2	15	1705
Lathyrus delnorticus	Del Norte pea	Jun-Jul	None	None	4.3	100	4755
Lathyrus japonicus	seaside pea	May-Aug	None	None	2B.1	5	100
Lathyrus palustris	marsh pea	Mar-Aug	None	None	2B.2	5	330
Layia carnosa	beach layia	Mar-Jul	FT	CE	1B.1	0	195
Leptosiphon aureus	bristly leptosiphon	Apr-Jul	None	None	4.2	180	4920
Leptosiphon latisectus	broad-lobed leptosiphon	Apr-Jun	None	None	4.3	560	4920
Lewisia oppositifolia	opposite-leaved lewisia	Apr-May(Jun)	None	None	2B.2	985	4005
Lilium bolanderi	Bolander's lily	Jun-Jul	None	None	4.2	100	5250
Lilium kelloggii	Kellogg's lily	(Feb)May-Aug	None	None	4.3	10	4265
Lilium occidentale	western lily	Jun-Jul	FE	CE	1B.1	5	605
Lilium pardalinum ssp. vollmeri	Vollmer's lily	(Jun)Jul-Aug	None	None	4.3	100	5510
Listera cordata	heart-leaved twayblade	Feb-Jul	None	None	4.2	15	4495
Lomatium howellii	Howell's lomatium	Apr-Jul	None	None	4.3	360	5595
Lomatium martindalei	Coast Range lomatium	May-Jun(Aug)	None	None	2B.3	785	9845
Lycopodium clavatum	running-pine	Jun-Aug(Sep)	None	None	4.1	150	4020
Lysimachia europaea	arctic starflower	Jun-Jul	None	None	2B.2	0	50
Micranthes howellii	Howell's saxifrage	Mar-May	None	None	4.3	245	2955
Micranthes marshallii	Marshall's saxifrage	Mar-Aug	None	None	4.3	295	6990
Mitellastra caulescens	leafy-stemmed mitrewort	(Mar)Apr-Oct	None	None	4.2	15	5580
Moneses uniflora	woodnymph	May-Aug	None	None	2B.2	330	3610
Monotropa uniflora	ghost-pipe	Jun-Aug(Sep)	None	None	2B.2	35	1805
Montia howellii	Howell's montia	(Feb)Mar-May	None	None	2B.2	0	2740
Oenothera wolfii	Wolf's evening-primrose	May-Oct	None	None	1B.1	10	2625
Oxalis suksdorfii	Suksdorf's wood-sorrel	May-Aug	None	None	4.3	50	2295
Packera bolanderi var. bolanderi	seacoast ragwort	(Jan-Apr)May-Jul(Aug)	None	None	2B.2	100	2135
Packera hesperia	western ragwort	Apr-Jun	None	None	2B.2	1640	8205
Packera macounii	Siskiyou Mountains ragwort	Jun-Jul	None	None	4.3	1310	3000
Perideridia gairdneri ssp. gairdneri	Gairdner's yampah	Jun-Oct	None	None	4.2	0	2000
Phacelia argentea	sand dune phacelia	Jun-Aug	PT	None	1B.1	10	80
Pinguicula macroceras	horned butterwort	Apr-Jun	None	None	2B.2	130	6300
Piperia candida	white-flowered rein orchid	(Mar-Apr)May-Sep	None	None	1B.2	100	4300
Pityopus californicus	California pinefoot	(Mar-Apr)May-Aug	None	None	4.2	50	7300
Platismatia lacunosa	crinkled rag lichen		None	None	2B.3	65	6560
Pleuropogon refractus	nodding semaphore grass	(Feb-Mar)Apr-Aug	None	None	4.2	0	5250
Poa piperi	Piper's blue grass	Apr-May	None	None	4.3	330	4790
Poa rhizomata	timber blue grass	Apr-May	None	None	4.3	490	3280

Polemonium carneum	Oregon polemonium	Apr-Sep	None	None	2B.2	0	6005
Potamogeton foliosus ssp. fibrillosus	fibrous pondweed	Unk	None	None	2B.3	15	4265
Primula pauciflora	beautiful shootingstar	Apr-Jun	None	None	4.2	3280	7810
Prosartes parvifolia	Siskiyou bells	May-Sep	None	None	1B.2	2295	5005
Pyrrocoma racemosa var. congesta	Del Norte pyrrocoma	Aug-Sep	None	None	2B.3	655	3280
Ramalina thrausta	angel's hair lichen		None	None	2B.1	245	1410
Rhynchospora alba	white beaked-rush	Jun-Aug	None	None	2B.2	195	6695
Ribes laxiflorum	trailing black currant	Mar-Jul(Aug)	None	None	4.3	15	4575
Romanzoffia tracyi	Tracy's romanzoffia	Mar-May	None	None	2B.3	50	100
Rosa gymnocarpa var. serpentina	Gasquet rose	Apr-Jun(Aug)	None	None	1B.3	1310	5660
Sabulina howellii	Howell's sandwort	Apr-Jul	None	None	1B.3	1805	3280
Sagittaria sanfordii	Sanford's arrowhead	May-Oct(Nov)	None	None	1B.2	0	2135
Salix delnortensis	Del Norte willow	Apr-May	None	None	4.3	295	1640
Sanguisorba officinalis	great burnet	Jul-Oct	None	None	2B.2	195	4595
Sanicula peckiana	Peck's sanicle	Mar-Jun	None	None	4.3	490	2625
Sedum citrinum	Blue Creek stonecrop	Jun	None	None	1B.2	3445	4200
Sedum patens	Smith River stonecrop	May-Jul	None	None	1B.2	295	690
Sidalcea elegans	Del Norte checkerbloom	May-Jul	None	None	3.3	705	4480
Sidalcea malachroides	maple-leaved checkerbloom	(Mar)Apr-Aug	None	None	4.2	0	2395
Sidalcea malviflora ssp. patula	Siskiyou checkerbloom	(Mar)May-Aug	None	None	1B.2	50	4035
Sidalcea oregana ssp. eximia	coast checkerbloom	Jun-Aug	None	None	1B.2	15	4395
Silene hookeri	Hooker's catchfly	(Mar)May-Jul	None	None	2B.2	490	4135
Silene scouleri ssp. scouleri	Scouler's catchfly	(Mar-May)Jun-Aug(Sep)	None	None	2B.2	0	1970
Silene serpentinicola	serpentine catchfly	May-Jul	None	None	1B.2	475	5415
Streptanthus howellii	Howell's jewelflower	Jul-Aug	None	None	1B.2	1000	4920
Sulcaria spiralifera	twisted horsehair lichen		None	None	1B.2	0	295
Tauschia glauca	glaucous tauschia	Apr-Jun	None	None	4.3	260	5580
Thermopsis robusta	robust false lupine	May-Jul	None	None	1B.2	490	4920
Tiarella trifoliata var. trifoliata	trifoliate laceflower	(May)Jun-Aug	None	None	3.2	560	4920
Trichodon cylindricus	cylindrical trichodon		None	None	2B.2	165	6570
Triquetrella californica	coastal triquetrella		None	None	1B.2	35	330
Usnea longissima	Methuselah's beard lichen		None	None	4.2	165	4790
Vaccinium scoparium	little-leaved huckleberry	Jun-Aug	None	None	2B.2	3400	7220
Vancouveria chrysantha	Siskiyou inside-out-flower	Jun	None	None	4.3	395	4920
Veratrum insolitum	Siskiyou false-hellebore	Jun-Aug	None	None	4.3	150	5365
Viola langsdorffii	Langsdorf's violet	May-Jul	None	None	2B.1	5	35
Viola palustris	alpine marsh violet	Mar-Aug	None	None	2B.2	0	490
Viola primulifolia ssp. occidentalis	western white bog violet	Apr-Sep	None	None	1B.2	330	3250

Showing 1 to 150 of 150 entries

Suggested Citation:

California Native Plant Society, Rare Plant Program. 2023. Rare Plant Inventory (online edition, v9.5). Website https://www.rareplants.cnps.org [accessed 19 January 2023].

California Native Plant Society Species List

		ESA ANADROMOUS FISH					ESA ANADROMOUS FISH CRITICAL HABITAT					ESA SEA TURTLES			ESA WHALES	ESSENTIAL FISH HABITAT				MMPA SPECIES	
Quad Name	Quad Number	Coho SONCC (T)	Chinook CC (T)	Steelhead NC (T)	Eulachon (T)	Southern DPS Green Sturgeon (T)	Coho SONCC (T)	Chinook CC (T)	Steelhead NC (T)	Eulachon (T)	Southern DPS Green Sturgeon (T)	East Pacific Green Sea Turtle (T)	Olive Ridley Sea Turtle (T/E)	Leatherback Sea Turtle (E)	Whales[1]	Coho	Chinook	Groundfish	Coastal Pelagic	MMPA Cetaceans[2]	MMPA Pinnipeds[3]
Ah Pah Ridge	41123-D8	X	X	X	X		X			X						X	X	X			
Cant Hook Mountain	41123-F8	X					X									X	X				
Childs Hill	41124-F1	X			X	X	X				X	X	X	X	X	X	X	X	X	X	X
Crescent City	41124-G2	X			X	X	X				X	X	X	X	X	X	X	X	X	X	X
Fern Canyon	41124-D1	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X
Gasquet	41123-G8	X					X									X	X				
Hiouchi	41124-G1	X					X									X	X				
Klamath Glen	41123-E8	X			X		X			X						X	X	X			
Requa	41124-E1	X	X	X	X	X	X			X	X	X	X	X	X	X	X	X	X	X	X
Sister Rocks	41124-F2	X			X	X	X				X	X	X	X	X	X	X	X	X	X	X

Source: NMFS Unofficial Species Tool, queried July 28, 2022 and January 23, 2023.

CC= California Coastal
DPS= Distinct Population Segment
E= Endangered Species Act Endangered
ESA= Federal Endangered Species Act
MMPA= Marine Mammal Protection Act
NC= Northern California
SONCC= Southern Oregon /Northern California Coast
T= Endangered Species Act Threatened

[1] ESA whales include: blue whale (E), fin whale (E), humpback whale (E), southern resident killer whale (E), North Pacific right whale (E), sei whale (E), sperm whale (E).
[2] MMPA cetaceans include: Baird's Beaked Whale, Blue Whale (E), Cuvier's Beaked Whale, Dwarf Sperm Whale, False Killer Whale, Fin Whale (E), Gray Whale (Western North Pacific) (E), Gray Whale (Eastern North Pacific) (E), Hubb's Beaked Whale, Humpback Whale (E), Killer Whale (Southern Resident DPS) (E), Killer Whale, Minke Whale, North Pacific Right Whale (E), Pygmy Sperm Whale, Sei Whale (E), Short Finned Pilot Whale, Sperm Whale (E), Stejneger's Beaked Whale.
[3] MMPA pinnipeds include: Dall's Porpoise, Harbor Porpoise, Northern Right Whale Dolphin, Pacific White Sided Dolphin, Risso's Dolphin, Short Beaked Common Dolphin, Striped Dolphin, California Sea Lion, Guadalupe Fur Seal (T), Northern Elephant Seal, Northern Fur Seal, Pacific Harbor Seal, Steller Sea Lion.

NMFS Species List

National Marine Fisheries Service Species List

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Arcata Fish And Wildlife Office
1655 Heindon Road
Arcata, CA 95521-4573
Phone: (707) 822-7201 Fax: (707) 822-8411

In Reply Refer To:
Project Code: 2023-0133975
Project Name: Last Chance Grade Permeate Restoration Project

September 27, 2023

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological

evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

https://www.fws.gov/sites/default/files/documents/endangered-species-consultation-handbook.pdf

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see https://www.fws.gov/program/migratory-bird-permit/what-we-do.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures see https://www.fws.gov/library/collections/threats-birds.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/partner/council-conservation-migratory-birds.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

US Fish and Wildlife Service Species List

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Bald & Golden Eagles
- Migratory Birds
- Wetlands

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Arcata Fish And Wildlife Office
1655 Heindon Road
Arcata, CA 95521-4573
(707) 822-7201

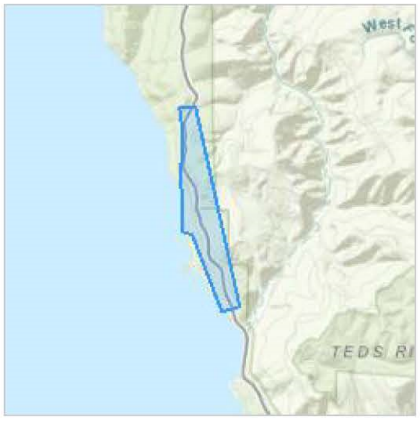
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PROJECT SUMMARY

Project Code: 2023-0133975
Project Name: Last Chance Grade Permeate Restoration Project
Project Type: Road Repair
Project Description: project proposes to develop a long-term solution to the instability and potential roadway failure at LCG . Alternative X would involve reengineering and partially realigning a 1.6-mile-long section of the existing highway to minimize the risk of landslides. Main project components would include 1.6 miles of retaining walls along the roadway, an underground drainage system to help reduce landslide risk by capturing groundwater, and strategic eastward retreats from the existing roadway.
Alternative F would involve constructing a 6,000-foot (1.1-mile) tunnel east of the existing highway to avoid the most intense areas of known landslides and geologic instability. Main components would include a tunnel and associated portals, a bridge from the northern portal to reconnect to existing U.S. 101, and an on-site Operations and Maintenance Center (OMC) for tunnel support.

Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@41.62731225,-124.11160455498155,14z



Counties: Del Norte County, California

ENDANGERED SPECIES ACT SPECIES

There is a total of 9 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

MAMMALS

NAME	STATUS
Pacific Marten, Coastal Distinct Population Segment *Martes caurina* There is **proposed** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/9081	Threatened

The Tools unprocessed records that do not show up on the list above. These records are included in the project special-status

BIRDS

NAME	STATUS
Hawaiian Petrel *Pterodroma sandwichensis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6746	Endangered
Marbled Murrelet *Brachyramphus marmoratus* Population: U.S.A. (CA, OR, WA) There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/4467	Threatened
Northern Spotted Owl *Strix occidentalis caurina* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1123	Threatened
Short-tailed Albatross *Phoebastria (=Diomedea) albatrus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/433	Endangered
Western Snowy Plover *Charadrius nivosus nivosus* Population: Pacific Coast population DPS-U.S.A. (CA, OR, WA), Mexico (within 50 miles of Pacific coast) There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8035	Threatened
Yellow-billed Cuckoo *Coccyzus americanus* Population: Western U.S. DPS There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened

FISHES

NAME	STATUS
Tidewater Goby *Eucyclogobius newberryi* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/57	Endangered

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

CRITICAL HABITATS

There is 1 critical habitat wholly or partially within your project area under this office's jurisdiction.

NAME	STATUS
Marbled Murrelet *Brachyramphus marmoratus* https://ecos.fws.gov/ecp/species/4467#crithab	Final

USFWS NATIONAL WILDLIFE REFUGE LANDS AND FISH HATCHERIES

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

BALD & GOLDEN EAGLES

Bald and golden eagles are protected under the Bald and Golden Eagle Protection Act[1] and the Migratory Bird Treaty Act[2].

Any person or organization who plans or conducts activities that may result in impacts to bald or golden eagles, or their habitats[3], should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Bald and Golden Eagle Protection Act of 1940.
2. The Migratory Birds Treaty Act of 1918.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

There are bald and/or golden eagles in your project area.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Jan 1 to Sep 30

PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read the supplemental

information and specifically the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

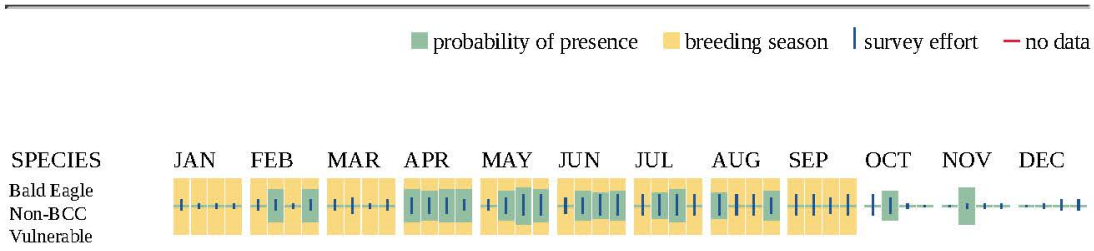
Probability of Presence (■)

Green bars; the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during that week of the year.

Breeding Season (■)
Yellow bars; liberal estimate of the timeframe inside which the bird breeds across its entire range.

Survey Effort (|)
Vertical black lines; the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data (–)
A week is marked as having no data if there were no survey events for that week.



Additional information can be found using the following links:

- Eagle Managment https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

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MIGRATORY BIRDS

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats[3] should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Allen's Hummingbird *Selasphorus sasin* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9637	Breeds Feb 1 to Jul 15
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Jan 1 to Sep 30
Black Oystercatcher *Haematopus bachmani* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9591	Breeds Apr 15 to Oct 31
Black Turnstone *Arenaria melanocephala* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Black-vented Shearwater *Puffinus opisthomelas* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
California Gull *Larus californicus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 1 to Jul 31
Cassin's Auklet *Ptychoramphus aleuticus* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/6967	Breeds Mar 21 to Sep 21
Cassin's Finch *Carpodacus cassinii* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9462	Breeds May 15 to Jul 15

NAME	BREEDING SEASON
Clark's Grebe *Aechmophorus clarkii* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Jun 1 to Aug 31
Marbled Godwit *Limosa fedoa* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9481	Breeds elsewhere
Olive-sided Flycatcher *Contopus cooperi* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3914	Breeds May 20 to Aug 31
Rufous Hummingbird *selasphorus rufus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8002	Breeds Apr 15 to Jul 15
Tufted Puffin *Fratercula cirrhata* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/430	Breeds May 5 to Oct 5
Western Grebe *aechmophorus occidentalis* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/6743	Breeds Jun 1 to Aug 31
Willet *Tringa semipalmata* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Wrentit *Chamaea fasciata* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 15 to Aug 10

PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read the supplemental information and specifically the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Green bars; the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during that week of the year.

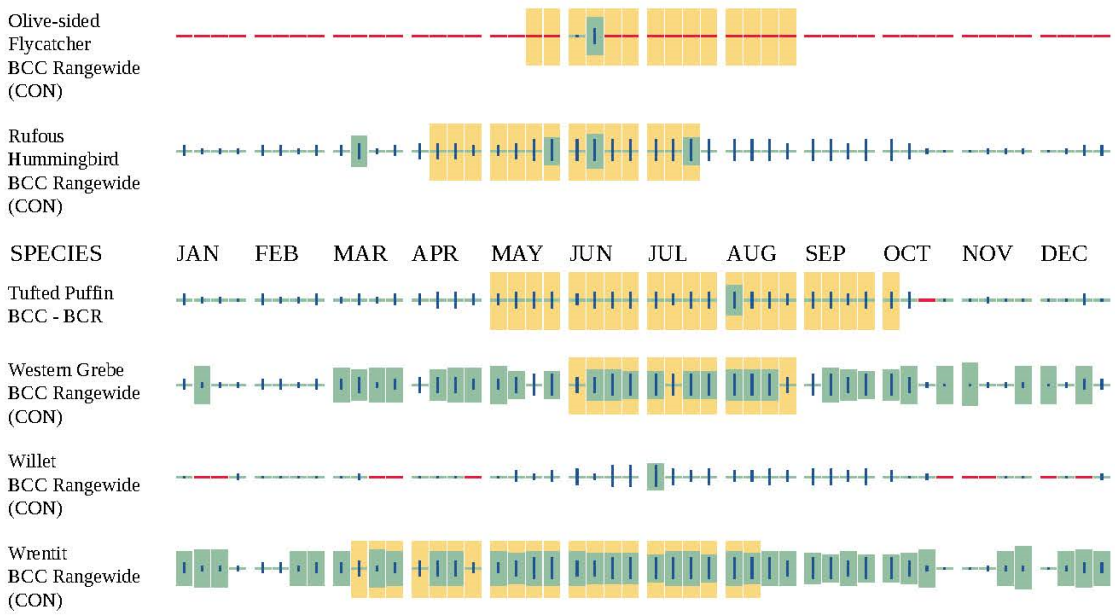
US Fish and Wildlife Service Species List

Breeding Season (■)
Yellow bars; liberal estimate of the timeframe inside which the bird breeds across its entire range.

Survey Effort (|)
Vertical black lines; the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data (–)
A week is marked as having no data if there were no survey events for that week.





Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

WETLANDS

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

RIVERINE

- R4SBC

ESTUARINE AND MARINE WETLAND

- M2RS1N
- M2RSN
- M2RSP

ESTUARINE AND MARINE DEEPWATER

- M1UBL

FRESHWATER POND

- PUBH

IPAC USER CONTACT INFORMATION

Agency: California Department of Transportation
Name: Prairie Moore
Address: 1656 Union Street
City: Eureka
State: CA
Zip: 95501
Email prairie.moore@dot.ca.gov
Phone: 7078156943

US Fish and Wildlife Service Species List



APPENDIX H. Special Status Plant Species with the Potential to Occur in the Project Vicinity



Common Name	*Scientific Name*	Status[1] Federal/ State/ CRPR	Blooming Period	Habitat/ Elevational Range	Habitat Present or Absent?[2]	Potential to Occur[3]
VASCULAR PLANTS						
pink sand-verbena	*Abronia umbellata* var. *breviflora*	--/--/1B.1	Jun–Oct	Coastal dunes. Foredunes and interdunes with sparse cover. This species is usually the plant closest to the ocean. Elevational range: 0–35 feet (0–11 meters)	Absent	None
sea-watch	*Angelica lucida*	--/--/4.2	Apr–Sep	Coastal bluff scrub, coastal dunes, coastal scrub, marshes and swamps (coastal salt). Often along the edges of coastal backdunes and bluffs, edges of coastal marshes and riparian areas (creeks, rivers) close to the coast (J. Barrett, pers. obs.). Elevational range: 0–490 feet (0–149 meters)	Species Present	Present
evergreen everlasting	*Antennaria suffrutescens*	--/--/4.3	Jan–Jul	Lower montane coniferous forest (serpentinite). Dry, open conifer woodland, serpentine barrens (Jepson Flora Project 2021). Elevational range: 1,640–5,250 feet (500–1,600 meters)	Absent	None
vanilla-grass	*Anthoxanthum nitens* ssp. *nitens*	--/--/2B.3	Apr–Jul	Meadows and seeps (mesic). Wet sites. Elevational range: 4,920–6,215 feet (1,500–1,894 meters)	Habitat Present	Low
McDonald's rockcress	*Arabis mcdonaldiana*	FE/SE/1B.1	May–Jul	Lower montane coniferous forest, upper montane coniferous forest. Rocky outcrops, ridges, slopes, and flats on serpentine. Elevational range: 440–5,905 feet (134–1,800 meters)	Absent	None
Howell's manzanita	*Arctostaphylos hispidula*	--/--/4.2	Mar–Apr	Chaparral (serpentinite or sandstone). Elevational range: 390–4,100 feet (119–1,250 meters)	Absent	None
Del Norte manzanita	*Arctostaphylos nortensis*	--/--/4.3	Feb	Chaparral, lower montane coniferous forest. Often serpentinite. Elevational range: 1,640–2,625 feet (500–800 meters)	Absent	None
serpentine arnica	*Arnica cernua*	--/--/4.3	Apr–Jul	Lower montane coniferous forest (serpentinite). Elevational range: 1,640–6,300 feet (500–1,920 meters)	Absent	None
Klamath arnica	*Arnica spathulata*	--/--/4.3	May–Aug	Lower montane coniferous forest (serpentinite). Elevational range: 2,095–5,905 feet (639–1,800 meters)	Absent	None
maidenhair spleenwort	*Asplenium trichomanes* ssp. *trichomanes*	--/--/2B.1	May–Jul	Lower montane coniferous forest (rocky). On rocks. Elevational range: 605–655 feet (184–200 meters)	Absent	None

Common Name	*Scientific Name*	Status[1] Federal/ State/ CRPR	Blooming Period	Habitat/ Elevational Range	Habitat Present or Absent?[2]	Potential to Occur[3]
Koehler's stipitate rockcress	*Boechera koehleri*	--/--/1B.3	(Mar) Apr–Jul	Chaparral, lower montane coniferous forest. Rocky, serpentine substrate. Elevational range: 505–5,445 feet (154–1,670 meters)	Absent	None
Bolander's reed grass	*Calamagrostis bolanderi*	--/--/4.2	May–Aug	Bogs and fens, broadleaf upland forest, closed-cone coniferous forest, coastal scrub, meadows and seeps (mesic), marshes and swamps (freshwater), North Coast coniferous forest. Peatland, marshes, wet meadows in forest, coastal scrub, and prairie (Jepson Flora Project 2021). Elevational range: 0–1,495 feet (0–456 meters)	Habitat Present	Moderate
Thurber's reed grass	*Calamagrostis crassiglumis*	--/--/2B.1	May–Aug	Coastal scrub (mesic), marshes and swamps (freshwater). Usually in marshy swales surrounded by grassland or coastal scrub. Elevational range: 30–195 feet (9–59 meters)	Habitat Present	Low
Leafy reed grass	*Calamagrostis foliosa*	--/SR/4.2	May–Sep	Coastal bluff scrub, North Coast coniferous forest. Rocky cliffs and ocean-facing bluffs. Elevational range: 0–4,005 feet (0–1,221 meters)	Habitat Present	Low
Alaska cedar	*Callitropsis nootkatensis*	--/--/4.3	N/A	Upper montane coniferous forest. Cool, moist, forested, well-drained mountain slopes (Jepson Flora Project 2021). Elevational range: 2,130–8,200 feet (649–2,499 meters)	Absent	None
Butte County morning-glory	*Calystegia atriplicifolia* ssp. *buttensis*	--/--/4.2	May–Jul	Chaparral, lower montane coniferous forest, valley and foothill grassland. Rocky, sometimes roadsides; dry, mostly open slopes; rocky substrates. Elevational range: 1,850–5,000 feet (564–1,524 meters)	Absent	None
seaside bittercress	*Cardamine angulata*	--/--/2B.2	(Jan) Mar–Jul	Lower montane coniferous forest, North Coast coniferous forest. Wet areas, streambanks; often within riparian forests dominated by mature, undisturbed big-leaf maple or red alder trees (J. Barrett, pers. obs.). Elevational range: 80–3,000 feet (24–914 meters)	Present	Present
yellow-tubered toothwort	*Cardamine nuttallii* var. *gemmata*	--/--/3.3	Apr–May (Jun)	Lower montane coniferous forest, North Coast coniferous forest. On serpentine in a variety of aspects. Elevational range: 325–2,295 feet (99–700 meters)	Absent	None

Common Name	*Scientific Name*	Status[1] Federal/ State/ CRPR	Blooming Period	Habitat/ Elevational Range	Habitat Present or Absent?[2]	Potential to Occur[3]
northern clustered sedge	*Carex arcta*	--/--/2B.2	Jun–Sep	Bogs and fens, North Coast coniferous forest (mesic). Mesic sites, especially sphagnum bogs (Jepson Flora Project 2021). Elevational range: 195–4,595 feet (59–1,401 meters)	Habitat Present	Low
Buxbaum's sedge	*Carex buxbaumii*	--/--/4.2	Mar–Aug	Bogs and fens, meadows and seeps (mesic), marshes and swamps. Bogs, peatland, wet meadows (Jepson Flora Project 2021); generally, not in running water (Wilson et al., 2008). Elevational range: 5–10,825 feet (2–3,299 meters)	Absent	None
lagoon sedge	*Carex lenticularis* var. *limnophila*	--/--/2B.2	Jun–Aug	Bogs and fens, marshes and swamps, North Coast coniferous forest. Lakeshores, beaches. Often in gravelly substrates. Elevational range: 0–20 feet (0–6 meters)	Absent	None
bristle-stalked sedge	*Carex leptalea*	--/--/2B.2	Mar–Jul	Bogs and fens, meadows and seeps (mesic), marshes and swamps. Mostly known from bogs and wet meadows; often under dense willow thickets in Pacific Northwest (Wilson et al., 2008). Elevational range: 0–2,295 (0–700 meters)	Habitat Present	Low
Lyngbye's sedge	*Carex lyngbyei*	--/--/2B.2	Apr–Aug	Marshes and swamps (brackish or freshwater). Coastal brackish and freshwater marshes and estuaries, edges of river mouths. Elevational range: 0–35 feet (0–11 meters)	Absent	None
northern meadow sedge	*Carex praticola*	--/--/2B.2	May–Jul	Meadows and seeps (mesic). Moist to wet meadows, forest openings, areas of low disturbance (Wilson et al., 2008). Elevational range: 0–10,500 feet (0–3,200 meters)	Habitat Present	Low
deceiving sedge	*Carex saliniformis*	--/--/1B.2	(May)–Jun (Jul)	Coastal prairie, coastal scrub, meadows and seeps, marshes and swamps (coastal salt). Mesic sites; marshes, pond shores, wet openings (Jepson Flora Project 2021). Elevational range: 5–755 feet (2–230 meters)	Absent	None
Siskiyou sedge	*Carex scabriuscula*	--/--/4.3	May–Jul	Lower montane coniferous forest, meadows and seeps, upper montane coniferous forest. Mesic, sometimes serpentinite seeps. Elevational range: 2,325–7,695 feet (709–2,428 meters)	Absent	None

Common Name	*Scientific Name*	Status[1] Federal/ State/ CRPR	Blooming Period	Habitat/ Elevational Range	Habitat Present or Absent?[2]	Potential to Occur[3]
serpentine sedge	*Carex serpenticola*	--/--/2B.3	Mar–May	Meadows and seeps (mesic, serpentinite). Elevational range: 195–3,935 feet (59–1,199 meters)	Absent	None
Sheldon's sedge	*Carex sheldonii*	--/--/2B.2	May–Aug	Lower montane coniferous forest (mesic), marshes and swamps (freshwater), riparian scrub. Wet places (confirmed records only reported from the northern Sierra Nevada). Elevational range: 3,937–6,601 feet (1,200–2,012 meters)	Absent	None
green yellow sedge	*Carex viridula* ssp. *viridula*	--/--/2B.3	(Jun) Jul–Sep (Nov)	Bogs and fens, marshes and swamps (freshwater), North Coast coniferous forest (mesic). Variety of mesic habitats including fens and bogs. Elevation range: 0–5,250 feet (0–1,600 meters)	Habitat Present	Low
Nuttall's saxifrage	*Cascadia nuttallii*	--/--/2B.1	May	North Coast coniferous forest (mesic, rocky), cliff walls, moss-covered rocks along creeks; mesic sites. Elevation range: 130–245 feet (40–75 meters)	Habitat Present	Low
johnny-nip	*Castilleja ambigua* ssp. *ambigua*	--/--/4.2	Mar–Aug	Coastal bluff scrub, coastal prairie, coastal scrub, marshes and swamps, valley and foothill grassland, vernal pools, margin coastal bluffs, grassland (Jepson Flora Project 2021). Elevation range: 0–1,427 feet (0–435 meters)	Habitat Present	Low
Humboldt Bay owl's-clover	*Castilleja ambigua* ssp. *humboldtiensis*	--/--/1B.2	Apr–Aug	Marshes and swamps (coastal salt). In coastal saltmarsh with *Spartina, Distichlis, Salicornia, Jaumea.* Elevation range: 0–10 feet (0–3 meters)	Absent	None
short-lobed paintbrush	*Castilleja brevilobata*	--/--/4.2	Apr–Jul	Lower montane coniferous forest (serpentinite, edges and openings). Dry, open serpentine, forest edges (Jepson Flora Project 2021). Elevation range: 390–5,575 feet (94–1,700 meters)	Absent	None
Siskiyou paintbrush	*Castilleja elata*	--/--/2B.2	May–Aug	Bogs and fens, lower montane coniferous forest (seeps). Usually found on mesic serpentine soils; often associated with bogs, seeps, stream benches, and dry gullies. Elevation range: 0–5,740 feet (0–1,750 meters)	Absent	None
Oregon coast paintbrush	*Castilleja litoralis*	--/--/2B.2	Jun–Jul	Coastal bluff scrub, coastal dunes, coastal scrub. Generally dry sea bluffs (Jepson Flora Project 2021), sandy sites, coastal bluff scrub. Elevation range: 45–330 feet (14–101 meters)	Habitat Present	Moderate

Common Name	*Scientific Name*	Status[1] Federal/ State/ CRPR	Blooming Period	Habitat/ Elevational Range	Habitat Present or Absent?[2]	Potential to Occur[3]
Pacific golden saxifrage	*Chrysosplenium glechomifolium*	--/--/4.3	Feb–Jun (Jul)	North Coast coniferous forest, riparian forest. Streambanks, sometimes seeps, sometimes roadsides. Elevation range: 30–2,100 feet (9–640 meters)	Species Present	Present
Greenland cochlearia	*Cochlearia groenlandica*	--/--/2B.3	May–Jul	Coastal bluff scrub (on basaltic sea stack). Sea bird nesting areas on offshore rocks. Elevation range: 0–165 feet (0–50 meters)	Absent	None
Oregon goldthread	*Coptis laciniata*	--/--/4.2	(Feb) Mar–May (Sep–Nov)	Meadows and seeps, North Coast coniferous forest (streambanks). Mesic sites such as moist streambanks. Elevation range: 0–3,280 feet (0–1,000 meters)	Habitat Present	Low
California lady's-slipper	*Cypripedium californicum*	--/--/4.2	Apr–Aug (Sep)	Bogs and fens, lower montane coniferous forest. Seeps and streambanks, usually serpentinite. Elevation range: 95–9,020 feet (29–2,749 meters)	Absent	None
mountain lady's-slipper	*Cypripedium montanum*	--/--/4.2	Mar–Aug	Broadleaf upland forest, cismontane woodland, lower montane coniferous forest, North Coast coniferous forest. Moist areas, dry slopes, mixed-evergreen or conifer forest (excluding North Coast) (Jepson Flora Project 2021). Elevation range: 605–7,300 feet (184–2,225 meters)	Absent	None
California pitcherplant	*Darlingtonia californica*	--/--/4.2	Apr–Aug	Bogs and fens, meadows and seeps. Mesic, generally serpentinite seeps. Elevation range: 0–8,480 (0–2,585 meters)	Absent	None
Oregon bleeding heart	*Dicentra formosa* ssp. *oregana*	--/--/4.2	Apr–May	Lower montane coniferous forest (serpentinite). Damp, shaded areas (Jepson Flora Project 2021). Elevation range: 1,390–4,870 (424–1,484 meters)	Absent	None
Siskiyou aster	*Doellingeria glabrata* (synonym *Eucephalus glabratus*)	--/--/4.3	Jul–Sep	Lower montane coniferous forest, upper montane coniferous forest. Rocky openings. Elevation range: 390–8,875 feet (119–2,705 meters)	Absent	None
Cascade downingia	*Downingia willamettensis*	--/--/2B.2	Jun–Jul (Sep)	Cismontane woodland (lake margins), valley and foothill grassland (lake margins), vernal pools. Elevation range: 45–3,640 feet (14–1,109 meters)	Absent	None
small spikerush	*Eleocharis parvula*	--/--/4.3	(Apr) Jun–Aug (Sep)	Marshes and swamps. Brackish wet soil, coastal (Jepson Flora Project 2021). Elevation range: 3–9,908 feet (1–3,020 meters)	Absent	None

Common Name	*Scientific Name*	Status[1] Federal/ State/ CRPR	Blooming Period	Habitat/ Elevational Range	Habitat Present or Absent?[2]	Potential to Occur[3]
black crowberry	*Empetrum nigrum*	--/--/2B.2	Apr–Jun	Coastal bluff scrub, coastal prairie. Rocks on coastal cliffs (Jepson Flora Project 2021). Elevation range: 30–655 feet (9–199 meters)	Habitat Present	Low
Siskiyou Mountains willowherb	*Epilobium rigidum*	--/--/4.3	Jul–Aug	Lower montane coniferous forest (serpentinite). Dry, open places, dry streambeds, sometimes on serpentine-like soils (Jepson Flora Project 2021). Elevation range: 492–3,937 feet (150–1,200 meters)	Absent	None
Waldo daisy[4]	*Erigeron bloomeri* var. *nudatus*	--/--/2B.3	Jun–Jul	Lower montane coniferous forest, upper montane coniferous forest. Serpentinite. Often on roadsides, sometime on ridges, streambanks, and in openings. Elevation range: 1,965–7,545 feet (599–2,230 meters)	Absent	None
Siskiyou daisy	*Erigeron cervinus*	--/--/4.3	Jun–Aug	Lower montane coniferous forest, meadows and seeps. Open, rocky slopes, meadows, forest (Jepson Flora Project 2021). Elevational range: 80–6,235 feet (24–1,900 meters)	Absent	None
Del Norte buckwheat	*Eriogonum nudum* var. *paralinum*	--/--/2B.2	Jun, Aug, Sep	Coastal bluff scrub, coastal prairie. Open places along immediate coast. Elevation range: 15–260 feet (5–79 meters)	Habitat Present	Low
Waldo wild buckwheat	*Eriogonum pendulum*	--/--/2B.2	Aug–Sep	Lower montane coniferous forest, upper montane coniferous forest. On dry, rocky ultramafic soils; open somewhat grassy areas within pine forest. Elevation range: 750–3,280 feet (229–1,000 meters)	Absent	None
ternate buckwheat	*Eriogonum ternatum*	--/--/4.3	Jun–Aug	Lower montane coniferous forest (serpentinite). Elevation range: 1,001–7,300 feet (305–2,225 meters)	Absent	None
bluff wallflower	*Erysimum concinnum*	--/--/1B.2	Feb–Jul	Coastal bluff scrub, coastal dunes, coastal prairie. More or less a coastal generalist within coastal habitat types. Elevation range: 0–605 feet (0–185 meters)	Habitat Present	Low
lemon-colored fawn lily	*Erythronium citrinum* var. *citrinum*	--/--/4.3	Mar–May	Chaparral, lower montane coniferous forest. Dry woodland, shrubby slopes (usually serpentinite). Elevation range: 490–4,265 feet (150–1,300 meters)	Absent	None
Henderson's fawn lily	*Erythronium hendersonii*	--/--/2B.3	Apr–Jul	Lower montane coniferous forest. Openings in dry woodland (Jepson Flora Project 2021). Elevation range: 980–5,250 (299–1,600 meters)	Absent	None

Common Name	*Scientific Name*	Status[1] Federal/ State/ CRPR	Blooming Period	Habitat/ Elevational Range	Habitat Present or Absent?[2]	Potential to Occur[3]
Howell's fawn lily	*Erythronium howellii*	--/--/1B.3	Apr–May	Lower montane coniferous forest, North Coast coniferous forest. Sometimes serpentinite. Elevation range: 655–3,755 feet (200–1,145 meters)	Absent	None
giant fawn lily	*Erythronium oregonum*	--/--/2B.2	Mar–Jun (Jul)	Cismontane woodland, meadows and seeps. Openings. Sometimes on serpentine; rocky sites. Elevation range: 325–3,775 (99–1,151 meters)	Absent	None
coast fawn lily	*Erythronium revolutum*	--/--/2B.2	Mar–Jul (Aug)	Bogs and fens, broadleaf upland forest, North Coast coniferous forest. Mesic sites; streambanks. Elevation range: 0–5,250 feet (0–1,600 meters)	Habitat Present	Moderate
Mendocino gentian	*Gentiana setigera*	--/--/1B.2	(Apr–Jul) Aug-Sep	Lower montane coniferous forest, meadows, seeps, and bogs. Serpentine substrates. Elevation range: 1,095–3,495 feet (334–1,065 meters)	Absent	None
Pacific gilia	*Gilia capitata* ssp. *pacifica*	--/--/1B.2	Apr–Aug	Coastal bluff scrub, chaparral (openings), coastal prairie, valley and foothill grassland. Steep slopes, ravines, open flats, or coastal bluffs, grassland, and dunes (Jepson Flora Project 2021). Elevation range: 15–5,465 feet (5–1,666 meters)	Habitat Present	Low
dark-eyed gilia	*Gilia millefoliata*	--/--/1B.2	Apr–Jul	Coastal dunes. Stabilized coastal dunes (Jepson Flora Project 2021). Elevation range: 0–100 feet (0–30 meters)	Absent	None
American glehnia	*Glehnia littoralis* ssp. *leiocarpa*	--/--/4.2	May–Aug	Coastal dunes. Elevation range: 0–65 feet (0–20 meters)	Absent	None
short-leaved evax	*Hesperevax sparsiflora* var. *brevifolia*	--/--/1B.2	Mar–Jun	Coastal bluff scrub (sandy), coastal dunes, coastal prairie. Elevation range: 0–705 feet (0–215 meters)	Absent	None
Josephine horkelia	*Horkelia congesta* var. *nemorosa*	--/--/2B.1	May–Jul	North Coast coniferous forest (clay, serpentinite seeps). Vernally moist, rocky clay, generally serpentine (Jepson Flora Project 2021). Elevation range: 984–2,625 feet (300–800 meters)	Absent	None
Howell's horkelia	*Horkelia sericata*	--/--/4.3	Jun–Aug	Chaparral, lower montane coniferous forest. Elevation range: 195–4,200 feet (59–1,280 meters)	Absent	None

Common Name	*Scientific Name*	Status[1] Federal/ State/ CRPR	Blooming Period	Habitat/ Elevational Range	Habitat Present or Absent?[2]	Potential to Occur[3]
harlequin lotus	*Hosackia gracilis*	--/--/4.2	Mar–Jul	Broadleaf upland forest, coastal bluff scrub, closed-cone coniferous forest, cismontane woodland, coastal prairie, coastal scrub, meadows and seeps, marshes and swamps, North Coast coniferous forest, valley and foothill grassland. Wetlands, roadsides. Elevation range: 0–2,295 feet (0–700 meters)	Habitat Present	Low
California globe mallow	*Iliamna latibracteata*	--/--/1B.2	Jun–Aug	Chaparral (montane), lower montane coniferous forest, North Coast coniferous forest (mesic), riparian scrub (streambanks). Often in burned areas. Seepage areas in silty clay loam. Elevation range: 195–6,560 feet (59–1,999 meters)	Habitat Present	Low
Siskiyou iris	*Iris bracteata*	--/--/3.3	May–Jun	Broadleaf upland forest, lower montane coniferous forest. Serpentinite. Elevation range: 590–3,510 feet (180–1,070 meters)	Absent	None
Del Norte County iris	*Iris innominata*	--/--/4.3	May–Jun	Lower montane coniferous forest (serpentinite). Open or partly shaded slopes with well-drained soil. Elevation range: 980–6,560 feet (299–1,999 meters)	Absent	None
Orleans iris	*Iris tenax* ssp. *klamathensis*	--/--/4.3	Apr–May	Lower montane coniferous forest (often in disturbed areas). Shaded mixed-evergreen forest. Elevation range: 325–4,595 feet (99–1,401 meters)	Absent	None
Thompson's iris	*Iris thompsonii*	--/--/4.3	(Mar–Apr) May–Jun (Jul–Aug)	Lower montane coniferous forest, North Coast coniferous forest. Openings, usually mesic, often serpentinite, often edges, sometimes roadsides and streambanks. Elevation range: 295–1,970 feet (90–600 meters)	Absent	None
small groundcone	*Kopsiopsis hookeri*	--/--/2B.3	Apr–Aug	North Coast coniferous forest. Open woods, shrubby places, generally on Gaultheria shallon. Elevation range: 295–2,905 (90–885 meters)	Habitat Present	Moderate
perennial goldfields	*Lasthenia californica* ssp. *macrantha*	--/--/1B.2	Jan–Nov	Coastal bluff scrub, coastal dunes, coastal scrub. Grasslands and dunes along immediate coast (Jepson Flora Project 2021). Elevation range: 15–1,705 feet (5–520 meters)	Habitat Present	Low
Del Norte pea	*Lathyrus delnorticus*	--/--/4.3	Jun–Jul	Lower montane coniferous forest, North Coast coniferous forest. Often serpentinite. Elevation range: 95–4,755 feet (29–1,449 meters)	Absent	None

Common Name	*Scientific Name*	Status[1] Federal/ State/ CRPR	Blooming Period	Habitat/ Elevational Range	Habitat Present or Absent?[2]	Potential to Occur[3]
seaside pea	*Lathyrus japonicus*	--/--/2B.1	May–Aug	Coastal dunes. Coastal beaches and dunes (Jepson Flora Project 2021). Elevation range: 0–100 feet (0–30 meters)	Absent	None
marsh pea	*Lathyrus palustris*	--/--/2B.2	Mar–Aug	Bogs and fens, coastal prairie, coastal scrub, lower montane coniferous forest, marshes and swamps, North Coast coniferous forest. Moist coastal areas. Elevation range: 0–330 feet (0–101 meters)	Habitat Present	Low
beach layia	*Layia carnosa*	FT/SE/1B.1	Mar–Jul	Coastal dunes, coastal scrub (sandy). On sparsely vegetated, semi-stabilized dunes, usually behind foredunes. Elevation range: 0–195 feet (0–59 meters)	Absent	None
bristly leptosiphon	*Leptosiphon aureus*	--/--/4.2	Apr–Jul	Chaparral, cismontane woodland, coastal prairie, valley and foothill grassland. Grassy areas, woodland, chaparral (Jepson Flora Project 2021). Elevation range: 180–4,921 feet (55–1,500 meters)	Habitat Present	Low
broad-lobed leptosiphon	*Leptosiphon latisectus*	--/--/4.3	Apr–Jun	Broadleaf upland forest, cismontane woodland. Open or partially shaded grassy slopes (Jepson Flora Project 2021). Elevation range: 558–4,921 feet (170–1,500 meters)	Absent	None
opposite-leaved lewisia	*Lewisia oppositifolia*	--/--/2B.2	Apr–May (Jun)	Lower montane coniferous forest (mesic). In open, rocky, shallow soils; usually on decomposed serpentine. Mesic sites. Elevation range: 980–4,005 (299–1,221 meters)	Absent	None
Bolander's lily	*Lilium bolanderi*	--/--/4.2	Jun–Jul	Chaparral, lower montane coniferous forest. Serpentinite. Elevation range: 95–5,250 feet (29–1,600 meters)	Absent	None
Kellogg's lily	*Lilium kelloggii*	--/--/4.3	May–Aug	Lower montane coniferous forest, North Coast coniferous forest. Openings, roadsides. Elevation range: 5–4,265 feet (2–1,300 meters)	Habitat Present	Low
western lily	*Lilium occidentale*	FE/SE/1B.1	Jun–Jul	Bogs and fens, coastal bluff scrub, coastal prairie, coastal scrub, marshes and swamps (freshwater), North Coast coniferous forest (openings). Well-drained, old beach washes overlain with wind-blown alluvium and organic topsoil; usually near margins of Sitka spruce. Elevation range: 5–605 feet (2–184 meters)	Habitat Present	Low

Common Name	*Scientific Name*	Status[1] Federal/ State/ CRPR	Blooming Period	Habitat/ Elevational Range	Habitat Present or Absent?[2]	Potential to Occur[3]
Vollmer's lily	*Lilium pardalinum* ssp. *vollmeri*	--/--/4.3	(Jun) Jul–Aug	Bogs and fens, meadows and seeps (mesic). Peatland, springs and streams (Jepson Flora Project 2021). Elevation range: 95–5,510 feet (29–1,679 meters)	Habitat Present	Low
heart-leaved twayblade	*Listera cordata*	--/--/4.2	Feb–Jul	Bogs and fens, lower montane coniferous forest, North Coast coniferous forest. Moist, shady conifer forests (Jepson Flora Project 2021). Elevation range: 15–4,495 feet (5–1,370 meters)	Habitat Present	High
Howell's lomatium	*Lomatium howellii*	--/--/4.3	Apr–Jul	Chaparral, lower montane coniferous forest. Serpentinite. Elevation range: 360–5,595 feet (110–1,705 meters)	Absent	None
Coast Range lomatium	*Lomatium martindalei*	--/--/2B.3	May–Jun (Aug)	Coastal bluff scrub, lower montane coniferous forest, meadows and seeps. Bogs and seeps along creeks and on ridgetops, often on serpentine. Elevation range: 785–9,845 feet (239–3,001 meters)	Absent	None
inundated bog club-moss[4]	*Lycopodiella inundata*	--/--/2B.2	Jun–Sep	Bogs and fens (coastal), lower montane coniferous forest (mesic), marshes and swamps (lake margins). Peat bogs, muddy depressions, and pond margins (Jepson Flora Project 2021). Elevational range: 15–3,280 feet (4–1,000 meters)	Habitat Present	Low
running-pine	*Lycopodium clavatum*	--/--/4.1	Jun–Aug (Sep)	Lower montane coniferous forest (mesic), marshes and swamps, North Coast coniferous forest (mesic). Forest understory, edges, openings, roadsides; mesic sites with partial shade and light. Elevational range: 145–4,020 feet (44–1,226 meters)	Habitat Present	Moderate
arctic starflower	*Lysimachia europaea*	--/--/2B.2	Jun–Jul	Bogs and fens, meadows and seeps. Coastal boggy areas. Elevation range: 0–50 feet (0–15 meters)	Habitat Present	Low
Howell's saxifrage	*Micranthes howellii*	--/--/4.3	Mar–May	Cismontane woodland (sometimes serpentinite). Moist ledges, crevices. Elevation range: 246–2,953 feet (75–900 meters)	Absent	None
Marshall's saxifrage	*Micranthes marshallii*	--/--/4.3	Mar–Aug	Riparian forest. Rocky streambanks. Elevation range: 295–6,990 feet (90–2,131 meters)	Absent	None

Common Name	*Scientific Name*	Status[1] Federal/ State/ CRPR	Blooming Period	Habitat/ Elevational Range	Habitat Present or Absent?[2]	Potential to Occur[3]
leafy-stemmed mitrewort	*Mitellastra caulescens*	--/--/4.2	(Mar) Apr–Oct	Broadleaf upland forest, lower montane coniferous forest, meadows and seeps, North Coast coniferous forest. Mesic, sometimes roadsides. Elevation range: 15–5,575 feet (5–1,699 meters)	Habitat Present	High
woodnymph	*Moneses uniflora*	--/--/2B.2	May–Aug	Broadleaf upland forest, North Coast coniferous forest. Elevation range: 325–3,610 feet (99–1,100 meters)	Habitat Present	Moderate
ghost-pipe	*Monotropa uniflora*	--/--/2B.2	Jun–Aug (Sep)	Broadleaf upland forest, North Coast coniferous forest. Often found growing under mature or old-growth Douglas-fir trees; also known to occur under coast redwoods or western hemlock. Elevation range: 30–1,805 feet (9–550 meters)	Species Present	Present
Howell's montia	*Montia howellii*	--/--/2B.2	(Jan–Feb) Mar-May	Meadows and seeps, North Coast coniferous forest, vernal pools. Vernally mesic, sometimes roadsides; often on compacted soil; appears to do better in partly shaded sites rather than exposed sites (J. Barrett, pers. obs.). Elevation range: 0–2,740 feet (0–835 meters)	Habitat Present	Low
Wolf's evening-primrose	*Oenothera wolfii*	--/--/1B.1	May–Oct	Coastal bluff scrub, coastal dunes, coastal prairie, lower montane coniferous forest. Sandy substrates; usually mesic sites. Elevation range: 5–2,625 feet (2–800 meters)	Habitat Present	Low
Suksdorf's wood-sorrel	*Oxalis suksdorfii*	--/--/4.3	May–Aug	Broadleaf upland forest, North Coast coniferous forest. Dry, shrubby or wooded areas, or grassy areas; often in open to partly shaded areas along trails and roadsides (J. Barrett, pers. obs.). Elevation range: 45–2,295 feet (14–700 meters)	Species Present	Present
seacoast ragwort	*Packera bolanderi* var. *bolanderi*	--/--/2B.2	(Jan–Apr) May–Jul (Aug)	Coastal scrub, North Coast coniferous forest. Sometimes along roadsides. Elevation range: 95–2,135 feet (29–651 meters)	Habitat Present	Moderate
western ragwort	*Packera hesperia*	--/--/2B.2	Apr–Jun	Meadows and seeps, upper montane coniferous forest. Serpentine. Elevation range: 1,640–8,200 feet (500–2,499 meters)	Absent	None
Siskiyou Mountains ragwort	*Packera macounii*	--/--/4.3	Jun–Jul	Chaparral, lower montane coniferous forest. Sometimes serpentinite, often in disturbed areas. Elevation range: 1,310–3,000 feet (399–914 meters)	Absent	None

Common Name	*Scientific Name*	Status[1] Federal/ State/ CRPR	Blooming Period	Habitat/ Elevational Range	Habitat Present or Absent?[2]	Potential to Occur[3]
Gairdner's yampah	*Perideridia gairdneri* ssp. *gairdneri*	--/--/4.2	Jun–Oct	Broadleaf upland forest, chaparral, coastal prairie, valley and foothill grassland, vernal pools. Vernally mesic. Elevation range: 0–2,000 feet (0–610 meters)	Habitat Present	Low
sand dune phacelia	*Phacelia argentea*	FT/--/1B.1	Jun–Aug	Coastal dunes. Stabilized and recently moving sand dunes. Elevation range: 5–80 feet (2–24 meters)	Absent	None
horned butterwort	*Pinguicula macroceras*	--/--/2B.2	Apr–Jun	Bogs and fens (serpentinite). Meadow edges, seepage areas. Serpentine soil. Elevation range: 130–6,300 feet (40–1,920 meters)	Absent	None
white-flowered rein orchid	*Piperia candida*	--/--/1B.2	(Mar) May–Sep	Broadleaf upland forest, lower montane coniferous forest, North Coast coniferous forest. Sometimes on serpentine. Forest duff, mossy banks, rock outcrops, and muskeg. Elevation range: 95–4,300 feet (29–1,311 meters)	Absent	None
California pinefoot	*Pityopus californicus*	--/--/4.2	(Mar–Apr) May–Aug	Broadleaf upland forest, lower montane coniferous forest, North Coast coniferous forest, upper montane coniferous forest. Mesic. Elevation range: 45–7,300 feet (14–2,225 meters)	Habitat Present	High
nodding semaphore grass	*Pleuropogon refractus*	--/--/4.2	(Mar) Apr–Aug	Lower montane coniferous forest, meadows and seeps, North Coast coniferous forest, riparian forest. Mesic. Elevation range: 0–5,250 feet (0–1,600 meters)	Species Present	Present
Piper's blue grass	*Poa piperi*	--/--/4.3	Apr–May	Chaparral, lower montane coniferous forest (rocky, serpentinite). Elevation range: 330–4,790 feet (100–1,460 meters)	Absent	None
timber blue grass	*Poa rhizomata*	--/--/4.3	Apr–May	Lower montane coniferous forest (often serpentinite). Shady moist slopes in forest, in rich loose soils, on ultramafic substrates (Jepson Flora Project 2021). Elevation range: 490–3,280 feet (149–1,600 meters)	Absent	None
Oregon polemonium	*Polemonium carneum*	--/--/2B.2	Apr–Sep	Coastal prairie, coastal scrub, lower montane coniferous forest. Moist to dry, open areas (Jepson Flora Project 2021). Elevation range: 0–6,005 feet (0–1,830 meters)	Habitat Present	High
fibrous pondweed	*Potamogeton foliosus* ssp. *fibrillosus*	--/--/2B.3	unknown	Marshes and swamps (assorted shallow freshwater). Shallow water, small streams. Elevation range: 15–4,265 feet (5–1,300 meters)	Absent	None

Common Name	*Scientific Name*	Status[1] Federal/ State/ CRPR	Blooming Period	Habitat/ Elevational Range	Habitat Present or Absent?[2]	Potential to Occur[3]
beautiful shootingstar	*Primula pauciflora*	--/--/4.2	Apr–Jun	Great Basin scrub, meadows and seeps, pinyon and juniper woodland. Wet meadows. Elevation range: 3,281–7,808 feet (1,000–2,380 meters)	Absent	None
Siskiyou bells	*Prosartes parvifolia*	--/--/1B.2	May–Sep	Lower montane coniferous forest, upper montane coniferous forest. Occurs in disturbed and undisturbed sites, but mostly productive roadsides, disturbed areas, and burned areas. Elevation range: 2,295–5,005 feet (700–1,526 meters)	Absent	None
Del Norte pyrrocoma	*Pyrrocoma racemosa* var. *congesta*	--/--/2B.3	Aug–Sep	Chaparral, lower montane coniferous forest. Serpentine soils, from dry roadsides to damp hills; often in forest openings. Apparently equally likely to occur in wetlands or non-wetlands. Elevation range: 655–3,280 feet (200–1,000 meters)	Absent	None
white beaked-rush	*Rhynchospora alba*	--/--/2B.2	Jun–Aug	Bogs and fens, meadows and seeps, marshes and swamps (freshwater). Boggy open sites (Jepson Flora Project 2021). Elevation range: 197–6,693 feet (60–2,040 meters)	Absent	None
trailing black currant	*Ribes laxiflorum*	--/--/4.3	Mar–Jul (Aug)	North Coast coniferous forest. Sometimes roadsides. Elevation range: 15–4,575 feet (5–1,394 meters)	Habitat Present	High
Tracy's romanzoffia	*Romanzoffia tracyi*	--/--/2B.3	Mar–May	Coastal bluff scrub, coastal scrub. Rocky sites. Elevation range: 45–100 feet (14–30 meters)	Habitat Present	Low
Gasquet rose	*Rosa gymnocarpa* var. *serpentina*	--/--/1B.3	Apr–Jun (Aug)	Chaparral, cismontane woodland. Serpentinite. Often on roadsides, sometime on ridges, streambanks, and in openings. Elevation range: 1,310–5,660 feet (399–1,725 meters)	Absent	None
Howell's sandwort	*Sabulina howellii*	--/--/1B.3	Apr–Jul	Chaparral, lower montane coniferous forest. Dry open places, often on serpentine hillsides and ridges, near Jeffrey pines. Elevation range: 1,800–3,280 feet (549–1,000 meters)	Absent	None
Sanford's arrowhead	*Sagittaria sanfordii*	--/--/1B.2	May–Oct (Nov)	Marshes and swamps (assorted shallow fresh water). In standing or slow-moving freshwater ponds, marshes, and ditches. Elevation range: 0–2,135 feet (0–651 meters)	Absent	None

Common Name	*Scientific Name*	Status[1] Federal/ State/ CRPR	Blooming Period	Habitat/ Elevational Range	Habitat Present or Absent?[2]	Potential to Occur[3]
Del Norte willow	*Salix delnortensis*	--/--/4.3	Apr–May	Riparian forest (serpentinite). Elevation range: 295–1,640 feet (90–500 meters)	Absent	None
great burnet	*Sanguisorba officinalis*	--/--/2B.2	Jul–Oct	Bogs and fens, broadleaf upland forest, meadows and seeps, marshes and swamps, North Coast coniferous forest, riparian forest. Rocky serpentine seepage areas and along stream. Elevation range: 195–4,595 feet (59–1,401 meters)	Absent	None
Peck's sanicle	*Sanicula peckiana*	--/--/4.3	Mar–Jun	Chaparral, lower montane coniferous forest. Often serpentinite. Elevation range: 490–2,625 feet (149–800 meters)	Absent	None
Blue Creek stonecrop	*Sedum citrinum*	--/--/1B.2	Jun	North Coast coniferous forest. Serpentinite, rocky; talus, scree, or boulder crevices, sometimes roadsides. Serpentinite. Elevation range: 3,440–4,200 feet (1,049–1,280 meters)	Absent	None
Smith River stonecrop	*Sedum patens*	--/--/1B.2	May–Jul	Lower montane coniferous forest. Ultramafic, openings, rock crevices, rocky sites, and talus. Elevation range: 295–690 feet (90–210 meters)	Absent	None
Del Norte checkerbloom	*Sidalcea elegans*	--/--/3.3	May–Jul	Chaparral, lower montane coniferous forest. Elevation range: 705–4,480 (215–1,366 meters)	Absent	None
maple-leaved checkerbloom	*Sidalcea malachroides*	--/--/4.2	(Mar) Apr–Aug	Broadleaf upland forest, coastal prairie, coastal scrub, North Coast coniferous forest, riparian woodland. Woodlands and clearings near coast; often in disturbed areas. Elevation range: 0–2,395 feet (0–730 meters)	Habitat Present	High
Siskiyou checkerbloom	*Sidalcea malviflora* ssp. *patula*	--/--/1B.2	(Mar) May–Aug	Coastal bluff scrub, coastal prairie, North Coast coniferous forest. Open coastal forest; roadcuts. Elevation range: 45–2,885 feet (14–880 meters)	Habitat Present	Moderate
coast checkerbloom	*Sidalcea oregana* ssp. *eximia*	--/--/1B.2	Jun–Aug	Lower montane coniferous forest, meadows and seeps, North Coast coniferous forest. Near meadows, in gravelly soil. Elevation range: 15–4,395 feet (5–1,340 meters)	Habitat Present	Moderate

Common Name	*Scientific Name*	Status[1] Federal/ State/ CRPR	Blooming Period	Habitat/ Elevational Range	Habitat Present or Absent?[2]	Potential to Occur[3]
Hooker's catchfly	*Silene hookeri*	--/--/2B.2	(Mar) May–Jul	Chaparral, cismontane woodland, lower montane coniferous forest. Often in grassy openings. Sometimes rocky, serpentinite, slopes. Elevation range: 490–4,135 feet (150–1,260 meters)	Absent	None
Scouler's catchfly	*Silene scouleri* ssp. *scouleri*	--/--/2B.2	(Mar–May) Jun–Aug (Sep)	Coastal bluff scrub, coastal prairie, valley and foothill grassland. Rocky slopes, coastal bluffs (Jepson Flora Project 2021). Elevation range: 0–1,970 feet (0–600 meters)	Habitat Present	Low
serpentine catchfly	*Silene serpentinicola*	--/--/1B.2	May–Jul	Chaparral, lower montane coniferous forest. Serpentine openings, gravelly or rocky soils. Elevation range: 475–5,415 feet (145–1,650 meters)	Absent	None
Howell's jewelflower	*Streptanthus howellii*	--/--/1B.2	Jul–Aug	Lower montane coniferous forest (serpentinite, rocky). Dry serpentine slopes, in open pine woods or in brushy areas; on rocky soil. Elevation range: 1,000–4,920 feet (305–1,500 meters)	Absent	None
glaucous tauschia	*Tauschia glauca*	--/--/4.3	Apr–Jun	Lower montane coniferous forest (gravelly, serpentinite). Often serpentinite (J. Barrett, pers. obs.). Elevation range: 260–5,575 feet (79–1,699 meters)	Absent	None
robust false lupine	*Thermopsis robusta*	--/--/1B.2	May–Jul	Broadleaf upland forest, North Coast coniferous forest. Ridgetops; sometimes on serpentine. Elevation range: 490–4,920 feet (149–1,500 meters)	Absent	None
trifoliate laceflower	*Tiarella trifoliata* var. *trifoliata*	--/--/3.2	(May) Jun–Aug	Lower montane coniferous forest, North Coast coniferous forest. Edges, moist shady banks, streambanks. Elevation range: 555–4,920 feet (169–1,500 meters)	Habitat Present	Moderate
little-leaved huckleberry	*Vaccinium scoparium*	--/--/2B.2	Jun–Aug	Subalpine coniferous forest (rocky). Rocky, subalpine woods. Sometimes serpentine. Elevation range: 3,395–7,220 feet (1,035–2,201 meters)	Absent	None
Siskiyou inside-out-flower	*Vancouveria chrysantha*	--/--/4.3	Jun	Chaparral, lower montane coniferous forest. Serpentinite. Elevation range: 390–4,920 feet (119–1,500 meters)	Absent	None
Siskiyou false-hellebore	*Veratrum insolitum*	--/--/4.3	Jun–Aug	Chaparral, lower montane coniferous forest. Clay. Elevation range: 150–5,365 feet (45–1,635 meters)	Absent	None
Langsdorf's violet	*Viola langsdorffii*	--/--/2B.1	May–Jul	Bogs and fens (coastal). Coastal wet areas. Elevation range: 5–35 feet (2–11 meters)	Absent	None

Common Name	*Scientific Name*	Status[1] Federal/ State/ CRPR	Blooming Period	Habitat/ Elevational Range	Habitat Present or Absent?[2]	Potential to Occur[3]
alpine marsh violet	*Viola palustris*	--/--/2B.2	Mar–Aug	Bogs and fens (coastal), coastal scrub (mesic). Swampy, shrubby places in coastal scrub or coastal bogs. Elevation range: 0–490 feet (0–149 meters)	Habitat Present	Low
Western white bog violet	*Viola primulifolia* ssp. *occidentalis*	--/--/1B.2	Apr–Sep	Bogs and fens (serpentinite), marshes and swamps. Streamside flats and bogs; serpentine soils. Elevation range: 325–3,250 feet (99–991 meters)	Absent	None
BRYOPHYTES AND LICHENS						
green shield-moss	*Buxbaumia viridis*	--/--/2B.2	N/A	Lower montane coniferous forest, upper montane coniferous forest, subalpine coniferous forest. Fallen, decorticated wood or humus. Elevational range: 3,200–7,220 feet (975–2,200 meters)	Absent	None
spiral-spored guilded-head pin lichen	*Calicium adspersum*	--/--/2B.2	N/A	Lower montane coniferous forest, North Coast coniferous forest. Often restricted to old-growth bark of conifers that are over 200 years in age; only known in California from a *Sequoia sempervirens* stand. Restricted throughout its range to old-growth conifer forests in relatively cool-humid stands. Elevational range: 655 feet (200 meters)	Habitat Present	High
naked flag moss	*Discelium nudum*	--/--/2B.2	N/A	Coastal bluff scrub (soil, on clay banks). Moss that grows on moist silty clay to fine sandy banks in somewhat shaded sites. Elevational range: 30–165 feet (9–50 meters)	Habitat Present	Low
Minute pocket moss	*Fissidens pauperculus*	--/--/1B.2	N/A	North Coast coniferous forest (damp coastal soil). Moss growing on damp soil along the coast. In dry streambeds and on stream banks. Elevational range: 30–3,360 feet (9–1,024 meters)	Habitat Present	High
crinkled rag lichen	*Platismatia lacunosa*	--/--/2B.3	N/A	North Coast coniferous forest, riparian woodland. Usually growing on *Alnus* (alder). Elevational range: 65–6,560 feet (20–2,000 meters)	Habitat Present	High
angel's hair lichen	*Ramalina thrausta*	--/--/2B.1	N/A	North Coast coniferous forest. On dead twigs and other lichens. Elevational range: 245–1,410 feet (74–430 meters)	Habitat Present	High

Common Name	*Scientific Name*	Status[1] Federal/ State/ CRPR	Blooming Period	Habitat/ Elevational Range	Habitat Present or Absent?[2]	Potential to Occur[3]
twisted horsehair lichen	*Sulcaria spiralifera*[5]	--/--/1B.2	N/A	Coastal dunes, North Coast coniferous forest; usually on conifers of the immediate coast: primarily *Picea sitchensis* and *Pinus contorta* var. *contorta* and also *Pseudotsuga menziesii*, *Abies grandis*, and *Tsuga heterophylla* (Glavich 2008a, 2008b; Myllys et al., 2014). Elevational range: 0–100 feet (0–31 meters)	Habitat Present	Moderate
cylindrical trichodon	*Trichodon cylindricus*	--/--/2B.2	N/A	Broadleaf upland forest, meadows and seeps, upper montane coniferous forest. Moss growing in openings on sandy or clay soils on roadsides, stream banks, trails or in fields. Elevational range: 160–6,570 feet (49–2,004 meters)	Habitat Present	Low
coastal triquetrella	*Triquetrella californica*	--/--/1B.2	N/A	Coastal bluff scrub, coastal scrub. Grows within 98 feet (30 meters) from the coast in coastal scrub, grasslands, and in open gravels on roadsides, hillsides, rocky slopes, and fields. On gravel or thin soil over outcrops. Elevational range: 30–300 feet (9–91 meters)	Habitat Present	Moderate
Methuselah's beard lichen	*Usnea longissima*	--/--/4.2	N/A	Broadleaf upland forest, North Coast coniferous forest. Grows in the "redwood zone" on tree branches of a variety of trees, including big-leaf maple, oaks, ash, Douglas-fir, and bay, usually on old-growth hardwoods and conifers. Elevational range: 165–4,790 feet (50–1,460 meters)	Species Present	Present

Sources: J. Barrett, personal observations
Jepson Flora Project 2021, 2022
CDFW 2023a
CNPS 2023
Glavich 2008a, 2008b
Myllys et al., 2014
Wilson et al., 2008

[1]**Status Definitions:**

Federal status: FT = Federal Threatened; FE = Endangered; FCT = Federal Candidate Threatened; FCE = Federal Candidate Endangered.

State status: ST = State Threatened; SE = State Endangered; SCE: State Candidate Endangered; FP = Fully Protected; SR = State Rare.

California Rare Plant Rank (CRPR):

1B = rare, threatened, or endangered in California and elsewhere;

2B = rare, threatened, or endangered in California but more common elsewhere;

3 = more information is needed (Review List);

4 = limited distribution (Watch List).

CRPR Threat Ranking: 0.1 = seriously threatened in California, 0.2 = moderately threatened in California, 0.3 = not very threatened in California.

[2] **Habitat Designations:**

Absent:	= Absent: no habitat present and no further work needed.
Habitat Present:	= Habitat is or may be present. The species may be present.
Present:	= The species is present.
CH:	= Critical Habitat: the project is within a designated critical habitat unit but this does not necessarily mean that appropriate habitat is present.

[3]**Rationale Rankings:**

None:	= No suitable habitat present within the BSA; the BSA is outside of species documented distribution and elevation range, species primarily occurs on serpentine soils, and/or species has generally not been documented within 10 miles of the BSA.
Low:	= Low-quality suitable habitat present within the BSA; the BSA is within the species documented distribution and elevation range and/or species has generally (with some exceptions) been documented within 10 miles of the BSA.
Moderate:	= Moderate-quality suitable habitat present within the BSA; the BSA is within the species documented distribution and elevation range, and/or species has generally (with some exceptions) been documented within 5 miles of the BSA.
High:	= High-quality suitable habitat present within the BSA; the BSA is within the species documented distribution and elevation range, and/or species has generally (with some exceptions) been documented within the BSA or within 1 mile of the BSA.
Present:	= Species was observed within BSA #1 during the botanical surveys conducted for the project.

[4] Species only appeared in the March 20, 2021, CNPS search and is not recorded from any of the quadrangles searched in 2023.

[5] *Sulcaria spiralifera* is the new combined name for *Bryoria spiralifera* (CRPR 1B.1) and *Bryoria pseudocapillaris* (CRPR 3.2). See Myllys et al. 2014.

*On October 19, 2023, the CNDDB nine-quad list was rechecked. One unprocessed record for Howells horkelia (horkelia howellii)(CRPR 4.3) was found, which was not included in the table above. This species habitat, chaparral and lower montane coniferous forest, is absent in BSA #1; therefore, there is no potential for this species to occur in within BSA #1.



APPENDIX I. Special Status Wildlife Species and Critical Habitat with the Potential to Occur in the Project Vicinity



Common Name	*Scientific Name*	Status[1] Federal/ State	General Habitat Description	Suitable Habitat[2] Present/ Absent	Critical Habitat[2]/ Essential Fish Habitat Present/ Absent	Rationale
AMPHIBIANS AND REPTILES						
foothill yellow-legged frog– North Coast Distinct Population Segment (DPS)	*Rana boylii (pop. 1)*	--/SSC	Inhabits forest perennial and intermittent streams and rivers with sunny, sandy, and rocky banks, with deep pools and shallow riffles. Spends most of its time along streams, but may move up to 165 feet (50 meters) from the edge of aquatic habitat. This is a state-listed threatened species in California, with the exception of the Northwest/North Coast Clade, which occurs from the Oregon border to San Francisco Bay and inland east of Redding.	Present	N/A	Habitat is present within BSA #1. Aquatic resources within BSA #1 such as perennial and intermittent streams may provide aquatic habitat. May occur in vegetated stream banks immediately adjacent to flowing water within red alder forests. The nearest CNDDB occurrence is approximately 3.4 miles southeast of the ESL. This species was not observed during surveys.
green sea turtle – East Pacific DPS	*Chelonia mydas*	FT/--	Does not nest on beaches of Northern California (NMFS and USFWS 2007); may occur in open water habitat off the coastline of Del Norte County. Found on both coasts of North America and Pacific Islands.	Absent	N/A	No habitat within BSA #1. This is a pelagic species.
leatherback sea turtle	*Dermochelys coriacea*	FE/--	No known nesting sites on the coast of California (NMFS 2020); may occur in open water habitat off the coast of Del Norte County. Found in U.S. waters in the west and east Pacific and northwest Atlantic.	Absent	N/A	No habitat within BSA #1. This is a pelagic species.

Common Name	*Scientific Name*	Status[1] Federal/ State	General Habitat Description	Suitable Habitat[2] Present/ Absent	Critical Habitat[2]/ Essential Fish Habitat Present/ Absent	Rationale
northern red-legged frog	*Rana aurora*	--/SSC	Humid forest, woodlands, grasslands, and stream sides in northwestern California, usually near dense riparian vegetation. Typically breeds in shallow ponds with emergent vegetation that are inundated at least 5 months a year. Along the Coast Ranges from Del Norte County south to Mendocino County below 4,000 feet (1,219 meters) elevation.	Present	N/A	Habitat is present within BSA #1. Aquatic resources within BSA #1 may provide habitat. May also occur in forested uplands such as red alder, redwood, and Sitka spruce forests. The nearest CNDDB occurrence abuts the eastern side of the central portion of the ESL. Observed in southern portion of ESL during wildlife surveys.
olive ridley sea turtle	*Lepidochelys olivacea*	FT/--	Mainly pelagic in tropical/temperate regions of Pacific, South Atlantic, and Indian oceans but has been known to inhabit coastal areas, including bays and estuaries. Found in tropical regions of the Atlantic, Pacific and Indian oceans.	Absent	N/A	No habitat within BSA #1. This is a pelagic species.

Common Name	*Scientific Name*	Status[1] Federal/ State	General Habitat Description	Suitable Habitat[2] Present/ Absent	Critical Habitat[2]/ Essential Fish Habitat Present/ Absent	Rationale
Pacific (coastal) tailed frog	*Ascaphus truei*	--/SSC	Typically found in cold, clear, perennial rocky streams in wet forests, but may also utilize intermittent creeks. This species is not known to use ponds or lakes. This species may occur in uplands during precipitation events. In California, found along coast from Mendocino County, north and east to Shasta County up to 8,400 feet (2,560 meters) elevation.	Present	N/A	Habitat is present within BSA #1. Aquatic resources within BSA #1, such as the perennial and intermittent streams that occur in the red alder, coastal brambles, Sitka spruce, and redwood natural communities, may provide potential habitat for this species. The nearest CNDDB occurrence is approximately 0.3 mile east of the ESL. This species was not observed during surveys.
southern torrent salamander	*Rhyacotriton variegatus*	--/SSC	Occurs along the coast in cold and well-shaded perennial streams and seeps in hardwood and coniferous forests. Eggs are laid in flowing water and adults are typically found among moss-covered pebbles and rocks within or adjacent to flowing water. Found in Humboldt, Mendocino, Siskiyou, and Trinity counties up to 3,900 feet (1,189 meters) elevation.	Present	N/A	Habitat is present within BSA #1. Aquatic resources within BSA #1, such as perennial streams and seeps, may provide aquatic habitat. May occur in vegetated stream banks immediately adjacent to flowing water in mature redwood, Douglas-fir, and Sitka spruce forests. The nearest CNDDB occurrence is within the ESL. This species was not observed during surveys.

Common Name	*Scientific Name*	Status[1] Federal/ State	General Habitat Description	Suitable Habitat[2] Present/ Absent	Critical Habitat[2]/ Essential Fish Habitat Present/ Absent	Rationale
western pond turtle	*Emys marmorata*	FPT/SSC	Occupies ponds, marshes, rivers, streams, and irrigation canals with muddy or rocky bottoms. Populations extend throughout coastal areas, the Central Valley, and foothills of California below 6,000 feet (1,829 meters) elevation.	Absent	N/A	There is no suitable habitat present within BSA #1. There are no CNDDB occurrences within 10 miles of the ESL. This species was not observed during surveys.
BIRDS[3]						
bald eagle	*Haliaeetus leucocephalus*	FD/SE, FP	Nests typically 50–200 feet (15–61 meters) above ground in large, old-growth, or dominant live trees. Forages primarily in large inland fish-bearing waters with adjacent large trees or snags, also along coastline, bay, and lagoons; occasionally in uplands with abundant rabbits, other small mammals. Breeding range includes the Sierra Nevada, Cascade Range, and portions of the Coast Ranges; winter range expands to include most of the state except southeastern California. Year-round residents within Northern California.	Present	N/A	Winter foraging habitat is present within BSA #1. Likely forages along coastline year-round. Large trees in Douglas-fir and Sitka spruce forest within BSA #1 may provide suitable nesting habitat. The nearest CNDDB record of a nesting pair is approximately 7.5 miles southeast of the ESL. No nests of this species were observed during nesting eagle and raptor helicopter surveys for the project. This species was observed flying over U.S. 101 and the Pacific Ocean during northern spotted owl surveys.

Common Name	*Scientific Name*	Status[1] Federal/ State	General Habitat Description	Suitable Habitat[2] Present/ Absent	Critical Habitat[2]/ Essential Fish Habitat Present/ Absent	Rationale
bank swallow	*Riparia riparia*	--/ST	Found primarily in riparian and other lowland habitats west of the deserts during spring through fall. Requires vertical banks and cliffs with sandy soils for digging nest holes near water; a colonial nesting species. Arrives in California from South America for breeding season.	Absent	N/A	No sandy, vertical bank habitat present within BSA #1. There are no CNDDB occurrences within 10 miles of the ESL.
black swift	*Cypseloides niger*	--/SSC	Colonial breeder on cliffs behind or adjacent to waterfalls and sea bluffs above the surf; forages widely. Breeds very locally in the Sierra Nevada, Cascade, San Gabriel, San Bernardino, and San Jacinto mountains, and in coastal bluffs and mountains from San Mateo County south to San Luis Obispo County. Does not winter in California. California provides migration habitat between breeding and non-breeding sites.	Absent	N/A	No waterfall habitat present within BSA #1. BSA #1 is outside this species' known breeding range. The nearest CNDDB record is 9.3 miles northeast of the ESL.
Cassin's auklet	*Ptychoramphus aleuticus*	--/SSC	Pelagic species, breeds in large, dense colonies on undisturbed islands; 80 percent of state population on Farallon Islands. Also nests in rock crevices or cavities. Intolerant of human intrusion at breeding grounds. Fairly common year-round in marine pelagic waters off California.	Absent	N/A	No habitat within BSA #1. This is a pelagic species. There are no CNDDB occurrences within 10 miles of the ESL.

Common Name	*Scientific Name*	Status[1] Federal/ State	General Habitat Description	Suitable Habitat[2] Present/ Absent	Critical Habitat[2]/ Essential Fish Habitat Present/ Absent	Rationale
fork-tailed storm petrel	*Hydrobates furcata*	--/SSC	Colonial nester on islands. Nests in burrows, natural cavities, or rock crevices on island. Forages over the open ocean. Uncommon, sporadic late fall to early spring visitor on open ocean along the entire California coast; occasionally in bays and harbors. Breeds on six small islets off Del Norte and Humboldt counties.	Absent	N/A	No habitat within BSA #1. No islet nesting habitat present. The nearest CNDDB occurrence is approximately 7.0 miles north of the ESL.
golden eagle	*Aquila chrysaetos*	--/FP	Utilizes rolling foothills and mountain terrain, wide arid plateaus deeply cut by streams and canyons, open mountain slopes, cliffs, and rock outcrops; also large trees adjacent to open areas. Uncommon permanent resident and migrant throughout California except Central Valley, ranging from sea level up to 11,500 feet (3,505 meters) elevation.	Absent	N/A	No nesting or foraging habitat within BSA #1. There are no CNDDB occurrences within 10 miles of the ESL.
Hawaiian petrel	*Pterodroma sandwichensis*	FE/--	Pelagic species. Nests on islands in Hawaii in burrows, crevices, or cracks in lava tubes. At sea, they occur throughout the central tropical and subtropical Pacific Ocean including along the west coast of continental USA.	Absent	NA	No habitat within BSA #1. This is a pelagic species. There are no CNDDB occurrences within 10 miles of the ESL.

Common Name	*Scientific Name*	Status[1] Federal/ State	General Habitat Description	Suitable Habitat[2] Present/ Absent	Critical Habitat[2]/ Essential Fish Habitat Present/ Absent	Rationale
little willow flycatcher	*Empidonax traillii*	--/SE	Found within mountain meadow and riverine riparian habitats. Nests in vegetation clumps near edges of streams. Most numerous in areas with extensive thickets of 19.7 acres (8 hectares) or more, and an absolute minimum of 0.6 acre (0.25 hectare), of low, dense willows on the edge of wet meadows, ponds, or backwaters (Craig and Williams 1998). Known from Tulare County north, along the west side of the Sierra Nevada and Cascades, extending to the coast in Northern California. A common spring and fall migrant at lower elevations; few breeding records for Humboldt County and probable breeder along Smith River in Del Norte County.	Absent	N/A	No habitat within BSA #1. No extensive willow or similar riparian habitat. There are no CNDDB occurrences within 10 miles of the ESL.

Common Name	*Scientific Name*	Status[1] Federal/ State	General Habitat Description	Suitable Habitat[2] Present/ Absent	Critical Habitat[2]/ Essential Fish Habitat Present/ Absent	Rationale
marbled murrelet	*Brachyramphus marmoratus*	FT/SE	Nests in old-growth redwood-dominated forests, up to 6 miles inland, often in Douglas-fir. Feeds near shore; nests inland along coast from Eureka to Oregon border and from Half Moon Bay to Santa Cruz. Occurs year-round in marine subtidal and pelagic habitats; largely concentrated in coastal waters off Del Norte and Humboldt counties.	Present	CH Present	Habitat is present within BSA #1. Critical habitat overlaps with BSA #1. Presence is assumed within all suitable redwood, Douglas-fir and Sitka spruce forest habitat within BSA #1. The nearest CNDDB occurrence is 0.16 mile east of the ESL. Individuals were detected during northern spotted owl surveys (Caltrans 2021b), and during the bird acoustical recording surveys.
northern harrier	*Circus hudsonius*	--/SSC	Nests on the ground among herbaceous vegetation, such as grasses or cattails; forages in grasslands, agricultural fields, and marshes. Breeding range encompasses much of lowland California; winter range expands to include the remaining lowland areas. Occurs from annual grasslands up to alpine meadow habitat at 10,000 feet (3,048 meters) elevation. Seldom found in wooded areas.	Absent	N/A	No habitat within ESL. No open areas for foraging, no grasslands or similar habitats for nesting. There are no CNDDB occurrences within 10 miles of the ESL.

Common Name	*Scientific Name*	Status[1] Federal/ State	General Habitat Description	Suitable Habitat[2] Present/ Absent	Critical Habitat[2]/ Essential Fish Habitat Present/ Absent	Rationale
northern spotted owl	*Strix occidentalis caurina*	FT/ST	Found in mature old-growth forests and wooded canyons; coniferous forests with a multi-layered, multispecies canopy with moderate to high canopy closure; nests in broken top, cavities, or in large snags; requires an abundance of large, dead wood on the ground and open space within and below the upper canopy to fly. Breeding range extends west of the Cascade Range through the North Coast Ranges, and the Sierra Nevada; may move downslope in winter from higher elevations.	Present	Absent	Habitat is present within BSA #1, including within 0.7 mile of the ESL. Presence is assumed within all suitable redwood and Douglas-fir forest habitat within BSA #1. There is a unit of northern spotted owl critical habitat approximately 1.5 mile south-southeast of the ESL, near High Prairie Creek. The nearest CNDDB occurrence is an Activity Center (AC) 0.93 mile east of the ESL. This species was detected during northern spotted owl surveys.
purple martin	*Progne subis*	--/SSC	An uncommon to rare, local summer resident foraging over a variety of low-elevation, wooded habitats, including foothill and montane hardwood, conifer, and riparian habitats. Frequents old-growth, multi-layered open forests with snags for breeding. Nests mostly in old woodpecker cavities, sometimes bridges, culverts. In Northern California, an uncommon to rare local breeder on the coast and inland to Modoc and Lassen counties. Absent from higher slopes of the Sierra Nevada.	Present	N/A	Habitat is present within BSA #1. May occur in mature redwood and Douglas-fir forest habitat within BSA #1 where snags persist. There are no CNDDB occurrences within 10 miles of the ESL. This species was detected during the automated acoustical recording surveys.

Common Name	*Scientific Name*	Status[1] Federal/ State	General Habitat Description	Suitable Habitat[2] Present/ Absent	Critical Habitat[2]/ Essential Fish Habitat Present/ Absent	Rationale
short-tailed albatross	*Phoebastria albatrus (= Diomedea)*	FE/SSC	Pelagic species, does not breed in California; only known breeding sites in western Pacific Ocean islands. During nonbreeding season, may occur in Northern California along the shelf break of the continental shelf. Found off the coasts of Alaska and Canada, to the southwest coast of North America.	Absent	N/A	No habitat within BSA #1. This is a pelagic species. There are no CNDDB occurrences within 10 miles of the ESL.
tufted puffin	*Fratercula cirrhata*	--/SSC	Feeds in the ocean; nests along the coast on islands, islets. Requires sod or earth in which to burrow on island cliffs or grass island slopes. Occurs on the northwestern coast off California, Oregon, and Washington. Winters at sea. Historical nest sites on rocks offshore near Crescent City in Del Norte County, and Elks Head State Park in Humboldt County.	Absent	N/A	No large sea stacks with appropriate nesting habitat in BSA #1. There are no CNDDB occurrences within 10 miles of the ESL.

Common Name	*Scientific Name*	Status[1] Federal/ State	General Habitat Description	Suitable Habitat[2] Present/ Absent	Critical Habitat[2]/ Essential Fish Habitat Present/ Absent	Rationale
Vaux's swift	*Chaetura vauxi*	--/SSC	A summer resident of Northern California, breeding in the Coast Ranges from Sonoma County north. Requires large hollow trees for nest building; occasionally uses chimneys and buildings; often in large flocks. Preference for foraging over rivers and lakes. Prefers redwood and Douglas-fir habitats with nest sites in large hollow trees and snags, especially tall, burned-out remnants. Fairly common migrant throughout most of California in April, May, August, and September.	Present	N/A	Habitat is present within BSA #1. May occur in mature redwood and Douglas-fir forest habitats with large cavities, basal hollows, or snags for nesting within BSA #1. This species was detected during the automated acoustical recording surveys. There are no CNDDB occurrences within 10 miles of the ESL.
western snowy plover– Pacific Coast DPS	*Charadrius nivosus nivosus*	FT/SSC	Found on sandy marine and estuarine shores, coastal beaches, sandy areas near salt ponds, river mouths, and levees along inland salt ponds. Nests on the ground in shallow depression, mainly in the open and near objects such as driftwood in sandy or friable soil substrates.	Absent	Absent	No habitat within BSA #1. No open sandy or friable substrates for nesting. There are no CNDDB occurrences within 10 miles of the ESL.

Common Name	*Scientific Name*	Status[1] Federal/ State	General Habitat Description	Suitable Habitat[2] Present/ Absent	Critical Habitat[2]/ Essential Fish Habitat Present/ Absent	Rationale
white-tailed kite	*Elanus leucurus*	--/FP	Forages in undisturbed, open grasslands, meadows, and emergent wetlands. Nests near top of dense oak, willow, or other trees near open foraging area. Common to uncommon, yearlong resident in coastal and valley lowlands; rarely found away from agricultural areas.	Absent	N/A	No habitat within BSA #1. No open agricultural or grasslands habitat for foraging. There are no CNDDB occurrences within 10 miles of the ESL.
yellow-billed cuckoo– Western U.S. DPS	*Coccyzus americanus*	FT/SE	Prefers riparian woodlands of various compositions with a dense understory along slow-moving watercourses. Requires expansive riparian habitat for breeding. Breeds along major river valleys. Occurs at isolated sites in Northern California, Sacramento Valley, and along the Kern and Colorado river systems in Southern California.	Absent	N/A	No habitat within BSA #1. There is no expansive riparian habitat within BSA #1. There are no CNDDB occurrences within 10 miles of the ESL.
FISH						
Chinook salmon– California Coastal ESU	*Oncorhynchus tshawytscha*	FT/SSC	Anadromous fish that spends between 1 and 5 years in the ocean before returning to natal rivers to spawn, typically entering freshwater river systems after large winter storm events. Spawns between October and December in the upper mainstems of rivers and the lower reaches of coastal creeks comprising a mixture of small cobble and large gravel.	Absent	CH Absent EFH Present (Pacific Ocean)	No habitat within BSA #1. Species does not occupy intertidal zone. There are no CNDDB occurrences within 10 miles of the ESL.

Common Name	*Scientific Name*	Status[1] Federal/ State	General Habitat Description	Suitable Habitat[2] Present/ Absent	Critical Habitat[2]/ Essential Fish Habitat Present/ Absent	Rationale
Chinook salmon– Southern Oregon/ Northern California Coast ESU	*Oncorhynchus tshawytscha*	--/SSC	Anadromous fish that spends between 1 and 5 years in the ocean before returning to natal rivers to spawn, typically entering freshwater river systems after large winter storm events.	Absent	EFH Present (Pacific Ocean)	No habitat within BSA #1. Species does not occupy intertidal zone. There are no CNDDB occurrences within 10 miles of the ESL.
Chinook salmon– Upper Klamath and Trinity Rivers ESU	*Oncorhynchus tshawytscha*	FC/ST, SSC	Anadromous fish that spends between 1 and 5 years in the ocean before returning to natal rivers to spawn, typically entering freshwater river systems after large winter storm events.	Absent	CH Absent EFH Present (Pacific Ocean)	No habitat within BSA #1. Species does not occupy intertidal zone. There are no CNDDB occurrences within 10 miles of the ESL.
coastal cutthroat trout	*Oncorhynchus clarkii clarkii*	--/SSC	Occupies coastal streams with some populations migrating to the ocean where they typically stay near the coastline and the mouths of larger rivers. In freshwater, found in small, low-gradient streams and estuaries.	Absent	N/A	No habitat within BSA #1. The nearest CNDDB occurrence is 0.28 mile east of the ESL.

Common Name	*Scientific Name*	Status[1] Federal/ State	General Habitat Description	Suitable Habitat[2] Present/ Absent	Critical Habitat[2]/ Essential Fish Habitat Present/ Absent	Rationale
coho salmon– Southern Oregon/ Northern California Coast (SONCC) ESU	*Oncorhynchus kisutch*	FT/ST	Anadromous fish found in perennial streams with cooler temperatures. Requires deep pools, riffles, and runs with adequate canopy cover.	Absent	CH Absent EFH Present (Pacific Ocean)	No habitat within BSA #1. Species does not occupy intertidal zone. There are no CNDDB occurrences within 10 miles of the ESL. Critical habitat is present within Wilson Creek tributaries below barriers to fish passage; some aquatic resources within BSA #1 flow through a tributary system to Wilson Creek.
eulachon	*Thaleichthys pacificus*	FT/--	Anadromous fish that spawns in lower reaches of rivers during peak spring flow events. Adults in the southern DPS are semelparous. Needs sand or coarse gravel for spawning substrate. Larvae are transported to estuaries and then to the ocean.	Absent	CH Absent	No habitat within BSA #1. The nearest CNDDB occurrence is approximately 4.7 miles south of the ESL.
green sturgeon– Pop. 2, Northern DPS	*Acipenser medirostris*	--/SSC	Anadromous fish that spawns and spends a portion of its life in fresh inland streams, maturing in the open ocean.	Absent	CH Present (Pacific Ocean) EFH Present (Pacific Ocean)	No habitat within BSA #1. Species does not occupy intertidal zone. There are no CNDDB occurrences within 10 miles of the ESL.

Common Name	*Scientific Name*	Status[1] Federal/ State	General Habitat Description	Suitable Habitat[2] Present/ Absent	Critical Habitat[2]/ Essential Fish Habitat Present/ Absent	Rationale
green sturgeon– Southern DPS	*Acipenser medirostris*	FT/--	Anadromous fish that spawns and spends a portion of its life in fresh inland streams, maturing in the open ocean.	Absent	CH Absent EFH Present (Pacific Ocean)	No habitat within BSA #1. Species does not occupy intertidal zone. There are no CNDDB occurrences within 10 miles of the ESL.
longfin smelt	*Spirinchus thaleichthys*	FC/ST	Anadromous fish; adults live in bays, estuaries, and nearshore coastal areas and migrate into freshwater rivers to spawn, January through March, after which most adults die.	Absent	Absent	No habitat within BSA #1. The nearest CNDDB occurrence is approximately 4.7 miles south of the ESL.
Lower Klamath marbled sculpin	*Cottus klamathensis polyporus*	--/SSC	Found in slow to swift water, in streams with widths greater than 65 feet (20 meters) and cooler temperatures, with rocky substrate for egg laying.	Absent	N/A	No habitat within BSA #1. The nearest CNDDB occurrence is approximately 9.2 miles southeast of the ESL.
Pacific lamprey	*Entosphenus tridentatus*	--/SSC	Anadromous and parasitic fish, with most of its time spent in the ocean. Occurs in moderate-gradient pool and riffle river habitat during runs. Lays eggs in gravel riffles upstream of muddy backwater habitat.	Absent	N/A	No habitat within BSA #1. There are no CNDDB occurrences within 10 miles of the ESL.
Steelhead – Klamath Mountains province DPS	*Oncorhynchus mykiss irideus*	--/SSC	Anadromous fish that lives as adults in ocean habitats and migrates into rivers and streams to spawn in gravel and small-cobble substrates usually associated with riffle-and-run habitat types in cold water streams.	Absent	N/A	No habitat within BSA #1. There are no CNDDB occurrences within 10 miles of the ESL.

Common Name	*Scientific Name*	Status[1] Federal/ State	General Habitat Description	Suitable Habitat[2] Present/ Absent	Critical Habitat[2]/ Essential Fish Habitat Present/ Absent	Rationale
Steelhead – Northern California DPS	*Oncorhynchus mykiss irideus*	FT/--	Anadromous fish that lives as adults in ocean habitats and migrates into rivers and streams to spawn in gravel and small-cobble substrates usually associated with riffle-and-run habitat types in cold water streams.	Absent	CH Absent	No habitat within BSA #1. There are no CNDDB occurrences within 10 miles of the ESL.
tidewater goby	*Eucyclogobius newberryi*	FE/--	Inhabits lagoons and estuaries with still or slow-moving water less than 3 feet (1 meter) deep. Salinity levels typically less than 10 parts per thousand, although found in higher-salinity water. Typically occurs over a sandy or mixed sand and silt bottom with sparse vegetation.	Absent	Absent	No habitat within BSA #1. There are no CNDDB occurrences within 10 miles of the ESL.
western brook lamprey	*Lampetra richardsoni*	--/SSC	Entire life spent in small freshwater streams. Larvae filter-feed on algae and micro-organisms; there is no juvenile stage, and adults do not feed. Adults spawn and die in same waters.	Absent	N/A	No habitat within BSA #1. There are no CNDDB occurrences within 10 miles of the ESL.
western river lamprey	*Lampetra ayresii*	--/SSC	Larvae require soft sediment of slow-moving freshwater streams to burrow. Juveniles feed in surface waters of estuaries and nearshore ocean waters. Adults return to freshwater to spawn.	Absent	N/A	No habitat within BSA #1. There are no CNDDB occurrences within 10 miles of the ESL.

Common Name	*Scientific Name*	Status[1] Federal/ State	General Habitat Description	Suitable Habitat[2] Present/ Absent	Critical Habitat[2]/ Essential Fish Habitat Present/ Absent	Rationale
white sturgeon	*Acipenser transmontanus*	--/SSC	Occasionally found in the ocean, this fish primarily resides in large rivers and associated estuaries. Some runs include the Klamath, Trinity, and Eel Rivers.	Absent	N/A	No habitat within BSA #1. There are no CNDDB occurrences within 10 miles of the ESL.
MAMMALS						
blue whale	*Balaenoptera musculus*	FE/--	Worldwide, often near the edges of physical features where krill tend to concentrate.	Absent	N/A	No habitat within BSA #1. This is a pelagic species.
fin whale	*Balaenoptera physalus*	FE/--	Deep, offshore waters of all major oceans; less common in the tropics.	Absent	N/A	No habitat within BSA #1. This is a pelagic species.
fisher	*Pekania pennanti*	--/SSC	Utilizes forests with dense canopy and a complex structure that includes downed wood, moderate to high shrub cover, dead trees, and intermixed hardwood trees. Relies on dens created by large trees, snags, logs, rock piles, and root burrows. Uncommon resident of the Sierra Nevada, Cascades, and Klamath Mountains; found in a few areas of the North Coast Range.	Present	N/A	Habitat is present within BSA #2, within redwood and Douglas-fir forest habitats with appropriate canopy cover or dense shrub cover. Distant image captured during 2021 camera study determined to likely be fisher. The 2021 Forest Carnivore Survey detected fisher in the northeastern portion of BSA #2. There are no CNDDB occurrences within 10 miles of the ESL.

Common Name	*Scientific Name*	Status[1] Federal/ State	General Habitat Description	Suitable Habitat[2] Present/ Absent	Critical Habitat[2]/ Essential Fish Habitat Present/ Absent	Rationale
Humboldt (Pacific) marten– Coastal DPS	*Martes caurina humboldtensis*	FT/SE	Found in coastal old-growth forests, some dune forest habitat, and certain areas with dense shrub cover on serpentine areas. Avoids open areas. Dens in large tree cavities, snags, and logs. Uncommon resident endemic to northwestern California and western Oregon.	Present	N/A	Habitat is present within BSA #1, within redwood and Douglas-fir forest habitats with appropriate canopy cover or dense shrub cover. The nearest CNDDB occurrence is approximately 6.8 miles east of the ESL. Safe Harbor Agreement on adjacent Green Diamond Resource Company (GDRC) land.
humpback whale	*Megaptera novaeangliae*	FE--	Central California population migrates from winter calving and mating areas off Mexico to summer and fall feeding areas off coastal California. Humpback whales occur from late April to early December.	Absent	N/A	No habitat within BSA #1. This is a pelagic species.
North Pacific right whale	*Eubalaena japonica*	FE/--	North Pacific Ocean; seasonally migratory; colder waters for feeding, migrating to warmer waters for breeding and calving; may move far out to sea during feeding seasons but gives birth in coastal areas.	Absent	N/A	No habitat within BSA #1. This is a pelagic species.

Common Name	*Scientific Name*	Status[1] Federal/ State	General Habitat Description	Suitable Habitat[2] Present/ Absent	Critical Habitat[2]/ Essential Fish Habitat Present/ Absent	Rationale
pallid bat	*Antrozous pallidus*	--/SSC	Roosts in rocky outcrops, cliffs, and crevices, live or dead tree hollows, mines, caves, and a variety of vacant occupied structures or buildings.	Present	N/A	Habitat is present within BSA #1. Mature trees with cavities likely provide suitable roosting sites, including maternity sites for the rearing of young; may forage throughout BSA #1 in all habitat community types. There are no CNDDB occurrences within 10 miles of the ESL. Species was acoustically detected during 2021/2022 bat surveys.
ringtail	*Bassariscus astutus*	--/FP	Widely distributed, common to uncommon permanent resident in various riparian habitats and in brush stands of most forest habitats. Usually not found more than 0.6 mile (1 kilometer) from water. Breeding occurs in rock crevices and recesses, logs, snags, abandoned burrows, and tree hollows. Avoids open space. Primarily nocturnal. Occurs throughout a majority of California, including the Sierra Nevada, Coast Ranges, and the Central Valley.	Present	N/A	Reproductive and foraging habitat within BSA #1 in talus and rock outcrop areas, large logs, snags, and tree hollows found in mature redwood, Douglas-fir and Sitka spruce forests. Presence is assumed within all suitable habitats. There are no CNDDB occurrences within 10 miles of the ESL. This species was not detected during wildlife surveys.

Common Name	*Scientific Name*	Status[1] Federal/ State	General Habitat Description	Suitable Habitat[2] Present/ Absent	Critical Habitat[2]/ Essential Fish Habitat Present/ Absent	Rationale
sei whale	*Balaenoptera borealis*	FE/--	Subtropical, temperate, and subpolar waters; usually observed in deeper waters of oceanic areas far from coastline. Occurs in subtropical, temperate, and subpolar waters worldwide; prefers temperate waters in mid-latitudes of Atlantic, Pacific, and Indian oceans.	Absent	Absent	No habitat within BSA #1. This is a pelagic species.
Sonoma tree vole	*Arborimus pomo*	--/SSC	Occurs in old-growth and mixed-age forests, mainly Douglas-fir which is the primary food source for this arboreal species; found in redwood with Douglas-fir component. Distributed along the North Coast from Sonoma County north to the Oregon border, being more or less restricted to the fog belt.	Present	N/A	Reproductive and foraging habitat present within BSA #1 in Douglas-fir forests and redwood forests with a Douglas-fir component. Presence is assumed within all suitable habitat. The nearest CNDDB occurrence is within the ESL. This species was not detected during wildlife surveys.
Southern Resident killer whale	*Orcinus orca*	FE/--	Most abundant in colder waters but also occurs in temperate water; presence and occurrence common but unpredictable in coastal California.	Absent	N/A	No habitat within BSA #1. This is a pelagic species.

Common Name	*Scientific Name*	Status[1] Federal/ State	General Habitat Description	Suitable Habitat[2] Present/ Absent	Critical Habitat[2]/ Essential Fish Habitat Present/ Absent	Rationale
southern sea otter	*Enhydra lutris nereis*	FT/FP	Canopies of giant kelp and bull kelp provide important rafting and feeding areas. Found in rocky substrates, near points of land or large bays, where kelp beds occur. Found in nearshore marine environments from San Mateo County to Santa Barbara County. There are two unprocessed data records in the CNDDB showing southern sea otter present in the Crescent City and Sister Rocks quads.	Absent	N/A	No habitat within BSA #1. This species is found where kelp beds persist offshore.
sperm whale	*Physeter catodon*	FE/--	Open ocean far from land and uncommon in waters less than 984 feet (300 meters) deep; live at surface of the ocean but dive deep to catch giant squid.	Absent	N/A	No habitat within BSA #1. This is a pelagic species.
Townsend's big-eared bat	*Corynorhinus townsendii*	--/SSC	Primarily cavity-roosting and most often found in caves, mines, and tunnels, while also found in tree hollows. Found from redwood forests to inland desert, oak woodlands of Coast Range, and Sierra Nevada foothills. Very sensitive to disturbances and may abandon a roost after a single disturbance.	Present	N/A	Habitat is present within BSA #1. Mature redwood trees with cavities likely provide suitable roosting sites, including maternity sites for the rearing of young; may forage throughout the ESL in all habitat community types. The nearest CNDDB occurrence is approximately 6.5 miles southeast of the ESL. Species was acoustically detected during 2021/2022 bat surveys.

Common Name	*Scientific Name*	Status[1] Federal/ State	General Habitat Description	Suitable Habitat[2] Present/ Absent	Critical Habitat[2]/ Essential Fish Habitat Present/ Absent	Rationale
white-footed vole	*Arborimus albipes*	--/SSC	Found in coastal forests dominated by redwood, Douglas-fir, and riparian forest. Occupies habitat near small streams with dense alder and deciduous trees and shrubs. Endemic to the forests of western Oregon and northwestern California. In California only known from Humboldt and Del Norte counties.	Present	N/A	Reproductive and foraging habitat present in BSA #1 within red alder forest habitat, specifically near small streams. Presence is assumed within all suitable habitat. There are no CNDDB occurrences within 10 miles of the ESL. This species was not detected during wildlife surveys.
INVERTEBRATES						
Suckley's cuckoo bumble bee	*Bombus suckleyi*	--/SC	Obligate social parasite of other *Bombus* species. Found in western meadows with abundant floral resources.	Absent	N/A	No habitat within BSA #1. There are no CNDDB occurrences within 10 miles of the ESL.
monarch butterfly	*Danaus plexippus*	FC/--	Leave overwintering sites in Mexico during February and March and reach northern limit of North America range in early June. Females lay eggs singly on native milkweed species.	Absent	N/A	No habitat within BSA #1. The BSA is outside of this species' overwintering and breeding zones (Pelton et al., 2016). There are no overwintering sites in Del Norte County; the nearest overwintering sites are in Mendocino County, well south of the BSAs (Pelton et al., 2016). Additionally, no milkweed was observed in BSA #1 during botanical surveys that would provide suitable habitat for larval life stages.

Common Name	*Scientific Name*	Status[1] Federal/ State	General Habitat Description	Suitable Habitat[2] Present/ Absent	Critical Habitat[2]/ Essential Fish Habitat Present/ Absent	Rationale
Oregon silverspot butterfly	*Speyeria zerene hippolyta*	FT/--	Occupies marine terrace and coastal headland meadows, stabilized dunes, and montane grasslands found on Mount Hebo and Fairview Mountain in Oregon and Del Norte County in California. Requires early blue violet (*Viola adunca*), the larval host plant and nectar plants for adult butterflies.	Absent	N/A	No habitat within BSA #1. Species is only known from two or possibly three populations in California near the Lake Earl area. The nearest known CNDDB occurrence is approximately 10.4 miles northwest of the ESL near Crescent City. Additionally, the larval host plant *Viola adunca* was not observed during botanical surveys.
western bumble bee	*Bombus occidentalis*	--/SC	General forager of open fields of wild flowering plants and cultivated crops from near sea level to mountain meadows.	Absent	N/A	No habitat within BSA #1. The nearest CNDDB occurrence is approximately 3.8 miles east of the ESL.

Sources: CDFW 2023a; USFWS 2023, NMFS 2023

[1]**Status Definitions:**

Federal Status: FE = Endangered; FPT = Proposed Threatened; FT = Threatened; FC = Candidate; FD = Federally Delisted.

State Status: SE = Endangered; ST = Threatened; SC = State Candidate; FP = CDFW Fully Protected; SSC = CDFW Species of Special Concern; SR = State Rare.

[2]**Habitat Designations:**

Absent = Absent: no habitat present.
Present = Present: the species habitat is present.
CH = Critical Habitat
EFH = Designated Essential Fish Habitat
AC = Activity Center

[3] American peregrine falcon (*Falco peregrinus anatum*) and California brown pelican (*Pelecanus occidentalis californicus)* were listed on the CNDDB list (CDFW 2023a) as FP species. On July 10, 2023, Senate Bill No. 147 passed and these birds are no longer listed as FP. Therefore, we have removed them from this list.



APPENDIX J. Tree Impact Maps



Tree Impact Figures

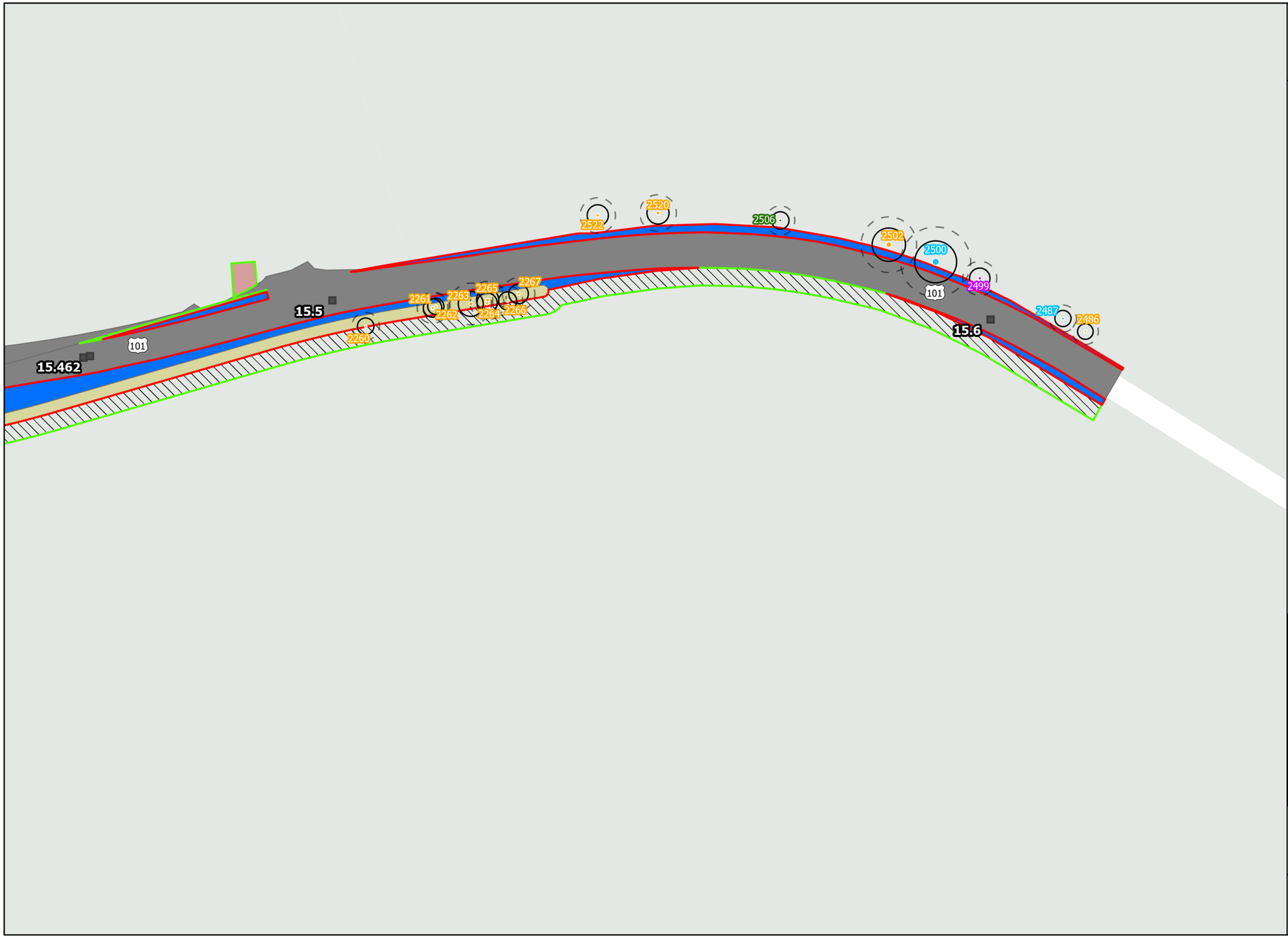
Figure 1. Alternative X Impacts to Large Trees (zoomed out) (7 sheets)

Figure 2. Alternative X Impacts to Large Trees (closeup) (22 sheets)

Figure 3. Alternative F Impacts to Large Trees (zoomed out) (8 sheets)

Figure 4. Alternative F Impacts to Large Trees (closeup) (29 sheets)





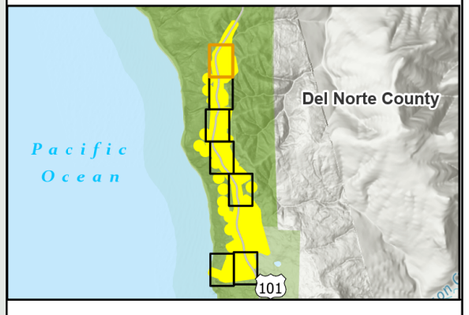
Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- Post Miles
- DBH 3X
- DBH 5X

Tree Species DBH
- Douglas Fir
- Redwood
- Sitka Spruce
- Western Hemlock

Impact Area
- Permanent
- Temporary

Project Components and Design Features
- 15-Foot Buffer
- Cut/Fill
- Drainage Outlet
- Retaining Wall
- New Road
- Existing Rd



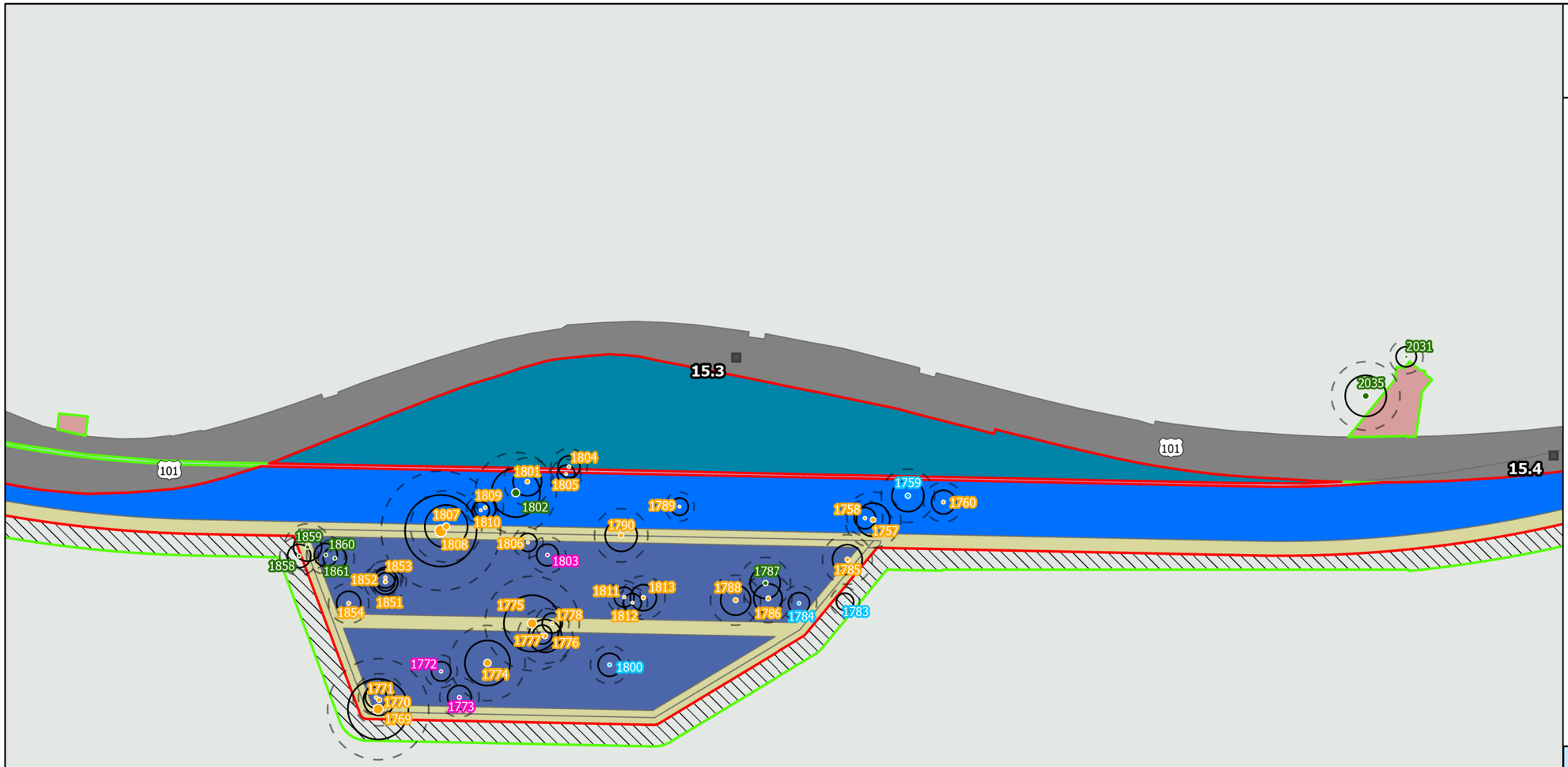
N

0 50 100
Feet

Date created: 6/30/2023

Caltrans

Figure 1
Alternative X Impacts to Large Trees
Sheet 1 of 7



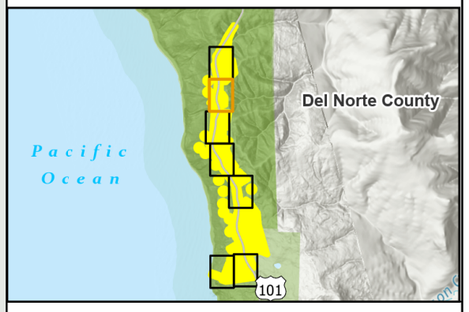
Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- Post Miles
- DBH 3X
- DBH 5X

Tree Species DBH
- Douglas Fir
- Red Alder
- Redwood
- Sitka Spruce

Impact Area
- Permanent
- Temporary

Project Components and Design Features
- 15-Foot Buffer
- Additional Areas
- Cut/Fill
- Drainage Outlet
- Retaining Wall
- Tiered Wall
- New Road
- Existing Rd



N

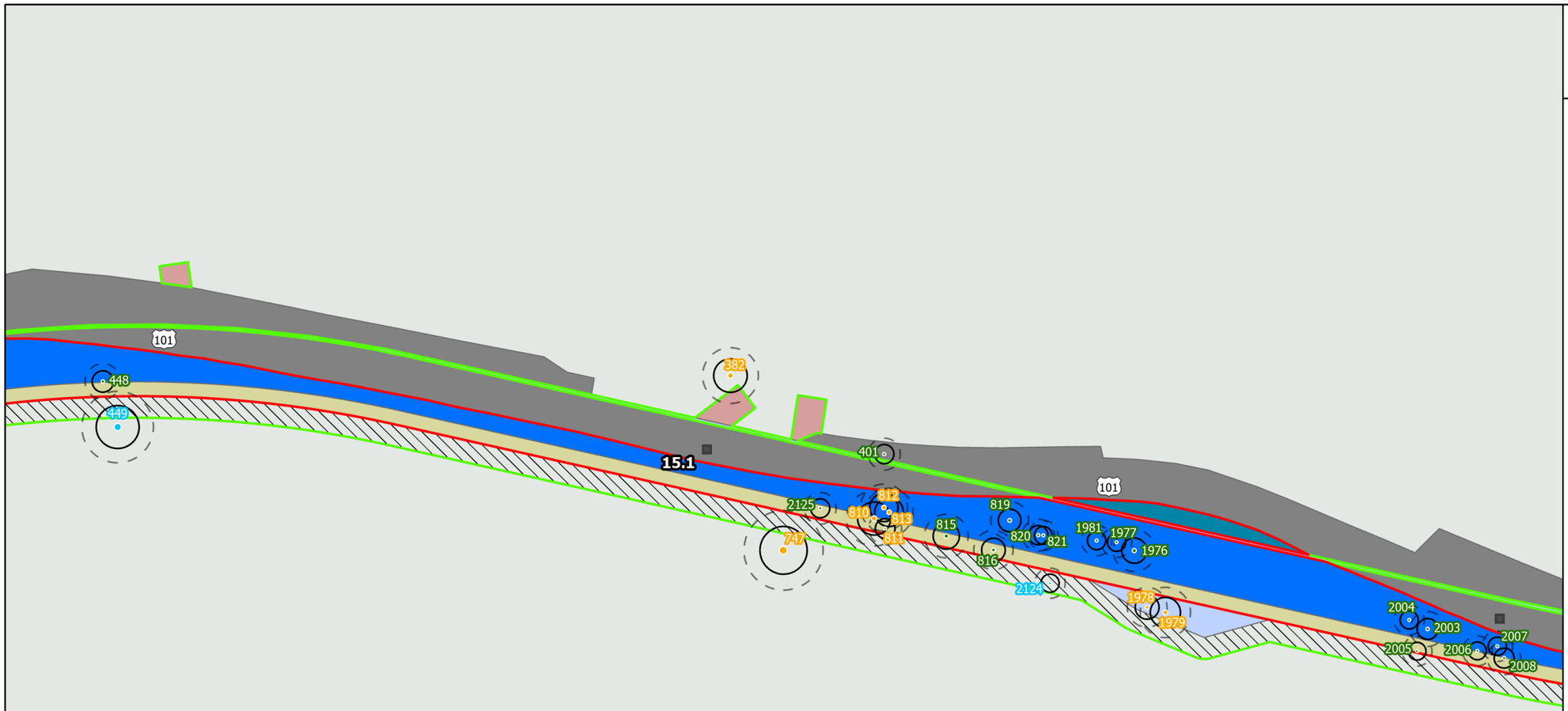
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Feet

Date created: 6/30/2023

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Figure 1
Alternative X Impacts to Large Trees
Sheet 2 of 7

Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

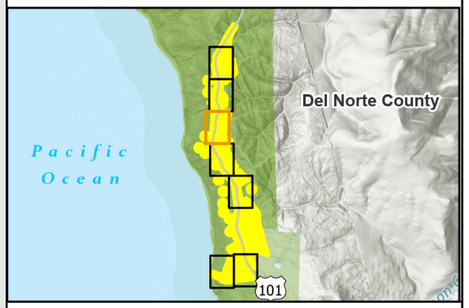


Post Miles
DBH 3X
DBH 5X

Tree Species DBH
- Douglas Fir
- Redwood
- Sitka Spruce

Impact Area
- Permanent
- Temporary

Project Components and Design Features
- 15-Foot Buffer
- Additional Areas
- Cut/Fill
- Drainage Outlet
- Retaining Wall
- New Road
- Existing Rd



N

0 50 100
Feet

Date created: 6/30/2023

Caltrans

Figure 1
Alternative X Impacts to Large Trees
Sheet 3 of 7

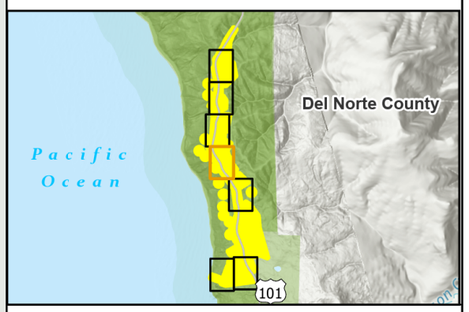
Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- Post Miles
- DBH 3X
- DBH 5X

Tree Species DBH
- Douglas Fir
- Redwood
- Sitka Spruce

Impact Area
- Permanent
- Temporary

Project Components and Design Features
- 15-Foot Buffer
- Additional Areas
- Cut/Fill
- Drainage Outlet
- Retaining Wall
- New Road
- Existing Rd



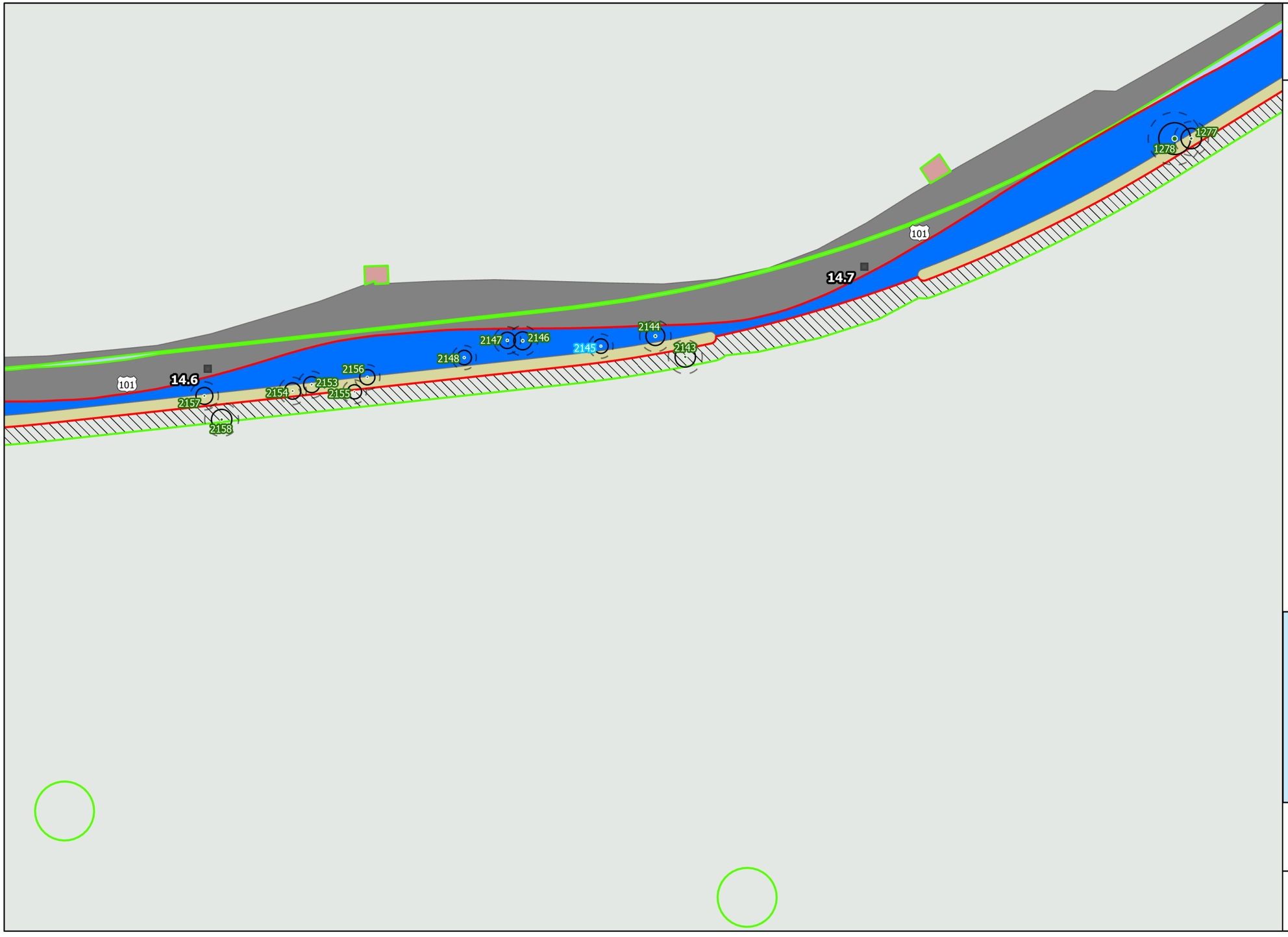
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Date created: 6/30/2023

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Figure 1
Alternative X Impacts to Large Trees
Sheet 4 of 7



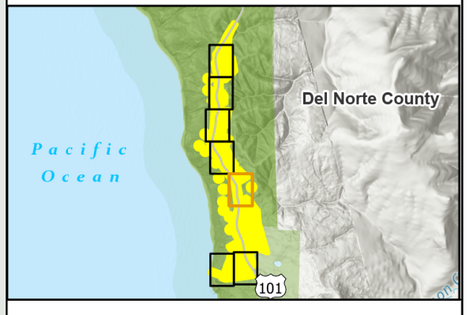
Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- Post Miles
- DBH 3X
- DBH 5X

Tree Species DBH
- Douglas Fir
- Sitka Spruce

Impact Area
- Permanent
- Temporary

Project Components and Design Features
- 15-Foot Buffer
- Cut/Fill
- Drainage Outlet
- Retaining Wall
- New Road
- Existing Rd



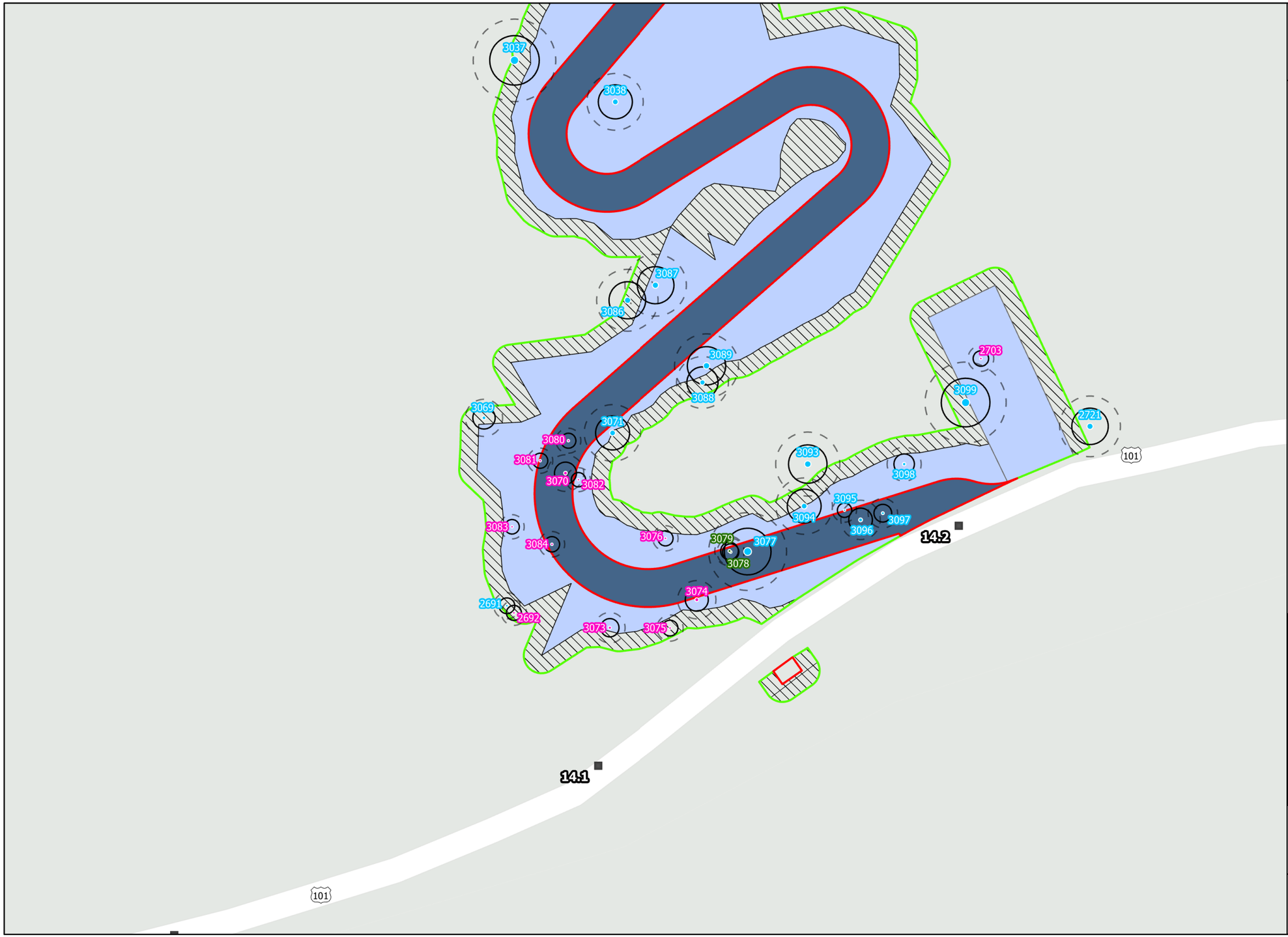
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Date created: 6/30/2023

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Figure 1
Alternative X Impacts to Large Trees
Sheet 5 of 7



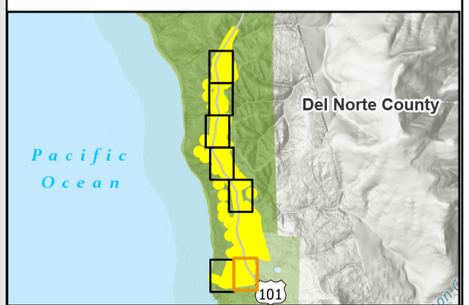
Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- Post Miles
- DBH 3X
- DBH 5X

Tree Species DBH
- Douglas Fir
- Red Alder
- Sitka Spruce

Impact Area
- Permanent
- Temporary

Project Components and Design Features
- 15-Foot Buffer
- Access Road
- Cut/Fill



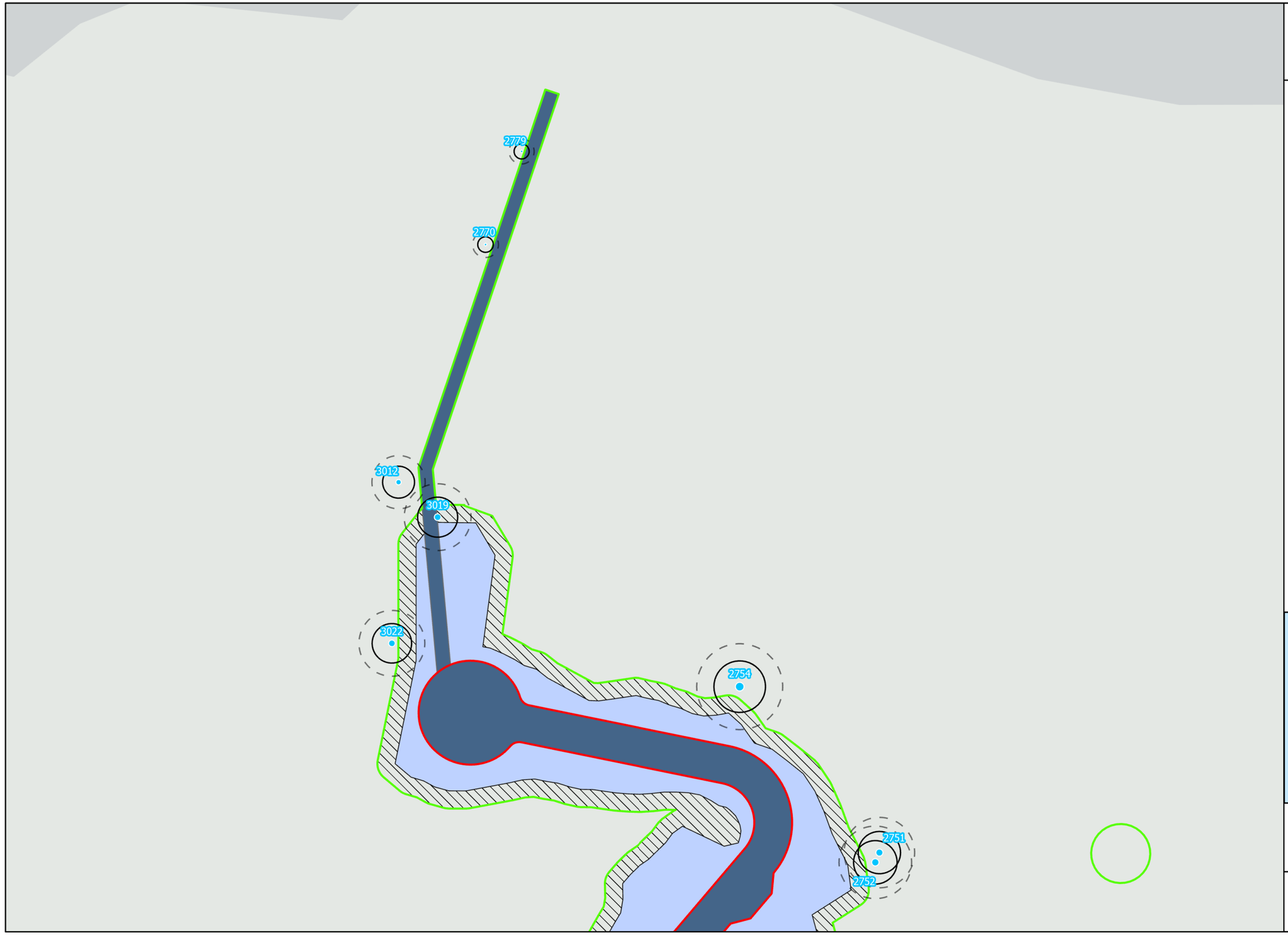
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Date created: 6/30/2023

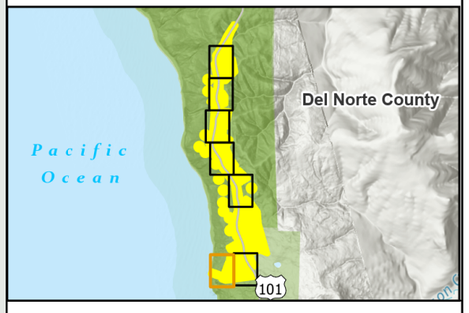
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Figure 1
Alternative X Impacts to Large Trees
Sheet 6 of 7



Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

DBH 3X
DBH 5X
Tree Species DBH
Sitka Spruce
Impact Area
Permanent
Temporary
Project Components and Design Features
15-Foot Buffer
Access Road
Cut/Fill



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0 50 100
Feet

Date created: 6/30/2023

Figure 1
Alternative X Impacts to Large Trees
Sheet 7 of 7

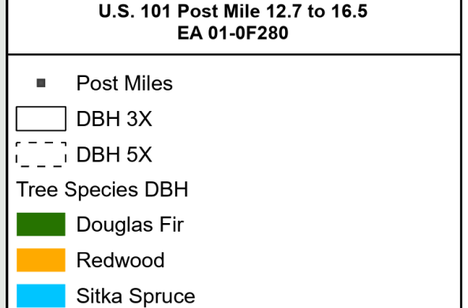
Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- Post Miles
- DBH 3X
- DBH 5X

Tree Species DBH
- Douglas Fir
- Redwood
- Sitka Spruce
- Western Hemlock

Impact Area
- Permanent
- Temporary

Project Components and Design Features
- 15-Foot Buffer
- New Road
- Existing Rd

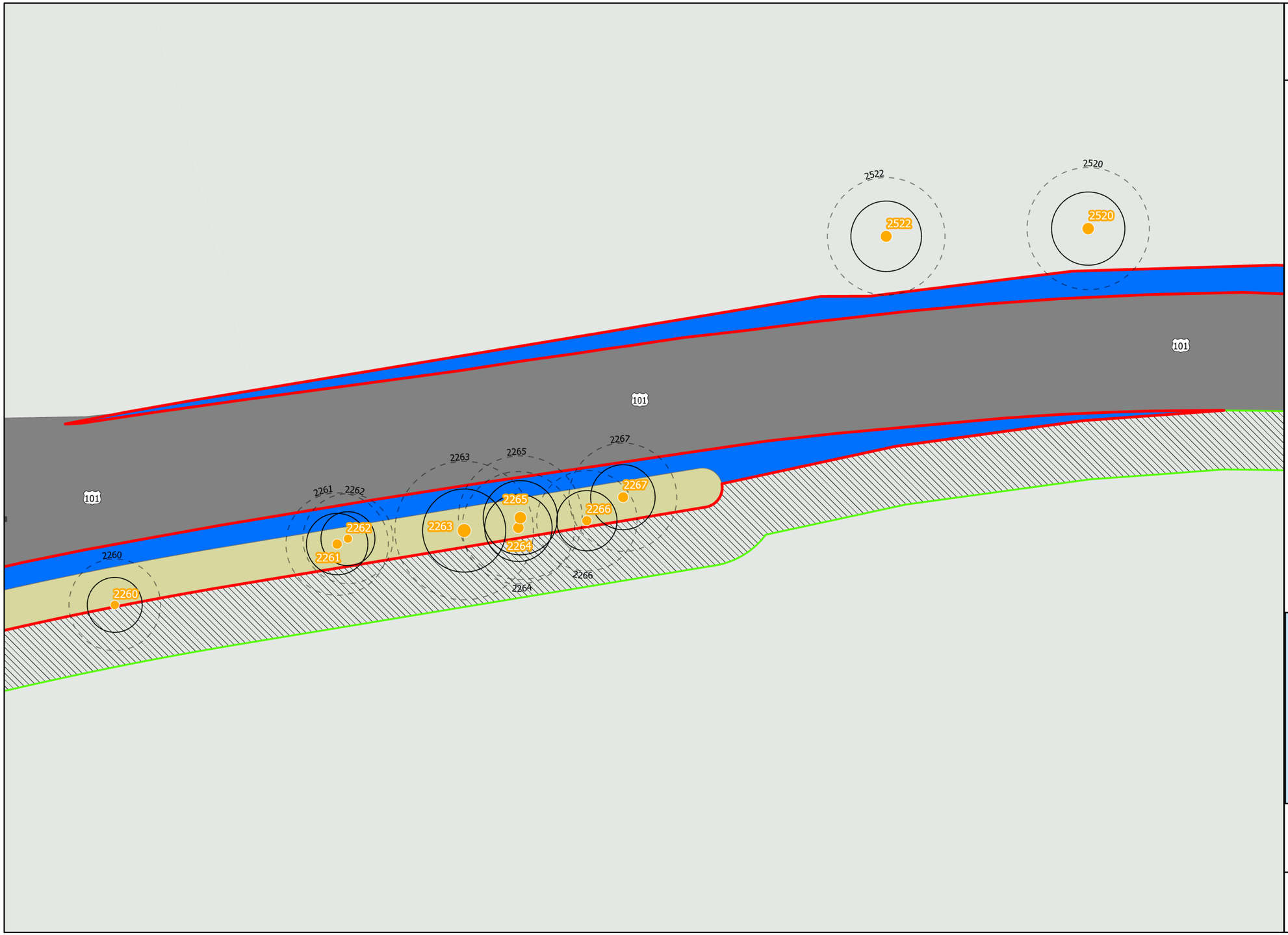


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Feet

Date created: 6/30/2023

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Figure 2
Alternative X Impacts to Large Trees
Sheet 1 of 22



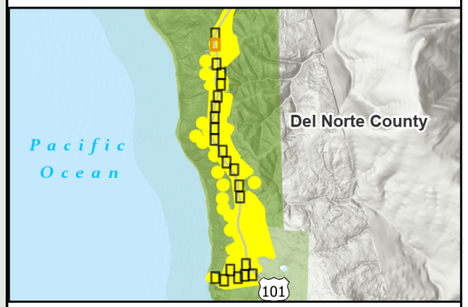
Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- Post Miles
- DBH 3X
- DBH 5X

Tree Species DBH
- Redwood

Impact Area
- Permanent
- Temporary

Project Components and Design Features
- 15-Foot Buffer
- Retaining Wall
- New Road
- Existing Rd



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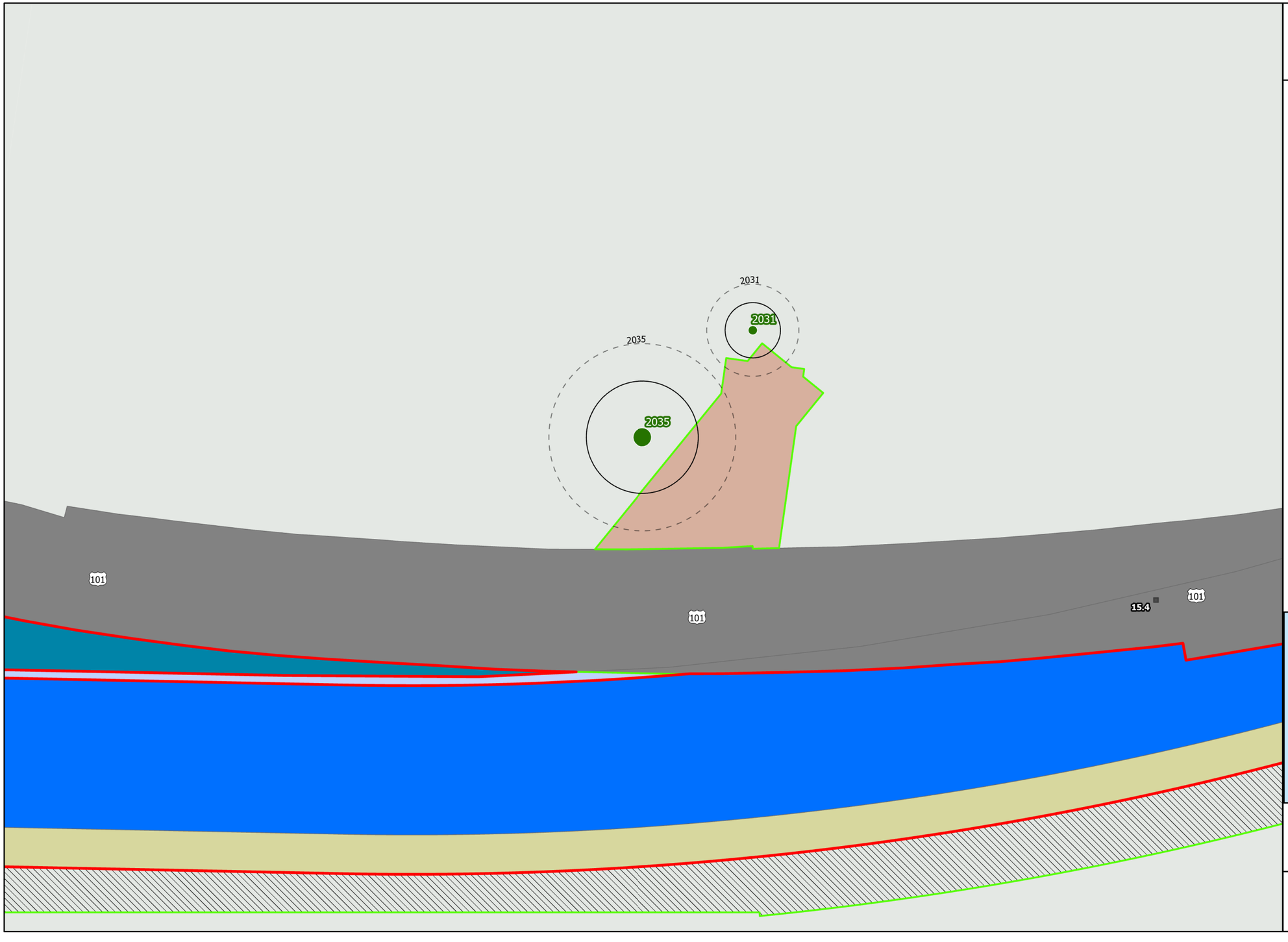
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Date created: 6/30/2023

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Figure 2
Alternative X Impacts to Large Trees
Sheet 2 of 22



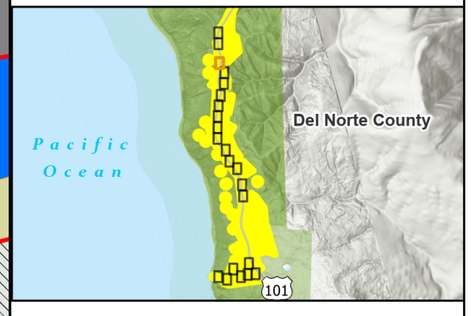
Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- Post Miles
- DBH 3X
- DBH 5X

Tree Species DBH
- Douglas Fir

Impact Area
- Permanent
- Temporary

Project Components and Design Features
- 15-Foot Buffer
- Additional Areas
- Cut/Fill
- Drainage Outlet
- Retaining Wall
- New Road
- Existing Rd

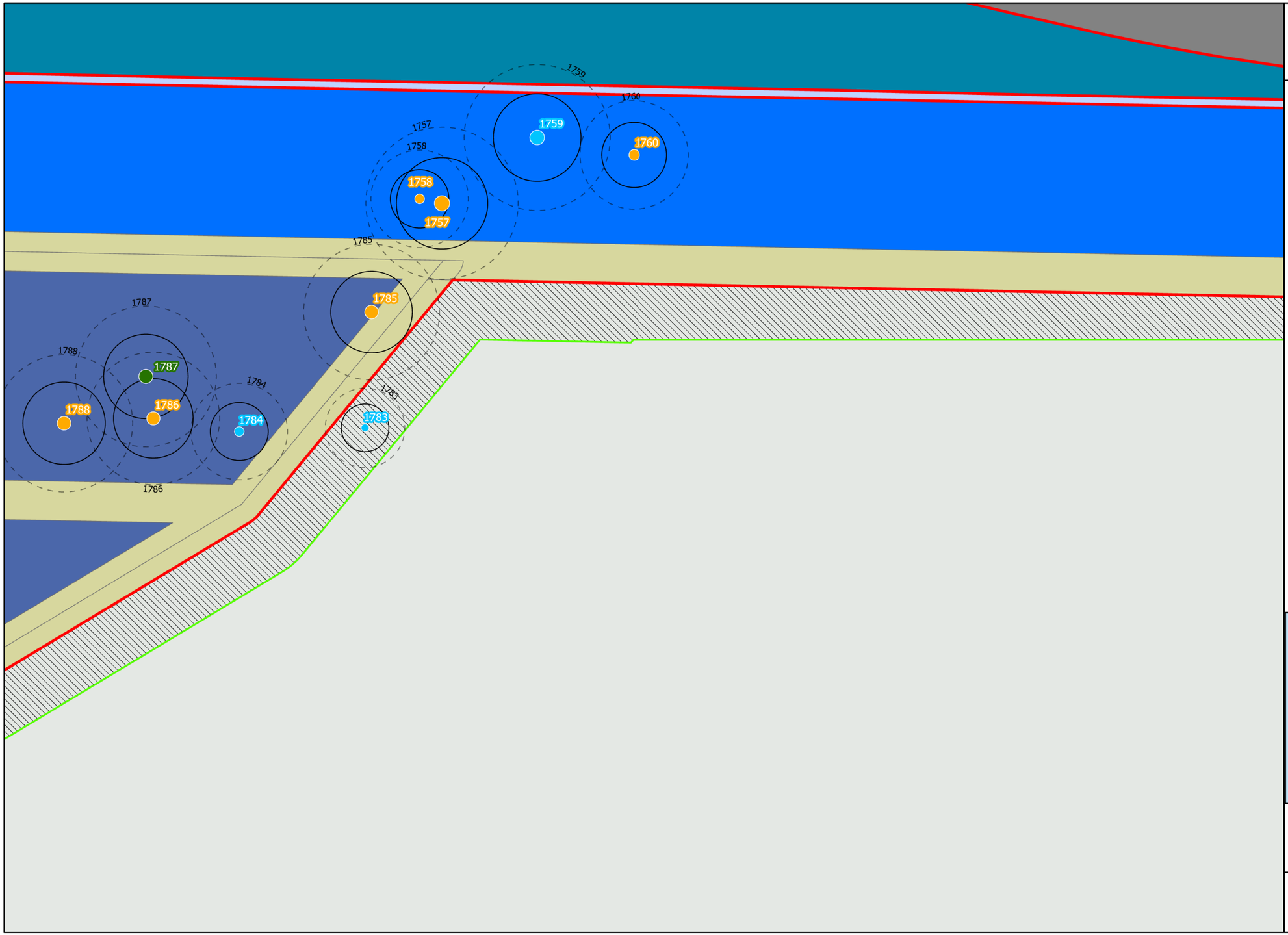


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Date created: 6/30/2023

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Figure 2
Alternative X Impacts to Large Trees
Sheet 3 of 22



Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- DBH 3X
- DBH 5X

Tree Species DBH

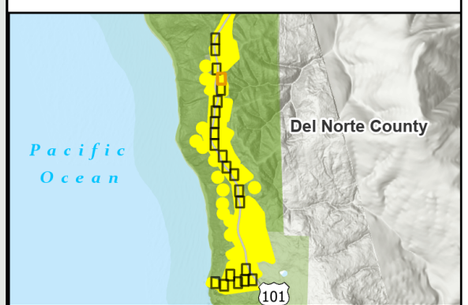
- Douglas Fir
- Redwood
- Sitka Spruce

Impact Area

- Permanent
- Temporary

Project Components and Design Features

- 15-Foot Buffer
- Additional Areas
- Cut/Fill
- Retaining Wall
- Tiered Wall
- New Road
- Existing Rd



N

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Feet

Date created: 6/30/2023

Caltrans

Figure 2
Alternative X Impacts to Large Trees
Sheet 4 of 22

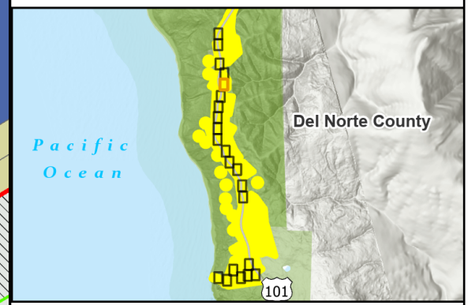
Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- DBH 3X
- DBH 5X

Tree Species DBH
- Douglas Fir
- Red Alder
- Redwood
- Sitka Spruce

Impact Area
- Permanent
- Temporary

Project Components and Design Features
- 15-Foot Buffer
- Additional Areas
- Cut/Fill
- Retaining Wall
- Tiered Wall
- New Road
- Existing Rd

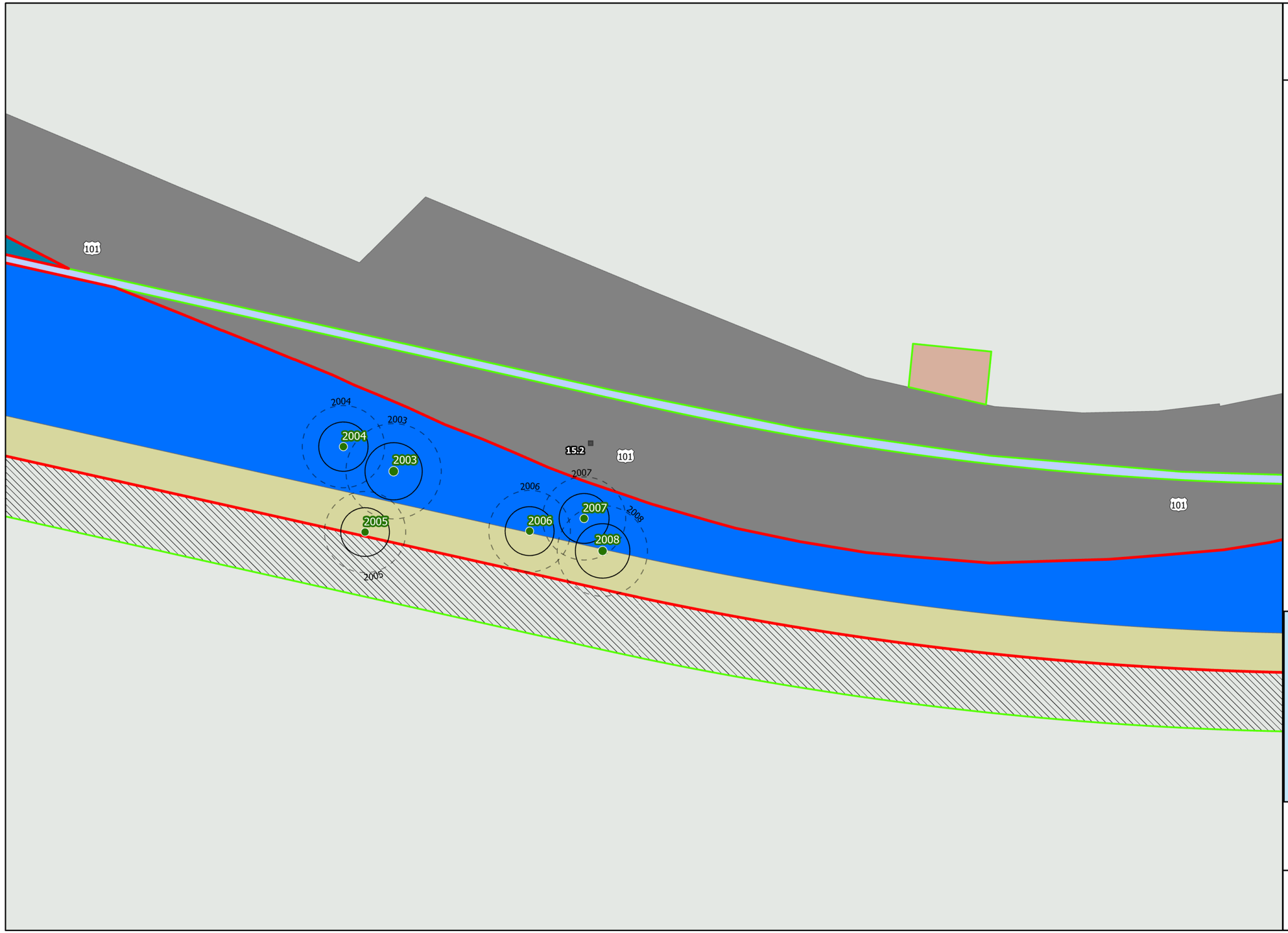


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Date created: 6/30/2023

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Figure 2
Alternative X Impacts to Large Trees
Sheet 5 of 22



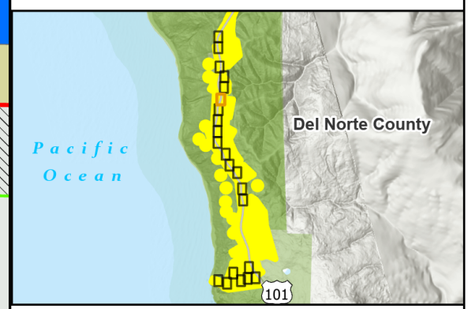
Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- Post Miles
- DBH 3X
- DBH 5X

Tree Species DBH
- Douglas Fir

Impact Area
- Permanent
- Temporary

Project Components and Design Features
- 15-Foot Buffer
- Additional Areas
- Cut/Fill
- Drainage Outlet
- Retaining Wall
- New Road
- Existing Rd



N

0 50

Feet

Date created: 6/30/2023

Caltrans

Figure 2
Alternative X Impacts to Large Trees
Sheet 6 of 22

Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- DBH 3X
- DBH 5X

Tree Species DBH

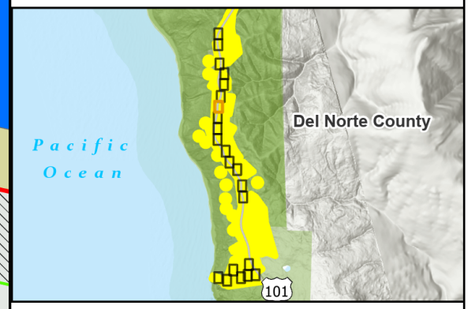
- Douglas Fir
- Redwood
- Sitka Spruce

Impact Area

- Permanent
- Temporary

Project Components and Design Features

- 15-Foot Buffer
- Additional Areas
- Cut/Fill
- Retaining Wall
- New Road
- Existing Rd



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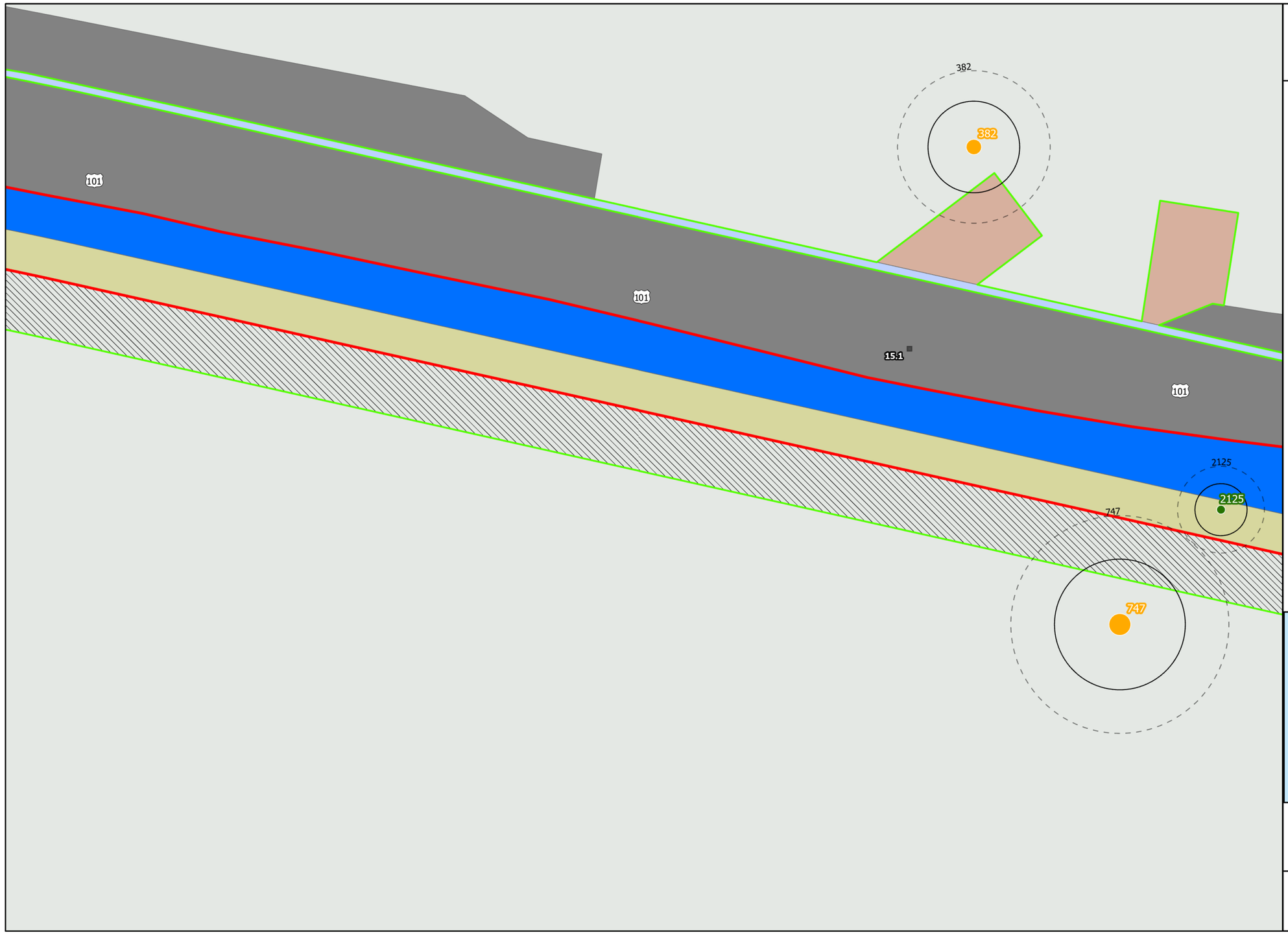
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Figure 2
Alternative X Impacts to Large Trees
Sheet 7 of 22



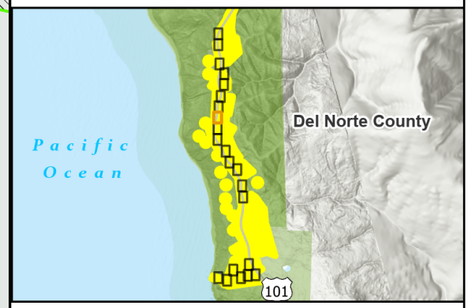
Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- Post Miles
- DBH 3X
- DBH 5X

Tree Species DBH
- Douglas Fir
- Redwood

Impact Area
- Permanent
- Temporary

Project Components and Design Features
- 15-Foot Buffer
- Cut/Fill
- Drainage Outlet
- Retaining Wall
- New Road
- Existing Rd



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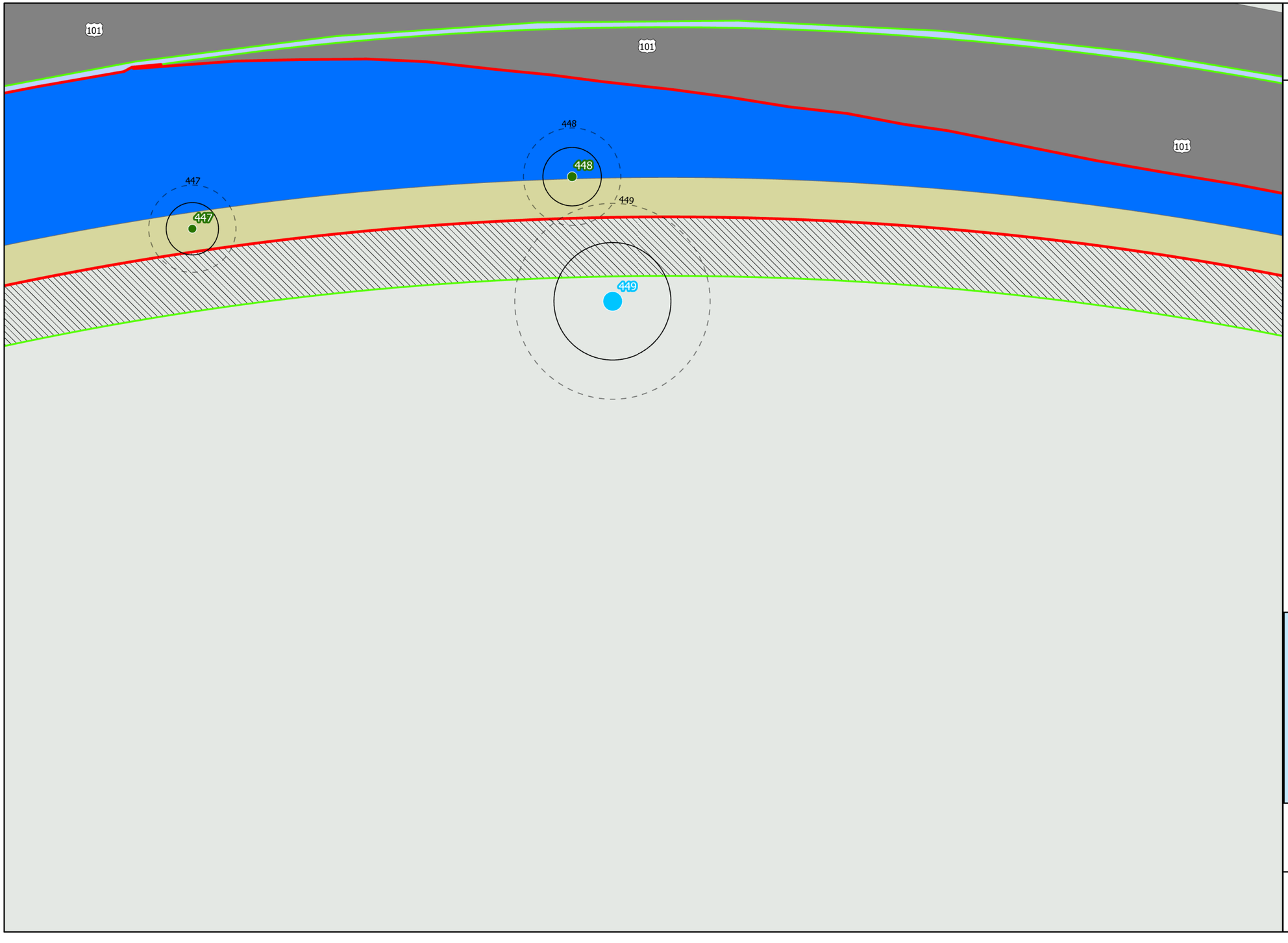
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Date created: 6/30/2023

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Figure 2
Alternative X Impacts to Large Trees
Sheet 8 of 22



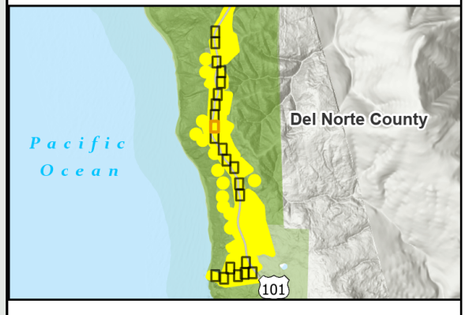
Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- DBH 3X
- DBH 5X

Tree Species DBH
- Douglas Fir
- Sitka Spruce

Impact Area
- Permanent
- Temporary

Project Components and Design Features
- 15-Foot Buffer
- Cut/Fill
- Retaining Wall
- New Road
- Existing Rd



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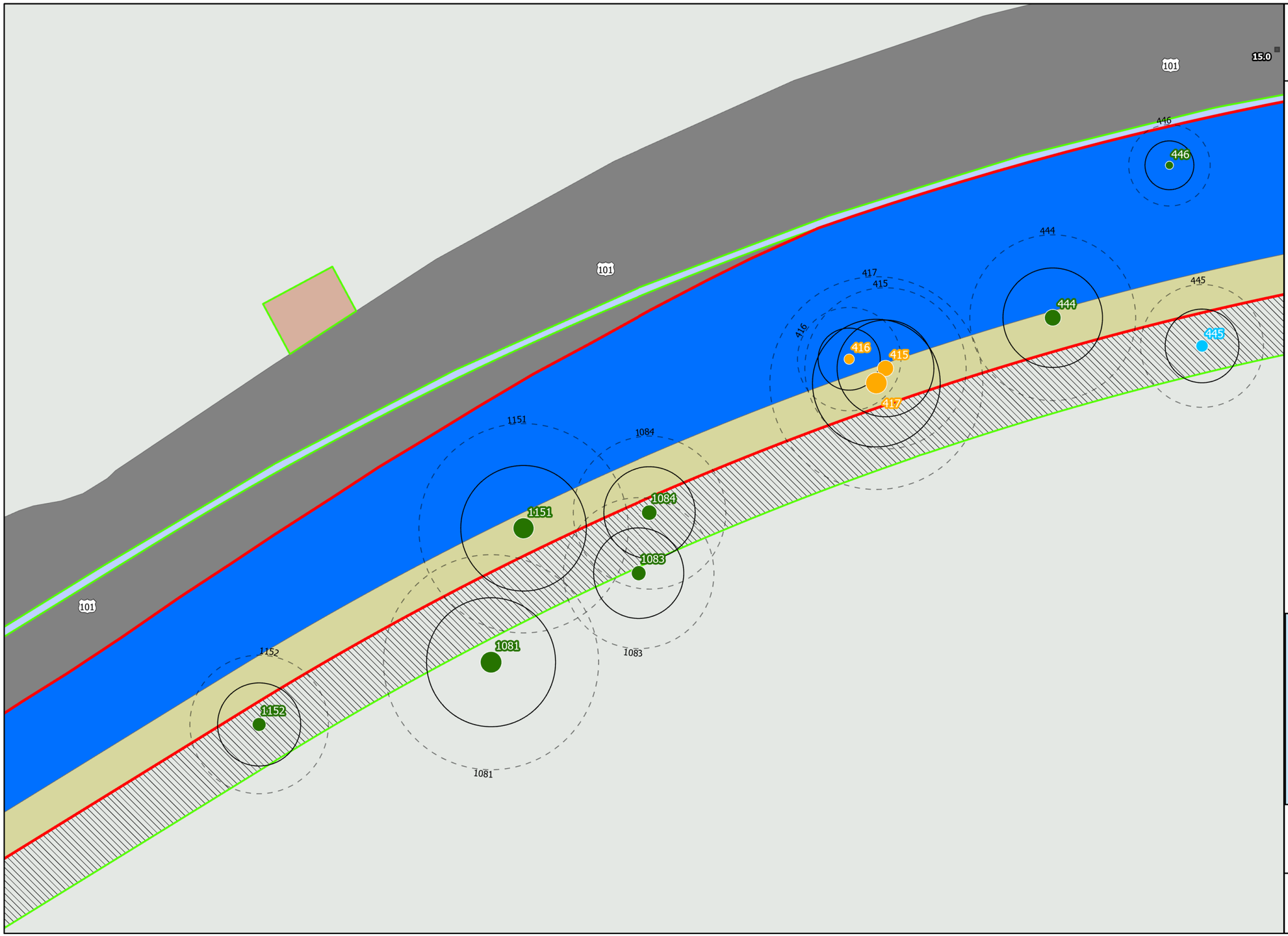
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Date created: 6/30/2023

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Figure 2
Alternative X Impacts to Large Trees
Sheet 9 of 22



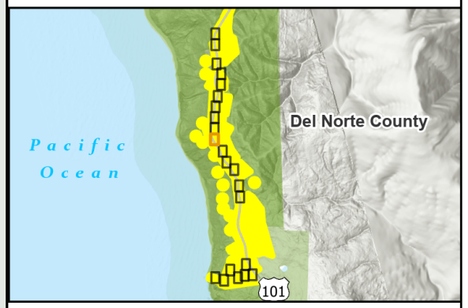
Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- Post Miles
- DBH 3X
- DBH 5X

Tree Species DBH
- Douglas Fir
- Redwood
- Sitka Spruce

Impact Area
- Permanent
- Temporary

Project Components and Design Features
- 15-Foot Buffer
- Cut/Fill
- Drainage Outlet
- Retaining Wall
- New Road
- Existing Rd



N

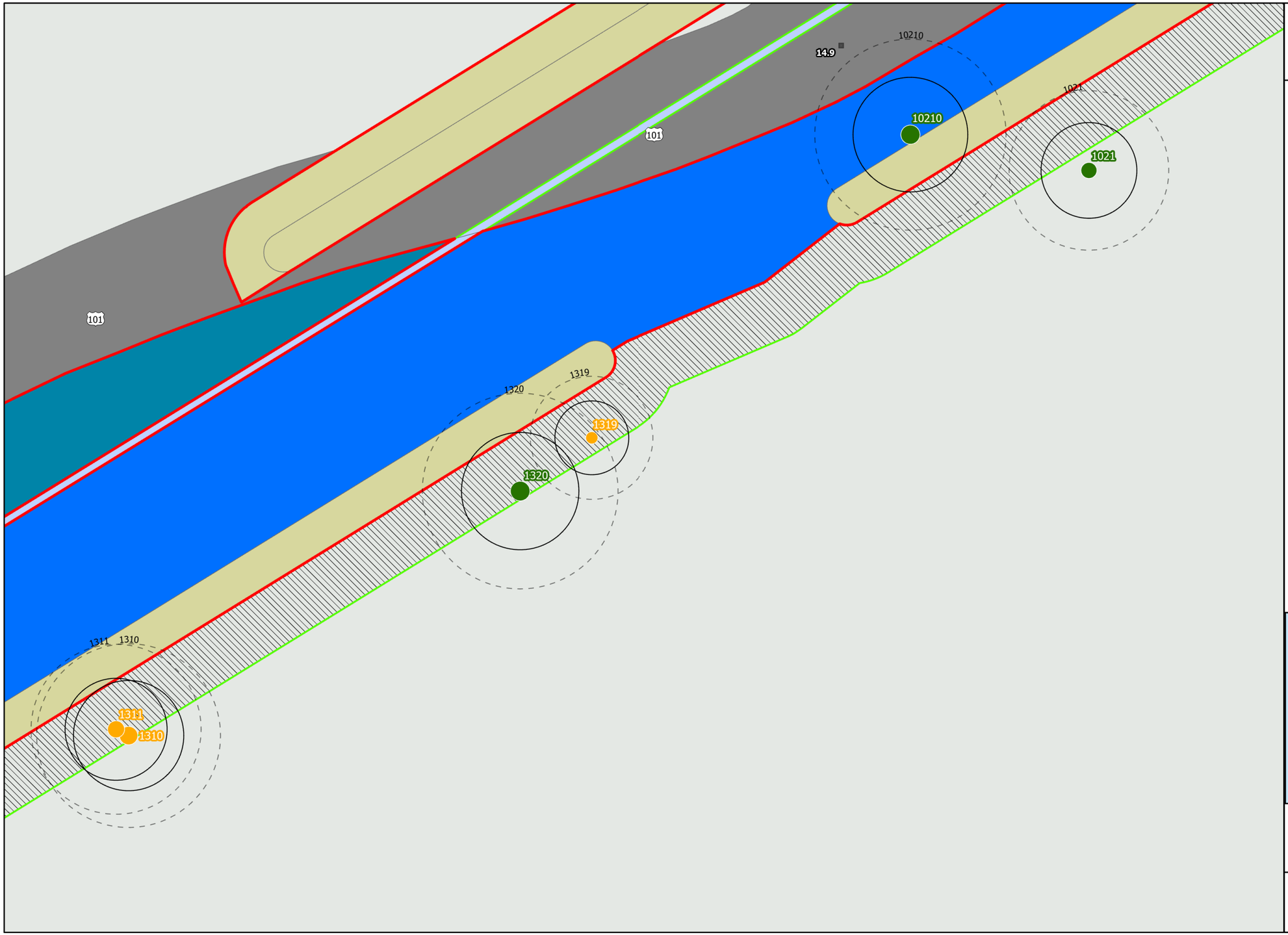
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Date created: 6/30/2023

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Figure 2
Alternative X Impacts to Large Trees
Sheet 10 of 22



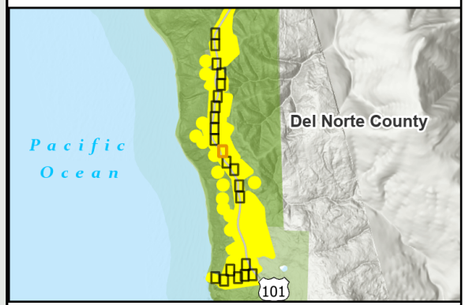
Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- Post Miles
- DBH 3X
- DBH 5X

Tree Species DBH
- Douglas Fir
- Redwood

Impact Area
- Permanent
- Temporary

Project Components and Design Features
- 15-Foot Buffer
- Additional Areas
- Cut/Fill
- Retaining Wall
- New Road
- Existing Rd



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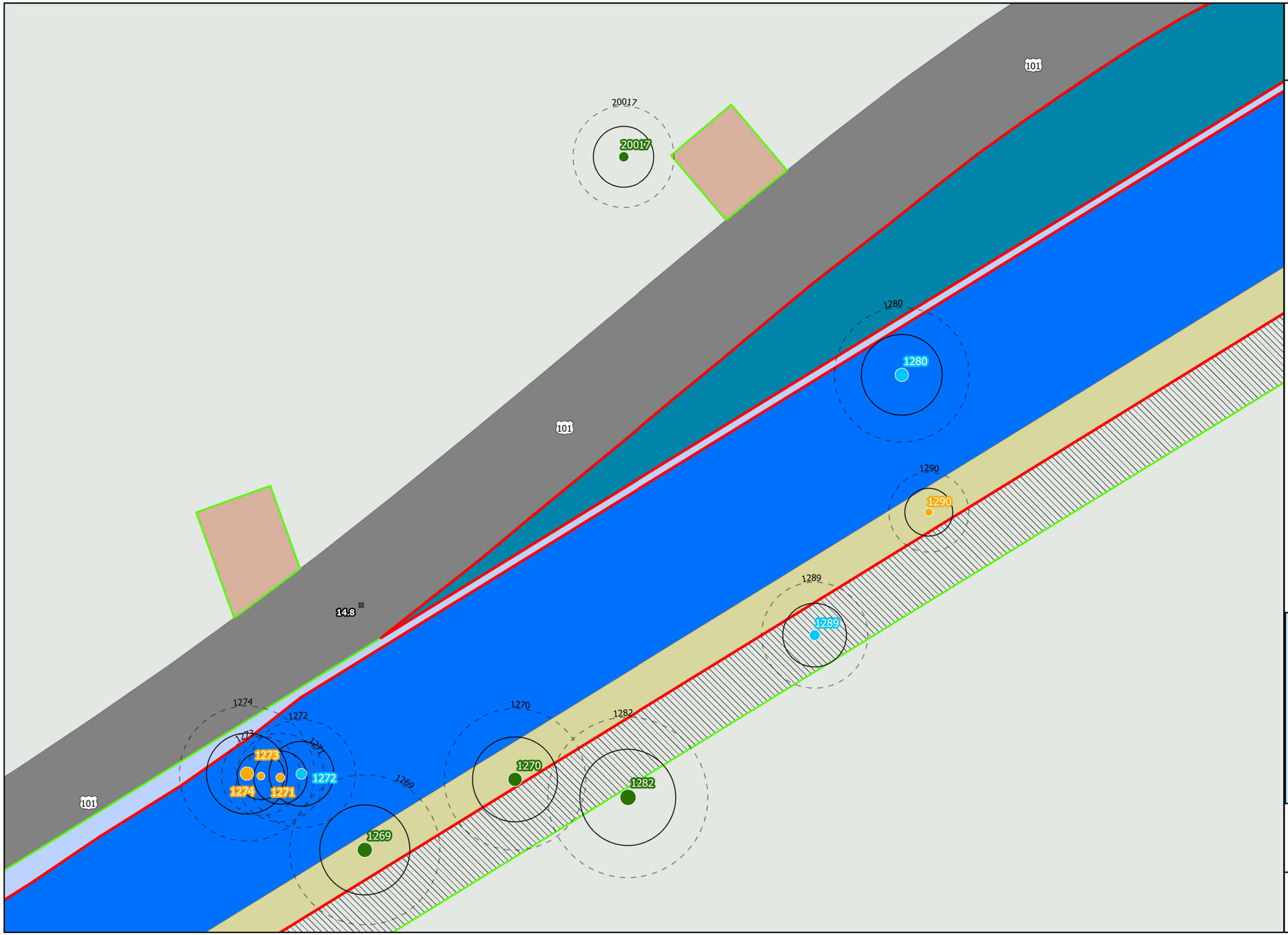
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Figure 2
Alternative X Impacts to Large Trees
Sheet 11 of 22



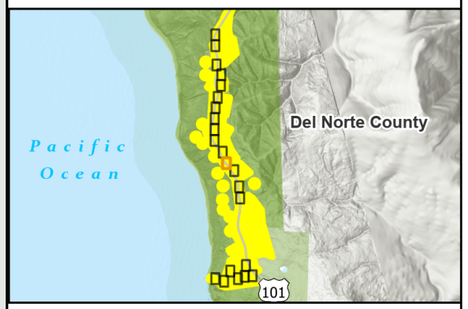
Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- Post Miles
- DBH 3X
- DBH 5X

Tree Species DBH
- Douglas Fir
- Redwood
- Sitka Spruce

Impact Area
- Permanent
- Temporary

Project Components and Design Features
- 15-Foot Buffer
- Additional Areas
- Cut/Fill
- Drainage Outlet
- Retaining Wall
- New Road
- Existing Rd



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Feet

Date created: 6/30/2023

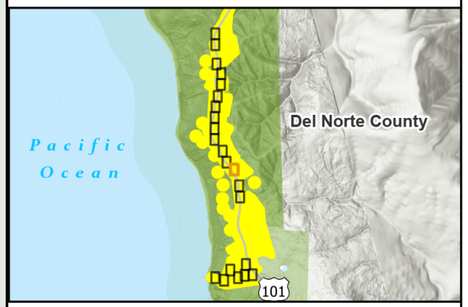
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Figure 2
Alternative X Impacts to Large Trees
Sheet 12 of 22



Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

DBH 3X
DBH 5X
Tree Species DBH
Douglas Fir
Redwood
Impact Area
Permanent
Temporary
Project Components and Design Features
15-Foot Buffer
Cut/Fill
Retaining Wall
New Road
Existing Rd



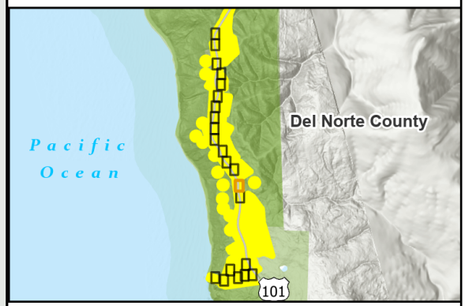
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Feet

Date created: 6/30/2023

Figure 2
Alternative X Impacts to Large Trees
Sheet 13 of 22

Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

DBH 3X
DBH 5X
Tree Species DBH
Douglas Fir
Sitka Spruce
Impact Area
Permanent
Temporary
Project Components and Design Features
15-Foot Buffer
Cut/Fill
Retaining Wall
New Road
Existing Rd



N
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50
Feet

Date created: 6/30/2023

Caltrans

Figure 2
Alternative X Impacts to Large Trees
Sheet 14 of 22

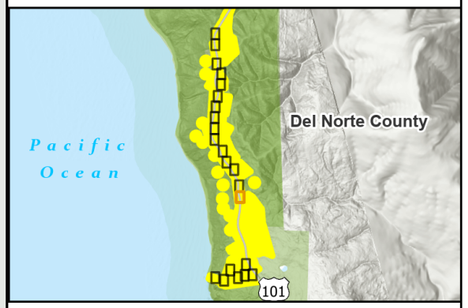
Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- Post Miles
- DBH 3X
- DBH 5X

Tree Species DBH
- Douglas Fir

Impact Area
- Permanent
- Temporary

Project Components and Design Features
- 15-Foot Buffer
- Cut/Fill
- Drainage Outlet
- Retaining Wall
- New Road
- Existing Rd



N

0 50

Feet

Date created: 6/30/2023

Caltrans

Figure 2
Alternative X Impacts to Large Trees
Sheet 15 of 22



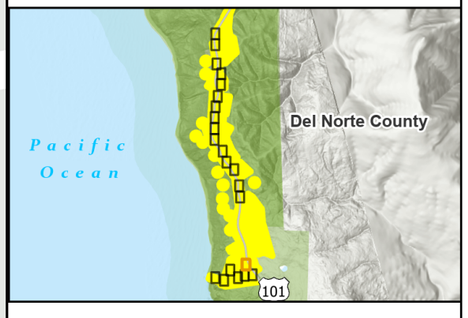
Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- Post Miles
- DBH 3X
- DBH 5X

Tree Species DBH
- Red Alder
- Sitka Spruce

Impact Area
- Permanent
- Temporary

Project Components and Design Features
- 15-Foot Buffer
- Access Road
- Cut/Fill



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Feet

Date created: 6/30/2023

Caltrans

Figure 2
Alternative X Impacts to Large Trees
Sheet 16 of 22

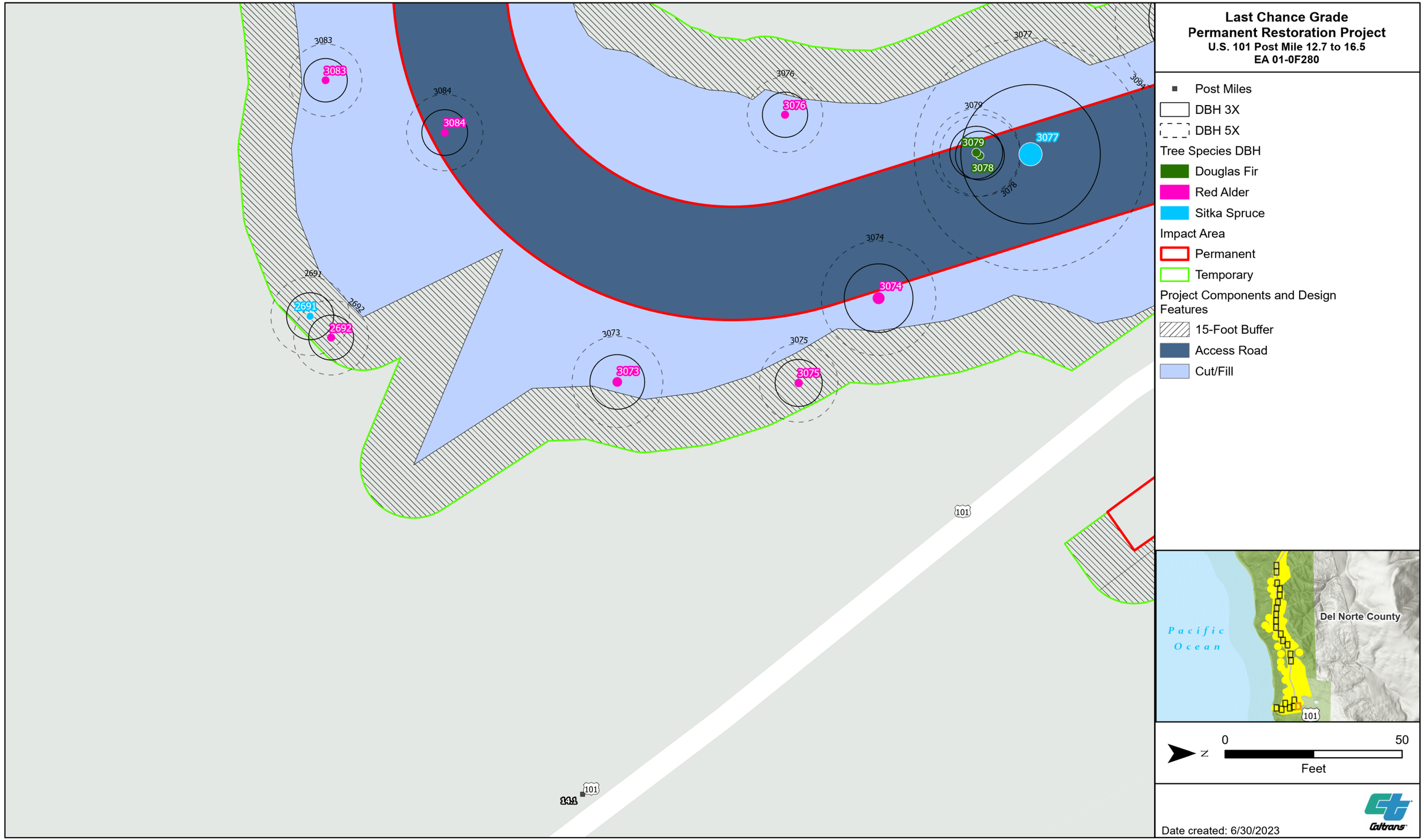
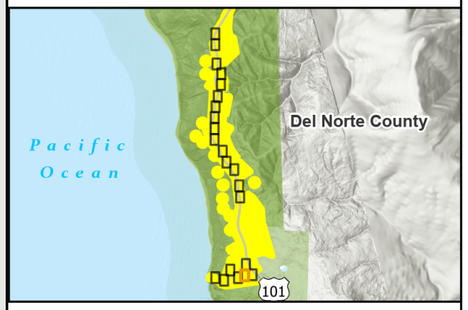


Figure 2
Alternative X Impacts to Large Trees
Sheet 17 of 22

Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

DBH 3X
DBH 5X
Tree Species DBH
Red Alder
Sitka Spruce
Impact Area
Permanent
Temporary
Project Components and Design Features
15-Foot Buffer
Access Road
Cut/Fill



N
0
50
Feet

Date created: 6/30/2023

Caltrans

Figure 2
Alternative X Impacts to Large Trees
Sheet 18 of 22

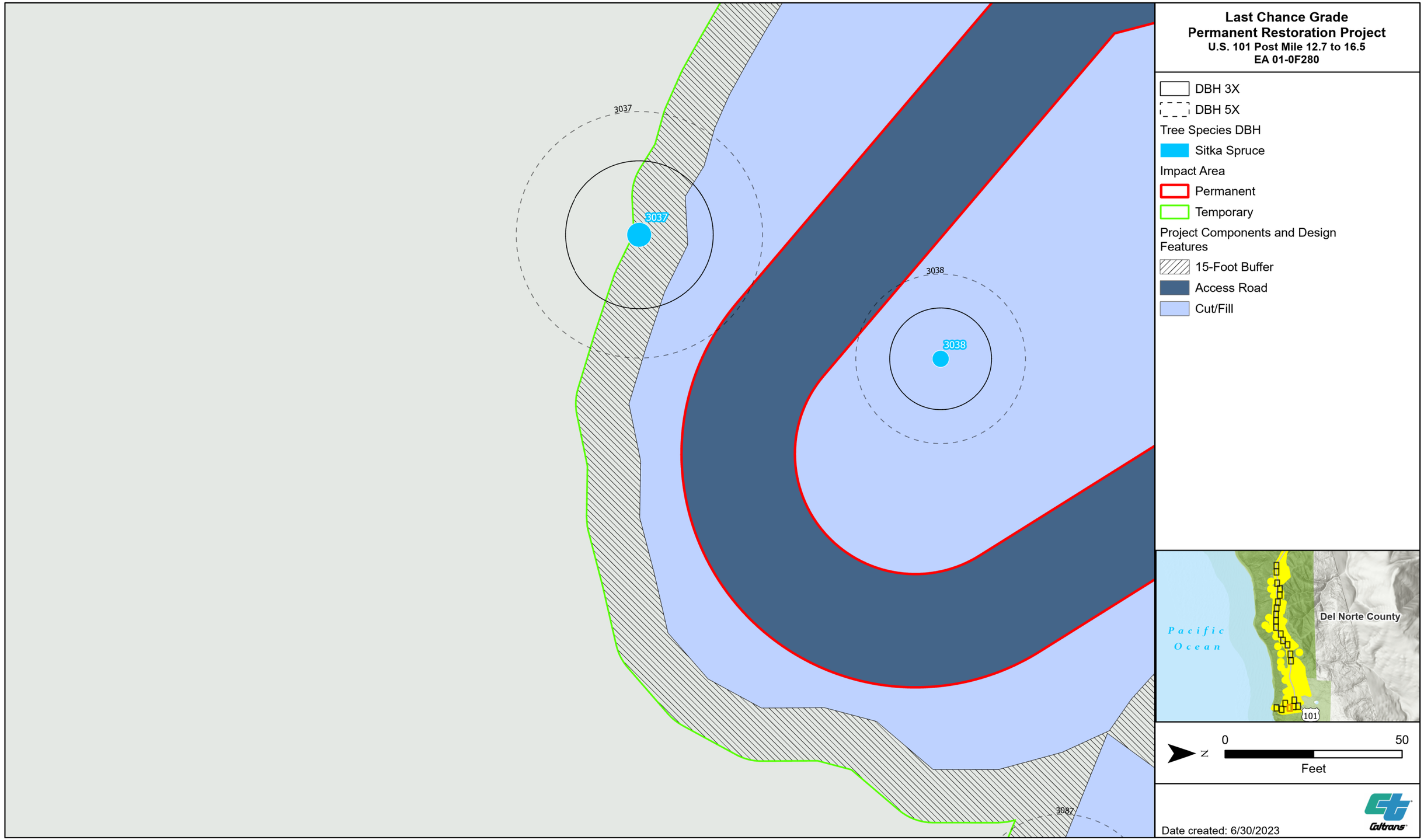
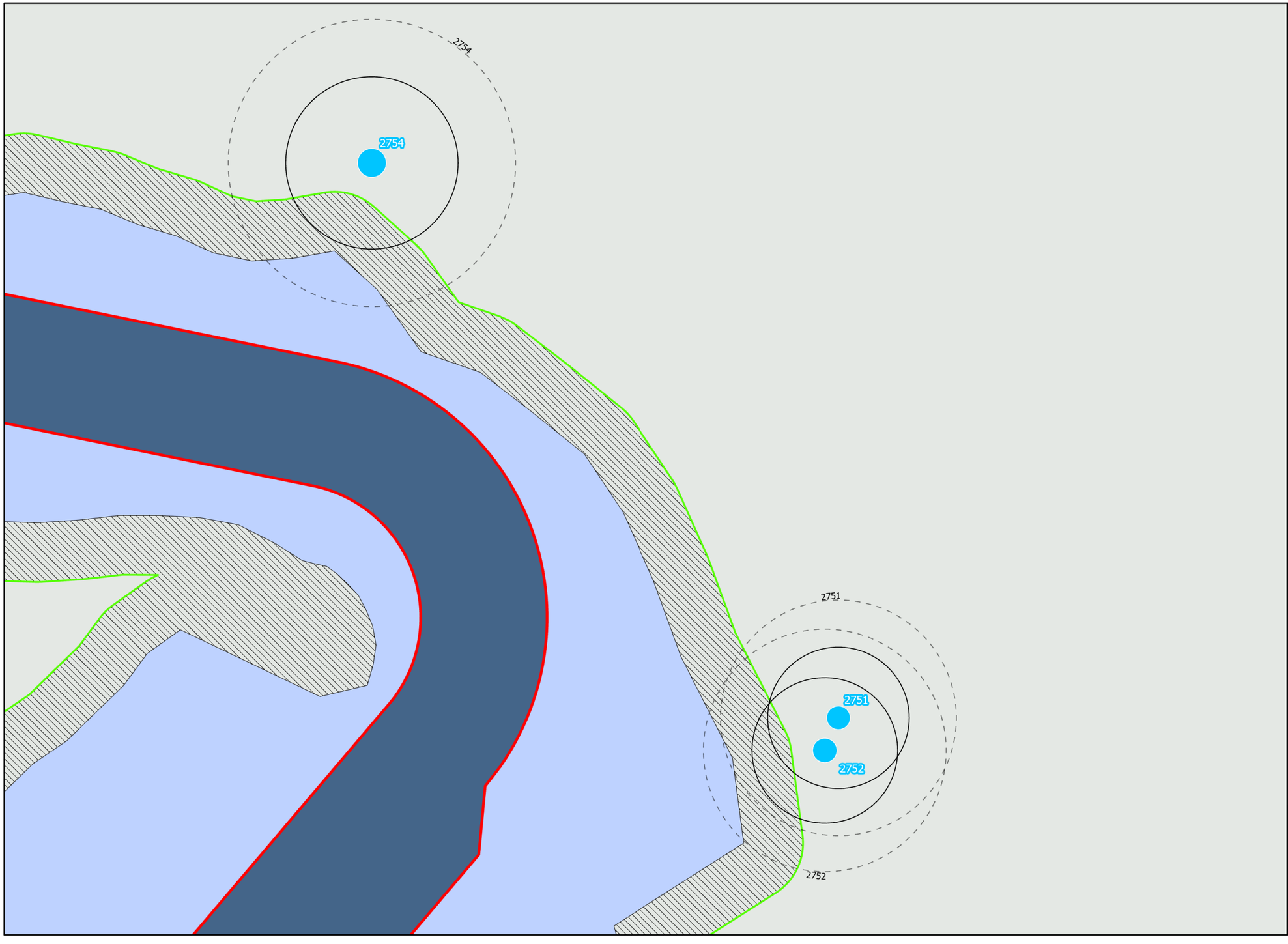
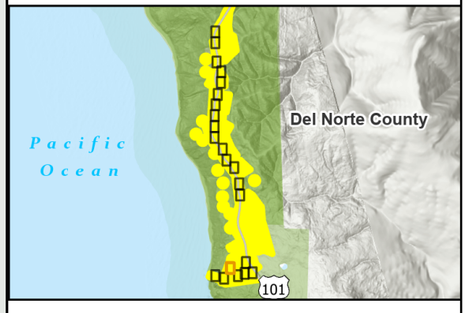


Figure 2
Alternative X Impacts to Large Trees
Sheet 19 of 22



Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

DBH 3X
DBH 5X
Tree Species DBH
Sitka Spruce
Impact Area
Permanent
Temporary
Project Components and Design Features
15-Foot Buffer
Access Road
Cut/Fill

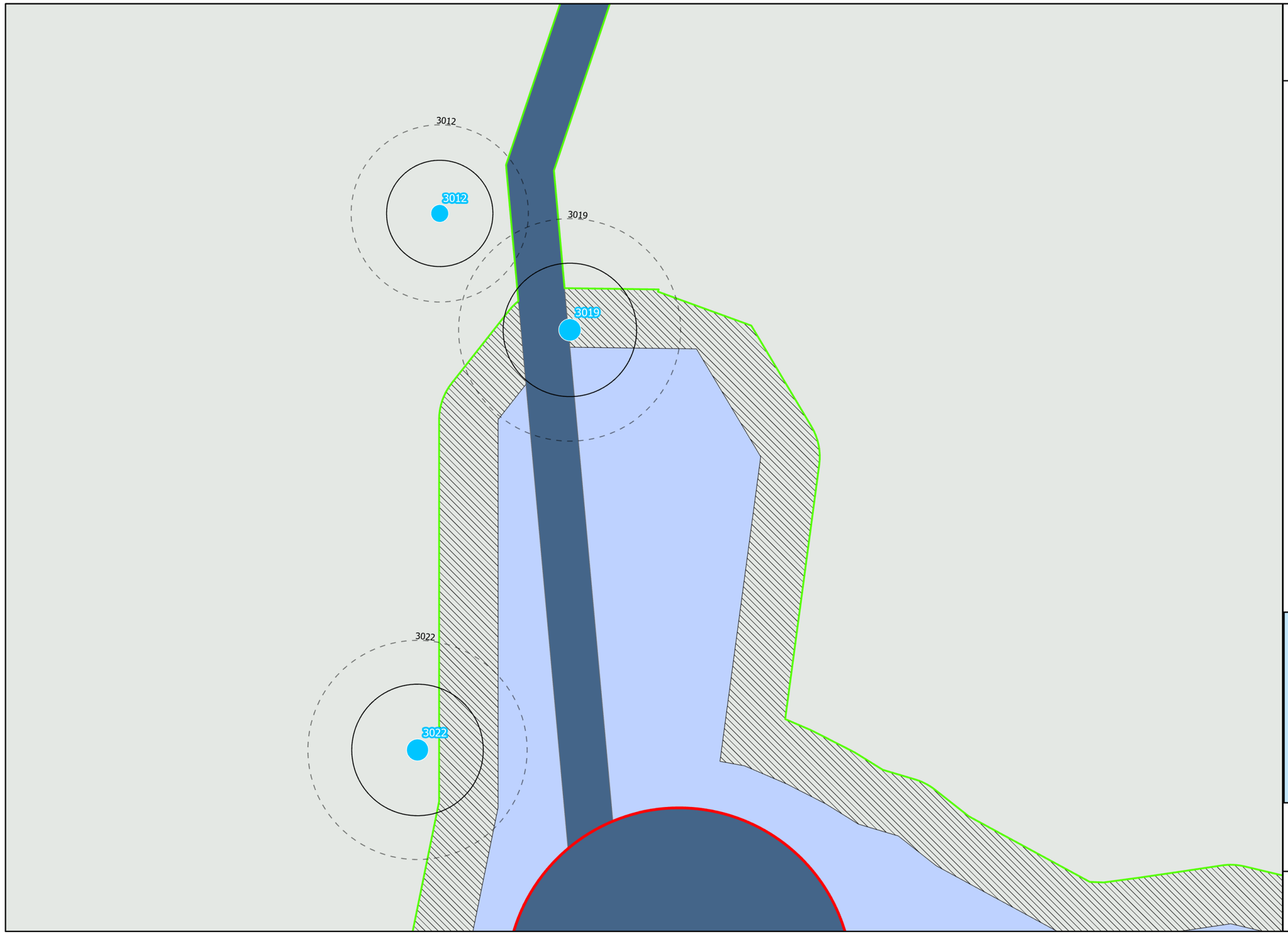


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0
50
Feet

Date created: 6/30/2023

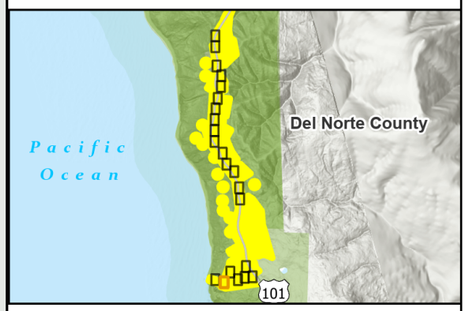
Caltrans

Figure 2
Alternative X Impacts to Large Trees
Sheet 20 of 22



Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

DBH 3X
DBH 5X
Tree Species DBH
Sitka Spruce
Impact Area
Permanent
Temporary
Project Components and Design Features
15-Foot Buffer
Access Road
Cut/Fill

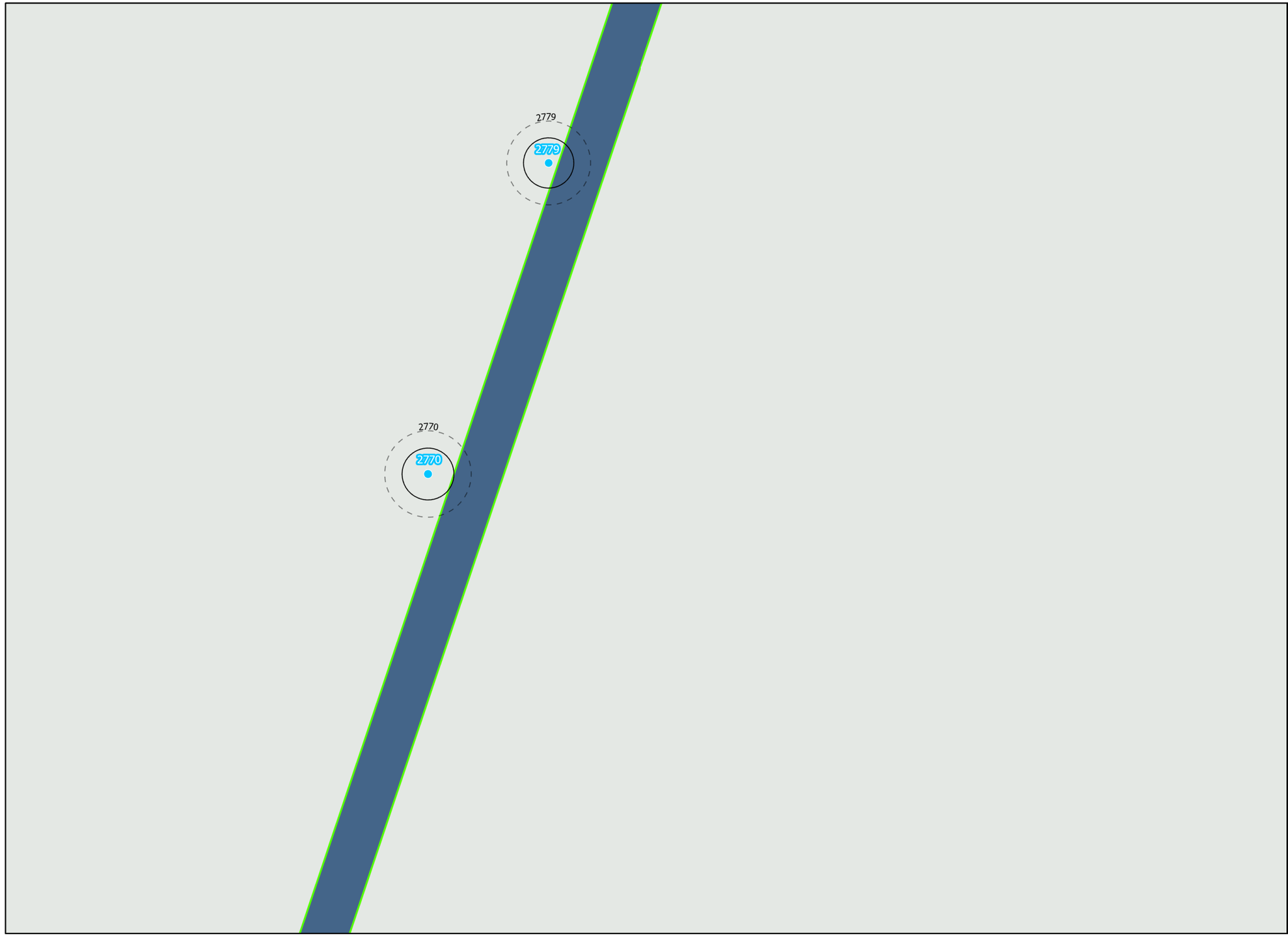


N
0
50
Feet

Date created: 6/30/2023

Caltrans

Figure 2
Alternative X Impacts to Large Trees
Sheet 21 of 22



Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

DBH 3X

DBH 5X

Tree Species DBH

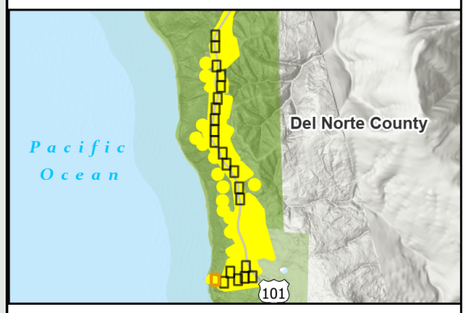
Sitka Spruce

Impact Area

Temporary

Project Components and Design Features

Access Road



N

0 50

Feet

Date created: 6/30/2023

Caltrans

Figure 2
Alternative X Impacts to Large Trees
Sheet 22 of 22

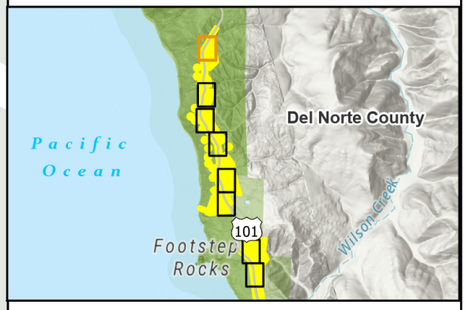
Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- Post Miles
- DBH 3X
- DBH 5X

Tree Species DBH
- Douglas Fir
- Red Alder
- Redwood
- Sitka Spruce
- Western Hemlock

Impact Area
- Permanent
- Temporary

Project Components and Design Features
- 15-Foot Buffer
- BMP Area
- Culvert/Drainage
- Cut/Fill
- Retaining Wall
- Tunnel Entry
- Bridge
- New Road
- Removed Road
- Existing Road



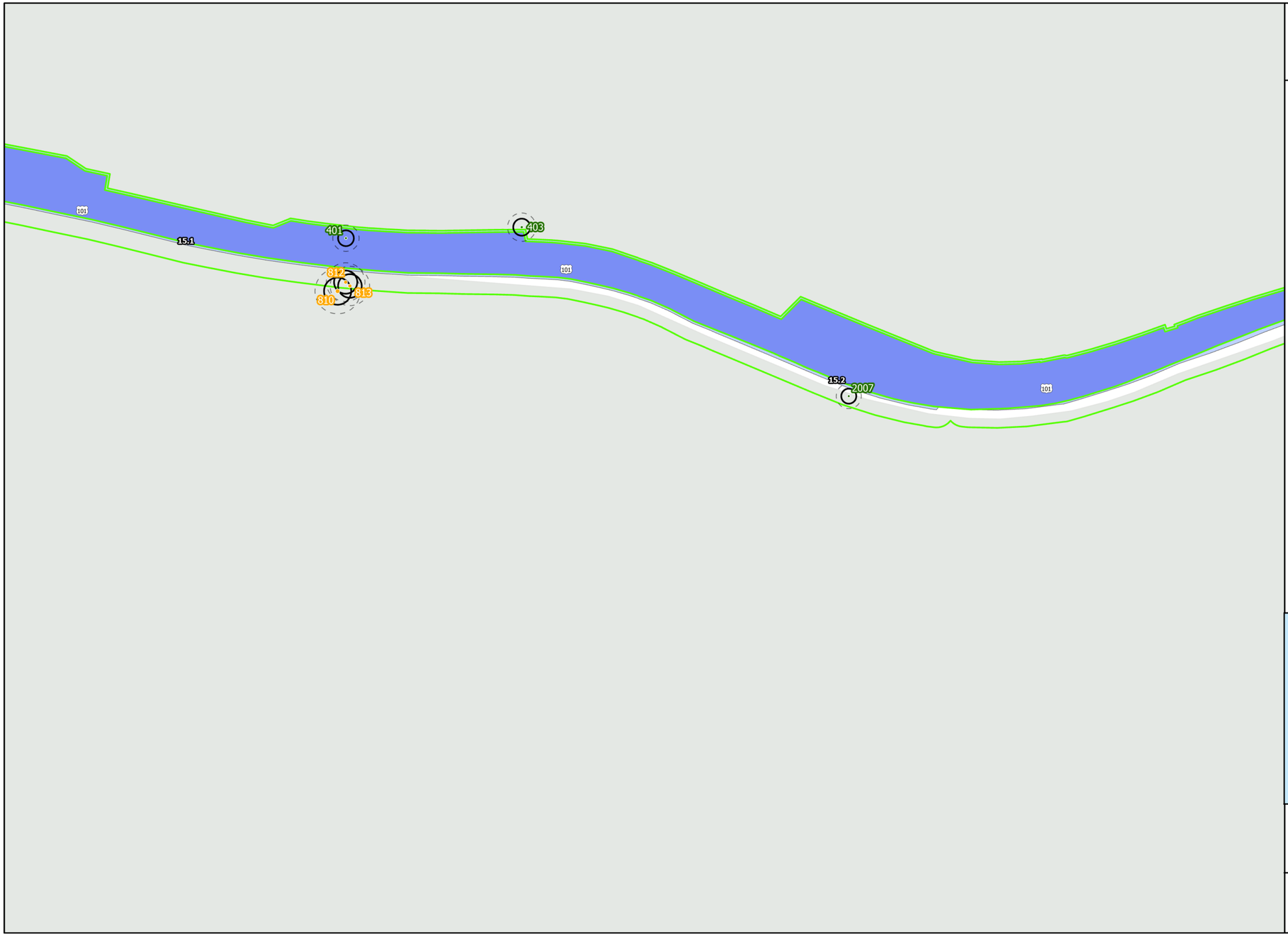
N

0 50 100
Feet

Date created: 6/30/2023

Caltrans

Figure 3
Alternative F Impacts to Large Trees
Sheet 1 of 8



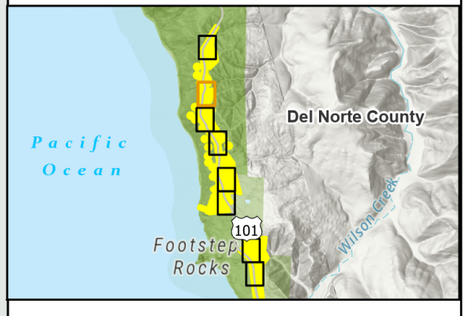
Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- Post Miles
- DBH 3X
- DBH 5X

Tree Species DBH
- Douglas Fir
- Redwood

Impact Area
- Temporary

Project Components and Design Features
- Cut/Fill
- Removed Road



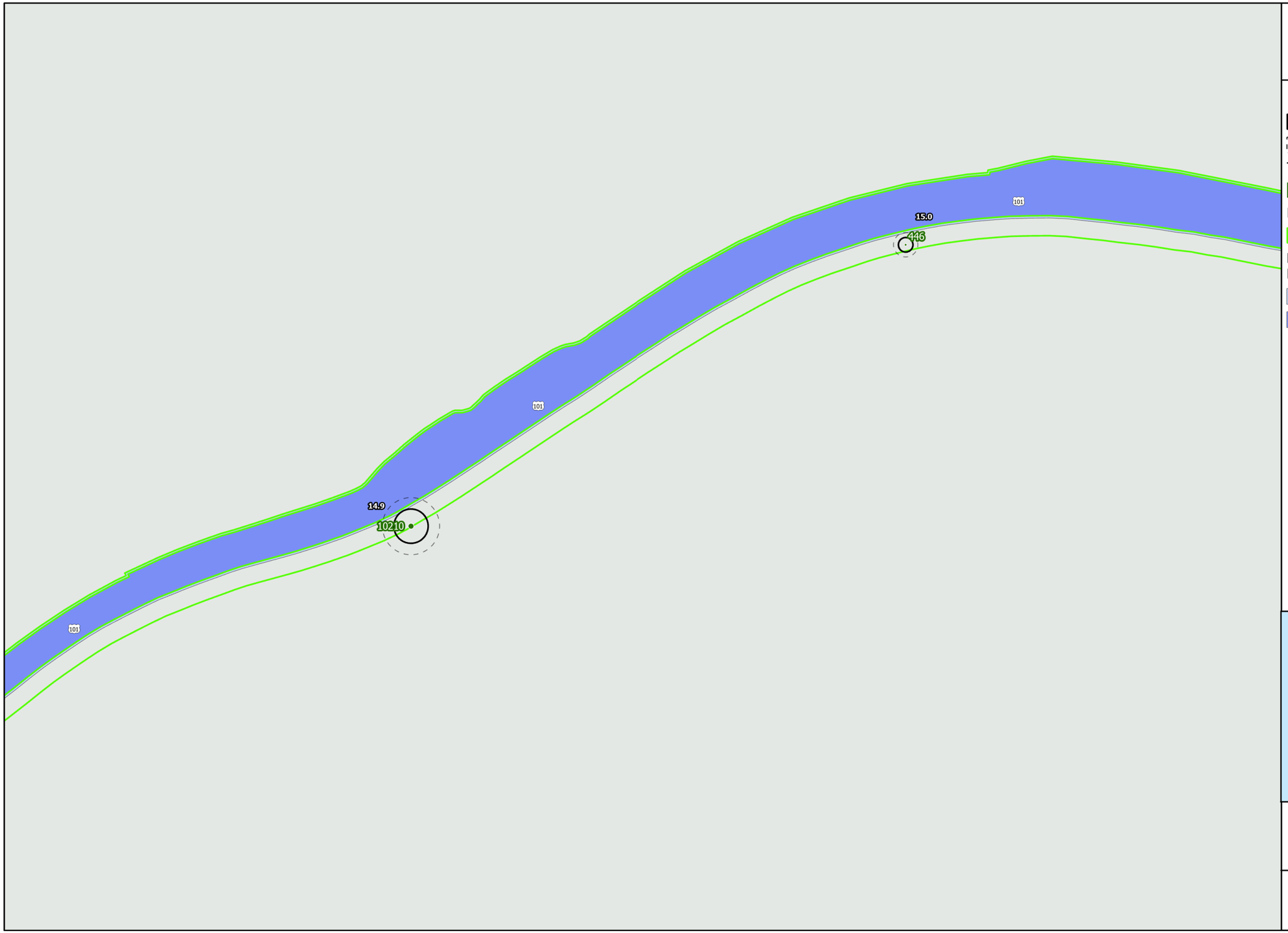
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0 50 100
Feet

Date created: 6/30/2023

Caltrans

Figure 3
Alternative F Impacts to Large Trees
Sheet 2 of 8



Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- Post Miles
- DBH 3X
- DBH 5X

Tree Species DBH

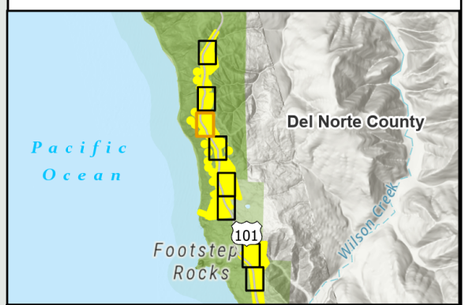
- Douglas Fir

Impact Area

- Temporary

Project Components and Design Features

- Cut/Fill
- Removed Road



N

0 50 100
Feet

Date created: 6/30/2023

Caltrans

Figure 3
Alternative F Impacts to Large Trees
Sheet 3 of 8

Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- Post Miles
- DBH 3X
- DBH 5X

Tree Species DBH

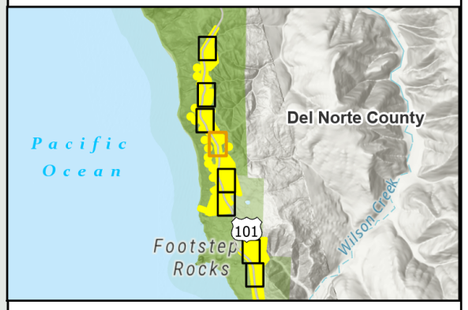
- Douglas Fir
- Redwood
- Sitka Spruce

Impact Area

- Temporary

Project Components and Design Features

- Cut/Fill
- Removed Road



N

0 50 100
Feet

Date created: 6/30/2023

Caltrans

Figure 3
Alternative F Impacts to Large Trees
Sheet 4 of 8

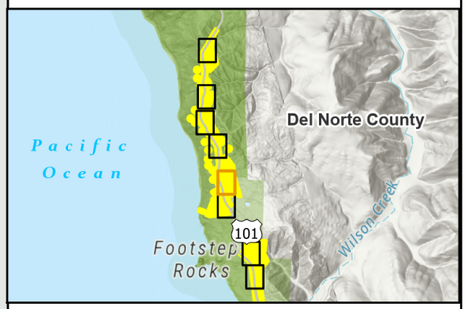
Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- Post Miles
- DBH 3X
- DBH 5X

Tree Species DBH
- Douglas Fir
- Red Alder
- Sitka Spruce

Impact Area
- Permanent
- Temporary

Project Components and Design Features
- 15-Foot Buffer
- BMP Area
- Culvert/Drainage
- Cut/Fill
- Retaining Wall
- Tunnel Entry
- Removed Road
- Existing Road



N

0 50 100
Feet

Date created: 6/30/2023

Caltrans

Figure 3
Alternative F Impacts to Large Trees
Sheet 5 of 8

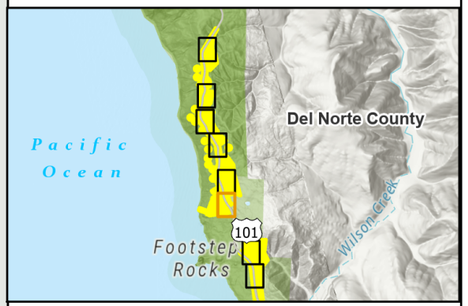
Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- Post Miles
- DBH 3X
- DBH 5X

Tree Species DBH
- Red Alder
- Redwood
- Sitka Spruce

Impact Area
- Permanent
- Temporary

Project Components and Design Features
- 15-Foot Buffer
- Cut/Fill
- Retaining Wall
- Tunnel Entry
- New Road
- Removed Road
- Existing Road



N

0 50 100
Feet

Date created: 6/30/2023

Caltrans

Figure 3
Alternative F Impacts to Large Trees
Sheet 6 of 8

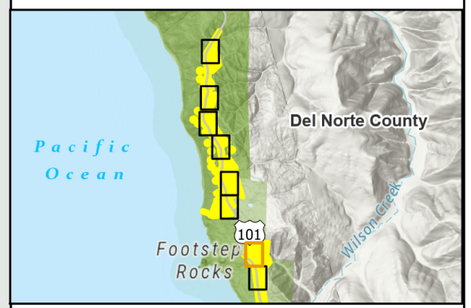
Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- Post Miles
- DBH 3X
- DBH 5X

Tree Species DBH
- Red Alder
- Sitka Spruce

Impact Area
- Permanent
- Temporary

Project Components and Design Features
- 15-Foot Buffer
- Access Road
- BMP Area
- Culvert/Drainage
- Cut/Fill
- Maintenance Yard



N

0 50 100
Feet

Date created: 6/30/2023

Caltrans

Figure 3
Alternative F Impacts to Large Trees
Sheet 7 of 8

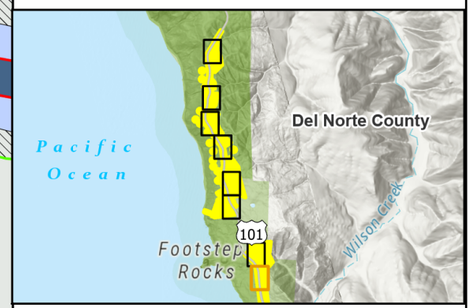
Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- Post Miles
- DBH 3X
- DBH 5X

Tree Species DBH
- Red Alder
- Sitka Spruce

Impact Area
- Permanent
- Temporary

Project Components and Design Features
- 15-Foot Buffer
- Access Road
- BMP Area
- Culvert/Drainage
- Cut/Fill
- Transformer



N

0 50 100
Feet

Date created: 6/30/2023

Caltrans

Figure 3
Alternative F Impacts to Large Trees
Sheet 8 of 8



Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- Post Miles
- DBH 3X
- DBH 5X

Tree Species DBH
- Redwood

Impact Area
- Temporary

Project Components and Design Features
- 15-Foot Buffer
- Cut/Fill
- Existing Road



N

0 50

Feet

Date created: 6/30/2023

Caltrans

Figure 4
Alternative F Impacts to Large Trees
Sheet 1 of 29

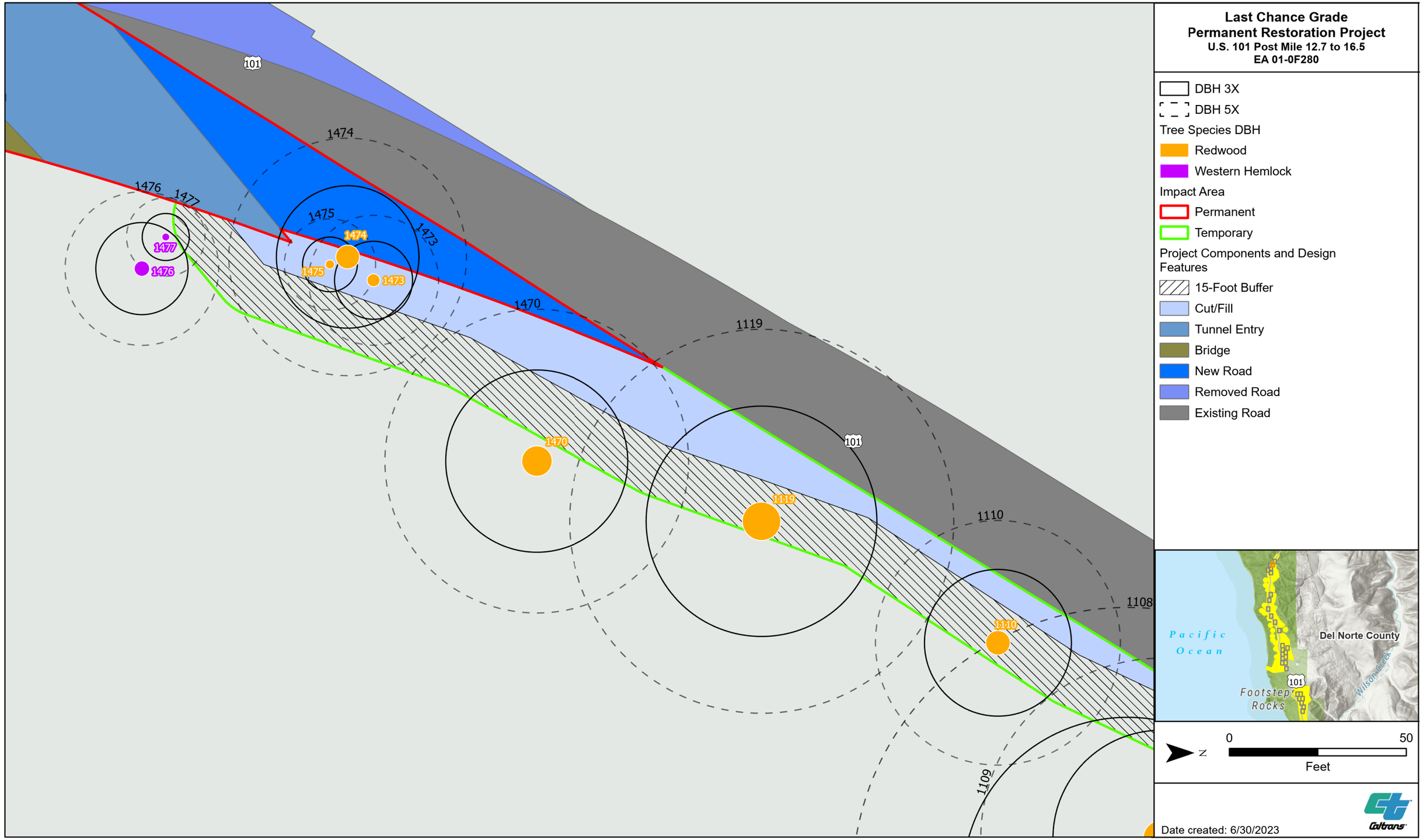
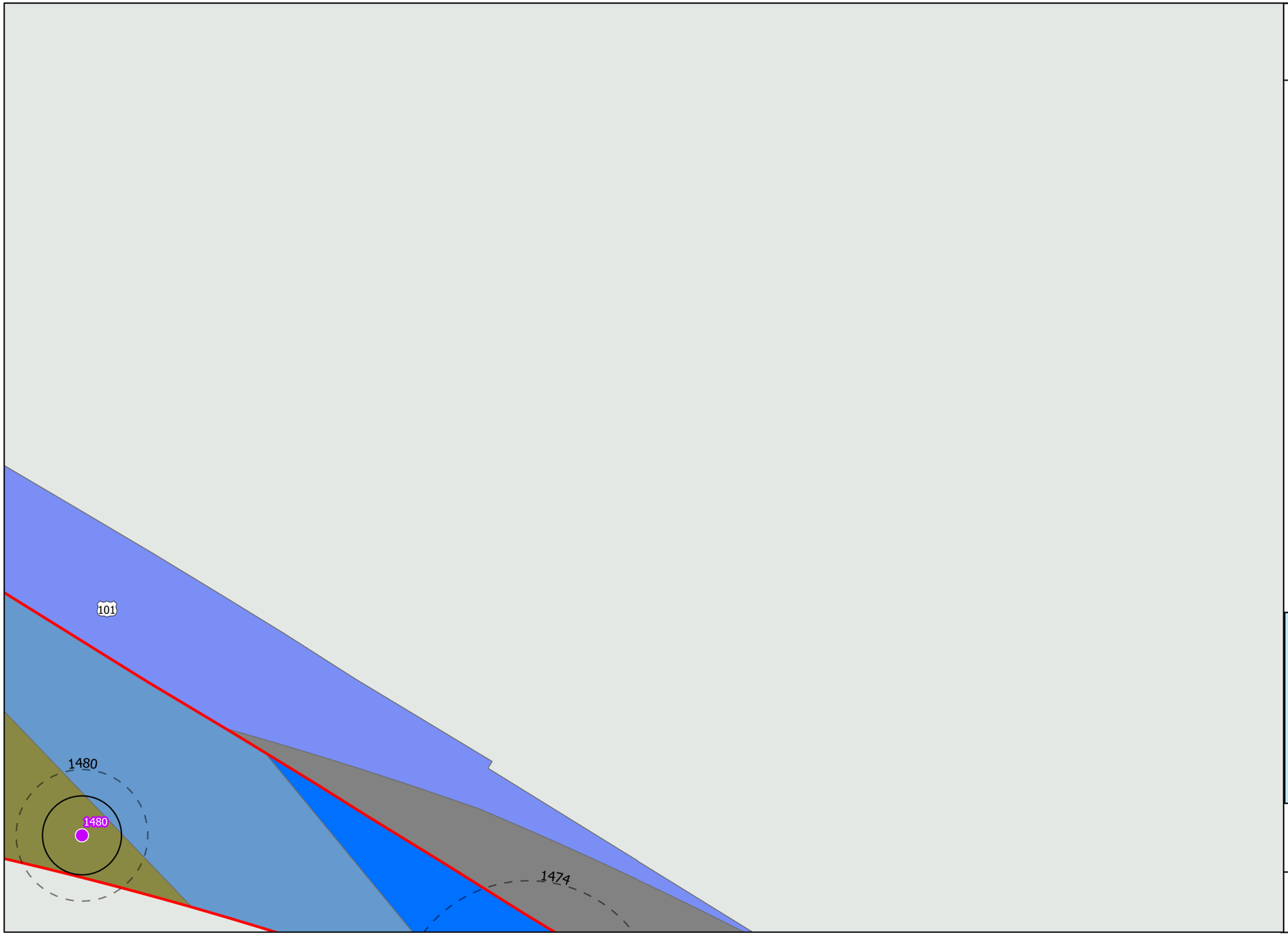
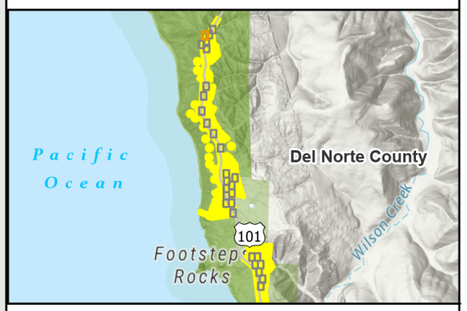


Figure 4
Alternative F Impacts to Large Trees
Sheet 2 of 29



Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

DBH 3X
DBH 5X
Tree Species DBH
Western Hemlock
Impact Area
Permanent
Project Components and Design Features
Tunnel Entry
Bridge
New Road
Removed Road
Existing Road



N
0
50
Feet

Date created: 6/30/2023

Caltrans

Figure 4
Alternative F Impacts to Large Trees
Sheet 3 of 29

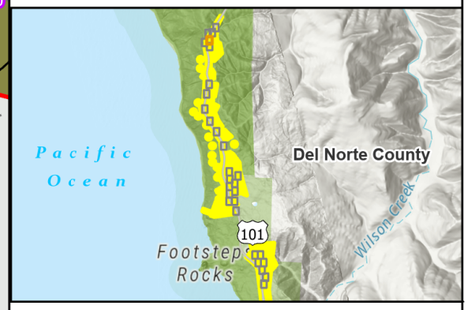
Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- Post Miles
- DBH 3X
- DBH 5X

Tree Species DBH
- Red Alder
- Redwood
- Sitka Spruce
- Western Hemlock

Impact Area
- Permanent
- Temporary

Project Components and Design Features
- 15-Foot Buffer
- BMP Area
- Culvert/Drainage
- Cut/Fill
- Retaining Wall
- Tunnel Entry
- Bridge
- Removed Road
- Existing Road



N

0 50
Feet

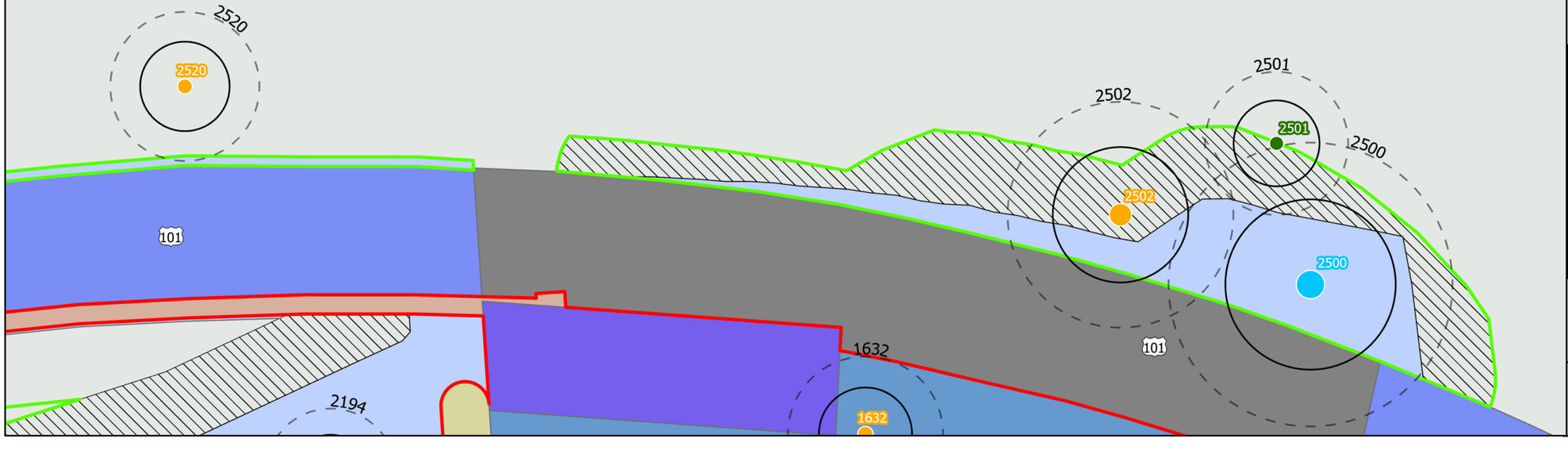
Date created: 6/30/2023

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Figure 4
Alternative F Impacts to Large Trees
Sheet 4 of 29

Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

DBH 3X
DBH 5X
Tree Species DBH
Douglas Fir
Redwood
Sitka Spruce
Impact Area
Permanent
Temporary
Project Components and Design Features
15-Foot Buffer
BMP Area
Culvert/Drainage
Cut/Fill
Retaining Wall
Tunnel Entry
Removed Road
Existing Road





N
0
50
Feet

Date created: 6/30/2023

Caltrans

Figure 4
Alternative F Impacts to Large Trees
Sheet 5 of 29

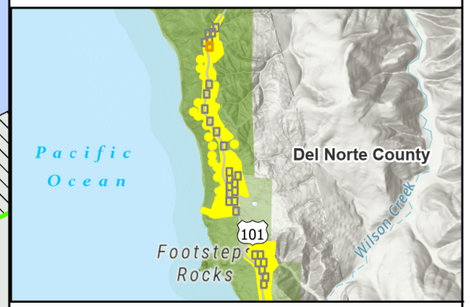
Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

DBH 3X
DBH 5X

Tree Species DBH
- Douglas Fir
- Redwood
- Sitka Spruce
- Western Hemlock

Impact Area
- Permanent
- Temporary

Project Components and Design Features
- 15-Foot Buffer
- BMP Area
- Culvert/Drainage
- Cut/Fill
- Retaining Wall
- Tunnel Entry
- Removed Road



N
0
50
Feet

Date created: 6/30/2023

Figure 4
Alternative F Impacts to Large Trees
Sheet 6 of 29

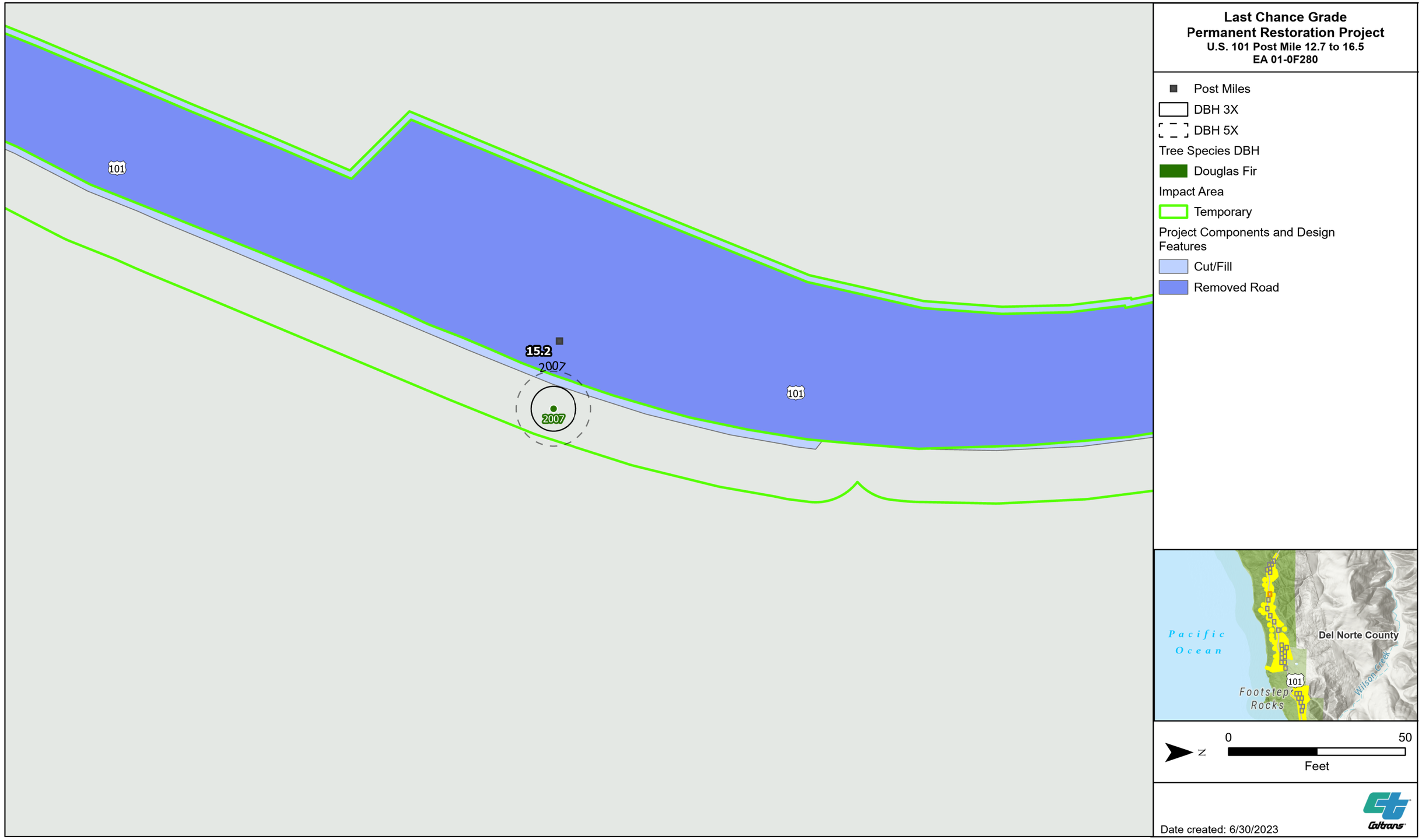
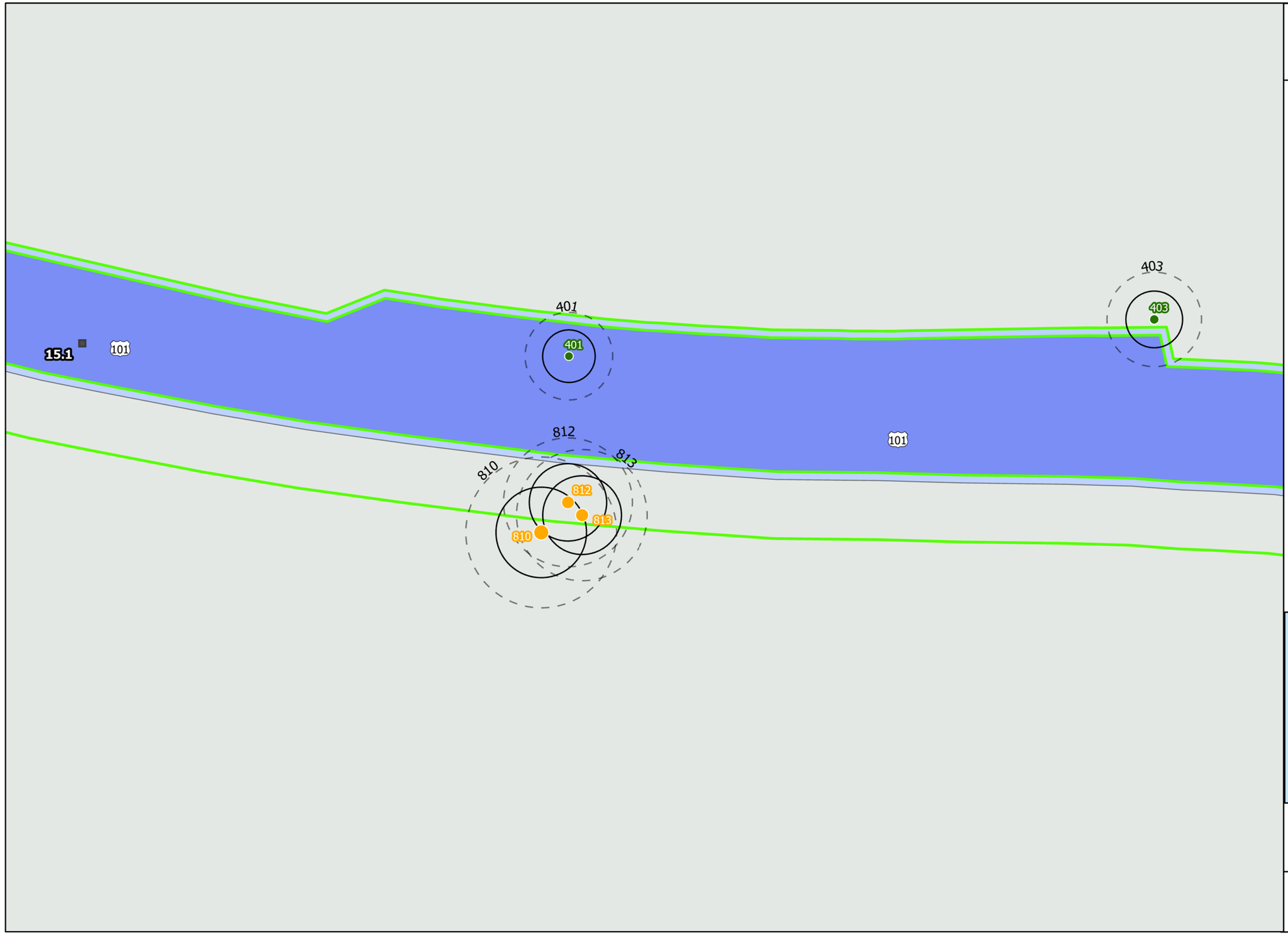


Figure 4
Alternative F Impacts to Large Trees
Sheet 7 of 29

Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280



- Post Miles
- DBH 3X
- DBH 5X

Tree Species DBH

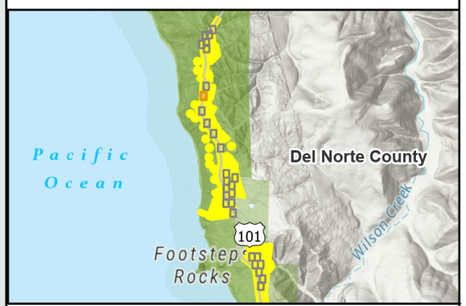
- Douglas Fir
- Redwood

Impact Area

- Temporary

Project Components and Design Features

- Cut/Fill
- Removed Road



N

0 50

Feet

Date created: 6/30/2023

Caltrans

Figure 4
Alternative F Impacts to Large Trees
Sheet 8 of 29



Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- Post Miles
- DBH 3X
- DBH 5X

Tree Species DBH

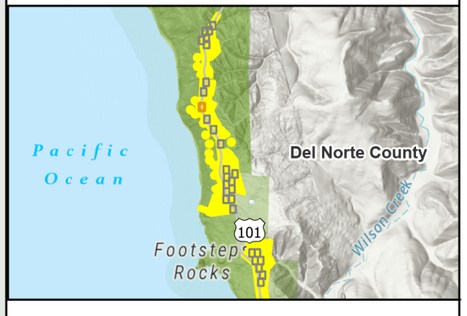
- Douglas Fir

Impact Area

- Temporary

Project Components and Design Features

- Cut/Fill
- Removed Road



N

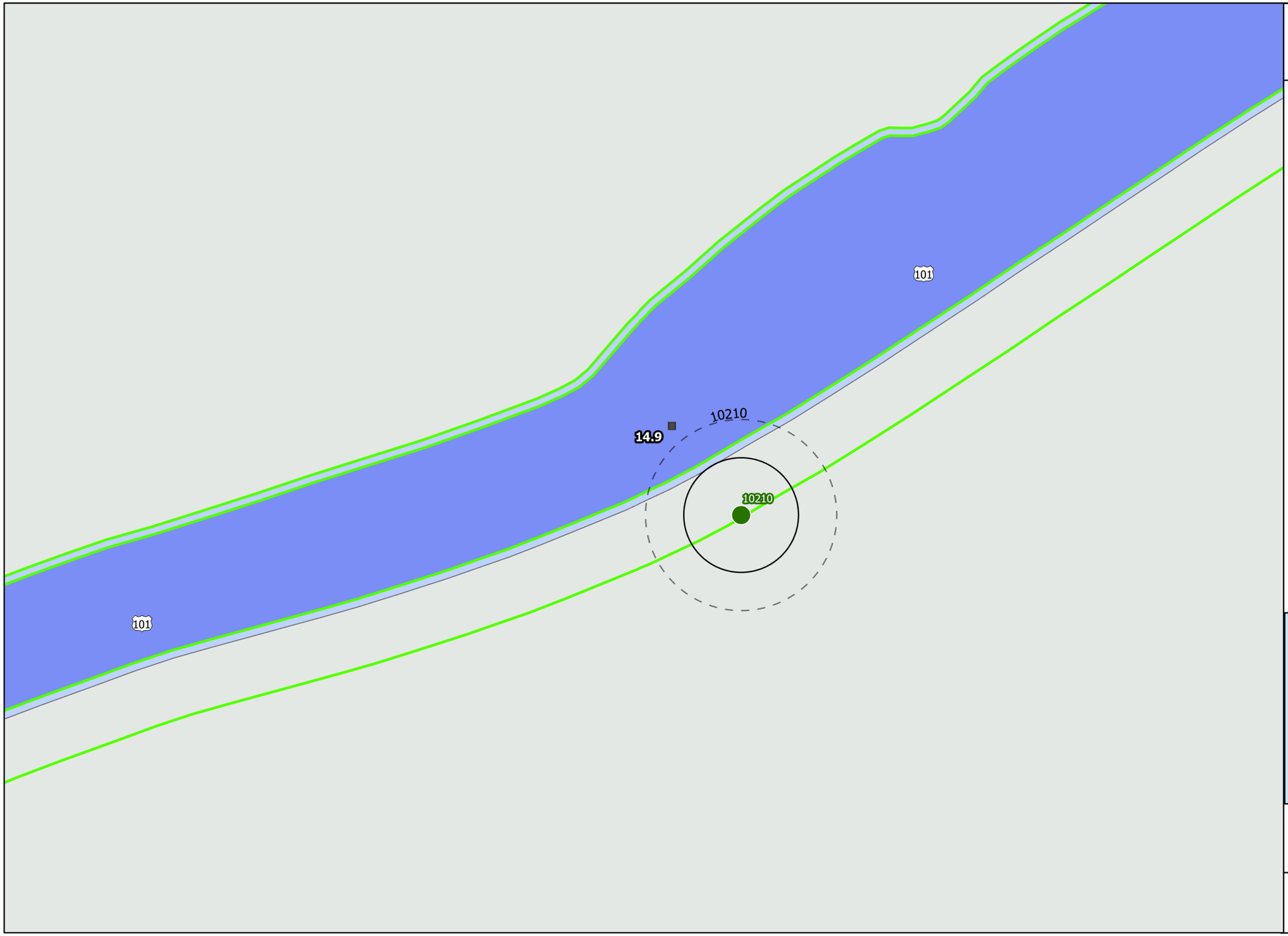
0 50

Feet

Date created: 6/30/2023

Caltrans

Figure 4
Alternative F Impacts to Large Trees
Sheet 9 of 29



Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- Post Miles
- DBH 3X
- DBH 5X

Tree Species DBH

- Douglas Fir

Impact Area

- Temporary

Project Components and Design Features

- Cut/Fill
- Removed Road



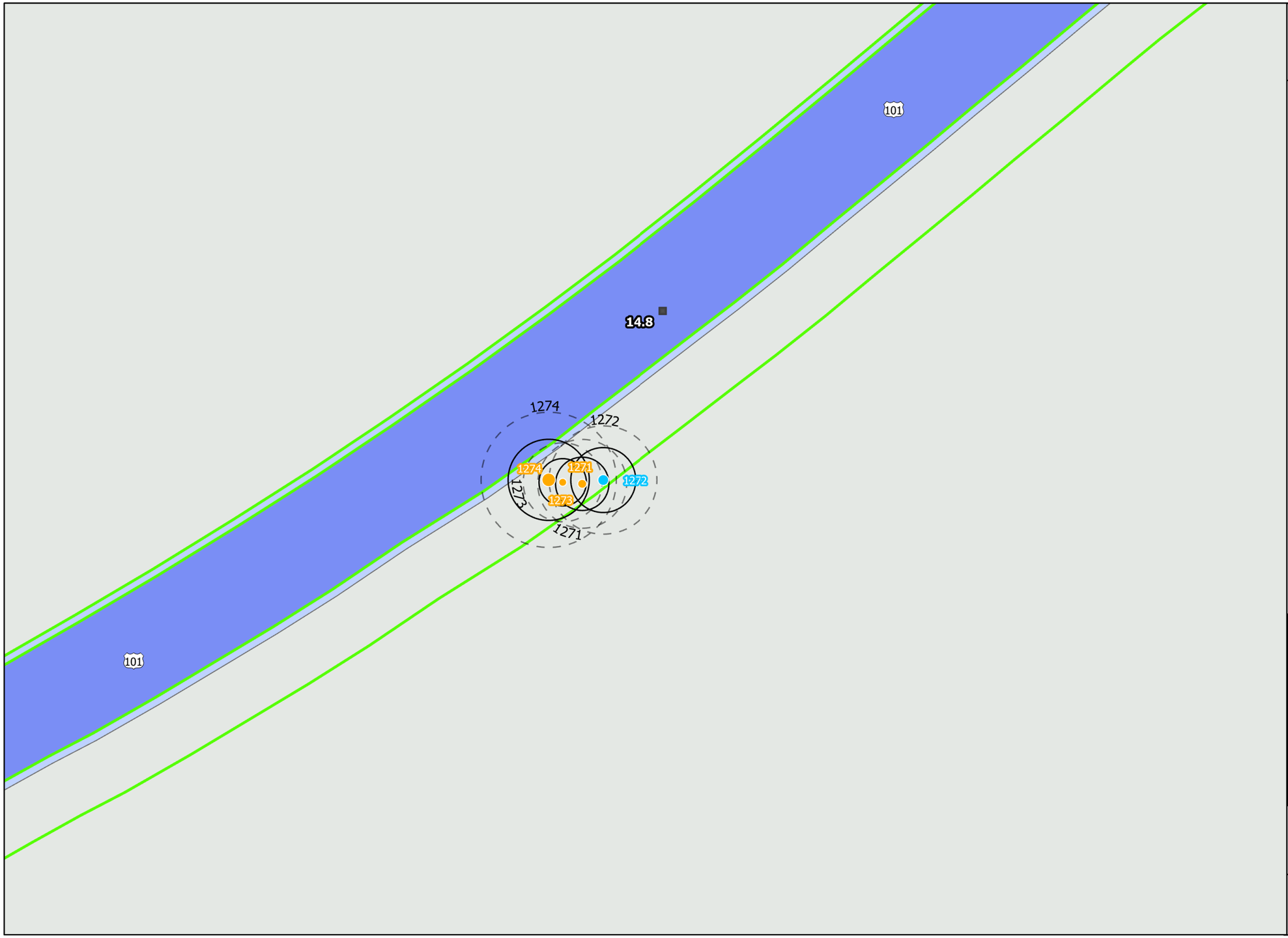
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0 50

Feet

Date created: 6/30/2023

Figure 4
Alternative F Impacts to Large Trees
Sheet 10 of 29



Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- Post Miles
- DBH 3X
- DBH 5X

Tree Species DBH
- Redwood
- Sitka Spruce

Impact Area
- Temporary

Project Components and Design Features
- Cut/Fill
- Removed Road



N

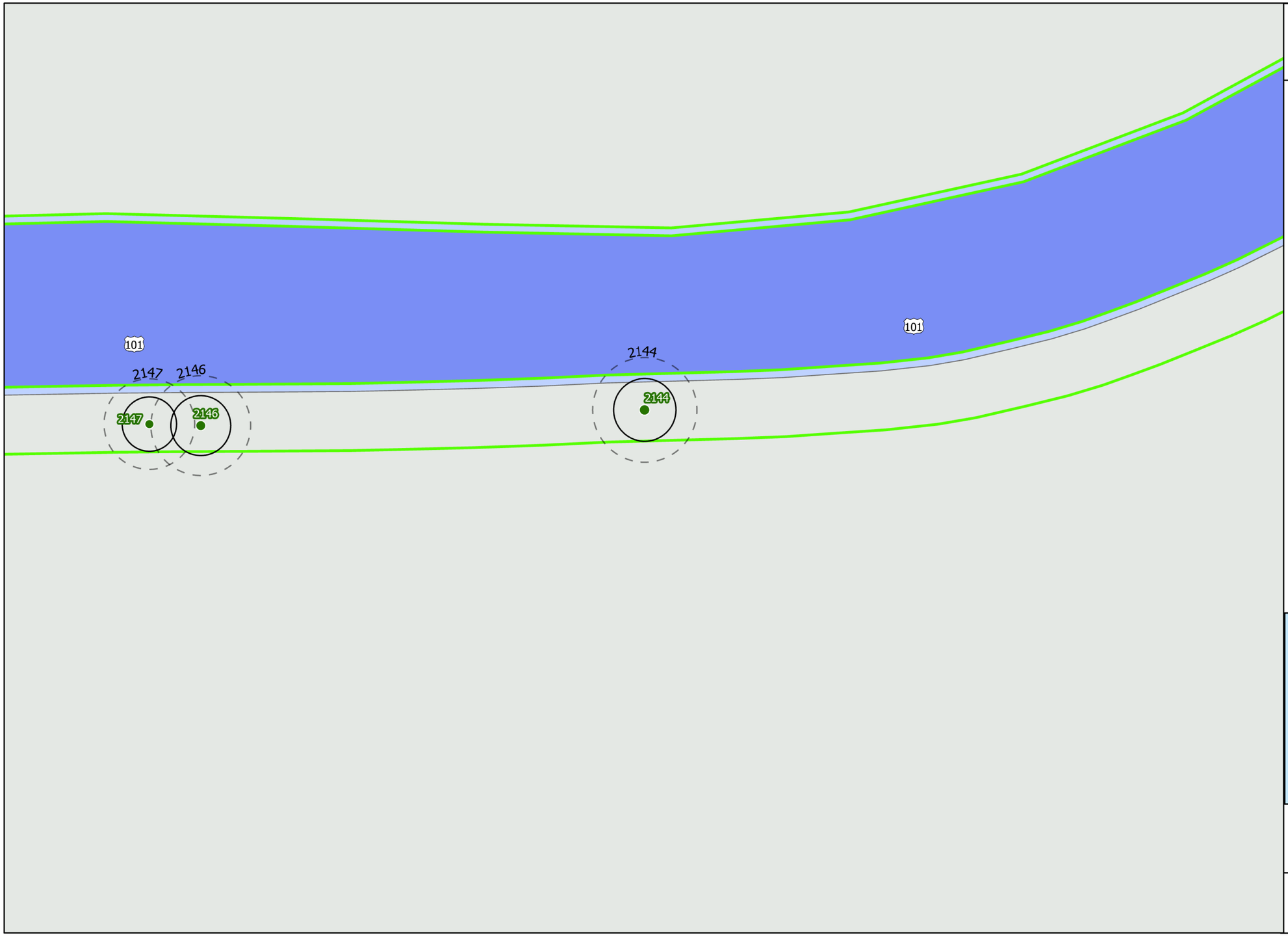
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Feet

Date created: 6/30/2023

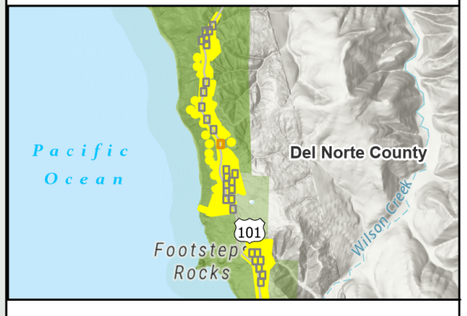
Caltrans

Figure 4
Alternative F Impacts to Large Trees
Sheet 11 of 29



Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

DBH 3X
DBH 5X
Tree Species DBH
Douglas Fir
Impact Area
Temporary
Project Components and Design Features
Cut/Fill
Removed Road



N

0 50
Feet

Date created: 6/30/2023

Caltrans

Figure 4
Alternative F Impacts to Large Trees
Sheet 12 of 29

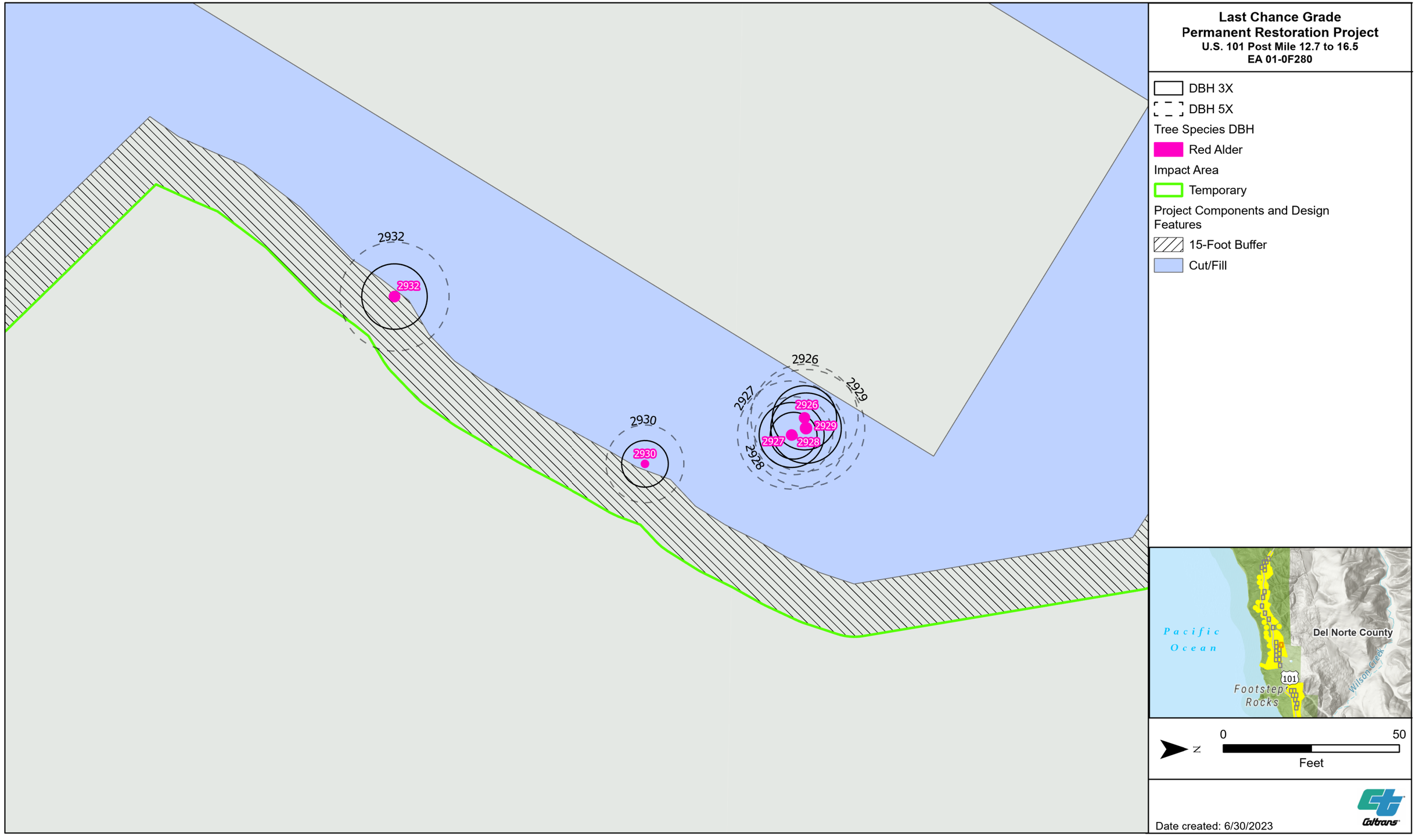
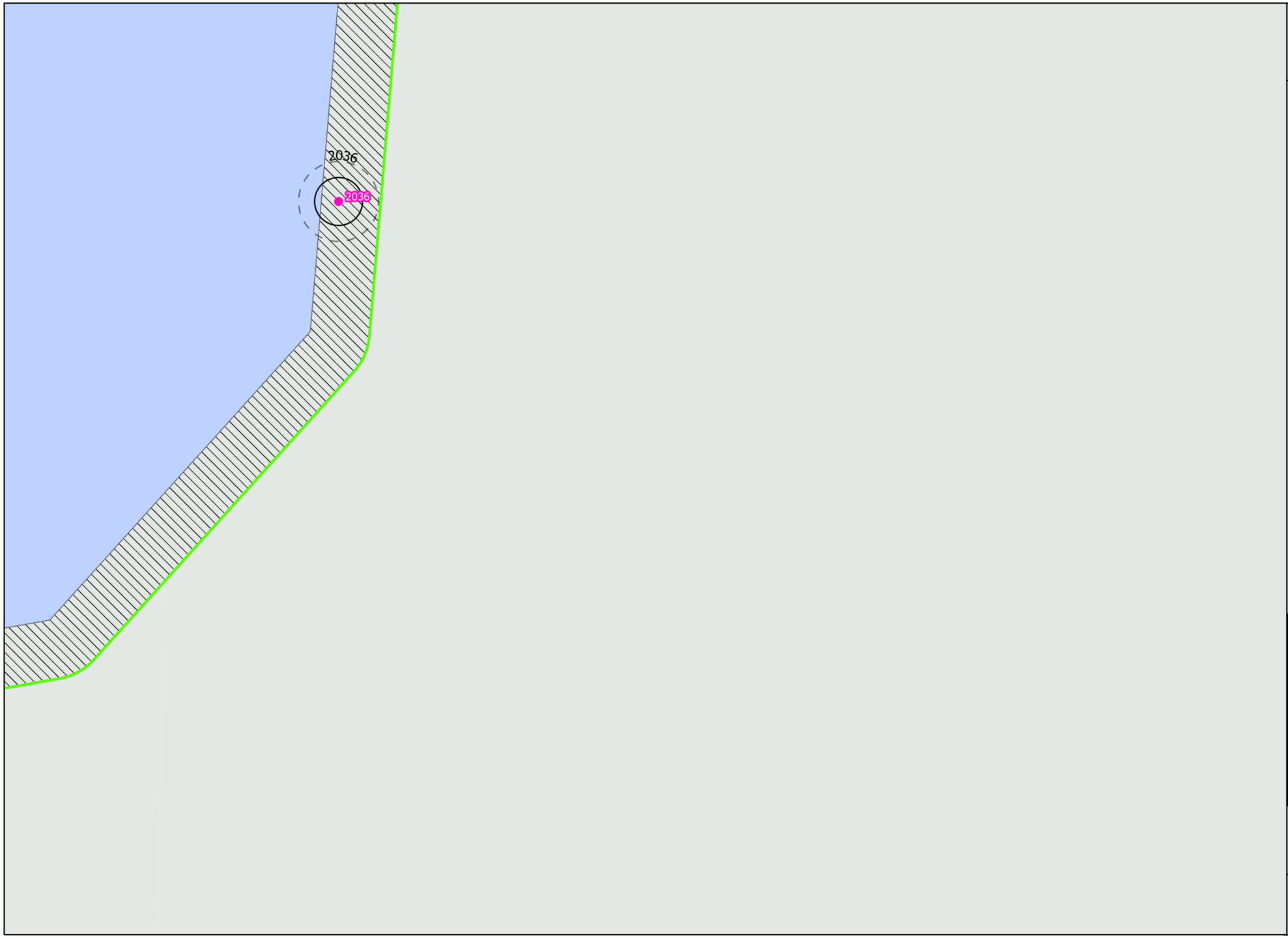


Figure 4
Alternative F Impacts to Large Trees
Sheet 13 of 29



Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

DBH 3X
DBH 5X
Tree Species DBH
Red Alder
Impact Area
Temporary
Project Components and Design Features
15-Foot Buffer
Cut/Fill

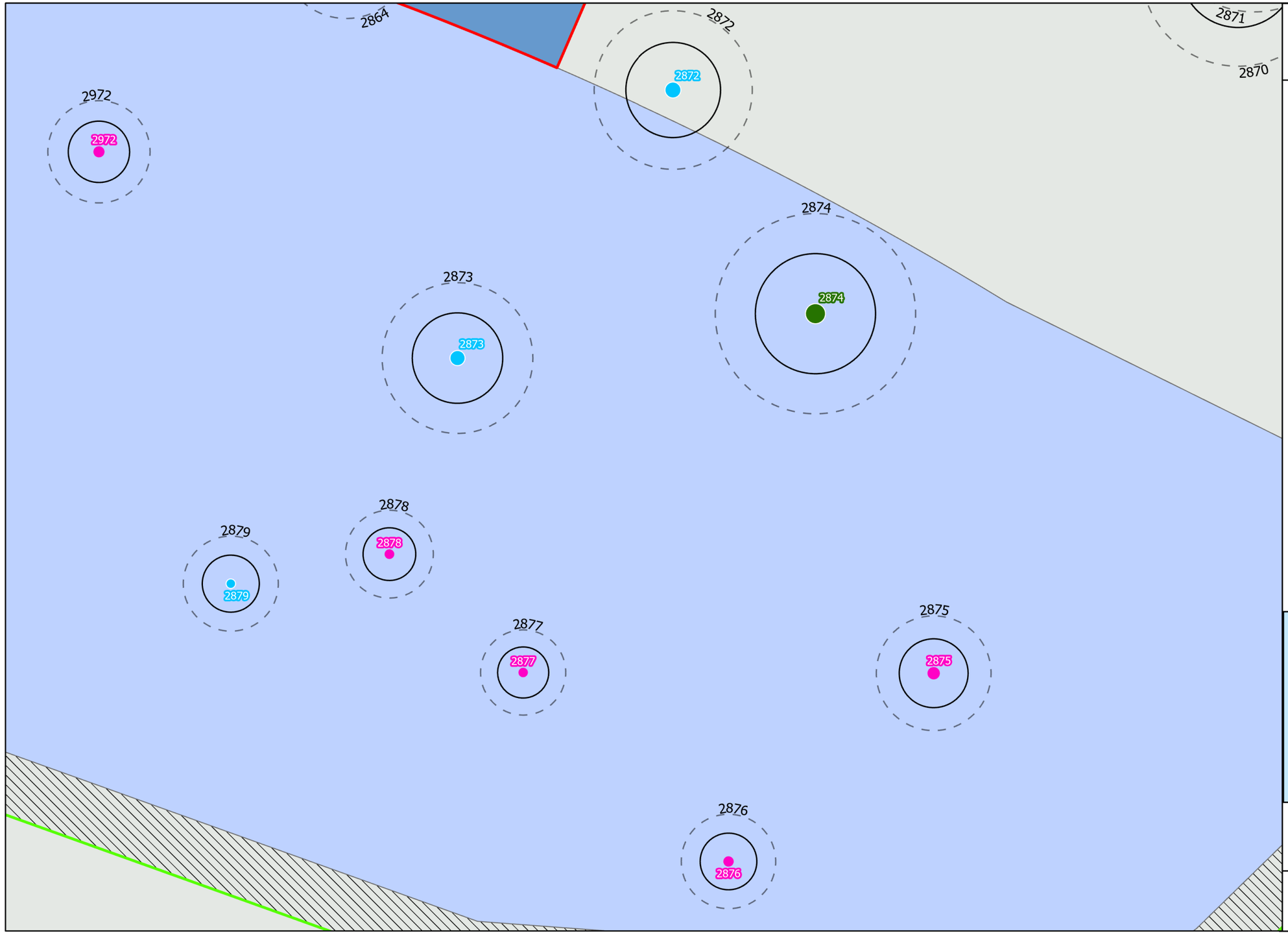


N
0
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Feet

Date created: 6/30/2023

Caltrans

Figure 4
Alternative F Impacts to Large Trees
Sheet 14 of 29



Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

DBH 3X
DBH 5X

Tree Species DBH
- Douglas Fir
- Red Alder
- Sitka Spruce

Impact Area
- Permanent
- Temporary

Project Components and Design Features
- 15-Foot Buffer
- Cut/Fill
- Tunnel Entry



N
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Feet

Date created: 6/30/2023

Caltrans

Figure 4
Alternative F Impacts to Large Trees
Sheet 15 of 29

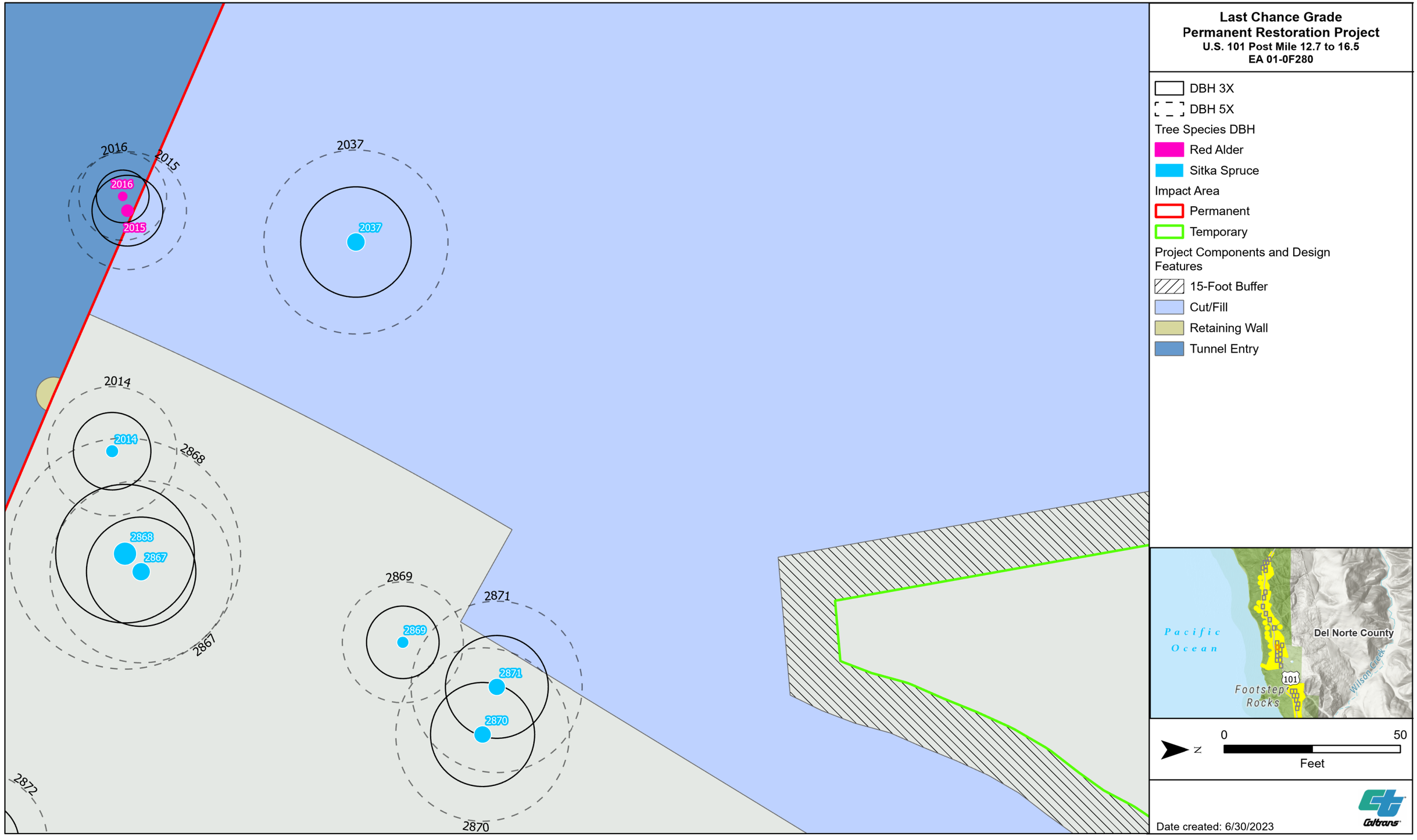
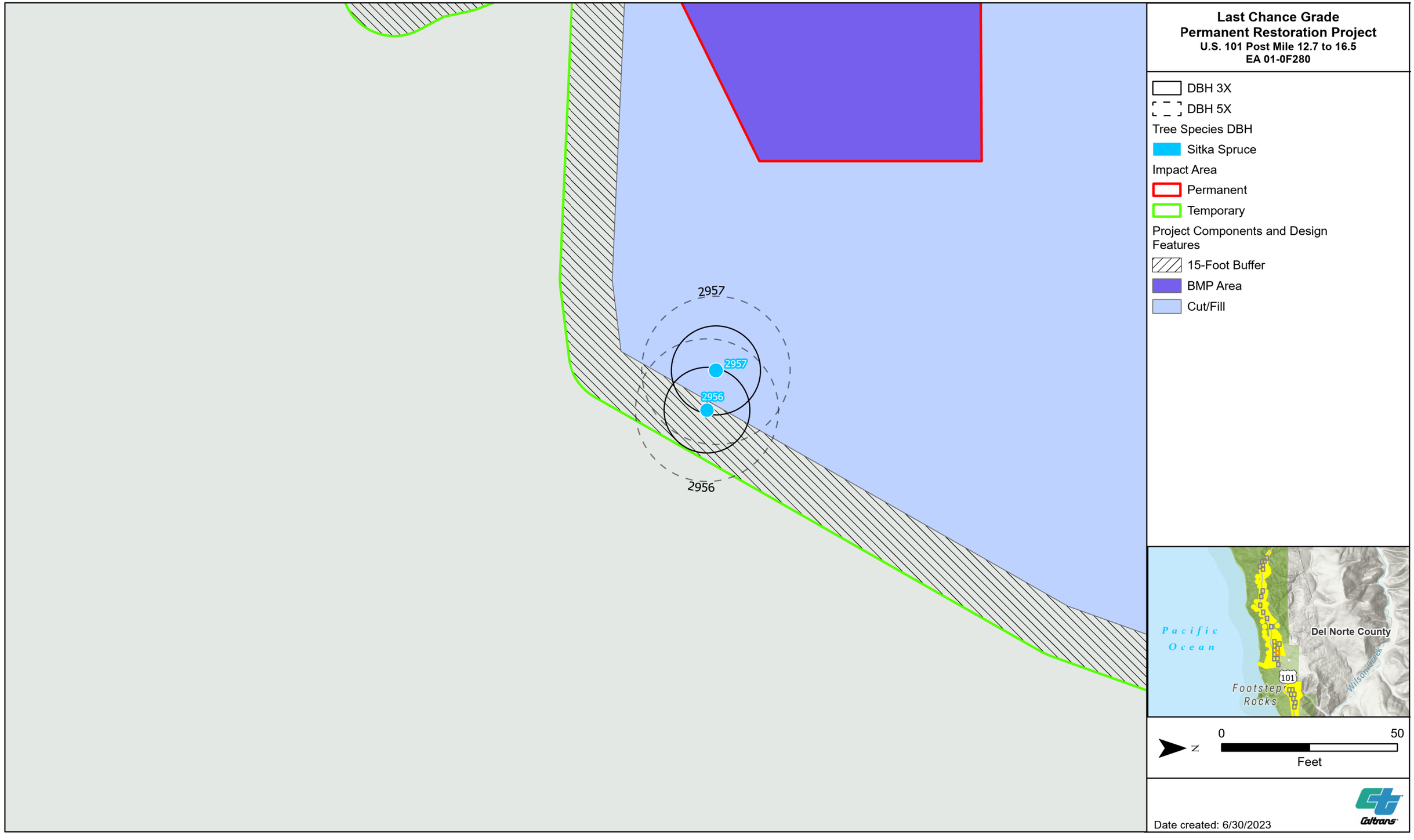


Figure 4
Alternative F Impacts to Large Trees
Sheet 16 of 29



Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

DBH 3X
DBH 5X
Tree Species DBH
Sitka Spruce
Impact Area
Permanent
Temporary
Project Components and Design Features
15-Foot Buffer
BMP Area
Cut/Fill

N
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50
Feet

Date created: 6/30/2023

Figure 4
Alternative F Impacts to Large Trees
Sheet 17 of 29

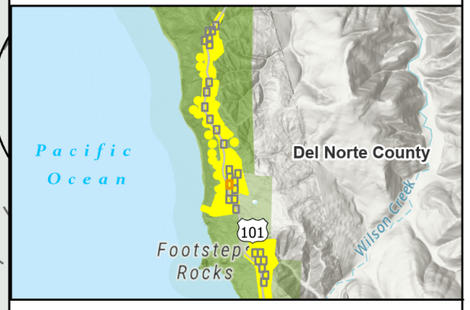
Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- DBH 3X
- DBH 5X

Tree Species DBH
- Douglas Fir
- Red Alder
- Sitka Spruce

Impact Area
- Permanent
- Temporary

Project Components and Design Features
- BMP Area
- Culvert/Drainage
- Cut/Fill
- Retaining Wall
- Tunnel Entry
- Removed Road
- Existing Road



N

0 50
Feet

Date created: 6/30/2023

Caltrans

Figure 4
Alternative F Impacts to Large Trees
Sheet 18 of 29

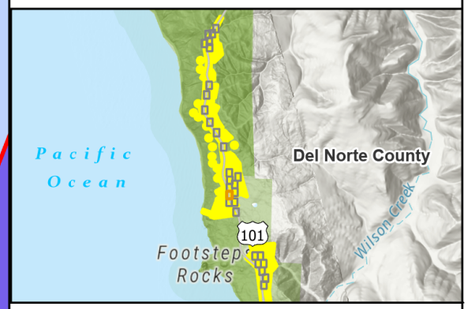
Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- Post Miles
- DBH 3X
- DBH 5X

Tree Species DBH
- Red Alder
- Sitka Spruce

Impact Area
- Permanent
- Temporary

Project Components and Design Features
- 15-Foot Buffer
- BMP Area
- Culvert/Drainage
- Cut/Fill
- Retaining Wall
- Tunnel Entry
- New Road
- Removed Road
- Existing Road



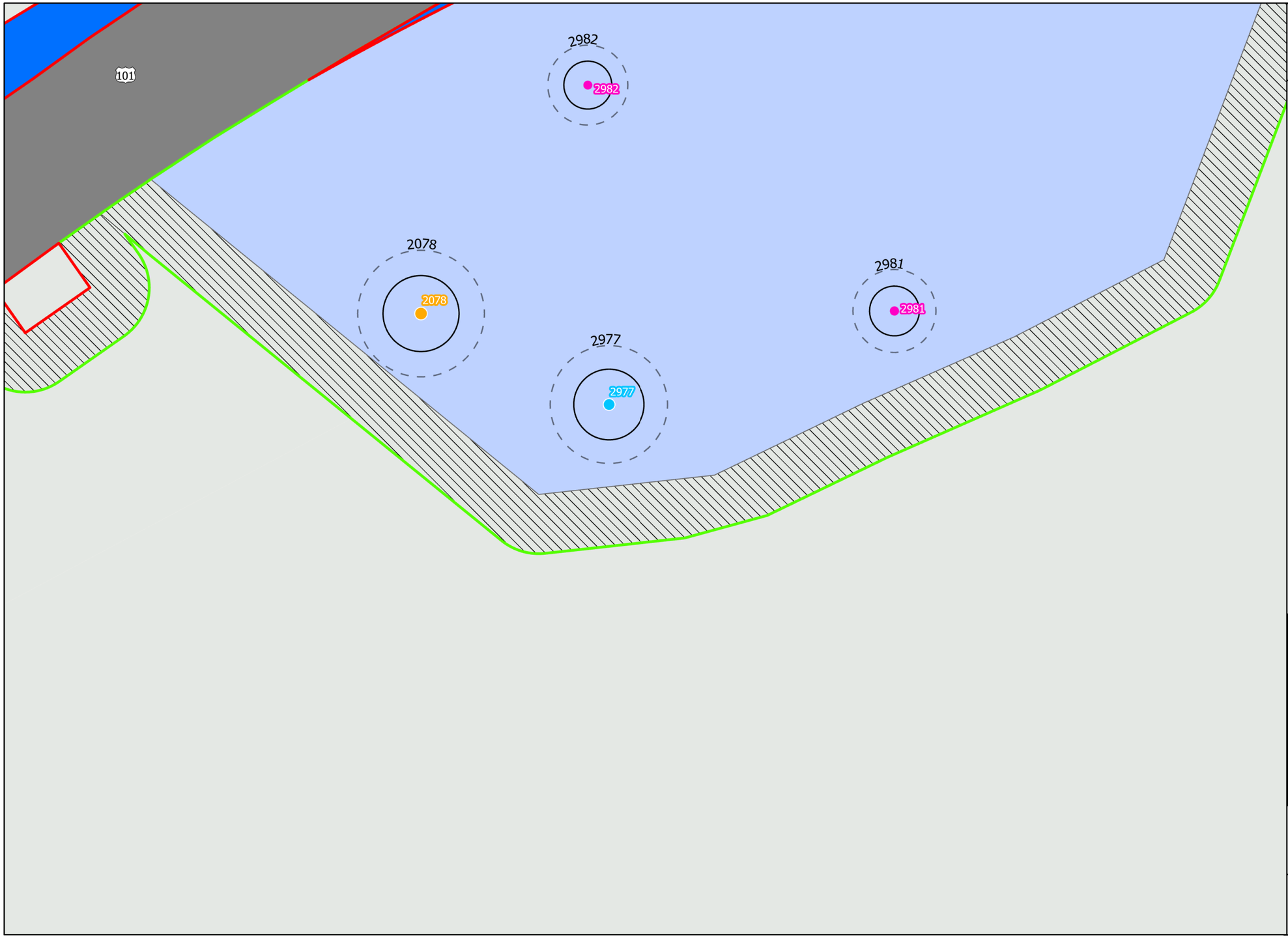
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Feet

Date created: 6/30/2023

Caltrans

Figure 4
Alternative F Impacts to Large Trees
Sheet 19 of 29



Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

DBH 3X
DBH 5X
Tree Species DBH
Red Alder
Redwood
Sitka Spruce
Impact Area
Permanent
Temporary
Project Components and Design Features
15-Foot Buffer
Cut/Fill
New Road
Existing Road



N
0
50
Feet

Date created: 6/30/2023

Caltrans

Figure 4
Alternative F Impacts to Large Trees
Sheet 20 of 29

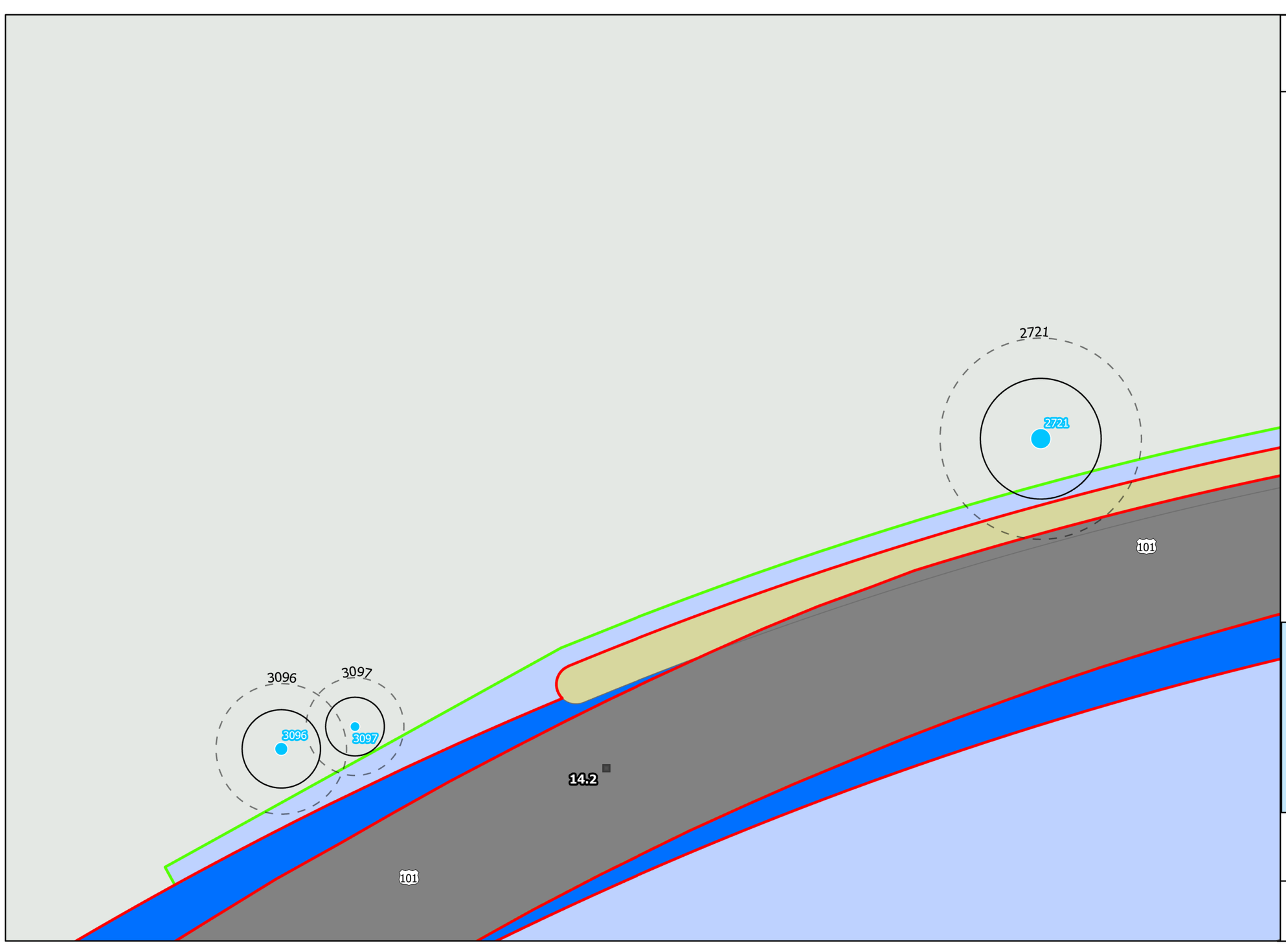
Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

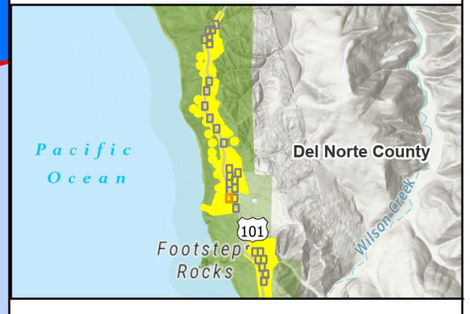
- Post Miles
- DBH 3X
- DBH 5X

Tree Species DBH
- Sitka Spruce

Impact Area
- Permanent
- Temporary

Project Components and Design Features
- 15-Foot Buffer
- Cut/Fill
- Retaining Wall
- New Road
- Existing Road





N

0 50

Feet

Date created: 6/30/2023

Caltrans

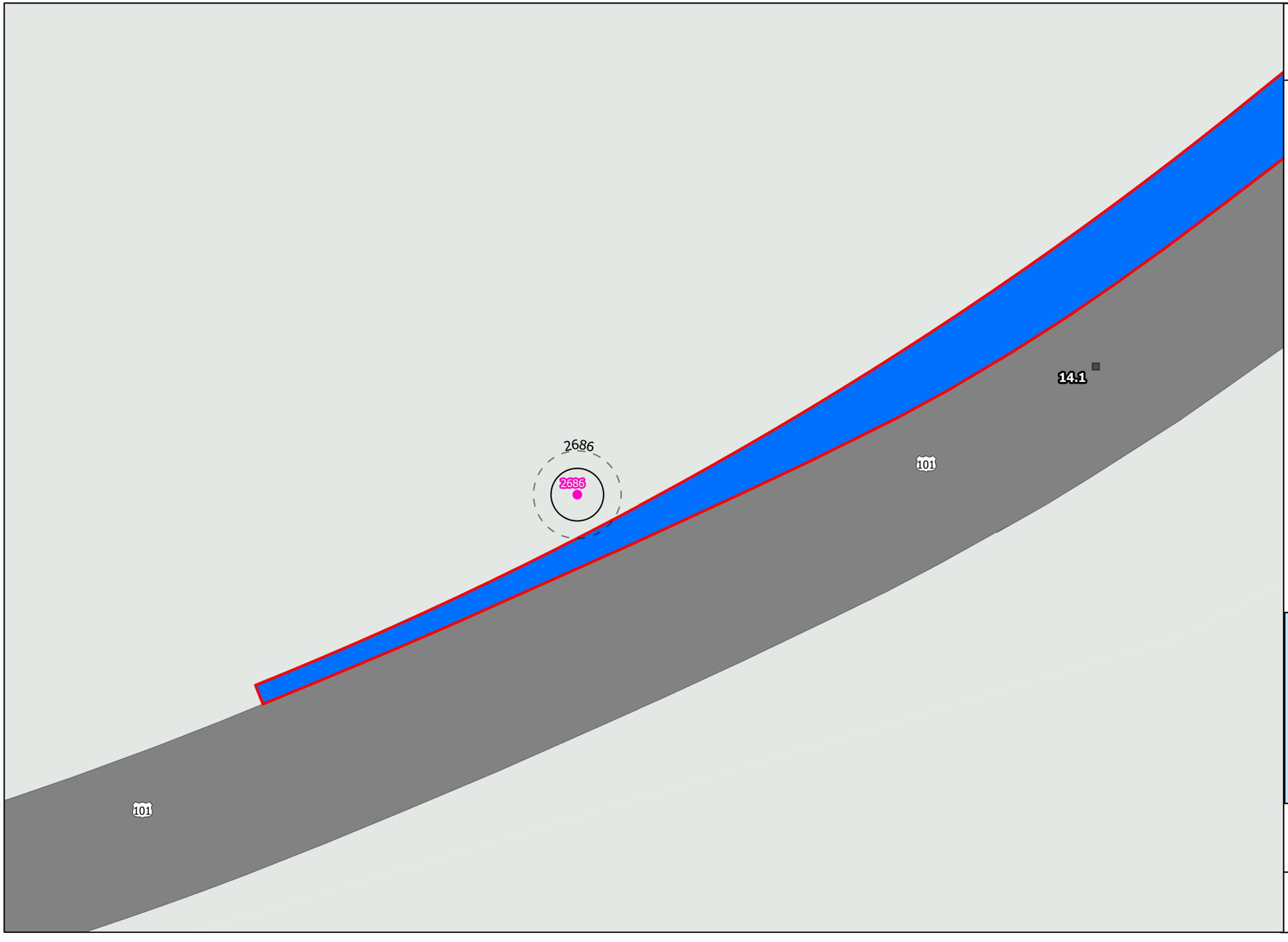
Figure 4
Alternative F Impacts to Large Trees
Sheet 21 of 29

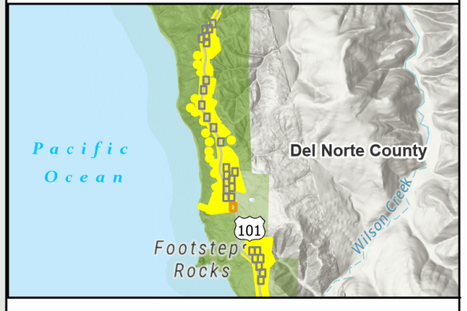
Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- Post Miles
- DBH 3X
- DBH 5X

Tree Species DBH
- Red Alder

Impact Area
- Permanent
- New Road
- Existing Road





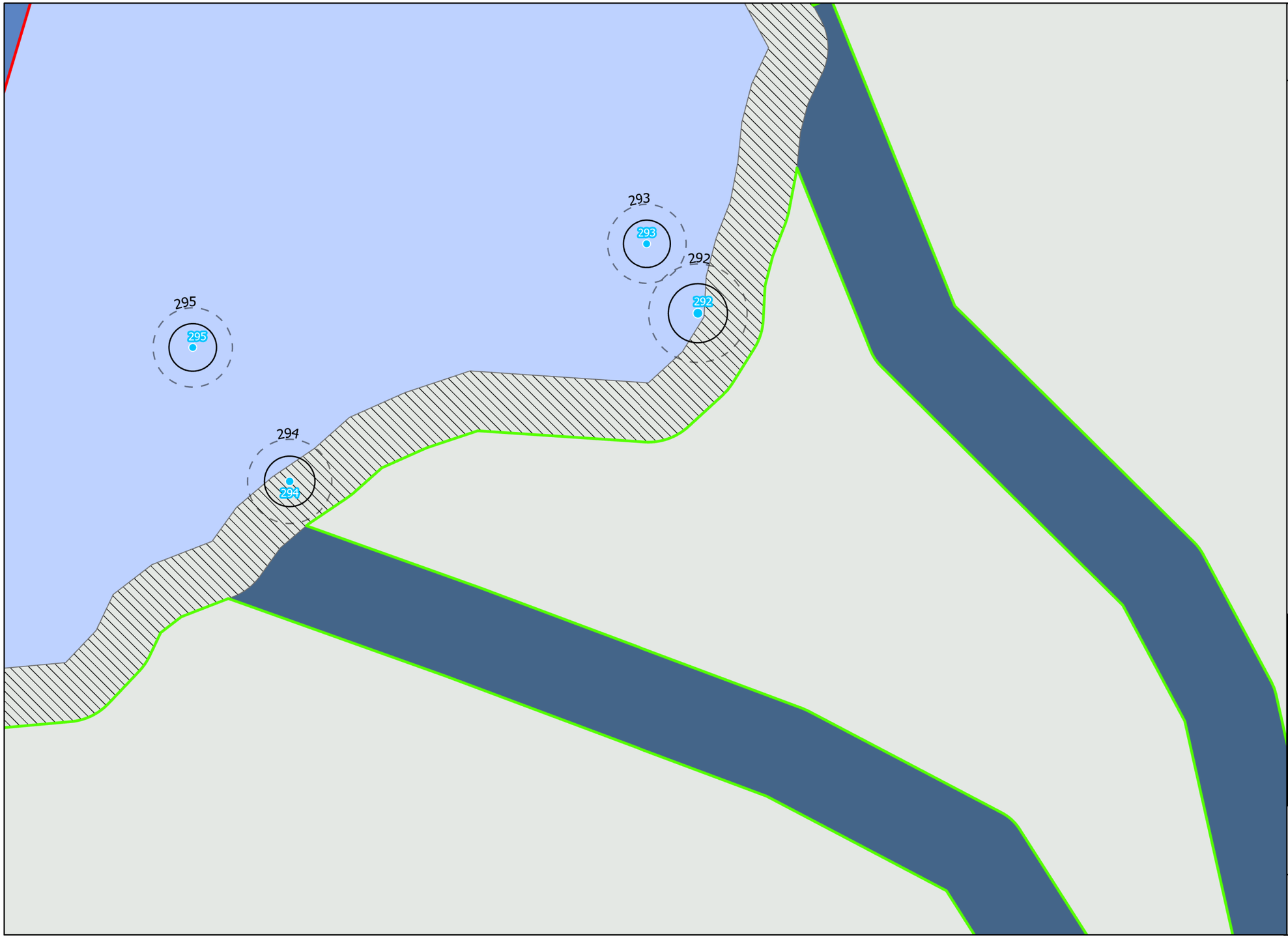
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Feet

Date created: 6/30/2023

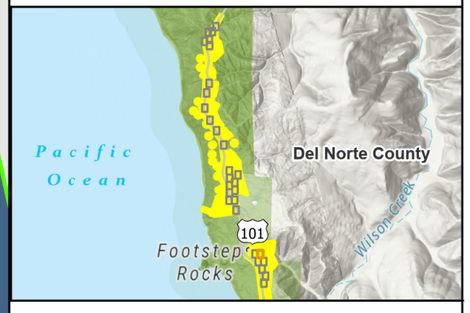
Caltrans

Figure 4
Alternative F Impacts to Large Trees
Sheet 22 of 29



Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

DBH 3X
DBH 5X
Tree Species DBH
Sitka Spruce
Impact Area
Permanent
Temporary
Project Components and Design Features
15-Foot Buffer
Access Road
Cut/Fill
Maintenance Yard

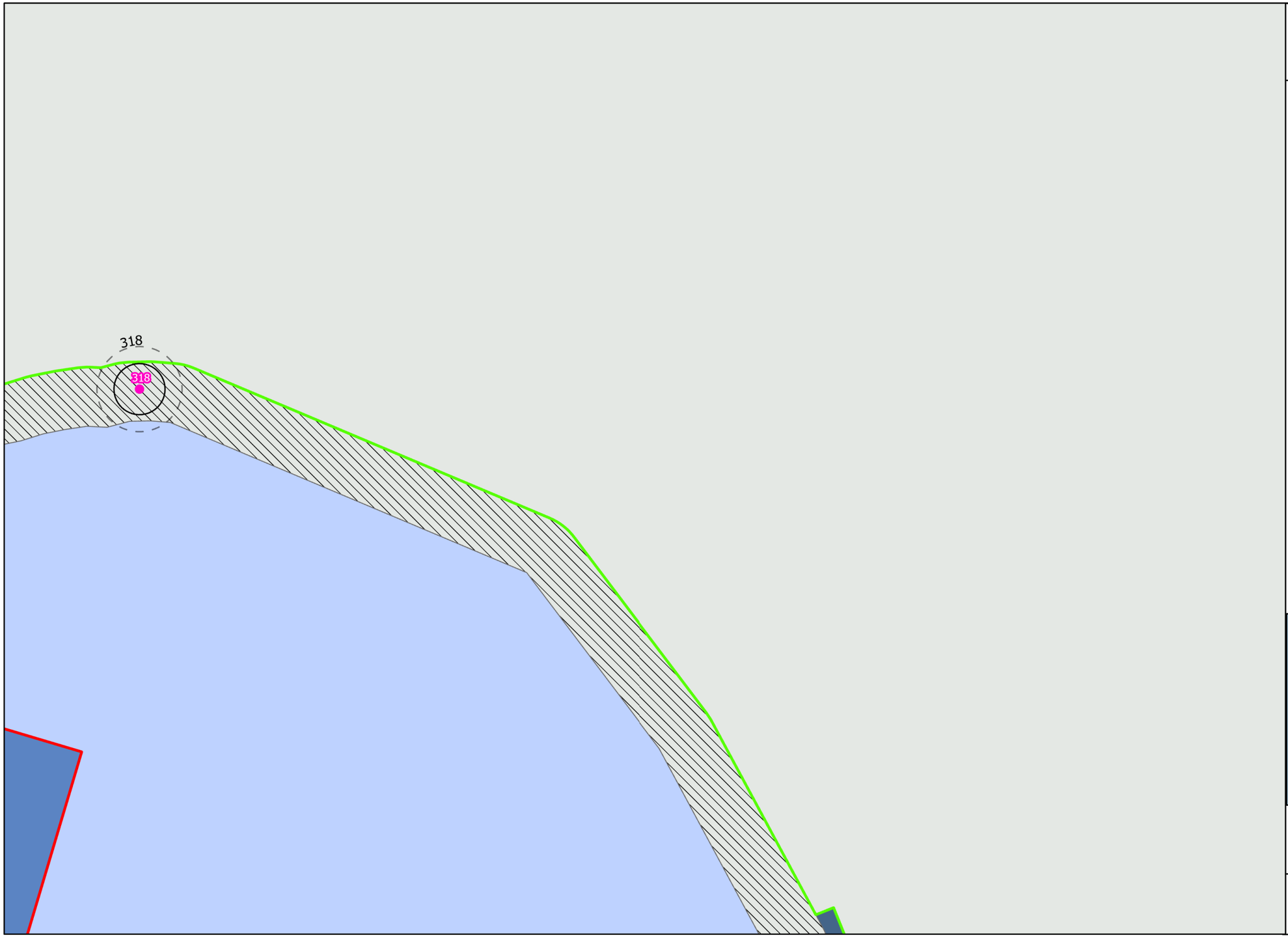


N
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50
Feet

Date created: 6/30/2023

Caltrans

Figure 4
Alternative F Impacts to Large Trees
Sheet 23 of 29



Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

- DBH 3X
- DBH 5X

Tree Species DBH

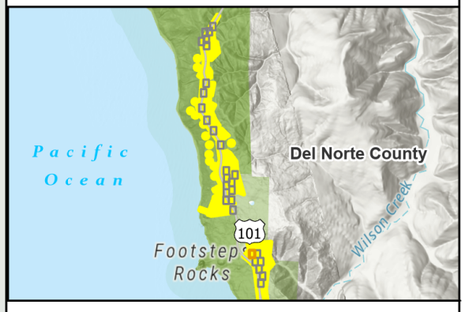
- Red Alder

Impact Area

- Permanent
- Temporary

Project Components and Design Features

- 15-Foot Buffer
- Access Road
- Cut/Fill
- Maintenance Yard



N

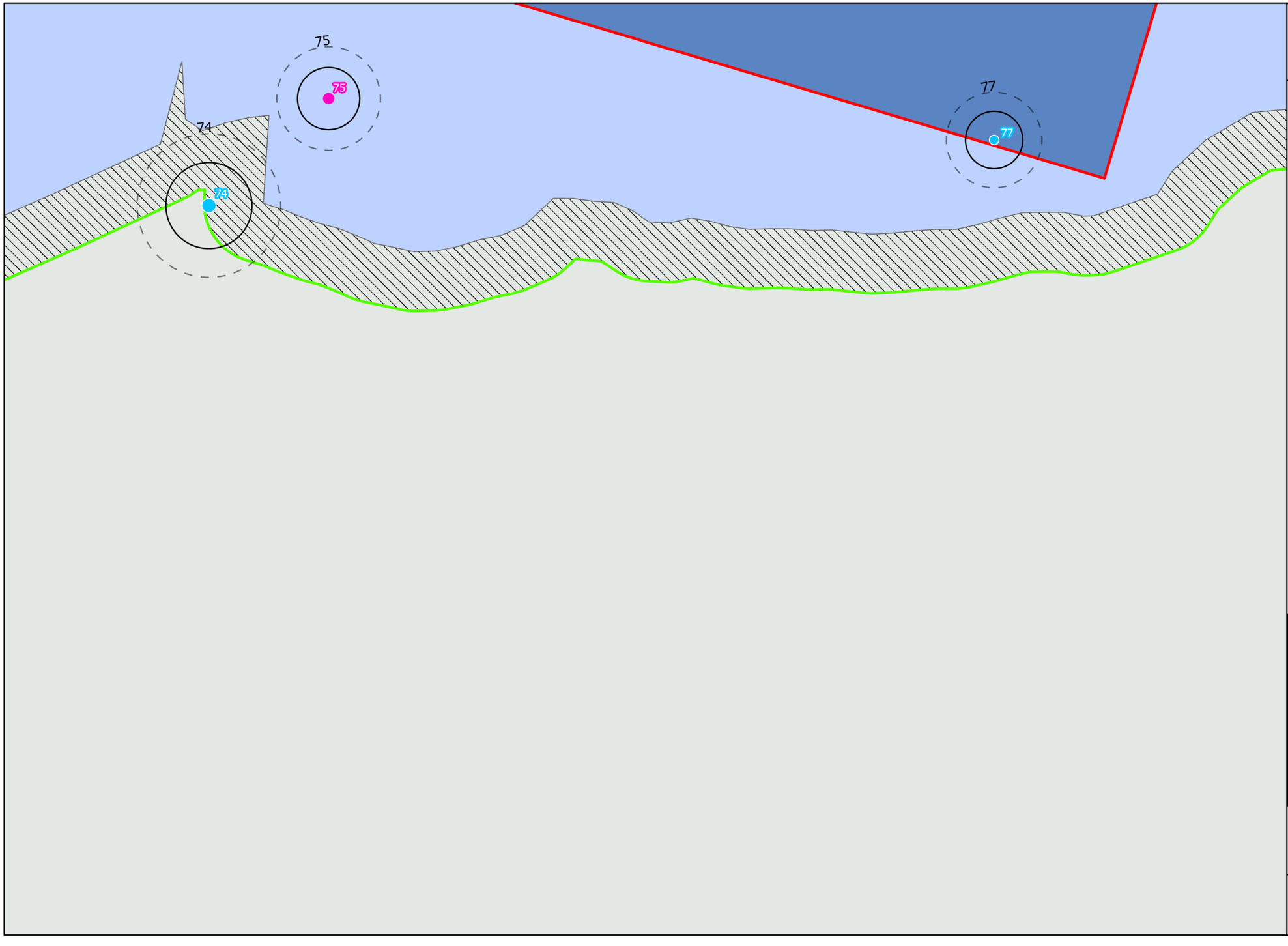
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Feet

Date created: 6/30/2023

Caltrans

Figure 4
Alternative F Impacts to Large Trees
Sheet 24 of 29



Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

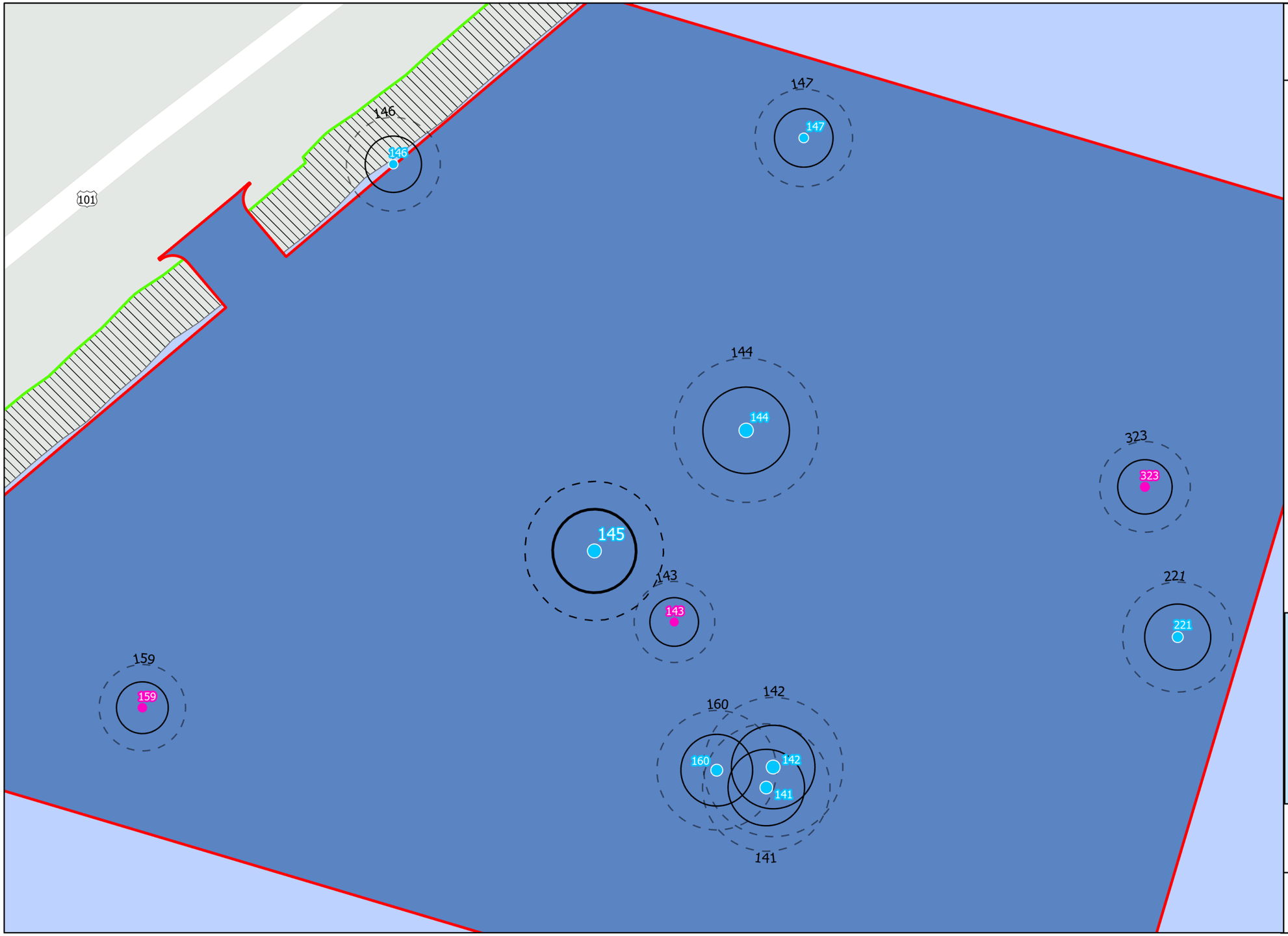
DBH 3X
DBH 5X
Tree Species DBH
Red Alder
Sitka Spruce
Impact Area
Permanent
Temporary
Project Components and Design Features
15-Foot Buffer
Cut/Fill
Maintenance Yard



N
0
50
Feet

Date created: 6/30/2023

Figure 4
Alternative F Impacts to Large Trees
Sheet 25 of 29



Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

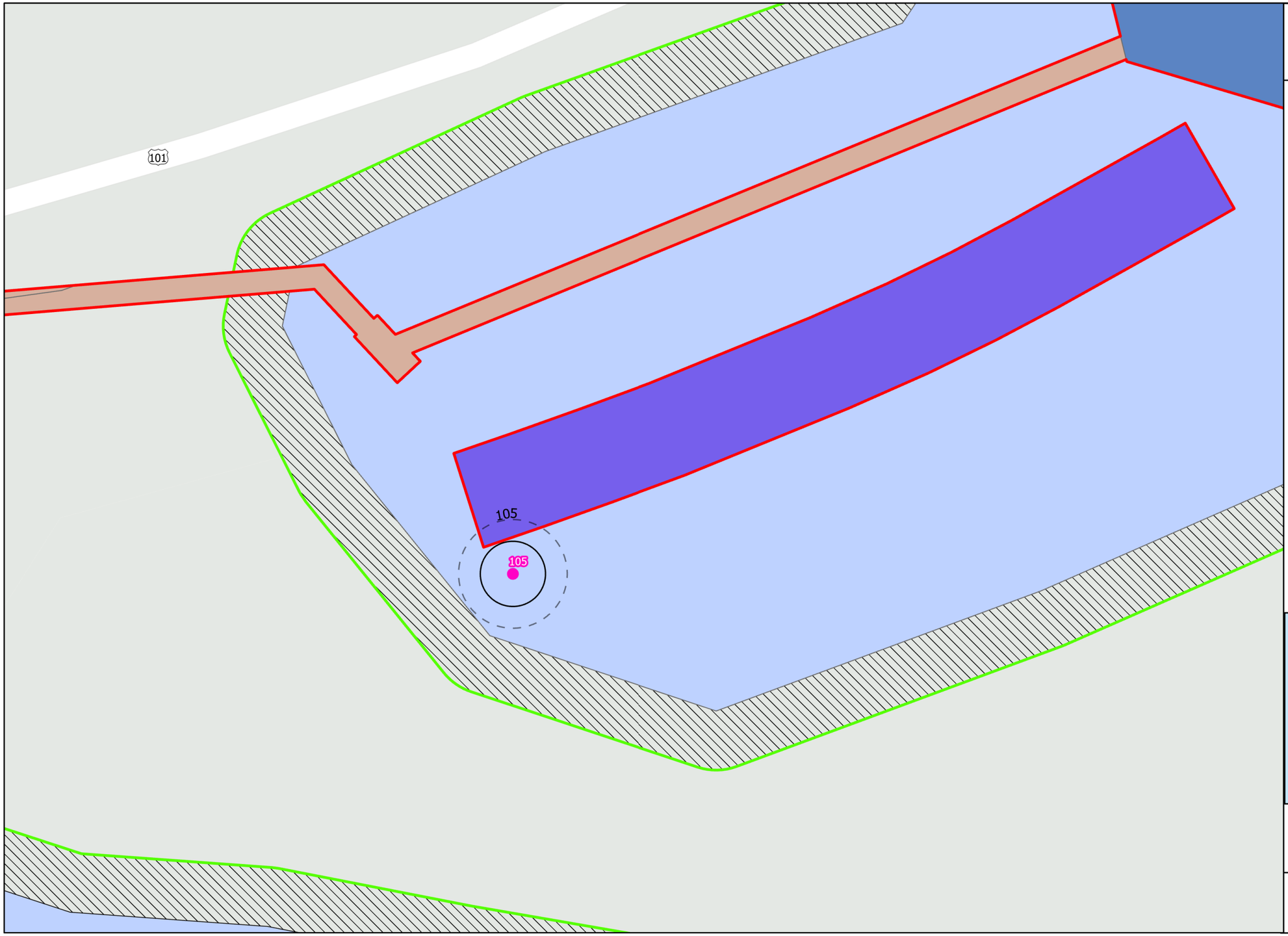
DBH 3X
DBH 5X
Tree Species DBH
Red Alder
Sitka Spruce
Impact Area
Permanent
Temporary
Project Components and Design Features
15-Foot Buffer
Cut/Fill
Maintenance Yard



N
0
50
Feet

Date created: 6/30/2023

Figure 4
Alternative F Impacts to Large Trees
Sheet 26 of 29



Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

DBH 3X
DBH 5X
Tree Species DBH
Red Alder
Impact Area
Permanent
Temporary
Project Components and Design Features
15-Foot Buffer
BMP Area
Culvert/Drainage
Cut/Fill
Maintenance Yard



N
0
50
Feet

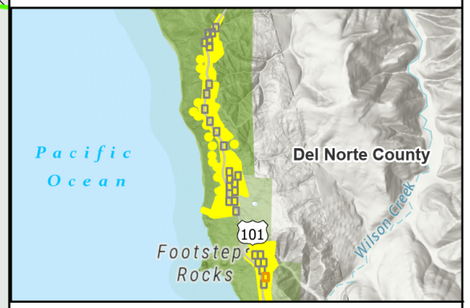
Date created: 6/30/2023

Caltrans

Figure 4
Alternative F Impacts to Large Trees
Sheet 27 of 29

Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280

DBH 3X
DBH 5X
Tree Species DBH
Red Alder
Sitka Spruce
Impact Area
Permanent
Temporary
Project Components and Design Features
15-Foot Buffer
Access Road
Cut/Fill



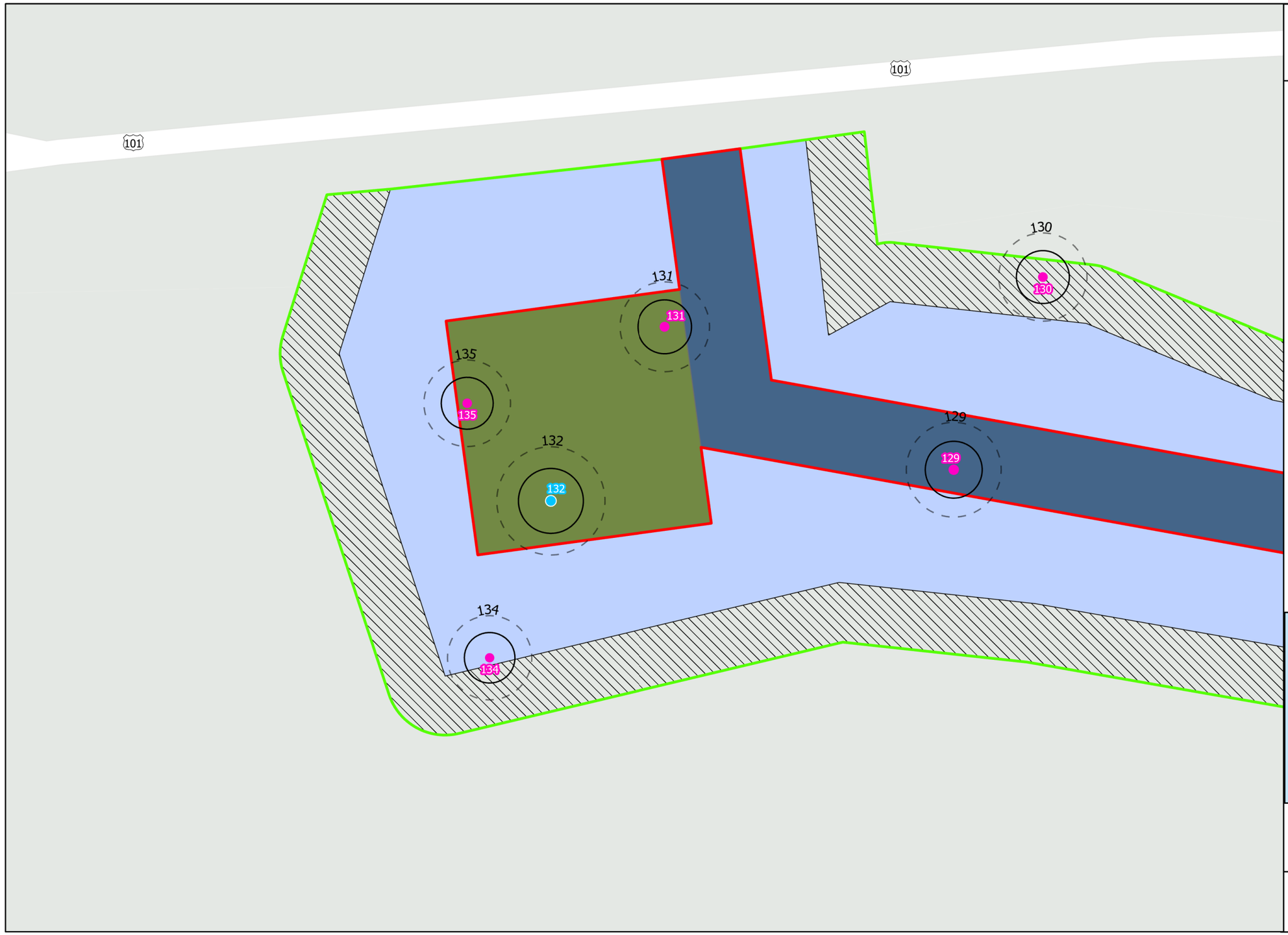
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Date created: 6/30/2023

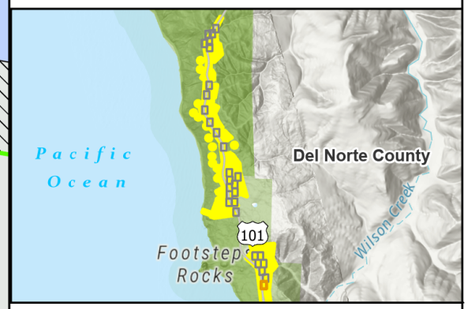
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Figure 4
Alternative F Impacts to Large Trees
Sheet 28 of 29

Last Chance Grade
Permanent Restoration Project
U.S. 101 Post Mile 12.7 to 16.5
EA 01-0F280



DBH 3X
DBH 5X
Tree Species DBH
Red Alder
Sitka Spruce
Impact Area
Permanent
Temporary
Project Components and Design Features
15-Foot Buffer
Access Road
Cut/Fill
Transformer



N
0
50
Feet

Date created: 6/30/2023

Caltrans

Figure 4
Alternative F Impacts to Large Trees
Sheet 29 of 29