County of Humboldt

Humboldt Bay Trail South

California Environmental Quality Act

Public Review Document

Initial Study & Proposed Mitigated Negative Declaration

February 16, 2018

California Environmental Quality Act
Public Review Document

Initial Study & Proposed Mitigated Negative Declaration

County of Humboldt
Humboldt Bay Trail South

Prepared for:

County of Humboldt
Department of Public Works
1106 Second Street
Eureka, California 95501

Prepared by:

GHD
718 Third Street
Eureka, California 95501

February 16, 2018

County of Humboldt
Department of Public Works
1106 Second Street
Eureka, California 95501

CEQA Notice of Intent to Adopt a Mitigated Negative Declaration for the County of Humboldt, Humboldt Bay Trail South Project

In accordance with the California Environmental Quality Act (CEQA) Guidelines Section 15072 and Public Resources Code Section 21092, the County of Humboldt Department of Public Works is providing notice of intent to adopt a mitigated negative declaration (MND) of environmental impact for the "Humboldt Bay Trail South Project" as described here. The public is invited to comment on the proposed MND pursuant to the provisions of CEQA. The review period is 30 days and commences on February 16, 2018, and ends on March 19, 2018. Written comments must be submitted to the County of Humboldt Department of Public Works no later than 5:00 pm on March 19, 2018. The Initial Study and proposed MND document is available for review during regular business hours at the County of Humboldt Department of Public Works located at 1106 Second Street in Eureka, California. The document is also available on the County's website for download at: http://www.humboldtbaytrail.info. Per CEQA Guidelines Section 15072(g)(5), no known hazardous waste facilities or disposal sites exist along the project alignment.

The project generally consists of the construction and operation of a Class I bike path and cable barrier along the North Coast Railroad Authority (NCRA) and Caltrans U.S. Highway 101 corridor between Bracut and Eureka, and construction of a cable barrier between Bracut and Gannon Slough. The project is located along the NCRA and Caltrans U.S. Highway 101 corridor between Eureka and Brainard Slough, with the exception of a proposed levee trail segment around the California Redwood Company mill site. The project is generally located on the west/north side of U.S. Highway 101 and on the south/east side of the NCRA railroad corridor along the northeast shoreline of Humboldt Bay.

The County of Humboldt Department of Public Works will discuss the plan to complete the Humboldt Bay Trail between Eureka and Arcata at the Wharfinger Building, 1 Marina Way in Eureka, between 5:30 and 7:00 pm on February 27, 2018. For further information, please contact Hank Seemann, County of Humboldt Department of Public Works, Deputy Director at (707) 445-7741, or email at HSeemann@co.humboldt.ca.us.

The County of Humboldt plans to consider adoption of the MND at a regularly scheduled Board of Supervisors meeting on or around April 24, 2018, after 9:00 am, in the Supervisors Chambers (first floor), located at 825 5th Street, in Eureka.

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Acronyms and Abbreviations

AB	Assembly Bill
ADA	Americans with Disabilities Act
APE	Area of Potential Effect
APN	Assessor Parcel Number
ARB	Air Resources Board
BAAQMD	Bay Area Air Quality Management District
BA/EFHA	Biological Assessment/Essential Fish Habitat Assessment
BMPs	Best Management Practices
CalEEMod	California Emissions Estimator Model
CalEMA	California Emergency Management Agency
CalEPA	California Environmental Protection Agency
CAL FIRE	California Department of Forestry and Fire Protection
Cal-OSHA	California Division of Occupational Safety and Health
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CBC	California Building Code
CCC	California Coastal Commission
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CDOC	California Department of Conservation
CDP	Coastal Development Permit
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CGS	California Geological Survey
CH_4	Methane
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CO_2	Carbon dioxide
CPR	California Public Resources Code
CRC	California Redwood Company
CRHR	California Register of Historic Resources
dB	decibel

dBA	A-Weighted Sound Level
DTSC	Department of Toxic Substances Control
EFH	Essential Fish Habitat
EPA	Environmental Protection Agency
ESHA	Environmentally Sensitive Habitat Area
FEMA	Federal Emergency Management Agency
GHGs	Greenhouse Gases
GIS	Geographic Information System
HCAOG	Humboldt County Association of Governments
HRER	Historical Resources Evaluation Report
HWMA	Humboldt Waste Management Authority
ICLEI	International Council on Local Environmental Initiatives
ISMND	Initial Study and Mitigated Negative Declaration
Ldn	Day-night Average Sound Level
Lmax	Maximum Instantaneous Noise Level
LOC	Letter of Concurrence
LRA	Local Responsibility Area
LUST	Leaking Underground Storage Tank
MBTA	Migratory Bird Treaty Act
MLD	Most Likely Descendant
$MTCO_2e$	Metric tons carbon dioxide equivalent
N_2O	Nitrous oxide
NAHC	Native American Heritage Commission
NCRA	North Coast Railroad Authority
NCRWQCB	North Coast Regional Water Quality Control Board
NCUAQMD	North Coast Unified Air Quality Management District
NEPA	National Environmental Policy Act
NES	Natural Environment Study
NMFS	National Marine Fisheries Service
NOAA	National Oceanographic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NRC	National Research Council
NRHP	National Register of Historic Places
NWIC	Northwest Information Center

NWPRR	Northwestern Pacific Railroad
PM_{10}	Particulate matter less than 10 micrometers in diameter
$PM_{2.5}$	Particulate matter less than 2.5 micrometers in diameter
PPV	Peak Particle Velocity
PRC	Public Resources Code
PSB	Project Study Boundary
ROW	Right-of-way
RWQCB	Regional Water Quality Control Board
SDC	Seismic Design Category
SLR	sea level rise
SONCC	Southern Oregon/Northern California Coast
SVOC	Semivolatile Organic Compounds
SWL	Still Water Elevation
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TWL	Total Water Level
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

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1. Project Information

Project Title	Humboldt Bay Trail South
Lead Agency Name & Address	County of Humboldt, Department of Public Works 1106 Second Street Eureka, California 95501
Contact Person	Hank Seemann, Deputy Director Telephone: (707) 445-7741 hseemann@co.humboldt.ca.us
Project Location	Between Bracut and the City of Eureka, California (see Section 1.3 of this ISMND)
Project Sponsors	Not applicable
Project Assessor's Parcel Numbers (APN)	014-031-002, 014-031-002, 014-041-002, 014-051-003, 014-041-002, 014-061-002, 014-101-002, 014-051-003, 014-111-003, 014-061-002, 014-121-002, 017-081-001, 017-081-002, 017-102-008, 014-101-002, 404-141-002, 404-141-003, 404-141-004, 014-111-003, 404-141-005, 014-121-002, 017-081-001, 501-091-006, 017-081-002, 501-241-005, 404-141-002, 501-241-027, 404-141-003, 501-241-031, 404-141-004, 501-241-033, 404-141-005, 501-091-006, 501-241-005, 501-241-027, 501-241-031, 501-241-033.
General Plan Land Use Designation	Humboldt County: Natural Resources (NR), Industrial General (MG), Public Facility (PF). City of Eureka: Natural Resources (NR).
Zoning	Humboldt County: NR/Coastal Wetlands (NR/W), Industrial General/ARA (MG/A), Natural Resources/Design Review, Wetlands (NR/D, W), Industrial General/Flood Hazard (MG/F), Unclassified (U). City of Eureka: NR, Conservation Water (WC).
Project Description Summary	Construction and operation of a Class I bike path along the North Coast Railroad Authority (NCRA) and Caltrans U.S. Highway 101 transportation corridor generally between Bracut and Eureka, and construction of a cable barrier between Eureka and Gannon Slough. Some project elements are discretionary and/or may be phased.

Surrounding Land Uses and Setting Summary	The project is located along the NCRA and Caltrans U.S. Highway 101 corridor between Eureka and Brainard Slough, with Humboldt Bay to the north. The project is generally located on the west/north side of U.S. Highway 101 and on the south/east side of the NCRA railroad corridor along the northeast shoreline of Humboldt Bay. Project improvements are located within the boundaries of the City of Eureka, and unincorporated Humboldt County.
Comment Period	February 16 – March 19, 2018 Comments can be submitted: 1. Via e-mail to hseemann@co.humboldt.ca.us; or 2. In hard-copy form to Humboldt County Department of Public Works, 1106 Second Street, Eureka, CA 95501

1.1 Introduction

The Humboldt Bay Trail is a network of multi-use trails (also known as shared-use paths) providing non-motorized access for transportation and recreational use throughout the Humboldt Bay region. The Humboldt Bay Trail will connect communities with multi-modal transportation facilities and connect people to the bay by enabling people of all ages and abilities to access and experience the bay's resources directly. In addition to serving the region's transportation needs, the Humboldt Bay Trail will achieve a critical link in the California Coastal Trail and enhance recreational use and enjoyment around the bay.

The Humboldt Bay Trail is being developed as a collaborative effort between the Humboldt County Association of Governments (HCAOG), Humboldt County (County), City of Arcata, City of Eureka, California Department of Transportation (Caltrans), California State Coastal Conservancy, North Coast Railroad Authority (NCRA), Redwood Community Action Agency (RCAA), and other partners. The City of Arcata recently completed the Humboldt Bay Trail North segment which extends south along the Highway 101 and railroad corridor to a terminus located near Bayside Cutoff and Bracut Industrial Park. The City of Eureka recently completed Phases B and C of the Eureka Waterfront Trail which extends a segment along the west side of Eureka Slough. The Humboldt Bay Trail is being developed concurrent with the Eureka-Arcata Route 101 Corridor Improvement Project which is being implemented by Caltrans and HCAOG to improve safety and operations at six at-grade crossings on Highway 101. The Corridor Improvement Project will include a new interchange at Indianola Cutoff.

Humboldt County is leading the Humboldt Bay Trail South project (the "project") from the Eureka Slough area to the Bracut Industrial Park to provide the interconnecting link between the two trail projects recently completed by the cities of Arcata and Eureka. The proposed project is an approximately 4.2-mile paved path situated primarily along the Highway 101 and railroad corridor with the exception of a proposed levee trail segment around the California Redwood Company (CRC) mill site. This project will result in a continuous non-motorized trail from central Arcata to the southern end of Eureka, for a total length of nearly 13 miles. Completion of the link between the two largest cities in Humboldt County will provide a major step toward regional trail connectivity around Humboldt Bay. Additional background information is provided in the Project Study Report (Humboldt County, 2014).

In 2013, the County initiated technical studies to evaluate potential alignment options for the project (GHD, 2014). Preliminary engineering and environmental studies began in 2015. Funding for the engineering and environmental phases of the project was provided by the State Transportation Improvement Program. The County plans to complete the CEQA process in spring 2018 and submit

environmental permit applications in late summer 2018. Refinement of the project design and preparation of engineering plans and specifications will continue through 2019.

The County will need to secure right-of-way prior to construction because the proposed project crosses property owned by NCRA, Caltrans, City of Eureka, and three private landowners. The County plans to apply for a license agreement from NCRA similar to the agreements NCRA executed with the cities of Eureka and Arcata for adjoining trail projects. The County plans to develop a cooperative agreement with Caltrans and obtain an encroachment permit. The County plans to obtain an access agreement (or similar authorization) from the City of Eureka. The County will need to obtain right-of-way through easement or acquisition from the three affected private landowners prior to construction. The County has initiated discussions with each of the affected landowners regarding right-of-way and seeks to work cooperatively with each of them to obtain rights needed for the trail.

The County plans to apply for construction funding from the Active Transportation Program in July 2018. Acquisition of funding from other sources will also likely be required due to the cost of the project. The timeline for construction is not firm because it is contingent upon securing right-of-way, environmental permits, funding for construction, and funding for wetland mitigation. The earliest construction could begin is likely 2021.

The project is subject to the environmental review requirements of the California Environmental Quality Act (CEQA). The County is the CEQA Lead Agency and has developed this Initial Study for the following purposes:

- To identify feasible opportunities to avoid, substantially reduce, or mitigate environmental impacts;
- To provide a basis for deciding whether to prepare an Environmental Impact Report, a Mitigated Negative Declaration, or a Negative Declaration for compliance with CEQA;
- To disclose the results of the County's analysis of potential environmental impacts from the project and the supporting information for approving the project; and
- To inform the CEQA Lead Agency, responsible agencies, trustee agencies, and the public regarding the potential environmental impacts of the project.

This Initial Study has been prepared to satisfy the requirements of CEQA (Public Resources Code [PRC], Div. 13, Sec 21000-21177) and the CEQA Guidelines (California Code of Regulations, Title 14, Sec 15000-15387). Based on the findings of the draft Initial Study, the County proposes to adopt a Mitigated Negative Declaration of environmental impact for the project. A Mitigated Negative Declaration is appropriate when significant environmental impacts can be avoided by adopting specified mitigation measures.

The public review period for the draft Initial Study and proposed Mitigated Negative Declaration (ISMND) is February 16 through March 19, 2018. Comments regarding the correctness, completeness, or adequacy of the ISMND are invited. Comments received by the end of the public review period will be considered before adoption. The final ISMND document will be produced in track-changes mode to show the changes made in response to the comments received. Copies of the comments will be provided in Appendix A of the final document. Adoption of the final ISMND by the Humboldt County Board of Supervisors is anticipated in April 2018. Comments on the draft ISMND can be submitted via e-mail to hseemann@co.humboldt.ca.us or mailed in hard-copy form to:

Humboldt County Department of Public Works
1106 Second Street
Eureka, CA 95501

Comments must be received by 5:00 pm on Monday, March 19, 2018.

1.2 Purpose and Need

A dedicated bicycle and pedestrian trail between Eureka and Arcata has been a regional priority for nearly 20 years and is identified as a priority project in the Regional Transportation Plan (HCAOG, 2017). The project described and analyzed in this Initial Study will close the existing 4.2-mile gap in the Humboldt Bay Trail between Eureka and Arcata.

The primary purpose of the project is to improve safety and connectivity for non-motorized and motorized travelers between the communities of Eureka and Arcata. The trail is warranted because Highway 101 between Eureka and Arcata is an incomplete transportation facility that was designed primarily to support motorized vehicles. The project would reduce the potential for conflicts between bicyclists, pedestrians, and vehicles within the Highway 101 Corridor and increase mobility options between the communities of Arcata and Eureka. The project would contribute to a balanced, "complete street" transportation network and enhance public access to Humboldt Bay. A continuous trail would have many benefits, including:

- Improved safety (through separation of motorized and non-motorized travelers)
- Economic development (by supporting transportation mobility and regional tourism)
- Congestion relief
- Coastal access and opportunities for nature study
- Improved bay viewshed
- Enhanced quality of life
- Improved public health (by creating opportunities for increased physical activity)
- Community connectivity
- Reduced vehicle miles traveled, fuel consumption, and emissions
- Partial rehabilitation of selected areas of the railroad prism

1.2.1 Alternative Alignments Considered and Not Selected

This section provides a brief summary of alternative alignments which were initially considered as part of the overall evaluation process but not selected:

West Side of Railroad Corridor

This alternative would develop a trail on the west side (toward the bay) of the railroad prism or within the open water portion of the bay. This alternative was not selected due to expected higher construction costs and expected higher impacts to the more sensitive habitat type (salt marsh and mud flat) within the bay. In addition, there is high uncertainty whether the required permits could be acquired.

East Side of Highway 101

This alternative would develop a trail on the east side of Highway 101. This alternative would require multiple crossings of Highway 101 and other roads and driveways to provide a continuous trail that is connected to the regional trail system. Right-of-way needs would be substantial with this alternative and new crossings of creeks and sloughs would be required. The increased distance and separation from Humboldt Bay are also shortcomings. For these reasons, this alternative was not selected.

Re-align Entire Railroad and Highway Corridors

This alternative would shift the railroad and highway corridors eastward to allow a trail on the existing railroad prism. This alternative is logical from a planning perspective and has the benefit of locating the trail directly adjacent to the bay to enhance the recreational experience. This alternative would

be a major infrastructure project with a cost on the order of $100 million, and securing funding of this magnitude is unlikely due to competing transportation needs. This alternative was determined to be cost-prohibitive and therefore infeasible.

Full Occupation of Railroad Prism (Rail-to-Trail)

This alternative would place the trail directly on the existing railroad prism for all or most of the project area. This alternative would require the removal of the existing railroad tracks and ties, and widening portions of the prism to accommodate the required trail width. This alternative was not selected because it conflicts with NCRA's Rails With Trails Policy and Procedures Manual (NCRA, 2009). NCRA policy allows trails within their right-of-way if they will not inhibit the current or future ability to operate freight or passenger rail services.

In 2012, NCRA formed an ad hoc committee to evaluate restoration of the Humboldt Bay rail prism, development of trails consistent with the NCRA's 2009 trail guidelines, and restoration of rail service in the Humboldt Bay Area. On December 12, 2012, NCRA passed Resolution 2012-13 which included a provision that "NCRA will consider clearly defined and strictly limited exceptions to its current trail policy to enable development of a trail in the Humboldt Bay corridor without compromising the prospects of rail service restoration."

Alignment around Bracut Marsh and Bracut Industrial Park

This alternative would place a portion of the trail (Segment 9) on the levees surrounding Bracut Marsh and Bracut Industrial Park. This alternative would have the advantage of being further away from the highway and closer to the bay, but would have the disadvantage of being a less direct route through the segment with several sharp turns. This alternative would require substantial improvements to the levees, including widening and revetment repair, and two bridges would be needed to cross the gaps in the levee around Bracut Marsh. This alternative would have more environmental impacts (through the filling of wetlands) and be more expensive than the proposed alignment parallel to the railroad. This alternative is not the least environmentally damaging feasible alternative and would conflict with Coastal Act Section 30233. For these reasons, this alternative was not selected.

Alignment in Front of CRC mill site

This alternative would place the portion of the trail near the CRC mill site (Segments 5 and 6) parallel with the railroad and highway rather than on the perimeter levee around the mill site. This alternative would have the advantage of providing a more direct route, but would have the disadvantage of being closer to Highway 101 and further from the bay. This alternative would require removal of the 0.6-mile-long southern segment of eucalyptus trees to create space for the trail facility and for safety reasons due to overhanging limbs. The feasibility of this alternative is questionable due to the need to avoid impacting the capacity of the drainage ditch situated between the railroad and highway (GHD, 2017d). This alternative would have more environmental impacts (through the filling of wetlands) and be more expensive than the proposed alignment around the perimeter levee. This alternative is not the least environmentally damaging feasible alternative and would conflict with Coastal Act Section 30233. For these reasons, this alternative was not selected.

1.3 Project Location

The project is located along the NCRA and California Department of Transportation (Caltrans) Highway 101 corridor between the City of Eureka and Brainard Slough, for a total length of approximately 4.2 miles, with a portion located on the perimeter levee between the CRC mill site property and Humboldt Bay (refer to Figure 1).

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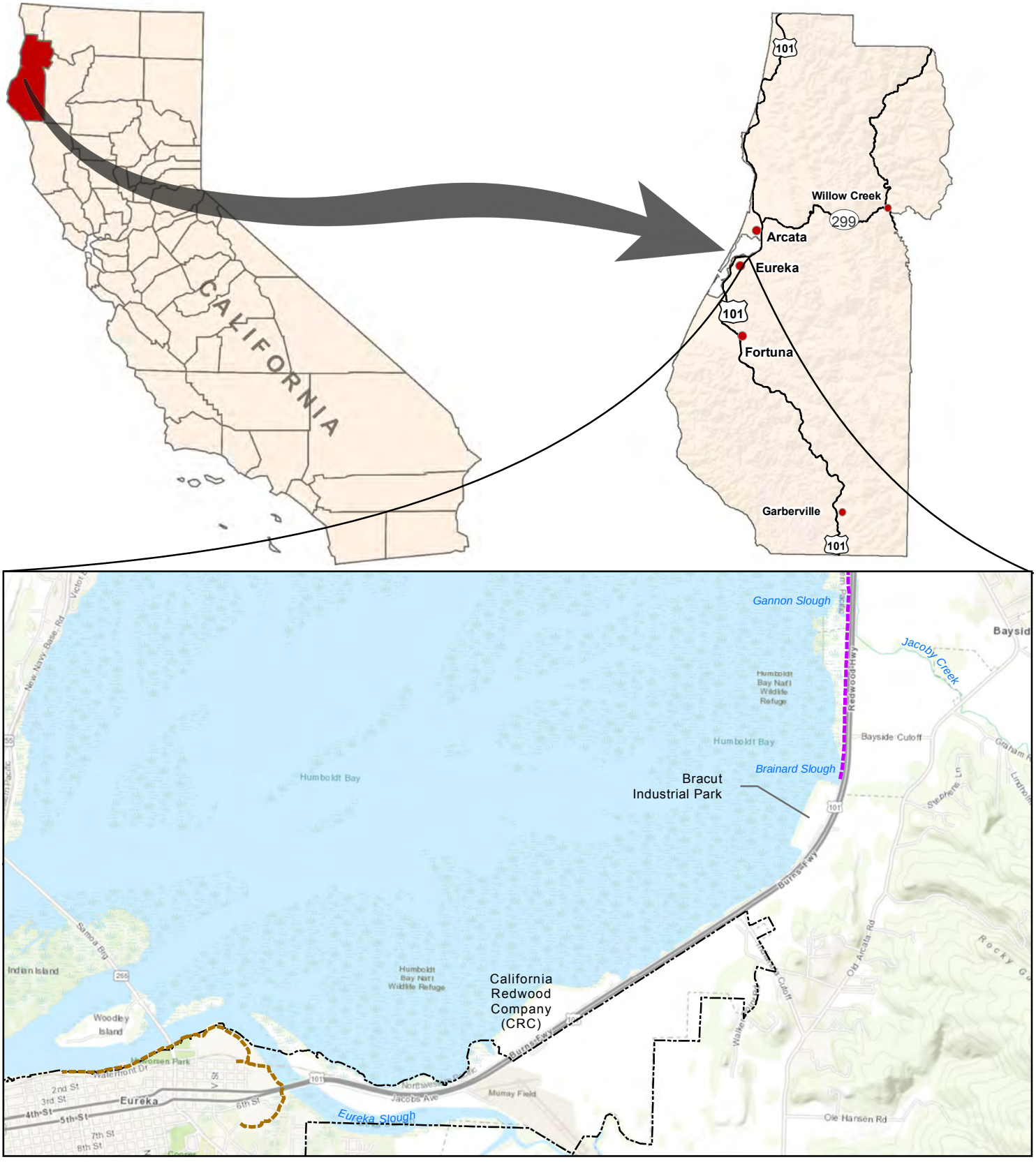

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Humboldt County Public Works Department
Humboldt Bay Trail - Bay Trail South
(Eureka to Bracut)

Job Number 11110166
Revision B
Date 11 Jan 2018

Vicinity and Existing Conditions Map

Figure 1

718 Third Street Eureka CA 95501 USA T 707 443 8326 F 707 444 8330 E eureka@ghd.com W www.ghd.com

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The proposed trail alignment is generally situated between Highway 101 and the NCRA railroad prism, except where the proposed alignment is located on the CRC levee or where the trail is on the NCRA Eureka Slough Bridge and approaches. Where the project is situated between Highway 101 and the railroad, the proposed alignment is on the west-northwest side of Highway 101 and on the east-southeast side of the NCRA railroad corridor. The project also includes the extension of a cable barrier at various locations along Highway 101 from Eureka Slough to Gannon Slough. Figure 2 shows the trail alignment and various project components, and Figure 3 shows the project study boundary (PSB) incorporating the finished trail and cable barrier.

1.4 Project Description

The Humboldt Bay Trail South Project is intended to provide non-motorized (primarily pedestrian and bike) transportation and recreational access connecting the City of Eureka's Waterfront Trail to the City of Arcata's Humboldt Bay Trail North via a Class I multi-use trail. The project would connect to the existing Eureka Waterfront Trail, starting just south of NCRA's Eureka Slough Bridge in Eureka, and continuing along the NCRA railroad transportation corridor north towards Brainard Slough. In addition to the proposed trail improvements between Eureka and Brainard Slough, the project includes sections of cable barrier that are proposed to be installed at specified locations between the existing Humboldt Bay Trail North Project and U.S. Highway 101. For the purposes of this study, the approximately 4.2-mile-long trail alignment was divided into nine functional study segments (as shown on Figure 2), in addition to the Humboldt Bay Trail North segment, where extension of the safety cable barrier is proposed:

Table 1-1 Trail Segments

Segment	Location	Approximate Length (ft)	Alignment Description
1	Connection to Eureka Waterfront Trail	100	Connection from railroad prism to existing Eureka Waterfront Trail
2	Eureka Slough Crossing	720	Cooperative use of NCRA's existing Eureka Slough Bridge
3	Eureka Slough North	1,500	Trail on or adjacent to railroad prism
4	Eureka Slough to CRC	5,200	Trail between railroad and highway and bridge trail connection over bay
5	CRC	5,400	Trail on CRC perimeter levee
6	CRC North Bay Crossing	200	Bridge trail connection over bay
7	North Eucalyptus Area	2,600	Trail between railroad and highway
8	South of Bracut	4,000	Trail between railroad and highway
9	Bracut to Brainard Slough	2,700	Trail between railroad and highway and bridge over Brainard Slough
Humboldt Bay Trail North	Brainard Slough to Gannon Slough	5,350	Cable barrier between existing trail and highway

The impact analysis included in this document is based the preliminary alignments and concepts shown in Figure 2 and Appendix G. As the design and engineering phase's progress, small changes and variations in design within the project study boundary are anticipated. The impacts

associated with the final design would be comparable or less severe to what is analyzed in this document.

1.4.1 Project Elements

The project is being designed to achieve the standards of a Class I Bikeway in accordance with the Caltrans Highway Design Manual (2017). In addition, the project will be designed to conform to other applicable standards, including the American Association of State Highway and Transportation Officials (AASHTO) Guide for the Development of Bicycle Facilities, Fourth Edition (2012); California Manual of Uniform Traffic Control Devices (CA MUTCD) (2014); the 2010 Americans with Disabilities Act (ADA) Standards for Accessibility Design; Chapter 11B of the 2016 California Building Code; General Order No. 26-D from the California Public Utilities Commission; and the NCRA Trail Guidelines (2009).

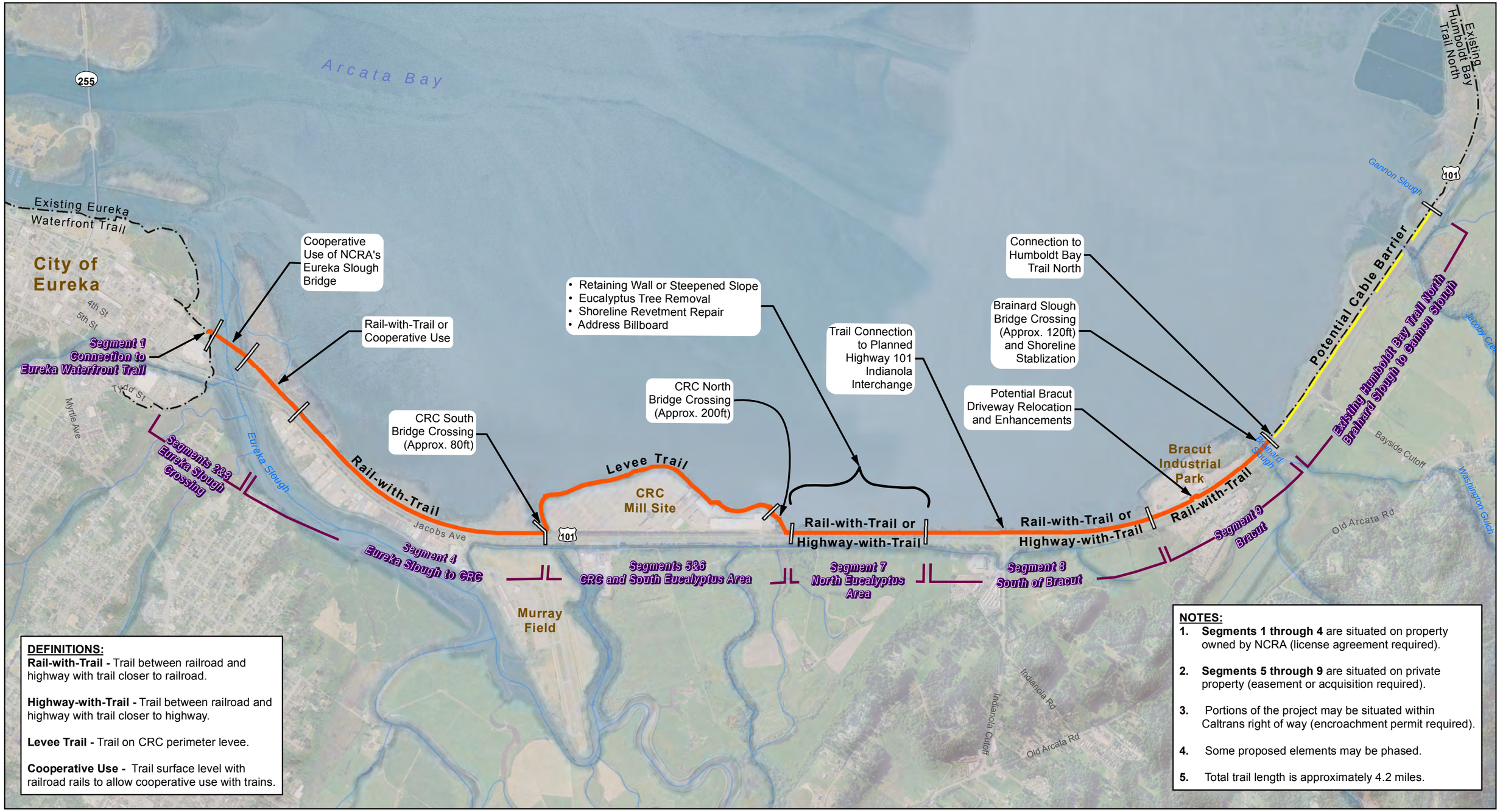
The basis of design for the width of the Humboldt Bay Trail between Eureka and Arcata was evaluated in a technical report (Humboldt County, 2016). Trail width is a key design parameter for use safety and the quality of the user experience. The report documents how design standards were applied for the project area to develop the appropriate trail width using a context-based approach.

The project is being designed to accommodate the expected volume and diversity of users, which includes a range of ages, experience levels, speeds, trip purposes, and mobility modes. As described in more detail below, the project includes a multi-use trail, lighting, signage, shoreline protection improvements, drainage improvements, and cable barrier fencing. Additional features may include viewing platforms, interpretive features, trailheads, and other amenities. Reference Appendix G for detailed graphics and images of project elements.

Class I Multi-Use Trail

The standard trail would consist of a 10 foot wide asphalt traveled way with two 2-foot gravel shoulders on each side. A narrower trail width may be utilized in isolated areas in special situations where it is not practical to maintain the standard width. In accordance to Class I and accessibility standards, the trail would be designed with a two percent or less cross slope and a five percent or less running slope. In areas in which the project crosses tidally influenced waters, the standard trail would include a bridge for crossing as further described below.

The trail is anticipated to have a typical pavement structural section that has approximately 12 inches of aggregate base and approximately 3 inches of asphalt concrete. In areas of poor soils, the structural section may be increased to up to three-feet of aggregate/engineered fill base or other soil stabilization measures such as the use of geotextiles and increased structural section depth.



DEFINITIONS:

Rail-with-Trail - Trail between railroad and highway with trail closer to railroad.

Highway-with-Trail - Trail between railroad and highway with trail closer to highway.

Levee Trail - Trail on CRC perimeter levee.

Cooperative Use - Trail surface level with railroad rails to allow cooperative use with trains.

NOTES:

1. **Segments 1 through 4** are situated on property owned by NCRA (license agreement required).
2. **Segments 5 through 9** are situated on private property (easement or acquisition required).
3. Portions of the project may be situated within Caltrans right of way (encroachment permit required).
4. Some proposed elements may be phased.
5. Total trail length is approximately 4.2 miles.

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Feet

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Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

LEGEND

- Humboldt Bay Trail South
- Cable Railing - Humboldt Bay Trail North
- Existing Trail
- "Text" Project Segment
- Segment Break

ABBREVIATIONS

CRC	California Redwood Company
NCRA	North Coast Railroad Authority

Humboldt County Public Works Department
Humboldt Bay Trail - Bay Trail South
(Eureka to Bracut)

Job Number	11110166
Revision	E
Date	30 Jan 2018

Proposed Trail Alignment and Key Components

Figure 2

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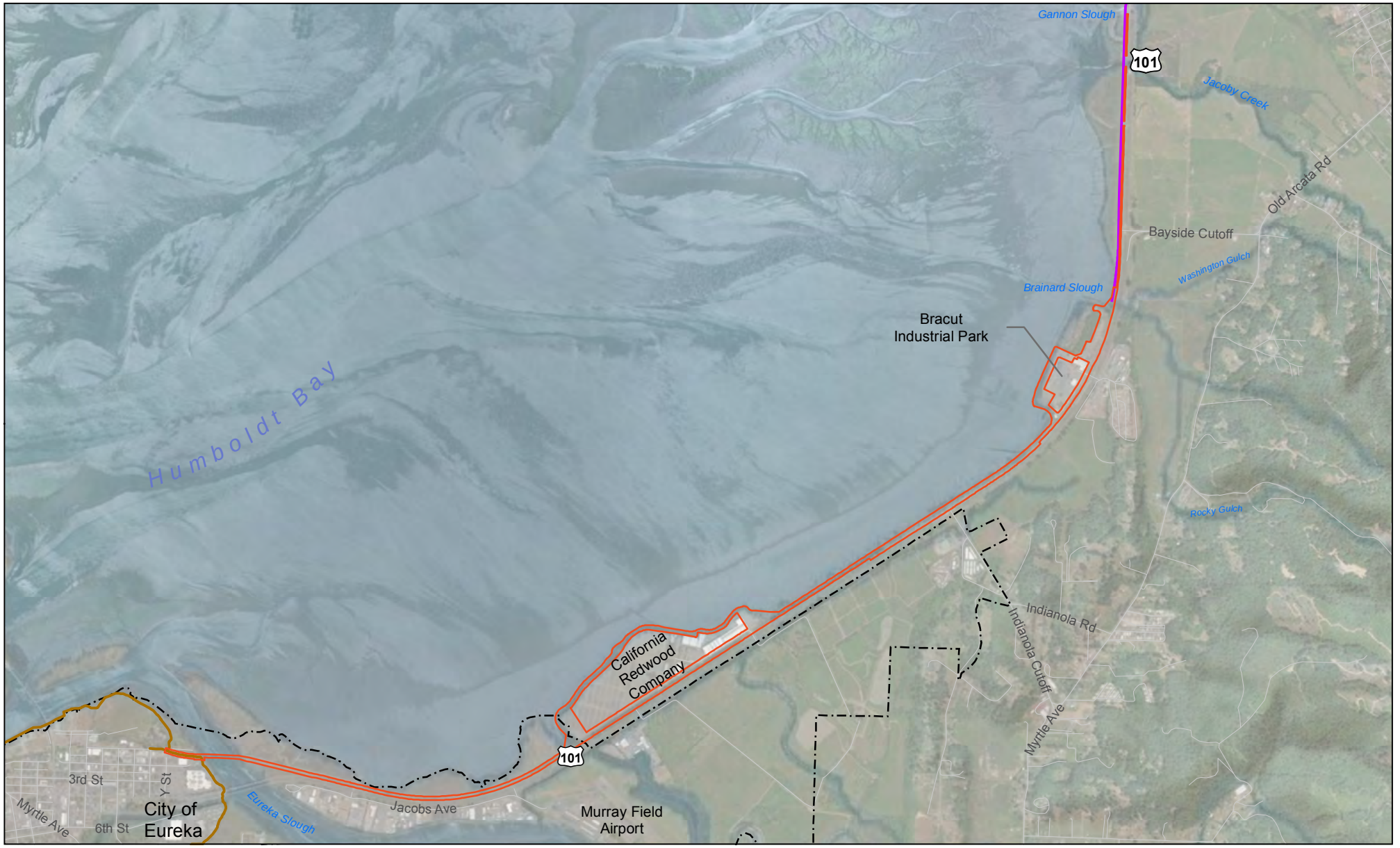
Data source: Aerial: NAIP USDA. **Created by:gldavidson**

718 Third Street Eureka CA 95501 USA **T** 707 443 8326 **F** 707 444 8330 **E** eureka@ghd.com **W** www.ghd.com



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Horizontal Datum: North American 1983
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Project Study Boundary

Eureka City Limits

Existing Eureka Waterfront Trail

Existing Humboldt BayTrail North (Bracut to Foster Ave)

Humboldt County Public Works Department
Humboldt Bay Trail - Bay Trail South
(Eureka to Bracut)

Job Number 11110166
Revision C
Date 11 Jan 2018

Project Study Boundary

Figure 3

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718 Third Street Eureka CA 95501 USA T 707 443 8326 F 707 444 8330 E eureka@ghd.com W www.ghd.com

Data source: GHD, 2017. Eureka City Limits. NAIP orthoimagery, 2014. Created by:gldavidson

Lighting

Up to two new lights may be included at the Bracut driveway/trail intersection to enhance visibility at night. Outside night lighting associated with construction, would be designed to protect wildlife and nighttime views, including views of the night sky. This design goal would be satisfied using a variety of means as applicable, including fixture types, cut off angles, shields, lamp arm extensions, and pole heights. Specific design preferences include directing light downward and away from other properties, avoiding brightly illuminated vertical surfaces where feasible, such as walls and lamp poles, and directing lighting away from environmentally sensitive habitat areas (ESHA).

Viewing Platforms and Interpretive Signage

The viewing platforms and interpretive sign areas of the project may consist of either low-profile landscaped areas or raised deck platforms comprised of either steel, asphalt concrete, concrete, wood or crushed rock. Each platform/sign area may include interpretive signs, benches, trash receptacles, railings and/or landscaping. These areas would encourage an appreciation of the environment and the socio-cultural history of the area by providing opportunities for nature and cultural study. The opportunities include providing up-close views of local vegetation/habitats, mid-range views of Eureka Slough/Humboldt Bay, long-range views of the surrounding ridge lines, and interpretive signs that include information regarding local habitats and cultural/historical sites. Specific locations for viewing platforms and interpretive signage will be determined later in the design process.

Directional/Wayfinding Signage

Directional/Wayfinding signage would be installed at regular intervals to inform trail users of nearby connections to surface streets and nearby destinations.

Trailheads

The project is primarily situated within the interior of the Arcata-Eureka transportation corridor and is fundamentally designed to connect existing trail segments located within the two cities. Currently the project does not propose new trailheads, and envisions that users will access the new trail segment from the interconnecting trail segments in Eureka or Arcata. Opportunities for new trailheads will be evaluated as the project design progresses. The trailheads could include new or refurbished parking spaces, interpretive signs, gateway signage, kiosks, benches, trash receptacles, and/or landscaping.

California Redwood Company Area/Levee Trail (Segment 5 and 6)

Approximately 1.1 miles of the proposed trail alignment follows the outer perimeter levee surrounding the CRC. The existing levee varies in width from 12 to more than 30 feet wide and averages approximately 10 feet higher than the adjacent Humboldt Bay mud flats. The standard trail section would be maintained along the levee but may include additional fencing and/or slope/drop-off protection. In general, the trail elevation is proposed to be very similar to that of the existing levee; however, the elevation profile would vary as needed to comply with the standards and other design elements. Portions of the levee which are narrow or low in elevation, may need additional embankment construction to widen and/or raise the elevation of the trail. Sections may also require reinforced steepened slopes or short retaining systems (e.g. gabion walls) to reduce necessary embankment fill. If widening is necessary, it would generally occur on the inboard CRC side of the levee rather than towards Humboldt Bay. The additional embankment would be added along the inside slope at an approximate 1.5:1 slope. In most cases, the added embankment would result in fill into the inboard ditch/wetlands. Where this occurs, the inboard ditch would be reconstructed to provide for the necessary capacity and to also mitigate onsite for wetlands impacts associated with

inboard ditch. The CRC portion of the trail is proposed to be connected to the adjacent trail sections (on both ends) by bridges crossing the mud flats or salt marsh and provide a smooth transition back to the main trail alignment located between the railroad tracks and highway. The bridges are described in more detail below.

Eureka Slough Crossing (Segment 2 and 3)

Currently, Highway 101 crosses the Eureka Slough, but does not include bike or pedestrian facilities. The highway's bridge structures (northbound and southbound bridges) are planned to be replaced and reconstructed in the future; however, no specific dates have been determined. Caltrans staff have indicated a replacement highway bridge across Eureka Slough would include bike and pedestrian facilities, but until that time, an alternate route would be required.

Approximately 700 feet to the northwest of the Highway 101 Eureka Slough Bridge crossing is a railroad bridge owned by the NCRA. The bridge is currently unused as there is no rail service within the area. If rail service were to resume, significant maintenance and/or improvements would be required as the condition of portions of the tracks approaching the bridge are not to current standards for rail traffic.

The proposed trail across Eureka Slough would make use of the existing railroad bridge by modifying the structure to accommodate the trail. One option utilizes the existing deck by installing an asphalt, concrete or a wooden surface over the existing bridge surface and on top of the rails. Another option would be to install an asphalt, concrete, wooden or pre-manufactured surface up to the level of the rails that allows for cooperative use with trains. Some of the existing cross ties may require replacement or an anti-fungal treatment to extend their useful life. Both options would include new safety railing and minor cosmetic improvements to the bridge's appearance, such as painting over graffiti. During construction, protection measures would be implemented to prevent construction debris and other materials from falling from the bridge and entering the waterway below.

In the future, when Caltrans replaces the southbound Highway 101 bridge structure with one that includes accommodations for bikes and pedestrians, the trail (Segments 2 and 3) would be rerouted to utilize the new Highway 101 bridge structure. After crossing the Highway 101 bridge, the future trail would continue along the highway until it connects with the trail (Segment 4) approximately 1,000 linear feet to the north. At that time, access across the railroad bridge would likely discontinue and any un-needed trail improvements could be removed. The future Eureka Slough crossing on Highway 101, connection route to and from the bridge, and the deconstruction of the trail improvements on the railroad bridge are not analyzed in this Initial Study.

Brainard Slough Crossing (Segment 9)

Brainard Slough is formed from the Washington Gulch and Rocky Gulch drainages, the confluence of which is on the east side of the freeway before crossing under Highway 101 via a single reinforced box culvert, then under the tracks via two 48-inch corrugated metal pipe culverts which are significantly damaged and do not currently function. A new trail crossing would require the two existing 48-inch pipe culverts be removed and a bridge structure be added for the trail.

The bridge structure would need to be approximately 120 feet in length. The bridge would consist of a single-span, pre-manufactured structural section comprised of steel, aluminum, fiberglass or concrete. The bridge would be supported on each end with abutments (including wingwalls) supported by up to five 18-inch diameter cast-in-steel-shell (CISS) piles on each end. Up to 10 piles would be installed to a depth of up to approximately 100 feet below ground surface (bgs) and approximately 10 to 15 feet from Humboldt Bay water extents during periods of low tide. The steel

shells would be installed outside the active channel using a vibratory pile driver (American Pile driving Equipment Model 200 or similar), which would utilize a vegetable based non-toxic hydraulic oil in case of a hydraulic leak in or near Humboldt Bay. Each steel shell would be proofed by driving its final 5 feet by a conventional impact hammer pile driver to achieve design tip elevation and verify load capacity. No pile driving would occur in water, as installation would occur during low tides.

The existing failed culverts and debris (including timber ties, supports and rock) would be removed, the remaining rail embankment regraded (as-needed) and rip-rap installed (including on the bay side) to stabilize the embankment/shoreline and reduce the potential for ongoing erosion.

Prior to completing the final design, the County would complete a geotechnical analysis to determine the bearing capacity of the soils and to verify if piles are necessary. The geotechnical analysis would be used to verify the target depths of the piles.

CRC Bridge Structures (Segment 5 and 6)

Two bridge structures are proposed at the north and south extents of the CRC property for trail portions that cross tidally influenced waters. The bridges would be at least 10-feet wide between railings and would be constructed with pre-manufactured wood, fiberglass, steel, aluminum, or concrete materials.

The northern CRC bridge is anticipated to be a three-span pre-manufactured bridge supported with four piers (one on each end and two within the mid-sections located in Humboldt Bay). The bridge would have a total length of approximately 200 feet. Each pier is anticipated to be comprised of up to five 18-inch diameter CISS piles. Like the bridge structure proposed for the Brainard Slough crossing, the steel shells would be installed to a depth of approximately 100 feet bgs and installed using the same vibratory pile driver method followed by impact hammer proofing. In order to provide access for cranes, temporary sheet piles and washed coarse-grained aggregate fill would be used to construct temporary access road and landings. The sheet piles would be installed approximately 30 feet bgs (vibrated in without impact proofing), and the aggregate fill would be encapsulated in geotextile fabric to separate native and fill soils. Water bladders may also be used to construct a coffer dam to isolate the work area from the bay and tidal waters. Isolating the work area with water bladders would allow for work within the bay to be expedited as work would not be restricted to periods of low tides only. The coffer dam would also reduce the likelihood of construction generated sediment from entering the bay, and reduce the possibility of fish entrapment. Following the installation of the bridges, the temporary access road, including the sheet piles, aggregate fill and geotextiles, would be removed, and existing ground surface (bay mud) smoothed out to the extent practical. The northern CRC bridge is necessary to avoid conflicts with an existing building.

The southern CRC bridge would be a single span pre-manufactured bridge approximately 80 feet in length. Like the Brainard Slough bridge, the southern CRC bridge is anticipated to be supported on each end with abutments and up to four 18-inch diameter CISS piles approximately 100 feet deep. The piles would be installed in the same manner and using the same equipment as the northern CRC bridge. The southern CRC bridge is intended to improve the geometry of the trail alignment by reducing the radius of curvature for turns at this location. The southern CRC bridge is optional and could be eliminated during subsequent design refinements.

Prior to completing the final design, the County would complete a geotechnical analysis to determine the bearing capacity of the soils and to verify if piles are necessary. The geotechnical analysis would be used to verify the target depths of the piles.

There have been some opinions expressed regarding the shininess of the new aluminum bridges installed as part of the Eureka Waterfront Trail and Arcata's Humboldt Bay Trail North. A study will be prepared in early 2018 to identify the bridge types that are suitable and that could be considered for the Humboldt Bay Trial South project. During bridge type selection, the County will consider the feedback received on adjacent trail projects as well as the potential benefits of consistency with the existing structures.

Retaining Structures

Retaining structures may be used at each end of the bridges (abutment wing-walls) and also along the segment of the trail beginning at the northwest corner of the CRC property and extending north-westerly for a distance of approximately 2,700 linear feet (Segment 7). The segment of trail north of CRC would be located between the railroad and the Highway 101 corridor, either directly adjacent to the railroad, or directly adjacent to the highway (behind the existing metal beam guardrail). A retaining wall structure may be required in order to maintain minimum setbacks from the NCRA tracks or Highway 101 (depending on the alignment) while limiting encroachment into the existing drainage ditch which is located between the railroad and highway. The structure may consist of cast-in-place concrete or soldier pile retaining wall. If soldier pile retaining wall is used, 30 to 40-foot tall reinforced concrete or steel soldier piles would be driven at six to eight foot intervals and approximately 22 to 34 feet bgs leaving approximately six to eight feet exposed above the ground surface. The soldier piles would be impact driven using the same (or similar) pile driver that would be used for proofing the CISS pilings. Lagging (concrete or treated timber) would be used to retain the backfill. It is anticipated that the soldier piles (approximately 340 total) would require 100 blows per pile. The top of the retaining structures would not exceed the elevation of the railroad and the height to the ground surface is expected to be six feet or less. For safety purposes, the retaining structure would include railings.

Eucalyptus Tree Removal (Segment 7)

A group of existing eucalyptus trees of varying age and size located along the edge of Highway 101 and railroad prism north of the CRC property would need to be removed as part of the project. Removal of the eucalyptus trees is needed to accommodate the trail. The tree removal area extends for approximately 2,500 feet (0.5 miles) and includes approximately 219 eucalyptus trees that are 8 inches in diameter or greater in addition to smaller trees and saplings. Some trees are in direct conflict with the trail alignment and all pose a safety hazard to trail users (falling debris and ground litter). Removal of the trees would also open up views looking west towards the bay. The trees would be limbed and trunks rigged, felled and lowered in sections (sectional felling). Tree stumps would be removed to the extent feasible through excavating, grinding or other means, with remaining stumps and root systems treated with an herbicide (glyphosate, triclopyr or similar) to prevent regrowth. Required equipment and workers would access the trees from both the highway and railroad side. The removal operation would likely require the closure of one or more lanes of Highway 101. The existing metal beam guardrail adjacent to the trees would likely be replaced because removal of the trees is expected to damage the guard rail system. The project would also remove all eucalyptus saplings in the vicinity of the trail (generally between the highway and railroad).

Shoreline Protection (Segments 4, 7, 8 and 9)

As previously discussed, the project includes localized shoreline improvements at the Brainard Slough crossing. In addition to Brainard Slough, there are multiple areas along the project extents where the existing railroad fill prism has deteriorated and shows significant signs of erosion as a result of wave action from Humboldt Bay. The area between CRC and Bracut is generally in the worst

condition, with more isolated areas of deterioration between Eureka Slough and CRC. In order to help protect the trail prism from future erosion and damage, sections of the rail prism would be repaired by placing ballast rock and portions of the revetment would be repaired and/or supplemented with additional rock rip-rap. The shoreline protection along the bay side (the western side of the railroad prism), would be limited (horizontally) to the bay-ward extent of the existing rip-rap. No additional encroachment beyond the toe of existing rock armoring is proposed.

Approximately 500 linear feet of existing shoreline revetment would be repaired with rip-rap and ballast rock. Work would include temporarily removing the railroad ties and rails, placing additional ballast rock, and resetting the ties and rails on the ballast.

Approximately 5,000 linear feet of shoreline would receive supplemental ballast rock infill and surface applied rip-rap placed directly adjacent to the railroad ties on the bay side to improve and protect the shoreline from wind and wave action. Additional surface stabilization rock armoring is anticipated along the highway side of the trail prism to protect against wave over wash and surface erosion. The stabilization rock would be smaller in size as compared to the shoreline rip-rap.

Striping and Vehicle Control

The trail would include a centerline stripe to delineate the two bi-directional lanes. Standard trail-related traffic-control signage would be installed in order to comply with Class I standards and MUTCD requirements. At locations where the trail intersects a vehicular roadway, bollards or similar control features would be installed to prevent motorized vehicles from entering the trail. Authorized personnel (e.g. police, emergency-responders, County/City maintenance crews, etc.) would be able to remove the bollards and temporarily access some portions of the trail with motorized vehicles.

Drainage Improvements

The trail would typically have a two percent or less cross slope to allow surface water to flow off of the trail surface. When the trail is directly adjacent to either the railroad or the highway facilities, the cross slope of the trail would be away from the railroad/highway in order to convey runoff towards existing or new drainage facilities. In locations where the existing drainage ditches are in close proximity to the proposed trail alignment, culverts may need to be extended or added. Similarly, in cases where the trail's fill prism encroaches into the existing drainage ditch to the extent it causes a reduction in capacity, the drainage ditch may need to be reconstructed at approximately the same grade and depth, but at a location (horizontally) offset from the original position.

Barriers and Fencing

Safety railing and fencing is proposed along retaining walls, viewing platforms, the CRC levee, on bridges, at the Bracut driveway, and at the edge of the trail when adjacent to steep embankments. Security fencing and gates may be needed at the CRC mill site and Bracut Industrial Park. The railing and fencing would be constructed from wood or metal material, and may include chain link, cable, or picket style fencing. During railing type selection, the County will consider feedback received on adjacent trail projects as well as potential benefits of consistency with existing structures.

High-tension cable barriers and metal beam guard rail would be utilized between Highway 101 and the trail to protect trail users from errant vehicles. Barriers are required by design standards when the trail is located within the highway's 30 foot clear recovery zone. The proposed project includes cable barriers in certain locations where the trail is outside the clear recovery zone as a discretionary action to enhance trail and highway safety. The cable barrier would be installed along portions of the proposed Humboldt Bay Trail South project as well as the existing Humboldt Bay Trail North project.

The high-tension cable barrier would be set back approximately 10 feet from the edge of trail and approximately 8 to 12 feet from the edge of the highway shoulder. The cable barrier consists of steel wire ropes (typically 4 strands) mounted on steel posts secured in concrete foundations. An approximately two-foot wide concrete weed mat would be constructed along the length of the cable barrier. Image 1-1 shows a typical cable barrier along a highway.

Image 1-1 – Typical Cable Barrier Fencing

Where the trail is less than 10 feet from the edge of the highway shoulder, a metal beam guard rail or other positive barrier would be required. In this situation the trail would be located approximately 3 feet behind the metal beam guard rail wood posts. A weed control mat would be installed along the length of the barrier to control vegetation.

Billboard Removal (Segment 7 and 8)

There are four billboards in the vicinity of the project, all of which are situated on private property. Three of the billboards are located outside the project study area on the bay side of the railroad prism. One of the billboards is located within the project study area between the highway and railroad. Depending on the final trail alignment, the trail may narrowly avoid this billboard, or it could be in conflict and require the billboard be removed or relocated. To prepare for this contingency, this Initial Study analyzes the potential removal of the billboard situated on the railroad prism.

1.4.2 Project Construction

Construction Schedule

Construction of the project is expected to begin in late spring and require approximately six months to complete. Vegetation clearing would occur during the non-bird nesting season, between August 16th and March 14th. Anticipated daytime work hours are 7:00 a.m. to 7:00 p.m., Monday through Friday with occasional work on Saturdays. Construction on Sunday or legal and County holidays is not currently anticipated except for emergencies or with prior approval from the County of Humboldt.

Construction Staging, Activities, and Equipment

Construction staging areas would occur within the mapped portion of the project study boundary, within paved or graveled areas, or with designated, previously disturbed corporation yards. Construction would primarily include removal of trees and vegetation, excavation and grading, bridge foundation construction and pre-manufactured bridge assembly and installation, trail paving, fencing/railing, and signage, along various segments of the project alignment. All construction activities would be accompanied by both temporary and permanent erosion and sediment control best management practices (BMPs).

Trail construction would include the following activities:

- Clearing and Grubbing – To clear trees, vegetation and topsoil from the proposed trail footprint
- Excavation – Primarily at bridge approaches with other shallow excavations to maintain trail grades
- Embankment – Fill to maintain trail grades through low areas
- Retaining Walls – To limit encroachment into drainage ditches
- Aggregate Base – For trail shoulders and to support asphalt paving
- Asphaltic Concrete Paving – For trail surface
- Fencing/Barriers/Bollards
- Trail striping and signage

Pre-manufactured Bridge Assembly and Placement would include the following activities:

- Excavation – For the abutment foundations (maximum depth of six feet below existing grade)
- Aggregate Base – For structure foundations
- Abutments and Footings – Cast-in-place concrete to support pre-manufactured bridges
- Piles – Reinforced concrete in steel shell to support pre-manufactured bridges
- Bridge assembly in stating area
- Placement/Installation – Set pre-manufactured bridge on abutments
- Railing Installation
- Rock Slope Protection – To protect abutments and prisms

Equipment required for trail construction would include: tracked excavators, backhoes, graders, bulldozers, dump trucks, rollers, paving machines, cranes, water trucks, drill rigs, pile drivers and pick-up trucks. Equipment required for pre-manufactured bridge assembly and placement would include excavators and cranes.

Construction access would be to and from the staging areas identified below. Roadways that would be utilized for construction access and the staging areas include Highway 101, the entrance into CRC and the entrance into Bracut Industrial Park.

It is not anticipated that any temporary utility extensions, such as electric power or water, would be required for construction.

Construction Access and Hauling Traffic

The anticipated haul truck routes to the project area include Highway 101 from the north and south. The number of construction-related vehicles traveling to and from project area would vary on a daily basis. It is anticipated that up to 40 haul truck round trips would occur on a peak day. In addition, it is anticipated that construction crew trips would require up to eight round trips per day. Therefore, for the purposes of analysis, on any one day during construction, up to 48 vehicle round trips could occur.

Traffic Control Plan

In accordance with jurisdictional requirements, the construction contractor would be required to obtain an encroachment permit from Caltrans prior to beginning the work along Highway 101. As part of the encroachment permit process, the construction contractor would be required to prepare a traffic control plan for review and acceptance of planned work within the public right-of-way. The development and implementation of a traffic control plan would include, but not necessarily be limited to: temporary traffic control systems, delineators, signs, and flaggers conforming to the current California Manual of Uniform Traffic Control Devices.

Groundwater Dewatering

Excavation into groundwater and dewatering is anticipated. Temporary groundwater dewatering would be conducted to provide a dry work area. Dewatering would involve pumping water out of a trench or excavation. Groundwater would be pumped to settling tanks (Baker tanks or similar) or into dewatering bags. Following the settling process provided by a tank or filter, the water would be used for dust control and compaction. Water from settling tanks or dewatering bags would be to applied to upland areas, away from wetlands and other water bodies, or discharged to nearest sanitary or stormwater system.

Site Restoration and Demobilization

Following construction, the contractor would demobilize and remove equipment, supplies, and construction wastes. The disturbed areas along the project alignment would be restored to pre-construction conditions or stabilized with a combination of grass seed (broadcast or hydroseed), straw mulch, rolled erosion control fabric, rock, and other plantings/vegetation.

Air Quality Construction Control Measures

The following air quality emission construction measures would be included in the construction specifications for the project:

1. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas and unpaved access roads) shall be watered as necessary during dusty conditions.
2. All haul trucks transporting soil, sand, or other loose material on- or off-site shall be covered or should maintain at least 6 inches of freeboard (i.e., minimum vertical distance between top of load and the trailer).
3. Soil stockpiles shall also be surrounded by silt fencing, straw wattles, or other sediment barriers prior any forecasted rain event.
4. Equipment or manual watering shall be conducted on all stockpiles, dirt/gravel roads, and exposed or disturbed soil surfaces, as necessary, to reduce airborne dust.
5. Paved access roads and parking areas shall be swept daily.
6. All visible mud or dirt tracked-out onto adjacent public roads shall be removed.
7. All vehicle speeds on unpaved areas shall be limited to 15 miles per hour.
8. All paving shall be completed as soon as possible.

1.4.3 Maintenance and Operation

The trail would be used for non-motorized transportation and recreation, including but not limited to walking, bicycling, running, skateboarding, roller skating, dog-walking and nature study.

Following construction, general trail operation and maintenance activities associated with the proposed trail would include annual inspections, trash/debris removal, vegetation management, repaving, and painting. In the event of storm damage, more significant repairs to the trail facilities and shoreline may be needed on occasion.

Typical routine operation and maintenance of the project would generate less than one traffic trip per week on average with motorized access limited to light maintenance and emergency service vehicles. Access would be gained at trail/roadway crossings equipped with secured, but removable bollards to prevent unintended vehicular access.

For larger repairs to damaged trail facilities or to the shoreline, larger construction equipment would be needed which may include backhoes, excavators, loaders, dump trucks, or pavers. Larger repairs to the trail or shoreline may take several weeks to complete depending on the extent of damage and other circumstances.

1.5 Project Technical Studies

The following technical studies have been completed for the project, are currently under preparation, or will be completed in the near future. The project includes federal funding and several of the studies listed below are associated with the required analysis and documentation under the National Environmental Policy Act (NEPA).

- Project Study Report – Completed March 2014
- Basis of Design Report for Trail Width – Completed March 2016
- Topography and Right of Way Surveys – Completed April 2017
- Preliminary Environmental Study – Completed July 2017
- Mapping of Environmentally Sensitive Habitat Areas – Completed November 2017
- Initial Site Assessment – Completed November 2017
- Rare Plant Survey - Completed November 2017
- Wetland Delineation - Completed December 2017
- Archaeological Survey Report – Draft completed December 2017
- Historic Property Survey Report – Draft completed December 2017
- Historical Resources Evaluation Report – Completed January 2018
- Natural Environment Study – Draft completed February 2018
- Visual Impact Assessment – Draft completed February 2018
- Biological Assessment (federal) – Draft completed February 2018
- Sea Level Rise Vulnerability and Adaptation Report – Under preparation
- Geotechnical Investigation – Under preparation
- Location Hydraulic Study – Under preparation
- Summary Floodplain Encroachment Report – Under preparation
- Drainage Study – Under preparation
- Stormwater Data Report - Under preparation
- Stormwater Pollution Prevention Plan – Under preparation
- Preliminary Design – Under preparation

1.6 Required Permits and/or Approvals

The project would require approval by the County of Humboldt Board of Supervisors, through adoption of this CEQA environmental study and future approval of the construction plans and

specifications. Several additional agencies would also be involved in the consideration of portions of the project. Federal, State and local approvals that may be required for the project are listed below. The anticipated submittal date for each is August 2018 and the goal is to achieve agency approval by August 2019.

- Caltrans: Encroachment Permit
- California Coastal Commission: Coastal Development Permit
- U.S. Army Corps of Engineers and Section 7 Consultation: Individual Permit and 404(b)(1) Alternatives Analysis
- U.S. Fish and Wildlife Service/National Marine Fisheries Service: Biological Opinion and Letter of Concurrence
- North Coast Regional Water Quality Control Board: Section 401 Water Quality Certification
- California Department of Fish and Wildlife: Section 1602 Notification of Lake or Streambed Alteration
- Humboldt Bay Harbor, Recreation and Conservation District: Development Permit.

1.7 Project Phasing

The project includes elements which are discretionary or which could be implemented separately from the core work of constructing the trail. Certain elements may be implemented before or after the trail construction, based on available funding and/or the readiness of the elements. Elements which may be implemented in phases (prior or after the construction of the trail) include, but are not limited to, the following:

- Eucalyptus tree removal
- Cable barrier installation
- Shoreline revetment and embankment repairs and improvements
- Billboard removal
- Painting NCRA's Eureka Slough Bridge
- Trail heads, viewing platforms and trail amenities

1.8 Wetland Mitigation

Due to topographic constraints and the presence of existing facilities within the project area, it is unavoidable that wetlands would be impacted from construction of the proposal trail. Impacts to wetlands are discussed in Section 3.4. The majority of the impacted wetlands are associated with the existing drainage ditch between Highway 101 and the railroad prism. A conservative estimate is approximately 5.65 acres of three-parameter wetlands would be permanently impacted and 1.78 acres temporarily impacted. In addition, approximately 0.13 acres of 1-parameter wetlands would be permanently impacted and 0.30 acres temporarily impacted. The wetland areas impacted include both estuarine and palustrine types. While some wetlands impacts are unavoidable, reduction of wetland impacts to the greatest extent feasible will continue to be a primary design objective as the design and engineering phases progress.

Impacts to wetlands are considered a potentially significant impact; therefore, the County will implement mitigation measures to ensure that the impacts are less than significant. The mitigation approach will be consistent with similar projects and comply with the requirements of the forthcoming environmental permits, including a commitment to no net loss of wetlands.

The proposed wetland mitigation strategy for the project includes a combination of on-site wetland creation and rehabilitation and off-site compensatory mitigation. Where appropriate, the project would

include on-site creation of wetlands associated with reconstruction and/or widening of the adjacent drainage ditch, concurrent with construction of the project. Temporary impacts to wetlands would be restored through disking (or other soil preparation techniques) and re-seeded with native plant species. In addition, the County is collaborating with Caltrans and HCAOG on the funding, planning, design, and permitting of a wetland mitigation project located on a property acquired by Caltrans in 2010 near Lanphere Dunes in the Arcata Bottoms (the "Lanphere Parcel"). Caltrans is leading this project to compensate for impacts from the Eureka-Arcata U.S. Route 101 Corridor Improvement Project and other transportation projects around Humboldt Bay. The goal is to create the wetlands on the Lanphere Parcel prior to, or concurrent with, construction of the Corridor Improvement Project. In 2016, Caltrans committed to create 2.26 acres of wetlands on the Lanphere Parcel to support the City of Arcata's wetland mitigation obligations for the Humboldt Bay Trail North project. Technical studies are currently in progress to identify the total area of wetland creation and to determine whether the Lanphere Parcel has sufficient capacity to fully compensate for all wetland impacts associated with the Humboldt Bay Trail South project. This determination is expected by the end of 2018. This determination will be made in coordination with the permitting agencies (Coastal Commission, U.S. Army Corps of Engineers, North Coast Regional Water Quality Control Board) regarding appropriate mitigation ratios. The mitigation ratio will depend on a variety of factors include wetland type and whether there is temporal loss of wetlands. If the Lanphere Parcel does not have sufficient capacity to fully compensate for the project's wetland impacts, then the County would identify an alternative site and develop a specific plan for that property to create the necessary wetland amount, to ensure no net loss from the project. The County will develop a Wetlands Mitigation and Monitoring Plan when the mitigation site (or sites) is established. Permitting agencies will require this plan prior to permit issuance.

1.9 Climate Change, Sea Level Rise, and Adaptation Strategy

The trail project will not significantly contribute to climate change and sea level rise through greenhouse gas emissions (Section 3.7). However, the project is located along the edge of Humboldt Bay, which is subject to the effects of climate change and sea level rise. A Sea Level Rise Vulnerability and Adaptation Report (ESA, in prep.) is currently being developed to analyze coastal hazards and identify potential adaptation strategies. This report will include the following components:

1. Establish the projected sea level rise range for the proposed project's planning horizon using the best available science.
2. Determine how physical impacts from sea level rise and climate change may constrain the project site, including erosion, structural and geologic stability, flooding, and inundation.
3. Consider the influence of future sea level rise and climate change upon trail infrastructure.
4. Consider initial design features to reduce near term sea level rise and climate change impacts and also consider longer term adaptation strategies that may be used over the lifetime of the project.

Sea level rise is caused by a number of factors including melting ice, increased ocean temperatures and thermal expansion, the compaction of previously diked and drained soils, and land subsidence caused by plate tectonics. Expected sea level rise rates have been forecasted through the development projections for Humboldt Bay published by NHE (2015) and based on State guidance from Ocean Protection Council (OPC) (2013). Based on these reports, the range of sea level rise considered for this project is approximately 1 to 3 feet by the year 2070. This will directly increase the still water elevation and total water level (still water elevation plus the effects of wave setup and

runup), which will be most extreme during King Tides, as well as during storm events which are also expected to occur more frequently.

Potential hazards to the trail itself from increases in sea level include possible wave spray, wave overtopping, trail overflow, and inundation. These forces could also cause deposition of debris on the trail and erosion of the trail prism. Sea level rise and climate change storm related impacts could also cause outboard shoreline erosion, and debris wash-up.

Addressing climate change and sea level rise scenarios are part of the context of developing projects along the coast. Therefore, the trail is being planned based on strategies for initial design, strategies for resiliency of ongoing operations and response to climate/tidal events, and strategies for long-term adaptation as sea level continues to rise in the future.

Strategies for Initial Design

Approximately 500 feet of existing shoreline will be strengthened by reconstructing approximately 500 feet of existing revetment, and installing supplemental ballast and surface applied rip-rap to the railroad prism on another 5,000 feet. In addition, for approximately 4,000 feet where the railroad prism is particularly low (Segment 4) between Eureka Slough and the CRC mill site, the trail finished grade will be raised to the approximate elevation of the adjacent highway.

In addition to shoreline improvements, the trail itself will include a durable asphalt surface, erosion control surface protections for the trail prism, drainage facilities, and other features to both resist damage from overtopping events, and to allow for cleaning and maintenance. Overtopping events will occur when the combination of sea level rise, tides, and weather effects drive the total water level above the shoreline elevation. Drainage features will be included to help quickly clear the trail of water as tides and storms subside.

Strategies for Resiliency of Ongoing Operations and Response to Climate/Tidal Events

During ongoing operations, the shoreline protecting the trail will be periodically inspected for damage. This will be especially important after storm events, when significant wave action and overtopping is most likely to occur and potentially cause erosion. Overtopping events are expected to initially occur relatively infrequently and only due to combinations of King Tides and storm events. However, as sea level rises and storm events become more frequent and severe, overtopping events are likely to become more common. Overtopping events would result in ponding water and potentially sediment on portions of the trail as well as potentially more significant damage in some areas. During such events, the trail may not be readily usable until the tide drops and/or the storm abates. However, during severe storm events that cause overtopping, it is unlikely there would be many users of the trail due to the severity of the weather and so user inconvenience is likely minimal. Post inundation inspections, cleaning, and maintenance should take place to maintain serviceability.

Strategies for Long-Term Adaptation

In the coming decades sea level is expected to continue to rise and the severity and frequency of storm events may continue to increase. Ultimately, this could result in more frequent overtopping, inundation, and erosion. At some point, the still water elevations may regularly inundate the trail at high tides unless adaptation measures are implemented. It is important to note that the trail is not a standalone piece of infrastructure. The corridor between Arcata and Eureka includes the railroad, Highway 101, public utilities, and many acres of protected developed and undeveloped land. There are numerous stakeholders throughout the corridor who could benefit from long-term adaptation based on a collaborative approach.

There are numerous adaptation strategies available to implement in the near- and long-term. One such strategy is the development of a Living Shoreline along the existing levees and the railroad prism. A Living Shoreline is created by augmenting the soils and plant communities within the tidal zone to help manage potential wave effects. Further strategies could include raising the railroad prism, levees, or trail to provide increased protection. In addition, the existing shoreline could be fortified with improved revetment or the implementation of biotechnical approaches such as turf reinforcement or timber crib walls. Since Highway 101 is subject to the effects of climate change and sea level rise, the State of California has a major stake in the resilience of the Eureka-Arcata transportation corridor, and Caltrans is expected to take a lead role in implementing an adaptation strategy for the corridor.

Any major adaptation strategy will take many years to implement and will need to be in place before sea level rise and climate change results in significant adverse effects on the infrastructure. Therefore, sea level rise and climate change should be part of ongoing planning and programming so adaptation projects can be implemented in a timely fashion.

Sea Level Rise Adaptation Plan for Humboldt Bay Transportation Infrastructure – Phase 1

Humboldt County and the City of Eureka are applying to the Fiscal Year 2018-19 Caltrans Adaptation Planning Grant Program for funding to develop a transportation infrastructure adaptation plan for an area that encompasses the Humboldt Bay Trail South Project, along with portions of Highway 101, county roads, city streets, NCRA railroad, and Murray Field Airport. Funding announcements are expected in the summer of 2018. If awarded, work could begin by the end of 2018. The plan would build a foundation for implementing multi-purpose adaptation projects to reduce the impacts and consequences of flooding hazards associated with sea level rise.

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2. Environmental Factors Potentially Affected

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

☐ Aesthetics	☒ Hazards & Hazardous Materials	☐ Recreation
☐ Agricultural & Forestry Resources	☐ Hydrology/Water Quality	☐ Transportation/Traffic
☐ Air Quality	☐ Land Use/Planning	☐ Tribal Cultural Resources
☒ Biological Resources	☐ Mineral Resources	☐ Utilities/Service Systems
☒ Cultural Resources	☐ Noise	☒ Mandatory Findings of Significance
☐ Geology/Soils	☐ Population/Housing	
☐ Greenhouse Gas Emissions	☐ Public Services	

DETERMINATION

(To be completed by the Lead Agency) On the basis of this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION would be prepared.

☒ I find that although the proposed project could have a significant effect on the environment, there would not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION would be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect: (1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect: (1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (2) has been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Hank Seaman — County of Humboldt Signature

2-14-2018 — Date

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3. Environmental Analysis

CEQA Guidelines Appendix G have been used to analyze potential project impacts throughout this ISMND. Significance thresholds have also been included where applicable to fine-tune the analysis to specific local regulations. Significance thresholds are not included for resource categories found to have no impact.

3.1 Aesthetics

	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a) Have a substantial adverse effect on a scenic vista?			✓	
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?				✓
c) Substantially degrade the existing visual character or quality of the site and its surroundings?			✓	
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?			✓	

Evaluation Criteria	Significance Thresholds	Sources
Would the project have a substantial adverse effect on a scenic vista?	Major alteration of a view from a scenic vista or major obstruction in viewed area towards a scenic vista	CEQA Guidelines Appendix G, Checklist Item I (a) Table A in Visual Resources Impact Assessment (Appendix B)
Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	Affect a scenic resource within 200 feet of a roadway designated as scenic by Caltrans	CEQA Guidelines Appendix G, Checklist Item I (b)
Would the project substantially degrade the existing visual character or quality of the site and its surroundings?	High visual contrast or change	CEQA Guidelines Appendix G, Checklist Item I (c) Table A in Visual Resources Impact Assessment (Appendix B)

Evaluation Criteria	Significance Thresholds	Sources
Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	Non-compliance with County General Plan Policy SR-S4	CEQA Guidelines Appendix G, Checklist Item I (d) General Plan Policy SR-S4

a) Have a substantial adverse effect on a scenic vista? (Less than Significant)

A draft Visual Resources Impact Assessment (VIA) was prepared for the project and is included as Appendix B (Stantec 2018). The Humboldt County General Plan identifies scenic resources as forested hillsides, working agricultural land, river corridors, and some coastal areas.

All proposed project components would be located on relatively flat land and would typically be at ground level (e.g., the Class I trail itself) or at a relatively low height (e.g., fencing and signage). Refer to Appendix B for images of existing conditions and visual simulations for the various project components (Images 1A through 12B). The three proposed new bridge structures including the Brainard Slough crossing and two crossings to the CRC levee (one at either end of the parcel) would affect the pattern elements (form, line, structure, texture, etc.) of the existing views, but the effect on visual resources and aesthetics would be less than significant. Neighbors (i.e., those persons working in offices and buildings near the north end of CRC) would be exposed to visual changes as a result of the bridge crossing extending from the trail corridor to the levee, and the addition of safety railings. Consideration for construction materials, color palettes, plantings, and use of open safety barrier design would buffer the appearance of project features on the landscape and the effect on viewers, in particular, commuters on Highway 101 who would have the greatest familiarity with the pre-project conditions. In addition, the use of cable safety barriers or rails as needed along the extent of the trail would be consistent with the existing safety features along Highway 101.

Visual impacts were determined in the VIA by assessing changes to the visual resources and predicting viewer response to those changes. These impacts can be beneficial or detrimental to the visual environment. The assessment of visual impacts also considers cumulative and temporary impacts associated with construction activities. Tables were used to assign numerical values to the existing visual resource and project-related changes, and the viewer's sensitivity to these changes. Numerical ratings range from -7.0 to +7.0 where -7.0 is high negative change and +7.0 is high positive change. Table A (Appendix B) provides a reference for comparing numerical ratings associated with changes to visual resources to a qualitative narrative rating, and significance level. Section 8.2 in the VIA (Appendix B) provides an analysis of visual resources impacts for each landscape unit along the project alignment. All impacts were determined to be either less than significant or result in a positive effect.

One billboard is located within the project area between the highway and railroad, and depending on the final trail alignment, the trail may narrowly avoid this billboard, or the potential exists for the trail to conflict with the billboard, which may result in its removal or relocation. The visual simulation (Image 8B in Appendix B) assumes the billboard would not be in conflict with the trail alignment and, therefore would remain. If the billboard is removed and eucalyptus trees removed, views of Humboldt Bay from Highway 101 would be broadened and scenic resources would be enhanced. There would be no impact to scenic vistas from removal of the billboard.

Two clusters of eucalyptus trees are situated along Highway 101 near the CRC mill site, separated by the entrance into the site. The southerly cluster extends for approximately 3,400 feet in front of the mill site; this cluster would not be affected by the project. The northerly cluster extends for

approximately 2,500 feet north of the mill site and would need to be removed as part of the project. This cluster includes approximately 219 eucalyptus trees that are eight inches in diameter or greater in addition to smaller trees and saplings. The trees would be limbed and trunks rigged, felled, and lowered in sections (i.e., sectional felling). Tree stumps would be removed to the extent feasible through excavating, grinding or other means, with remaining stumps and root systems treated with an herbicide to prevent regrowth. Required equipment and workers would access the trees from both the highway and railroad sides. The existing metal beam guardrail adjacent to the trees may be replaced following removal of the trees. The project would also remove all eucalyptus saplings in the vicinity of the trail (generally between the highway and railroad).

According to JRP Historical Consulting Services (2004), the eucalyptus trees were planted around 1920 at the time of Highway 101 construction as a beautification effort. These trees provide a vertical element and rich texture to the existing view. Other non-native vegetation has established itself along the proposed trail corridor, adding to the visual obstructions for the view from Highway 101. Neighbors and commuters are the viewer group having the most familiarity of this view, so they would be the most affected by the proposed removal of these trees. Per the VIA (Appendix B), removal of the trees would change the visual character of the view by allowing for unobstructed views of the coastal plain and Humboldt Bay previously obstructed by the presence of the trees. The pattern elements of form, line, color, and texture associated with the towering stand of eucalyptus would be replaced by the new trail prism that would be supported by a conspicuous retaining wall that would be exposed to the Highway 101 corridor. Removal of the stand of eucalyptus trees would also partially expose the CRC buildings, making them a dominant, unnatural feature, potentially distracting from the adjacent bay. Recreationists using the trail would be fully exposed to the visual quality of the Highway 101 corridor to the east, which would be in sharp contrast to the presence of Humboldt Bay immediately to the west.

Although the eucalyptus were purposely planted and are not native to the area, their presence along the coastline provides a higher level of unity and intactness than would exist as a result of their removal. Replacement of trees by a human-made feature (trail) would change the pattern elements associated with this view. Vertical lines would be replaced by the horizontal trail alignment, and the dynamic color and texture of the trees would be replaced by the monochromatic trail features; however, railing materials, color, and scale would affect the visual impact. Railings, fencing, and other barriers used throughout the trail alignment for safety may partially obstruct views of areas outside of the trail and conversely, views of the trail afforded motorists on Highway 101. The overall aesthetic quality would be lessened along this trail segment. However, views of Humboldt Bay would be increased for travelers on Highway 101 as well as landward views from the bay and curving coastline to the north and south. Overall, project-related impacts on the visual environment per the VIA (Appendix B) would be negative at a moderately low significance level.

Removal of approximately 40% of the total eucalyptus stand that currently line Highway 101 would be arguably the most noticeable change to the visual character of the Humboldt Bay Trail. Not only would their removal change the existing views along the Highway 101 corridor, but it would also change the visual character of the skyline as viewed from distant neighbors and as reference by pilots using the nearby Murray Field Airport. These trees are considered by some in the community to be an important local landmark, with a history reaching back approximately 80 years, although they are not eligible for listing on the National Register of Historic Places or the California Register of Historic Resources (JRP, 2004; JRP, 2018). The majority of the eucalyptus trees near the CRC mill site will not be affected by the project. This remaining cluster of trees is situated closer to the airport than the cluster to be removed, and will continue to provide visual screening for the mill site. The remaining eucalyptus trees will continue to serve as a landmark and dominant skyline feature.

Neighbors and commuters using Highway 101 (i.e., those most familiar with the existing view) would be the most affected viewer groups. There is currently not a trail in the affected area, thus the effect of changes in the visual character of this proposed trail segment on future trail users cannot be qualified since there is not an established existing view for this viewer group. Removal of the eucalyptus trees would open up views of Arcata Bay from Highway 101 as well as to neighbors; however, the use of railings, fencing, and barriers that may be used to ensure public safety along the affected segment may be considered by some to be an unnatural obstruction on the landscape, reducing the intactness of the view. Unity would be reduced because the eucalyptus trees were a compatible visual intrusion and were harmonious with other visual components. However, harmonious elements like native landscaping treatments would also be included. The impact is less than significant.

The project would result in minor changes to the appearance of the existing ROW between Highway 101 and Humboldt Bay, but would not diminish views of Humboldt Bay on the landward side or of the coastal mountain from the bay. Therefore, the project would not impact views of Humboldt Bay or scenic vistas after construction, and construction activities would be temporary and only visual in the immediate vicinity. The impact on scenic vistas would be less than significant.

b) Substantially damage scenic resources within a state scenic highway? (Less than Significant)

Based on California Scenic Highway Mapping System information no designated state scenic highways are found adjacent to or within view of the project alignment (Caltrans 2011). There are no officially designated State Scenic Highways within Humboldt County, although Highway 101 for its entire length in Humboldt County has been identified by the State Scenic Highway Mapping System as eligible for state listing. The project alignment is visible from Highway 101; however, due to the fact that Highway 101 is not a designated state scenic highway, there would be no impact to a state scenic highway. There would be no impact to a scenic resource within a state scenic highway.

c) Have an adverse effect on visual character or quality? (Less than Significant)

The project is expected to improve the scenic quality/character of the area by installation of a Class I multi-purpose trail which would attract multiple trail user groups to the area, deterring littering and other potential nuisance activities along the Highway 101 corridor.

Temporary adverse visual impacts may occur from construction activities associated with the project. This impact would be short-term (approximately six months of construction) and less than significant. In the long-term the existing visual character along the project alignment would improve for the reasons mentioned above.

The project would be compatible with the existing visual character of the proposed project alignment and its surroundings, and would not introduce any elements that would degrade existing visual character or quality. The addition of project components such as a multi-use trail, fencing, retaining walls, and rock slope protection would have a low profile and occur in a manner consistent with the existing aesthetic of the surrounding area. The impact is less than significant.

d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area? (Less than Significant)

The completed project includes use of nighttime safety lighting at locations where the trail would intersect roadways, such as at the Bracut driveway/intersection. While this would be a new source of nighttime lighting, low-level, low-glare lighting will be used. The potential for glare from headlights

(including bicycle lights), the expanded trail surface, directional and informational signs, would be consistent with existing conditions along the Highway 101 corridor and surrounding areas and would not be significant. Nighttime views of the project area would be limited to artificial light from outside sources such as bicycle lights and road crossings. Adherence to the lighting design features described in the project description would ensure that impacts resulting from project-related light sources remain less than significant.

3.2 Agriculture and Forest Resources

	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?				✓
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?				✓
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?				✓
d) Result in the loss of forest land or conversion of forest land to non-forest use?				✓
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?				✓

a, b, c, d, e) Convert farmland or forest land or conflict with existing zoning for agricultural use or a Williamson Act contract? (No Impact)

The project study area has no Important Farmlands as mapped by the Farmland Mapping and Monitoring Program of the California Department of Conservation (CDOC 2016). There is no land in agricultural production, land zoned for agricultural use, land designated (General Plan Land Use) for agriculture use, or land under Williamson Act contract within the project alignment (Humboldt County 2017).

There is land designated Agriculture Exclusive on the east and south side of Highway 101; however, the proposed project would have no impact on these lands. There is no forest land or timber harvesting in the project vicinity, nor are there lands suitable for timber harvesting; therefore, the project would not encroach upon or affect timber harvesting, or cause the rezoning of forest land. No impact would occur.

3.3 Air Quality

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

Evaluation Criteria	Significance Thresholds	Sources
Would the project conflict with or obstruct implementation of the applicable air quality plan?	Compliance with NCUAQMD Rule 104 – Prohibitions, Subsection D (Fugitive Dust Emissions)	CEQA Guidelines Appendix G, Checklist Item III (a) NCUAQMD Rules and Regulations
Would the project violate any air quality standard or contribute substantially to any existing or projected air quality violation?	Compliance with BAAQMD-recommends “Basic Construction Measures” to reduce emissions of construction-generated PM10	CEQA Guidelines Appendix G, Checklist Items III (b) BAAQMD 2017 CEQA Air Quality Guidelines

Evaluation Criteria	Significance Thresholds	Sources
Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	Exceed NCUAQMD Rule 110 – New Source Review & Prevention of Significant Deterioration Section E, Best Available Control Technology, Table 1.0 Significance Thresholds	CEQA Guidelines Appendix G, Checklist Items III (c) NCUAQMD Rule and Regulations, Rule 110 - New Source Review (NSR) & Prevention of Significant Deterioration (PSD), Section E.1 – BACT NCUAQMD Air Quality Planning & CEQA: Environmental Review Guidelines (NCUAQMD 2018a)
Would the project expose sensitive receptors to substantial pollutant concentrations?	Exceed NCUAQMD NCUAQMD Rule 110 –NSR & PSD Section E, Best Available Control Technology , Table 1.0 Significance Thresholds	CEQA Guidelines Appendix G, Checklist Item III (d) NCUAQMD Rule and Regulations, Rule 110 - NSR & PSD, Section E.1 - BACT
Would the project create objectionable odors affecting a substantial number of people?	Creation of a new substantial odor source near existing sensitive receptors	CEQA Guidelines Appendix G, Checklist Item III (e)

a) Conflict with or obstruct implementation of the applicable air quality plan? (No Impact)

This impact relates to consistency with an adopted attainment plan. The North Coast Unified Air Quality Management District (NCUAQMD) is responsible for monitoring and enforcing local, state, and federal air quality standards. The U.S. Environmental Protection Agency (EPA) sets the National Ambient Air Quality Standards for the following six 'criteria' air pollutants: ozone, particulate matter (PM_{10} and $PM_{2.5}$), nitrogen dioxide, carbon monoxide, lead, and sulfur dioxide. The California Air Resources Board (ARB) administers the California Ambient Air Quality Standards, which include the six criteria pollutants listed above as well as visibility-reducing particulates, hydrogen sulfide, sulfates, and vinyl chloride.

Humboldt County is designated 'attainment' for all National Ambient Air Quality Standards. With regard to the California Ambient Air Quality Standards, Humboldt County is designated attainment for all pollutants except PM_{10}. Humboldt County is designated as "non-attainment" for the state's PM_{10} standard.

PM_{10} refers to inhalable particulate matter with an aerodynamic diameter of less than 10 microns. PM_{10} includes emission of small particles that consist of dry solid fragments, droplets of water, or solid cores with liquid coatings. The particles vary in shape, size, and composition. PM_{10} emissions include unpaved road dust, smoke from wood stoves, construction dust, open burning of vegetation,

and airborne salts and other particulate matter naturally generated by ocean surf. Therefore, any use or activity that generates airborne particulate matter may be of concern to the NCUAQMD. The proposed project would create PM_{10} emissions in part through vehicles coming and going to the project site and the construction activity associated with the project.

To address non-attainment for PM_{10}, the NCUAQMD adopted a Particulate Matter Attainment Plan in 1995. This plan presents available information about the nature and causes of PM_{10} standard exceedances and identifies cost-effective control measures to reduce PM_{10} emissions to levels necessary to meet California Ambient Air Quality Standards. However, the NCUAQMD states that the plan, "should be used cautiously as it is not a document that is required in order for the District to come into attainment for the state standard." (NCUAQMD 2018b) Therefore, compliance with applicable NCUAQMD PM10 rules is applied as the threshold of significance for the purposes of analysis. NCUAQMD Rule 104 Section D, Fugitive Dust Emissions, is applicable to the project.

Pursuant to Rule 104 Section D, the handling, transporting, or open storage of materials in such a manner, which allows or may allow unnecessary amounts of particulate matter to become airborne, shall not be permitted. Reasonable precautions shall be taken to prevent particulate matter from becoming airborne, including, but not limited to: (1) covering open bodied trucks when used for transporting materials likely to give rise to airborne dust; and (2) the use of water during the grading of roads or the clearing of land. The project enhances project compliance with Rule 104 as noted in Section 1.4.3 under air quality construction control measures. Further, the project incorporates additional fugitive dust emission and construction equipment emission controls recommended by the Bay Area Air Quality Management District (BAAQMD). Therefore, the project complies with applicable rules, and would not conflict with or obstruct implementation of the applicable air quality plan with regard to construction and operation.

b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation? (Less than Significant)

This impact is related to localized criteria pollutant impacts. Potential localized impacts would be exceedances of State or federal standards for PM_{10}. Localized PM_{10} is of concern during construction because of the potential to emit fugitive dust during earth-disturbing activities.

The project would include clearing and grubbing, excavation, embankment work, asphalt paving, pre-manufactured bridge installation, fencing, and sidewalk construction along various segments of the project alignment. Generally, the most substantial air pollutant emissions would be dust generated from site clearing and grubbing, grading, and excavation. If uncontrolled, these emissions could lead to both health and nuisance impacts. Construction activities would also temporarily create emissions of equipment exhaust and other air contaminants. The project's potential impacts from equipment exhaust are assessed separately in Section 3.3 c), below.

The NCUAQMD does not have formally adopted thresholds of significance for fugitive, dust-related particulate matter emissions. For the purposes of analysis, this document uses the BAAQMD approach to determining significance for fugitive dust emissions from project construction. The BAAQMD bases the determination of significance for fugitive dust on a consideration of the control measures to be implemented. If all appropriate emissions control measures recommended by BAAQMD are implemented for a project, then fugitive dust emissions during construction are not considered significant. BAAQMD recommends a specific set of "Basic Construction Measures" to reduce emissions of construction-generated PM_{10} to less than significant. Without incorporation of these Basic Construction Measures, the project's construction-generated fugitive PM_{10} (dust) would result in a potentially significant impact. The Basic Construction Measure controls recommended by

the BAAQMD are incorporated into the project. These controls are consistent with NCUAQMD Rule 104 (D), Fugitive Dust Emission and provide supplemental, additional control of fugitive dust emissions beyond that which would occur with Rule 104 (D) compliance alone. Therefore, the project would result in a less than significant impact for construction-period PM_{10} generation, and would not violate or substantially contribute to an existing or projected air quality violation.

Following construction, the project would not include any stationary sources of air emissions. Vehicle trips associated with operation and maintenance of the trail would include annual inspections, repaving, painting, and repairs as needed. Operation and maintenance of the project would generate less than one traffic trip per week on average. However, larger repairs to the trail or shoreline may take several weeks to complete depending on the extent of damage and other circumstances. The project would not result in substantial long-term operational emissions of criteria air pollutants. Therefore, project-generated operational emissions would not violate or contribute substantially to an existing or projected air quality violation. The project's impact would be less than significant.

c) Result in a cumulatively considerable net increase of any criteria pollutant for which the region is in non-attainment? (Less than Significant)

This impact is related to regional criteria pollutant impacts. As identified in Section 3.3 a), Humboldt County is designated nonattainment of the State's PM_{10} standard. The County is designated attainment for all other state and federal standards.

For construction emissions, the NCUAQMD has indicated that emissions are not considered regionally significant for projects whose construction would be of relatively short duration, lasting less than one year. For project construction lasting more than one year or that involves above average construction intensity in volume of equipment or area disturbed, construction emissions may be compared to the stationary source thresholds. The project's construction is anticipated to require approximately six months to complete. Therefore, the project's construction duration does not exceed the NCUAQMD's unofficial screening guidance of one year. However, emissions modelling was conducted for project construction, as detailed below.

The NCUAQMD does not have established CEQA significance criteria to determine the significance of impacts that would result from projects such as the proposed project; however, the NCUAQMD does have criteria pollutant significance thresholds for new or modified stationary source projects proposed within the NCUAQMD's jurisdiction. NCUAQMD has indicated that it is appropriate for lead agencies to compare proposed construction emissions that last more than one year to its stationary source significance thresholds, which are:

- Nitrogen oxides – 40 tons per year
- Reactive organic gases – 40 tons per year
- PM_{10} – 15 tons per year
- Carbon monoxide – 100 tons per year.

If an individual project's emission of a particular criteria pollutant is within the thresholds outlined above, the project's effects concerning that pollutant are considered to be less than significant.

The California Emissions Estimator Model (CalEEMod) version 2016.3.1 was used to estimate air pollutant emissions from project construction (Appendix C). Construction of the project is expected to begin in late spring and require approximately six months to complete. Detailed construction equipment activity was estimated based on project construction components and prior trail projects.

NCUAQMD Rule 104 (D) requires reasonable precautions to prevent particulate matter from becoming airborne. The air quality construction control measures included in the project description

include enhanced compliance with the Rule 104 (D) requirement, as well as incorporation of BAAQMD's Basic Construction Measures. The emissions modeling included watering the construction site daily, promptly replacing ground cover on disturbed areas, and cleaning trackout off of paved roadways.

Table 3.3-1 summarizes construction-related emissions. As shown in Table 3.3-1, the project's construction emissions would not exceed the NCUAQMD's stationary sources emission thresholds. Therefore, the project's construction emissions are considered to have a less than significant impact.

Table 3.3-1 Construction Regional Pollutant Emissions

Parameter	Emissions (tons per year)			
	ROG	NO_x	CO	PM_{10}
Project Construction	0.22	2.12	1.43	0.17
NCUAQMD Stationary Source Thresholds	40	40	100	15
Significant Impact?	*No*	*No*	*No*	*No*

Following construction, the project would not include any stationary sources of air emissions. Vehicle trips associated with operation and maintenance of the proposed trail would include annual inspections, repaving, painting, and repairs as needed. Operation and maintenance of the project would generate less than one traffic trip per week on average. However, larger repairs to the trail or shoreline may take several weeks to complete depending on the extent of damage and other circumstances. The project would not result in substantial long-term operational emissions of criteria air pollutants. Therefore, project-generated operational emissions would not result in a cumulatively considerable net increase of any criteria pollutant for which the region is in non-attainment. The project's contribution to a cumulative impact would be less than significant.

d) Expose sensitive receptors to substantial pollutant concentrations? (Less than Significant)

Activities occurring near sensitive receptors should receive a higher level of preventative planning. Sensitive receptors include school-aged children (schools, daycare, playgrounds), the elderly (retirement community, nursing homes), the infirm (medical facilities/offices), and those who exercise outdoors regularly (public and private exercise facilities, parks). There are no schools in close proximity to the project alignment. The closest residences are approximately 250 feet (the closest residence) or more from the project alignments western end within the City of Eureka. The closest residences along the project alignment within the County are more than 600 feet away.

BAAQMD's Basic Construction Measures included in the project description minimize idling times for trucks and equipment to five minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]), and ensures construction equipment is maintained in accordance with manufacturer's specifications.

Staging areas where the majority of construction equipment would be stationed, would be located 600 feet or greater from sensitive receptors. Project construction activities would largely be linear in nature, and not include intensive or prolonged construction equipment use in any one location.

Therefore, project construction activities are not expected to occur for a substantial amount of time. Due to the relatively short length of the construction period, the distance from the majority of construction activities, and the implementation of fugitive dust control measures, the project would

not result in the exposure of sensitive receptors to substantial pollutant concentrations. Therefore, the construction-related impact would be less than significant.

Following construction, the project would not include any stationary sources of air emissions or new mobile source emissions that would result in substantial long-term operational emissions of criteria air pollutants. In fact, project operation could potentially reduce vehicle-miles-traveled and therefore emissions. Therefore, project operation would not expose nearby sensitive receptors to substantial levels of pollutants. The operation-related impact would be less than significant.

e) Create objectionable odors affecting a substantial number of people? (Less than Significant)

The project would not create odors that could reasonably be considered objectionable by the general public because no aspect of project construction is anticipated to create objectionable odors except for limited exhaust fumes from gas powered equipment. Following construction, implementation of the project would not result in any major sources of odor. The impact would be less than significant.

3.4 Biological Resources

	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?		✓		
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or US Fish and Wildlife Service?				✓
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?		✓		
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?				✓
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?				✓
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?				✓

Evaluation Criteria	Significance Thresholds	Sources
Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	Uncompensated loss of any plant or animal species or individuals listed as rare, threatened, or endangered by federal or state government, or loss or degradation of habitat that supports such species	CEQA Guidelines Appendix G, Checklist Item IV (a) General Plan Policies BR-P2 and BR-P12
Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	Uncompensated loss of more than an incidental and minor area of riparian habitat or other sensitive habitat type (excluding wetlands defined by Section 401 of the Clean Water Act) identified under federal, state or local policies	CEQA Guidelines Appendix G, Checklist Item IV (b) General Plan Policy BR-P6
Would the project have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filing, hydrological interruption, or other means?	Uncompensated loss or severe degradation of more than an incidental or minor area of wetlands as defined by Section 404 of the Clean Water Act	CEQA Guidelines Appendix G, Checklist Item IV (c) General Plan Policies BR-P5, BR-P6, BR-P7, BR-P8
Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	Uncompensated loss or substantive modification of key habitat areas that provide for continuity of movement for resident or migratory wildlife, or as a loss or substantive degradation of key habitat components that would result in loss of use of important concentration areas for wildlife	CEQA Guidelines Appendix G, Checklist Item IV (d)
Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	Uncompensated loss of important biological resources that is inconsistent with local ordinance or policies	CEQA Guidelines Appendix G, Checklist Item IV (e) Streamside Management Area Ordinance
Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan	CEQA Guidelines Appendix G, Checklist Item IV (f)

a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service? (Less than Significant with Mitigation)

An evaluation of the existing biological setting on and near the project alignment was conducted to determine the potential for any special-status vegetation communities, plants, or animal species to occur. A Botanical Survey Technical Memorandum was prepared for the project (GHD 2017a). Information on special-status plant species was compiled through a review of the literature and database searches. The CDFW and the CNPS recommend an assessment area for a project be a minimum of nine USGS quadrangles with the PSB located in the central quad. The assessment area was defined as the USGS 7.5' minute quadrangles in which the project is located and the surrounding quadrangles (Eureka, Arcata South, Arcata North, Tyee City, Cannibal Island, Fields Landing, McWhinney Creek, Blue Lake, Korbel, and Iaqua Buttes USGS 7.5' quadrangles). The following sources were reviewed to determine which special-status natural communities, plant and wildlife species have been documented in the vicinity of the project alignment:

- A Manual of California Vegetation Second Edition (Sawyer et al. 2009)
- California Natural Diversity Database records (CNDDB) (CDFW 2017)
- CNPS Inventory of Rare and Endangered Vascular Plants (CNPS 2017)
- Lists of special-status species and natural communities that may occur in the project area as provided by the U.S. Fish and Wildlife Service (USFWS 2017), National Marine Fisheries Service (NMFS), and CDFW (CDFW 2017)

In May and June, 2017 rare plant surveys, habitat mapping, and a biological evaluation were performed within the PSB including access routes and staging areas for construction. A wetland delineation was performed for this project and is a stand-alone report (GHD 2017b). A report assessing ESHA was also prepared for the project (GHD 2017c). A Natural Environment Study (NES) was also prepared for the project (Stantec 2017a). Additionally, a Biological Assessment/Essential Fish Habitat Assessment (BA/EFHA) was also prepared for the project (Stantec 2017b). All of the biological resources reports identified above are available at the County of Humboldt Public Works Department. The wetland delineation is included as Appendix D (with the exception of the wetland data sheets) and the botanical memorandum is included as Appendix E.

Special-status Plants

The PSB contains potential habitat for seven special-status plants: Lyngbye's sedge (*Carex lyngbyei*), Humboldt Bay owl's-clover (*Castilleja ambigua* var*. humboldtiensis*), Point Reyes bird's-beak (*Chloropyron maritimum ssp. palustre*), Western sand-spurrey (*Spergularia canadensis* var*. occidentalis*), dwarf alkali grass (*Puccinellia pumila*), Oregon coast paintbrush (*Castilleja littoralis*), and marsh pea (*Lathyrus palustris*).

Of the seven potential special-status plant species with the potential to occur within the PSB, three species were observed during the protocol level botanical surveys. These were Humboldt Bay owl's-clover, Point Reyes bird's-beak, and western sand-spurrey (GHD 2017a).

Humboldt Bay owl's-clover and Point Reyes bird's-beak were found in similar estuarine areas, mainly concentrated near Eureka Slough, near the southern end of the proposed alignment near the railroad bridge. Another smaller patch is located on the south end of the CRC property, near where the bridge would be constructed. Neither species was observed in the PSB north of the south end of the CRC property. Small patches of Point Reyes bird's beak were also observed along the railroad prism just north of the Eureka Slough railroad bridge. Western sand-spurrey was observed in a few locations just north of the Eureka Slough railroad bridge, just south of the railroad prism.

Implementation of the proposed project would impact areas where Humboldt Bay owl's clover, Point Reyes bird's-beak, and Western sand-spurrey have been observed. Direct impacts would mainly result from the clearing and grading for trail construction. Fuel and oil spills might occur during construction, which could result in an indirect effect to these plants. Populations of Humboldt Bay owl's clover and Point Reyes bird's-beak appear to have significant temporal geographic variability based on historic and recent plant surveys within the PSB. The number of individuals estimated to be impacted by the proposed project, as mapped during the botanical surveys is depicted as follows:

- Point Reyes Bird's-Beak (CRPR List 1B.2) – 41 individuals
- Humboldt Bay's owl's-clover (CRPR List 2B.1) – 3 individuals
- Western sand spurrey (CRPR List 2B.1) – 2 individuals

All impacts to these species would be less than significant with implementation of the following mitigation measure. No monitoring is proposed for mitigation of the annual salt marsh species as assessing the success of seeded areas is impractical given the mobility of seeds in the tidally influenced salt marsh environment.

Mitigation Measure BIO-1: Avoidance and Protection Measures for Special-status Plants

The County of Humboldt shall implement the following avoidance and protection measures for special-status plants:

1. Due to the mobility and fluctuation of populations of Humboldt Bay owl's-clover, and Point Due to the mobility and fluctuation of populations of Humboldt Bay owl's-clover, and Point Reyes bird's beak specifically, seasonally appropriate pre-construction surveys shall occur approximately one year prior to construction within the planned area of disturbance for the project, during the appropriate blooming time (spring or summer) for the target species. Impacts to special-status annual salt marsh plants such as Humboldt Bay owl's-clover, Point Reyes bird's beak, and western sand spurrey shall be avoided to the extent feasible. If these plants occur within the project footprint, and permanent impacts cannot be avoided, they shall be conserved through re-seeding (by hand, by a qualified biologist) into suitable habitat in the immediate project area. Seed will be collected in the late summer or early fall the year before construction when seeds from each target species are mature. Seed will be stored and spread post project construction in the best possible suitable habitat, near areas where impacts have occurred. Seeds should be spread in high elevation tidal marsh environments in the vicinity of salt grass if possible for Point Reyes bird's beak and near other native high salt marsh species, and in areas where invasive cordgrass is absent or sparse.
2. If future pre-construction surveys determine that other special-status species are present within the project footprint, these plants will also be avoided to the extent feasible, and if not feasible, they shall be conserved by measures appropriate for the individual species which may include methods such as plant relocation, seed collection, and/or nursery plant propagation.
3. Pre-construction surveys will also be performed within the planned area of disturbance, less than seven days prior to ground disturbance within habitat appropriate for Humboldt Bay owl's-clover, Point Reyes bird's beak and western sand spurrey. At this time any newly identified impacts to special-status plant species within the planned area of disturbance that cannot be feasibly avoided will be quantified and mapped. In the event that mature seed is available for Humboldt Bay owl's-clover, Point Reyes bird's beak and

western sand spurrey and plants cannot be feasibly avoided, the seed will be collected, stored, and spread post construction and as described in this mitigation measure. All special-status plant species found at this time within the planned area of disturbance, but outside the trail footprint will be flagged for avoidance during construction.

4. Any plants that could not be feasibly avoided and that will be impacted will be mapped, and the number of individuals documented prior to construction. The approximate quantity of seed collected from these plants and the dates the seed was collected and spread will also be reported. No monitoring is proposed for the seeded areas as assessing the success of these areas is impractical given the mobility of seeds in the tidally influenced salt marsh environment.

5. Any seed mixes or other vegetative material used for re-vegetation of disturbed sites will consist of locally adapted native plant materials to the extent practicable.

Tree Resources

A row of mature blue gum eucalyptus trees (*Eucalyptus globulus*) extends for approximately 1.1 miles adjacent to Highway 101, in two sections (one north and one south of the entrance to the CRC mill site). These trees were planted in 1926 and after a hard freeze most were cut down in 1933 and the trees today spouted from the stumps. Some of the trees were cut down in 1953 to allow access to the CRC site (Final EIR Eureka-Arcata Route 101 Corridor Improvement Project 2016). Eucalyptus trees in the area are non-native and not considered ESHA, and were not considered such in previous environmental studies. The northern section of trees which extends approximately 0.5 miles would be removed as part of the project, with the southern section (approximately 0.6 miles) remaining. Tree removal is expected to occur outside of the nesting bird season in Northern California (March 15 - August 15). However, if trees are removed during the nesting season, a qualified biologist would perform one or more pre-construction nesting bird surveys to ensure that there are no impacts to birds protected under the Migratory Bird Treaty Act (MBTA). Pre-construction nesting bird surveys are described in further detail below in Mitigation Measure BIO-5.

Special-status Wildlife

The following sections describe species with potential habitat present in the project area or immediate vicinity and anticipated impacts of the proposed project. None of these species were incidentally observed in the PSB during site visits.

Listed Salmonids

Project activities may cause take of a federally-listed fish species if it results in any one of the following: (1) direct mortality of a federally listed fish species; (2) temporary impacts to habitats such that federally listed species suffer increased mortality or lowered reproductive success; (3) permanent loss of habitat critical to a federally listed fish species; (4) substantial reductions in the size of a special-status fish species population; or (5) substantial reduction in the quantity or value of fish habitat in which a federally listed fish population occurs.

Southern Oregon/Northern California Coasts ESU Coho Salmon

The project area includes tidally influenced brackish water slough habitat that is seasonally suitable for migratory and rearing juvenile coho salmon. However, due to the lack of freshwater pool habitat suitable for summer rearing, daily tidal fluctuations, and the seasonal distribution of coho salmon in Humboldt Bay and its tributaries, the probability of juvenile coho salmon being present during the proposed in-channel and in-bay work period is discountable. Based on the life history of juvenile coho salmon in Humboldt Bay, and available data, it is highly unlikely that juvenile coho salmon would

occur in the PSB during the restricted in-bay construction period (July 1st–September 31st). Construction of the bridge structures may result in a small increment of permanent shading to tidal mudflat, and permanent displacement of an estimated 18 square feet of tidal mudflat area by the eight pilings required for the north access to the CRC levee. This area is included as part of designated critical habitat for Southern Oregon/Northern California Coast (SONCC) coho salmon. However, no measurable, long-term adverse changes to waters, substrates, food production, or availability of cover conditions that are necessary for rearing, migration, feeding, and growth of coho salmon after project construction would be expected as a result of this small change in total area of tidal mudflat habitat in Humboldt Bay.

Construction of the proposed bridges would require piles to be driven near and in tidal flat areas, which has the potential to cause barotraumas to fishes in the vicinity. A hydroacoustic analysis in the BA/EFHA (Stantec 2017c) was developed based on data for similar piles driven at water's edge for comparable projects. For fish ≥ 2 grams near the CRC and Brainard Slough bridges, the acoustic energy from pile driving was determined to not likely rise to the 187 decibels (dB) accumulated sound exposure level (SEL) physical injury threshold within zero and one meter of the piles, respectively. For fish < 2 grams, the acoustic energy from pile driving was determined to not likely rise to the 183 dB SEL physical injury threshold within one and three meters of the CRC and Brainard Slough piles, respectively. A behavioral impact radius of seven meters for Brainard Slough and nine meters for the CRC sites could occur when pile driving based on an impact threshold of 150 dB (root mean square [RMS]). However for the proposed project at Brainard's Slough and the CRC sites, it is reasonable to expect that the actual radius of each impact threshold would be less than these distances because all piles will be driven during low tide cycles, when work areas are well outside of the water, and attenuation of sound energy through ground versus water is greater, resulting in lower sound levels at an equal distance away from driven piles.

Existing rocky shoreline habitat will be impacted along the North Eucalyptus area. Permanent impacts to this habitat include an estimated 500 lineal feet of rip-rap approximately 15 feet wide added to an existing intertidal rocky shoreline area along the North Eucalyptus area, for a total footprint of 7,500 square feet. Of this total, 300 square feet (0.007 acre) would be placed in Estuarine Intertidal Emergent Wetlands – Native, and 300 square feet (0.007 acre) would be placed in Estuarine Intertidal Unconsolidated Bottom wetland, both of which would require mitigation.

Additionally, temporary impacts to local estuarine habitat would also occur during construction of the north CRC bridge. A temporary cofferdam would be constructed preventing access to an estimated 0.3 acre of habitat. This could indirectly effect coho salmon through a minor reduction in productivity of mudflat area for available invertebrate prey. However, the mudflat area to be temporarily isolated by the coffer dam is relatively small compared to the total available mudflat area of Humboldt Bay and is not adjacent to deeper tidal channel habitats or eel grass beds typically preferred by rearing salmonids and other fishes. Therefore, potential effects were determined to "may affect, but is not likely to adversely affect" SONCC coho salmon critical habitat according to the submitted BA/EFHA. However, the temporary disruption of this habitat during construction is considered as "may adversely affect" EFH for Pacific salmon according to the submitted BA/EFHA.

California Coastal ESU Chinook Salmon

The project effects for Chinook salmon and its habitat would be very similar to those described for coho salmon above. The area may be seasonally used as non-natal transitory rearing habitat for juvenile Chinook salmon. However, when they do occur seasonally, it is for short periods of time during their transitional rearing period between freshwater residency and migration through Humboldt Bay to the Pacific Ocean. In-channel or in bay work for trail bridge construction would be restricted

to daily low tide cycles during the limited construction period; therefore, the potential for direct and indirect effects on California Coastal Chinook salmon would be discountable.

Additionally, the proposed action would not cause measurable changes to the waters and substrates necessary for migration, feeding and growth of Chinook salmon, either during or after project construction. Therefore, effects on critical habitat and their PBFs is expected to be insignificant. Effects to EFH are the same as described for the coho salmon and, although, temporary, the disruption of this habitat during construction was determined to "may adversely affect" EFH for Pacific salmon, primarily as a result of potentially localized and transient increases of turbidity in the vicinity of in-channel and in-bay construction activities and temporary dewatering of the small area of mudflat (and associated invertebrate prey production) near the north side of the CRC property during bridge construction.

Northern California DPS Steelhead

The proposed project effects to the listed Northern California DPS steelhead and its designated critical habitat would be similar to those described in detail above for the coho and Chinook salmon. The proposed action would have a discountable potential to directly affect steelhead with the incorporation of the restricted in-channel and in-bay construction period. Additionally, the proposed action would not cause measurable long-term changes to designated critical habitat PBFs of estuarine migration and rearing habitat in the PSB during or after project construction. Therefore, effects on Northern California steelhead and its designated critical habitat are expected to be insignificant and discountable.

The proposed project has been designed such that the conservation measures and proposed avoidance and minimization measures would avoid or minimize the potential effects to SONCC coho salmon, California Coastal ESU Chinook salmon, Northern California DPS steelhead, and their designated critical habitat to the greatest extent possible.

While it is anticipated that no ESA-listed and other special-status fishes would be present during the seasonally-limited in-channel or in-bay construction window, measures to exclude aquatic organisms from in-channel and in-bay work areas and salvage potentially trapped organisms in areas to be dewatered would be implemented to protect non-listed aquatic species that may occur in the vicinity of the proposed project. Therefore, the following mitigation is included.

Mitigation Measure BIO-2: Avoidance and Minimization Measures for Fish

The County of Humboldt shall implement the following avoidance and protection measures for ESA-listed and other special-status fishes:

1. Prior to complete dewatering of any in-channel or in-bay work areas, coffer dams or barrier nets shall be placed to block off the area. Any fish remaining inside the coffer dams or barriers will be carefully removed by a qualified biologist. In order to minimize potentially adverse effects to aquatic organisms, all translocation/removal of fishes will be conducted by qualified fisheries biologists. Any fish that cannot be herded by seines from the work areas and must be physically handled will be immediately released in suitable habitat away from the action area, with comparable habitat and water quality conditions. Immediately following completion of in-channel or in-bay work, any cofferdams or block nets will be removed allowing free fish passage through the project area during the remainder of the construction period.

2. To minimize the potential hydroacoustic effects on fish of driving piles for bridge footings in and adjacent to tidally influenced stream/slough channels ("in-channel") and on

intertidal mudflat areas ("in-bay"), a vibratory driver will be used to the maximum extent practicable. It is anticipated that piles would need to be proofed by driving the final 5 feet with an impact hammer to achieve design tip elevation and to verify load capacity.

3. To protect the most vulnerable life stages of sensitive fish species that occur within the action area, all in-channel and in-bay work will be restricted to the period between July 1 and September 31. This seasonal work window correlates to the period of the year when sensitive fish species are least likely to occur in the action area. To further reduce the potential for hydroacoustic effects on fish potentially occurring in the action area, all pile driving, using either vibratory or impact hammers, of piles placed in-channel and in-bay mudflat areas will be scheduled to occur between the latter 2-hours of outgoing tides and beginning 2-hours of incoming tides, when tidal inundation of work areas is minimal and so that all pile driving will occur out of the water.

Due to the periodic and largely seasonal presence of listed salmonids with the potential to be in/near the action area, a seasonal work window for in-water construction activities is an appropriate measure to minimize direct injury or mortality of these species. Vibratory pile driving would be used to the maximum extent practicable to minimize the potential for barotrauma on aquatic organisms. Furthermore, all piles will be driven out of the water during low tide cycles. Project activities will include limiting the in-water project construction period to the dry season (July 1 through September 31).

Implementation of Mitigation Measure BIO-2 would ensure that impacts to ESA-listed and other special-status fishes are less than significant by conducting fish rescue and exclusion activities, minimizing the potential hydroacoustic effects on fishes, by restricting the time period for all in-channel and in-bay work, and by using vibratory pile driving.

Tidewater Goby

The U.S. Fish and Wildlife Service, listed the tidewater goby (*Eucyclogobius newberryi*) as endangered on March 7, 1994 (59 FR 5494) and designated critical habitat on November 20, 2000 (67 FR 67803). On June 24, 1999, they published a proposed rule to remove the northern populations of the tidewater goby from the endangered species list (64 FR 33816). The proposed rule (67 FR 67803) was withdrawn on November 7, 2002 (U.S. Fish and Wildlife Service 2007). Their endangered status was re-affirmed in a 2007 status review (U.S. Fish and Wildlife Service 2007). In March of 2014, after review of all available scientific and commercial information, the USFWS found that reclassifying the tidewater goby as threatened is warranted and proposed to reclassify tidewater goby as threatened under the ESA (79 FR 14340). A final rule to downlist the tidewater goby from endangered to threatened status was still pending as of December 2017.

Tidewater goby presence documented in the vicinity of the PSB is farther up gradient in the system and above tidegates (i.e. up gradient of Brainard Slough in Rocky Gulch). Critical habitat is mapped in ditches east of Highway 101, although actual presence of the species is uncertain and the ditches are completely isolated from the trail corridor. Project activities, including conservation measures and avoidance minimization efforts to minimize effects to tidewater goby and critical habitat as described below in Mitigation Measure Bio-3, would reduce the potential risk of direct effects on tidewater gobies to a discountable level and would not alter the available habitat in the PSB such that their survival and population recovery would be measurably reduced.

According to the hydroacoustic analysis in the BA/EFHA, acoustic parameters are not expected to rise to the physical injury threshold of 187 decibels, within three feet of the pile. Therefore, no effect to tidewater goby as a result of pile driving is anticipated. In 2011, The USFWS provided a Letter of

Concurrence (LOC) for a programmatic ESA section 7 consultation with Caltrans covering routine maintenance, repair and small project activities in Humboldt County (U.S. Fish and Wildlife Service 2011). The LOC covered six species including tidewater goby and would be applied to the proposed project. The County and Caltrans would ensure that the proposed project construction methods follow the guidelines within the LOC. Caltrans would be responsible for the requirements included in the LOC from USFWS.

The following mitigation from the USFWS programmatic LOC shall be implemented to avoid or minimize project-related impacts on the tidewater goby.

Mitigation Measure BIO-3: Tidewater Goby Avoidance and Minimization Measures

The County of Humboldt shall implement the following avoidance and minimization measures for tidewater goby:

1. To avoid crushing adult gobies and their breeding burrows, no construction equipment will operate within potential goby habitat and no workers shall walk within the wetted channel in potential goby habitat areas.
2. To avoid barotrauma injury to gobies or damage to breeding burrows, no impact or vibratory equipment shall be used within an active, wetted channel in or contiguous with potential goby habitat or in any location where it could have an adverse effect on breeding burrows and gobies. In addition, heavy equipment used outside the wetted channel, must be operated at a distance as far as possible from suitable breeding habitat to avoid barotrauma injury and/or damage to goby breeding burrows.
3. No pile driving is permitted in the wetted channel within potential goby habitat.
4. New access roads must not enter a wetted channel or watercourse within potential goby habitat.

Implementation of Mitigation Measure BIO-3 would ensure that impacts to tidewater goby are less than significant by avoidance, not using impact of vibratory/conventional impact equipment in the wetted channel, installing a visual barrier, no drilling, and no new roads in the wetted channel or watercourse.

Southern and Northern DPS Green Sturgeon

On April 7, 2006, NMFS issued its final rule to list green sturgeon that spawn in rivers south of the Eel River (excluding the Eel River), California (the southern DPS) as threatened under the ESA (71 FR 17757), effective June 6, 2006. Although spawning populations of the southern DPS green sturgeon do not occur in or north of the Eel River, the species migrates long-distances and occupies bays and estuaries from Monterey, California to Puget Sound. Both the northern and southern DPS are present in Humboldt Bay, with seasonal concentrations in the northeast end of the bay.

Impacts to the southern and northern DPS green sturgeon (*Acipenser medirostris*) would be limited to indirect effects to potential sub-adult and adults foraging in Humboldt Bay. Work is proposed to occur in the tidal flats of Arcata Bay, therefore, some minor turbidity may be produced when tides re-flood disturbed work areas. Given the natural background turbidity in the shallow areas of the bay created during wind events and the overall small impact area, we do not expect project-related turbidity to reduce the availability or access to food resources. The area affected through the proposed bridges is small relative to the total food source habitat available in and seaward of the PSB. A draft BA/EFHA to be submitted to NMFS determined that the proposed project “may affect, but is not likely to adversely affect” the southern DPS green sturgeon, and its designated critical

habitat. The PBFs of the southern DPS green sturgeon critical habitat in the affected waterways would not be permanently altered or destroyed by the proposed project to the extent that the survival and recovery of southern DPS green sturgeon would be measurably reduced. Therefore, any impacts are expected to be insignificant and discountable. Implementation of Mitigation Measure BIO-2 would ensure that impacts are less than significant.

Southern DPS Eulachon

The southern DPS eulachon (*Thaleichthys pacificus*) are listed as federally threatened and are a California Species of Special Concern. The southern DPS eulachon populations are thought to consist of spawning runs in the Klamath River, Del Norte County, and in the Mad River and Redwood Creek, Humboldt County. Eulachon spend most of their life in salt water, moving up rivers in large numbers to spawn in the spring. Spawning usually occurs in the lower reaches of rivers or tributaries with pea-sized gravel or semi-sandy areas with woody and other debris (Moyle 2002). The cause of the decline of this species is unknown.

The PSB includes tidal slough and intertidal mudflat habitats that are seasonally suitable for eulachon. However, due to the restriction of in-channel and in-bay work activities to periods outside of the spawning migration season, the lack of freshwater spawning habitat in the PSB, and the low historical abundance in Humboldt Bay, it is highly unlikely that southern DPS eulachon would be impacted by the project. A plausible indirect impact would be similar to those described for the green sturgeon (e.g., indirect effects associated with water quality). Implementation of Mitigation Measure BIO-2 would ensure that impacts are less than significant.

Longfin Smelt

Longfin smelt (*Spirinchus thaleichthys*) is a federal Candidate, and state Threatened. They historically ranged from the Gulf of Alaska south to Monterey Bay, California. Adult and juvenile longfin smelt typically occupy the middle or bottom of the water column in salt or brackish water portions of estuaries.

Historically, the longfin smelt was common in Humboldt Bay (Moyle 2002; California Department of Fish and Game 2009). However, longfin smelt abundance is reported to have declined from historic levels in collections near and in Humboldt Bay to a low but consistent abundance (Moyle et al. 2015). Longfin smelt are thought to continue to occur as adults and juveniles but in lower numbers in Humboldt Bay. Potential impacts to longfin smelt would be very similar to those described for eulachon above. In-channel or in bay work for trail bridge construction would be restricted to daily low tide cycles during the limited construction period; therefore, the potential for direct and indirect effects on longfin smelt is thought to be insignificant and discountable. Implementation of Mitigation Measure BIO-2 would ensure that impacts are less than significant.

Coastal Cutthroat Trout

Coastal cutthroat trout (*Oncorhynchus clarkii*) is a California Species of Special Concern which are found in coastal streams from the Eel River, Humboldt County, to north to Seward in southeastern Alaska. Some coastal cutthroat trout may spend their entire lives in freshwater, but most are anadromous, spending the summers in saltwater habitats.

Coastal cutthroat trout only rarely enter Humboldt Bay, as they are primarily a freshwater species (Fritzsche and Cavanagh 1995), occurring in the streams in the Humboldt Bay basin. Coastal cutthroat trout occur in low numbers in the freshwater streams and sloughs surrounding Humboldt Bay (Moyle et al. 2015).

Potential impacts to coastal cutthroat trout would be very similar to those described for listed salmonids above and would be less than significant with implementation of Mitigation Measure BIO-2.

Northern Red-legged Frog

The northern red-legged frog (*Rana aurora*) is designated a California Species of Special Concern. It ranges from northern Mendocino County, California to British Columbia. It can be found in upland habitats adjacent to freshwater aquatic sites, and may travel away from them on wet or rainy nights (Thompson et al. 2016). Egg-laying usually occurs in January to March.

The CNDDB has northern red-legged frogs recorded in the Little Freshwater and Ryan Creek Drainages; along the South Fork Elk River; and near an unnamed tributary to Willow Brook south and east of the action area. The CNDDB also has an occurrence record for the northern red-legged frog within Arcata Marsh from 1998.

Suitable habitat exists within some portions of and in the vicinity of the PSB, therefore northern red-legged frogs could be impacted if present during construction. Impacts to northern red-legged frogs could either occur as egg masses or tadpoles within wetted areas, or as adults in fresh water or in the vicinity of fresh water. Impacts to egg masses or tadpoles are unlikely because of limited freshwater habitat and because trail construction activity in waterways and areas of standing freshwater would occur during the spring and summer dry season and outside the northern red-legged frog breeding season. Construction vehicle traffic and related ground disturbance in and around freshwater wetland areas could result in direct impacts to adult northern red-legged fronts, including harassment, injury, and mortality if frogs were present at the time.

Construction activities associated with the project if unmitigated could have a potentially significant effect on the northern red-legged frog if present during construction. Therefore, the following mitigation is incorporated.

> **Mitigation Measure BIO-4: Northern Red-legged Frog Avoidance and Minimization Measures**
>
> The County of Humboldt shall implement the following avoidance and minimization measures for northern red-legged frogs:
>
> 1. Construction in waterways and wetlands with standing water shall be limited to the period of the year between July 1 and October 30 to avoid disturbance to breeding northern red-legged frogs.
> 2. No more than one week prior to commencement of ground disturbance within 50 feet of suitable northern red-legged frog habitat, a qualified wildlife biologist shall perform a preconstruction survey for the northern red-legged frog and shall relocate any specimens that occur within the work -impact zone to nearby suitable habitat.
> 3. In the event that a northern-red legged frog is observed in an active construction zone, the contractor shall halt construction activities in the area where observed and the frogs shall be moved to a safe location in similar habitat outside of the construction zone.

Implementation of Mitigation Measure BIO-4 is intended to reduce potential impacts to northern red-legged frogs to less than significant.

Little Willow Flycatcher

Little willow flycatcher (*Empidonax traillii brewsteri*), listed as state endangered, is one of three subspecies of the willow flycatcher to occur in California. The little willow flycatcher is a rare to locally

uncommon summer resident in wet meadows and montane riparian habitats occurring between 2,000 and 8,000 feet in elevation and a more common spring and fall migrant at lower elevations. They occur primarily in riparian habitat throughout the state exclusive of the North coast (Zeiner et al. 1990). This subspecies nests in dense riparian thickets and forages on insects, berries, and seeds.

The little willow flycatcher is an occasional visitor during the spring, winter, and fall; foraging in the coastal lowlands and riparian areas of Humboldt Bay (Hunter et al. 2005). The PSB and vicinity provides marginal foraging and breeding habitat and there have been very few documented occurrences of nesting in Humboldt County since the 1930's (Hunter et al. 2005).

Quality riparian habitat preferred by the little willow flycatcher is not present in the PSB. Some scattered isolated willow patches occur, but are likely not suitable for nesting. Thus, there is a discountable potential for nesting to occur within or near the PSB. Removal of vegetation along portions of the trail might slightly decrease the amount of suitable roosting habitat in the PSB. This small reduction of foraging habitat for this species is not considered significant.

Protected Migratory Birds

Migratory birds are protected under the Migratory Bird Treaty Act, which makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory birds listed in 50 CFR Part 10. Loss of fertile eggs or migratory birds, or any activities resulting in migratory bird nest abandonment, would be an adverse effect. Construction and maintenance activities associated with the project could have a potentially significant effect on protected migratory birds. Therefore, the following mitigation is incorporated.

Mitigation Measure BIO-5: Avoidance and Protection Measures for Nesting Birds

The County of Humboldt shall implement the following measures to ensure no significant impacts to native migratory bird species:

1. The County will attempt to remove trees and other vegetation that could potentially contain nesting birds outside the bird nesting season (March 15 to August 15). If vegetation removal occurs outside the bird nesting season, no further mitigation is necessary. If vegetation removal occurs between March 15 and August 15, the County shall have a qualified wildlife biologist conduct preconstruction surveys within the vicinity of the impact area, to check for nesting activity of native birds and to evaluate the site for special-status bird species such as Little Willow Flycatcher and White-tailed Kites. The biologist shall conduct a minimum of one preconstruction survey within the seven-day period prior to vegetation removal activities. If vegetation removal work lapses for seven days or longer during the nesting season, a qualified biologist shall conduct a supplemental avian survey before project work is reinitiated.
2. If an active nest is found, the biologist will determine the extent of an appropriate construction-free buffer zone to be established around the nest and/or operational restrictions in consultation with the California Department of Fish and Wildlife. Buffer zones will be delineated with flagging and maintained until the nests have fledged or nesting activity has ceased. Buffer sizes would take into account factors such as (1) highway and other ambient noise levels, (2) distance from the nest to the highway and distance from the nest to the active construction area, (3) noise and human disturbance levels at the construction site at the time of the survey and the noise and disturbance expected during the construction activity; (4) distance and amount of vegetation or other screening between the construction site and the nest; and (5) sensitivity of individual nesting species and behaviors of the nesting birds.

Mitigation Measure BIO-5 requires practicable avoidance and protection measures to nesting birds during construction, thereby reducing any potential impacts to nesting birds to a less than significant level.

Western Yellow-billed Cuckoo

The Western Yellow-billed Cuckoo (*Coccyzus americanus occidentalis*) is a federally threatened and California State endangered species. A former widespread inhabitant of native riparian areas in the west, its range in California has been greatly reduced from historical numbers (Layman 1998).

Critical habitat was proposed for the Western Yellow-billed Cuckoo on August 15, 2014 (79 FR 48547 48652). The public comment period is over for this proposed habitat designation and the final rule is yet to be published by the USFWS. Proposed critical habitat for the yellow-billed cuckoo exists south of the PSB and Humboldt Bay along the Eel River corridor. The last sighting in the region occurred in this area (Eel River) in 2013 and was thought to be a breeding pair. The species was also observed (likely migratory) in Arcata Marsh and Wildlife Sanctuary north of the PSB in late July, early August of 2015 (eBird.org 2017). Potential use in the PSB would be limited to the spring and fall migration season as appropriate breeding habitat is not present.

Dense riparian habitat with a good understory preferred by the yellow-billed cuckoo is not present in the PSB. Some scattered isolated willow patches do occur, but are not suitable for nesting habitat. Thus the potential for nesting to occur within the PSB is discountable. Potential impacts would be limited to foraging or roosting sites during migration. Removal of vegetation along portions of the trail might slightly decrease the amount of suitable roosting habitat in the PSB. However, due to the amount of similar habitat in the proposed project area, a small amount of willow habitat loss is not expected to result in an adverse effect on this species. Implementation of Mitigation Measure BIO-5 would result in a less than significant impact to this species.

Western Snowy Plover

The western snowy plover (*Charadrius nivosus nivosus*) is federally threatened and a California Species of Special Concern. The species breeds primarily on coastal beaches from southern Washington to southern Baja California, Mexico. Nests are made above the high tide line, on coastal beaches, sand spits, dune-backed beaches, sparsely-vegetated dunes, creek and river mouths, and salt pans at lagoons and estuaries.

Breeding habitat for the snowy plover does not exist in the PSB, but the tidal flats in Humboldt Bay adjacent to the PSB may provide foraging habitat. Public records indicate that the species typically inhabits areas near the designated critical habitats and the coastline, rarely entering Humboldt Bay proper. The most recent observation of the species within the project area occurred in 2014 near the mouth of Jacoby Creek, and also one recorded observation located within Eureka Slough (eBird.org 2017).

Western snowy plover have rarely been documented on the east side of Humboldt/Arcata Bay, as there is no breeding habitat present and it is not favorable foraging habitat. The very low potential for occurrence near the PSB suggests that any potential project impacts would be negligible and would not result in adverse effects. The impact is less than significant.

Yellow Warbler

The yellow warbler (*Setophaga petechia*) is a California Species of Special Concern. It is a Neotropical migrant that principally occurs in California as a summer resident from late March through early October (Shuford and Gardali 2008). It is usually found in dense riparian deciduous habitats with cottonwoods, willows, alders, and other small trees and shrubs typical of open-canopy riparian

woodlands. The species breeds from mid-April to early August, building an open cup nest in a tree or shrub.

Yellow warbler are known to occur in the Humboldt Bay area. Only marginal breeding riparian habitat exists in the PSB as scattered bunches of willows and, therefore, is not highly suitable for yellow warbler nesting. Potential impacts would be similar to those described for the little willow flycatcher above. Implementation of Mitigation Measure BIO-5 would result in a less than significant impact to this species.

Yellow-breasted Chat

The Yellow-breasted chat (*Icteria virens*) is a California Species of Special Concern. It is a large wood warbler with a robust build. A Neotropical migrant, it usually arrives in California in April and departs by late September. In California, it typically occurs in early successional riparian habitats with a well-developed shrub layer and an open canopy. Nesting habitat is usually restricted to the narrow border of streams, creeks, sloughs, and rivers (Shuford and Gardali 2008). Breeding occurs from early May to early August.

The Yellow-breasted chat is present seasonally as a breeder in riparian areas of Humboldt Bay concentrated around Arcata Marsh. Some scattered isolated willow patches occur within the PSB, but are not suitable for nesting to due to the small size. Marginal riparian habitat exists in the PSB mainly as scattered bunches of willows, largely contained in areas mapped as palustrine emergent wetlands or willow-dripline. Therefore, these areas are not suitable for yellow-breasted chat nesting.

Potential impacts would be similar to those described for the little willow flycatcher above. Occurrence of this species cannot be precluded in local woody or shrub vegetation, during migration. However, no construction activities are proposed within dense woody riparian habitat. Indirect effects (e.g., nest abandonment, incubation or feeding interruptions) from constructing within close proximity of nesting and foraging habitat are unlikely, as preferred breeding habitat does not occur along the proposed project alignment. Therefore, the proposed project is not expected to result in an adverse effect on this species. Implementation of Mitigation Measure BIO-5 would result in a less than significant impact to this species.

White-tailed Kite

The white-tailed kite (*Elanus leucurus*) is a California Fully Protected species. California supports the largest number of white-tailed kites in North America. They can be found in association with the herbaceous and open stages of a variety of habitat types, including open grasslands, meadows, emergent wetlands, and agricultural lands. Nests are constructed in dense stands located adjacent to foraging areas.

White-tailed kites may occur in and adjacent to the PSB due to the presence of suitable habitat surrounding Humboldt Bay. There is a low potential for white tailed kite to nest adjacent to the PSB. The proposed project may result in a small, temporary reduction of foraging and/or roosting habitat for these species. However, due to the regional abundance of similar habitats, temporary small amounts of foraging or roosting habitat loss is not expected to result in an adverse effect on this species. Any nests found in or near the PSB would be protected via Mitigation Measure BIO-5, and implementation of this mitigation measure would result in a less than significant impact to this species.

Northern Harrier

Northern harriers (*Circus cyaneus*) are designated a California Species of Special Concern. In California, the northern harrier is distributed throughout the state, primarily in open habitats, nesting in coastal fresh and saltwater marshes. Nests are built on the ground in areas where long grasses or marsh plants provide cover and protection. Northern harriers hunt for a variety of prey, including

rodents, birds, frogs, reptiles, and insects by flying low and slow in a traversing manner utilizing both sight and sound to detect prey items. Current threats to this species include habitat destruction resulting from agricultural and urban development.

The northern harrier is a common migrant and winter resident found in the coastal marshes and grasslands near Humboldt Bay. It occurs in the area year around, but is more common in the winter months.

Northern harrier foraging habitat is present in and adjacent to the PSB. Due to similar diets and foraging, the potential impacts to northern harrier are similar to those described for white-tailed kite above. Implementation of Mitigation Measure BIO-5 would result in a less than significant impact to this species.

Bald Eagle

The bald eagle (*Haliaeetus leucocephalus*) is state listed as Endangered, state Fully Protected, and was federally delisted. Most of a bald eagle's annual food requirements are derived from or obtained around aquatic habitats. Because of the dietary association, nesting territories are usually found near water. Perches are used primarily during the day for resting, preening, and hunting, and may include human-made structures such as power poles. Bald eagle nests and roosts are usually found where human activity is infrequent or muted.

Nesting habitat for the bald eagle is not present in or near the PSB; however, bald eagles occasionally forage along the margins of Humboldt Bay near the PSB. Recent observations have occurred near the project area in Fay Slough to the east of the CRC property, and in Arcata Marsh north of the PSB.

Removal of vegetation and trees within the PSB would result in a very small reduction of potential roosting habitat for this species. However, due to the regional abundance of foraging habitat and roosting sites as well as the infrequency with which these species are expected to occur in the project area, this is not anticipated to have an adverse effect on this species. Implementation of Mitigation Measures BIO-5 and BIO-6 would result in a less than significant impact to this species.

Short-eared Owl

The short-eared owl (*Asio flammeus*) is designated a California Species of Special Concern. The short-eared owl is a ground nester and occurs in open country, including grasslands, wet meadows, and cleared forest. During migration it may also appear in alpine meadows (Fix and Bezener 2000). Current threats to short-eared owls are primarily from the decline and degradation of marsh and tall grassland habitat as a result of grazing pressure.

Short-eared owls are known from wetland and agricultural areas surrounding Humboldt Bay, including the Humboldt Bay National Wildlife Refuge and the Fay Slough and Mad River Slough Wildlife Areas. Nesting is very rare, but displaying birds have been observed in the Humboldt Bay National Wildlife Refuge (LeValley 2004). Short-eared owls may occur in the vicinity of the PSB as suitable habitat is present.

Due to similar diets and foraging habits, the potential impacts to short-eared owl are similar to those described for white-tailed kite above. Due to the low detection rate of nesting short-eared owl in the Humboldt Bay area and the small footprint of the proposed project, it is unlikely that the project would impact nesting short-eared owls. The project would result in a small, temporary reduction of foraging and/or roosting habitat for these species. However, due to the regional abundance of similar habitats, temporary habitat loss is not expected to result in an adverse effect on these species.

Implementation of Mitigation Measure BIO-5 would result in a less than significant impact to this species by conducting surveys, implementing a buffer, and identifying appropriate timeframes.

Black Brant

Black Brant (*Branta bernicula nigricans*) are a species of sea goose that breed in the arctic and sub-arctic and primarily winter in coastal bays and estuaries in Baja California. The California Department of Fish and Wildlife have designated Black Brant as a Species of Special Concern. Humboldt Bay serves as a critical wintering area and spring staging site for brant (Lewis et al. 2013). In fact, it is believed to the most important spring staging site for Brant in California and the fourth most important staging site in the Pacific Flyway (Moore et al. 2013). This is due to the presence of large eelgrass (*Zostera marina*) beds in Humboldt Bay, which serve as a critical food resource for brant. Brant build energy stores necessary for breeding by foraging on eelgrass during the winter. The population of Black Brant that use Humboldt Bay as a stop-over site have an estimated population size of 150,000 birds and harvest is allowed during the winter under the species management plan (Pacific Flyway Council 2002). Brant have been documented to feed on eelgrass beds during both low and high tides in Humboldt Bay and are relatively common winter visitors to the area (Elkinton 2013). Surveys have documented brant in both the North and South Bays (Moore et al. 2013).

Due to their foraging habitats, brant may be present during the fall, winter, and spring in or near the PSB in areas where the PSB is close to eelgrass beds. The project is not-expected to have any impacts on eelgrass. However, pile-driving activities may occur near small areas of eelgrass (i.e. possible brant foraging habitat). Auditory impacts of pile-driving will be minimized with the use of a vibratory hammer and the noise disturbance will be of a short duration. In addition, any eelgrass near the PSB represents a small portion of the total eelgrass in Humboldt Bay and thus a small portion of brant foraging habitat. Potential impacts due to recreational use are analyzed in the following section.

Waterfowl, Shorebirds, and Wading Birds

Waterfowl, shorebirds, and wading birds utilize portions of Humboldt Bay in the vicinity of the project area for foraging. There is an existing level of disturbance due to vehicles and non-motorized travelers along Highway 101. The trail is situated along the edge of the potential foraging habitat rather than bisecting an undisturbed foraging or nesting area. Trails such as this one that are along a tangential approach to avian foraging and nesting areas are expected to be less disruptive to birds than trails on a direct approach (Burger and Gochfeld 1981). Although the effects of trail and pedestrian disturbance to birds at nesting sites has been well documented, the effects of trail use on avian foraging behavior varies significantly by species (Burger and Gochfeld 1983, Klein et al. 1995). However, a study on trail use in the Bay Area found no significant correlation between trail use intensity and waterbird numbers or species richness (Trulio and Sokale 2006). The trail would not introduce watercraft, hunting, or other sources of loud noises; however, dogs may be present. Since brant as well as other waterfowl, shorebirds, and wading birds are highly mobile, they are expected to move to other foraging areas in the bay in the event of auditory or visual disturbance by pedestrians or dogs along the trail.

b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service? (No impact)

Riparian areas are those vegetated areas adjacent to rivers, streams and lakes with specific overstory and/or understory plant species that meet the definition of riparian by the CDFW. The entire project alignment is within the Coastal Zone, which is subject to the California Coastal Act of 1976. Section 30107.5 of the Coastal Act defines an ESHA as any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments.

According to the Vegetation Mapping/ESHA Screening report (GHD 2017c) prepared for the project, the mapping of upland vegetation communities occurred in Spring of 2017 for the proposed project and in September for the additional area within the Humboldt Bay Trail North project. No eelgrass was observed within the PSB. Two vegetation alliances were mapped within the trail alignment. One alliance is ranked as sensitive, *Morella californica* Shrubland Alliance, and one is not, Eucalyptus (*globulus*, *camaldulensis*) semi-natural woodland stand. Neither of these communities met criteria to be considered high quality natural communities or ESHA. There is no riparian habitat within the PSB either. Therefore, no impact would occur.

c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means? (Less than Significant with Mitigation)

A wetlands delineation was prepared for the project (GHD 2017a). The PSB is entirely within the Coastal Zone; therefore, the extent of wetland-type vegetation (based on one parameter) was mapped in accordance with the California Coastal Commission as well as the extent of wetlands having wetland-type vegetation, hydric soils, and wetland hydrology (based on three-parameters) per the U.S. Army Corps of Engineers (USACE). The wetland delineation effort began with reviewing available wetland mapping within the PSB. This included reviewing existing wetland delineations that overlap or intersect the project area, including a wetland delineation completed by GHD for the Eureka Waterfront Trail Phase C Project, wetlands mapping for the Humboldt Bay Trail Eureka to Bracut Initial Engineering Study (GHD 2014), a wetland delineation for the Arcata Rail-with-Trails project (Winzler & Kelly 2010), and Caltrans mapping. GHD created a preliminary environmental constraints map template from the previous delineation work.

Field mapping was completed with a GeoPro 6H global positioning system (GPS) receiver connecting to a Motion F5v Tablet running ArcPad geographic information system (GIS) software that was used by the ecology team to map areas of 1-parameter and 3-parameter wetlands. The wetland delineation identified the types of wetlands that are present within the project alignment and their locations.

The wetland delineation procedure was completed pursuant to the USACE 1987 Manual, *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coastal Regions* (Version 2.0) (USACE 2010). Following the initial review, field surveys were conducted over 13 days on 1/31, 2/1, 2/6, 2/7, 3/1, 3/3, 3/16, 3/17, 4/10, 4/14, 4/21, 4/23, and 4/27 of 2017 to map and document wetland and water features within the PSB. A jurisdictional determination has not yet been conducted (this would be accomplished as part of the project's permitting process); USACE-verified three-parameter wetlands are subject to USACE jurisdiction.

The parameters used to identify a wetland are characteristics of the soil, hydrology, and vegetation. To define a wetland, the USACE (2010) requires that all three parameters show wetland attributes. The Coastal Commission defines a wetland based on the presence of any one parameter. As the project falls entirely within the Coastal Zone, areas with wetland vegetation (Facultative Wetland Plants or wetter) that did not meet requirements for wetland hydrology or hydric soils were mapped and differentiated from three parameter wetlands.

Table 3.4-1 identifies the nine types of three parameter wetlands and one parameter wetlands.

Table 3.4-1 Summary of wetland types

Three-Parameter Wetlands
Estuarine Intertidal Emergent Wetland dominated with native vegetation
Estuarine Intertidal Emergent Ditch with *Spartina densiflora*
Estuarine Intertidal Emergent Wetland with *Spartina densiflora*
Palustrine Emergent Ditch
Palustrine Emergent Scrub-Shrub
Estuarine Intertidal Rocky Shore
Estuarine Intertidal Rocky Shore with *Spartina densiflora*
Estuarine Intertidal Unconsolidated Bottom
Estuarine Subtidal Unconsolidated Bottom
One-Parameter Wetlands
1 parameter Pacific rush (*Juncus effusus subsp. pacificus*) series
1 parameter Tufted hair grass (*Deschampsia cespitosa*) series
1 parameter Willow (*Salix sp.*) series, dripline

Implementation of the proposed project would potentially result in permanent impacts on up to 5.65 acres of waters of the United States (Table 3.4-2). This impact acreage calculation is a conservative estimate, and the County will continue to explore opportunities to further reduce impacts to jurisdictional waters during the final design phase for the project. Permanent impacts would occur where the footprint of the proposed trail overlaps mapped waters of the United States. Temporary impacts may occur along edges of the trail alignment and associated with construction access routes and work areas for bridge construction. A complete wetland delineation of the PSB is provided in Appendix D.

Permanent impacts to federal and state jurisdictional waters, including wetlands, would occur as a result of the placement of fill along the existing railroad grade to meet trail design specifications, installation of trail bridge pilings at Brainard Slough and at the north and south ends of the CRC levee, and placement of rip rap to repair existing and prevent future erosion of the railroad bed in certain locations. The placement of rip rap would occur along the trail section north of the CRC property. This rip rap would impact an area of shoreline 500 lineal feet long by 15 feet wide (plan view), totaling 7,500 square feet (sf). Of that 7,500 sf, 20 percent (1,500 sf) would be placed above 9.2 feet (Federal and State waters), NAVD 88. Of the 80 percent remaining placed below 9.2 feet, 90 percent (a total of 5,400 sf) of that would be placed on existing rip rap rock, which was mapped as Estuarine Rocky Intertidal Shore in the wetland delineation (Appendix D). Therefore, no mitigation would be proposed for this section of rip rap placement. Of the remaining 10 percent placed below the 9.2 foot elevation, 300 sf (0.007 acre) would be placed in Estuarine Intertidal Emergent Wetlands – Native, and 300 sf (0.007 acre) would be placed in Estuarine Intertidal Unconsolidated Bottom wetlands, both of which would require mitigation.

Construction of the bridge structures would result in a small amount of permanent shading (0.6 acre) to estuarine habitat. However, the cumulative area affected by these project features is very small

relative to the total habitat available in Humboldt Bay. In addition, no eelgrass was observed growing in this area, therefore no mitigation for the proposed bridges at the Brainard slough and CRC north and south crossings is proposed.

Table 3.4-2 Potential Permanent and Temporary Impacts on Waters of the United States and Waters of the State

Feature Type	Permanent (acres)	Temporary (acres)
Estuarine Intertidal Emergent Ditch - with *Spartina densiflora*	2.44	0.46
Palustrine Emergent Ditch	1.83	0.92
Estuarine Rocky Intertidal Shore	0.002	0.01
Estuarine Intertidal Emergent Wetland - with *Spartina densiflora*	0.57	0.01
Estuarine Intertidal Emergent Wetland - with *Spartina densiflora (railroad revetment repairs)*	0.007	0
Estuarine Intertidal Emergent Wetland - Native	0.03	0.01
Estuarine Intertidal Unconsolidated Bottom	0.01	0.13
Estuarine Intertidal Unconsolidated Bottom (railroad revetment repairs)	0.007	0
Palustrine Emergent Wetland	0.26	0.2
Palustrine Scrub-Shrub Wetland	0.49	0.04
Total Impacts on waters of the U.S. and State	**5.65**	**1.78**
Willow series (1-parameter)	0.027	0.01
Tufted hair grass series (1-parameter)	0.006	0
Juncus series (1-parameter)	0.093	0.29
Total Impacts on additional waters of the State	**0.126**	**0.30**

To the extent practicable, the discharge of dredged or fill material into “waters of the United States” including wetlands would be avoided (this also includes waters not subject to USACE jurisdiction, but subject to CCC and RWQCB jurisdiction). However, complete avoidance is not feasible, thus the following mitigation shall be implemented to avoid or minimize the potential for project-related impacts on “waters of the United States” and wetlands regulated by the CCC and RWQCB.

Mitigation Measure BIO-6: Avoidance and Minimization Measures for Waters of the United States

The County of Humboldt shall implement the following avoidance and protection measures for Waters of the United States and Waters of the State:

1. The County shall attempt to avoid or minimize impacts to wetlands/waters to the greatest extent feasible in the final design plans.
2. Areas where wetland and upland vegetation are to be removed shall be clearly identified in the construction documents and reviewed by the County prior to issuing for bid.
3. Within 10 days of completion of construction in those areas where subsequent ground disturbance will not occur for 10 calendar days or more, disturbed areas shall be temporarily stabilized to reduce the potential for short-term erosion. Prior to a rain event or when there is a greater than 50 percent possibility of rain within the next 24 hours, as forecasted by the National Weather Service, appropriate BMPs will be installed upon

completion of the day's activities to control erosion and prevent sediment laden stormwater from leaving the construction area.

4. Suitable perimeter control BMPs, such as silt fences, or straw wattles shall be placed below all construction activities at the edge of surface water features to intercept sediment before it reaches the waterway. These BMPs shall be installed prior to any clearing or grading activities.
5. If spoil (or stockpile) sites are used, they shall be located such that they do not drain directly into a surface water feature, if possible. If a spoil site drains into a surface water feature, swales shall be constructed to intercept sediment before it reaches the feature. Spoil sites shall be graded and vegetated to reduce the potential for erosion.
6. Sediment control measures shall be in place prior to the onset of the rainy season and will be monitored and maintained in good working condition until disturbed areas have been revegetated.
7. A site-specific spill prevention plan shall be implemented for potentially hazardous materials. The plan shall include the proper handling and storage of all potentially hazardous materials, as well as the proper procedures for cleaning up and reporting any spills. If necessary, containment berms shall be constructed to prevent spilled materials from reaching surface water features.
8. Equipment and hazardous materials shall be stored 50 feet away from surface water features.

Mitigation Measure BIO-7: Compensatory Mitigation for Wetlands Impacts

The County shall compensate for wetlands impacts through restoration, rehabilitation, and/or creation of wetlands. If the wetland mitigation project being led by Caltrans on the Lanphere Parcel in the Arcata Bottoms does not have sufficient capacity to fully compensate for the Humboldt Bay South project's wetland impacts, then the County will identify an alternative site and develop a specific plan for that property to create the necessary wetland amount. A Wetlands Mitigation and Monitoring Plan shall be prepared in coordination with the USACE, NCRWQCB, CCC, and CDFW. Compensation for wetlands shall occur so there is no net loss of wetland habitat at ratios to be determined in consultation with the USACE, NCRWQCB, CCC, and CDFW.

The Plan shall be acceptable to the applicable agencies and include the following elements: proposed mitigation ratios; description and size of the restoration or compensatory area; site preparation and design; plant species; planting design and techniques; maintenance activities; plant storage; irrigation requirements; success criteria; monitoring schedule; and remedial measures. The Plan shall be implemented by the County.

Mitigation Measures BIO-6 and BIO-7 requires avoidance and minimization of permanent impacts and temporary impacts to wetlands during construction, restoration of pre-project conditions at the conclusion of construction, and compensation of wetlands thereby reducing any potential impacts to wetlands to a less-than-significant level.

d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites? (No Impact)

Wildlife movement corridors are areas that connect suitable wildlife habitat areas in a region otherwise fragmented by rugged terrain, changes in vegetation, or human disturbance. Natural features such as canyon drainages, ridgelines, or areas with vegetative cover provide wildlife corridors. Wildlife movement corridors are important because they provide access to mates, food, and water; allow the dispersal of individuals away from high population density areas, and facilitate the exchange of genetic traits between populations.

The project does not include any features that would interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites. The project would not preclude wildlife mobility, breeding, or reproduction. No impact has been identified.

Following construction, the proposed project would not create an impediment to wildlife movement. No operational impact would occur.

e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance? (No Impact)

The Humboldt County General Plan and City of Eureka General Plan includes several policies to protect biological resources. The County includes a policy to avoid significant habitat modification or destruction consistent with federally adopted Habitat Recovery Plans or interim recovery strategies (Policy BR-P2); a policy for wetland identification (Policy BR-P7); a policy to protect oak woodlands (Policy BR-P9); and a policy to manage and control noxious and exotic invasive plant species (Policy BR-P10); a policy for projects requiring discretionary review to preserve large trees, where possible, and mitigate for carbon storage losses attributable to significant removal of trees (Policy AQ-P17). The County does not have a tree preservation policy or ordinance.

The City of Eureka includes a number of policies to protect and enhance the natural qualities of the Eureka area's aquatic resources and to preserve the area's valuable marine, wetland, and riparian habitat (policies 6.A.1, 6.A.3, 6.A.6, 6.A.7, 6.A.8, 6.A.13, 6.A.14, and 6.A.19). The project would not conflict with applicable Humboldt County General Plan or City of Eureka General Plan policies protecting biological resources. No impact would occur.

f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan? (No Impact)

Currently there are no adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plans that cover the project area. No impact would occur.

3.5 Cultural Resources

	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a) Cause a substantial adverse change in the significance of a historic property that qualifies as a historical resource as defined in §15064.5?				✓
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?		✓		
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?			✓	
d) Disturb any human remains, including those interred outside of formal cemeteries?		✓		

Evaluation Criteria	Significance Thresholds	Sources
Would the project cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	Adverse alteration of those physical characteristics of a historical resource that justify its eligibility for the NRHP, CRHR or as a local landmark	CEQA Guidelines Appendix G, Checklist Item V (a) General Plan Policies CU-P3 and CU-P5
Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	Adverse alteration of those physical characteristics of an archaeological resource that justify its eligibility for the NRHP, CRHR or as a unique archaeological resource	CEQA Guidelines Appendix G, Checklist Item V (b) General Plan Policies CU-P1, CU-P3, CU-P5 and CU-P6
Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	Disturbance of a known vertebrate fossil locality or within a geologic unit that has high sensitivity for vertebrate fossils	CEQA Guidelines Appendix G, Checklist Item V (c)
Would the project disturb any human remains, including those interred outside of dedicated cemeteries?	Disturbance of human remains, including Native American human remains, associated grave goods, or items of cultural patrimony	CEQA Guidelines Appendix G, Checklist Item V (d) General Plan Policy CU-P4

The CEQA Guidelines define a historical resource as: (1) a resource listed in the California Register of Historical Resources; (2) a resource included in a local register of historical resources, as defined in the California PRC Section 5020.1(k), or identified as significant in a historical resource survey meeting the requirements of PRC Section 5024.1(g); or (3) any object, building, structure, site, area, place, record, or manuscript that a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California, provided the lead agency's determination is supported by substantial evidence in light of the whole record.

The County retained JRP Historical Consulting, LLC (JRP) and Roscoe & Associates (Roscoe) to prepare cultural resources documentation for the project. JRP prepared a Historical Resources Evaluation Report (HRER), Roscoe prepared an Archaeological Survey Report (ASR), and they jointly prepared a Historic Property Survey Report (HPSR), which is a summary document regarding the cultural resources findings. JRP addressed historic architectural / built environment resources and Roscoe addressed archaeological resources. The HPSR, ASR, and HPSR were prepared for compliance under Section 106 of the National Historic Preservation Act. These documents also provided data and analysis for compliance with Section 15064.5 of the CEQA Guidelines. JRP and Roscoe developed a stand-alone memo discussing CEQA compliance (JRP and Roscoe, 2018).

a) Cause a substantial adverse change in the significance of a historic property that qualifies as a historical resource as defined in §15064.5? (No Impact)

JRP identified three historic-era resources within the Area of Potential Effect that had previously been evaluated and found ineligible for the National Register of Historic Places (NRHP) and the California Register of Historic Resources (CRHR), with concurrence from the State Historic Preservation Officer. These previously evaluated resources are the Bracut Industrial Park, a five-mile segment of the railroad corridor, and the row of eucalyptus trees along Highway 101 near the CRC property.

JRP identified two resources which had not been previously evaluated: the former Arcata Redwood Company property, currently owned by CRC, at 5151 N US Highway 101, and a segment of the railroad in the City of Eureka near Eureka Slough. Neither of these resources meet the criteria for listing in the NRHP, the CRHR, nor as eligible properties on the City of Eureka Local Register of Historic Places. Furthermore, the former railroad segment does not have the potential to be a contributor to any larger historic property. Additionally, pursuant to Section 15064.5(a)(2)-(3) of CEQA, using criteria outlined in Section 5024.1 of the California PRC, neither resource is a historical resource for the purposes of CEQA. No impact would occur.

In 2003, JRP evaluated a row of eucalyptus trees located in the APE as part of the "Historical Resources Evaluation Report Route 101 Eureka-Arcata Corridor Highway Improvement Project." This row of trees is located adjacent to the CRC property. JRP concluded that the tree row was not eligible for the NRHP and CRHR, nor as part of a historic landscape. SHPO concurred with this determination on November 29, 2006. The Eureka Heritage Society presented Caltrans with additional information regarding the original date of planting and by whom, but Caltrans staff decided that the trees still do not meet the criteria for NRHP or CRHR eligibility, either alone, or as part of a historic landscape. Caltrans also stated that the possibility of the trees contributing to a historic corridor has been negated by the lack of integrity the corridor possesses in relation to its period of significance. (JRP Historical Consulting, LLC 2018)

Subsurface historic-period archaeological resources are evaluated in "b" below.

b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5? (Less than Significant with Mitigation)

The records search at the Northwest Information Center (NWIC) indicates that the project APE has been included in previous cultural resource surveys, beginning with Llewellyn L. Loud (1918: *Ethnogeography and Archaeology of the Wiyot Territory*) and later, formal surveys by Gary Berg (1974: S-000129), James Benson et al. (1977: S-000886), Timothy Keefe (2006: S-038304) Lou Ann Speulda-Drews (2012: S-039642), and JRP Historical Consulting (2004: no survey number). (Roscoe and Associates 2017)

Four previously-recorded cultural resources are reported within the project area at the NWIC, three of which are historic-period resources. Site CA-HUM-048, the Wiyot village of *plets-wok*, was mapped in the APE by Loud (1918); however, subsequent historic-era quarrying and road-construction projects obliterated the majority of Brainard's Point, on which the site was situated, and no evidence of the site has since been reported. A recent analysis of Loud's maps, historic-period maps and aerial photographs concluded that this site would have been located where Highway 101 and the Northwestern Pacific Railroad corridors pass the southeast corner of the Bracut Industrial Center.

Roscoe and Associates contacted local Native American tribes regarding this project and cultural resources investigation. Correspondence was initiated with the Native American Heritage Commission (NAHC) who provided a list of Native American individuals and tribes with ancestral interest in this portion of Humboldt County. Written letters, email and phone conversations were conducted with representatives of the Bear River Band of the Rohnerville Rancheria, Blue Lake Rancheria and the Wiyot Tribe at Table Bluff Reservation. Ultimately, no concerns regarding the proposed undertaking or this investigation were expressed as a result of this correspondence.

An archaeological field survey was conducted on October 31, 2017 by Roscoe and Associates personnel under the supervision of James Roscoe, M.A. This field investigation was conducted over the entire project APE, including the equipment staging areas, and overlapped portions of the Eureka Waterfront Trail project and the City of Arcata Rail with Trail project. During the field survey, conditions to identify archaeological site indicators were fair. Mineral soils were observed along and adjacent to the APE and provided ample opportunity to identify archaeological materials; except in the paved areas of the Bracut Industrial Park and the former lumber decks of the CRC. The margins of these paved areas, where the proposed trail construction is planned, were included in the field survey.

No artifacts, features, sites or other archaeological cultural resources were encountered during this investigation within the APE. Although the Wiyot village site of plets-wok (CA-HUM-048) was once recorded within the project APE, the landform on which the shell-mound was situated was destroyed in the mid-20th century for use as fill in local construction projects, and no evidence of the site has been reported since Loud's recordation (Loud 1918).

This investigation results in a finding that pursuant 36 CFR 800.4(d)(1), no archaeological resources would be affected by the proposed project and according to Public Resource Code 5020.1, no adverse changes would occur to any archaeological resources. At this time, no further archaeological studies are recommended.

It is unlikely that archaeological materials would be discovered during construction of the project; however, if buried cultural materials are encountered during construction, work shall stop in the immediate vicinity of the find(s) until Humboldt County can follow procedures for discovery of cultural resources during implementation of an undertaking, as described at 36 CFR 800.13. A substantial change to or destruction of these resources could be a potentially significant impact; therefore the following mitigation is included.

Mitigation Measure CR-1: Protect Archaeological Resources during Construction Activities

If cultural materials such as chipped or ground stone, historic debris, building foundations, or bone are discovered during ground-disturbance activities, work shall be stopped within 20 meters (66 feet) of the discovery. Work near the archaeological finds shall not resume until a professional archaeologist, who meets the Secretary of the Interior's Standards and Guidelines, has evaluated the materials and offered recommendations for further action. If the find is determined to constitute either an historical resource or a unique archaeological resource per CEQA Guidelines sections 15064.5, the archaeologist shall develop appropriate mitigation to protect the integrity of the resource and ensure that no additional resources are affected. Mitigation could include but would not necessarily be limited to avoidance, preservation in place, archival research, subsurface testing, or excavation and data recovery.

Implementation of Mitigation Measure CR-1 would reduce this impact to a less-than-significant level for both construction and operation because a plan to address discovery of unanticipated buried cultural resources and to preserve and/or record those resources consistent with appropriate laws and requirements would be implemented.

c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature? (Less than Significant)

Paleontological resources are the remains or traces of prehistoric animals and plants. Paleontological resources, which include fossil remains and geologic sites with fossil-bearing strata are non-renewable and scarce and are a sensitive resource afforded protection under environmental legislation in California. Under California PRC Section 5097.5, unauthorized disturbance or removal of a fossil locality or remains on public land is a misdemeanor. State law also requires reasonable mitigation of adverse environmental impacts that result from development of public land and affect paleontological resources (PRC Section 30244).

According to the Humboldt County General Plan, the geology of the Mad-Redwood Basin is complex and variable. The basin includes the Mad River, Redwood Creek, Eureka Plain, and Trinidad planning watersheds which all differ in their bedrock composition. Mad River, Redwood Creek, and Trinidad are composed primarily of Franciscan rock types, while Eureka Plain is mostly younger sedimentary rock.

It is unlikely that project construction would impact potentially significant paleontological resources; therefore, the impact is less than significant.

d) Disturb any human remains, including those interred outside of formal cemeteries? (Less than Significant with Mitigation)

Based on field review/investigations, no evidence suggests that any prehistoric or historic-era marked or un-marked human interments are present within or in the immediate vicinity of the project alignment. It is unlikely that undiscovered human remains are present within the construction areas given that the majority of the project area has been disturbed by previous development. However, the possibility of encountering human remains during construction cannot be completely discounted; therefore, the impact related to the potential disturbance or damage of previously undiscovered human remains, if present, is considered potentially significant.

Mitigation Measure CR-2: Protect Human Remains if Encountered during Construction

The County's contractor shall immediately notify the Humboldt County Coroner should human remains, associated grave goods, or items of cultural patrimony be encountered during construction, and the following procedures shall be followed as required by Public Resources Code § 5097.9 and Health and Safety Code § 7050.5. In the event of the coroner's determination that the human remains are Native American, the Native American Heritage Commission would be contacted and would appoint a Most Likely Descendant (MLD). A qualified archaeologist, the County and the MLD shall make all reasonable efforts to develop an agreement for the treatment, with appropriate dignity, of any human remains and associated or unassociated funerary objects. The agreement would take into consideration the appropriate excavation, removal, recordation, analysis, custodianship, and final disposition of the human remains and associated or unassociated funerary objects.

Mitigation Measure CR-2 would reduce the impact of construction activities on potentially unknown human remains to a less-than-significant level by addressing discovery of unanticipated remains, associated grave goods, or items of cultural patrimony consistent with appropriate laws and requirements. Operational impacts on human remains are not anticipated.

3.6 Geology and Soils

	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.			✓	
ii) Strong seismic ground shaking?			✓	
iii) Seismic related ground failure, including liquefaction?			✓	
iv) Landslides?			✓	
b) Result in substantial soil erosion or the loss of topsoil?			✓	
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on, or off, site landslide, lateral spreading, subsidence, liquefaction or collapse?			✓	
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?			✓	
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?				✓

Evaluation Criteria	Significance Thresholds	Sources
Would the project expose people or structures to potential substantial adverse effects involving rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault?	Placement of a structure intended for human occupancy within an Alquist-Priolo earthquake fault zone	CEQA Guidelines Appendix G, Checklist Item VI(a)(i) General Plan Policy S-P7
Would the project expose people or structures to potential substantial adverse effects involving strong seismic ground shaking?	Non-compliance with California Building Code Non-compliance with recommendations of project-specific geotechnical reports	CEQA Guidelines Appendix G, Checklist Item VI(a)(ii) Humboldt County Geologic Hazards Ordinance
Would the project expose people or structures to potential substantial adverse effects involving seismic-related ground failure, including liquefaction?	Non-compliance with California Building Code Non-compliance with recommendations of project-specific geotechnical reports	CEQA Guidelines Appendix G, Checklist Item VI(a)(iii) Humboldt County Geologic Hazards Ordinance
Would the project expose people or structures to potential substantial adverse effects involving landslides?	Non-compliance with California Building Code Non-compliance with recommendations of project-specific geotechnical reports	CEQA Guidelines Appendix G, Checklist Item VI(a)(iv) Humboldt County Geologic Hazards Ordinance
Would the project result in substantial soil erosion or the loss of topsoil?	Non-compliance with Streamside Management Area Ordinance	CEQA Guidelines Appendix G, Checklist Item VI(b) Streamside Management Area Ordinance General Plan Standard BR-S9
Would the project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	Non-compliance with California Building Code Non-compliance with recommendations of project-specific geotechnical reports	CEQA Guidelines Appendix G, Checklist Item VI(c) General Plan Policy S-P1 Humboldt County Geologic Hazards Ordinance

Evaluation Criteria	Significance Thresholds	Sources
Would the project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	Non-compliance with California Building Code Non-compliance with recommendations of project-specific geotechnical reports	CEQA Guidelines Appendix G, Checklist Item VI(d)
Would the project have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	Installation of septic systems or waste water disposal systems in unsuitable soils	CEQA Guidelines Appendix G, Checklist Item VI(e)

a.i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42. (Less than Significant)

The Alquist-Priolo Act (Public Resources Code Sections 2621–2630) was passed in 1972 to mitigate the hazard of surface faulting to structures designed for human occupancy. The purpose of the Act is to prevent the construction of buildings used for human occupancy on the surface trace of active faults. The project does not include structures designed for human occupancy. Additionally, the proposed trail alignment would not cross an active Alquist-Priolo fault mapped by the California Geological Survey (CDOC 1983). No impact has been identified.

The project would be designed and constructed in conformance with the site-specific recommendations contained in the geotechnical report prepared for the project (Crawford and Associates 2017), any subsequent project-related geotechnical reports, and be consistent with General Plan Policy S-P7. This would include, but not be limited to, pavement recommendations, new embankment support, subgrade conditions, retaining structures, and bridge foundation recommendations, and soil corrosivity for culvert design. The project's fault rupture related impacts would be less than significant with regard to construction and operation.

a.ii) Strong seismic ground shaking? (Less than Significant)

Strong seismic shaking is a regional hazard that could cause major damage to the project area. The extent of ground-shaking during an earthquake is controlled by the earthquake magnitude and intensity, distance to the epicenter, and the geologic conditions in the area.

Humboldt County is in an active earthquake area. The closest faults to the project alignment are the Falore and Freshwater Faults which abut Highway 101 and head southeast, according to the California Geological Survey 2010 Fault Activity Map of California (CGS 2010). The only project component that would likely present a hazard in the event of a seismic incident are the bridges; however, all constructed features would comply with the latest version of the California Building Code (CBC), including the requirements of the Seismic Design Category (SDC) zones.

The project would be designed and constructed in conformance with the site-specific recommendations contained in the geotechnical report to be prepared for the project, any subsequent project-related geotechnical reports, and be consistent with the Humboldt County Geologic Hazards Ordinance. This would include, but not be limited to, pavement recommendations, new embankment support, subgrade conditions, retaining structures, and bridge foundation recommendations, and

corrosion protection. Adherence to the recommendations in the geotechnical report during construction and operation would result in a less than significant impact.

a.iii) Seismic related liquefaction? (Less than Significant)

Liquefaction is the transformation of saturated, loose, fine-grained sediment to a fluid-like state because of earthquake shaking or other rapid loading. Liquefaction is known to occur in loose or moderately saturated granular soils with poor drainage.

The proposed project would not include residential development, occupied structures, or critical facilities that would be subject to liquefaction. According to Humboldt County's Web GIS (http://webgis.co.humboldt.ca.us/HCEGIS2.0/), the project area is in an area of potential liquefaction. The project is within an area of historical fill over bay muds and may be subject to some degree of ground liquefaction during strong seismic shaking. The project would be designed and constructed in conformance with the site-specific recommendations contained in the geotechnical report prepared for the project (Crawford and Associates 2017) and any subsequent project-related geotechnical reports. Adherence to the recommendations in the geotechnical report during construction and operation would result in a less than significant impact with regard to seismic related liquefaction.

a.iv) Landslides? (Less than Significant)

The project area does not have the potential for landslides as the project area is on relatively flat land. No project components would present a landslide hazard, and all constructed features would comply with the latest version of the CBC, including the requirements of the SDC zones, and the site-specific recommendations contained in the geotechnical report prepared for the project. Adherence to the CBC and recommendations in the geotechnical report during construction and operation would result in a less than significant impact with regard to landslides.

b) Result in substantial soil erosion or the loss of topsoil? (Less than Significant)

Construction activities, including cut, fill, removal of vegetation, and operation of heavy equipment would disturb soil and, therefore, have the potential to cause erosion. These activities would be performed in compliance with the BMPs prescribed in the National Pollutant Discharge Elimination Standards (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Order No. 2009-0009-DWQ) (Construction General Permit). BMPs may include: silt fences, straw bales and wattles, soil stabilization controls, site watering for controlling dust, settling tanks and dewatering bags. In areas where the bike path would be located within close proximity to wetlands or special-status plants, BMPs would be implemented to prevent erosion and sedimentation from bike path construction. Protection measures include a stormwater pollution prevention plan (SWPPP) which would be required prior to any construction ground disturbing activities since the project would disturb more than one acre of ground. Therefore, with adherence to existing codes and regulations and the SWPPP, no substantial soil erosion or loss of topsoil would result from the project and a less than significant impact is expected to occur as a result of the project.

Following construction, the project would not result in soil erosion or loss of topsoil, as disturbed areas would be restored to general pre-construction conditions and no additional ground disturbance would occur. Therefore, no operational impact would occur.

c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on, or off, site landslide, lateral spreading, subsidence, liquefaction or collapse? (Less than Significant)

The proposed project is not located in an area prone to on- or off-site landslide, lateral spreading, subsidence, or collapse; nor would construction or activities after construction increase the likelihood of creating on- or off-site landslide, lateral spreading, subsidence, or collapse. Reference Section a) iii, above for a discussion on liquefaction. The soil profile (Occidental, 0 2 percent slopes, map unit symbol 140) in the vicinity of the project alignment generally consists of peat (0-3”), and silty clay loam (3-63”) (USDA 2016). Together with much of the land in and around Humboldt Bay and associated coastal streams, the project alignment is mapped as “Relatively Stable” on the Humboldt County GIS Portal.

The project would comply with the seismic requirements of the CBC and is on predominately flat ground with no potential for landslides. The project would be designed and constructed in conformance with the site-specific recommendations contained in the geotechnical report prepared for the project (Crawford and Associates 2017),any subsequent project-related geotechnical reports, and be consistent with General Plan Policy S-P1. Project adherence to the recommendations in the geotechnical report during construction and operation would result in a less than significant impact with regard to landslide, lateral spreading, subsidence, or collapse.

d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property? (Less than Significant)

Expansive soils are generally high in certain clay types and are prone to large volume changes that are directly related to changes in water content. Soils along the project alignment are generally silty clay loam (USDA 2016), which have the potential for expansion. The project would be designed and constructed in conformance with the site-specific recommendations contained in the geotechnical report prepared for the project (Crawford and Associates 2017) and any subsequent project-related geotechnical reports. Adherence to the recommendations in the geotechnical report during construction and operation would result in a less than significant impact with regard to expansive soils creating substantial risks to property.

e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater? (No Impact)

The project would not involve the use of septic tanks or other alternative wastewater disposal systems. Therefore, no impact would occur.

3.7 Greenhouse Gas Emissions

	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?			✓	
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?			✓	

Evaluation Criteria	Significance Thresholds	Sources
Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	1,100 MT CO_2e	CEQA Guidelines Appendix G, Checklist Item VII (a) BAAQMD CEQA Guidelines
Would the project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	Conflict with the State's adopted Scoping Plan	CEQA Guidelines Appendix G, Checklist Item VII (b)

a, b) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment, or conflict with an applicable plan, policy, or regulation? (Less than Significant)

This section discusses greenhouse gas emissions and consistency with the State's adopted Scoping plan. Greenhouse gasses are also a contributor to climate change and sea level rise. To provide additional context to this document, this section also discusses sea level rise resulting from global climate change for informational purposes only.

Climate change refers to change in the Earth's weather patterns including the rise in the Earth's temperature due to an increase in heat-trapping greenhouse gases (GHG) in the atmosphere. Unlike emissions of criteria and toxic air pollutants, which have local or regional impacts, emissions of GHGs that contribute to global warming or global climate change have a broader, global impact. Global climate change is a process whereby GHGs accumulating in the atmosphere contribute to an increase in the temperature of the Earth's atmosphere. The principal GHGs contributing to global warming are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O) and fluorinated compounds. These gases allow visible and ultraviolet light from the sun to pass through the atmosphere, but they prevent heat from escaping back out into space. GHG emissions can be reduced to some degree by improved coordination of land use and transportation planning at the city, county and subregional level, and other measures to reduce automobile use. Energy conservation measures also can contribute to reductions in GHG emissions.

Federal Guidance

On February 18, 2010, the Council on Environmental Quality (CEQ) provided a draft guidance memorandum for public consideration and comment on the ways in which federal agencies can improve their consideration of the effects of greenhouse gas emissions and climate change in evaluations of proposals for federal actions under the NEPA (CEQ 2010). The CEQ updated that draft in 2014, and provided a final guidance on August 2, 2016 (CEQ 2016).

The CEQ's 2010 draft guidance proposed to advise federal agencies to consider, in scoping their NEPA analyses, whether analysis of the direct and indirect greenhouse gas emissions from their proposed actions may provide meaningful information to decision makers and the public. Specifically, if a proposed action would be reasonably anticipated to cause direct emissions of 25,000 metric tons or more of carbon dioxide equivalent ($MTCO_2e$) emissions on an annual basis, agencies should consider this an indicator that a quantitative and qualitative assessment may be meaningful to decision makers and the public. For long-term actions that have annual direct emissions of less than 25,000 $MTCO_2e$, CEQ encouraged federal agencies to consider whether the action's long-term emissions should receive similar analysis. CEQ did not propose this as an indicator of a threshold of significant effects, but rather as an indicator of a minimum level of greenhouse gas emissions that may warrant some description in the appropriate NEPA analysis for agency actions involving direct emissions of greenhouse gases. The CEQ removed the direct emissions criteria from the 2016 final guidance, which contains no numeric recommendations. For comparison, the EPA's Greenhouse Gas Reporting Program requires mandatory reporting for 'large' industrial sources of GHG to report GHG data, and defines large industrial sources as those that emit more than 25,000 $MTCO_2e$ per year.

State Guidance

In 2006, the Governor of California signed the Global Warming Solutions Act of 2006 (Assembly Bill 32), committing the State of California to reducing GHG emissions to 1990 levels by 2020. The statute requires the ARB to track emissions through mandatory reporting, determine the 1990 emission levels, set annual emissions limits that would result in meeting the 2020 target, and design and implement regulations and other feasible and cost effective measures to ensure that statewide GHG emissions would be reduced to 1990 levels by 2020

In December 2008, pursuant to Assembly Bill 32 (AB 32), the ARB adopted the Climate Change Scoping Plan (Scoping Plan), which outlined measures to attain the 2020 GHG emissions limit. The Scoping Plan estimated that implementation of identified measures would result in a reduction of emission from various sectors including transportation, energy, forestry, and high global warming potential gas sectors.

In May 2014, ARB approved the First Update to the Climate Change Scoping Plan (Updated Scoping Plan) which describes the progress made to meet the near-term (2020) objectives of AB 32 and defines California's climate change priorities and activities for the next several years (ARB 2014). The Updated Scoping Plan also updated the 2020 emissions limit and business-as-usual emissions for 2020. Finally, the Updated Scoping Plan provides recommendations for establishing a mid-term emissions limit that aligns with the long-term (2050) goals of Executive Order S-3-05. The recommendations cover the energy, transportation, agriculture, water, waste management, natural and working lands, short-lived climate pollutants, green building, and cap-and-trade sectors.

The initial Scoping Plan recommended that local governments achieve a 15-percent reduction below 2005 levels by 2020, which aligns with the State's goal of not exceeding 1990 emissions levels by 2020. However, the Updated Scoping Plan does not contain a recommended reduction level or percent for local government's municipal operations. The ARB is moving forward with a second

update to the Scoping Plan that would incorporate a year 2030 GHG emissions reduction target. The second update to the Scoping Plan has not been adopted.

Regional Guidance

The NCUAQMD does not have rules, regulations, or thresholds of significance for non-stationary GHG emissions. In 2011, the NCUAQMD adopted Rule 111 - Federal Permitting Requirements for Sources of Greenhouse Gases to establish a threshold above which New Source Review and federal Title V permitting applies and to establish federally enforceable limits on potential to emit GHGs for stationary sources. These are considered requirements for stationary sources, and should not be used as a threshold of significance for non-stationary source projects. For reference, Rule 111 Section D(1)(a) and D(1)(b) have applicability thresholds of 75,000 $MTCO_2e$ per year and 100,000 $MTCO_2e$ per year.

On December 4, 2007, the Humboldt County Board of Supervisors joined the International Council on Local Environmental Initiatives' (ICLEI) campaign to reduce local carbon emissions. The Humboldt County General Plan (Chapter 15) contains one goal, and multiple policies, standards, and implementation measures related to greenhouse gases and the reduction of GHG emissions in the County.

The County released a draft Climate Action Plan in January 2012, which contains an emissions inventory and forecast. The draft Climate Action Plan also includes a proposed emissions reduction target. However, the County has not yet adopted the Climate Action Plan. The County's General Plan contains policies and implementation measures within the Air Quality Element to reduce greenhouse gas emissions and for the preparation of a Climate Action Plan.

Other Air District Guidance

The BAAQMD publishes CEQA Guidelines to assist local jurisdictions and lead agencies in complying with the requirements of CEQA regarding potentially adverse impacts to air quality. These CEQA Guidelines were updated in June 2010 to include new thresholds of significance (2010 Thresholds) adopted by the BAAQMD Governing Board. The BAAQMD's Guidelines were further updated in May 2017 to address the California Supreme Court's 2015 opinion in California Building Industry Association vs. Bay Area Air Quality Management District, 62 Cal.4th 369.

The BAAQMD's adopted thresholds of significance contain the following operational GHG thresholds:

- Compliance with a Qualified GHG Reduction Strategy; or
- 1,100 MTCO2e per year; or
- 4.6 MTCO2e per service population (residents plus employees) per year.

The BAAQMD Guidelines do not provide construction thresholds of significance for GHG emissions.

Threshold of Significance Applied

The Updated Scoping Plan is the applicable plan adopted for the purpose of reducing emissions of greenhouse gas. Humboldt County, as Lead Agency for the project, has elected to apply the BAAQMD's threshold of 1,100 $MTCO_2e$ per year to determine the project's impact for generation of greenhouse gases. In order to assess the potential impact of construction-generated emissions, the construction GHG emissions are annualized over an assumed 30-year project lifespan and added to operational emissions.

Construction and Operational Impact

Project construction activities would result in a temporary increase in GHG emissions, including exhaust emissions from on-road trucks, worker commute vehicles, and off-road heavy-duty equipment. Construction would require clearing, earthmoving, and delivery equipment, as used for

similar projects, and which have been accounted for in the State's emission inventory and reduction strategy for both on and off-road vehicles. Construction emissions were estimated using CalEEMod version 2016.3.1, and are estimated to be approximately 285 $MTCO_2e$ from all construction activities over the two-year construction period. The project's construction emissions equal 9.5 $MTCO_2e$ per year when annualized over the assumed 30-year lifespan of the project.

Operation and maintenance of the project would generate less than one traffic trip per day on average. Larger repairs to the trail or shoreline may take several weeks to complete depending on the extent of damage and other circumstances. The project would not increase the County's population or bring new, permanent employees to the project area. As such, the project would not result in substantial long-term operational emissions of GHGs. Even assuming an average of one trip per day, total project emissions (operations plus annualized construction) would be less than 12 $MTCO_2e$ per year, which is substantially less than the emission threshold of 1,100 MT CO_2e. Therefore, the project would generate a less than significant impact.

The project is also evaluated for consistency with the ARB *First Update to the Climate Change Scoping Plan*. The Climate Change Scoping Plan released by the ARB provided strategies for meeting the near-term 2020 greenhouse gas emission reduction goals in AB 32. The *First Update to the Climate Change Scoping Plan* provides recommendations for establishing a mid-term emissions limit that aligns with the long-term (2050) goals of Executive Order S-3-05, which consists of reducing greenhouse gas emissions to 80 percent below 1990 levels. The recommendations cover the energy, transportation, agriculture, water, waste management, natural and working lands, short-lived climate pollutants, green building, and cap-and-trade sectors, and are to be implemented by a variety of State agencies.

Although project construction may benefit (have a reduced generation of GHG) from implementation of some of the State-level regulations and policies, such as the Phase 2 heavy-duty truck greenhouse gas standards proposed to be implemented within the transportation sector, the project would not impede the State in meeting the AB 32 greenhouse gas reduction goals. The recommended next steps in the *First Update Climate Change Scoping Plan* are broad policy and regulatory initiatives that would be implemented at the State level and do not relate to the construction and operation of smaller individual infrastructure projects such as the proposed project. The project would provide infrastructure for non-motorized transportation modes, which supports the Updated Scoping Plan's goals reducing emissions from the transportation sector. Therefore, the project would not conflict with AB 32 or the Climate Change Scoping Plan, and would result in a less than significant impact.

3.8 Hazards and Hazardous Materials

	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?		✓		
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?		✓		
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?				✓
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?			✓	
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?				✓
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?				✓
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?		✓		
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?			✓	

Evaluation Criteria	Significance Thresholds	Sources
Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	Potential for improper transport, use, disposal, or accidental release of hazardous materials or wastes due to non-compliance with State and federal hazardous materials or waste regulations	CEQA Guidelines Appendix G, Checklist Item VIII (b) California (Title 8 and 26 of the CCR), and federal (CFR 29 and 49) hazardous materials and waste regulations
Would the project emit hazardous emissions or involve handling hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	Use, storage, or emission, of acutely hazardous materials or waste within 0.25 mile of a school	CEQA Guidelines Appendix G, Checklist Item VIII (c)
Would the project be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment (State CEQA Guidelines Section 15186)?	Location of project on or adjacent to a site with presence or likely presence of hazardous substances or petroleum products	CEQA Guidelines Appendix G, Checklist Item VIII (d)
Would the project be located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, result in a safety hazard for the people residing or working in the area?	Location of project within an airport land use plan or within two miles of an airport and introduction of new or increased safety hazard	CEQA Guidelines Appendix G, Checklist Item VIII (e) Murray Field Airport Master Plan Humboldt County Airport Land Use Compatibility Plan
Would the project be within the vicinity of a private airstrip and result in a safety hazard for people residing or working in the project area?	Location of project within two miles of a private airport and introduction of new or increased safety hazard	CEQA Guidelines Appendix G, Checklist Item VIII (f)
Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	Location of project in areas that impair or interfere with an adopted emergency plan, including emergency access routes	CEQA Guidelines Appendix G, Checklist Item VIII (g) Humboldt County Emergency Operations Plan
Would the project expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	Location of project in a wildland fire area	CEQA Guidelines Appendix G, Checklist Item VIII (h) Humboldt County Fire Safe Regulations (Title III – Land Use and Development Division 11)

a, b) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials or upset and accident conditions? (Less than Significant with Mitigation)

Construction activities would involve the use of hazardous materials, such as fuels, lubricants, paints and solvents. These materials are commonly used during construction, are not acutely hazardous and would be used in small quantities. Regular transport of such materials to and from the project alignment during construction could result in an incremental increase in the potential for accidents. However, numerous laws and regulations ensure the safe transportation, use, storage and disposal of hazardous materials. For example, Caltrans and the California Highway Patrol regulate the transportation of hazardous materials and wastes, including container types and packaging requirements, as well as licensing and training for truck operators, chemical handlers, and hazardous waste haulers.

Worker safety regulations cover hazards related to the prevention of exposure to hazardous materials and a release to the environment from hazardous materials use. The California Division of Occupational Safety and Health (Cal-OSHA) also enforces hazard communication program regulations, which contain worker safety training and hazard information requirements, such as procedures for identifying and labeling hazardous substances, communicating hazard information related to hazardous substances and their handling, and preparation of health and safety plans to protect workers and employees.

An Initial Site Assessment (GHD 2017d) was prepared for the project by GHD in November, 2017, and due to its size (over 500 pages) is not attached as an appendix. It is, however, available for viewing at the County of Humboldt Public Works Department located at 1106 2nd Street in Eureka. Reference Figures 3.8-1 through 3.8-4 in the Initial Site Assessment for the Corridor Study's features and sites of interest along the project alignment.

The purpose of this Corridor Study was to identify areas of potentially impacted soil and/or groundwater along the project alignment that may require special handling and disposal during construction or could pose a health exposure risk to construction workers. Based on the data available, each of the sites that could potentially impact the project has been assigned a Hazard Rank in the Initial Site Assessment which is defined as follows:

- **Hazard Rank 1**: A site that would likely affect project construction. Contamination of soil and/or groundwater is confirmed to be within the project alignment.
- **Hazard Rank 2**: A site with the potential to affect the project, either because of the presence of contamination that may likely migrate into the project area or because the extent of contamination is unknown.
- **Hazard Rank 3**: A site that is not known to be contaminated, but due to current or historical use could possibly have contamination that could affect project construction.
- **Hazard Rank 4**: A site that has little or no potential to affect the project.

The Initial Site Assessment identified evidence that soil and groundwater impacts from historical activities (mill operations and industrial land uses and areas of fill materials of unknown origins) and documented petroleum hydrocarbon and semivolatile organic compounds (SVOC) releases may have the potential to be present at seven locations (see Table 3.8-1 for locations and constituents of concern) within, or adjacent to, the project alignment.

Table 3.8-1 Potential Construction Impacts

Site	Hazard Rank	GHD Map Id
North Coast Railroad Authority Corridor	3	1
Pepsi Cola Bottling Company	2	2
Target	2	3
APN 002-231-012	3	4
Former Redwood Oil Bulk Plant	2	5
California Redwood Company	2	6
Bracut Industrial Park	3	7

Source: Initial Site Assessment (GHD 2017d)

There is no analytical evidence to indicate that contaminated soils or hazardous materials are present in the project vicinity; however, as stated below in Mitigation Measures HAZ-1 and HAZ-2, during project construction and implementation, if there is any evidence that indicates contaminated soil or hazardous materials are present on the site, either from visual observations or odors indicative of regulated substances, the County shall be responsible for performing soil sample analyses. Based on the results of the analysis, the County shall consult with jurisdictional agencies regarding follow-up procedures. The County shall comply with all requirements/regulations of the appropriate agencies with regard to handling, transport and disposal of potential hazardous substances to the satisfaction of the applicable agency.

Mitigation Measure HAZ-1: Procedures for Encountering Unknown Hazardous Materials

In the event any hazardous, toxic, noxious, objectionable, or unknown chemicals are encountered during trail construction, construction shall be halted by the construction crew on duty and reported to the general contractor for the project and the County of Humboldt. Prior to resuming any work the County shall be responsible for obtaining a soil sample for analysis. The findings of the analysis shall be submitted, as applicable, to the North Coast Regional Water Quality Control Board (NCRWQCB) and any other appropriate regulatory agencies. Work shall not continue until and unless written approval is obtained from these agencies. The County shall comply at all times with the requirements and regulations of the NCRWQCB and other appropriate regulatory agencies with regard to the handling, transport, and disposal of hazardous materials such as contaminated soils to the satisfaction of these agencies. Disposal of all hazardous materials would be in compliance with all applicable California hazardous waste disposal laws.

Construction specifications will include the following measures to reduce potential impacts to vegetation and aquatic habitat resources in the project area associated with accidental spills of pollutants (e.g., fuel, oil, and grease):

- A site-specific spill prevention plan shall be implemented for potentially hazardous materials. The plan shall include the proper handling and storage of all potentially hazardous materials, as well as the proper procedures for cleaning up and reporting any spills. If necessary, containment berms shall be constructed to prevent spilled materials from reaching surface water features.
- Equipment shall use non-toxic vegetable oil for operating hydraulic equipment instead of conventional hydraulic fluids.

- Place plastic materials under asphaltic concrete paving equipment, while not in use to catch and/or contain drips and leaks.
- Minimize sand and gravel from any new asphalt from getting into storm drains, streets, and creeks by sweeping. Old or spilled asphalt must be recycled or disposed as approved by the Resident Engineer.
- During any and sweeping operations, petroleum or petroleum covered aggregate must not be allowed to enter any storm drain or water courses. Use silt fence until installation is complete.
- Use only non-petroleum based substances to coat asphalt transport trucks and asphalt spreading equipment.
- Drainage inlet structures and manholes shall be covered with filter fabric during application of seal coat, tack coat, slurry seal, and/or fog seal.
- Seal coat, tack coat, slurry seal or fog seal shall not be applied if rainfall is predicted to occur during the application or curing period.
- If dewatering is not required for other purposes, removal of seepage water in the coffered work areas may be ceased after new abutment concrete is poured and is curing (for at least 72 hours after pour) within the form structures, provided that pH of the water inside the cofferdam enclosures and in contact with the concrete forms does not exceed a difference of 0.5 pH units from that of ambient water quality in main slough channel outside of the cofferdams (e.g., 50 ft. upstream and downstream of the new bridge alignment) . If the difference in pH within the cofferdam exceeds 0.5 units, water levels within the coffered area will be kept below the level of the concrete abutment forms and pumped to temporary retention basins or Baker tanks and treated as above for erosion and sediment control.

Mitigation Measure HAZ-2: Preliminary Site Investigation and Sampling

The County shall ensure that in areas of ground disturbance, a Preliminary Site Investigation (PSI) that includes pre-construction soil borings is conducted prior to finalization of plans/specifications in order to characterize soil and groundwater in anticipation of implementation of construction activities. Once the areas of ground disturbance and potential dewatering are confirmed, the PSI Workplan shall identify potential contaminants of concern for laboratory analysis, location, and number of borings necessary for pre-characterization, and depth for sample collection. Laboratory analytical results of soil and groundwater samples collected from the borings shall be utilized to ascertain whether health and safety concerns are present for construction workers and determine potential soil and/or groundwater handling and disposal options. Proposed soil borings and/or grab groundwater sample locations shall be determined following identification of the areas and depths of soil excavation and dewatering activities.

If soil and/or groundwater impacts are identified, site workers involved in excavation activities shall be Hazardous Waste Operations and Emergency Response (HAZWOPER) trained (Occupational Safety and Health Administration [OSHA] 1910.120).

Implementation of Mitigation Measure HAZ-1 and HAZ-2, and adherence to existing and future hazardous materials and waste regulations would result in a less than significant impact. Following construction, operation of the project would not result in the need for new hazardous materials that would need to be transported, used, or disposed. No operational impact would occur.

c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school? (No Impact)

There are no existing or proposed schools within 0.25 mile of the project alignment; therefore, no impacts would occur related to emissions or handling of materials within one-quarter mile of an existing or proposed school.

d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment? (No Impact)

The provisions in Government Code Section 65962.5 are commonly referred to as the "Cortese List." A search of the Cortese List was completed to determine if any known hazardous waste sites have been recorded on or adjacent to the project alignment.

No portion of the project alignment would be located on any of the lists compiled pursuant to Government Code Section 65962.5, known as the Cortese List (CalEPA 2017) (hazardous waste and substances sites found on the Department of Toxic Substances Control [DTSC] EnviroStor database, leaking underground storage tanks found on the Geo Tracker database, solid waste disposal sites identified by the Water Board, and hazardous waste facilities subject to corrective action identified by the DTSC). There are a few leaking underground storage tank (LUST) sites near the project alignment; however, all of them have a cleanup status of closed. The closest LUST site with an open status is Victoria Gardens at the foot of V and X Streets in Eureka, which is approximately 700 feet northwest of the western end of the project alignment. Therefore, the proposed project would not be located on a Cortese List site and would not create a significant hazard to the public or environment. The impact is less than significant.

e, f) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area? (No Impact)

Murray Field is located less than a ¼ mile to the southeast of the project alignment off of Jacobs Avenue. However, no aspect of the project would result in an airport-related safety hazard for people residing or working in the project area. The project may require the use of a crane or two to install the bridge near CRC; however, the cranes are less than 200 feet in height (crane height is approximately 150 feet in height), so the County would not need to file a Notice of Proposed Construction or Alteration form with FAA. There are no other public or private airports/airstrips within two miles of the project alignment. Therefore, no potential safety hazards associated with airports would occur.

g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan? (Less than Significant with Mitigation)

The project alignment is located entirely within the Tsunami Inundation Area according to the Tsunami Inundation Map for Emergency Planning for the Eureka and Arcata South quadrangles (CalEMA et al. 2009). The Pacific Tsunami Warning Center in Ewa Beach, Hawaii, is staffed full-time by scientists, who quickly collect and analyze incoming tsunami data and decide whether to issue a tsunami warning. In the event of a tsunami warning, the Humboldt County of Humboldt Office of Emergency Services employees are trained in disaster preparedness including broadcasting an emergency tsunami warning (and sirens) and giving direction to the public on the actions they should

take in the event of a potential tsunami in Humboldt Bay. To help inform trail users of tsunami hazards and evacuation procedures, the proposed project would include adequate signage to notify the public of tsunami hazards and evacuation routes. Because there are existing tsunami evacuation plans for the area, and the project includes additional tsunami hazard signage, the project would not interfere with any existing emergency response plans. Therefore, the project would have a less than significant impact.

h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands? (Less than Significant)

The California Department of Forestry and Fire Protection (CAL FIRE) is required by law to map areas of significant fire hazards based on fuels, terrain, weather, and other relevant factors. These Fire Hazard Severity Zones influence how people construct buildings and protect property to reduce risk associated with wildland fires. The project alignment is located on lands designated Local Responsibility Area (LRA) by CAL FIRE (CAL FIRE 2007). The majority of the project alignment is designated LRA Unzoned with a couple areas near CRC and the Bracut Industrial Park designated LRA Moderate. The impact is less than significant.

3.9 Hydrology and Water Quality

	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a) Violate any water quality standards or waste discharge requirements?			✓	
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?			✓	
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off- site?			✓	
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off- site?			✓	
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?			✓	
f) Otherwise substantially degrade water quality?			✓	
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?				✓
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?			✓	
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?				✓
j) Inundation by seiche, tsunami, or mudflow?			✓	

Evaluation Criteria	Significance Thresholds	Sources
Would the project violate any water quality standards or waste discharge requirements, or alter the existing drainage patterns, rate, or amount of surface runoff in a manner which would result in substantial erosion or siltation, flooding, or exceedance of the capacity of stormwater drainage systems?	Non-compliance with the NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities. Alteration of the course of a stream, river, or waterway in a manner that creates erosion or siltation. Creation of increased quantity of runoff such that capacity of storm drains would be exceeded.	CEQA Guidelines Appendix G, Checklist Item IX (a) (c) (d) (e) General Plan Policies WR-P35, WR-P36, WR-P37, WR-P38, WR-P39, WR-P42, WR-P43, and WR-P44 General Construction Permit (Order No. 2009-0009, as amended by Order No. 2010-0014 & 2012-006)
Would the project substantially deplete groundwater supplies or interfere substantially with groundwater recharge?	Creation of a deficit in aquifer volume or lowering of groundwater levels. Creation of a substantial amount of new impervious surfaces that would interfere with groundwater recharge.	CEQA Guidelines Appendix G, Checklist Item IX (b)
Would the project provide additional sources of polluted runoff, or otherwise substantially degrade water quality?	Uncontrolled runoff from construction site	CEQA Guidelines Appendix G, Checklist Item IX (e) (f) Humboldt County Grading Ordinance Humboldt County Grading, Excavation, and Erosion and Sediment Control Ordinance
Would the project place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	Placement of housing in a 100-year flood hazard area	CEQA Guidelines Appendix G, Checklist Item IX (g) General Plan Standard S-P15 Humboldt County Flood Damage Prevention Ordinance
Would the project expose people or structures to a significant risk involving flooding, or place within a 100-year flood hazard area structures which would impede or redirect flood flows?	Placement of facilities in a 100-year flood hazard area Non-compliance with the Humboldt County Flood Damage Prevention Ordinance	CEQA Guidelines Appendix G, Checklist Item IX (h) (i) General Plan Standard S-P15 Humboldt County Flood Damage Prevention Ordinance
Would the project expose people or structures to flooding as a result of the failure of a levee or dam?	Placement of facilities in areas of potential dam or levee inundation	CEQA Guidelines Appendix G, Checklist Item VIII (i)

Evaluation Criteria	Significance Thresholds	Sources
Would the project expose people or structures to inundation by seiche, tsunami, or mudflow?	Placement of facilities in an area potentially affected by seiche, tsunami or mudflow	CEQA Guidelines Appendix G, Checklist Item VIII (j) General Plan Policies S-P1 and S-P2, Standard S-S7

a) Violate any water quality standards or waste discharge requirements? (Less than Significant)

Construction activities necessary to construct the trail would be conducted in accordance with the State Water Resources Control Board's General Permit for Discharges of Storm Water Associated with Construction Activity (Construction General Permit Order 2009-0009-DWQ). The Construction General Permit requires the development of a Storm Water Pollution Prevention Plan (SWPPP) by a certified Qualified SWPPP Developer. The SWPPP will identify appropriate erosion control measures and other Best Management Practices (BMPs).

The project's vegetation removal, excavation, grading and other earthwork activities are generally limited to the trail prism footprint which is separated from the Bay by the existing railroad prism. Runoff from the site would generally flow into highway drainage ditches where it would flow indirectly into Eureka Slough and/or Humboldt Bay. Appropriate stromwater BMPs, including erosion, sediment and non-stormwater controls would be implemented in accordance the SWRCB's Construction General Permit to protect water quality at all times through construction. Implementation of BMPs and erosion control measures would reduce potential water quality impacts during project construction activities to a less-than-significant level by requiring measures to control erosion and sedimentation of receiving water bodies. As a result, the potential impact on water quality during construction and operation would be less than significant.

b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)? (Less than Significant)

Water would only be used during construction for dust suppression on local roadways and work areas. Any water table draw-down during project construction would be very minor and localized and would not affect the ability of any off-site wells to draw water. Therefore, no substantial deficit in aquifer volume or interference would be expected to occur. The construction-related impact on groundwater levels would be less than significant.

Following construction, the project would not utilize groundwater and would not result in an increase in population or employment that would indirectly increase groundwater demand. Therefore, the project would not create a deficit in aquifer volume or a lowering of water levels. Additionally, the amount of impervious surface created by the project is minimal when compared to the remaining adjacent undeveloped surfaces, thereby not affecting groundwater recharge. The project is not expected to result in any change in the use or recharge of any groundwater source. The operational impact is less than significant.

c, d, e, f) Substantially alter the existing drainage pattern resulting in substantial erosion or siltation or flooding, create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff on- or off- site, or degrade water quality? (Less than Significant)

The proposed trail prism would extend into portions of the existing drainage ditch. In order to maintain conveyance capacity some portions of ditch would be shifted so that the new ditch grade and slope will match that of the existing ditch. Localized ponding similar to that experienced under the existing conditions may occur during runoff events for short periods of time due to local depressions. However the extent and duration of localized ponding is not anticipated to increase relative to existing conditions and no impacts existing highway facilities and adjacent properties are anticipated. A project specific drainage study will be developed to assess the hydrologic and hydraulic characteristics of the existing drainage system and the proposed project. The analysis will be completed to support the final project design and will include a capacity analysis of post-project ditch adjoining Highway 101, and a floodplain impact analysis.

The project would not result in a substantial change to drainage patterns, would not alter the course of a stream or river, would not substantially increase surface runoff, or create substantial additional sources of polluted runoff. Modifications to existing highway drainage are anticipated as part of the project. The modifications are not expected to significantly reduce the capacity or negatively impact the conveyance of stormwater from the project site or adjacent areas.

Areas disturbed during construction would generally be restored to pre-construction conditions, and the project would result in a minimal increase in new impervious surface associated with the paved portion of the trail. To ensure that there are no potentially significant runoff impacts that could result in minor erosion, completion of a SWPPP to the satisfaction of the RWQCB is required because the project includes more than one acre of ground disturbance. The preparation of a SWPPP and adherence to the RWQCB's requirements for the preparation of SWPPP's would result in a less than significant impact on stormwater-related siltation and erosion on- or off-site, or flooding on- or off-site.

The SWPPP would incorporate BMPs as appropriate. No debris, soil, silt, sand, slash, sawdust, rubbish, cement or concrete washings, oil or petroleum products, or other organic or earthen material from construction operations would be allowed to enter or be placed where it may become entrained in any flowing or standing water. Erosion control measures and BMPs would be implemented during all phases of construction. No motorized vehicles would be allowed on the trail; therefore, oil, gas or other fluids would not be expected to be a significant source of polluted stormwater runoff.

Erosion control measures to be included in the SWPPP or to be implemented by the County include, but are not limited to, the following:

To the maximum extent practicable, activities that increase the erosion potential in the project area shall be restricted to the relatively dry summer and early fall period to prevent or minimize the potential for rainfall events to transport sediment to surface water features. In-channel and in-bay construction activities would be restricted to the period of July 1st–September 31st. Upland construction would likely occur throughout the year as long as work activities comply with the conservation and avoidance and minimization measures identified in the plans/specifications and for the protection of other sensitive or special-status plant or animal species. For upland construction activities that must take place during the late–fall, winter, or spring (e.g., vegetation removal prior to avian nesting periods), then temporary erosion and sediment control structures shall be in place and operational at

the end of each construction day and maintained until permanent erosion control structures are in place.

Areas, where wetland and upland vegetation need to be removed, shall be identified in advance of ground disturbance and limited to only those areas that have been approved by the County. Exclusionary fencing will be installed around environmentally sensitive areas and other areas that do not need to be disturbed.

Within 10 days of completion of construction, in those areas where subsequent ground disturbance will not occur for 10 calendar days or more, weed-free mulch shall be applied to disturbed areas to reduce the potential for short-term erosion. Prior to a rain event or when there is a greater than 50 percent possibility of rain within the next 24 hours, as forecasted by the National Weather Service, weed-free mulch shall be applied to all exposed areas upon completion of the day's activities. Soils shall not be left exposed during the rainy season.

Suitable BMPs, such as silt fences, straw wattles, or catch basins, shall be placed below all construction activities at the edge of surface water features to intercept sediment before it reaches the waterway. These structures shall be installed prior to any clearing or grading activities. Further, sediment built up at the base of BMPs will be removed before BMP removal to avoid any accumulated sediments from being mobilized post-construction.

If spoil sites are used, they shall be located such that they do not drain directly into a surface water feature, if possible. If a spoil site drains into a surface water feature, catch basins shall be constructed to intercept sediment before it reaches the feature. By the end of the project, spoil sites shall be graded and revegetated to reduce the potential for erosion.

Sediment control measures shall be in place prior to the onset of the rainy season and will be monitored and maintained in good working condition until disturbed areas have been revegetated.

Due to the factors above, it has been found that the project would not result in significantly increased erosion or sedimentation potential and would not permanently alter any drainage patterns of the site or area on- or off-site. Therefore, the project would have a less than significant impact.

g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map? (No Impact)

The project does not include the construction of new homes and would not indirectly induce housing growth as it would not extend infrastructure into new areas and would not increase the overall capacity of the local water/wastewater systems. Therefore, this evaluation criterion is not applicable to the project. No impact would occur.

h, i) Place structures within a 100-year flood hazard area or expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam? (Less than Significant)

The Federal Emergency Management Agency (FEMA) issues Flood Insurance Rate Maps identifying land areas that are subject to flooding. According to Humboldt County's GIS, which is based on FEMA data from June, 2017, the project alignment is situated within, or near, the FEMA-designated Special Flood Hazard Area (Humboldt County 2017). Flooding of the trail is anticipated during extreme weather events, particularly over time as a result of anticipated sea level rise; however, the project would not place structures that would redirect or impede flood flows within the Special Flood Hazard Area. The impact is less than significant.

The project alignment is not in close proximity to any dam or levee that has the potential to expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam. No impact has been identified.

j) Inundation by seiche, tsunami, or mudflow? (Less than Significant)

Due to the known seismic activity in the Pacific Rim, a tsunami could impact Humboldt Bay. It is expected that the impact of a tsunami on Humboldt Bay would primarily occur along the north and south spits and the King Salmon and Fields Landing areas, which are located directly across from the opening to Humboldt Bay. Humboldt State University has conducted a number of studies on the impacts to Humboldt Bay resulting from tsunami inundation. These studies indicate that, although a wave from 12 to 20 feet high could threaten the southern end of the north spit, including the U.S. Coast Guard base, Fairhaven and parts of Samoa, the largest tsunamis occurring on Humboldt Bay, including those dating back as early as 1700 A.D., did not entirely inundate the north spit. The last recorded tsunami of any observable height to occur in Humboldt Bay was in 1964 as a result of the Gulf of Alaska earthquake. It had a recorded maximum height of 12 feet on the inside of the north spit and breached a 10-foot seawall at the Eureka Boat Basin. The Bay was filled with logs and debris and nine changes in tidal height were reported over the night causing high current velocities within the Bay. Fourteen-knot currents were reported in the channel opposite the Coast Guard Stations (Lander et al. 1993).

Inundation is only one of the hazards posed by a tsunami. The extremely high velocity caused by rapid changes in water elevation is capable of causing significant erosion and damage to structures, especially when the water is laden with debris. High velocity water can cause damage even when the water height is not significantly high.

The National Oceanographic and Atmospheric Administration (NOAA) published a tsunami inundation model of the Humboldt Bay region which mathematically computed the expected inundation levels caused by a magnitude 8.4 earthquake on the Cascadia Subduction Zone (Bernard and others 1994). In the model, the north and south spit bear the brunt of the impact. Both spits are overrun and the waves travel across Humboldt Bay flooding Woodley and Indian Islands. The shallowness of the bay dissipates the wave energy and flooding on the east side of the bay is expected only in the immediate waterfront area west of the project alignment.

Configuration of the coastline, shape of the ocean floor, and character of the advancing waves play an important role in the destruction wrought by tsunamis along any coast, whether near the generating area or thousands of kilometers from it. The United States has collaborated with other countries around the Pacific to build and maintain a warning system that detects earthquake, sea surface levels, and ocean-bottom movements of water. The Pacific Tsunami Warning Center in Ewa Beach, Hawaii, is staffed full-time by scientists, who quickly collect and analyze incoming data and decide whether to issue a tsunami warning. In the event of a tsunami warning, the County of Humboldt Office of Emergency Services employees are trained in disaster preparedness including broadcasting an emergency tsunami warning and giving direction to the public on the actions they should take in the event of a potential tsunami in Humboldt Bay.

The majority of the project alignment is located adjacent to Humboldt Bay and the Eureka Slough, and the entire project alignment is within the Tsunami Inundation Area as mapped by the California Emergency Management Agency, California Geological Survey and University of Southern California (CalEMA 2009). The site is also within high and moderate inundation areas according to the Tsunami Hazards Map. The project area includes adequate signage to notify the public of tsunami hazards and evacuation routes. Because there are existing tsunami evacuation plans for the area (including

tsunami sirens), and the project includes additional tsunami hazard signage, the tsunami risk is anticipated to be less than significant. The project is therefore not expected to expose people to significant risk, loss, injury or death from tsunami inundation.

The proposed trail alignment does run adjacent to Humboldt Bay, which lies directly within the Coastal Tsunami Hazard zone. The County of Humboldt, City of Eureka along with FEMA, NOAA, and the State of California, have developed emergency response procedures incorporated into the County's and City's emergency response plans. While Tsunamis can be devastating, they are a potential threat and technology currently in place would help the County/City respond in a timely and appropriate manner. However, because the proposed project would not include the development of residential units or other occupied structures, and because mitigation for the potential tsunami inundation hazard already exists along the Bay in the form of tsunami hazard warning signs and a Countywide tsunami early warning system, the impact would be less than significant. Additionally, the project is consistent with General Plan Standard S-S7, which says that new development below the level of the 100-year tsunami run-up elevation as described in Tsunami Predictions for the West Coast of the Continental United States shall be limited to public recreation facilities. Because of the relatively flat terrain, the project area is not susceptible to seiche or mudflow events.

3.10 Land Use and Planning

	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a) Physically divide an established community?				✓
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?			✓	
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?				✓

Evaluation Criteria	Significance Thresholds	Sources
Would the project physically divide an established community?	A physical barrier to movement dividing an established community that results in a complete physical separation from the rest of the neighborhood	CEQA Guidelines Appendix G, Checklist Item X (a)
Would the project conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	Any such applicable goal/policy in the Humboldt County General Plan	CEQA Guidelines Appendix G, Checklist Item X (b) Land Use Element of the Humboldt County General Plan
Would the project conflict with any applicable habitat conservation plan or natural community conservation plan?	Any conflict with a goal or policy envisioned in an applicable habitat conservation plan or natural community conservation plan.	CEQA Guidelines Appendix G, Checklist Item X (c)

a) Physically divide an established community? (No Impact)

The project would involve construction and operation of a multi-purpose Class I bicycle and pedestrian trail parallel to Highway 101 connecting to the Humboldt Bay Trail North and Eureka Waterfront Trail in Arcata, and Eureka, respectively. The trail would not divide any existing neighborhood or community, rather it would provide for a more convenient and safer connection between the two communities. No impact would occur.

b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect? (Less than Significant)

The project is located along the NCRA and Caltrans Highway 101 corridor between Bracut and the City of Eureka, with a portion located on the perimeter levee between CRC's property and Humboldt Bay. The project also includes the extension of a cable barrier at various location along Highway 101 from Eureka Slough to Gannon Slough. Applicable land use plans covering the project area include the Humboldt County General Plan and County Code, and the City of Eureka General Plan and Municipal Code. The County's General Plan land use designations along the project alignment include Natural Resources (NR), Industrial General (MG) and Public Facility, and the City of Eureka's General Plan land use designation includes NR. County zoning along the project alignment includes Natural Resources/Coastal Wetlands (NR/W), Industrial General/ARA (MG/A), Natural Resources/Design Review, Wetlands (NR/D, W), Industrial General/Flood Hazard (MG/F), Unclassified (U). City of Eureka zoning includes NR and Water (WC).

Per Humboldt County's Web GIS, the entire project is within the Coastal Zone, with the majority of the project alignment in the primary jurisdiction of the CCC and therefore subject to applicable coastal zone policies and regulations of the Coastal Act. There is one small area in front of Bracut that is within the primary jurisdiction of the County. The County of Humboldt and City of Eureka Local Coastal Plans would be advisory. Any new development within the CCC's coastal zone would require a CDP from the CCC. It is anticipated that the County and City of Eureka would submit a CDP consolidation request letter to the CCC for this project. A CCC CDP application package is being prepared in concert with this ISMND.

Applicable policies adopted for the purpose of avoiding or mitigating environmental effects can be found throughout the County of Humboldt Local Coastal Program (LCP) and General Plan. A review of the LCP and General Plan elements, and the policies and standards within, did not identify any inconsistencies with the proposed project.

Agencies that regulate the filling of wetlands and impacts to creeks include the USACE, the State Water Resources Control Board (SWRCB) the CCC, and the CDFW. Since the proposed project would affect USACE and SWRCB "jurisdictional wetlands," the County must obtain the necessary permit(s) to comply with respective regulations including Clean Water Act Section 404, and 401 Water Quality Certification, and CDFW 1600 Permit. By implementing permit requirements and mitigation measures identified in the Biological Resources and Cultural Resources sections the project would not conflict with any applicable federal and state wetland regulations. Additionally, the proposed Class I multi-purpose trail would not permanently alter the existing land uses or their designations or zoning, and would not introduce new land uses or land use designations or zoning; therefore, no conflict with applicable land use plans, policies, or regulation(s) would occur. The impact would be less than significant.

c) Conflict with any applicable habitat conservation plan or natural community conservation plan? (No Impact)

Currently there are no adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plans that cover the project area. No impact would occur.

3.11 Mineral Resources

	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?			✓	
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?			✓	

Evaluation Criteria	Significance Thresholds	Sources
Would the project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	The loss of a mineral resource of value to the region and State	CEQA Guidelines Appendix G, Checklist Item XI (a)
Would the project result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	The loss of a locally-important mineral resource recovery site	CEQA Guidelines Appendix G, Checklist Item XI (b)

a, b) Result in the loss of availability of a known mineral resource that would be of value to the region or delineated by a General Plan, Specific Plan or other land use plan? (Less than Significant)

The proposed project would require minor use of quarry rock, gravel, sand, and other similar materials, but is not expected to have any significant impact on locally available minerals or mineral resources valuable to the region or State. There are no locally important mineral resource recovery sites in the project vicinity, and the project alignment contains no mineral resources that would be impacted by the project. The impact is less than significant.

3.12 Noise

	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?			✓	
b) Exposure of persons to or generation of excessive ground borne vibration or ground borne noise levels?			✓	
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?			✓	
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?			✓	
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?				✓
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?				✓

Evaluation Criteria	Significance Thresholds	Sources
Would the project result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	Land Use/Noise Compatibility Standards (Table 13-C)	CEQA Guidelines Appendix G, Checklist Item XII (a) General Plan Land Use/Noise Compatibility Standards (Table 13-C)
Would the project result in exposure of persons to or generation of excessive groundborne vibration or noise levels?	0.3 in/sec	CEQA Guidelines Appendix G, Checklist Item XII (b) California Department of Transportation – Construction Vibration Guidance Manual
Would the project result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	Land Use/Noise Compatibility Standards (Table 13-C)	CEQA Guidelines Appendix G, Checklist Item XII (a) General Plan Land Use/Noise Compatibility Standards (Table 13-C)
Would the project result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	Zone MG: 80 dBA max, day, 6:00 a.m. to 10:00 p.m. Zone NR: 65 dBA max, day, 6:00 a.m. to 10:00 p.m. Zone MB: 70 dBA max, night, 10:00 p.m. to 6:00 a.m. Zone NR: 60 dBA max, night, 10:00 p.m. to 6:00 a.m.	CEQA Guidelines Appendix G, Checklist Item XII (d) General Plan Standard N-S7
Would the project be located within an airport land use plan, or where such a plan has not been adopted, within two miles of a public airport or public use airport, exposing people residing or working in the project area to excessive noise levels?	Location of project in area exposed to effects of airport noise	CEQA Guidelines Appendix G, Checklist Item XII (e)
Would the project be located within the vicinity of a private airstrip, exposing people residing or working in the Project area to excessive noise levels?	Location of project in area exposed to effects of private airport noise	CEQA Guidelines Appendix G, Checklist Item XII (f)

a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies? (Less than Significant)

The project area is exposed to off-site noise caused primarily by traffic on Highway 101. Humboldt County does not have a Noise Ordinance; however, implementation measure N-IM6 of the Noise Element of the General Plan, calls for the County to "prepare and consider a noise control ordinance to regulate noise and vibration sources in order to protect persons from existing or future excessive levels of noise and/or vibration which interfere with sleep, communication, relaxation, health or legally permitted use of property." The General Plan does not include any policies limiting noise generating activities (for example, construction and maintenance activities and loading and unloading activities) to certain hours of the day. The General Plan does include Standard N-S1, which specifies that the

Land Use/Noise Compatibility Standards (Table 13-C) shall be used as a guide to ensure compatibility of land uses. Development may occur in areas identified as “normally unacceptable” if mitigation measures can reduce indoor noise levels to “Maximum Interior Noise Levels” and outdoor noise levels to the maximum “Normally Acceptable” value for the given Land Use Category.

For measuring noise levels and setting noise standards, the County uses Table 13-C of the General Plan, which stipulates that 60 CNEL is the upper acceptable limit for residential units (outside measurement), and 85 CNEL is the upper acceptable limit for “public ROW” land uses. Table 3.12-1 identifies average construction equipment noise for various construction equipment which could be used for the project measured at 50 feet (dBA, L_{max}). Of the equipment listed in Table 3.12-1 the vibratory pile driver has the highest noise level at 101 dBA (L_{max}) at 50 feet.

Table 3.12-1 Construction Equipment Noise Levels

Construction Equipment	Noise Level (dBA L_{max} at 50 feet)
Backhoe	78
Front end loader	79
Cement and mortar mixer	79
Concrete/asphalt saw	90
Crane	81
Excavator	81
Generator	81
Horizontal boring hydraulic jack	82
Jackhammer	89
Paver	77
Pumps	81
Roller	80
Separation plant	81
Truck-mounted drill rig	79
Tractor trailer 20 yd	77
Truck	74
Vibratory Pile Driver	101

Source: FHWA 2006

The City of Eureka includes residential noise exposure policies in the General Plan Policy Document, Part II, Section 7 (February 1997). The overall goal under “Residential Noise Exposure” is “to protect Eureka residents from the harmful and annoying effects of exposure to excessive noise.” For non-transportation related noise, the maximum allowable noise at the property line of lands designated for noise-sensitive uses cannot exceed 65 dB (nighttime, 10 p.m. to 7 a.m.) to 70 dB (daytime, 7 a.m. to 10 p.m.). Transportation noise sources are defined as “public roadways, railroad line operations, and aircraft in flight.”

The closest residences are approximately 250 feet (the closest residence) or more from the project alignments western end within the City of Eureka. The closest residences along the project alignment within the County are more than 600 feet away. Sound from a point source is known to attenuate at a rate of -6 dB for each doubling of distance. For example, a noise level of 101 dBA L_{max} (e.g., a vibratory pile driver which is the loudest equipment listed in Table 3.12-1 that the project could use)

as measured at 50 feet from the noise source would attenuate to 96 dBA at 100 feet from the source, to 91 dBA at 200 feet from the source, and to 86 dBA 400 feet from the source to the receptor. Therefore, since noise levels during construction would be below 85 dBA L_{dn} at the closest receptors, construction work would be temporary and intermittent, and Highway 101 is the most prominent noise source along the project alignment, the impact is less than significant.

No nighttime work is anticipated for the duration of the project; therefore, there would be no construction during the more sensitive nighttime hours. Following construction, operational noise associated with trail use and maintenance activities would be generated adjacent to limited noise-sensitive uses (residences). However, the noise would include pedestrian/bicycle activity noise and occasional landscaping and trail maintenance. For the overall trail alignment, this incremental increase in noise would not expose persons to noise levels in excess of applicable standards and would not represent a substantial increase in noise. The impact would be less than significant.

b) Exposure of persons to or generation of excessive ground borne vibration or ground borne noise levels? (Less than Significant)

The construction of the project may generate vibration when heavy equipment or impact tools (e.g. jackhammers, vibratory compaction equipment, pile drivers) are used. Construction activities would include grading, compacting, paving, and approximately 20 days of pile driving, which can cause noticeable vibration.

For structural damage, Caltrans recommends a vibration limit of 0.5 in/sec Peak Particle Velocity (PPV) for buildings structurally sound and designed to modern engineering standards, 0.3 in/sec PPV for buildings that are found to be structurally sound but where structural damage is a major concern, and a conservative limit of 0.08 in/sec PPV for very old buildings or buildings that are documented to be structurally weakened. No known very old buildings or buildings that are documented to be structurally weakened adjoin the project alignment. Therefore, conservatively, groundborne vibration levels exceeding 0.3 in/sec PPV would have the potential to result in a significant vibration impact.

Table 3.12-2 presents typical vibration levels that could be expected from construction equipment at a distance of 25 feet. High-power or vibratory tools and rolling stock equipment (tracked vehicles, compactors, etc.), may generate substantial vibration in the immediate vicinity. Impact pile drivers typically generate vibration levels of 0.644 in/sec PPV, potentially reaching levels up to 1.158 in/sec PPV, and vibratory rollers typically generate vibration levels of 0.210 in/sec PPV at a distance of 25 feet. Vibration levels are highest close to the source and attenuate with increasing distance at a rate of $\left({D_{ref}}/{D}\right)^{1.1}$, where D_{ref} is 25 feet and D is the distance from the source to the receptor, in feet. Vibration levels would vary depending on soil conditions, construction methods, and equipment used.

Table 3.12-2 Typical Vibration Levels for Construction Equipment

Equipment	PPV at 25 ft. (in/sec)	Approximate Lv at 25 ft. (VdB)
Pile Driver (Impact)	0.644 – 1.158	1-4 - 112
Pile Driver (Sonic)	0.170 – 0.734	93 - 105
Clam Shovel Drop	0.202	94
Vibratory Roller	0.210	94
Hoe Ram	0.089	87
Large Bulldozer	0.089	87
Caisson drilling	0.089	87
Loaded trucks	0.076	86
Jackhammer	0.035	79
Small bulldozer	0.003	58

Source: Transit Noise and Vibration Impact Assessment, United States Department of Transportation, Office of Planning and Environment, Federal Transit Administration, May 2006.

Project related activities would not involve the use of explosives or other intensive construction techniques that could generate significant ground borne vibration or noise. Up to 38 piles would be installed to a depth of up to approximately 100 feet below ground surface (bgs) and out of the water. Noise impacts from ground borne noise to humans are anticipated to minor based on the fact that the piles would be a maximum diameter of 18 inches; the piles would be spaced so as few are used as feasible; attenuation measures such as (but not limited to) wood cushion blocks at impact would be used; and there are no noise sensitive groups adjacent to the areas where piles would be used.

Vibration impacts to residences are anticipated to be minor as the closest residences are more than 1,700 feet away. A residence at a distance of approximately 1,800 feet away, for example, would be exposed to vibration levels up to 0.002 in/sec PPV, which is substantially less than 0.3 in/sec PPV. Minor vibration adjacent to mechanized equipment and road/trail treatments during construction work would be generated only on a short-term basis. Therefore, ground borne vibrations and noise would have a less than significant impact. Reference Section 3.4 (Biological Resources) for a discussion of potential impacts to biological resources.

Following construction, operation of the project would not result in substantial sources of groundborne vibration or groundborne noise. Project operation would not generate vibration, except in instances where larger repairs to the trail or shoreline might be required, which could take several weeks to complete depending on the extent of damage or other circumstances; therefore, no operational impact would occur.

c) Substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project? (Less than Significant)

The project is a passive recreational facility; motorized vehicles would be prohibited on the facility. The project does not involve any operational feature that would cause any permanent increase to noise levels. The project would, therefore, not result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project. The impact is less than significant.

d) Substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project? (Less than Significant)

The duration of exposure at any given noise-sensitive receptor is a consideration in determining an impact's significance. For example, this analysis generally assumes that temporary construction noise that occurs during the day for a relatively short period of time would not be significant. This analysis assumes that most residents of average sensitivity that live in urban environments are accustomed to a certain amount of construction activity from time to time to maintain existing infrastructure. Therefore, for the purposes of this analysis, temporary exposure to construction noise during the daytime is not considered to result in a substantial temporary increase in ambient noise levels if it is for a duration of one year or less, and with regard to pile driving, as described above, there are no sensitive receptors in close proximity that would experience a substantial increase in ambient noise levels. An exception to this would be construction near schools that are in session. There are no schools in close proximity to the project alignment; therefore, there would be no impact.

Construction activities would result in a minor temporary increase in ambient noise levels from construction equipment and construction-related traffic. The western-most portion of the trail (Figure 2) would be the only segment of the proposed trail where construction noise could be an issue to sensitive receptors because of residences and businesses in the vicinity of 2nd and Y Streets. Constructing the trail would include using heavy equipment for earth moving, grading and compaction, paving, and hauling. The construction phase would increase localized truck trips to transport materials and equipment to and from the proposed trail corridor. Although construction-related noise would be unavoidable, it would be temporary and intermittent and construction hours are anticipated between 7:00 a.m. and 7:00 p.m., Monday through Friday with occasional work on Saturdays. Construction on Sunday or legal and County holidays is not currently anticipated except in emergencies or with prior approval from the County of Humboldt/City of Eureka. The proposed project would comply with all applicable County and City policies discussed above to abate construction-related noise impacts. The temporary or periodic impact on ambient noise levels would be less than significant.

e, f) Exposure of people residing or working near a private or public airport to excessive noise levels? (No Impact)

The project alignment is located just north of Murray Field, a County-owned public airport; however, project construction and operation would include only ground-based, non-motorized travel, and because the project is not growth inducing, it would not affect air traffic patterns or levels. Additionally, given the nature of the project, it would not introduce new permanent residents or employees to the area. Therefore, there would be no impact from exposing people to excessive noise levels attributable to airport operations and flights.

3.13 Population and Housing

	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?				✓
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?				✓
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?				✓

a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)? (No Impact)

The proposed bike path would reduce the potential for conflicts between bicyclists, pedestrians, and vehicles within the Highway 101 Corridor and increase mobility options between the communities of Arcata and Eureka by connecting with Arcata's Humboldt Bay Trail North to the north and Eureka Waterfront Trail to the south. The project does not include the construction of new homes or businesses in the area. The project would not indirectly induce population growth because it would not extend infrastructure into new areas not already served by the communities of Arcata and Eureka. It would not result in the extension of utilities or roads or other infrastructure into outlying areas and would not directly or indirectly lead to the development of new sites that would induce population growth. In addition, implementation of the project would not result in a direct or indirect increase in employment opportunities that could lead to an increase in the local population. Therefore, no impact to population growth would occur.

b, c) Displace substantial numbers of existing housing or people, necessitating the construction of replacement housing elsewhere? (No Impact)

No homes or people would be displaced as a result of project construction or operation. Therefore, no impact would occur.

3.14 Public Services

	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
Fire Protection?			✓	
Police protection?			✓	
Schools?				✓
Parks?				✓
Other public facilities?				✓

Evaluation Criteria	Significance Thresholds	Sources
Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the following public services: • fire protection • police protection • schools • parks	Increase in population that leads to unacceptable service ratios or response times	CEQA Guidelines Appendix G, Checklist Item XIV (a) General Plan Policy IS-P25

a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios,

response times or other performance objectives for public services? (Less than Significant)

The Humboldt County Sheriff's Office serves the Highway 101 corridor and provides a variety of public safety services countywide (court and corrections services) and law enforcement services for the unincorporated areas of the County. The Arcata Fire Department, Ward 5, serves the Bracut area of the project alignment. The City of Eureka Police Department and Humboldt Bay Fire currently serve the project area within the City limits of Eureka and the greater Eureka area. In addition, a California Highway Patrol (CHP) office is located at 255 East Samoa Boulevard and serves the Highway 101 corridor.

As a non-motorized transportation facility, the project would not necessitate any related new or altered facilities. The project would not result in significant adverse effects on service ratios for the CHP, sheriff, police or fire departments. The proposed project may result in increased motorized and non-motorized traffic in the vicinity. The proposed project would facilitate improved bicycle and foot access on trails and light vehicle for law enforcement and emergency services personnel. The project is not expected to substantially increase the need for patrols by local law enforcement or emergency services. The project may have a beneficial effect on reducing the need for patrol by encouraging more public use and discouraging unwanted uses in the area. A less than significant impact with respect to fire and law enforcement facilities is anticipated.

The project would not result in an increase in the County's or Cities of Eureka or Arcata's student population; therefore, no new or expanded schools would be required. No impacts to schools would occur.

The project would present a new passive recreational opportunity by increasing bike path connectivity with the Humboldt Bay Trail North towards Arcata and the Eureka Waterfront Trail to the south. The project would not result in the increased use of existing parks and other public facilities as it would not induce population growth. The project would also not require the expansion of recreational facilities to maintain acceptable service ratios in parks, and would not require the expansion of other public facilities. No impact to parks would occur.

No other public facilities or services apply to the project. Therefore, no impact would occur.

3.15 Recreation

	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?			✓	
b) Include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment?			✓	

Evaluation Criteria	Significance Thresholds	Sources
Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	Increase in population Increase in ratio of people to acres for recreation	CEQA Guidelines Appendix G, Checklist Item XV (a)
Would the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	New or expanded recreational facilities	CEQA Guidelines Appendix G, Checklist Item XIV (b) General Plan Policy CO-P11

a, b) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated, or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment? (Less than Significant)

Consistent with Humboldt County's General Plan Policy CO-P11, the project would have a long-term positive effect on recreation by increasing recreational opportunities between the communities of Arcata and Eureka. The Humboldt Bay Trail project has been identified as a high-priority regional project by the Humboldt County Association of Governments (HCAOG) for many years. Once completed, the trail would become a component of the California Coastal Trail providing non-motorized transportation, recreation and coastal access opportunities for the public. The proposed bike path would increase non-motorized transportation in the area making it convenient and safer for people to travel along the Highway 101 corridor.

The proposed project would not lead to an increase in the use of recreational facilities that would contribute to the physical deterioration of other recreational facilities. In fact, the project enhances the existing trail system and would have an overall beneficial impact to the regional trail system.

Increasing visibility and usage among public use facilities may deter illegal activity, such as illegal dumping or camping, thereby enhancing public safety and the overall health of the trail corridor. Trails are generally low maintenance facilities and the additional wear-and-tear would be minimal.

The proposed trail is a recreational facility that could encourage the construction of other recreational facilities, predominantly other connecting trails or trail-related facilities, although a significant amount of connecting trail has already been constructed. Future connecting and related trail and recreational facility projects with the potential to cause significant environmental impacts would be subject to CEQA review and other environmental regulations enacted to protect the environment. Therefore, a less than significant impact is expected to occur.

3.16 Transportation/Traffic

	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?			✓	
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?				✓
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?				✓
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?			✓	
e) Result in inadequate emergency access?			✓	
f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?			✓	

Evaluation Criteria	Significance Thresholds	Sources
Would the project conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the vehicular circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	LOS deteriorates from LOS C or better countywide, and LOS D or better for U.S. 101, to LOS E or F	CEQA Guidelines Appendix G, Checklist Item XVI (a) General Plan Policy C-P5
Would the project conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	LOS deteriorates from LOS C or better countywide, and LOS D or better for U.S. 101, to LOS E or F	CEQA Guidelines Appendix G, Checklist Item XVI (b) General Plan Policy C-P5
Would the project result in a change in air traffic pattern, including either an increase in traffic levels or a change in location that results in substantial safety risks?	Location of project structures not in compliance with airport land use policies	CEQA Guidelines Appendix G, Checklist Item XVI (c)
Would the project substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	Non-conformance with defined safety regulations or roadway design standards, or otherwise create unsafe conditions	CEQA Guidelines Appendix G, Checklist Item XVI (d)
Would the project result in inadequate emergency access?	Increases in traffic, road closures, or insufficient emergency access during construction or inadequate design features to accommodate emergency vehicle access and circulation during operation	CEQA Guidelines Appendix G, Checklist Item XVI (e) Humboldt County Emergency Operations Plan
Would the project conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	Non-conformance or conflict with adopted policies, plans, or programs	CEQA Guidelines Appendix G, Checklist Item XVI (f) General Plan Policies C-P31, C-P33, C-P35, and C-P38 Humboldt Regional Bicycle Plan Update 2012

a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit? (Less than Significant)

The proposed multi-use trail would provide increased opportunities and routes for safe non-motorized travel between the communities of Arcata and Eureka (Figure 2). The proposed trail would connect with the Humboldt Bay Trail North to the north, and the Eureka Waterfront Trail to the south. The project is expected to increase recreational use levels in the project area, which could result in minor amounts of additional motorized and non-motorized traffic. However, the proposed project could reduce motorized traffic levels by providing a safe, alternative modes of travel between Arcata and Eureka. The project has been designed to meet the operational needs of adjacent and intersecting roadways, area businesses, and a variety of potential trail users. Parking is not planned for the proposed project as this section of trail would be connecting with the Humboldt Bay Trail North to the north, and the Eureka Waterfront Trail to the south where the population centers are located.

Construction

Construction would result in vehicle trips by construction workers and haul-truck trips for material off-haul and deliveries. The anticipated haul truck route to the project area would be from Highway 101 from the north and south. Construction-related traffic would be temporary, would vary on a daily basis, and would be spread out over the course of a work day and work week.

As identified in the Project Description, Section 1.4.3 (Construction Access and Hauling Traffic), the number of construction-related vehicles traveling to and from the project area would vary on a daily basis. For the purposes of analysis, it is anticipated that on any one day during construction, up to 48 vehicle round trips could occur. Because the project's contribution of construction traffic would be temporary (approximately six months) and distributed throughout a work day, roadway segments in the vicinity of the construction sites would have sufficient capacity to accommodate the temporary increase in construction traffic. The temporary construction impact on the circulation system would be less than significant.

In accordance with Caltrans requirements, the construction contractor would be required to obtain an encroachment permit from Caltrans for any portion of work completed within the Highway 101 ROW or for access to the project site from the State accessed-controlled ROW. The construction contractor's encroachment permit application would include a proposed temporary traffic control plan, and if necessary would include plans for re-routing of vehicles, bicycles and pedestrians. Traffic controls would be required in accordance with the County and Caltrans standards, and contractors would be required to comply with the general conditions of the encroachment permit. Therefore, through compliance with local requirements, construction activities would not result in substantial adverse effects or conflicts with the local roadway system. The impact would be less than significant.

Operation and Maintenance

Once complete, the proposed project is not expected to significantly increase vehicle traffic on local streets, as it is not intended to increase the area's population or redirect traffic patterns. The project may actually decrease vehicle trips within the area by encouraging non-motorized forms of travel (walking, bicycling, skateboarding, rollerblading, etc.). Any potential increase in traffic generated by public visitation to the proposed trail and associated access areas would likely be offset by increased non-motorized travel to and from the area by trail users. The project would not conflict with effective circulation system performance or intersection level of service standards. Based on the above, the

project: (1) would not conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system; (2) would take into account all modes of transportation, including mass transit and non-motorized travel; and (3) would take into account other components of the transportation system, such as intersections, streets, pedestrian paths, and bicycle paths. Therefore, a less than significant impact would occur.

b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways? (No Impact)

The project area is not subject to a Congestion Management Program and does not have a traffic congestion problem, and the proposed project would have no effect on level of service. No impact would occur.

c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks? (No Impact)

The project alignment is located just north of Murray Field, a County-owned public airport; however, project construction and operation would include only ground-based travel, and because the project is not growth inducing, it would not affect air traffic patterns or levels. No impact would occur.

d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)? (Less than Significant)

The project would not change the geometry of the street or roadway network. Therefore, no potentially hazardous roadway design features would be introduced by the project. The trail would be routed along the west/north side of Highway 101, so there would be no crossing of the highway by bicyclists or pedestrians. The proposed trail may impact transportation and/or traffic safety at the crossings with Bracut; however, traffic is minimal within this area and the trail would be nearest to Humboldt Bay for most of its alignment. The trail would be demarcated at this crossings by features such as: differentiated pavement coloring, high-visibility crosswalk, intersection lighting, and intersection signage for motorists and trail users.

Roadway and driveway crossings would be ADA-accessible and include warning signage and markings both on the trail and the approaching vehicular way as applicable. In addition, signage would be added along the trail warning users of curves, bends, and any other hazardous situations. Speed control can only be maintained through signage and other visual cues; speed bumps or other surface irregularities are not permitted to control the speed of bicycles or other non-motorized vehicles.

In compliance with Caltrans standards for a Class I Bikeway, segments of the trail adjacent to roadways would be separated by at least five feet. The proposed trail along Highway 101 would meet all Caltrans safety requirements and is proposing a physical barrier to enhance safety and separate trail users from vehicles traveling on Highway 101.

There is a perceived hazard associated with trails adjacent to active rail lines; however, the NCRA rail line running adjacent to the project alignment is currently inactive. In 2009, the NCRA issued guidelines for the development of multiuse bike paths in the NCRA railroad ROW. The official title of the guideline is “Trail Projects on the NWP Line Rights-of-Way: Design, Construction, Safety, Operations, and Maintenance Guidelines.” The document provides a range of design guidance and requirements, such as minimum offsets from centerline of tracks. The portions of the project within

NCRA ROW comply with the NCRA Guidelines. The project also complies with California Public Utility Commission requirements for crossings of railroads. Therefore, there would be no safety impacts associated with the project crossing or being adjacent to the rail line.

The proposed trail may have potential conflicts between users who are stationary, such as birdwatchers, and bicyclists due to the difference in these activities. However, since the proposed trail would have striping, signage, unpaved shoulders on both sides, and scenic vista viewing areas, which could be used by birdwatchers and other uses who want to get out of the main travel lanes, substantial safety related conflicts between trail users and birdwatchers (or other stationary individuals) would be avoided.

Based on the information above, the proposed project would not substantially increase hazards due to a design feature; therefore, the impact is less than significant.

e) Result in inadequate emergency access? (Less than Significant)

The proposed trail would be adjacent to existing streets and Highway 101. Emergency access to the project area already exists from these streets and Highway 101, and would continue to exist under the proposed project during both construction and operation. Bollards would be placed at trail intersections and entrances to prevent all but emergency and maintenance vehicles from entering. Since the trail corridor is already served by emergency and law enforcement personnel, the trail would not slow or hinder emergency response, the trail would not require additional emergency services, and there would be emergency access to all trail segments; therefore, a less than significant impact would occur.

Following construction, all properties along the project alignment would continue to have emergency access. No operational impact on emergency access would occur.

f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities? (Less than Significant)

Humboldt County benefits from several public entities and private enterprises that provide transit services. Organizations that provide and/or fund transit services include municipalities, the County of Humboldt, tribal governments, social services, private businesses, and community-based/non-profit organizations. Existing transit services in the project area include Redwood Transit System in the County and Eureka Transit Service within the Eureka City limits. The proposed project would have no impact on existing or future transit services in the area. No impact has been identified.

Pedestrian and bicycle facilities in the project area are limited, which is one of the reasons why the Humboldt Bay Trail has been the focus of many planning studies over the years. Pedestrian and bicycle access between Arcata and Eureka is primarily limited to the shoulders of Highway 101 which has no separation from the highway. Other routes between the two communities, such as Myrtle Avenue to Old Arcata Road, are longer, more circuitous and not any safer. The project would not conflict with adopted policies, plans, or programs regarding bicycle, or pedestrian facilities, but would rather implement such plans. The proposed project planning began in 1997 with the *Humboldt County Bicycle Facilities Planning Project* which found substantial demand for a Class I facility between Arcata and Eureka. Additionally, Policy C-P38 (Develop a Regional Trails System) of the Humboldt County General Plan calls for the County to support efforts to establish and connect regional trails, particularly in the greater Humboldt Bay and lower Mad River areas, the Eel River Valley, along the Avenue of the Giants and in the Klamath-Trinity area. The regional trail system should include the California Coastal Trail system and consist of multi-use trails where feasible. The entire trail would

be constructed to ADA standards. The proposed project would thus help implement rather than conflict with adopted policies, plans and programs regarding public transit, bicycle, and pedestrian facilities and would not decrease the performance or safety of such facilities. The impact is less than significant.

3.17 Tribal Cultural Resources

	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or			✓	
b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe?			✓	

Evaluation Criteria	Significance Thresholds	Sources
Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is: Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k) or	Adverse alteration of those physical characteristics of a tribal cultural resource that justify its eligibility for the NRHP, CRHR or in a local register of historical resources	CEQA Guidelines Appendix G, Checklist Item XVII (a) and (b) General Plan Policy CU-P2

Evaluation Criteria	Significance Thresholds	Sources
A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe?		

Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

a, b) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or a resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe? (Less than Significant with Mitigation)

CEQA requires lead agencies to determine if a proposed project would have a significant effect on tribal cultural resources. The CEQA Guidelines define tribal cultural resources as: (1) a site, feature, place, cultural landscape, sacred place, or object with cultural value to a California Native American Tribe that is listed or eligible for listing on the California Register of Historical Resources, or on a local register of historical resources as defined in PRC Section 5020.1(k); or (2) a resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant according to the historical register criteria in PRC Section 5024.1(c), and considering the significance of the resource to a California Native American tribe.

Humboldt County General Plan Policy CU-P2 (Native American Tribal Consultation) states that Native American Tribes shall be consulted during discretionary project review for the identification, protection and mitigation of adverse impacts to significant cultural resources. Consultation on ministerial permits shall be initiated if it has been determined the project may create a substantial adverse change to a significant cultural resource. At their request, Tribes shall be afforded the opportunity to review and provide comments to the County early in project review and planning (screening) about known or potential Tribal cultural resources located in project areas within their respective tribal geographical area of concern. The County has not received formal written correspondence from any Tribe to be informed of proposed projects per PRC Section 21080.3.1; however, the Bear River Band of the Rohnerville Rancheria, Blue Lake Rancheria and the Wiyot Tribe at Table Bluff Reservation have been informally consulted about the project (see Section 3.5).

According to the Archaeological Survey Report prepared for the project (Roscoe and Associates 2017), there is a low possibility that the project APE contains undiscovered prehistoric artifacts or archaeological deposits. Although formal Native American consultation was conducted by the County for the proposed project, correspondence with local Native American Tribes conducted by Roscoe

and Associates did not result in any expressed concerns regarding Tribal cultural resources. Therefore, the impact is less than significant.

3.18 Utilities and Service Systems

	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?				✓
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?				✓
c) Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?			✓	
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?			✓	
e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?				✓
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?			✓	
g) Comply with federal, state, and local statutes and regulations related to solid waste?			✓	

Evaluation Criteria	Significance Thresholds	Sources
Would the project exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	An increase in wastewater volume or strength exceeding existing treatment capacity	CEQA Guidelines Appendix G, Checklist Item XVIII (a) General Plan Policy IS-P7
Would the project require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	Inadequate water supply or sewer capacity to serve the project	CEQA Guidelines Appendix G, Checklist Item XVIII (b)

Evaluation Criteria	Significance Thresholds	Sources
Would the project require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	Inadequate storm water drainage capacity to serve the site	CEQA Guidelines Appendix G, Checklist Item XVIII (c) General Plan Policies WR-P11, WR-P35, WR-P36, WR-P38, and WR-P42
Would the project have sufficient water supplies available to serve the project from existing entitlements and resources or are new or expanded entitlements needed?	Inadequate water supply capacity or infrastructure to serve the needs of the project	CEQA Guidelines Appendix G, Checklist Item XVIII (d)
Would the project result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	Inadequate sewer capacity to serve the project and future needs of the County	CEQA Guidelines Appendix G, Checklist Item XVIII (e)
Would the project be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	Inadequate regional landfill capacity to serve the project	CEQA Guidelines Appendix G, Checklist Item XVIII (f)
Would the project comply with federal, State and local statutes and regulations related to solid waste?	Non-compliance with applicable solid waste diversion regulations	CEQA Guidelines Appendix G, Checklist Item XVIII (g)

a, b, e) Exceed wastewater treatment requirements of the RWQCB, or require the construction of new water or wastewater treatment facilities, or have adequate wastewater capacity? (No Impact)

The proposed project does not involve the use or construction of any facilities that would require new water or wastewater infrastructure and would therefore have no impact.

c) Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects? (Less than Significant)

As discussed in Hydrology and Water Quality, above, there are no proposed changes to drainage patterns associated with the proposed project. There may be some storm drain culverts that would be installed/replaced along the project alignment. To mitigate for potentially significant runoff impacts that could result in erosion, completion of a SWPPP to the satisfaction of the RWQCB is required because total ground disturbance is more than one acre. The preparation of a SWPPP and adherence to the RWQCB's requirements for the preparation of SWPPP's would result in a less than significant impact.

d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed? (Less than Significant)

The proposed trail would not create an increased demand for domestic water service. The project would require relatively small quantities of water during the construction phase (e.g. for dust control and concrete/asphalt applications) and water for landscaping, until the new vegetation is established.

The project's water demands would not be substantial and could be met by existing entitlements and resources. Therefore, the project would not result in the need for the construction of new water facilities, or the expansion of existing facilities. A less than significant impact would occur.

f, g) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs, and comply with federal, state, and local statutes and regulations related to solid waste? (Less than Significant)

The solid waste provider in the project area is the Humboldt Waste Management Authority (HWMA). The project is not expected to generate a significant increase of services for solid waste disposal needs. The proposed trail would generate limited solid waste during construction and even less during operation. Construction solid waste would include the one-time temporary generation of construction waste associated with the proposed development of the trail. Recyclable construction materials (e.g. scrap metal, wood, concrete, glass) could be shipped to local businesses for reuse, with non-recyclable materials sent to the HWMA transfer station in Eureka.

The project may include waste receptacles, spaces for recycling bins, and pet waste stations. The County and City of Eureka have franchise agreements for waste collection in the project area. Solid waste collected as a part of the project would be disposed of at the HWMA. HWMA trucks solid waste produced in the County to State licensed landfills located in Anderson, California and Medford, Oregon in compliance with local, state, and federal regulations pertaining to solid waste disposal. These facilities have sufficient capacity to serve the project's solid waste disposal needs; therefore, a less than significant impact is anticipated.

3.19 Mandatory Findings of Significance

	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?		✓		
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?			✓	
c) Does the project have environmental effects which would cause substantial adverse effects on human beings, either directly or indirectly?			✓	

a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory? (Less than Significant with Mitigation)

As evaluated in this IS/MND, the project would not substantially degrade the quality of the environment; substantially reduce the habitat of a fish or wildlife species; cause a fish or wildlife population to drop below self-sustaining levels; threaten to eliminate a plant or animal community; reduce the number or restrict the range of an endangered, rare, or threatened species; or eliminate important examples of the major periods of California history or prehistory.

Mitigation measures are listed herein to reduce impacts related to biological resources, cultural resources, hazards and hazardous materials (related to releases that may impact biological resources), and tribal cultural resources. With implementation of the required mitigation measures, impacts would be less than significant.

b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)? (Less than Significant)

Cumulative impacts are defined as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts" (CEQA Guidelines Section 15355). Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

As discussed in Section 3.10 Land Use and Planning, the project is consistent with the goals and policies of the Humboldt County LCP and General Plan and City of Eureka General Plan. The Humboldt Bay Trail project has also been identified as a high-priority regional project by the HCAOG for many years, and when completed, the trail would become a component of the California Coastal Trail providing non-motorized transportation, recreation and coastal access opportunities for the public.

The project's impacts would not add appreciably to any existing or foreseeable future significant cumulative impact, such as visual quality, cultural resources, biological, traffic impacts, or air quality degradation. Incremental impacts, if any, would be negligible and undetectable. Any applicable cumulative impacts to which this project would contribute would be mitigated to a less-than-significant level. Incremental impacts, if any, would be very small, and the cumulative impact would be less than significant. Because the proposed project would not result in significant impacts after mitigation, and because the proposed project is a trail project rather than a development project that could add to existing and future population growth and development in the area, the proposed project would not contribute to any significant cumulative impacts which may occur in the area in the future. Therefore, the impact would be less than significant.

c) Does the project have environmental effects which would cause substantial adverse effects on human beings, either directly or indirectly? (Less than Significant)

The project has been planned and designed to avoid significant environmental impacts. As discussed in the analysis throughout Section 3 of this IS/MND, the project would not have environmental effects that would cause substantial adverse direct or indirect effects on human beings. The impact is less than significant.

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4. References

American Association of State Highway and Transportation Officials, 2012, Guide for the Development of Bicycle Facilities.

Bay Area Air Quality Management District (BAAQMD), 2010, Bay Area 2010 Clean Air Plan, September.

BAAQMD, 2011, California Environmental Quality Act Air Quality Guidelines, May.

Bernard,E., C. Mader, G. Curtis, and K. Satake, (1994), Tsunami Inundation Model Study of Eureka and Crescent City, California, NOAA Technical Memorandum ERL PMEL-103, National Oceanic and Atmospheric Administration, Seattle, Washington, 80 pp.

Burger, J. and M. Gochfeld, (1981), Discrimination of the threat of direct versus tangential approach to the nest by incubating Herring and Great Black-backed Gulls, Journal of Comparative and Physiological Psychology 95:676-684.

Burger, J. and M. Gochfeld, (1993), Tourism and short-term behavioral responses of nesting masked, red-footed and blue-footed bobies in the Galapagos, Environmental Conservation 20:225-259.

California Coastal Commission, 2015, Sea Level Rise Policy Guidance, Interpretive Guidelines for Addressing Sea Level Rise in Local Coastal Programs and Coastal Development Permits, Adopted August 12.

California Department of Fish and Game, 2009, A status review of the longfin smelt (Spirinichus thaleichthys) in California, A report to the Fish and Game Commission, January 23, 2009, California Department of Fish and Game, Sacramento California, 45 p, plus three appendices.

California Department of Forestry and Fire Protection (CAL FIRE), 2007, Draft Fire Hazard Severity Zones in LRA – Humboldt County, September 19.

California Department of Conservation (CDOC), 1983, State of California Special Studies Zones Delineated in compliance with Chapter 7.5, Division 2 of the California Public Resources Code (Alquist-Priolo Special Studies Zones Act), Arcata South Quadrangle, July 1.

CDOC, 2016, Farmland Mapping and Monitoring Program, accessed website on July 19, 2017 at: http://www.conservation.ca.gov/dlrp/fmmp/Pages/county_info.aspx.

California Ocean Protection Council Science Advisory Team Working Group (OPC-SAT), 2017, Rising Seas in California: An Update on Sea-Level Rise Science. California Ocean Science Trust, April.

Caltrans, 2011, California Scenic Highway Mapping System, Humboldt County, accessed website on July 19, 2017 at: http://www.dot.ca.gov/hq/LandArch/16_livability/scenic_highways/.

California Emergency Management Agency, California Geological Survey, University of Southern California (CalEMA et al.), 2009, Tsunami Inundation Map for Emergency Planning Eureka and Arcata South quadrangles, June 1.

California Environmental Protection Agency (CalEPA), 2017, Cortese List Data Resources.

California Geologic Survey (CGS), 2010, 2010 Fault Activity Map of California, accessed online on July 19, 2017 at: http://maps.conservation.ca.gov/cgs/fam/.

Council on Environmental Quality (CEQ), 2010, Memorandum for Heads of Federal Departments and Agencies, Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions, February 18.

Council on Environmental Quality (CEQ), 2016, Memorandum for Heads of Federal Departments and Agencies, Final Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of climate Change in National Environmental Policy Act Reviews, August 1.

Coastal and Ocean Working Group of the California Climate Action Team (CO-CAT), 2010, State of California Sea-Level Rise Interim Guidance Document, October.

CO-CAT, 2013, State of California Sea-Level Rise Interim Guidance Document Update, March.

eBird, 2017, eBird: An online database of bird distribution and abundance [web application], eBird, Ithaca, New York, accessed website at: http://www. eBird.org.

Elkinton, Elizabeth. 2013. Foraging and energy acquisition by Black Brant (Branta bernicla nicricans) on South Humboldt Bay, California. Master Thesis, Humboldt State University, CA, U.S.A.

ESA, 2018, Draft Humboldt Bay Trail South Sea Level Rise Vulnerability and Adaptation Report, prepared for County of Humboldt, under contract to GHD, January.

Fix, D., and A. Bezener, 2000, Birds of northern California, Edmonton: Lone Pine Publishers.

Fritzsche, R. A., and J. W. Cavanagh, 1995, A guide to the fishes of Humboldt Bay: HSU Press.

GHD, 2014, Humboldt Bay Trail: Eureka to Bracut Initial Engineering Study.

GHD, 2017a, Botanical Survey Technical Memorandum for the Humboldt Bay Trail South, County of Humboldt Public Works Department, Eureka, CA, November 15.

GHD, 2017b, Wetlands Delineation Humboldt Bay Trail South (Eureka to Bracut), prepared for the County of Humboldt Department of Public Works, July.

GHD, 2017c, Environmentally Sensitive Habitat Areas Mapping, Humboldt Bay Trail South (Eureka to Bracut), prepared for the County of Humboldt Department of Public Works, June.

GHD, 2017d, Feasibility Evaluation of Alignment Alternatives for the California Redwood Company Property – Humboldt Bay Trail South, June.

GHD, 2017e, Initial Site Assessment Humboldt Bay Trail South, prepared for the Humboldt County Department of Public Works, November.

Humboldt County, 2014, Project Study Report, Humboldt Bay Trail: Bay Trail South Segment (Eureka-to-Bracut) X Street in Eureka to Bracut Industrial Center, Humboldt County, March 18.

Humboldt County, 2016, Basis of Design Report for Trail Width Humboldt Bay Trail: Eureka-to-Arcata Segment, March 31.

Humboldt County, 2017, Planning and Building Department OnTrack Current Planning Division Activity Report, January - April.

Humboldt County, 2017, Humboldt County Web GIS, General Plan Land Use and Zoning, FEMA Flood Zones, accessed website on July 19, August 18, 2017 at: http://webgis.co.humboldt.ca.us/HCEGIS2.0/.

Hunter, J. E., D. Fix, G. A. Schmidt, and J. C. Power, 2005, Atlas of the Breeding Birds of Humboldt County, California, Eureka, California: Redwood Region Audubon Society.

JRP Historical Consulting Services, 2004, Historical resources evaluation report – Eureka to Arcata Route 1 corridor improvement project Humboldt County, CA, prepared for Caltrans, July.

JRP Historical Consulting, LLC, 2018, Draft Historical Resources Evaluation Report, Humboldt Bay Trail South Project, Humboldt County, California, January.

JRP Historical Consulting, LLC and Roscoe & Associates, 2018, Memorandum, Historical Resources / Cultural Resources Compliance under California Environmental Quality Act for Humboldt Bay Trail South Project, Humboldt County, California.

Klein, M. L., S. R. Humphrey, and H .F. Percival, (1995), Effects of ecotourism on distribution of waterbirds in a wildlife refuge, Conservation Biology 9:1454-1465.

Lander, James F., Lockridge, Patricia A., Kozuch, Michael J., 1993, Tsunamis Affecting the West Coast of the United States 1806-1992, December.

Laymon, S. A. 1998, Yellow-billed Cuckoo (*Coccycus americanus*), In The Riparian Bird Conservation Plan: a strategy for reversing the decline of riparian-associated birds in California, California Partners in Flight, accessed website at: http://www.prbo.org/calpif/htmldocs/riparian_v-2.html

LeValley, R, 2004, Bracut Marsh study.

Lewis, T. L., D. H. Ward, James S. Sedinger, Austin Reed and D. V. Derksen. 2013. Brant (*Branta bernicla*), version 2.0. In The Birds of North America (P. G. Rodewald, editor). Cornell Lab of Ornithology, Ithaca, New York, USA. https://doi.org/10.2173/bna.337

Loud, Llewellyn L., 1918, Ethnogeography and Archaeology of the Wiyot Territory, American Archaeology and Ethnology 14(3):221-436.

Moore, J. E., M. A. Colwell, R. L. Mathis, and J. M. Black. 2013. Staging of Pacific flyway brant in relation to eelgrass abundance and site isolation, with special consideration of Humboldt Bay, California. Biological Conservation 115:475-486.

Moyle, P. B., 2002, Inland fishes of California: University of California Press, Berkeley, CA 502p.

Moyle, P.B., R. M. Quiñones, J. V. Katz and J. Weaver, 2015, Fish species of special concern in California, Sacramento: California Department of Fish and Wildlife, July.

National Academy of Sciences (NAS), 2012, Sea-Level Rise for the Coasts of California, Oregon, and Washington, June.

North Coast Railroad Authority, 2009, Rails With Trails Policy and Procedures Manual.

North Coast Railroad Authority, 2012, Resolution 2012-13.

North Coast Unified Air Quality Management District (NCUAQMD), 2018a, Air Quality Planning & CEQA: Environmental Review Guidelines, accessed website on January 10, 2018 at: http://www.ncuaqmd.org/index.php?page=aqplanning.ceqa#T2.

North Coast Unified Air Quality Management District (NCUAQMD), 2018b, Air Quality Planning & CEQA: NCUAQMD Criteria Pollutant Attainment Status, accessed website on January 10, 2018 at: http://www.ncuaqmd.org/index.php?page=aqplanning.ceqa#T2.

Northern Hydrology & Engineering (NHE), 2015, Humboldt Bay: Sea Level Rise, Hydrodynamic Modeling, and Inundation Vulnerability Mapping Final Report. April, Report available at http://www.coastalecosystemsinstitute.org.

Pacific Flyway Council, 2002, Pacific Flyway management plan for Pacific brant, Pacific Flyway Study Comm, [c/o USFWS, DMBM] Portland, OR Unpubl. rept., 40 pp. + appendices.

Roscoe and Associates, 2017, An Archaeological Survey Report for the Humboldt Bay Trail South Project, Humboldt County, California, Caltrans District 1, Route 101, December.

Sawyer, J.O., T. Keeler-Wolf, and J.M. Evans, 2009, A Manual of California Vegetation, Second Edition, California Native Plant Society, Sacramento, CA.

Shuford, W. D., and T. Gardali, 2008, California bird species of special concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California, Studies of Western Birds 1, Camarillo and Sacramento, California: Western Field Ornithologists and California Department of Fish and Game.

Stantec, 2017a, Humboldt Bay Trail South Natural Environment Study, prepared for Humboldt County and Caltrans, December.

Stantec, 2017b, Humboldt Bay Trail South DRAFT Biological Assessment/Essential Fish Habitat Assessment, Humboldt County, California, January.

Stantec, 2018, Humboldt Bay Trail South Visual Resources Impact Assessment Draft Revision 1, prepared for Humboldt County and Caltrans, December.

Trulio, L. A. and J. Sokale, (2006), Abundance, species richness and behavior of waterbirds in response to non-motorized trails around San Francisco Bay, Wildlife and Public Access Study, a continuing ecological investigation sponsored by the San Francisco Bay Trail Project.

USACE, 2010, Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0).

U.S. Department of Agriculture, 2016, Web Soil Survey, accessed website on July 19, 2017 at: https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx.

U.S. Fish and Wildlife Service, 1973, Endangered Species Act of 1973.

U.S. Fish and Wildlife Service, 2007, Tidewater goby (Eucyclogobius newberryi) 5-year review: summary and evaluation, U.S. Fish and Wildlife Service, Ventura Fish and Wildlife Office, September.

U.S. Fish and Wildlife Service, 2011, Programmatic informal consultation for the California Department of Transportation's Routine Maintenance and Repair Activities, and Small Projects Program for Districts 1 and 2, File No. AFW0-12B0001-12I0001.

Zeiner, D. C., W. F. Laudenslayer, Jr., K. Mayer, and M. White, eds, 1990, California's wildlife Volume II: Birds, Sacramento, California: California Department of Fish and Game.

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Appendices

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Appendix A Comments on Initial Study (forthcoming)

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Appendix B Visual Impact Assessment

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Humboldt Bay Trail South

Visual Resources Impact Assessment

Draft Revision 1

Humboldt County, California
Eureka, *California* and *Arcata South, California* 7.5-Minute Quadrangles, Township 5 North, Range 1 West, Sections 23 and 24; and Township 5 North, Range 1 West, Section 4, 9, 17, and unsectioned portions, respectively
01-HUM-0-CR, Federal Project No. RPSTPL-5904(143)

February 2018

Caltrans
CALIFORNIA DEPARTMENT OF TRANSPORTATION

Humboldt Bay Trail South

Visual Resources Impact Assessment

Humboldt County, California
Eureka, *California* and *Arcata South, California* 7.5-Minute Quadrangles
Township 5 North, Range 1 West, Sections 23 and 24; and Township 5 North, Range 1 West, Section 4, 9, 17, and unsectioned portions, respectively
February 2018

01-HUM-0-CR
Federal Project No. RPSTPL-5904(143)

STATE OF CALIFORNIA
Department of Transportation, District 1 and
County of Humboldt – Public Works Department

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Humboldt Bay Trail South

Visual Resources Impact Assessment

Contents

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Tables

Figures

Abbreviations and Acronyms

AASHTO	American Association of State Highway and Transportation Officials
ADA	Americans with Disabilities Act
APN	Assessor's Parcel Number
bgs	below ground surface
BMPs	best management practices
Bracut	Bracut Industrial Center
Caltrans	California Department of Transportation
CCA	California Coastal Act
CCC	California Coastal Commission
CCT	California Coastal Trail
CEQA	California Environmental Quality Act
CISS	cast-in-steel-shell
County	Humboldt County Department of Public Works
CRC	California Redwood Company
FHWA	Federal Highway Administration
Highway 101	U.S. Highway 101
KOP	Key Observation Point
LCP	Local Coastal Program
LAU	Landscape Assessment Unit
MUTCD	Manual of Uniform Traffic Control Devices
NEPA	National Environmental Policy Act
NCRA	North Coast Railroad Authority
NWR	National Wildlife Refuge
project	Humboldt Bay Trail South
ROW	right of way
SR 255	California State Route 255
VAU	Visual Assessment Unit
VIA	Visual Impact Assessment

Chapter 1. Introduction

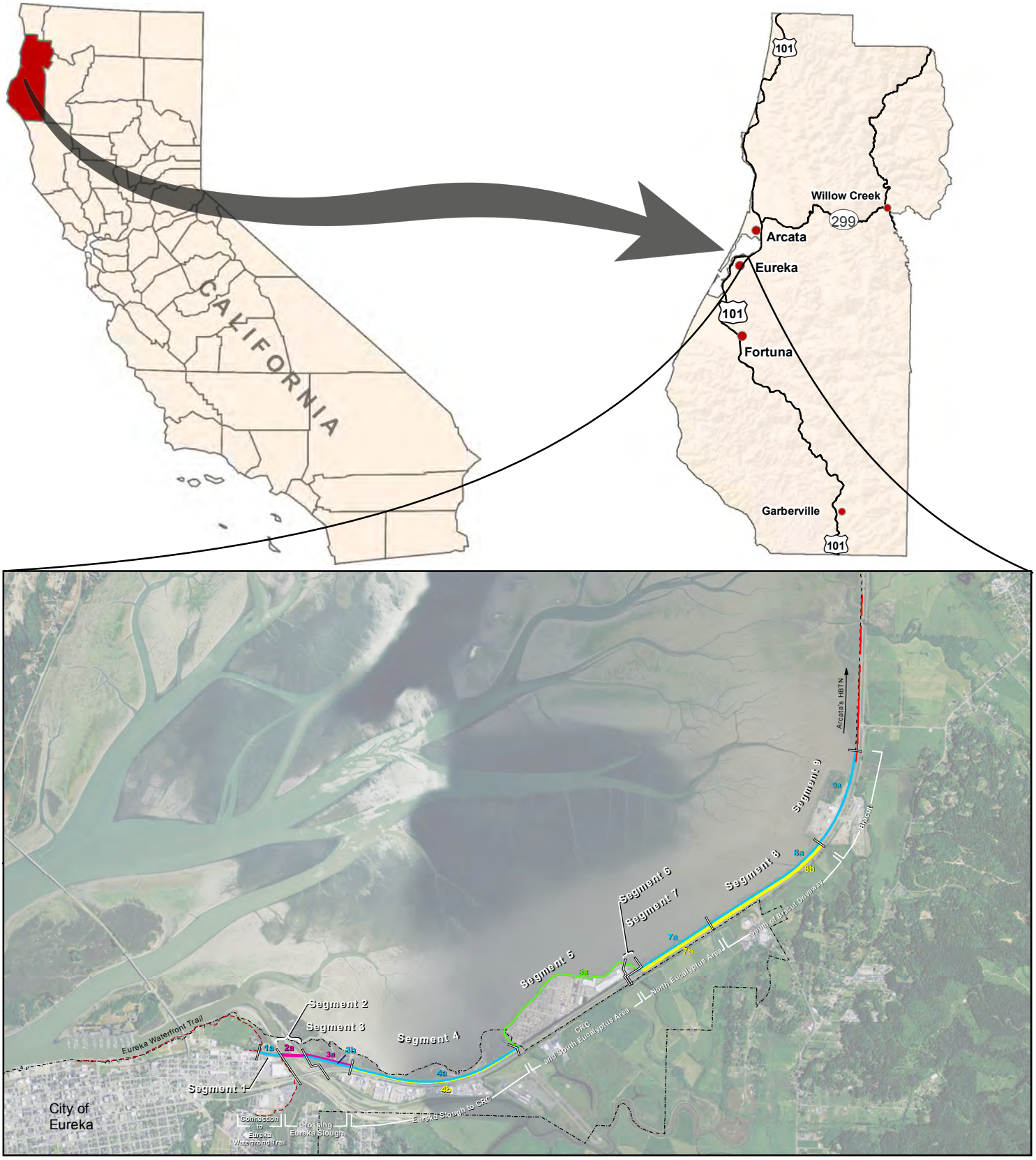
Humboldt County Department of Public Works (County) is proposing to construct a Class I multi-use recreational trail between Bracut and the city of Eureka, Humboldt County, California. The Humboldt Bay Trail South Project (project) would provide the interconnecting link between two other segments of the larger Humboldt Bay Trail system that are currently under construction—the City of Arcata's Bay Trail North and the City of Eureka's Waterfront Trail. The proposed project would be generally aligned in or adjacent to the unused North Coast Railroad Authority (NCRA) railroad corridor that follows the Humboldt Bay coastline immediately west of U.S. Highway 101 (Highway 101). This Visual Resources Impact Assessment (VIA) was prepared to evaluate the effects of the project on the aesthetics and visual resources associated with the proposed trail alignment: provide project design recommendations (i.e., conservation measure), strategies, and features; and act as a technical support document for the project's environmental documents and permits. The existing and post-project visual environments and visual quality of the project area are assessed and the corresponding viewer response to project-related changes anticipated to result from implementation of the proposed project. Cumulative impacts of the project, as a whole, are also discussed.

In accordance with the California Environmental Quality Act (CEQA), visual impacts were assessed using the Appendix G, CEQA Guidelines criteria (Association of Environmental Professionals 2017) and for the purposes of the National Environmental Policy Act (NEPA), the guidance for visual resources set forth by the Federal Highway Administration (FHWA) (Federal Highway Administration 1988) were followed. The project is situated primarily within the state jurisdiction of the Coastal Zone and is subject to the requirements of the California Coastal Act (CCA). This VIA also evaluates the project for consistency with the City of Eureka Local Coastal Program (LCP) (2008a) and the County's certified LCP (1982), and with the goals and policies indicated in the City of Eureka's (2008b) and the County's (2017) general plans.

Chapter 2. Project Location

The project alignment is found in Township 5 North, Range 1 West, Sections 23 and 24 in the *Eureka, California* 7.5-minute U.S. Geological Survey quadrangle and Township 5 North, Range 1 West, Sections 4, 9, 17, and unsectioned portions in the *Arcata South, California* 7.5-minute U.S. Geological Survey quadrangle (Figure 1).

The project area extends from the southern terminus of the City of Arcata's Humboldt Bay Trail North project, located near Brainard Slough (also known as Rocky Gulch) north of the Bracut Industrial Center (Bracut), to the existing Target trail in Eureka, for a total length of approximately 4.2 miles. The majority of the project is proposed to be situated between U.S. Highway 101 (Highway 101) and the NCRA railroad corridor, with a portion located on the perimeter levee along the California Redwood Company's (CRC) property. The project also includes the extension of a cable barrier along Highway 101 from Brainard Slough to Gannon Slough where the highway is adjacent the City of Arcata's Humboldt Bay Trail North project. Figures 2a and 2f illustrates the proposed project alignment.



TRAIL LOCATION TYPE

- NCRA RwT (N of tracks)
- NCRA RwT (S of tracks)
- On Railroad (temporary)
- Highway-with-Trail
- Private (CRC)
- Cable Railing - Humboldt Bay Trail North
- Segment Break

Trail Connections

- Eureka Waterfront Trail
- Humboldt Bay Trail North

Eureka City Limits

Paper Size 8.5" x 11" (ANSI A)
0 750 1,500 2,250 3,000
Feet
Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

N

GHD

2a Alignment

"Text" Project Reach

Humboldt County Public Works Department
Humboldt Bay Trail - Bay Trail South
(Eureka to Bracut)

Job Number 11110166
Revision B
Date 25 Oct 2017

Vicinity Map

Figure 1

718 Third Street Eureka CA 95501 USA T 707 443 8326 F 707 444 8330 E eureka@ghd.com W www.ghd.com

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Reference Scale (1:4800)

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Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

N

Key Observation Points (KOPs)

Area of Potential Effect

Visual Assessment Units (VAUs)

Connection to Eureka Waterfront Trail

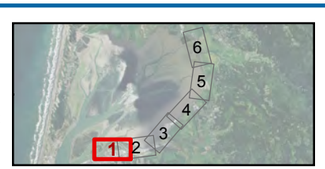
Crossing Eureka Slough

Eureka Slough North

Trail Connections

Existing Eureka Waterfront Trail

Proposed Eureka Waterfront Trail (Tydd St to Adorni Trail)



Humboldt County Public Works Department
Humboldt Bay Trail - Bay Trail South
(Eureka to Bracut)

Job Number	11110166
Revision	F
Date	13 Feb 2018

Trail Alignment

Figure 2a

G:\111\11110166 Humboldt Bay Trail South PA&ED PS&E\08-GIS\Maps\Figures\VIA\11110166_02_TrailAlignment-VIA_MB_RevF.mxd

Data source: Aerial: NAIP USDA. **Created by:gldavidson**

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Humboldt Bay

Eureka Slough

Segment 1:
Connection to Eureka Waterfront Trail

Segment 2
Crossing Eureka Slough

Segment 3
Eureka Slough

Segment 4
Eureka Slough to CRC

1st St
X St
Y St
4th St
5th St
Tydd St
Bay St
7th St
North St
Jacobs Ave
Redwood Hwy
101

1
2
3

Eureka Slough

Paper Size 11" x 17" (ANSI B)
Reference Scale (1:4800)
0 100 200 300 400
Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

N

Key Observation Points (KOPs)
Area of Potential Effect

Visual Assessment Units (VAUs)
Connection to Eureka Waterfront Trail
Crossing Eureka Slough
Eureka Slough North
Eureka Slough to CRC

Trail Connections
Proposed Eureka Waterfront Trail (Tydd St to Adorni Trail)

Humboldt County Public Works Department
Humboldt Bay Trail - Bay Trail South
(Eureka to Bracut)

Job Number	11110166
Revision	F
Date	13 Feb 2018

Trail Alignment

Figure 2b

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Humboldt Bay

Segment 5

5

6

California Redwood Company

California Redwood Company

Segment 4

Eureka Slough to CRC

4

Redwood Hwy

101

Airport Rd

Paper Size 11" x 17" (ANSI B)
Reference Scale (1:4800)

0 100 200 300 400

Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

N

Key Observation Points (KOPs)

Area of Potential Effect

Area not assessed in this study

Visual Assessment Units (VAUs)

California Redwood Company

Eureka Slough to CRC

Humboldt County Public Works Department
Humboldt Bay Trail - Bay Trail South
(Eureka to Bracut)

Job Number	11110166
Revision	F
Date	13 Feb 2018

Trail Alignment

Figure 2c

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Humboldt Bay

7

Segment 6

CRC North

8

Segment 7

9

North Eucalyptus Area

101

Redwood Hwy

10

Segment 8

South of Bracut Driveway

Indianola Cutoff

Paper Size 11" x 17" (ANSI B)
Reference Scale (1:4800)

0 100 200 300 400

Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

Key Observation Points (KOPs)

Area of Potential Effect

Area not assessed in this study

Visual Assessment Units (VAUs)

CRC North

California Redwood Company

North Eucalyptus Area

South of Bracut Driveway

Humboldt County Public Works Department
Humboldt Bay Trail - Bay Trail South
(Eureka to Bracut)

Job Number 11110166
Revision F
Date 13 Feb 2018

Trail Alignment

Figure 2d

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Data source: Aerial: NAIP USDA. **Created by:gldavidson**

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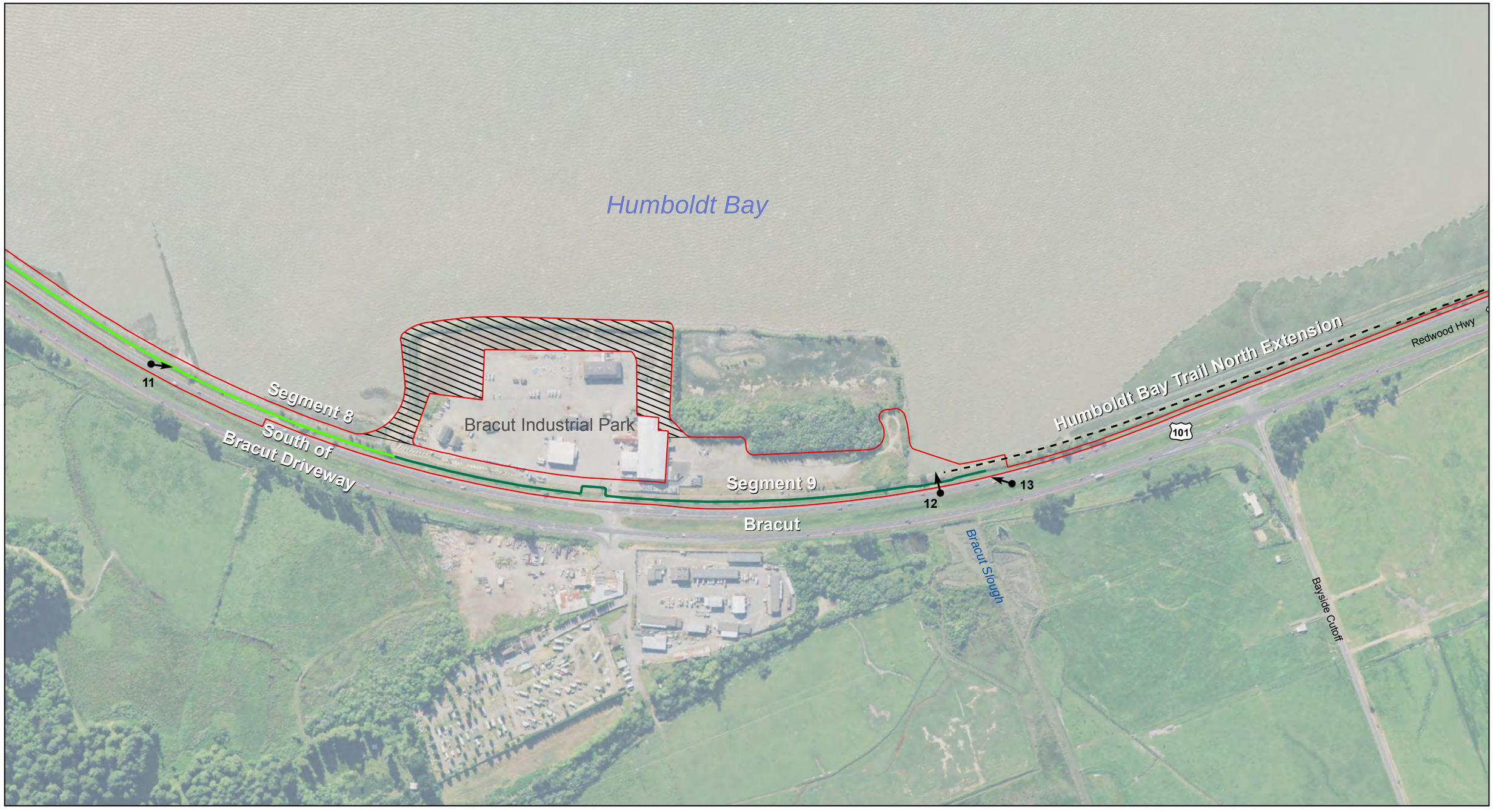

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Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

N

- Key Observation Points (KOPs)
- Area of Potential Effect
- Area not assessed in this study

Visual Assessment Units (VAUs)

- Bracut
- South of Bracut Driveway

Trail Connections

- Arcata Rail-with-Trail (Bracut to Foster Ave)

Humboldt County Public Works Department
Humboldt Bay Trail - Bay Trail South
(Eureka to Bracut)

Job Number	11110166
Revision	F
Date	13 Feb 2018

Trail Alignment

Figure 2e

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Data source: Aerial: NAIP USDA. **Created by:gldavidson**

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Paper Size 11" x 17" (ANSI B)
Reference Scale (1:4800)

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Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

N

Key Observation Points (KOPs)

Area of Potential Effect

Trail Connections

Arcata Rail-with-Trail (Bracut to Foster Ave)

GHD

Humboldt County Public Works Department
Humboldt Bay Trail - Bay Trail South
(Eureka to Bracut)

Job Number	11110166
Revision	F
Date	13 Feb 2018

Trail Alignment

Figure 2f

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Data source: Aerial: NAIP USDA. **Created by:gldavidson**

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Chapter 3. Project Description

3.1. Project Background

A non-motorized trail between Eureka and Arcata has been identified as a community priority for over 20 years in multiple surveys, workshops, meetings, and planning documents. The proposed project is part of the proposed Class I multi-use trail, with several segments of the Humboldt Bay Trail already completed or in construction, the proposed 4.2 mile Humboldt Bay Trail South Project would be the keystone project of the overall Humboldt Bay Trail system which when complete will result in a continuous 13-mile-long non-motorized trail from Sunset Avenue in Arcata, to Hikshari' Trail in Eureka. Once complete the trail would become a component of the California Coastal Trail. The Humboldt Bay Trail was identified as a high priority regional project by the Humboldt County Association of Governments and was formally linked to the California Department of Transportation (Caltrans) Eureka-Arcata Highway 101 Corridor Improvement Project by the California Coastal Commission (CCC) in 2013. When complete, the trail will link the two largest cities in Humboldt County and provide a major step toward regional trail connectivity in and around Humboldt Bay.

3.2. Project Purpose and Need

The primary purpose of the project is to improve safety and connectivity for non-motorized and motorized travelers between the communities of Eureka and Arcata. The trail is warranted because Highway 101 between Eureka and Arcata is an incomplete transportation facility that was designed primarily to support motorized vehicles. The project would reduce the potential for conflicts between bicyclists, pedestrians, and vehicles within the Highway 101 corridor and increase mobility options between the communities of Arcata and Eureka. The project would contribute to a balanced, "complete street" transportation network and enhance public access to Humboldt Bay. A continuous trail would have many benefits, including:

- Improved safety (through separation of motorized and non-motorized travelers)
- Economic development (by supporting transportation mobility and regional tourism)
- Congestion relief
- Coastal access and opportunities for nature study
- Improved bay viewshed
- Enhanced quality of life
- Community connectivity
- Reduced vehicle miles traveled, fuel consumption, and emissions
- Partial rehabilitation of selected areas of the railroad prism

3.3. Project Description

The Humboldt Bay Trail South Project would provide non-motorized (primarily pedestrian and bike) transportation and recreational access by creating a Class I multi-use trail connection between the City of Eureka's Waterfront Trail and the City of Arcata's Humboldt Bay Trail North. The project would connect to the existing Eureka Waterfront Trail, starting just south of NCRA's Eureka Slough Bridge in Eureka, and continuing along the NCRA railroad transportation corridor north towards Brainard Slough. In addition to the proposed trail improvements between Eureka and Brainard Slough, the project includes sections of cable barrier that are proposed to be installed at specified locations between the existing Humboldt Bay Trail North Project and U.S. Highway 101. For the purposes of this study, the approximately 4.2-mile-long trail alignment was divided into nine unique segments (as shown on Figures 2a–f) in addition to the Humboldt Bay Trail North segment where extension of the safety cable barrier is proposed:

- Segment 1: Connection to Eureka Waterfront Trail
- Segment 2: Eureka Slough Crossing
- Segment 3: Eureka Slough North
- Segment 4: Eureka Slough to CRC
- Segment 5: CRC
- Segment 6: CRC North Bay Crossing
- Segment 7: North Eucalyptus Area
- Segment 8: South of Bracut
- Segment 9: Bracut to Brainard Slough

Following is a description of the project design standards and approach that would be implemented under the proposed project, including the trail segment where these project features would be used.

3.3.1. Design Standards and Approach

The project is being designed to achieve the standards of a Class I Bikeway in accordance with the Caltrans Highway Design Manual (2017). In addition, the project will be designed to conform to other applicable standards, including the American Association of State Highway and Transportation Officials (AASHTO) Guide for the Development of Bicycle Facilities, Fourth Edition (2012); California Manual of Uniform Traffic Control Devices (CA MUTCD) (2014); the 2010 Americans with Disabilities Act (ADA) Standards for Accessibility Design; Chapter 11B of the 2016 California Building Code; General Order No. 26-D from the California Public Utilities Commission; and the NCRA Trail Guidelines (2009).

The project is being designed to accommodate the expected volume and diversity of users, which includes a range of ages, experience levels, speeds, trip purposes, and mobility modes. Consideration will be given to user safety and ensuring that the project will meet the needs of the public and minimize potential conflicts. Particular constraints within the trail alignment may warrant adjustments to the standards to address site specific issues. Throughout the project alignment, the design standards described in the following sections would be applied to the design:

3.3.2. Trail Width and Surface (All Project Segments)

In accordance with the County of Humboldt's Basis of Design Report for Trail Width (March 31, 2016), a context-based approach will be utilized for selecting the appropriate trail width for the project. Trail width is a key design parameter for user safety. Trails that are too narrow can result in a high rate of collisions or a perception of unsafe conditions, which could deter use and result in a failure to achieve the desired outcomes and benefits. Trail width is also a key design parameter for the quality of the user experience, with wider trails typically resulting in a higher quality user experience.

In order to satisfy the project need, while minimizing impacts on environmental sensitive areas, the standard trail would consist of a 10-foot-wide asphalt track with 2-foot-wide gravel shoulders on each side. A narrower trail width may be used in isolated areas, where special situations preclude construction of the standard trail width. In accordance to Class I and accessibility standards, the trail would be designed with a two percent or less cross slope and a five percent or less running slope. In areas where the project intersects tidally influenced waters, the standard trail would consist of a bridge (described below).

3.3.3. Streetscape Improvements (All Project Segments)

3.3.3.1. VIEWING PLATFORMS AND INTERPRETIVE SIGNAGE

The viewing platforms and interpretive sign areas associated with the project may consist of either low-profile landscaped areas or raised deck platforms comprised of steel, asphalt-concrete, concrete, or wood or rail tie borders filled with crushed rock. Each platform/sign area may include interpretive signs, benches, trash receptacles and landscaping. These areas would encourage an appreciation of the environment and the socio-cultural history of the area by providing opportunities for nature study. The opportunities include providing up-close views of local vegetation/habitats, mid-range views of Eureka Slough/Humboldt Bay, long-range views of the surrounding ridge lines, and interpretive signs that provide information about local habitats and cultural/historical sites. Specific locations for viewing platforms and interpretive signage will be determined later in the design process.

3.3.3.2. DIRECTIONAL AND WAYFINDING SIGNAGE

Directional and wayfinding signage would be installed at regular intervals to inform trail users of nearby connections to surface streets and nearby destinations.

3.3.3.3. TRAILHEADS

The project is primarily situated within the interior of the Arcata-Eureka transportation corridor and was fundamentally designed to connect existing trail segments located in the two cities—Eureka and Arcata. Currently the project does not propose new trailheads and envisions that users would access the new trail segment from the interconnecting trail segments in Eureka or Arcata. Opportunities for new trailheads will be evaluated as the project design progresses. The trailheads could include new or refurbished parking spaces, interpretive signs, gateway signage, kiosks, benches, trash receptacles, and/or landscaping.

3.3.3.4. LIGHTING

Up to two new lights may be included at the Bracut driveway/trail intersection to enhance visibility at night. Outside night lighting associated with construction, would be designed to protect wildlife and nighttime views, including views of the night sky. This design goal would be satisfied using a variety of means as applicable, including fixture types, cut off angles, shields, lamp arm extensions, and pole heights. Specific design preferences include directing light downward and away from other properties, avoiding brightly illuminated vertical surfaces where feasible, such as walls and lamp poles, and directing lighting away from environmentally sensitive habitat areas (ESHA).

3.3.4. Structural Pavement Sections (All Project Segments)

The trail is anticipated to have a typical pavement structural section that has approximately 12 inches of aggregate base and approximately 3 inches of asphalt concrete. In areas of poor soils, the structural section may be increased to up to 3 feet of aggregate/engineered fill base or other soil stabilization measures such as the use of geotextiles and increased structural section depth.

3.3.5. California Redwood Company Area (Project Segment 5 and 6)

Approximately 1.1 miles of the proposed trail alignment follows the outer perimeter levee surrounding the CRC. The existing levee varies in width from 12 to more than 30 feet wide and averages approximately 10 feet higher than the adjacent Humboldt Bay mud flats. The standard trail section would be maintained along the levee, but may include additional fencing/railing and/or slope/drop-off protection as needed on one or both sides of the trail. The fencing/railing would be 42 inches in height (minimum) and would be constructed from wood or metal material, and may include chain link, cable or picket style fencing. In general, the trail elevation is proposed to be very similar to that of the existing levee; however, the

elevation profile would vary as needed to comply with the standards and other design elements. Portions of the levee that are narrow or low in elevation may need additional embankment to widen or raise the elevation of the trail. Sections may also require reinforced steepened slopes or short retaining systems (i.e., gabion walls) to limit necessary embankment fill. If widening is necessary, it would generally occur on the CRC side of the levee rather than towards Humboldt Bay. The additional embankment would be added along the inside slope at an approximate 1.5:1 slope. In most cases, the added embankment would result in fill into the inboard ditch/wetlands. When this occurs, the inboard ditch would be reconstructed to provide for the necessary capacity and to also mitigate onsite for wetlands impacts associated with inboard ditch. The CRC portion of the trail is proposed to be connected to the adjacent trail sections (on both ends) by bridges used to cross the mud flats or saltmarsh and provide a smooth transition back on to the main trail alignment located between the railroad tracks and highway. The bridge are described in more detail below.

3.3.6. Eureka Slough Crossing (Project Segments 2 and 3)

Currently, Highway 101 crosses the Eureka Slough, but contains no bike or pedestrian facilities. The highway's bridge structures (northbound and southbound bridges) are scheduled to be replaced and reconstructed in the future; however, no specific dates have been determined. Caltrans staff have indicated a replacement highway bridge across Eureka Slough would include bike and pedestrian facilities, but until that time, an alternate route would be required.

Approximately 700 feet to the northwest of the Highway 101 Eureka Slough Bridge crossing is a railroad bridge owned by NCRA. The bridge is currently unused as there is no rail service within the area. If rail service were to resume, significant maintenance or improvements would be required as the condition of portions of the tracks approaching the bridge are not to current standards for rail traffic.

The proposed trail across Eureka Slough would make use of the existing railroad bridge by modifying the structure to accommodate the trail. One option utilizes the existing deck by installing an asphalt, concrete, or a wooden surface over the existing bridge surface and on top of the rails. Another option would be to install an asphalt, concrete, wooden, or pre-manufactured surface up to the level of the rails that would allow for cooperative use with trains. Some of the existing cross ties may require replacement or an anti-fungal treatment to extend their useful life. Both options would include new safety railing and minor cosmetic improvements to the bridge's appearance, such as painting over graffiti. During construction, protection measures would be implemented to prevent construction debris and other materials from falling from the bridge and entering the waterway below.

In the future, when Caltrans replaces the southbound Highway 101 bridge structure with one that contains accommodations for bikes and pedestrians, the trail would be rerouted and utilize the Highway 101 bridge structure. After crossing the highway bridge, the trail would continue along the highway until it connects with the trail approximately 1,000 linear feet to the north. At that time, access across the railroad bridge would likely discontinue and all pedestrian and trail improvements would be removed. The future Eureka Slough crossing on Highway 101, connection route to and from the bridge, and the deconstruction of the trail improvements on the railroad bridge were not analyzed in this document.

3.3.7. Brainard Slough Crossing (Project Segment 9)

Brainard Slough is formed from the Washington Gulch and Rocky Gulch drainages, the confluence of which is on the east side of the freeway before crossing under Highway 101 via a single reinforced box culvert, then under the tracks via two 48-inch corrugated metal pipe culverts. These culverts are significantly damaged and do not currently function. A new trail crossing would require the two existing 48-inch pipe culverts be removed and a bridge structure be added for the trail.

The bridge structure would need to be approximately 120 feet in length. The bridge would consist of a single-span, pre-manufactured structural section comprised of steel, aluminum, fiberglass, or concrete. The bridge would be supported on each end by abutments (including wingwalls) supported by up to five 18-inch diameter cast-in-steel-shell (CISS) piles on each end. Up to 10 piles would be installed to a depth of up to approximately 100 feet below ground surface (bgs) and approximately 10 to 15 feet from Humboldt Bay water extents during periods of low tide. The steel shells would be installed outside the active channel using a vibratory pile driver (American Pile driving Equipment Model 200 or similar), which would utilize a vegetable based non-toxic hydraulic oil in case of a hydraulic leak in or near Humboldt Bay. Each steel shell would be proofed by driving its final 5 feet by a conventional impact hammer pile driver to achieve design tip elevation and verify load capacity. No pile driving would occur in water, as installation would occur during low tides.

The existing failed culverts and debris (including timber ties, supports and rock) would be removed, the remaining rail embankment regraded (as-needed), and rip-rap installed (including on the bay side) to stabilize the embankment/shoreline and reduce the potential for ongoing erosion.

Prior to completing the project's final design, the County will complete a geotechnical analysis to determine the bearing capacity of the soils and to verify if piles are necessary. The geotechnical analysis will be used to verify the target depths of the piles.

3.3.8. CRC Bridge Structures (Project Segments 5 and 6)

Two bridge structures would be constructed at the north and south extents of the CRC property for trail portions that cross tidally influenced waters. The bridges would be at least 10-feet wide between railings and would be comprised of pre-manufactured wood, fiberglass, steel, aluminum, or concrete.

The northern CRC bridge is anticipated to be a three-span pre-manufactured bridge supported with four piers (one on each end and two within the mid-sections located in Humboldt Bay). The bridge would have a total length of approximately 200 feet. Each pier is anticipated to be comprised of up to five 18-inch diameter CISS piles. Like the bridge structure proposed for the Brainard Slough crossing, the steel shells would be installed to a depth of approximately 100 feet bgs using the vibratory hammer method followed by impact hammer proofing. In order to provide access for cranes, temporary sheet piles and washed coarse-grained aggregate fill would be used to construct an access road and landings. These activities would be required for the three-span bridge proposed on the north side of CRC, on property owned by CRC (Assessor's Parcel Number [APN] 404-141-004), the City of Eureka (APN 405-061-004), and McMurray and Hoff (APN 404-141-005). The sheet piles would be installed approximately 30 feet bgs and the aggregate fill would be encapsulated in geotextile fabric to separate native and fill soils. Water bladders may also be used to construct a coffer dam to isolate the work area from the bay and tidal waters. Isolating the work area with water bags would allow for work within the bay to be expedited as work would not be restricted to periods of low tides only. The coffer dam would also reduce the likelihood of construction-generated sediment from entering the bay and to reduce the possibility of fish entrapment. Following the installation of the bridges, the temporary access road, including the sheet piles, aggregate fill and geotextiles, would be removed, and existing ground surface (bay mud) smoothed out to the extent practical.

The southern CRC bridge would be a single-span pre-manufactured bridge approximately 80 feet in length. Like the Brainard's Slough bridge, the southern bridge is anticipated to be supported on each end by abutments and up to four 18-inch diameter CISS piles driven approximately 100 feet deep. The piles would be installed in the same manner and using the same equipment as the northern CRC bridge.

The vibratory hammer used for the installation of sheet piles and steel shell piles at the north and south extents of the CRC property is anticipated to be operated for approximately 3 hours per day for a total of 20 days. It is anticipated that the piles (up to 26 total) would require 100 blows per pile at 145 decibels and driving 3 to 4 piles per day. The installation of sheet piles and steel shells would occur during low tide.

Prior to completing the project's final design, the County will complete a geotechnical analysis to determine the bearing capacity of the soils and to verify if piles are necessary. The geotechnical analysis will be used to verify the target depths of the piles.

There have been some opinions expressed regarding the shininess of the new aluminum bridges installed as part of the Eureka Waterfront Trail and Arcata's Humboldt Bay Trail North. A study will be prepared in early 2018 to identify the bridge types that are suitable and that could be considered for the Humboldt Bay Trial South project. The photographs below show examples of possible bridge and rail types being considered for the proposed project. During bridge type selection, the County will consider the feedback received on adjacent trail projects as well as the potential benefits of consistency with the existing structures.

Examples of Bridge and Rail Types

3.3.9. Retaining Structures (Project Segments 4, 5, 6, 7, and 9)

Retaining structures may be used at each end of the bridges (abutment wingwalls) and also along the segment of the trail beginning at the northwest corner of the CRC property and

extending north-westerly for a distance of approximately 2,700 linear feet. The segment of trail north of CRC would be located between the railroad and the Highway 101 corridor, either directly adjacent to the railroad or directly adjacent to the highway (behind the existing metal beam guardrail). A retaining wall structure may be required in order to maintain minimum setbacks from the NCRA tracks or Highway 101 (depending on the alignment) while limiting encroachment into the existing drainage ditch that is located between the railroad and highway. The structure may consist of cast-in-place concrete or soldier pile retaining wall. If soldier pile retaining wall is used, 30 to 40-foot tall reinforced concrete or coated steel soldier piles would be driven at 6- to 8-foot intervals and approximately 22 to 34 feet bgs leaving approximately 6 to 8 feet exposed above the ground surface. The soldier piles would be impact driven using the same (or similar) pile driver that would be used for proofing the CISS pilings. Lagging (concrete or treated timber) would be used to retain the backfill. It is anticipated that the beams (approximately 340 total) would require 100 blows per pile. The top of the retaining structures would not exceed the elevation of the railroad and the height to the ground surface is expected to be 6 feet or less. For safety purposes, the retaining structure would include railings.

3.3.10. Eucalyptus Trees (Project Segment 7)

The group of existing eucalyptus trees located north of the CRC property would need to be removed as part of the project. Removal of the eucalyptus trees is needed to accommodate the trail and includes approximately 219 eucalyptus trees that are 8 inches in diameter or greater in addition to smaller trees and saplings. The trees would be limbed and trunks rigged, felled, and lowered in sections (i.e., sectional felling). Tree stumps would be removed to the extent feasible through excavating, grinding or other means, with remaining stumps and root systems treated with an herbicide to prevent regrowth. Required equipment and workers would access the trees from both the highway and railroad sides. The removal operation would likely require the temporary closure of one or more lanes of US 101. The existing metal beam guardrail adjacent to the trees would likely be replaced because removal of the trees is expected to damage the guard rail system. The project would also remove all eucalyptus saplings in the vicinity of the trail (generally between the highway and railroad). Figure 3 shows the extent of proposed eucalyptus tree removal.

3.3.11. Shoreline Protection (Project Segments 4, 7, 8, and 9)

As previously discussed, the project includes localized shoreline restoration and protection at the Brainard Slough crossing. In addition to Brainard Slough, there are multiple areas along the project extents where the existing railroad fill prism has deteriorated and shows significant signs of erosion as a result of direct wave action from Humboldt Bay. The area between CRC and Bracut is generally in the worst condition with more isolated areas of

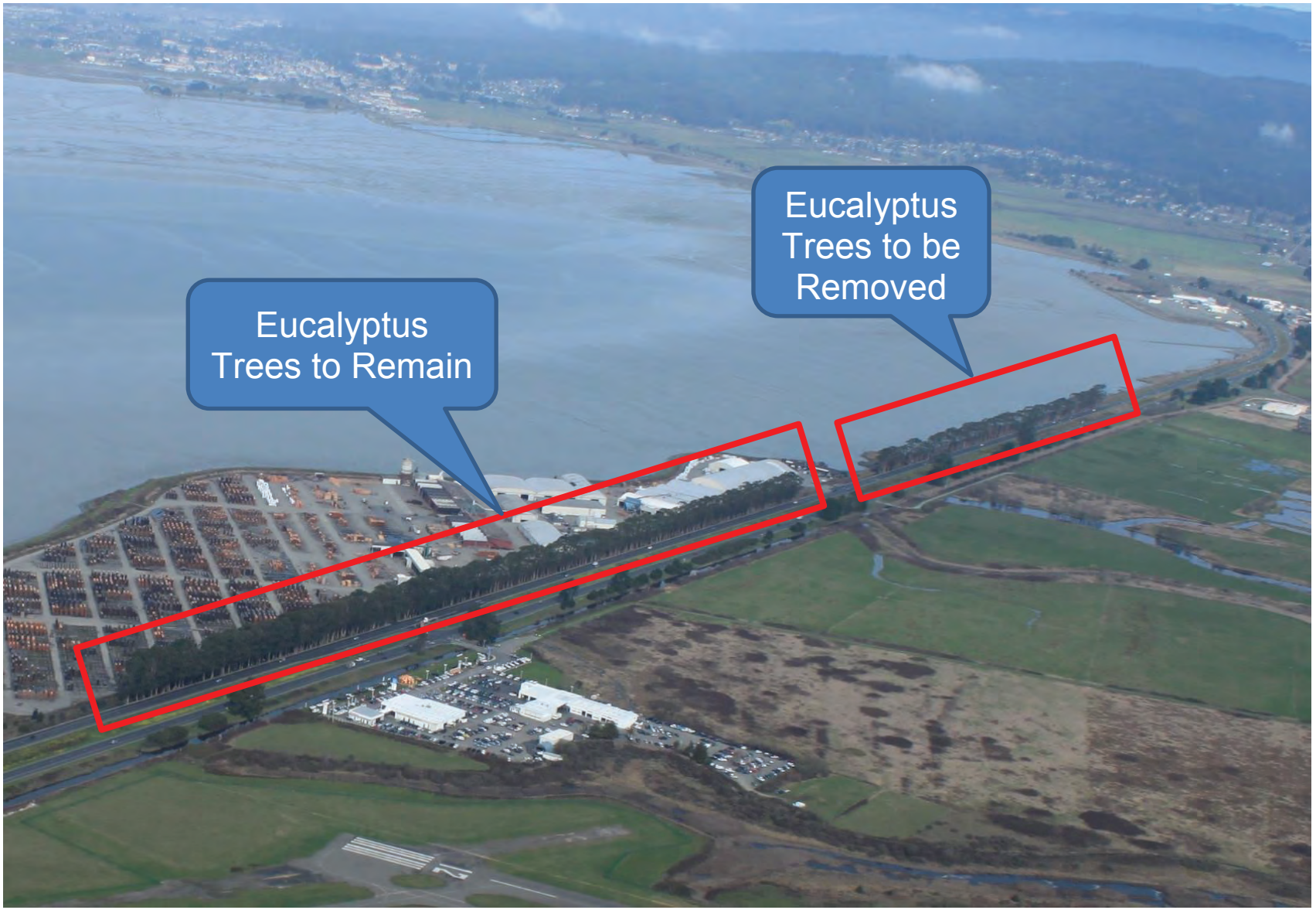

Figure 3
Proposed Eucalyptus Tree Removal

deterioration between Eureka Slough and CRC. In order to help protect the trail prism from future erosion and damage, sections of the rail prism would be repaired by placing ballast rock, and portions of the revetment would be repaired and/or supplemented with additional shoreline rock rip-rap. The shoreline protection along the bay side (the western side of the railroad prism) would be limited (horizontally) to the bay-ward extent of the existing rip-rap. No additional encroachment beyond the toe of existing rock armoring is proposed.

Approximately 500 linear feet of existing shoreline revetment would be repaired with rip-rap and ballast rock. Work would include temporarily removing the railroad ties and rails, placing additional ballast rock, and resetting the ties and rails on the ballast.

Approximately 5,000 linear feet of shoreline would receive supplemental ballast rock infill and surface applied rip-rap placed directly adjacent to the railroad ties on the bay side to improve and protect the shoreline from wind and wave action. Additional surface stabilization rock armoring is anticipated along the highway side of the trail prism to protect against wave over wash and surface erosion. The stabilization rock would be smaller in size as compared to the shoreline rip-rap. Over time, it is anticipated that native vegetation would establish itself in the interstices of the rock armoring, lessening the appearance of the rock on the landscape.

3.3.12. Striping and Vehicle Control (All Project Segments)

The trail would include a centerline stripe to delineate the two bi-directional lanes. Standard trail-related traffic-control signage would be installed in order to comply with Class I standards and MUTCD requirements. At locations where the trail intersects a vehicular roadway, removable bollards would be installed to prevent motorized vehicles from entering the trail. Authorized personnel (e.g., police, emergency-responders, County/City maintenance crews, etc.) would be able to remove the bollards and temporarily access some portions of the trail with motorized vehicles.

3.3.13. Drainage (All Project Segments)

The trail would typically have a two percent or less cross slope to allow surface water to flow off of the trail surface. When the trail is directly adjacent to either the railroad or the highway facilities, the cross slope of the trail would slant away from the railroad/highway in order to convey runoff towards existing or new drainage facilities. In locations where the existing drainage ditches are in close proximity to the proposed trail alignment, culverts may need to be extended or added. Similarly, in cases where the trail's fill prism encroaches into the existing drainage ditch to the extent it causes a reduction in capacity, the drainage ditch

may need to be reconstructed at approximately the same grade and depth, but at a location (horizontally) offset from the original position.

3.3.14. Barriers and Fencing (All Project Segments)

Safety railing and fencing is proposed along retaining walls, viewing platforms, the CRC levee, on bridges, at the Bracut driveway, and at the edge of the trail when adjacent to steep embankments or drop-offs. In addition, the project may include security fencing and gates along portions of the CRC property to prevent trail users from entering CRC facilities. The railings, fencing, and gates would be constructed from wood or metal material, and may include chain link, cable or picket style fencing. During railing type selection, the County will consider feedback received on adjacent trail projects as well as potential benefits of consistency with existing structures.

High-tension cable barriers and metal beam guard rail would be utilized between Highway 101 and the trail to protect trail users from errant vehicles. Barriers are required by design standards when the trail is located within the highway's 30 foot clear recovery zone. The proposed project includes cable barriers in certain locations where the trail is outside the clear recovery zone to enhance trail and highway safety, based on documented occurrences of vehicles departing the highway within the Eureka-Arcata corridor and reaching the railroad prism. The cable barrier would be installed along portions of the proposed Humboldt Bay Trail South project as well as the existing Humboldt Bay Trail North project. The high-tension cable barrier would be set back approximately 10 feet from the edge of trail and approximately 8 to 12 feet from the edge of the highway shoulder. The cable barrier consist f steel wire ropes (typically 4 strands) mounted on steel posts secured in concrete foundations. An approximately 2-foot wide concrete weed mat would be installed along the length of the cable barrier. The picture at right shows a typical cable barrier along a highway.

Typical cable barrier fencing (all project segments.)

Where the trail is less than 10 feet from the edge of the highway shoulder, a metal beam guard rail or other positive barrier would be required. In this situation, the trail would be located approximately 3 feet behind the metal beam guard rail wood posts. A weed control mat would be installed along the length of new metal beam guardrail to control vegetation.

3.3.15. Billboard Removal (Project Segments 7 and 8)

There are four billboards in the vicinity of the project, all of which are situated on private property. Three of the billboards are located outside the project area on the bay side of the railroad prism. One of the billboards is located within the project area between the highway and railroad. Depending on the final trail alignment, the trail may narrowly avoid this billboard, or it could be in conflict and require the billboard be removed or relocated. The future disposition of the remaining three billboards located outside the project area is unknown at this time, and not analyzed in this document. (Note: Visual simulations used in Section 8.8.6 conservatively assume all billboards would remain).

3.4. Project Construction

3.4.1. Construction Staging, Activities and Equipment

Construction staging areas would occur in the mapped portion of the project study boundary, within paved or graveled areas, or in designated, previously disturbed corporation yards.

Construction would primarily include removal of trees and vegetation, excavation and grading, bridge foundation construction and pre-manufactured bridge assembly and installation, trail paving, fencing/railing and signage, along various segments of the project alignment. All construction activities would be accompanied by both temporary and permanent erosion and sediment control best management practices (BMPs).

Trail construction would include the following activities:

- Clearing and Grubbing – To clear trees, vegetation and topsoil from the proposed trail footprint
- Excavation – Primarily at bridge approaches with other shallow excavations to maintain trail grades
- Embankment – Fill to maintain trail grades through low areas
- Retaining Walls – To limit encroachment into drainage ditches
- Aggregate Base – For trail shoulders and to support asphalt paving
- Asphaltic Concrete Paving – For trail surface
- Fencing/Barriers/Bollards
- Trail striping and signage.

Pre-manufactured bridge assembly and placement would include the following activities:

- Excavation – For the abutment foundations (maximum depth of 6 feet below existing grade)
- Aggregate Base – For structure foundations
- Abutments and Footings – Cast-in-place concrete to support pre-manufactured bridges
- Piles – Reinforced concrete in steel shell to support pre-manufactured bridges
- Bridge assembly in stating area
- Placement/Installation – Set pre-manufactured bridge on abutments
- Railing Installation
- Rock Slope Protection – To protect abutments and prisms

Equipment required for trail construction would include: tracked excavators, backhoes, graders, bulldozers, dump trucks, rollers, paving machines, cranes, water trucks, drill rigs, pile drivers and pick-up trucks. Equipment required for pre-manufactured bridge assembly and placement would include excavators and cranes.

Construction access would be to and from the staging areas identified below. Roadways that would be utilized for construction access and the staging areas include Highway 101, the entrance into CRC and the entrance into Bracut Industrial Park.

It is not anticipated that any temporary utility extensions, such as electric power or water, would be required for construction.

3.4.2. Construction Access and Hauling Traffic

The anticipated haul truck routes to the project area include Highway 101 from the north and south. The number of construction-related vehicles traveling to and from project area would vary on a daily basis. It is anticipated that up to 40 haul truck round trips would occur on a peak day. In addition, it is anticipated that construction crew trips would require up to eight round trips per day. Therefore, for the purposes of analysis, on any one day during construction, up to 48 vehicle round trips could occur.

3.4.3. Site Restoration and Demobilization

Following construction, the contractor would demobilize and remove equipment, supplies, and construction wastes. The disturbed areas along the project alignment would be restored to pre-construction conditions or stabilized with a combination of grass seed (broadcast or hydro seed), straw mulch, rolled erosion control fabric, rock and other plantings/vegetation.

Chapter 4. Affected Environment

4.1. Regional Context

Humboldt County is located along the northern coast of California from the King Range National Conservation Area up to the Prairie Creek Redwoods State Park. The cities of Eureka and Arcata are located within Humboldt County. The City of Eureka is located on the inner shoreline of Humboldt Bay, buffered from the Pacific Ocean by the Samoa Peninsula. Eureka is bordered on all sides by unincorporated Humboldt County. Humboldt Bay and the Samoa peninsula occur to the west, the foothills of the Pacific Coast Range occur to the east, the Eureka Slough and lowland wetlands occur to the north; the Elk River and more wetlands are found to the south of the city. The City of Arcata is situated just north along Highway 101 from Humboldt Bay (the northern portion of Humboldt Bay is also referred to as Arcata Bay) to Highway 299. Humboldt Bay lies to the south and the foothills occur east of the city. Agriculture dominates the land to the west of Arcata and the Mad River borders the city to the north.

This area contains open and expansive views of Humboldt Bay, low-lying wetlands, and tree-covered foothills. Further east the canyons and ridges of the Coast Range are visible. Several large streams, rivers, and sloughs flow through this area of Humboldt County and empty into the Humboldt Bay or directly into the Pacific Ocean.

4.2. Local Context

The proposed trail alignment begins in the northeast end of the Eureka and proceeds generally northeast along the NCRS corridor that parallels Highway 101 to the east and Humboldt Bay to the west. The flat elevation of the coastal plain grants views of the bay throughout the entire trail alignment and adjacent Highway 101 corridor, with the exception of the extreme south end of the proposed trail, which passes into urban areas. The terrain to the west of the proposed project alignment includes open water, wetlands, mudflats, and designated wildlife areas. To the east is Highway 101, scattered industrial development, and agricultural lands. The proposed trail segment also would pass through two industrial areas located immediately adjacent to the bay. There are four billboards in the vicinity of the project, all of which are situated on private property. Three of the billboards are located outside the project area on the bay side of the railroad prism. One of the billboards is located within the project area between the highway and railroad.

4.3. Project Viewshed

The viewshed is traditionally defined as what can be seen in 360 degrees from a single view point. The limits of a viewshed include the visual boundaries of the surface areas seen from the proposed project. Viewsheds can be restricted to corridors—limited by vegetation, topography, or other obstacles—or may be temporarily limited by smoke, dust, fog, or precipitation. While the extent of the viewshed varies by location (i.e., view point), throughout the project area, it is primarily characterized by open views with Humboldt Bay to the west. Landward views to the east from the proposed trail predominantly show lowland wetlands, commercial development, and the foothills and Coast Range in the distance. Highway 101 parallels the proposed trail corridor to the east. Views may be obstructed by trees and traffic along Highway 101. Portions of the trail are adjacent to development such as the CRC and the Bracut Industrial Park.

4.4. Landscape Units

Landscape units are used to define the visual environment within distinct boundaries. Landscape units are frequently named and are often locally recognized. For example, Humboldt Bay—located in between Arcata and Eureka—would be a landscape unit. Landscape units provide a framework for the assessment and management of visual resources and the effects of projects upon them.

A visual assessment unit (VAU) is a term used to define the portion of the landscape unit that is visible from the project or from which the project may be seen within the boundaries of a landscape unit. Individual VAUs are characterized by key observation points (KOP), which are key locations from which viewers can see existing conditions in the VAU.

Following are descriptions of the nine landscape units that correspond to project segments and one landscape unit outside of the project alignment defined for the purpose of visual resources assessment for the proposed project (Figures 2a–f). Visual assessment units and KOPs within each landscape unit are introduced in the analysis of impacts (Section 8).

4.4.1. Landscape Unit #1: Connection to Eureka Waterfront Trail (Project Segment 1)

Landscape Unit #1 corresponds to Segment #1 of the proposed trail alignment. This landscape unit begins at its connection to Eureka Waterfront Trail and extends approximately 100 feet along the railroad corridor to the Eureka Slough crossing. The surrounding landscape type is a mix of coastal, industrial, rural residential dominated by low-lying vegetation (mostly grass) with a few scattered mature hardwood trees and shrubs. For the

most part, this landscape unit is not visible from major roads in the area, including Highway 101 and SR 255 because of the flat topography, distance, and surrounding development. Some businesses adjacent to nearby surface streets (2nd and Y streets) would have the most direct views of the proposed trail. Commercial, industrial, and residential development immediately adjacent to this landscape unit would be visible to trail users.

4.4.2. Landscape Unit #2: Eureka Slough Crossing (Project Segment 2)

Landscape Unit #2 consists of the approximately 700-linear-foot existing railroad bridge crossing over Eureka Slough that runs roughly parallel to Highway 101. The railroad bridge is a relatively low-elevation, flat, steel structure supported by multiple piers. Views of the bridge from Highway 101 and areas immediately adjacent to the north side of the slough, including a public waterfront access at the northwest corner of Highway 101, behind the Target store are generally unobstructed, although the flat topography and distance make it difficult to distinguish detail. The landscape type associated with this landscape unit is the railroad corridor, water, and mudflats. Trail users would be afforded views of Humboldt Bay to the west, Highway 101 to the east, and Eureka Slough over which the trail would pass.

4.4.3. Landscape Unit #3: Eureka Slough North (Project Segment 3)

Continuing north from the east end of the Eureka Slough railroad bridge crossing, Landscape Unit #3 follows the railroad corridor as it passes between two wetland marsh/mudflats managed by Humboldt Bay National Wildlife Refuge (NWR). It is along this project segment that the proposed trail alignment would begin to parallel the west side of Highway 101. The landscape type is dominated by the railroad corridor, coastal mudflats, and marshes with no designated public access or other development. Commercial development lines much of the east side of Highway 101 adjacent to the project area, but the flat topography, distance, and vegetation that lines the south side of Highway 101 obstructs most views toward the bay. Trail users passing through Landscape Unit #3 would experience the naturalness of Humboldt Bay and the coastal marshlands; however, the visual character of these views from the trail would also include the Highway 101 corridor to the east.

4.4.4. Landscape Unit #4: Eureka Slough to CRC (Project Segment 4)

Landscape Unit #4 follows the Humboldt Bay coastline for approximately 1 mile. This landscape unit follows the railroad corridor as it passes between Highway 101 to the south and the wetland marsh/mudflats managed by Humboldt Bay NWR to the north, and eventually to the west as the alignment follows the land contours northward. The tidally influenced (i.e., inundated) Humboldt Bay coastline is only about 100 feet to the west. The railroad corridor prism is slightly elevated and is, therefore, apparent from Highway 101 with the exception of a few stretches where the view is buffered by small stands of trees and

shrubs that have established between the highway and the railroad corridor. The elevation is flat and the landscape type is dominated by the railroad corridor, coastal mudflats, and marshes. There is no residential or commercial development, or public access immediately adjacent to this project segment. The visual experience afforded trail users would be similar to that described for Landscape Unit #4.

4.4.5. Landscape Unit #5: CRC and South Eucalyptus Area (Project Segment 5)

The proposed trail would be routed along the approximately 1-mile long levee that was created to protect the CRC mill site from the waters of Humboldt Bay. Although it is no longer used as a lumber mill, many of the old buildings at the north end of the parcel remain intact. Landscape Unit #5 consists of the proposed trail alignment that would follow the outer perimeter of the CRC mill site. Trail users would be afforded direct views of Humboldt Bay as well as unobstructed views of the CRC parcel. Conversely, viewers within the CRC parcel would have views of this section of the trail. The sizable former log deck area would buffer views of the trail along the levee from Highway 101; however, a proposed bridge structure would be needed at the south end of the parcel, adjacent to Highway 101, to allow for connection of the trail to the existing levee. In addition, mature eucalyptus trees that line the west side of the Highway 101 road corridor as it passes by CRC would further limit views of this trail segment. Limited industrial and commercial use of the parcel occurs, but there is no residential development or public access in proximity to this landscape unit. In addition to the railroad corridor and the armored rock levee, the landscape type is industrial and commercial development, with outlying areas of coastal marsh and mudflats. Because Project Segment 5 would deviate from the NCRA corridor, the Highway 101 corridor and the southern eucalyptus corridor that occurs between Highway 101 and the eastern boundary of the CRC parcel, these areas will not be discussed relative to this trail segment.

4.4.6. Landscape Unit #6: North CRC Levee Trail Connector (Project Segment 6)

Landscape Unit #6 is a small unit that corresponds to project Segment 6. Approximately 500-linear feet of trail bridge crossing would be needed in this segment to create a connection between the proposed trail to the north and the north end of the CRC levee. The area to be spanned consists of a tidally-influenced inundated finger of the Humboldt Bay coastline that interfaces with the west side of the railroad prism and the north side of the levee. A commercial office building on the extreme north end of the CRC parcel further limits trail alignment options. The proposed bridge would be visible from Highway 101, but the view would be buffered by the presence of existing development. The landscape type

associated with this landscape unit is water, coastal marsh, mudflats, the railroad corridor, and commercial development. Trail users would experience this variety of landscape types and the visual character unique to each as seen from the trail.

4.4.7. Landscape Unit #7: North Eucalyptus Area (Project Segment 7)

Landscape Unit #7 would extend approximately 0.75 mile, from the proposed bridge crossing at the north end of the CRC parcel to the location where Indianola Cutoff intersects the east side of Highway 101. The southern end of this segment contains a row of mature eucalyptus trees that line a portion of the north side of Highway 101. Two commercial billboards are located on either side of the railroad corridor just north of the trees. The area available for trail development is limited in this segment by the presence of Highway 101 on the east and Humboldt Bay on the west. Under the proposed project, the eucalyptus trees would be removed to allow for trail construction and as a public safety measure for trail users. Changes to the existing view in this landscape unit would be apparent, particularly to travelers familiar with this stretch of roadway. However, as experienced by users of the new trail, the changes in the post-construction visual character of this landscape unit would not be substantial since there currently is no comparable land use. The landscape type includes railroad corridor, commercial billboards, coastal marsh, mudflats, water, and mature tree stands.

4.4.8. Landscape Unit #8: South of Bracut (Project Segment 8)

Landscape Unit #8 is similar in structure to Landscape Unit #7. The area available for trail development is limited by the presence of Highway 101 and Humboldt Bay. This approximately 0.5 mile segment of proposed trail contains only a widely scattered number of small trees and two commercial billboards. Its proximity to Highway 101 would result in the proposed trail and its features highly visible on the landscape. Aside from the billboards, there is no commercial or residential development near this proposed trail segment. The landscape type includes the railroad corridor, commercial billboards, coastal marsh, mudflats, water, and widely scattered trees. The visual character experienced by trail users in this landscape unit would include developed and undeveloped features, including Highway 101 and the developed road corridor immediately adjacent to the trail and the more natural environment of Humboldt Bay to the west.

4.4.9. Landscape Unit #9: Bracut (Project Segment 9)

Landscape Unit #9 corresponds to project Segment 9, which is the northern terminus of the proposed trail addressed in this assessment. Bracut is an area of active commercial and light industrial development that lines both side of Highway 101. There is no residential development adjacent to this project segment. Similar to the other northern landscape units

(i.e., #s 7 and 8), the railroad corridor is aligned in close proximity to Highway 101, making it readily apparent on the landscape. Trees and shrubs are sparse in this landscape unit with the exception of the northern end where vegetation along the railroad corridor increases in density. The landscape type includes the railroad corridor, a commercial billboard, coastal marsh, mudflats, water, and patches of trees and shrubs. The visual experience afforded trail users would be similar to that described for Landscape Unit #8.

4.4.10. Landscape Unit #10: Humboldt Bay Trail North

Landscape Unit #10 consists of a section of the Humboldt Bay Trail North where it would join the proposed Humboldt Bay Trail south. It was included in this discussion to assess the planned extension of safety cable barrier fencing from the north end of project Segment 9 into the Humboldt Bay Trail North. Trail pavement in this landscape unit was installed as a part of the Humboldt Bay Trail North project. The trail is aligned on the east side of the NCRA corridor and the west side of Highway 101. The safety cable barrier fencing would be installed between the trail and Highway 101 over approximately 0.9 mile. Trees and shrubs are scattered along the edge of the railroad corridor. Much of the wetland marsh/mudflats on the west side of the NCRA corridor are managed by Humboldt Bay NWR.

Chapter 5. Visual Environment

5.1. Regional Landscape

The description of regional landscape is used to establish the general visual environment of the project alignment against which the effects of the project on visual resources are assessed. A regional landscape is characterized by those attributes that distinguish it from the next. Following are descriptions of the landform (e.g., valleys, coasts, and mountains), natural and developed land cover, regional distribution, and visual homogeneity of the regional landscape within the project alignment.

5.2. Landform

The dominant landform associated with the project area is coast plain. The city of Eureka and the coastal plain through which the proposed trail would be aligned is located on a fairly flat plain just slightly higher in elevation (approximately 44 feet above mean sea level) than Humboldt Bay. Vast areas of mudflats and shallow water north of Eureka extend north along the Humboldt Bay coastline. Although views are expansive, the nearly level elevation limits definition of distant views. To the east, north, and south the coastal plain extends for some distance before giving way to the forested mountain foothills.

5.3. Land Cover

5.3.1. Natural

Natural land cover in the landward portions of the project area includes coastal wetlands, grasslands, and shoreline. Expansive wetlands, marshes, sloughs, and mudflats occur throughout the project alignment. Little in the way of natural vegetation and land cover remains in the southern end of the project area south of the Segment #2 Eureka Slough crossing. Years of industrial, commercial, and urban development and other disturbances have significantly altered the natural vegetation community types in this area favoring invasive and ornament species over coastal wetland and upland species. The wetlands, mudflats, and marshes support low-growing vegetation (i.e., grass, rush, sedges) with occasional patches of shrubs and small trees.

Adjacent to the southeast side of the CRC parcel is a sizable stand of mature eucalyptus trees. These trees buffer views of the CRC industrial complex from Highway 101 and areas to the east and south. A second, similar row of mature eucalyptus, also located along the southeast side of Highway 101, begins at the north end of the CRC parcel and extends approximately 0.7 mile northeast toward Bracut.

5.3.2. Developed

Although the alignment would pass through areas dominated by natural land cover, the alignment itself would be within the NCRA corridor. Much of the proposed trail alignment has at some time in the past experienced varying levels of disturbance and development. The proposed purpose of the project—to develop a commuter and recreational trail—would diversify the land cover type to include mixed use (industrial, transportation, and recreation). Portions of two significant industrial areas would be included in the proposed project area. The Bracut Industrial Center is the smaller of the two areas and is used for light industrial and commercial businesses. The larger CRC no longer is used as a mill, but many of the buildings on the northern half of the parcel are used for a variety of commercial and light industrial businesses. The old log deck on the southern half of the property is currently unused. Within the proposed project alignment and vicinity, the currently unused NCRA corridor, Highway 101, and adjacent recreational development such as Arcata's Humboldt Bay Trail North to the north and the Eureka Waterfront Trail to the south influence the visual character of the proposed trail alignment.

Chapter 6. Planning Guidelines

The following designations and planning documents serve as the basis for the assessment of potential impacts on scenic resources resulting from the project:

6.1. California Coastal Commission – Coastal Act

The CCA was enacted by the State Legislature in 1978 to provide long-term protection of California's coastal zone (the inland boundary of the coastal zone was mapped by the Legislature in 1976). The Coastal Act also made permanent the California Coastal Commission. The Commission plans and regulates development and natural resource use along the coast in partnership with local governments and in keeping with the requirements of the Coastal Act. Coastal Act policies constitute the standards used by the Coastal Commission in its coastal development permit decisions and for the review of Local Coastal Programs (LCPs). These policies are also used by the Commission to review federal activities that affect the coastal zone. The policy that pertain to visual resources and aesthetics require:

- Protection of the scenic beauty of coastal landscapes and seascapes.

6.2. Humboldt County General Plan

Humboldt County completed the update of its General Plan in October 2017. The Conservation and Open Space element (Humboldt County 2017) contains a number of goals and policies relating to scenic resources. Although Highway 101 in the project vicinity is not officially designated as a State Scenic Highway, it is considered to be eligible for listing (Caltrans 2017); therefore, policies that guide scenic resource protections associated with state scenic highways are provided in this study. The following goals and policies from this element are relevant to the proposed project:

Conservation and Open Space Element

Goal SR-G1: Conservation of Scenic Resources. Protect high-value scenic forest, agriculture, river, and coastal areas that contribute to the enjoyment of Humboldt County's beauty and abundant natural resources.

6.3. Humboldt County Local Coastal Program Plan

Humboldt County contains a series of LCPs as part of its Local Coastal Program. There are Local Coastal Plans for the Eel River Area, Humboldt Bay Area, McKinleyville Area, North

Coast Area, South Coast Area, and Trinidad Area. The project area falls within the Humboldt Bay Area Local Coastal Plan (Humboldt County 1982) that the County is currently in the process of updating. The existing plan, certified in 1982, contains a series of policies and standards to guide land use and development within the coastal zone. The following policies related to aesthetic resources are relevant to the proposed project:

3.22 Public Services-Rural

B.3 Development Policies: Public Roadway Projects

Public roadway improvement projects shall not, either individually or cumulatively, degrade environmentally sensitive habitats or coastal scenic areas. Improvements (beyond repair and maintenance) shall be consistent with Section 3.30 et seq and shall be limited to the following:

g. construction of bikeways.

3.30 Natural Resources Protection Policies and Standards

*** 30240(b). Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade such areas, and shall be compatible with the continuance of such habitat areas.

3.40 Visual Resource Protection

*** 30251. The scenic and visual qualities of coastal areas shall be considered and protected as a resource of public importance. Permitted development shall be sited and designed to protect views to and along the ocean and scenic coastal areas, to minimize the alteration of natural land forms, to be visually compatible with the character of surrounding areas, and, where feasible, to restore and enhance visual quality in visually degraded areas. New development in highly scenic areas such as those designated in the California Coastline Preservation and Recreation Plan prepared by the Department of Parks and Recreation and by local government shall be subordinate to the character of its setting.

B. Development Policies

1. Physical Scale and Visual Compatibility

No development shall be approved that is not compatible with the physical scale of development as designated in the Area Plan and zoning for the subject parcel; and the following criteria shall be determinative in establishing the compatibility of the proposed development:

a. For the proposed development that is not the principle permitted use, or that is outside and urban limit and for other than detached residential, agricultural uses, or forestry activities regulated by CDFW, that the proposed development compatible with the principle permitted use, and, in addition is either:

(1) No greater in height or bulk than is permitted for the principle use, and is otherwise compatible with the styles and visible material so existing development or land forms in the immediate neighborhood, where such development is visible from the nearest public road.

(2) Where the project cannot feasibly conform to paragraph 1, and no other more feasible location exists, that the exterior design, and landscaping be subject to a public hearing, and shall be approved only when:

2. Protection of Natural Landforms and Features

Natural contours, including slope, visible contours of hilltops and treelines, bluffs, and rock outcroppings shall suffer the minimum feasible disturbance compatible with development of any permitted use, and the following standards shall at a minimum secure this objective:

a. Under any permitted alteration of natural landforms during construction, mineral extraction or other approved development, the topography shall be restored to as close to natural contours as possible, and the area planted with attractive vegetation common to the region.

b. In permitted development, land form alteration for access roads and public utilities shall be minimized by running hillside roads and utility corridors along natural contours where feasible, and the optional waiving on minimum street width requirements, where proposed development densities or use of one-way circulation patterns make this consistent with public safety, in order that necessary hillside roads may be as narrow as possible.

3. Coastal Scenic Area

In the Coastal Scenic Area designated in the Area Plan Map (Indianola area), it is the intent of these regulations that all developments visible from Highway 101 be subordinate to the character of the designated area, and the following uniform standards shall apply to all development within said area, in addition to other applicable policies of this plan:

a. New industrial and public facility development shall be limited to:

(1) Temporary storage of materials and equipment for the purpose of road and utility repair or improvement provided that this is necessary to the repair or improvement, and no feasible site for storage of equipment of material is available outside such area.

b. All permitted development shall be subject to the following standards for siting and design except for structures integral to agricultural use and timberland management subject to CDF requirements for special treatment areas.

(2) The highest point of a structure shall not exceed 30' vertically measured from the highest point of the foundation, nor 40' from the lowest point of the foundation.

(3) Vegetation clearing for new development shall be minimized. New development on ridgelines shall be sited adjacent to existing major vegetation, prohibiting removal of tree masses which might destroy the ridgeline silhouette, and limiting the height of structures so that they maintain present ridgeline silhouettes.

6.4. City of Eureka General Plan

The City of Eureka General Plan contains goals and policies designed to guide the future physical development of the city based on current conditions. Although the General Plan contains all the state-required elements, it does not specifically address visual resources. However, certain goals identified within the context of other plan elements are relevant to visual resources. The following goals and objectives related to the aesthetic issues associated with the proposed project were taken from the applicable elements of the City's General Plan:

Recreation and Cultural Resources Element

Goal 5.A: To provide for park and recreational systems which include sufficient diversity of areas and facilities to effectively serve a population with varied characteristics, densities, needs and interests, consistent with protecting environmentally sensitive habitats.

Goal 5.B: To provide public open space and shoreline accessways throughout the Coastal Zone, consistent with protecting environmentally sensitive habitats and other coastal priority land uses.

Policy 5.B.1: The City shall provide public open space and shoreline access throughout the Coastal Zone, particularly along the waterfront and First Street, through all of the following:

d. Consider and protect the scenic and visual qualities of coastal areas that are visible from scenic public vista points and waterfront walkways.

Natural Resources Element

Goal 6.C: To support the continued protection of valuable open space resources in and around Eureka.

Land Use and Community Design Element

Goal 1.H: To maintain and expand views of the waterfront, inner harbor, and landmark buildings from public streets and other public spaces.

6.5. City of Eureka Local Coastal Program Plan

Goal 1.A: Land Use and Development Framework

Policy 1.A.6.c: The City shall continue to work with the Humboldt Bay Harbor, Recreation, and Conservation District to implement the projects described in the City's Eureka Waterfront Revitalization Program as listed below:

Goal 3.A: Streets and Highways

Policy 3.A.7: The City should improve the appearance of existing transportation [right of ways] ROWs and incorporate high standards of aesthetic design when considering new transportation corridors, including streets, bikeways, walkways, and other related ROWs.

Goal 5.B: Coastal Recreation and Access

Policy 5.B.1: The City shall provide public open space and shoreline access throughout the Coastal Zone by considering and protecting the scenic and visual qualities of

coastal areas that are visible from scenic public vista points and waterfront walkways.

Policy 5.B.8: Where public access ways or vista points are located near environmentally sensitive habitat areas, attractive barriers shall be provided to preclude disturbance of natural areas by off-road or all-terrain vehicles.

Chapter 7. Viewers and Viewer Response

Viewer sensitivity (activity, awareness, and local values) and exposure (location, quantity, and duration) influence viewer response (public opinion) to changes to the visual character of a landscape as the result of a proposed project. Viewer groups are used to differentiate the classes of viewers as a means of assessing viewer response. This study assesses views of the proposed trail (travelers on Highway 101 and neighbors) and from the proposed trail (pedestrian and bicyclist travelers).

7.1. Viewer Groups

Viewer groups that would be affected by project implementation include neighbors and travelers. Travelers consist of persons that would have views from the trail and adjacent road corridors, and are typically subdivided by their reason for, or mode of, travel. Neighbors are those persons whose views of the trail are tied to a particular land use such as a residence or commercial business, or passive use of a recreation area.

7.1.1. Travelers

This viewer group consists of trail and adjacent roadway users, including bicyclists, pedestrians, tourists, commuters, and others traveling by motorized vehicles. The awareness of visual resources by travelers varies with their specific activity. Bicyclists and pedestrians using the proposed trail would have a longer exposure time to the area's scenic resources than other travelers (e.g., those passing by the trail on Highway 101). A majority of the views that travelers would have of the proposed trail would be made from the Highway 101 corridor. Travelers may also use streets that feed into Highway 101 such as Indianola Cutoff. Tourists generally have a high sense of awareness of visual resources yet are often less sensitive to specific changes in the environment because of their transitory, non-residential nature. Tourists typically experience the scenic resources within the project area as a cumulative sequence of views rather than as individual features. Commuters would be the most sensitive to changes in the visual environment since this sub-group includes area residents who have more familiarity and a personal investment in the area as a result of routine travel on Highway 101.

Recreationists who use the project area and vicinity for more passive forms of recreation such as fishing, bird watching, or kayaking may be present in the project vicinity. Currently, recreational activities are primarily limited to the Eureka Slough area since there is no readily accessible trail or public access areas in the remainder of the proposed trail alignment or vicinity. Kayaking, fishing, and walking are popular activities near Eureka Slough, with a

public water front access located near the southwest corner of the railroad bridge crossing over the slough, behind the Target store. Recreationists are generally highly sensitive to visual resource changes due to their having familiarity and prolonged exposure to the area.

7.1.2. Neighbors

Neighbors consist of those viewer groups who have views to the project area. This viewer group is typically subdivided by land use, such as residential, recreational, commercial, or industrial. The western portion of the trail near its southern beginning in Eureka would contain the most neighbors from businesses in the proposed trail proximity. Neighbors would also be present in the commercial areas along the Highway 101 adjacent to project area. These neighbors would include workers who have views of the proposed trail from their office or job site such as the Bracut area. Residential areas are limited to the southern end of the project alignment in Eureka; other areas of residential development are located substantial distances from the project area and would not be able easily discern changes in the visual environment as a result of the new trail. Neighbors can be particularly sensitive to visual changes due to their routine and sometimes prolonged exposure to views.

Chapter 8. Visual Impacts

8.1. Study Methodology

8.1.1. Visual Impact

Visual impacts are determined by assessing changes to the visual resources and predicting viewer response to those changes. These impacts can be beneficial or detrimental to the visual environment. The assessment of visual impacts also considers changes to visual character (composed of pattern elements and pattern character), cumulative, and temporary impacts associated with construction activities. Tables are used to assign numerical values to the existing visual resource and project-related changes, and the viewer's sensitivity to these changes. Numerical ratings range from -7.0 to +7.0 where -7.0 is high negative change and +7.0 is high positive change. Table A provides a reference for comparing numerical ratings associated with changes to visual resources to a qualitative narrative rating:

Table A. Comparing Numerical and Narrative Ratings of Visual Resource Change Based on Viewer Response

	Negative Visual Resource Change								Positive Visual Resource Change						
Rating	-7.0	-6.0	-5.0	-4.0	-3.0	-2.0	-1.0	0	1.0	2.0	3.0	4.0	5.0	6.0	7.0
Viewer Sensitivity[A]/ Equivalent Narrative Rating	High	High	Moderately High	Moderate	Moderate	Moderately Low	Low	No Change	Low	Moderately Low	Moderate	Moderate	Moderately High	High	High
Significance[B]	S	S	S	S	S	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS

Notes:

[A]**Viewer Sensitivity**

High: The potential for public concern over adverse (negative) change in scenic/visual quality is great. Affected views are rare, unique, or in other ways are special and highly valued in the region or locale. Project-related changes that enhance or preserve affected views would not be considered adverse and would be perceived as positive (less than significant).

Moderate: The potential for public concern over adverse (negative) change in scenic/visual quality is appreciable. Affected views are secondary in importance or similar to views commonly found in the region or locale. A moderately to highly intense visual impact would be perceived as a significant lessening of visual quality. Project-related changes that enhance or preserve affected views would not be considered adverse and would be perceived as positive (less than significant).

Low: There may be some indication that a small minority of the public has a concern over scenic/visual resource impacts on the affected area. However, only the greatest intensity of adverse change (i.e., High and Moderate) in the condition of aesthetics/visual resources would have the potential to register with the public as a substantial (significant) reduction in visual quality. Project-related changes that

enhance or preserve affected views would not be considered adverse and would be perceived as positive (less than significant).

No Change: The views are not public or there are no indications of public concern over, or interest in, scenic/visual resource impacts on the affected area. This designation is also used to indicate no impact or no adverse impact.

[B]**Significance** (Determinations correspond to Table 12, CEQA Guidelines Significance Criteria for Aesthetics and Visual Resources, provided in Chapter 9 of this VIA):

S (Significant Impact): There would be a substantial reduction in visual quality.

LS (Less-than-Significant-Impact): There would be no substantial reduction in visual quality.

The magnitude of potential changes to visual resources resulting from implementation of the project was assessed by evaluating changes to visual character of the existing views. Pattern elements, which are the artistic attributes—form, line, color, and texture—intrinsic to the items to compose the view; and pattern character, including, but not limited to dominance, scale, diversity, and continuity, were considered. In addition, the assessment of project-related visual impacts considered visual quality of the existing and proposed conditions of the 15 KOPs used to represent scenic resources within the project area. The numerical difference between the following three visual quality conditions, in addition to the response of viewers described in Chapter 7, was used to quantify the level of change to visual resources anticipated as a result of the proposed project:

- **Vividness:** The extent to which the landscape is memorable. This is associated with the distinctiveness, diversity, and contrast of visual elements.
- **Intactness:** The integrity of the visual order in the landscape and the extent to which the existing landscape is free from non-typical encroaching intrusions.
- **Unity:** The visual harmony of the landscape as a whole; the degree to which the visual elements maintain a coherent visual pattern.

Key views within the various VAUs, referred to in this study as Key Observation Points (KOPs), were selected to best assess the proposed changes to the project's visual resources. In many cases, post-project visual simulations were created at the KOP to provide a snapshot of anticipated changes to visual resources.

The ratings of visual quality provided herein were determined by Stantec staff based on their professional experience evaluating similar development projects.

8.2. Visual Resources Impacts Assessment

Following are descriptions of the VAUs within each landscape unit. These VAUs were chosen to represent the different visual attributes within a particular landscape unit. KOPs illustrate the visual resources as seen from a specific location with a VAU. Figures 2a–f show the hierarchy of the visual analysis method used in the context of the project alignment.

8.2.1. Landscape Unit #1: Connection to Eureka Waterfront Trail (Project Segment 1)

8.2.1.1. VISUAL ASSESSMENT UNIT 1, KEY OBSERVATION POINT 1

VAU 1 is located in a public waterfront access area behind the Target store in Eureka. Because of its public accessibility, parking availability, and proximity to Eureka Slough, it is popular with recreationists, including fishermen, walkers, and kayakers. KOP 1 represents a recreationist's point of view. Image 1A illustrates the existing view from this KOP facing north toward the proposed project and the railroad bridge over Eureka Slough. Views of Eureka Slough are fairly expansive from this KOP; however, human-made visual intrusions, including ornamental trees and metal fencing in the fore- and middle-ground, and the railroad bridge in the background are somewhat visually intrusive and views of Humboldt Bay in the distance.

The proposed trail would follow the railroad alignment in the background. As shown in the post-project visual simulation (Image 1B), a section of the Eureka Waterfront Trail—visually simulated to illustrate its connection to the Humboldt Bay Trail that would begin where the former would intersect the railroad corridor immediately to the left of the railroad bridge—would be created to link the public parking area to the Humboldt Bay Trail. Specific to the proposed Humboldt Bay Trail, the visual simulation illustrates the new bridge railing, which would be consistent with the existing view. As seen from KOP 1, the existing landscape would be modified as a result of trail development actions associated with the extension of the Eureka Waterfront Trail, but as it ascends into the background toward the Humboldt Bay Trail, it creates an inviting view to explore the trail system. Modifications to the railroad bridge as a result of the addition of new railing and the intersection of the two trails at the left end of the bridge would not significantly change the existing pattern elements associated with the view. Scale and continuity of the existing visual features would not change. The pattern character observed from KOP 1 and VAU 1 is the result of scale and continuity of the

Image 1A (VAU 1, KOP 1). Existing view of the proposed trail alignment and NCRA Railroad bridge crossing over Eureka Slough. View looking north towards Humboldt Bay.

Image 1B (VAU 1, KOP 1). Visual simulation of post-project view of the trail alignment and NCRA Railroad bridge crossing over Eureka Slough. View looking north towards Humboldt Bay.

railroad corridor. Table 1 summarizes the anticipated effect of the proposed project on visual resources as seen from VAU 1.

Table 1. Anticipated Changes to Visual Quality in Visual Assessment Unit 1

	Vividness	Intactness	Unity	Total ((V+I+U)/3)	Resource Change (Qualitative)
Existing Condition[A]	6	5	5.5	5.3	
Proposed Condition[A]	6.5	5.5	6	6	
Visual Quality Difference				+0.7	Low (Positive)

[A]The visual quality ratings shown above are based on summertime daylight hours, which is the most likely time that travelers would pass through the area. Ratings are anticipated to vary minimally by season and time of day.

The existing vividness, intactness, and unity of views from VAU 1 earn moderately-high to high ratings. The area shown appears to be maintained (e.g., mowed grass). Although the presence of infrastructure and urban development detract from the unique visual qualities associated with Humboldt Bay to the north beyond the railroad crossing and the undeveloped Humboldt Bay coastline to the northeast, implementation of the proposed project would not significantly change the existing visual environment. Although the access trail shown in the visual simulation (Image 1B) is a part of the Eureka Waterfront Trail system, its presence is an important part of the proposed Humboldt Bay Trail since it would serve as a link between the two trail segments. The addition of even more human-made features in the view as seen from KOP 1, including the access trail and new railing on the railroad bridge, would enhance rather than degrade this view by creating a more inviting public space that would encourage viewers to explore the new coast trail. Despite its being in the background, Humboldt Bay and its coastal influence shape the pattern character of the view. Although minor, the proposed project would introduce slightly increased visual intrusions through the addition of pedestrian and bicycle traffic over the bridge. Signage, and new safety railings and paint, would slightly modify the view, but would enhance the aesthetics, particularly those of the existing railroad bridge, which has been degraded by time and vandalism. Because this is an established public recreational access point, recreationists would be the most sensitive viewer group to project-related changes. Vividness, intactness, and unity would all increase at this location as a result of project implementation. Because this view can also be seen from Highway 101 as it crosses Eureka Slough, travelers would also be exposed to the positive changes made to the aesthetics and visual resources associated with the project. It is anticipated that travelers and recreationists would enjoy the resulting changes in the quality

of the views when looking north toward the trail from this location. Project-related impacts on the visual environment as seen from KOP 1 would be less than significant and would result in a positive effect on the visual resource as summarized in Table 1.

8.2.2. Landscape Unit #2: Eureka Slough Crossing (Project Segment 2)

8.2.2.1. Visual Assessment Unit 2, Key Observation Point 2

KOP 2 illustrates the travelers' view of the proposed Eureka Slough crossing from the southbound lanes of Highway 101 just before it enters into Eureka. Image 2 illustrates how the presence of highway bridge railing, the existing railroad bridge, and distance detract from the unique visual qualities associated with Humboldt Bay in the distant background. This view is of the outer extent of north-Eureka's industrial and commercial development, and signals a return to urbanization after having passed by the coastal marshes and mudflats of Humboldt Bay. Travelers on Highway 101 are subject to these contrasting views, which lack intactness and unity. The highway bridge's safety rail obstructs much of the view, but it is also consistent with the linearity of the railroad crossing. The Highway 101 bridge is also slightly higher elevation than the railroad grade, thus Humboldt Bay and its confluence with Eureka Slough are visible. Vividness is moderately high due to the presence of the slough and railroad bridge. The proposed trail would follow the railroad corridor and bridge

Image 2 (VAU 2, KOP 2). View of Eureka Slough NCRA railroad bridge from Highway 101 south. View looking north.

crossing. Although travelers would have little time to look out over the project area it would still be visible from this perspective. Table 2 summarizes the anticipated effect of the proposed project on visual resources as seen from VAU 2.

Table 2. Anticipated Changes to Visual Quality in Visual Assessment Unit 2

	Vividness	Intactness	Unity	Total ((V+I+U)/3)	Resource Change (Qualitative)
Existing Condition[A]	5.5	4	4	4.5	
Proposed Condition[A]	5.5	5	5	5.2	
Visual Quality Difference				+0.7	Low (Positive)

[A]The visual quality ratings shown above are based on summertime daylight hours, which is the most likely time that travelers would pass through the area. Ratings are anticipated to vary minimally by season and time of day.

VAU 2 earns moderate ratings for intactness and unity, and a moderately high rating for vividness (i.e., memorability). The linearity of the proposed trail along the railroad corridor would be consistent with existing conditions and would improve the intactness and unity of the view by creating a more aesthetically pleasing continuous pattern character. It is anticipated that elements of the proposed project would enhance the aesthetics of visual resources in the project area as seen by travelers. Unity and intactness would improve. It is anticipated that the addition of signage to the landscape would have no discernible noticeable effect given the numerous visual intrusions present. Construction activities would be a temporary visual impact and not unlike maintenance equipment used in the Highway 101 corridor. Project-related impacts on the visual environment as seen from KOP 2 would be less than significant and would result in a positive effect on the visual resource as summarized in Table 2.

8.2.3. Landscape Unit #3: Eureka Slough North (Project Segment 3)

8.2.3.1. VISUAL ASSESSMENT UNIT 3, KEY OBSERVATION POINT 3

VAU 3 illustrates the typical view that travelers on Highway 101 have of the coastal plain to the west looking toward Humboldt Bay on the west side of Eureka Slough. As shown in Image 3, views from KOP 3 are expansive with little or no vertical obstructions towards the proposed project alignment—which would be horizontal across the middle-ground of the image just beyond the paved road corridor—or Humboldt Bay in the background. Views such as this capture the naturalness of the coastal plain and the NWR, and while scenic, are somewhat common along this stretch of highway. Table 3 summarizes the anticipated effect of the proposed project on visual resources as seen from VAU 3

Image 3 (VAU 3, KOP 3). View of the coastal plain west of Eureka Slough from Highway 101 north. View looking northwest.

Table 3. Anticipated Changes to Visual Quality in Visual Assessment Unit 3

	Vividness	Intactness	Unity	Total ((V+I+U)/3)	Resource Change (Qualitative)
Existing Condition[A]	5.5	6	6	5.8	
Proposed Condition[A]	5.5	5.5	5.5	5.5	
Visual Quality Difference				-0.3	Low (Negative)

[A]The visual quality ratings shown above are based on summertime daylight hours, which is the most likely time that travelers would pass through the area. Ratings are anticipated to vary minimally by season and time of day.

The existing vividness, intactness, and unity of VAU 3 as seen from KOP 3 earns moderately high to high ratings. Views such as those shown in Image 3 are aesthetically pleasing and pattern elements (form, line, color, and texture) are generally harmonious, but such views are relatively common over the extent of the proposed trail alignment through Segment 3 and are not individually remarkable. Changes to the view, including vegetation removal and exposure of the trail to travelers along Highway 101, and installation of safety barriers such as cables to ensure separation of the trail from the highway to the east and the NWR to the

west, would be a human-made intrusion on the landscape. However, any such project features would be low profile (elevation) and linear, consistent with the other linear features in the VAU and over time, vegetation on the trail prism would return. The continuity of the pattern character and use of low-chroma and non-glare construction materials would lessen the effects of the trail on the unity of the coastal plain. Construction activities would be a temporary visual impact and not unlike maintenance equipment used in the Highway 101 corridor. Project-related impacts on the visual environment as seen from KOP 3 would be negative, but less than significant as summarized in Table 3.

8.2.4. Landscape Unit #4: Eureka Slough to CRC (Project Segment 4)

8.2.4.1. Visual Assessment Unit 4, Key Observation Point 4

VAU 4 illustrates typical views that neighbors may have of the proposed project area when looking from commercial businesses located on the south side of Highway 101. KOP 4 is located at the intersection of Airport Road and Highway 101. Image 4A shows existing conditions looking northwest towards Humboldt Bay. Image 4B is a post-project visual simulation. From this KOP, human-made intrusions on the landscape are readily apparent with vertical signage and lighting, and significant paved road corridors. The coastal plain and Humboldt Bay are apparent in the middle- and background of Image 4A, but these views are broken-up by the vertical trees and shrubs that have become established along the unused railroad corridor. The proposed trail would cross horizontally through this vantage point parallel to the highway. The highway and related infrastructure lowers intactness and unity although expansive views of the bay are still present. Table 4 summarizes the anticipated effect of the proposed project on visual resources as seen from VAU 4.

Image 4A (VAU 4, KOP 4). Existing view looking northwest from the intersection of Airport Road and Highway 101.

Image 4B (VAU 4, KOP 4). Visual simulation of the post-project view looking northwest from the intersection of Airport Road and Highway 101.

Table 4. Anticipated Changes to Visual Quality in Visual Assessment Unit 4

	Vividness	Intactness	Unity	Total ((V+I+U)/3)	Resource Change (Qualitative)
Existing Condition[A]	4.5	5	5	4.8	
Proposed Condition[A]	5	5.5	5.5	5.3	
Visual Quality Difference				+0.5	Low (Positive)

[A]The visual quality ratings shown above are based on summertime daylight hours, which is the most likely time that travelers would pass through the area. Ratings are anticipated to vary minimally by season and time of day.

VAU 4 earns moderate ratings for intactness, unity, and vividness despite the obvious human-made intrusions on the landscape. Similar to the project effects on visual resources described for VAU 3, views such as those shown in Image 4A and in the post-project visual simulation, Image 4B, are aesthetically pleasing and pattern elements (form, line, color, and texture) are generally harmonious. Such views are relatively common over the extent of the proposed trail alignment through Segment 4 and are not individually remarkable. Changes to the view, including vegetation removal and exposure of the trail to neighbors on the south side of Highway 101, and installation of safety barriers such as cables to ensure separation of the trail from the highway to the east and the NWR to the west, would be an additional human-made intrusion on the landscape. However, any such project features would be low profile (elevation) and linear, consistent with the other linear features in the VAU. Removal of the taller vertical vegetation would enhance the vividness, intactness and unity of the view by returning it to a more natural coastal plain without the tall shrubs that are not commonly found in this habitat community. The continuity of the pattern character and use of low-chroma and non-glare construction materials would lessen the effects of the trail on the unity of the coastal plain. Construction activities would be a temporary visual impact and not unlike maintenance equipment used in the Highway 101 corridor. Project-related impacts on the visual environment as seen from KOP 4 would be less than significant and would result in a positive effect on the visual resource as summarized in Table 4.

8.2.5. Landscape Unit #5: CRC and South Eucalyptus Area (Project Segment 5)

8.2.5.1. VISUAL ASSESSMENT UNIT 5, KEY OBSERVATION POINTS 5, 6, AND 7

VAU 5 includes the proposed trail alignment along the levee that extends along the CRC parcel. The proposed trail alignment in this VAU would leave the Highway 101 and NCRA corridors and would follow the levee that juts out into Humboldt Bay. As illustrated in the

photograph provided in Section 3.3.10, the stand of eucalyptus trees that line the NCRA corridor between Highway 101 and the CRC parcel in Landscape Unit #5 would not be affected by the proposed trail alignment. The view from KOP 5, as shown in Image 5A, would allow trail users to experience the contrast in visual character that occurs between the natural character and pattern elements of Humboldt Bay to the west versus those of the human-made environment of CRC to the east. Images 5B and 5C illustrate other views from the proposed trail that pedestrians and bicyclists would have of the bay and the structures associated with the CRC parcel. The levee is not visible to travelers on Highway 101. The levee prism is elevated above both the water and the upland areas through which it passes. The elevated levee would expand the distance of views afforded trail users of both the bay and the former industrial character of the CRC parcel. The form, line, and structure of these views are fairly common along the Humboldt Bay coastline, but are aesthetically pleasing and have a high degree of unity. Table 5 summarizes the anticipated effect of the proposed project on visual resources as seen from KOP 5.

Image 5A (VAU 5, KOP 5). View of proposed trail alignment from south end of CRC parcel levee. View looking north..

Image 5B (VAU 5, KOP 6). View of proposed trail adjustment near northwest end of CRC levee. View looking north.

Image 5C (VAU 5, KOP 7). View of proposed trail alignment from north end of CRC levee. View looking northeast.

Table 5. Anticipated Changes to Visual Quality in Visual Assessment Unit 5

	Vividness	Intactness	Unity	Total ((V+I+U)/3)	Resource Change (Qualitative)
Existing Condition[A]	5	4.5	6	5.2	
Proposed Condition[A]	6	3.5	5	4.8	
Visual Quality Difference				-0.4	Low (Positive)

[A]The visual quality ratings shown above are based on summertime daylight hours, which is the most likely time that travelers would pass through the area. Ratings are anticipated to vary minimally by season and time of day.

Alignment of the proposed trail along the levee would decrease the intactness and unity of the existing views as a result of the trail, and the fencing, barriers, and gates that may be needed along the trail to ensure there would be no trespass into the CRC industrial complex. Although the levee is a human-made feature located immediately adjacent to the CRC facility, which is an area that has undergone significant development, the existing sense of naturalness when looking west toward the bay, would be somewhat reduced by the removal of the coastal vegetation and addition of fencing. However, the presence of the trail along the levee would increase the vividness of the view for trail users. The exposure of neighbors would be limited to the limited number of viewers looking toward the trail from the CRC or from the bay. Similar to the visual experience of viewers from the trail, neighbors and outside travelers would may notice the vertical elements of the fencing and other barriers, which would reduce the overall quality of the view. In addition, railings, fencing, and other barriers used throughout the trail alignment for safety may partially obstruct views of areas outside of the trail. It is anticipated that the temporarily disturbed area would be restored to pre-project conditions. Construction of the trail would require equipment and machinery that may temporarily reduce intactness and increase glare experienced by viewers from outside of the trail alignment. There would be no impact on pedestrians or bicyclists during construction since they would not have access to this area. Project-related impacts on the visual environment as seen from KOP 5 would be negative, but less than significant as summarized in Table 5.

8.2.6. Landscape Unit #6: North CRC Levee Trail Connector (Project Segment 6)

8.2.6.1. VISUAL ASSESSMENT UNIT 6, KEY OBSERVATION POINT 6

VAU 6 includes the north end of the CRC parcel. This VAU illustrates the proximity of Segment 6 to the shoreline and the view that recreational visitors using the trail might have of

the north end of the CRC parcel when looking southwest. This is one of only two areas along the proposed alignment that encompasses open water, the trail alignment, and urban development (the other being Segment 2 over Eureka Slough). A proposed bridge walkway would be created at this location to create a connection between the trail from the north to the levee that extends around the perimeter of the bay-ward edge of the CRC parcel. As shown in Image 6A, there is limited upland in front (north) of the office building where the trail could be routed. Therefore, as shown in the post-project visual simulation, Image 6B, a bridge crossing would be built that would extend approximately 200 feet from the railroad corridor, over the water, to the edge of the levee just northeast of the office building complex. Travelers, particularly commuters on Highway 101, and neighbors (i.e., those who occupy the CRC offices and outbuildings) would experience noticeable changes in the vividness, intactness, and unity of the view.

The proposed bridge crossing would add a sense of connectivity between the bustling activity occurring on Highway 101 and the tranquility of Humboldt Bay. The color, line, and airy form of the proposed bridge would be inviting and encourage viewers to explore beyond what can be seen from KOP 6. Minor obstruction to views from the adjacent CRC office building could result from the proposed bridge alignment, but the openness of the structure over the water would minimize this potential effect. It is anticipated that the temporarily disturbed area would be restored to pre-project conditions.

Construction of the trail and bridge would require equipment and machinery that may temporarily reduce the quality of the existing view. Table 6 summarizes the anticipated effect of the proposed project on visual resources as seen from VAU 6.

Image 6A (VAU 6, KOP 6). View of existing conditions at north end of CRC parcel. View looking southwest towards levee.

Image 6B (VAU 6, KOP 6). Visual simulation of proposed bridge connection to levee at north end of CRC parcel. View looking southwest toward levee.

Table 6. Anticipated Changes to Visual Quality in Visual Assessment Unit 6

	Vividness	Intactness	Unity	Total ((V+I+U)/3)	Resource Change (Qualitative)
Existing Condition[A]	5	4	4	4.3	
Proposed Condition[A]	5.5	4	4.5	4.5	
Visual Quality Difference				+0.2	Low (Positive)

[A]The visual quality ratings shown above are based on summertime daylight hours, which is the most likely time that travelers would pass through the area. Ratings are anticipated to vary minimally by season and time of day.

The existing vividness, intactness, and unity of views from within VAU 6 earn moderately low to moderate ratings. Views such as those shown in Image 6A illustrate the proximity of buildings on the CRC parcel to Humboldt Bay and the proposed trail alignment. There is a disparity between the intactness and unity of the coastline to the north and south of the CRC parcel and the industrial and commercial development that occurs intermittently along the proposed trail corridor. The vividness (memorability) of the view from KOP 6 is relatively high compared to surrounding areas because of the presence of a definable feature—the office building—that is highly visible on the landscape. Addition of the proposed bridge crossing as shown in visual simulation Image 6B would increase the memorability of the view. The human-made bridge and its safety railings would be a permanent, unnatural feature in the VAU; however, the form, line, and color of the bridge design would add diversity, scale, and continuity to the pattern character associated with the view from KOP 6. Each of the various bridge design options under consideration, and as illustrated in Section 3.3.8, would have their own unique visual character that would influence viewer response. Railings, fencing, and other barriers used throughout the trail alignment for safety may partially obstruct views of areas outside of the trail and conversely, views of the trail afforded motorists on Highway 101. The proposed trail alignment and enhancements would be visible for a distance given the flat topography of the viewing area and the linear nature of the proposed trail. It is anticipated that travelers and neighbors would enjoy the resulting changes in the quality of the views when looking east toward the trail from these locations.

Construction equipment required for pile driving and cranes would be required. This would temporarily increase visual intrusions and the potential for glare in the project area. Construction equipment and activities may equally impact commuters and tourists, however permanent changes to the visual environment would be more noticeable to commuters and

neighbors in the adjacent offices. Project-related impacts on the visual environment as seen from KOP 6 would be less than significant and would result in a positive effect on the visual resource as summarized in Table 6.

8.2.7. Landscape Unit #7: Eucalyptus Area North (Project Segment 7)

8.2.7.1. VISUAL ASSESSMENT UNIT 7, KEY OBSERVATION POINT 7

VAU 7 consists of project Segment 7, which includes an approximately 0.7-mile-long eucalyptus stand located between the west side of Highway 101 and the east side of the NCRA railroad corridor. As shown in Image 7A, these trees dominate the VAU and limit views of Humboldt Bay from Highway 101. Their presence emphasizes the linearity of the human-made elements in the view including Highway 101, the metal guard rail, the railroad corridor, and the alignment of the trees themselves. According to the project's cultural report (JRP Historical Consulting Services 2004) the eucalyptus was planted at the time of Highway 101 construction as a beautification effort. These trees provide a vertical element and rich texture to the existing view. Other non-native vegetation has established itself along the proposed trail corridor, adding to the visual obstructions for the view from Highway 101. Commuters are the viewer group having the most familiarity of this view, so they would be the most affected by the proposed removal of these trees for public safety reasons. As shown in the visual simulation Image 7B, removal of the trees would change the visual character of the view by allowing for unobstructed views of the coastal plain and Humboldt Bay previously obstructed by the presence of the trees. The pattern elements of form, line, color, and texture associated with the towering stand of eucalyptus would be replaced by the new trail prism that would be supported by a conspicuous retaining wall that would be exposed to the Highway 101 corridor. Removal of the stand of eucalyptus trees, as shown in the photograph provided in Section 3.3.10, would also expose the CRC buildings to the south, making them a dominant, unnatural feature, potentially distracting from the adjacent bay. Recreationists using the trail would be fully exposed to the visual quality of the Highway 101 corridor to the east, which would be in sharp contrast to the presence of Humboldt Bay immediately to the west.

Table 7 summarizes the anticipated effect of the proposed project on visual resources as seen from VAU 7.

Image 7A (VAU 7, KOP 7). Existing view of eucalyptus trees and vegetation lining the Highway 101 corridor just north of CRC. View looking southwest.

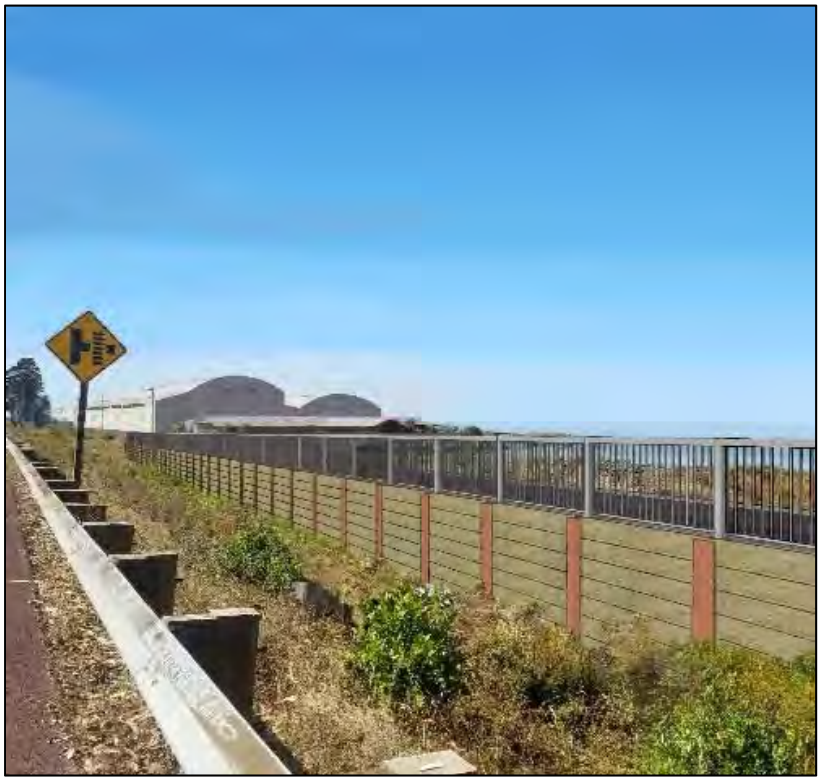

Image 7B (VAU 7, KOP 7). Visual simulation of the proposed trail alignment post-tree removal just north of CRC. View looking southwest.

Table 7. Anticipated Changes to Visual Quality in Visual Assessment Unit 7

	Vividness	Intactness	Unity	Total ((V+I+U)/3)	Resource Change (Qualitative)
Existing Condition[A]	5	5	6	5.3	
Proposed Condition[A]	4	3.5	4	3.8	
Visual Quality Difference				-1.5	Moderately Low (Negative)

[A]The visual quality ratings shown above are based on summertime daylight hours, which is the most likely time that travelers would pass through the area. Ratings are anticipated to vary minimally by season and time of day.

VAU 7 earns moderately high to high ratings for existing intactness, unity, and vividness. However, proposed removal of the eucalyptus trees and the installation of extensive safety railing and approximately 2,700 linear feet of retaining wall would decrease the visual character of views experienced by travelers both in and outside of the proposed trail alignment, as well as the limited number of neighbors at the CRC parcel. Although the eucalyptus trees were purposely planted and are not native to the area, their presence along the coastline provides a higher level of unity and intactness than would exist as a result of their removal. Replacement of trees by a human-made feature (trail) would change the pattern elements associated with this view. Vertical lines would be replaced by the horizontal trail alignment, and the dynamic color and texture of the trees would be replaced by the monochromatic trail features; however, railing materials, color, and scale would affect the visual impact. Railings, fencing, and other barriers used throughout the trail alignment for safety may partially obstruct views of areas outside of the trail and conversely, views of the trail afforded motorists on Highway 101. The overall aesthetic quality would be lessened along this trail segment. Project-related impacts on the visual environment as seen from KOP 7 would be negative; moderately low significance as summarized in Table 7.

8.2.8. Landscape Unit #8: South of Bracut (Project Segment 8)

8.2.8.1. VISUAL ASSESSMENT UNIT 8-1, KEY OBSERVATION POINT 8

KOP 8 is used to illustrate the changes to visual resources and aesthetics that would occur as a result of removing the sizable eucalyptus that currently line Highway 101 south. As shown in Image 8A, the trees dominate the existing view, drawing the viewer's eye skyward. In contrast, post-construction visual simulation Image 8B draws the viewer's line of vision toward the background of the image. The northern end of this stand of eucalyptus trees along

Highway 101 begins approximately 1,000 feet south of the Indianola Cutoff and extends south nearly to the CRC parcel (as described in Landscape Unit #7).

Despite obvious signs of human intrusion, the view shown in Image 8A includes a dynamic mix of form, line, color, and texture. Humboldt Bay is visible to the west. The continuity of the highway and adjacent railroad corridors influence the pattern character of the existing and post-construction views. Similar to other VAUs north of CRC, VAU 8-1 exhibits more areas of disturbance and decreased unity than those further to the south. Tourists and other travelers may find the existing view fairly common and unremarkable compared to more natural areas along the Humboldt Bay coastlines. The removal of the trees would only increase the unremarkable visual experience. Commuters would be the most affected viewer group. Recreationists on the trail may also find the view unremarkable and common with nothing to buffer the presence of the Highway 101 corridor. Table 8 summarizes the anticipated effect of the proposed project on visual resources as seen from VAU 8-1. Table 8 summarizes the anticipated effect of the proposed project on visual resources as seen from VAU 8-1.

As previously discussed, one of the billboards is located within the project area between the highway and railroad, and depending on the final trail alignment, the trail may narrowly avoid this billboard. The potential exists for the trail to conflict with the billboard, which may result in its removal or relocation. The visual simulation (Image 8B) assumes the billboard would not be in conflict with the trail alignment and, therefore will remain. If the billboard is removed, views of Humboldt Bay from Highway 101 would be broadened and the distraction created by its presence would be removed.

Image 8A (VAU 8-1, KOP 8). Existing view of north end of eucalyptus grove on west side of Highway 101 south, just south of Indianola Cutoff.

Image 8B (VAU 8-1, KOP 8). Visual simulation of the post-construction trail alignment along Highway 101 south, just south of Indianola Cutoff.

Table 8. Anticipated Changes to Visual Quality in Visual Assessment Unit 8

	Vividness	Intactness	Unity	Total ((V+I+U)/3)	Resource Change (Qualitative)
Existing Condition[A]	5	4.5	4.5	4.7	
Proposed Condition[A]	4	3	3.5	3.5	
Visual Quality Difference				-1.2	Low (Negative)

[A]The visual quality ratings shown above are based on summertime daylight hours, which is the most likely time that travelers would pass through the area. Ratings are anticipated to vary minimally by season and time of day.

The existing vividness, intactness, and unity of views from VAU 8-1 are generally low to moderate. Significant urban and commercial development and infrastructure detracts from the visual quality and aesthetics of this landscape unit as a whole; compounded further by the removal of the trees in the middle- and background of the view. Views such as those shown in Images 8A and B are relatively common in urban areas and are not individually remarkable. Numerous human-caused intrusions on the landscape dominate the view as seen from KOP 8. The addition of safety cable fencing and raised profile asphalt path as shown in Image 8B would add to the diminished quality of the view. Views of the bay may be increased, but the visual intrusions may distract from the aesthetic quality of the visual resource. Railings, fencing, and other barriers used throughout the trail alignment for safety may partially obstruct views of areas outside of the trail and conversely, views of the trail afforded motorists on Highway 101. Construction activities would temporarily increase intrusions and glare. These changes would be most noticeable to commuters as opposed to tourists due to the routine exposure to views along their commute. Project-related impacts on the visual environment as seen from KOP 8 would be negative; moderately low significance as summarized in Table 8.

8.2.8.2. VISUAL ASSESSMENT UNIT 8-2, KEY OBSERVATION POINT 9

The purpose of VAU 8-2 is to provide a pre- and post-construction comparison of the proposed trail. Image 9A shows the existing condition of the NCRA railroad corridor just south of Bracut. The area available for the trail is relatively narrow with Highway 101 immediately to the east and Humboldt Bay to the west. Views such as this are common and while harmonious with the dominant coastal character of the area, are unremarkable. Post-construction visual simulation Image 9B illustrates the proposed asphalt trail alignment and the safety cable barrier that would be used between the trail and Highway 101. Views in this area are expansive and generally unobstructed. Travelers of all types can appreciate the size

of the bay and get a sense of the coastline as it extends into the distance. Table 9 summarizes the anticipated effect of the proposed project on visual resources as seen from VAU 8-2.

Image 9A. (VAU 8-2, KOP 9). Existing view of Highway 101 corridor south of Bracut. View facing north.

Image 9B. (VAU 8-2, KOP 9). Post-construction visual simulation of proposed trail south of Bracut. View facing north.

Table 9. Anticipated Changes to Visual Quality in Visual Assessment Unit 8-2

	Vividness	Intactness	Unity	Total ((V+I+U)/3)	Resource Change (Qualitative)
Existing Condition[A]	5	6	6	5.7	
Proposed Condition[A]	5	5.5	5.5	5.3	
Visual Quality Difference				-0.4	Low (Negative)

[A]The visual quality ratings shown above are based on summertime daylight hours, which is the most likely time that travelers would pass through the area. Ratings are anticipated to vary minimally by season and time of day.

KOP 8-2 earns fairly high ratings for intactness, unity, and vividness. The pattern elements present are harmonious and open. The new trail would be intrusive on the landscape, but somewhat consistent with the adjacent Highway 101 corridor and the railroad prism. Intactness and unity would be slightly diminished. The proposed trail and its features would be apparent to travelers on Highway 101 and may distract from the scenic resources associated with the bay in the background. The presence of recreational trail uses so close to the highway could be a distraction to drivers. Alternatively, some drivers may feel that observing people recreating along the bay is an enhancement. However, railings, fencing, and other barriers used throughout the trail alignment for safety may partially obstruct views of areas outside of the trail and conversely, views of the trail afforded motorists on Highway 101. During construction equipment and machines would be present which would provide a temporary increase in visual intrusions. Project-related impacts on the visual environment as seen from KOP 8 would be negative, but less than significant as summarized in Table 9.

8.2.9. Landscape Unit #9: Bracut (Project Segment 9)

8.2.9.1. VISUAL ASSESSMENT UNIT 9, KEY OBSERVATION POINTS 10 AND 11

VAU 9 is located just north of Bracut where the Highway 101 crosses Brainard Slough. KOPs 10 and 11 are located in close proximity to each other and were established to illustrate different views of the proposed trail alignment APE at Brainard Slough, including proposed changes to visual resources that would occur as a result of installing a pedestrian bridge crossing over the slough and shoreline revetment (rock). Image 10 faces west toward Humboldt Bay as seen from Highway 101. The railroad crossing over Brainard Slough has been significantly degraded by historic washout and erosion. The view of the Bracut peninsula that extends into the distance coupled with the diverse textural elements, including rocks, mudflats, vegetation, and the slough extending out towards the bay has a relatively high degree of vividness, intactness, and unity despite the human-made elements. As seen

from Highway 101, views of the crossing would be fleeting, but nonetheless interesting. The unique quality of this view decreases slightly with the presence of the metal guardrail and highway corridor as shown in Image 11A, but it continues to retain a sense of the area's history. Installation of a pedestrian bridge crossing as a part of the proposed trail would change the character of the view by adding a modern, vertical, human-made feature to the visual resource. Table 10 summarizes the anticipated effect of the proposed project on visual resources as seen from VAU 9.

Image 10 (VAU 9, KOP 10). Existing Brainard Slough railroad crossing. View looking west.

Table 10. Anticipated Changes to Visual Quality in Visual Assessment Unit 9

	Vividness	Intactness	Unity	Total ((V+I+U)/3)	Resource Change (Qualitative)
Existing Condition[A]	6	5.5	6	5.8	
Proposed Condition[A]	6	5	5.5	5.5	
Visual Quality Difference				-0.3	Low (Negative)

[A]The visual quality ratings shown above are based on summertime daylight hours, which is the most likely time that travelers would pass through the area. Ratings are anticipated to vary minimally by season and time of day.

The existing vividness, intactness, and unity of views from KOP 10 earn moderately high to high ratings. Views such as those shown in Images 10 and 11A are aesthetically pleasing due to the pattern elements (form, line, color, and texture) that are harmonious throughout the entirety of the views. Although the proposed bridge crossing, revetment, and trail alignment would be visual intrusions on the landscape, the retention of existing trees and landscape features (as shown in visual simulation Image 11B) would continue to draw the viewer's eye upward and towards the background of the image instead of along the horizontal trail. Use of rock and low-chroma colors that would be consistent with the surrounding environment would lessen the visual effect of the bridge on the landscape. The continuity of the pattern character would be maintained as a result of the linearity of the trail alignment; however, intactness and unity would be slightly diminished. The vividness (memorability) of the view from this KOP would remain high given the uniqueness of the bridge crossing. The proposed trail and its features would be apparent to travelers on Highway 101 and may distract from the scenic resources associated with the bay in the background. The presence of recreational trail uses so close to the highway could be a distraction to drivers. However, railings, fencing, and other barriers used throughout the trail alignment for safety may partially obstruct views of areas outside of the trail and conversely, views of the trail afforded motorists on Highway 101. During construction equipment and machines would be present which would provide a temporary increase in visual intrusions. Project-related impacts on the visual environment as seen from KOP 9 would be negative, but less than significant as summarized in Table 10.

Image 11A (VAU 9, KOP 11). Existing view from southbound Highway 101 next to Brainard Slough crossing. View looking southwest.

Image 11B (VAU 9, KOP 11). Post-construction visual simulation showing proposed Brainard Slough crossing from Highway 101 south. View looking southwest.

8.2.10. Landscape Unit #10: Humboldt Bay Trail North Extension

8.2.10.1. VISUAL ASSESSMENT UNIT 10, KEY OBSERVATION POINT 12

VAU 10 is comprised of the southernmost extent of the nearly completed Humboldt Bay Trail North (shown in Image 12A). The proposed cable barrier fencing would be extended north from Landscape Unit #9 into Landscape Unit #10 (as far as the Gannon Slough crossing). No other activities would occur in this VAU, since the Bay Trail North has already been implemented under a separate project. Visual simulation Image 12B illustrates the existing paved trail segment, including the cable barrier fencing. The low profile cable barrier would be set back from the edge of trail and approximately 8 to 12 feet from the edge of the Highway 101 shoulder. The cable barrier would consist of steel wire ropes (typically 4 strands) mounted on steel posts secured in concrete foundations. An approximately 2-foot wide concrete weed mat would be installed along the length of the cable barrier. Views such as those shown in Images 12A and 12B would be common throughout the entirety of the proposed trail system improvements along Humboldt Bay between Arcata and Eureka. Although the cable barrier fencing would be another human-made intrusion on the landscape, it would be consistent with existing conditions, which include the paved trail, the NCRA corridor, and Highway 101. Views in this area are expansive and generally unobstructed. Travelers of all types can appreciate the size of the bay and get a sense of the coastline as it extends into the distance. Table 11 summarizes the anticipated effect of the proposed project on visual resources as seen from VAU 10.

Image 12A. (VAU 10, KOP 12). Existing view of the Humboldt Bay Trail North, which is currently under construction. View facing north.

Image 12B. (VAU 10, KOP 12). Visual simulation of the completed Humboldt Bay Trail North, including the continuation of cable barrier fencing from VAU 9. View facing north.

Table 11. Anticipated Changes to Visual Quality in Visual Assessment Unit 10

	Vividness	Intactness	Unity	Total ((V+I+U)/3)	Resource Change (Qualitative)
Existing Condition[A]	5	6	6	5.7	
Proposed Condition[A]	5	6.5	6.5	6	
Visual Quality Difference				+0.3	Low (Positive)

[A]The visual quality ratings shown above are based on summertime daylight hours, which is the most likely time that travelers would pass through the area. Ratings are anticipated to vary minimally by season and time of day.

KOP 12 earns moderately high ratings for intactness, unity, and vividness. The pattern elements present are harmonious and open. While the addition of the cable barrier fencing, including its concrete foundation and metal fence posts, would be intrusive on the landscape, it would be consistent with the existing paved trail, adjacent Highway 101 corridor, and the railroad prism. The low profile and openness of the barrier would not obstruct views available to motorists or recreationists. While there may be an increased potential for glare as a result of the use of galvanized metal and concrete, it is anticipated that this potential impact would be avoided through the use of non-glare and low-chroma construction materials. Intactness and unity would increase with the installation of the barrier because of its linearity and consistency with the other human-made features visible from KOP 12. The proposed trail and its features would be apparent to travelers on Highway 101 and may slightly distract from the scenic resources associated with the bay, but the impact would be low. Recreationists would similarly find views of the trail to be visually common and would not be distracted from the panoramic views of the adjacent coastline. Railings, fencing, and other barriers used throughout the trail alignment for safety may partially obstruct views of areas outside of the trail and conversely, views of the trail afforded motorists on Highway 101. During construction equipment and machines would be present, which would provide a temporary increase in visual intrusions; however, because the pavement has already been installed in this VAU, the duration of construction would be shorter than along other segments of the Humboldt Bay Trail South. Project-related impacts on the visual environment as seen from KOP 10 would be less than significant and would result in a positive effect on the visual resource as summarized in Table 12.

8.3. Special Consideration – Eucalyptus Tree Removal

Removal of approximately 1/3 of the total eucalyptus stand that currently lines Highway 101, would be arguably the most noticeable change to the visual character of the Humboldt Bay Trail. Not only would their removal change the existing views along the Highway 101 corridor, but it would also change the visual character of the skyline as viewed from distant neighbors and as reference by pilots using the nearby Murray Field Airport. These trees are considered by some in the community to be an important local landmark, with a history reaching back approximately 80 years. Neighbors and commuters using Highway 101 (i.e., those most familiar with the existing view) would be the most affected viewer groups. There is currently not a trail in the affected area, thus the effect of changes in the visual character of this proposed trail segment on future trail users cannot be qualified since there is not an established existing view for this viewer group. Removal of the eucalyptus trees would be open up views of Arcata Bay from Highway 101 as well as to neighbors; however, the use of railings, fencing, and barriers that may be used to ensure public safety along the affected segment may be considered by some to be an unnatural obstruction on the landscape, reducing the intactness of the view. Unity would be reduced because the eucalyptus trees were a compatible visual intrusion and were harmonious with other visual components. However, harmonious elements like native landscaping treatments would also be included. The photograph provided in Section 3.3.10 shows the extent of proposed eucalyptus tree removal.

Chapter 9. Summary of Project Impacts

9.1. Determination of Impacts Under CEQA

Project consistency with the significance criteria used in the current CEQA Guidelines (2017) was determined using the impacts thresholds identified in Table A (Chapter 8. Section 8.1). The proposed project impacts on visual resources and aesthetics, and the anticipated viewer response would be less than significant, even when the impact would result in a low to moderately low negative resource change. Table 12 summarizes the project's impacts and consistency with the current CEQA significance criteria

Table 12. CEQA Guidelines Significance Criteria for Aesthetics and Visual Resources (2017)

Significance Criteria Issue	Project-related Impact	Project Consistency
Have a significant adverse effect on a scenic vista?	The project would result in minor changes to the appearance of the existing ROW between Highway 101 and Humboldt Bay, but would not diminish views of Humboldt Bay on the landward side or of the coastal mountain from the bay.	Less than Significant
Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	Highway 101 in the project vicinity is not a designated state scenic highway. There are no documented scenic resources or historic buildings in the immediate project area. However, the eucalyptus trees that line Highway 101 from just south of Bracut to the southern end of the CRC parcel are a local landmark and scenic resource. Partial removal of eucalyptus trees on the north side of the CRC site for safety would change the existing view, but would result in an expansion of views of Humboldt Bay.	Less than Significant
Substantially degrade the existing visual character or quality of the site and its surroundings?	The project would be compatible with the existing visual character of the proposed project alignment and its surroundings, and would not introduce any elements that would degrade existing visual character or quality. The addition of project components such as a boardwalk, fencing, retaining walls, and rock slope protection would occur in a manner consistent with the existing aesthetic of the surrounding area.	Less than Significant
Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	The project would result in some light emissions similar to existing conditions in the Bracut area and the Highway 101 corridor. Use of metal bridge railings may increase the potential for glare. The use of reflective paint and signage, and lighting at some trail/driveway intersections would be consistent with other California Coastal Trail segments. Project	Less than Significant

Table 12. CEQA Guidelines Significance Criteria for Aesthetics and Visual Resources (2017)		
Significance Criteria Issue	**Project-related Impact**	**Project Consistency**
	implementation would may impact daytime views as a result of glare off of metal bridges. However, the type of bridges used in the proposed trail alignment are currently to be determined. Nighttime views would not be affected in the project area and vicinity as a result of project-related safety lighting improvements.	

9.2. Determination of Impacts Under NEPA

Although there are no specific standards for determining the significance of project impacts on visual resources and aesthetics under NEPA, the assessment of changes in visual quality as a result of project-related impacts on visual resources was determined based on the relationship of viewers with their visual environment and the project's potential to change the visual character of the environment. Similar to the CEQA thresholds for significance, project compatibility, viewer sensitivity, and degree of impacts were identified for the purpose of this study as the NEPA criteria used to determine if overall project impacts on visual quality would be beneficial, adverse, or neutral. The determination of visual quality change is based on visual simulations and other images, and prevailing findings of qualitative resource changes summarized in the VAU assessment tables used in Chapter 8. An overall net change when assessing the project as a whole (i.e., the cumulative net change of all KOPs assessed) was found to equal -0.7 (Low/Less than Significant) (as described in Chapter 8, Section 8.1, Table A). The degrees of visual change used in NEPA are described as beneficial, adverse, or neutral. Because the overall net change falls within the low end of the negative side of the scale used in Table A, the changes in visual quality when assessed using NEPA terminology were determined to be "neutral." Table 13 provides a summary of NEPA criteria, general project impact, and the anticipated effect that project-related changes to visual resources would have on viewers.

Table 13. NEPA Criteria Assessment of Visual Quality Change		
Criteria	**Project-related Impact**	**Visual Quality Change**
Compatibility of impacts on visual resources	The project would be compatible with the existing visual character of the proposed project alignment and its surroundings, and would not introduce any elements that would substantially degrade existing visual character or quality.	Neutral

Table 13. NEPA Criteria Assessment of Visual Quality Change		
Criteria	**Project-related Impact**	**Visual Quality Change**
Viewer sensitivity to impacts	Commuters would be the viewer group potentially most affected by the proposed project because of their familiarity with the Highway 101 corridor. However, views of Humboldt Bay and compatibility of the proposed trail components with the surrounding area would likely be enhanced as a result of the project. Other travelers would have little or no familiarity with the existing view. The few neighbors with views of the project would not be adversely affected by the project.	Neutral
Degree of impacts	Overall impacts on visual resources as a result of project implementation would enhance the existing viewshed (i.e., views of Humboldt Bay and surrounding areas as seen from both land and water). In addition, project components would not degrade the visual character or quality of the existing visual environment.	Neutral

9.3. Summary of Project Impacts

In general, the project would have a beneficial impact on existing and planned visual resources in the project alignment or vicinity, which would include improvements to existing aesthetics and visual resources, and creation of additional viewing opportunities of Humboldt Bay, mudflats and marshlands. New features such as signage, bridge crossings, and viewing platforms would be constructed to be unobtrusive on the landscape. Landscape reestablishment would incorporate plants that would match the surrounding native vegetation and improve the aesthetic qualities of the trail.

The project would not adversely impact the panoramic scenic vistas of Humboldt Bay visible from points along the proposed trail alignment and locations adjacent to the trail such as along Highway 101 and nearby roads such as the Indianola Cutoff. The low profile of project features such as a guard rail and cable barriers, and directional signage would not substantially obstruct views of the bay as seen from inland areas. The three proposed new bridge structures including the Brainard Slough crossing and two crossings to the CRC levee (one at either end of the parcel) would affect the pattern elements (form, line, structure, texture, etc.) of the existing views, but the effect on visual resources and aesthetics would be less than significant. Neighbors (i.e., those persons working in offices and buildings near the north end of CRC) would be exposed to visual changes as a result of the bridge crossing extending from the trail corridor to the levee. Consideration for construction materials, color palettes, plantings, and use of open safety barrier design would buffer the appearance of project features on the landscape and the effect on viewers, in particular, commuters on Highway 101 who would have the greatest familiarity with the pre-project conditions. In

addition, the use of cable safety barriers or rails as needed along the extent of the trail would be consistent with the safety features along Highway 101.

Removal of eucalyptus north of CRC (Segment 7) would result in a minor adverse change in the visual environment, primarily noticeable to commuters; however, views of Humboldt Bay would be increased for travelers on Highway 101 as well as landward views from the bay and curving coastline to the north and south. Other vegetation management actions throughout the project alignment, including removal of smaller trees and shrubs along the railroad corridor would have a lesser impact on visual resources and aesthetics. Travelers would have more intact and unified views of Humboldt Bay and the coastal plain as a result of vegetation management activities. Few, if any, neighbors would be significantly impacted by changes in visual resources as a result of vegetation management, including removal of the eucalyptus, since most are too far away to see a change in the visual environment or have obstructed views.

The completed project includes use of nighttime safety lighting at locations where the trail would intersect roadways, such as at the Bracut driveway/intersection (Segment 9). While this would be a new source of nighttime lighting, low-level, low-glare lighting will be used. The potential for glare from headlights (including bicycle lights), the expanded trail surface, directional and informational signs, soils exposed by project construction, and vegetation removal would be consistent with existing conditions along the Highway 101 corridor and surrounding areas and would not be significant. Nighttime views of the project area would be limited to artificial light from outside sources such a bicycle lights and road crossings. Conservation Measure VIS-1 (see Chapter 11) is recommended to ensure that impacts resulting from project-related light sources remain less than significant.

The effects of new signage and viewing platforms set against the landscape would be less-than-significant given the dominant vertical structure of the vegetation and occasional overhead utilities throughout the project alignment. However, reflective road paint, where appropriate, and highly reflective signs are required by law.

During construction minor temporary impacts on aesthetics could result from construction disturbance. Large machines and equipment would be present along the highway, which could temporarily provide sources of glare and obstruct views of the Humboldt Bay. Most noticeable to neighbors and travelers would be the presence of construction equipment at the various bridge crossings; however, the industrial nature of the adjacent parcels and the temporary presence of the equipment makes this a less-than-significant impact on aesthetics and visual resources.

The effects of the project on the Coastal Commission's Coastal Act requirements, the County and City's general plans and LCP guidelines are summarized in Table 14.

Table 14. Project Consistency with Management Guidelines

Management Guideline		Impact	Consistency Determination
California Coastal Commission			
Coastal Development Permit	Protection of the scenic beauty of coastal landscapes and seascapes	The scenic beauty of the coastal landscape will be protected. Landscape revegetation and reestablishment would incorporate plants that would match the surrounding native vegetation and improve the aesthetic qualities of the trail. All project components (i.e., interpretive signage, fencing, boardwalk, retaining walls, etc.) would be at a low height (approximately 4.5 feet in height maximum), thereby not diminishing views of Humboldt Bay on the landward side or of the coastal mountains from the bay.	Consistent
Humboldt County General Plan			
Conservation and Open Space Element	Goal SR-G1: Conservation of Scenic Resources. Protect high-value scenic forest, agriculture, river, and coastal areas that contribute to the enjoyment of Humboldt County's beauty and abundant natural resources.	The proposed project would protect the coastal area through shoreline restoration along certain portions of the project alignment.	Consistent
Humboldt County Local Coastal Program			
Public Services - Rural	3.22 – B.3: Public Roadway Projects. Public roadway improvement projects shall not, either individually or cumulatively, degrade environmentally sensitive habitats or coastal scenic areas. Improvements (beyond repair and maintenance) shall be consistent with Section 3.30 et seq and shall be limited to the following: g. construction of bikeways.	Improvements to bikeways shall be consistent with Section 3.30	Consistent
Natural Resource Protection Policies and Standards.	3.30. *** 30240(b). Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade such areas, and shall be compatible with the continuance of such habitat areas.	The proposed project does not conflict with the development policies in Section 3.30 regarding visual resources. Areas within 100 feet of a mean high water line shall match existing contours and would revegetate disturbed areas.	Consistent

Table 14. Project Consistency with Management Guidelines

	Management Guideline	Impact	Consistency Determination
Visual Resource Protection	3.40.*** 30251. The scenic and visual qualities of coastal areas shall be considered and protected as a resource of public importance. Permitted development shall be sited and designed to protect views to and along the ocean and scenic coastal areas, to minimize the alteration of natural land forms, to be visually compatible with the character of surrounding areas, and, where feasible, to restore and enhance visual quality in visually degraded areas. New development in highly scenic areas such as those designated in the California Coastline Preservation and Recreation Plan prepared by the Department of Parks and Recreation and by local government shall be subordinate to the character of its setting.		Consistent
	3.40 – B.1. Physical Scale and Visual Compatibility No development shall be approved that is not compatible with the physical scale of development as designated in the Area Plan and zoning for the subject parcel; and the following criteria shall be determinative in establishing the compatibility of the proposed development: a. For the proposed development that is not the principle permitted use, or that is outside and urban limit and for other than detached residential, agricultural uses, or forestry activities regulated by CDFW, that the proposed development compatible with the principle permitted use, and, in addition is either: (1) No greater in height or bulk than is permitted for the principle use, and is otherwise compatible with the styles and visible material so existing development or land forms in the immediate neighborhood, where such development is visible from the nearest public road.	The proposed project's styles and visible materials would be compatible with immediately surrounding existing land forms and development. Landscaping and exterior designs would be compatible with the physical scale established by surrounding development.	Consistent

Table 14. Project Consistency with Management Guidelines

	Management Guideline	Impact	Consistency Determination
	(2) Where the project cannot feasibly conform to paragraph 1, and no other more feasible location exists, that the exterior design, and landscaping be subject to a public hearing, and shall be approved only when: (a) There is no less environmentally damaging feasible alternative location. (b) The proposed exterior design, and landscaping are sufficient to assure compatibility with the physical scale established by surrounding development.		
	3.40 – B.2. Protection of Natural Landforms and Features Natural contours, including slope, visible contours of hilltops and treelines, bluffs, and rock outcroppings shall suffer the minimum feasible disturbance compatible with development of any permitted use, and the following standards shall at a minimum secure this objective: a. Under any permitted alteration of natural landforms during construction, mineral extraction or other approved development, the topography shall be restored to as close to natural contours as possible, and the area planted with attractive vegetation common to the region. b. In permitted development, land form alteration for access roads and public utilities shall be minimized by running hillside roads and utility corridors along natural contours where feasible, and the optional waiving on minimum street width requirements, where proposed development densities or use of one-way circulation patterns make this consistent with public safety, in order that necessary hillside roads may be as narrow as possible.	The project would match the existing contour and would disturb natural tree lines and features to the minimum amount feasible. Disturbed areas will be revegetated along the proposed trail would match the surrounding landscape.	Consistent

Table 14. Project Consistency with Management Guidelines

Management Guideline	Impact	Consistency Determination
3.40 – B.3. Coastal Scenic Area In the Coastal Scenic Area designated in the Area Plan Map (Indianola area), it is the intent of these regulations that all developments visible from Highway 101 be subordinate to the character of the designated area, and the following uniform standards shall apply to all development within said area, in addition to other applicable policies of this plan: a. New industrial and public facility development shall be limited to: (1) Temporary storage of materials and equipment for the purpose of road and utility repair or improvement provided that this is necessary to the repair or improvement, and no feasible site for storage of equipment of material is available outside such area. b. All permitted development shall be subject to the following standards for siting and design except for structures integral to agricultural use and timberland management subject to CDF requirements for special treatment areas. (2) The highest point of a structure shall not exceed 30' vertically measured from the highest point of the foundation, nor 40' form the lowest point of the foundation. (3) Vegetation clearing for new development shall be minimized. New development on ridgelines shall be sited adjacent to existing major vegetation, prohibiting removal of tree masses which might destroy the ridgeline silhouette, and limiting the height of structures so that they maintain present ridgeline silhouettes.	Proposed project features will be subordinate to the character of the surrounding area. No structures will be included that are above 30 feet at the highest point nor 40 feet from the lowest point of the foundation. The least amount of vegetation clearing feasible will occur.	Consistent

Table 14. Project Consistency with Management Guidelines

Management Guideline		Impact	Consistency Determination
City of Eureka General Plan			
Recreation and Cultural Resources Element	Goal 5.A. To provide for park and recreational systems which include sufficient diversity of areas and facilities to effectively serve a population with varied characteristics, densities, needs and interests, consistent with protecting environmentally sensitive habitats. Goal 5.B To provide public open space and shoreline accessways throughout the Coastal Zone, consistent with protecting environmentally sensitive habitats and other coastal priority land uses. Policy 5.B.1: The City shall provide public open space and shoreline access throughout the Coastal Zone, particularly along the waterfront and First Street, through all of the following: d. Consider and protect the scenic and visual qualities of coastal areas that are visible from scenic public vista points and waterfront walkways.	Amenities proposed along the trail route are designed to serve a wide array of potential users and to enhance the public's understanding of environmentally sensitive habitats through interpretive signage and passive recreation opportunities that allow the public to become familiar with the natural character of the Humboldt Bay coastline.	Consistent
Natural Resources Element	To support the continued protection of valuable open space resources in and around Eureka.	The proposed trail would follow and existing right of way and existing roads. Proposed enhancements will benefit adjacent natural resources through actions such as vegetation management and curtailing transients camping and dumping.	Consistent
Land Use and Community Design Element	To maintain and expand views of the waterfront, inner harbor, and landmark buildings from public streets and other public spaces.	The project would create viewing opportunities of Humboldt Bay throughout the extent of the trail alignment.	Consistent
Eureka Local Coastal Program			
Land Use and Development Framework	The City shall continue to work with the Humboldt Bay Harbor, Recreation, and Conservation District to implement the projects described in the City's Eureka	The proposed project would create viewing and additional access opportunities to Humboldt Bay for the public. The project would be consistent with	Consistent

Table 14. Project Consistency with Management Guidelines

	Management Guideline	Impact	Consistency Determination
	Waterfront Revitalization Program, including construction of a public access vista point at the foot of Truesdale Street.	other public recreation projects proposed or completed.	
Streets and Highways	The City should improve the appearance of existing transportation ROWs and incorporate high standards of aesthetic design when considering new transportation corridors, including streets, bikeways, walkways, and other related ROWs.	The project includes numerous aesthetic enhancements that would be implemented along a currently degraded existing transportation ROW.	Consistent
Coastal Recreation and Access	The City shall provide public open space and shoreline access throughout the Coastal Zone by considering and protecting the scenic and visual qualities of coastal areas that are visible from scenic public vista points and waterfront walkways.	Proposed trail enhancements, including non-native vegetation management, interpretive signage, and creation of waterfront viewing opportunities would enhance and protect the scenic natural beauty of the coastal landscape.	Consistent
	Where public access ways or vista points are located near environmentally sensitive habitat areas, attractive barriers shall be provided to preclude disturbance of natural areas by off-road or all-terrain vehicles.	The proposed trail would be for pedestrian or non-motorized use. Standard trail-related traffic-control signage would be installed in order to comply with Class I standards and MUTCD requirements. At locations where the trail intersects a vehicular roadway, removable bollards would be installed to prevent unauthorized motorized vehicles from entering the trail. Safety railing and fencing is proposed along retaining walls, viewing platforms, the CRC levee, and at the edge of the trail when adjacent to steep embankments.	Consistent

Chapter 10. Cumulative Effects

Proposed changes to the existing aesthetic of the project area from implementation of the Humboldt Bay Trail South Project would not degrade views of Humboldt Bay or the scenic quality of the project area. The proposed project would enhance viewing opportunities for the public and would provide landscaping treatments that visually match the surrounding landscape. Rock rip-rap, weed mats, and native revegetation are examples of the types of landscape treatments that would be used throughout the project area, as practicable. In addition, it is anticipated that native vegetation would reestablish over time, lessening the appearance of such treatments even further. The visual effect of these treatments on the landscape would be a part of the cumulative considerations afforded landscaping used for other projects associated with the Highway 101 corridor and adjacent areas. Views of Humboldt Bay, the coastal mudflats, and other coastal scenic resources would open up in some areas where large trees are planned for removal. Travelers typically experience views from a travel corridor in a cumulative rather than site specific manner. The project's contribution to cumulative impacts on aesthetics and visual resources would be an overall improvement of the scenic quality of the area throughout many segments of the proposed alignment, when considering the scattered industrial and commercial development that distracts from the panoramic views of Humboldt Bay along the Highway 101 corridor. The cumulative effect of the vegetation removal along Highway 101 on visual resources and aesthetics would contribute to the loss of vertical pattern elements rich in texture, form, line, and color, thus reducing the visual diversity of the views between Eureka and Arcata. The addition of the cable barrier railing, fencing, and retaining walls in the project area would be a cumulative impact, particularly when considered in the context of other projects such as the Eureka-Arcata Route 101 Corridor Improvement Project (Caltrans District 1-HUM-101, PM 79.9/86.3) that will affect the same general area. The larger Highway 101 corridor has cable barrier rail proposed in McKinleyville and the Eureka to Arcata corridor, along with the existing cable barrier rail already installed in Arcata. However, in the project area, Humboldt Bay and the coastal shoreline would be made more prominent, consistent with the majority of the project area. The presence of the trail would be a cumulatively considerable improvement for recreationists.

Chapter 11. Visual Resource Management Recommendations

11.1. Resource Protection Measures

The effect of the proposed project on scenic resources and aesthetics would be a benefit to the County and the City of Eureka. Project design considerations include the beneficial effects of the project on viewer sensitivity to Humboldt Bay, and the County's, City's, and Caltrans' guidelines pertaining to scenic resources. This assessment of the visual character of the project area indicates that the following management recommendations should be considered for inclusion in the project design standards to ensure minimal adverse changes in overall visual quality:

1. Manipulate landscape components such as landform and vegetation to enhance the visibility of project actions from surrounding areas.

2. Enhance opportunities for scenic views from the Humboldt Bay Trail South when possible.

3. Use construction materials that are visually compatible with the landscape. However, reflective road paint and highly reflective signs are required by law.

4. Retaining wall architectural treatment, such as specified color, texture, and material options that would allow the wall to recede into the landscape.

5. Select pedestrian safety rails within consideration for matching the scenic character to the project area.

6. Revegetation would be limited to native grasses and special-status native plants.

11.2. Conservation Measures

The following conservation measure is recommended to be incorporated into the project description to minimize impacts associated with required safety lighting:

- **Conservation Measure VIS-1:** To avoid adverse impacts, new sources of light, including any outside night lighting associated with construction, will be designed to protect wildlife and nighttime views, including views of the night sky. This design goal will be satisfied using a variety of means as applicable, including fixture types, cut off angles, shields, lamp arm extensions, and pole heights. Specific design preferences include not directing light upward or to other properties, avoiding

brightly illuminated vertical surfaces where feasible, such as walls and lamp poles, and not directing lighting toward environmentally sensitive habitats. The Recommended Practices of the Illuminating Engineering Society of North America should be consulted for lighting levels and quality of light.

Chapter 12. Conclusions

Assessment of potential impacts on visual resources and aesthetics resulting from implementation of the Humboldt Bay Trail South project, and viewer response to these impacts, would be less than significant for the project as a whole. Although the cumulative net change to the existing views afforded travelers and neighbors resulting from the presence of the trail and the minor changes that would be made to the visual character of the proposed trail alignment were found to be negative (-1.7 [Moderately Low/Less than Significant]) based on the assessment methodology used in Chapter 8, this rating indicates that there would be no substantial reduction in visual quality. Implementation of the Humboldt Bay Trail South would enhance opportunities for the public to experience the panoramic vistas of Humboldt Bay and the coastal environment.

Chapter 13. List of Preparers and Reviewers

13.1. County of Humboldt –Public Works Department

Hank Seemann	Environmental Services Deputy Director Humboldt County Public Works Department

13.2. GHD

Misha Schwarz	Senior Environmental Scientist
Josh Wolf, P.E.	Project Manager
Julia Clark	Spatial Scientist

13.3. NSR, now part of Stantec

Keith Marine	Principal Aquatic and Fishery Scientist/Project Manager
Wirt Lanning	Principal
Connie MacGregor	Senior Environmental Analyst/Environmental Scientist
Brendan Cohen	Environmental Scientist
Sylvia Langford	Document Production

Chapter 14. References

American Association of State Highway and Transportation Officials (AASHTO). 2012. Guide for the development of bicycle facilities, fourth edition.

Association of Environmental Professionals. 2017. California Environmental Quality Act (CEQA) statute and guidelines. Association of Environmental Professionals. Palm Desert, California.

California Department of Transportation (Caltrans). 2014. California manual of uniform traffic control devices. Available at http://www.dot.ca.gov/trafficops/camutcd/camutcd2014rev1.html (accessed November 15, 2017)

California Department of Transportation (Caltrans). 2017. California state scenic highway mapping system. Available at http://www.dot.ca.gov/hq/LandArch/16_livability/scenic_highways/ (accessed November 15, 2017)

City of Eureka. 2008a. City of Eureka General Plan – Coastal Land Use Policy document. Eureka, California.

City of Eureka. 2008b. City of Eureka general plan policy document, as amended by Council resolution 2008-08. Eureka, California.

Federal Highway Administration. 1988. Visual Impact Assessment for Highway Projects. U.S. Department of Transportation, Federal Highway Administration, Office of Environmental Policy. Washington, D.C.

Humboldt County. 1982. Humboldt County General Plan Volume II – Humboldt Bay Area Plan of the Humboldt County Local Coastal Program. Amended and fully adopted November 29, 1983. Humboldt, California.

Humboldt County. 2017. Humboldt County general plan update Board of Supervisors EIR draft. Chapter 10: Conservation and open space element. October 2017.

JRP Historical Consulting Services. 2004. Historic resources evaluation report. Eureka to Arcata Route 101 corridor improvement project, Humboldt County, California. Prepared for State of California, Department of Transportation, Caltrans District 1, North Region – Eureka Office.

Appendix C CalEEMod Emissions

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Humboldt Bay Trail South Eureka to Bracut Const.

Humboldt County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	4.60	Acre	4.60	200,376.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	103
Climate Zone	1			**Operational Year**	2019
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - 3.8 miles long x 10 feet wide = 4.61 acre pavement

Construction Phase - Project-specific Construction Schedule

Off-road Equipment - Project-Specific Equip Mix and Activity

Off-road Equipment - Project-Specific Equip Mix and Activity

Off-road Equipment - Project-Specific Equip Mix and Activity

Off-road Equipment - Project-Specific Equip Mix and Activity

Off-road Equipment - Project-Specific Equip Mix and Activity

Off-road Equipment - Project-Specific Equip Mix and Activity

Off-road Equipment - Project-Specific Equip Mix and Activity

Off-road Equipment - Project-Specific Equip Mix and Activity

Demolition - 100 tons pavement, 50 tons misc material to be hauled away

Grading - 10,568 cy import, 2,000 cy export

Construction Off-road Equipment Mitigation - Environmental Protection Action 2 - Implement AQ Measures During Const.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	16
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	40	15
tblConstructionPhase	NumDays	230.00	40.00
tblConstructionPhase	NumDays	230.00	10.00
tblConstructionPhase	NumDays	230.00	10.00
tblConstructionPhase	NumDays	8.00	90.00
tblConstructionPhase	NumDays	18.00	10.00
tblConstructionPhase	NumDays	5.00	90.00
tblGrading	MaterialExported	0.00	2,000.00
tblGrading	MaterialImported	0.00	10,568.00
tblOffRoadEquipment	HorsePower	84.00	600.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	2.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	8.00	2.00
tblOffRoadEquipment	UsageHours	7.00	0.80
tblOffRoadEquipment	UsageHours	8.00	2.00
tblOffRoadEquipment	UsageHours	8.00	3.00
tblOffRoadEquipment	UsageHours	8.00	1.00
tblOffRoadEquipment	UsageHours	8.00	7.10
tblOffRoadEquipment	UsageHours	8.00	10.00
tblOffRoadEquipment	UsageHours	6.00	10.00
tblOffRoadEquipment	UsageHours	6.00	10.00
tblOffRoadEquipment	UsageHours	8.00	2.00
tblOffRoadEquipment	UsageHours	7.00	6.00
tblOffRoadEquipment	UsageHours	7.00	4.50
tblOffRoadEquipment	UsageHours	7.00	4.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	8.00	10.00
tblOffRoadEquipment	UsageHours	8.00	7.10
tblProjectCharacteristics	OperationalYear	2018	2019

2.0 Emissions Summary

2.1 Overall Construction

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2017	0.0759	0.7115	0.4804	8.3000e-004	0.0153	0.0395	0.0548	2.3000e-003	0.0375	0.0398	0.0000	75.2622	75.2622	0.0167	0.0000	75.6799
2018	0.1428	1.4123	0.9504	2.2700e-003	0.0567	0.0535	0.1103	0.0122	0.0503	0.0625	0.0000	208.9734	208.9734	0.0323	0.0000	209.7804
Maximum	**0.1428**	**1.4123**	**0.9504**	**2.2700e-003**	**0.0567**	**0.0535**	**0.1103**	**0.0122**	**0.0503**	**0.0625**	**0.0000**	**208.9734**	**208.9734**	**0.0323**	**0.0000**	**209.7804**

2.2 Overall Operational

Not Applicable

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	9/5/2017	10/2/2017	5	20	
2	Clearing and Grubbing	Site Preparation	10/3/2017	2/5/2018	5	90	
3	Grading	Grading	2/6/2018	6/11/2018	5	90	
4	Retaining Wall Construction	Building Construction	6/12/2018	8/6/2018	5	40	
5	Barrier Installation	Building Construction	8/7/2018	8/20/2018	5	10	
6	Pile Driving-Bridge and Boardwalk	Building Construction	8/21/2018	9/3/2018	5	10	
7	Paving	Paving	9/4/2018	9/17/2018	5	10	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 39.94

Acres of Paving: 4.6

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Clearing and Grubbing	Concrete/Industrial Saws	2	5.30	81	0.73
Clearing and Grubbing	Excavators	1	3.60	158	0.38
Clearing and Grubbing	Graders	1	8.00	187	0.41
Clearing and Grubbing	Rubber Tired Dozers	0	8.00	247	0.40
Clearing and Grubbing	Tractors/Loaders/Backhoes	2	7.10	97	0.37
Grading	Excavators	0	8.00	158	0.38
Grading	Graders	1	7.10	187	0.41
Grading	Rollers	1	3.60	80	0.38
Grading	Rubber Tired Dozers	0	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Retaining Wall Construction	Cranes	0	7.00	231	0.29
Retaining Wall Construction	Excavators	1	4.50	158	0.38

Retaining Wall Construction	Forklifts	0	8.00	89	0.20
Retaining Wall Construction	Generator Sets	1	8.00	84	0.74
Retaining Wall Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Retaining Wall Construction	Welders	0	8.00	46	0.45
Demolition	Concrete/Industrial Saws	1	2.00	81	0.73
Demolition	Excavators	1	2.00	158	0.38
Demolition	Rubber Tired Dozers	1	2.00	247	0.40
Barrier Installation	Cranes	0	7.00	231	0.29
Barrier Installation	Excavators	1	3.00	158	0.38
Barrier Installation	Forklifts	0	8.00	89	0.20
Barrier Installation	Generator Sets	1	3.00	84	0.74
Barrier Installation	Other Construction Equipment	1	2.00	172	0.42
Barrier Installation	Tractors/Loaders/Backhoes	1	4.50	97	0.37
Barrier Installation	Welders	0	8.00	46	0.45
Pile Driving-Bridge and Boardwalk	Bore/Drill Rigs	1	4.00	221	0.50
Pile Driving-Bridge and Boardwalk	Cranes	1	0.80	231	0.29
Pile Driving-Bridge and Boardwalk	Excavators	1	8.00	158	0.38
Pile Driving-Bridge and Boardwalk	Forklifts	0	8.00	89	0.20
Pile Driving-Bridge and Boardwalk	Generator Sets	1	1.00	84	0.74
Pile Driving-Bridge and Boardwalk	Other Construction Equipment	1	1.00	172	0.42
Pile Driving-Bridge and Boardwalk	Pumps	1	2.00	600	0.74
Pile Driving-Bridge and Boardwalk	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Pile Driving-Bridge and Boardwalk	Welders	0	8.00	46	0.45
Paving	Cement and Mortar Mixers	0	6.00	9	0.56
Paving	Other Construction Equipment	1	2.00	172	0.42
Paving	Pavers	1	10.00	130	0.42
Paving	Paving Equipment	1	10.00	132	0.36
Paving	Rollers	2	10.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	10.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Clearing and Grubbing	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	3	8.00	0.00	1,321.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Retaining Wall Construction	3	84.00	33.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Demolition	3	8.00	0.00	15.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Barrier Installation	4	84.00	33.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Pile Driving-Bridge and Boardwalk	7	84.00	33.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Demolition - 2017

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					7.2000e-004	0.0000	7.2000e-004	1.1000e-004	0.0000	1.1000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.4100e-003	0.0539	0.0293	5.0000e-005		2.8800e-003	2.8800e-003		2.7100e-003	2.7100e-003	0.0000	4.5235	4.5235	1.0900e-003	0.0000	4.5508
Total	**5.4100e-003**	**0.0539**	**0.0293**	**5.0000e-005**	**7.2000e-004**	**2.8800e-003**	**3.6000e-003**	**1.1000e-004**	**2.7100e-003**	**2.8200e-003**	**0.0000**	**4.5235**	**4.5235**	**1.0900e-003**	**0.0000**	**4.5508**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.2000e-004	3.0600e-003	6.3000e-004	1.0000e-005	1.1000e-004	3.0000e-005	1.4000e-004	3.0000e-005	3.0000e-005	6.0000e-005	0.0000	0.5824	0.5824	2.0000e-005	0.0000	0.5830
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.8000e-004	7.9000e-004	6.4000e-003	1.0000e-005	5.3000e-004	1.0000e-005	5.4000e-004	1.4000e-004	1.0000e-005	1.5000e-004	0.0000	0.6125	0.6125	6.0000e-005	0.0000	0.6139
Total	**9.0000e-004**	**3.8500e-003**	**7.0300e-003**	**2.0000e-005**	**6.4000e-004**	**4.0000e-005**	**6.8000e-004**	**1.7000e-004**	**4.0000e-005**	**2.1000e-004**	**0.0000**	**1.1949**	**1.1949**	**8.0000e-005**	**0.0000**	**1.1968**

3.3 Clearing and Grubbing - 2017

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0107	0.0000	0.0107	1.1600e-003	0.0000	1.1600e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0649	0.6491	0.4057	7.3000e-004		0.0366	0.0366		0.0347	0.0347	0.0000	65.8691	65.8691	0.0152	0.0000	66.2492
Total	**0.0649**	**0.6491**	**0.4057**	**7.3000e-004**	**0.0107**	**0.0366**	**0.0473**	**1.1600e-003**	**0.0347**	**0.0359**	**0.0000**	**65.8691**	**65.8691**	**0.0152**	**0.0000**	**66.2492**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.7000e-003	4.7200e-003	0.0384	4.0000e-005	3.1900e-003	5.0000e-005	3.2400e-003	8.6000e-004	4.0000e-005	9.0000e-004	0.0000	3.6748	3.6748	3.3000e-004	0.0000	3.6831
Total	**4.7000e-003**	**4.7200e-003**	**0.0384**	**4.0000e-005**	**3.1900e-003**	**5.0000e-005**	**3.2400e-003**	**8.6000e-004**	**4.0000e-005**	**9.0000e-004**	**0.0000**	**3.6748**	**3.6748**	**3.3000e-004**	**0.0000**	**3.6831**

3.3 Clearing and Grubbing - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0107	0.0000	0.0107	1.1600e-003	0.0000	1.1600e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0235	0.2389	0.1621	3.0000e-004		0.0128	0.0128		0.0121	0.0121	0.0000	26.4668	26.4668	6.0700e-003	0.0000	26.6186
Total	**0.0235**	**0.2389**	**0.1621**	**3.0000e-004**	**0.0107**	**0.0128**	**0.0235**	**1.1600e-003**	**0.0121**	**0.0133**	**0.0000**	**26.4668**	**26.4668**	**6.0700e-003**	**0.0000**	**26.6186**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7800e-003	1.7400e-003	0.0141	2.0000e-005	1.3000e-003	2.0000e-005	1.3100e-003	3.5000e-004	2.0000e-005	3.7000e-004	0.0000	1.4612	1.4612	1.2000e-004	0.0000	1.4643
Total	**1.7800e-003**	**1.7400e-003**	**0.0141**	**2.0000e-005**	**1.3000e-003**	**2.0000e-005**	**1.3100e-003**	**3.5000e-004**	**2.0000e-005**	**3.7000e-004**	**0.0000**	**1.4612**	**1.4612**	**1.2000e-004**	**0.0000**	**1.4643**

3.4 Grading - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					9.8500e-003	0.0000	9.8500e-003	1.0800e-003	0.0000	1.0800e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0320	0.3943	0.1682	3.9000e-004		0.0169	0.0169		0.0156	0.0156	0.0000	35.5045	35.5045	0.0111	0.0000	35.7809
Total	**0.0320**	**0.3943**	**0.1682**	**3.9000e-004**	**9.8500e-003**	**0.0169**	**0.0268**	**1.0800e-003**	**0.0156**	**0.0167**	**0.0000**	**35.5045**	**35.5045**	**0.0111**	**0.0000**	**35.7809**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	8.6900e-003	0.2506	0.0474	5.4000e-004	9.5600e-003	2.0500e-003	0.0116	2.6700e-003	1.9600e-003	4.6300e-003	0.0000	51.0294	51.0294	1.7600e-003	0.0000	51.0733
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.2900e-003	3.2100e-003	0.0261	3.0000e-005	2.3900e-003	3.0000e-005	2.4300e-003	6.5000e-004	3.0000e-005	6.8000e-004	0.0000	2.6976	2.6976	2.3000e-004	0.0000	2.7033
Total	**0.0120**	**0.2538**	**0.0735**	**5.7000e-004**	**0.0120**	**2.0800e-003**	**0.0140**	**3.3200e-003**	**1.9900e-003**	**5.3100e-003**	**0.0000**	**53.7271**	**53.7271**	**1.9900e-003**	**0.0000**	**53.7766**

3.5 Retaining Wall Construction - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0174	0.1565	0.1469	2.4000e-004		9.7200e-003	9.7200e-003		9.3700e-003	9.3700e-003	0.0000	20.8631	20.8631	3.7900e-003	0.0000	20.9579
Total	**0.0174**	**0.1565**	**0.1469**	**2.4000e-004**		**9.7200e-003**	**9.7200e-003**		**9.3700e-003**	**9.3700e-003**	**0.0000**	**20.8631**	**20.8631**	**3.7900e-003**	**0.0000**	**20.9579**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.5100e-003	0.1035	0.0339	1.9000e-004	3.7600e-003	1.1400e-003	4.9000e-003	1.1100e-003	1.0900e-003	2.2100e-003	0.0000	17.5711	17.5711	1.0200e-003	0.0000	17.5965
Worker	0.0154	0.0150	0.1216	1.4000e-004	0.0112	1.5000e-004	0.0113	3.0200e-003	1.4000e-004	3.1500e-003	0.0000	12.5890	12.5890	1.0600e-003	0.0000	12.6154
Total	**0.0209**	**0.1185**	**0.1555**	**3.3000e-004**	**0.0149**	**1.2900e-003**	**0.0162**	**4.1300e-003**	**1.2300e-003**	**5.3600e-003**	**0.0000**	**30.1601**	**30.1601**	**2.0800e-003**	**0.0000**	**30.2120**

3.6 Barrier Installation - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.9300e-003	0.0285	0.0249	4.0000e-005		1.7000e-003	1.7000e-003		1.6000e-003	1.6000e-003	0.0000	3.4466	3.4466	8.2000e-004	0.0000	3.4671
Total	**2.9300e-003**	**0.0285**	**0.0249**	**4.0000e-005**		**1.7000e-003**	**1.7000e-003**		**1.6000e-003**	**1.6000e-003**	**0.0000**	**3.4466**	**3.4466**	**8.2000e-004**	**0.0000**	**3.4671**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.3800e-003	0.0259	8.4800e-003	5.0000e-005	9.4000e-004	2.9000e-004	1.2300e-003	2.8000e-004	2.7000e-004	5.5000e-004	0.0000	4.3928	4.3928	2.5000e-004	0.0000	4.3991
Worker	3.8400e-003	3.7400e-003	0.0304	4.0000e-005	2.7900e-003	4.0000e-005	2.8300e-003	7.5000e-004	3.0000e-005	7.9000e-004	0.0000	3.1473	3.1473	2.6000e-004	0.0000	3.1539
Total	**5.2200e-003**	**0.0296**	**0.0389**	**9.0000e-005**	**3.7300e-003**	**3.3000e-004**	**4.0600e-003**	**1.0300e-003**	**3.0000e-004**	**1.3400e-003**	**0.0000**	**7.5400**	**7.5400**	**5.1000e-004**	**0.0000**	**7.5530**

3.7 Pile Driving-Bridge and Boardwalk - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	6.0600e-003	0.0658	0.0438	1.2000e-004		2.7300e-003	2.7300e-003		2.5800e-003	2.5800e-003	0.0000	11.2235	11.2235	2.0200e-003	0.0000	11.2739
Total	**6.0600e-003**	**0.0658**	**0.0438**	**1.2000e-004**		**2.7300e-003**	**2.7300e-003**		**2.5800e-003**	**2.5800e-003**	**0.0000**	**11.2235**	**11.2235**	**2.0200e-003**	**0.0000**	**11.2739**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.3800e-003	0.0259	8.4800e-003	5.0000e-005	9.4000e-004	2.9000e-004	1.2300e-003	2.8000e-004	2.7000e-004	5.5000e-004	0.0000	4.3928	4.3928	2.5000e-004	0.0000	4.3991
Worker	3.8400e-003	3.7400e-003	0.0304	4.0000e-005	2.7900e-003	4.0000e-005	2.8300e-003	7.5000e-004	3.0000e-005	7.9000e-004	0.0000	3.1473	3.1473	2.6000e-004	0.0000	3.1539
Total	**5.2200e-003**	**0.0296**	**0.0389**	**9.0000e-005**	**3.7300e-003**	**3.3000e-004**	**4.0600e-003**	**1.0300e-003**	**3.0000e-004**	**1.3400e-003**	**0.0000**	**7.5400**	**7.5400**	**5.1000e-004**	**0.0000**	**7.5530**

3.8 Paving - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	9.1100e-003	0.0944	0.0781	1.1000e-004		5.6200e-003	5.6200e-003		5.1700e-003	5.1700e-003	0.0000	10.4784	10.4784	3.2600e-003	0.0000	10.5600
Paving	6.0300e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0151**	**0.0944**	**0.0781**	**1.1000e-004**		**5.6200e-003**	**5.6200e-003**		**5.1700e-003**	**5.1700e-003**	**0.0000**	**10.4784**	**10.4784**	**3.2600e-003**	**0.0000**	**10.5600**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.9000e-004	6.7000e-004	5.4300e-003	1.0000e-005	5.0000e-004	1.0000e-005	5.1000e-004	1.3000e-004	1.0000e-005	1.4000e-004	0.0000	0.5620	0.5620	5.0000e-005	0.0000	0.5632
Total	**6.9000e-004**	**6.7000e-004**	**5.4300e-003**	**1.0000e-005**	**5.0000e-004**	**1.0000e-005**	**5.1000e-004**	**1.3000e-004**	**1.0000e-005**	**1.4000e-004**	**0.0000**	**0.5620**	**0.5620**	**5.0000e-005**	**0.0000**	**0.5632**

2.0 Emissions Summary

2.1 Overall Construction

Not Applicable

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mobile	7.3000e-004	2.0800e-003	0.0124	3.0000e-005	1.9100e-003	1.0000e-005	1.9200e-003	5.1000e-004	1.0000e-005	5.2000e-004	0.0000	2.3386	2.3386	1.1000e-004	0.0000	2.3414

3.0 Construction Detail

Not Applicable

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	7.3000e-004	2.0800e-003	0.0124	3.0000e-005	1.9100e-003	1.0000e-005	1.9200e-003	5.1000e-004	1.0000e-005	5.2000e-004	0.0000	2.3386	2.3386	1.1000e-004	0.0000	2.3414
Unmitigated	7.3000e-004	2.0800e-003	0.0124	3.0000e-005	1.9100e-003	1.0000e-005	1.9200e-003	5.1000e-004	1.0000e-005	5.2000e-004	0.0000	2.3386	2.3386	1.1000e-004	0.0000	2.3414

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Recreational	1.00	1.00	1.00	5,351	5,351
Total	1.00	1.00	1.00	5,351	5,351

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Recreational	14.70	6.60	6.60	100.00	0.00	0.00	100	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Recreational	0.000000	0.000000	0.500000	0.500000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000

Appendix D Wetland Delineation

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Wetlands Delineation

Humboldt Bay Trail South (Eureka to Bracut)

County of Humboldt Department of Public Works

GHD | 718 Third Street, Eureka, CA 95501

11110166 | 27 | October 2017 Rev 2


GHD

Wetlands Delineation

Humboldt Bay Trail South (Eureka to Bracut)

County of Humboldt Department of Public Works

Project No. 11110166.04

Prepared for:

County of Humboldt
Department of Public Works
1106 2nd Street
Eureka, CA 95501

Prepared by:

Amy Livingston

Amy Livingston, Botanist

Reviewed by:

Misha Schwarz, PWS/CPSS

GHD
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Eureka, CA 95501

October 2017 Rev 2

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1. Summary

The Humboldt Bay Trail South (Eureka to Bracut) project is a proposed Class I bike path along the North Coast Railroad Authority (NCRA) and Caltrans Highway 101 corridor between Bracut and Eureka. The Area of Potential Effect (APE) is generally on the west/north side of US 101 and on the south/east side of the railroad along the northeast shoreline of Humboldt Bay. The majority of the Humboldt Bay Trail South project is proposed to be located between the Highway 101 and NCRA railroad corridor. At the Eureka Slough crossing, the trail is being evaluated for potential cooperative (shared) use of the NCRA bridge and portions of the adjacent rail prism. At the California Redwood Company (CRC) Brainard mill site, the trail is being evaluated for potential alignment along the perimeter of the levee. At the Bracut Industrial Park, this report assumes the trail will be aligned between Highway 101 and the railroad. The standard trail width for the project will be 10 feet of asphalt with two 2-foot gravel shoulders. An additional area was added to the Humboldt Bay Trail North (HBTN)/Arcata Rail-with-Trail project to accommodate the installation of a barrier that will parallel highway 101 in locations that currently lack a barrier. The additional area, approximately 20' wide from edge of pavement by 4,855' in length is included in the APE for HBTS.

A wetland delineation was performed at the request of the County of Humboldt Public Works Department over 15 days on 1/31, 2/1, 2/6, 2/7, 3/1, 3/3, 3/16, 3/17, 4/10, 4/14, 4/21, 4/23, 4/27, 9/26 and 9/28 of 2017. The delineation was conducted within potential alignments of the proposed project from the project's beginning at the intersection with the Proposed Eureka Waterfront Trail, to the intersection with the Arcata Rail-with-Trail project which initiates north of the Bracut Industrial Park and also included the additional APE added to Arcata's HBTN /Arcata Rail-with-Trail.

The APE is entirely within the Coastal Zone therefore the extent of wetland-type vegetation (based on one parameter) was mapped in accordance with the California Coastal Commission as well as the extent of wetlands having wetland-type vegetation, hydric soils, and wetland hydrology (based on three-parameters) per the U.S. Army Corps of Engineers. Figures presenting results of the 2017 investigation are provided in Appendix A. Data sheets documenting conditions observed during the 2017 investigation are included in Appendix B.

2. Introduction

The Humboldt Bay Trail South wetland delineation effort began with reviewing available wetland mapping for the study area. This included reviewing existing wetland delineations that overlap or intersect the project area, including a wetland delineation completed by GHD for the Eureka Waterfront Trail Phase C Project, wetlands mapping for the Humboldt Bay Trail Eureka to Bracut Initial Engineering Study (GHD 2014), a wetland delineation for the Arcata Rail-with-Trails project (Winzler & Kelly 2010), and Caltrans mapping. GHD created a preliminary environmental constraints map template from the previous delineation work.

Field mapping was completed with a GeoPro 6H global positioning system (GPS) receiver connecting to a Motion F5v Tablet running ArcPad geographic information system (GIS) software that was used by the ecology team to map areas of 1-parameter and 3-parameter wetlands.

The area of investigation consisted of evaluation of the proposed alignments of the Humboldt Bay Trail from Eureka CA to Bracut, in Humboldt County, California (Figure 1) as well as the additional APE added to Arcata's HBTN /Arcata Rail-with-Trail. For ease of reference, the project is divided into nine distinct segments arranged from south to north. In areas of complex intersections and water crossings, the segments are broken into sub-segments. In some cases, for the purposes of presenting the wetland delineation results, sub-sections and sections are described together where exiting conditions are similar. The segments are identified on Figure 1 and show the APE.

1. Segment 1a: This segment includes a short section of the Eureka Waterfront Trail, beginning at Y Street in Eureka and ending at the bridge that crosses Eureka Slough. Wetlands were previously delineated in this section for the Eureka Waterfront Trail Phase C Project — (Figure 1);
2. Segment 2: This segment includes the existing railroad bridge over the Eureka Slough (Figure 1);
3. Segment 3a and 3b and 4a and 4b: Segments 3a and 4a are within the NCRA right of way south of the tracks and Segments 3b and 4b are between the NCRA right of way and the highway. These segments span the section between Eureka Slough and California Redwoods Company. Segments 3c and 3d were not included in this delineation (Figure 1);
4. Segment 5 and 6: This segment follows the perimeter levee around California Redwood Company facility property. The bay side of CRC is bound by a levee with significant armoring. The top of the levee is generally greater than 10 feet wide and is routinely mowed. Segments 5b, 5c, and 5d were not included in this delineation. Segment 6 includes the proposed bay crossing (Figure 1);
5. Segment 7: This segment includes the north Eucalyptus area. A deep ditch with steep sides falls in the center of this area. The NCRA side of the ditch has some small immature eucalyptus trees as well as some willows and wax myrtle. The highway side of the ditch is almost entirely occupied by mature Eucalyptus trees (Figure 1); and
6. Segment 8 and 9: These segments include areas north of the Eucalyptus grove to the north end of the Bracut industrial area (Figure 1).
7. Additionally, the APE includes a new section along the Humboldt Bay Trail North/Arcata Rail-with-Trail project to accommodate the installation of a barrier that will parallel highway 101 in locations that currently lack a barrier.

3. Purpose

The purpose of this investigation was to determine the location of wetlands within the proposed Humboldt Bay Trail South project area to support (1) avoidance and minimization of impacts during project design, (2) permit and environmental documentation preparation, and (3) marking of protected areas during construction. As the APE is entirely within the Coastal Zone, the wetland delineation was performed in accordance with the California Coastal Commission criteria for wetland delineation as well as in accordance with the U.S. Army Corps of Engineers (USACE) wetlands criteria.

4. Methodology

4.1 Wetland Delineation

The wetland delineation was conducted by a GHD wetland delineation team consisting of a Soil Scientist and a Botanist. To define a wetland, the USACE requires that all three parameters (vegetation, soil, and hydrology) show wetland attributes (USACE 1987; USACE 2010). The California Coastal Commission requires only one parameter to be present in order to define the site as a wetland (14 CCR 13577).

The wetland delineation followed USACE criteria from the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys and Coast Region (USACE 2010). Botany/soils/hydrology data sheets used were the current standard forms provided by the USACE (2010).

Vegetation and soil data were collected at transects across the upland/wetland boundary with two plots (upland/wetland) per transect. The naming convention used was upland (U) or wetland (W) plot and the number of the transect or the wetland section (not the same as the trail segment). Intermediate plots were placed without collection of data as appropriate (based on wetland vegetation and verification of soil conditions as well as extrapolation from adjacent test pits). The intermediate plots were named with a W before the intermediate plot number, followed by the wetland section, with an “INT” after the point number (i.e. W1W3-INT) on the figures. Additional mapping occurred after the main delineation work, in order to define the wetland boundary more precisely. Additional intermediate points were mapped and more simply named: “INT-1”, “INT-2”, and so on).

Mapping for additional sections of the trail was completed in Septmeber of 2017 after the majority of the delineation was completed, and for simplicity the new areas were mapped as wetland 1 and wetland 2. The area just east of Eureka slough was mapped as wetland 1, and the new APE within the Humboldt Bay Trail North/Arcata Rail-with-Trail project was mapped as wetland 2.

Throughout the delineation, the horizontal location of the wetland boundary was mapped in the field (in between the upland and wetland plots), or the horizontal location of the upland and wetland plots were mapped and the boundary between the two locations was mapped in GIS. Wetland transects mapped in the field at the wetland boundary were named for the wetland they represented and the number of the transect (i.e. W1T1). Intermediate plots between these transects followed the same naming convention.The horizontal location of intermediate points along the wetland boundary was also mapped. Field mapping was completed with a GeoPro 6H global positioning system (GPS) receiver with sub-meter accuracy, connected to a Motion F5v Tablet running ArcPad geographic information system (GIS) software that was used by the wetland delineation team to map areas of 1-parameter and 3-parameter wetlands.

To address the section of the APE that was added to the HBTN/Arcata Rail-with-Trail project, the GHD wetland delineation team reviewed the exsisting wetland delineation performed by Winzler and Kelly (2010). The APE for the previous delineation did not extend to the edge of pavement of the highway which is included in the new APE. Using the Motion F5v Tablet running ArcPad (GIS) software, the delineation team ground truthed the boundaries of the previously mapped wetland

features to identify if the wetlands continued into the new APE. Where this occurred the wetland boundary was delineated and mapped. The delineation team also mapped the extent of the newly constructed ditch adjacent to the new trail within the APE. Over time it is anticipated that the ditch will function as wetlands. This ditch is displayed on Figures 2-19, 2-20, 2-21, and 2-22. The ditch is displayed on the figures where it occurs within the APE and where it occurs directly adjacent the APE (on the bay side).

4.2 Botanical Methodology

Vegetation data collection consisted of listing the dominant species in the herbaceous, shrub, and tree layers within a variable sized plot. Since upland and wetland test pits were often very close together, a five foot radius was not deemed appropriate for characterizing herbaceous vegetation. Instead, absolute percent cover of each plant species was visually estimated within a rectangular plot that encompassed the test pit. Plot size varied in instances where it was necessary to have a narrower plot due to the proximity of the neighboring upland or wetland test pit. A rectangular plot, generally 5' x 4' was used to assess herbaceous vegetation. Dominant shrubs were assessed within a 10' radius to the front and sides of the plot being described so there was no overlap with vegetation characteristic of the neighboring upland or wetland plot. Trees did not occur within study plots with the exception of plots located within the northern Eucalyptus grove. The Eucalyptus trees were not considered in the assessment of whether or not wetland vegetation was present since this non-native species was planted along the highway corridor and inclusion in the data sheets would not be appropriate.

Data sheets are attached in Appendix B. The species listed for each plot were classified as to whether or not they were wetland or upland indicators, using the standard reference for plant wetlands indicators: *State of California 2016 Wetland Plant List* (Lichvar et al. 2016). The plant indicator states categories developed by the USFWS and as found in the USACE Manual (USACE 1987). The indicator staus classifies plants based on the probability that they would be found in wetlands, ranging from Obligate Wetland Plants (almost always occur in wetlands) [OBL], Facultative Wetland Plants (usually occur in wetlands, but may occur in non-wetlands 67% to 99% in wetlands) [FACW], Facultative Plants (occur in wetlands and non-wetlands, 34% to 66%) [FAC], Facultative Upland Plants (usually occur in non-wetlands, but may occur in wetlands 1% to 33% in wetlands) [FACU], or Upland Plants (almost never occur in wetlands, less than 1% in wetlands) [UP]. Plants not listed in the wetland plant list are considered to be in the upland category.

4.3 Soils Methodology

The Regional Supplement to the Corps of Engineers Wetland Delineation Manual (USACE 2010) procedures were combined with the Natural Resources Conservation Service's (NRCS) definition of hydric soils presented in Changes in Hydric Soils of the United States and Field Indicators of Hydric Soils in the United States (USDA/NRCS 2016). Data sheets are attached (Appendix B). Soil pits were dug to an approximate depth of 18 inches. Data on soil color, texture and redoximorphic features was collected. Care was taken to observe mottling (iron concentrations) and to distinguish between chromas of 1 and 2 that would indicate an iron-depleted soil within 12 inches of the soil surface (USACE 2010; USDA/NRCS 2016).

Colors were described for the entire depth of the test pit and colors were determined on moist natural soil aggregate (ped) surfaces, which had not been crushed, using the Munsell Color Chart (COLOR,M. 2000). Soils with low chromas were verified as being hydric or upland with Field Indicators of Hydric Soils in the United States (Version 8.0, 2016) using indicators including depleted matrix (F3) and sandy redox (S5).

4.4 Hydrology Methodology

The majority of the delineation (with the exception of HBTN) was performed during the winter within the wet-weather season. Direct evidence of ground water (soil saturation, standing water, etc.) was present in three-parameter wetland plots during the delineation. Primary wetland hydrologic indicators were observed including high water table, saturation, surface water, presence of reduced iron, and positive reactions to Alpha-alpha-Dipyridyl. Secondary wetland hydrologic indicators included passing the FAC-Neutral Test.

4.5 Wetland Determination

Wetland boundaries were evaluated first using the USACE (three-parameter) methodology, and then additionally using the Coastal Commission (one-parameter) methodology. For the USACE methodology, the wetland determination was made with an emphasis on hydrology, redoximorphic soil features (hydric soils), and the dominance of wetland vegetation. All wetland plots exhibited a predominance of facultative (FAC) or wetter vegetation and most upland plots exhibited predominance of facultative-up (FACU) or drier vegetation. Some upland plots exhibited predominance of facultative (FAC) species. As discussed in the vegetation results section, this was likely due to frequent mowing within the highway corridor. Upland and wetland plots were completed on either side of the wetlands boundary. The distance to the wetland/upland boundary from wetland and upland plot were recorded on each respective datasheet. The wetland/upland boundary was recorded with a GPS device. Individual wetland and upland plots were not recorded with a GPS devise.

5. Results

5.1 Existing Site Information

The APE consists of various wetland types along the northeast shoreline of Humboldt Bay. A roadside ditch runs parallel between the highway and the railroad tracks fed by rainwater with some tidal influence. The APE also includes Eureka Slough, and Intertidal Emergent Wetlands where invasive dense-flowered cordgrass is often the predominant vegetation. Anthropomorphically placed riprap lines much of the shoreline of the Estuarine Intertidal Rocky Shore, generally northwest of the railroad tracks.

5.2 Delineation Results

The parameters used to identify a wetland are characteristics of the soil, hydrology, and vegetation. To define a wetland, the USACE (2010) requires that all three parameters show wetland attributes. The Coastal Commission defines a wetland based on the presence of any one parameter. As the

project falls entirely within the Coastal Zone, areas with wetland vegetation (FAC or wetter) that did not meet requirements for wetland hydrology or hydric soils were mapped and differentiated from three parameter wetlands. The nine types of three parameter wetlands were classified within the area of potential effect using nomenclature adapted from Classification of Wetlands and Deepwater Habitats of the United States (Cowardin), by the Federal Geographic Data Committee (2013):

- Estuarine Intertidal Emergent Wetland dominated with native vegetation
- Estuarine Intertidal Emergent Ditch with the non-native, highly invasive species *Spartina densiflora*
- Estuarine Intertidal Emergent Wetland with the non-native, highly invasive species *Spartina densiflora*
- Palustrine Emergent Ditch
- Palustrine Emergent Scrub-Shrub
- Estuarine Intertidal Rocky Shore
- Estuarine Intertidal Rocky Shore- with *Spartina densiflora*
- Estuarine Intertidal Unconsolidated Bottom
- Estuarine Subtidal Unconsolidated Bottom

One parameter wetlands meeting Coastal Commission requirements based only on wetland (FAC or wetter) vegetation were mapped based on dominant native vegetation. These included:

- 1 parameter Pacific rush (*Juncus effusus* subsp. *pacificus*) series
- 1 parameter Tufted hair grass (*Deschampsia cespitosa*) series
- 1 parameter Willow series, dripline

Figures found in Appendix A show the results of the wetland delineation. In summary, for HBTS 17.74 acres of three parameter wetlands, an additional 0.40 acres of 1 parameter Pacific rush Series and Tufted hair grass Series, and 0.27 acres of 1 parameter Willow Series dripline were mapped within the project area. An additional 0.678 acres of three parameter wetlands were mapped within the new APE for the HBTN/Arcata Rail-with-Trail project

5.3 Summary of Wetland Types within Trail Segments

The following table includes a list of the types of wetlands that occur within each trail segment.

Table 1 Summary of the wetland types occurring in each trail segment

Description of mapped feature	
Segment 1a	• Estuarine Intertidal Emergent Ditch with *Spartina densiflora* • Palustrine Emergent Ditch • Estuarine Intertidal Emergent Wetland with *Spartina densiflora* • 1 Parameter Willow series, dripline
Segment 2	• Estuarine Intertidal Unconsolidated Bottom • Estuarine Subtidal Unconsolidated Bottom • Estuarine Intertidal Emergent Wetland with *Spartina densiflora*
Segment 3a and b and 4a and b	• Estuarine Intertidal Emergent Wetland with *Spartina densiflora* • Estuarine Intertidal Unconsolidated Bottom • Estuarine Intertidal Emergent Wetland – natives • Palustrine Emergent Scrub-Shrub • Estuarine Intertidal Emergent Ditch with *Spartina densiflora* • 1 Parameter Willow series, dripline
Segment 5 and 6	• Palustrine Emergent Ditch • Estuarine Intertidal Emergent Wetland – natives • Estuarine Intertidal Unconsolidated Bottom • Estuarine Intertidal Rocky Shore
Segment 7	• 1 Parameter Juncus series • Palustrine Emergent Ditch • Estuarine Intertidal Emergent Wetland with *Spartina densiflora* • 1 Parameter Deschampsia series • Estuarine Intertidal Rocky Shore- with *Spartina densiflora* • Estuarine Intertidal Emergent Wetland – natives • Estuarine Intertidal Emergent Ditch with *Spartina densiflora* • 1 Parameter Willow series, dripline
Segment 8 and 9	• Estuarine Intertidal Emergent Ditch with *Spartina densiflora* • Palustrine Emergent Ditch • Estuarine Intertidal Rocky Shore • Estuarine Intertidal Emergent Wetland with *Spartina densiflora* • 1 Parameter Juncus series • Palustrine Emergent Ditch • Estuarine Intertidal Emergent Wetland – natives • Estuarine Intertidal Unconsolidated Bottom • Estuarine Intertidal Rocky Shore • 1 Parameter Willow series, dripline

New APE HBTN/Arcata Rail-with-Trail project	• Palustrine Emergent Ditch • Palustrine Emergent Wetland

5.4 Vegetation Results

An inboard wetland ditch between the railroad track and the highway spans the majority of the APE and was classified per Classification of Wetlands and Deepwater Habitats of the United States (FGDC 2013) into four wetlands types. Typical vegetation for each wetland type is described below with designated indicator status (OBL, FACW, FAC, FACU, or UPL) based on Lichvar et al. 2016. Plants not listed in the manual are considered to be in the upland category.

Where the ditch was classified as Palustrine Emergent Wetland the dominant species included tall fescue (*Festuca californica* synonym*: Schedonorus arundinaceus*) [FAC], Pacific rush (*Juncus effusus* subsp. *pacificus*) [FACW], spreading rush (*Juncus patens*) [FACW], and tufted hair grass (*Deschampsia cespitosa*) [FACW]. Two sections of Palustrine Emergent Scrub-Shrub Wetland occur on the southwest side of the proposed trail. Wax myrtle (*Morella californica*) [FACW] was the dominant shrub with occasional coastal willow (*Salix hookeriana*) [FACW]. Dense patches of non-native Himalayan blackberry (*Rubus armeniacus*) [FAC] and non-native rose also occurred in these wetlands.

The ditch was classified as Estuarine throughout the APE when dense-flowered cordgrass (*Spartina densiflora*) [OBL] was abundant indicating salt water influence. Dense-flowered cord grass was generally the predominant species in the deepest section of the wetland ditch. Closer to the highway and still within the wetland, the vegetation was predominately species that occur in palustrine emergent wetlands such as tall fescue (*Festuca californica* synonym: *Schedonorus arundinaceus*) [FAC] and bird's-foot trefoil (*Lotus corniculatus*) [FAC]. These wetlands were lumped into the Estuarine Intertidal Emergent Wetland with *Spartina* densiflora classification; however, when dense-lowered cordgrass was abundant in the wetland ditch. Within this wetland type, cover of dense-flowered cordgrass was generally 30% or greater. There are two small sections of the ditch where the native species salt grass (*Distichlis spicata*) [FACW] was the dominant species. These sections were classified as Estuarine Intertidal Emergent Wetland - Native.

Willows often occur in riparian or other moist environments and are found in several locations in the APE as shown in Figures 2-1, 2-2, 2-3, 2-4, 2-12, and 2-18. Although characterized by the dominant willow species, other willow species can co-occur and this is the case within the APE. Willows are tolerant of disturbance and can rapidly colonize adjacent areas of ground disturbance. According to Sawyer et al. (2009) "It (*Salix hookeriana*) is the major willow scrub along the moist, northwestern coastal belt of California."

Between the railroad tracks and the bay four wetland types were delineated. Classification types with low vegetative cover included: Estuarine Intertidal Rocky Shore, Estuarine Intertidal Unconsolidated Bottom, and Estuarine Subtidal Unconsolidated Bottom. Sections of Estuarine Intertidal Rocky Shore were classified as "with *Spartina*" where dense-flowered cordgrass grew within the rocky shore line either as the only species occurring, or where it occurred with patches of native vegetation.

Estuarine Intertidal Emergent Wetland occurred in patches along the bay with a community of native halophytes including pickle weed (*Salicornia pacifica* synonym: *Sarcoconaria pacifica*) [OBL] and saltgrass, or in patches where dense-flowered cordgrass grew at various densities. The Estuarine Intertidal Emergent Wetland classification was split between wetlands where native vegetation was predominant (Estuarine Intertidal Emergent Wetland- Native), or wetlands where dense-flowered cordgrass was either predominant or mixed with native species (Estuarine Intertidal Emergent Wetland- with *Spartina*).

In the mowed corridor along the highway the most dominant species was tall fescue [FAC]. Tall fescue is favored by mowing so it was not surprising to seeing it thriving within the mowed corridor in both wetland and upland plots. Other non-native facultative species such as bird's-foot trefoil also occurred in wetland and upland plots in the mowed corridor of the highway. As defined by Lichvar (2016) facultative species have a 36% to 66% probability of occurring in wetlands, making these species statistically equally likely to occur in wetlands or uplands. Field inspections to determine the presence of hydric soil conditions and/or wetland hydrology can alleviate potential technical misinterpretation of facultative species. Considering that wetland hydrology and hydric soils were not present in the upland plots, and given that these non-native species are favored by disturbance and are located in the mowed highway corridor, we determined these species are not growing as hydrophytes and are not one-parameter wetlands. Other projects have incorporated this same methodology including the Eel River Estuary Preserve Ecosystem Enhancement Project Delineation of Uplands (GHD 2014), the City of Eureka Waterfront Trail Phase C Updated Delineation of Wetlands (GHD 2015), the Wetland Delineation for the Rail with Trail Connectivity Project in the City of Arcata (Winzler & Kelly 2010), and the Salt River Ecosystem Restoration Project. GHD has had multiple discussions with Dr. Dixon, a retired Senior Staff Biologist with the California Coastal Commission with regard to this methodology (pers. comm., Dr. Dixon, 2010, 2011, 2012 2013, 2014 and 2015).

Sweet vernal grass (*Anthoxanthum odoratum*) [FACU] was another dominant species in upland plots on the highway side of the wetland, and rattlesnake grass (*Briza maxima*) [NL] was a dominant species along the railroad berm. (Species not listed [NL] in the Wetland Plant List are presumed to be upland species).

5.5 Soils Results

Soils in delineated wetlands were generally sandy in texture at the surface although texture was variable and also consisted of loam, clay, or silt loams. The texture of the subsoil layer was often sand or sandy loam but sometimes clay or loam. The subsoil layer often contained variegated fill material from previous grading activities. Wetland soils exhibited redoximorphic features typically found in hydric soils including low chromas with redoximorphic (iron concentrations) at or above 10 inches from the soil surface. Representative wetland (hydric) soils had matrix color ranges of 2.5Y 3/2, 7.5YR 3/2, 10YR 4/1, 10YR 2/2, 10YR 5/1. Iron concentrations were documented in most wetland plots within 10 inches of the surface, with representative color ranges of 7.5YR 5/6, and 5YR 4/6. Common hydric soil indicators observed included depleted matrix (F3), sandy redox (S5), and redox dark surface (F6). Representative upland soils had surface and subsurface color ranges of 10YR 3/3, 10YR 4/3, 10YR 4/1 (low chroma due to organic matter, not reduction), 10YR 3/4, 10YR 4/4, 7.5YR 4/4 with no redoximorphic features observed.

5.6 Hydrology Results

Precipitation in 2017 was unusually high. According to data from the National Weather Service automated rain gage in Eureka (Eureka WFO (EKA01)), when the delineation began on January 31, Eureka had received 37" of rain since the beginning of the water year on October 1, 2016 (National Weather Service 2017), (161% of mean rainfall for this time period). By April 27, 2017, when the majority of the delineation had been completed, 60.8" of rain had fallen, (160% of mean rainfall for the period of October 1- April 27); National Weather Service 2017).

Durign the winter and spring delineation work water was observed in wetland test pits within 12" of the soil surface. Primary indicators of hydrology included: high water table, saturation, observation of standing water, presence of reduced iron, and positive reactions to Alpha-alpha-Dipyridyl.

5.7 Other Waters (Tidal)

Other waters of the U.S. (Tidal) are defined at the high tide line (HTL) [or highest observed tide (annual)]. Within the APE, the HTL is approximately the 9' contour (NAVD88 datum) based on Eureka Slough Bridge (HTL was observed at 9.2 on December 13, 2016 king tide). The upper limits of Estuarine Intertidal Emergent Wetland and Estuarine Intertidal Rocky Shore were mapped along this contour with field verification during the wetland delineation and GIS mapping. Eureka slough was classified as Estuarine Subtidal Unconsolidated Bottom using aerial LiDAR Mapping (California State Coastal Conservancy 2014) for depths greater than -2' MSL (NADV88 datum). Estuarine Intertidal Unconsolidated Bottom was mapped above -2' MSL (NADV88 datum) to the vegetation line.

6. Conclusions

The wetland delineation completed in 2017 for the proposed Humboldt Bay Trail South determined the extent of wetland-type vegetation (based on one-parameter) and the extent of wetlands having wetland-type vegetation, hydric soils, and wetland hydrology (based on three-parameters). The area of investigation was determined to consist of nine types of three-parameter wetlands and three types of one-parameter wetlands. The wetland delineation mapping results are found in Appendix A. The field data sheets from the delineation area are included in Appendix B.

7. Special Terms and Conditions

To achieve the delineation objectives stated in this report, conclusions of the delineation were based on the information available during the period of the investigation which took place between January 31 and April 23, 2017, and also on September 26 and 28th. This report was prepared for the exclusive use of the County of Humboldt Department of Public Works. GHD Inc. is not liable for any action arising out of the reliance of any third party on the information contained within this report.

This report does not authorize any individuals to develop, fill or alter the wetlands delineated. Verification of the delineation by jurisdictional agencies is necessary prior to the use of this report for planning and development purposes. An agency stamped delineation map and jurisdictional

approval letter is required to signify confirmation of delineation results. In situations where a field investigation determines that no jurisdictional wetlands occur, jurisdictional concurrence with these findings is recommended.

8. References

California State Coastal Conservancy, 2014. Humboldt Bay DEM Project.

COLOR, M., 2000. Munsell Soil Color Charts: year 2000 revised washable edition. GretagMacbeth.

Federal Geographic Data Committee, 2013. Classification of Wetlands and Deepwater Habitats of the United States. Second Edition. Wetlands Subcommittee, Federal Geographic Data Committee and U.S. Fish and Wildlife Service, Washington, DC.

Eureka, California Climate Summary for the Month of January, 2017. Observed Weather Reports. National Weather Service Forecast Office, Eureka, California. Accessed April 27, 2017: https://www.weather.gov/climate/index.php?wfo=eka

GHD, 2014. Eel River Estuary Preserve (EREP) Ecosystem Enhancement Project Delineation of Uplands. July.

GHD, 2015. City of Eureka Waterfront Trail Phase C Updated Delineation of Wetlands. May.

Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2016. The National Wetland Plant List: 2016 wetland ratings. United States Army Corps of Engineers.

National Weather Service Yearly Precipitation Chart, Eureka CA, 2017. National Weather Service Forecast Office, Eureka, California. Accessed April 27, 2017: http://www.wrh.noaa.gov/climate/yeardisp.php?wfo=eka&stn=KEKA&submit=Yearly+Charts

U.S. Army Coprs of Engineers (USACE), 1987. Corps of Engineers Wetlands Delineation Manual. January.

USACE, 2010. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0). U.S. Army Corps of Engineers.

USDA/NRCS, 2016. Field Indicators of Hydric Soils in the United States, Version 8.0. L.M. Vasilas, G.W. Hurt, and J.F. Berkowitz (eds). United States Department of Agriculture (USDA) and Natural Resources Conservation Service (NRCS) in cooperation with the National Technical Committee for Hydric Soils.

Winzler & Kelly, 2010. Wetlands Delineation and Habitat Mapping Rail-with-Tail Connectivity Project, City of Arcata, Humboldt County, California. Winzler & Kelly, Eureka, CA.

Appendices

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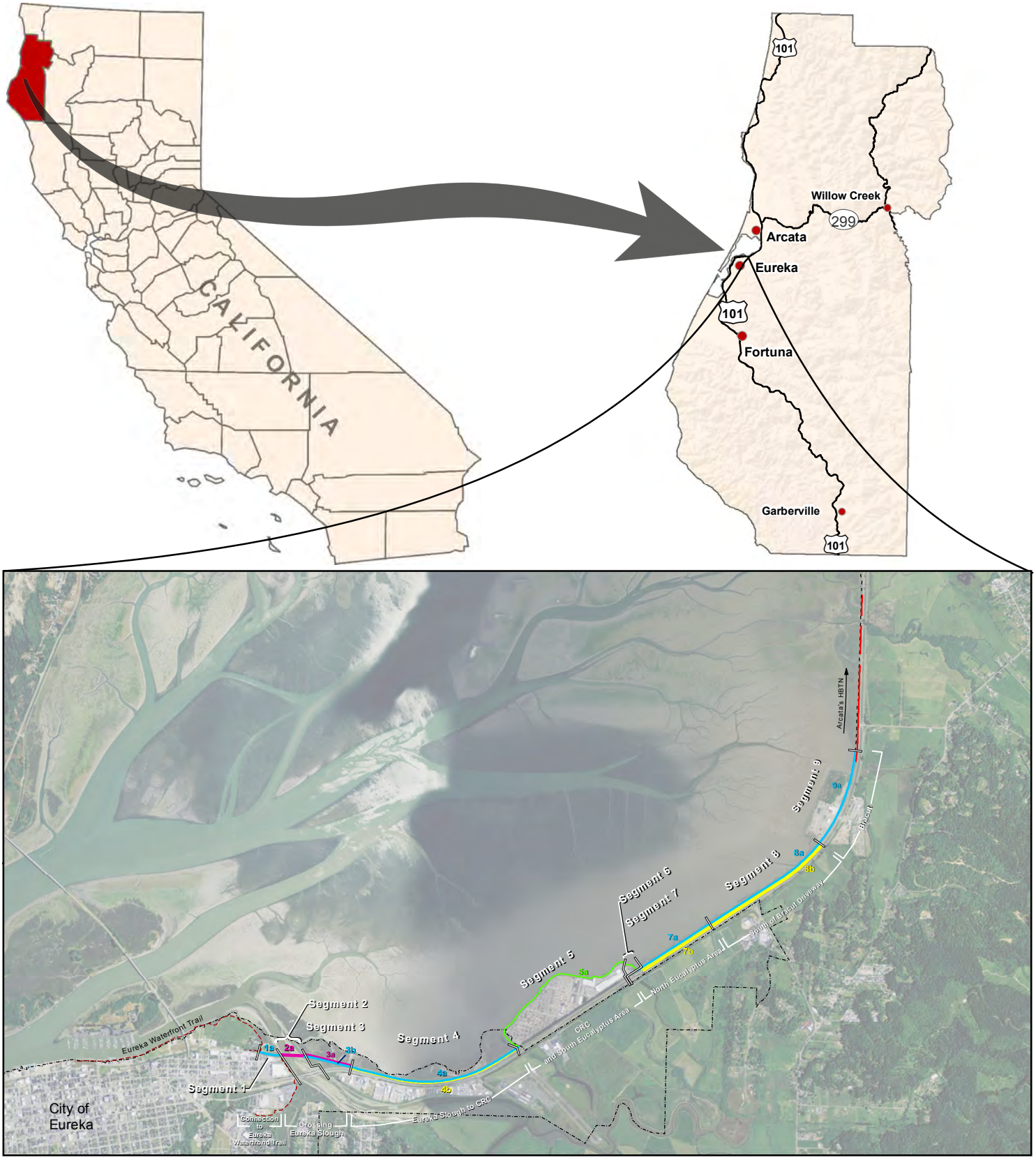
Appendix A – Figures

Figure 1 – Vicinity Map

Figure 2 – Wetland Delineation



TRAIL LOCATION TYPE

- NCRA RwT (N of tracks)
- NCRA RwT (S of tracks)
- On Railroad (temporary)
- Highway-with-Trail
- Private (CRC)
- Cable Railing - Humboldt Bay Trail North
- Segment Break

Trail Connections

- Eureka Waterfront Trail
- Humboldt Bay Trail North

Eureka City Limits

Paper Size 8.5" x 11" (ANSI A)
0 750 1,500 2,250 3,000
Feet
Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

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GHD

2a Alignment

"Text" Project Reach

Humboldt County Public Works Department
Humboldt Bay Trail - Bay Trail South
(Eureka to Bracut)

Job Number 11110166
Revision B
Date 25 Oct 2017

Vicinity Map

Figure 1

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Eureka Slough

X St

Y St

2nd St

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Paper Size ANSI B

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Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

N

Area of Potential Effect

1-parameter wetland

Willow series, dripline

3-parameter wetland

Estuarine Intertidal Emergent Ditch - with Spartina densiflora

Estuarine Intertidal Emergent Wetland - with Spartina densiflora

Estuarine Intertidal Unconsolidated Bottom

Estuarine Subtidal Unconsolidated Bottom

Palustrine Emergent Ditch

Humboldt County Public Works Department
Humboldt Bay Trail - Bay Trail South

Job Number 11110166
Revision H
Date 15 Nov 2017

Wetland Delineation

Figure 2-1

G:\111\11110166 Humboldt Bay Trail South PA&ED PS&E\08-GIS\Maps\Figures\Wetland_Delin\11110166_02_WetDelin_RevH.mxd

Data source: ESRI: aerial basemap; Caltrans: wetland delineation; GHD field survey, 11/17/2016. Created by:gldavidson

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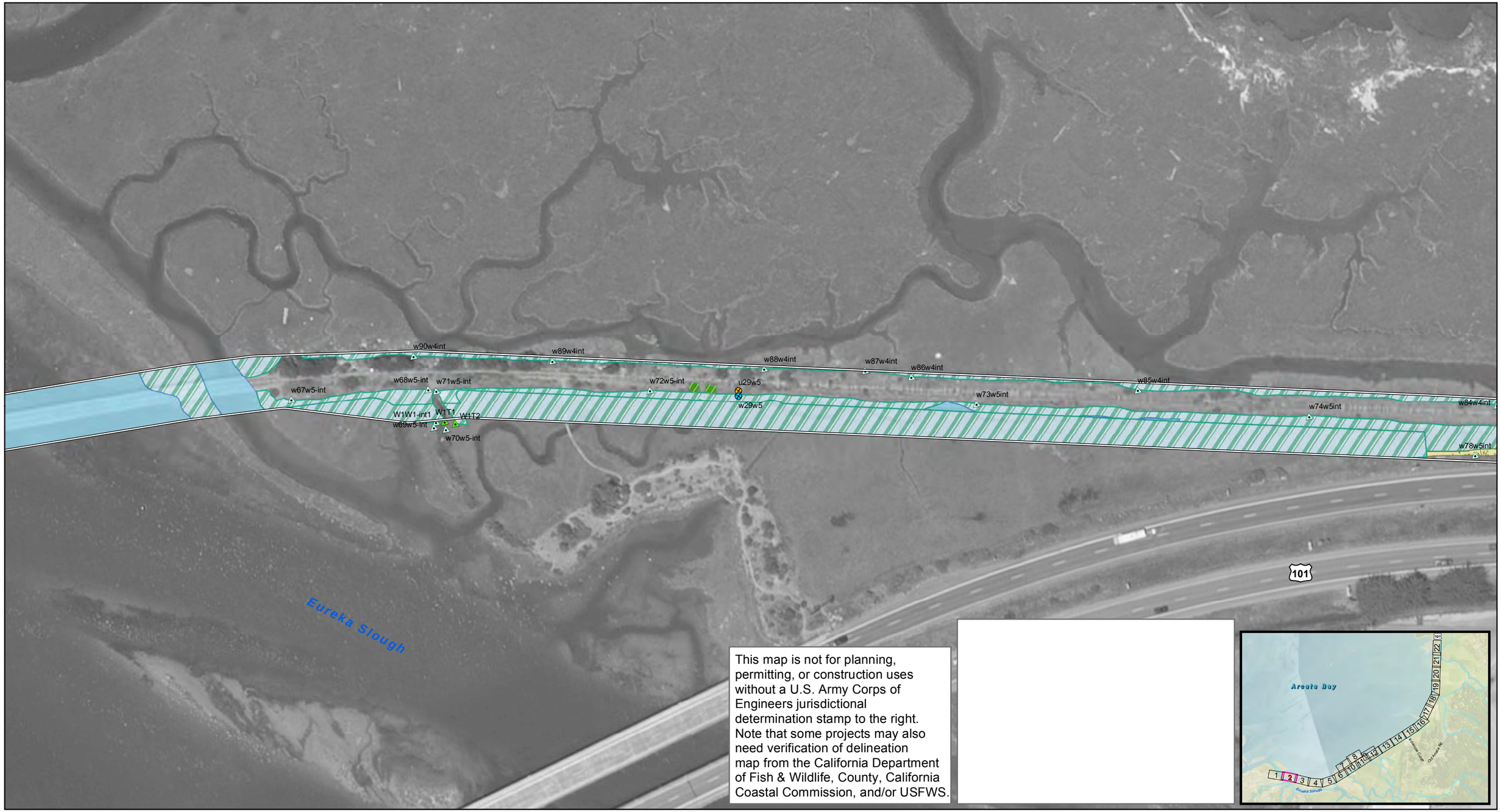

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Paper Size ANSI B

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Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

N

Area of Potential Effect

1-parameter wetland

Willow series, dripline

3-parameter wetland

Estuarine Intertidal Emergent Wetland - Native

Estuarine Intertidal Emergent Wetland - with Spartina densiflora

Estuarine Intertidal Unconsolidated Bottom

Field Data Points

Upland Test Pit

Wetland Test Pit

Wetland transect

Intermediate Data Point

Humboldt County Public Works Department
Humboldt Bay Trail - Bay Trail South

Job Number 11110166
Revision H
Date 15 Nov 2017

Wetland Delineation

Figure 2-2

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Data source: ESRI: aerial basemap; Caltrans: wetland delineation; GHD field survey, 11/17/2016. Created by:gldavidson

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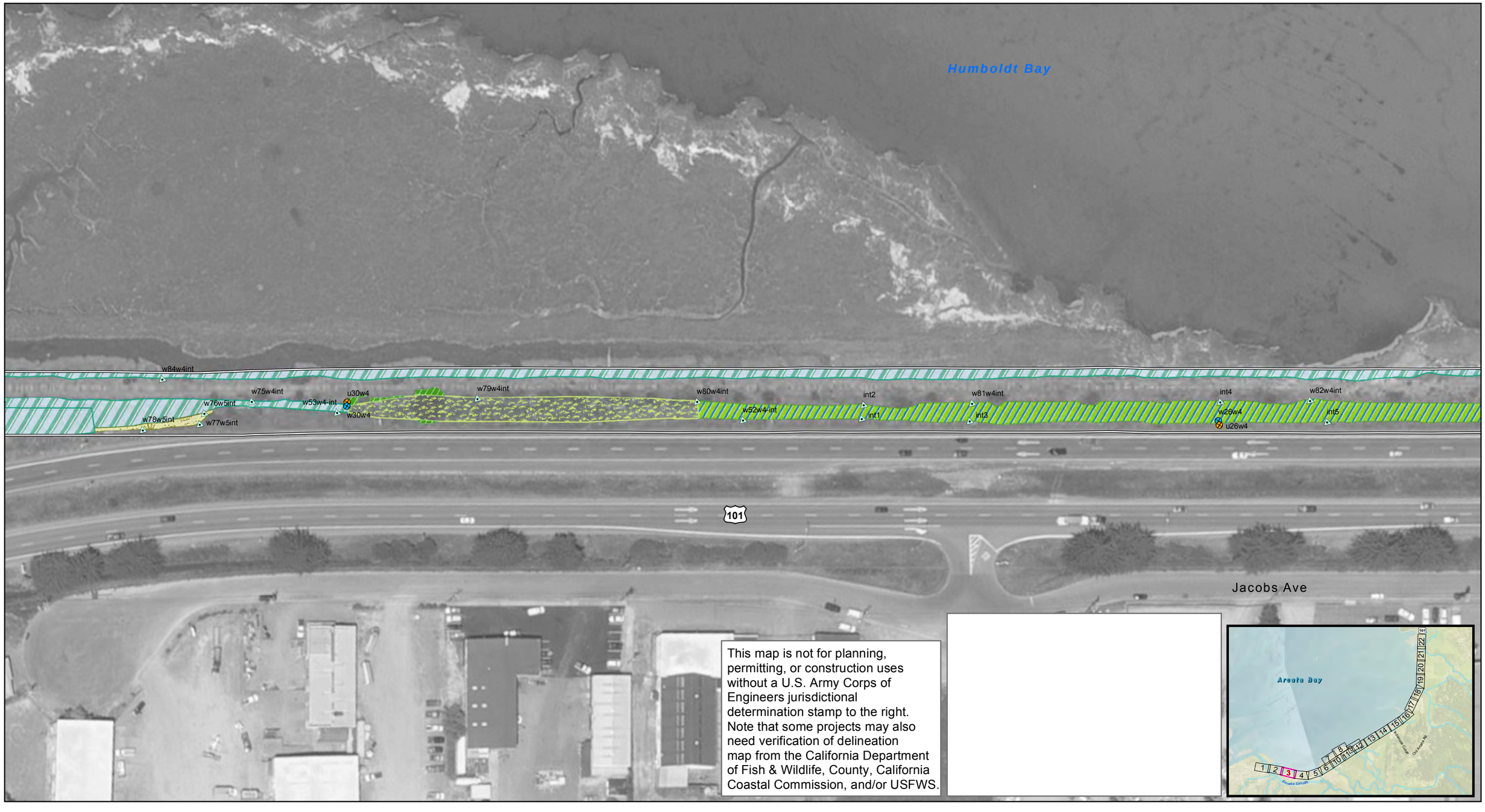

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Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
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N

Area of Potential Effect

1-parameter wetland

Willow series, dripline

3-parameter wetland

Estuarine Intertidal Emergent Ditch - with Spartina densiflora

Estuarine Intertidal Emergent Wetland - Native

Estuarine Intertidal Emergent Wetland - with Spartina densiflora

Palustrine Scrub-Shrub Wetland

Field Data Points

Upland Test Pit

Wetland Test Pit

Intermediate Data Point

Humboldt County Public Works Department
Humboldt Bay Trail - Bay Trail South

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Revision H
Date 15 Nov 2017

Wetland Delineation

Figure 2-3

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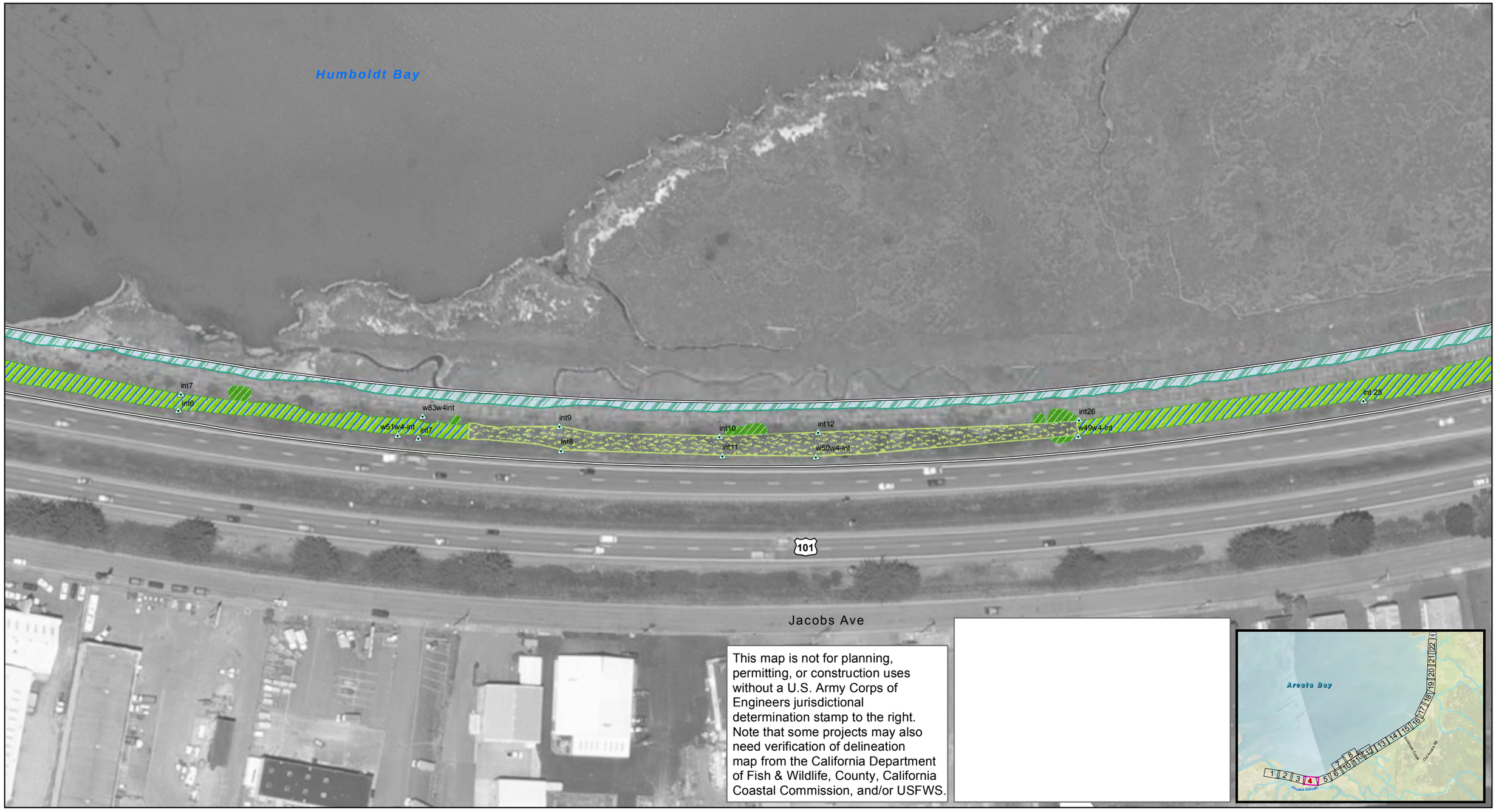

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Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
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N

Area of Potential Effect

1-parameter wetland

Willow series, dripline

3-parameter wetland

Estuarine Intertidal Emergent Ditch - with Spartina densiflora

Estuarine Intertidal Emergent Wetland - with Spartina densiflora

Palustrine Scrub-Shrub Wetland

Field Data Points

Intermediate Data Point

Humboldt County Public Works Department
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Date 15 Nov 2017

Wetland Delineation

Figure 2-4

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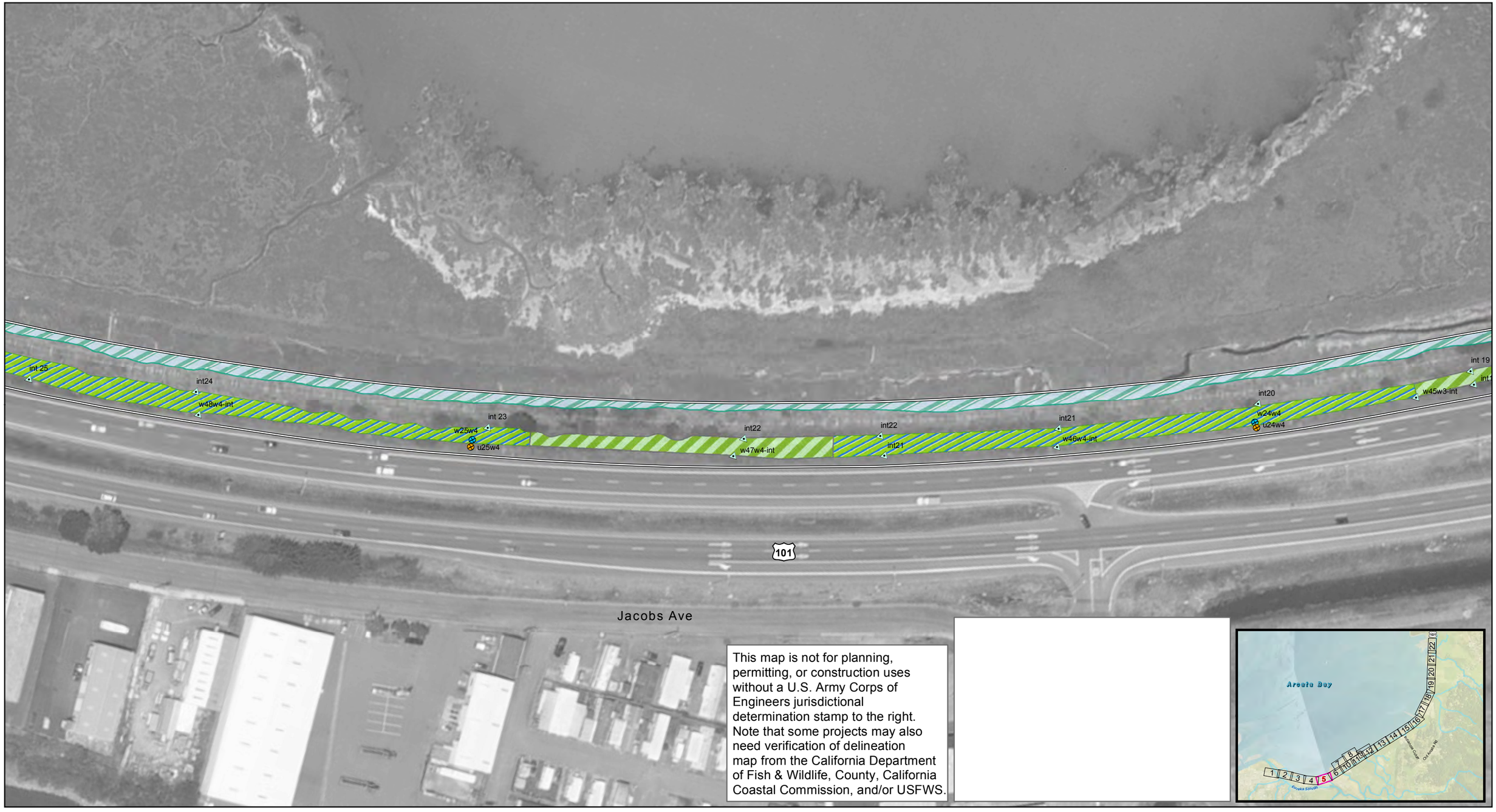

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Map Projection: Lambert Conformal Conic
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N

Area of Potential Effect

3-parameter wetland

Estuarine Intertidal Emergent Ditch - with Spartina densiflora

Estuarine Intertidal Emergent Wetland - with Spartina densiflora

Palustrine Emergent Ditch

Field Data Points

Upland Test Pit

Wetland Test Pit

Intermediate Data Point

Humboldt County Public Works Department
Humboldt Bay Trail - Bay Trail South

Job Number 11110166
Revision H
Date 15 Nov 2017

Wetland Delineation

Figure 2-5

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Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

Area of Potential Effect

Area not mapped

3-parameter wetland

- Estuarine Intertidal Emergent Ditch - with Spartina densiflora
- Estuarine Intertidal Emergent Wetland - Native
- Estuarine Intertidal Emergent Wetland - with Spartina densiflora
- Estuarine Intertidal Unconsolidated Bottom
- Palustrine Emergent Ditch

Field Data Points

- Upland Test Pit
- Wetland Test Pit
- Intermediate Data Point

Humboldt County Public Works Department
Humboldt Bay Trail - Bay Trail South

Job Number 11110166
Revision H
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Wetland Delineation

Figure 2-6

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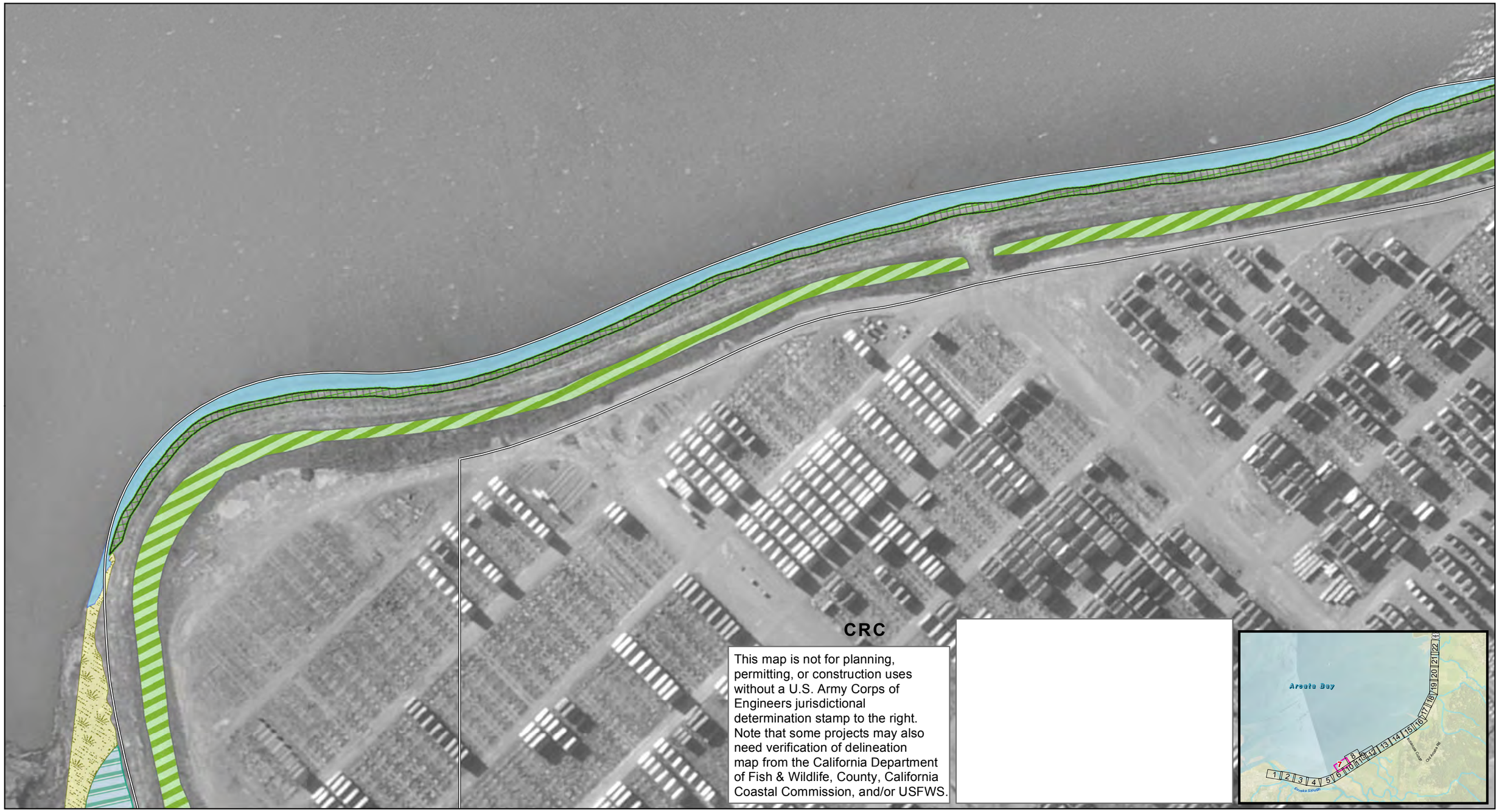

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Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
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Area of Potential Effect

3-parameter wetland

- Estuarine Intertidal Emergent Wetland - Native
- Estuarine Intertidal Emergent Wetland - with Spartina densiflora
- Estuarine Intertidal Rocky Shore
- Estuarine Intertidal Unconsolidated Bottom
- Palustrine Emergent Ditch

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Wetland Delineation

Figure 2-7

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Paper Size ANSI B

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Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

Area of Potential Effect

3-parameter wetland

Estuarine Intertidal Rocky Shore

Estuarine Intertidal Unconsolidated Bottom

Palustrine Emergent Ditch

Humboldt County Public Works Department
Humboldt Bay Trail - Bay Trail South

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Wetland Delineation

Figure 2-8

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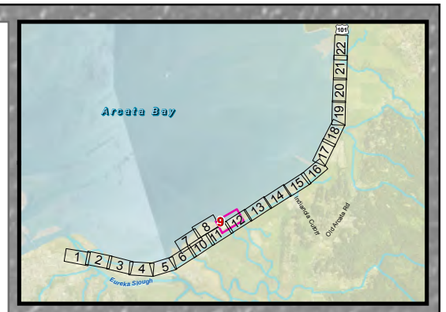

CRC

Area not mapped

int3

int2

Paper Size ANSI B

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Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

Area of Potential Effect

Area not mapped

1-parameter wetland

Juncus series

3-parameter wetland

Estuarine Intertidal Rocky Shore

Estuarine Intertidal Unconsolidated Bottom

Palustrine Emergent Ditch

Field Data Points

Intermediate Data Point

Humboldt County Public Works Department
Humboldt Bay Trail - Bay Trail South

Job Number 11110166
Revision H
Date 15 Nov 2017

Wetland Delineation

Figure 2-9

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Data source: ESRI: aerial basemap; Caltrans: wetland delineation; GHD field survey, 11/17/2016. Created by:gldavidson

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Paper Size ANSI B

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Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

N

Area of Potential Effect

Area not mapped

Humboldt County Public Works Department
Humboldt Bay Trail - Bay Trail South

Job Number 11110166
Revision H
Date 15 Nov 2017

Wetland Delineation

Figure 2-10

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Data source: ESRI: aerial basemap; Caltrans: wetland delineation; GHD field survey, 11/17/2016. Created by:gldavidson

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Paper Size ANSI B

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Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

Area of Potential Effect

Area not mapped

3-parameter wetland

Estuarine Intertidal Rocky Shore

Estuarine Intertidal Unconsolidated Bottom

Palustrine Emergent Ditch

Humboldt County Public Works Department
Humboldt Bay Trail - Bay Trail South

Job Number	11110166
Revision	H
Date	15 Nov 2017

Wetland Delineation

Figure 2-11

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Data source: ESRI: aerial basemap; Caltrans: wetland delineation; GHD field survey, 11/17/2016. Created by:gldavidson

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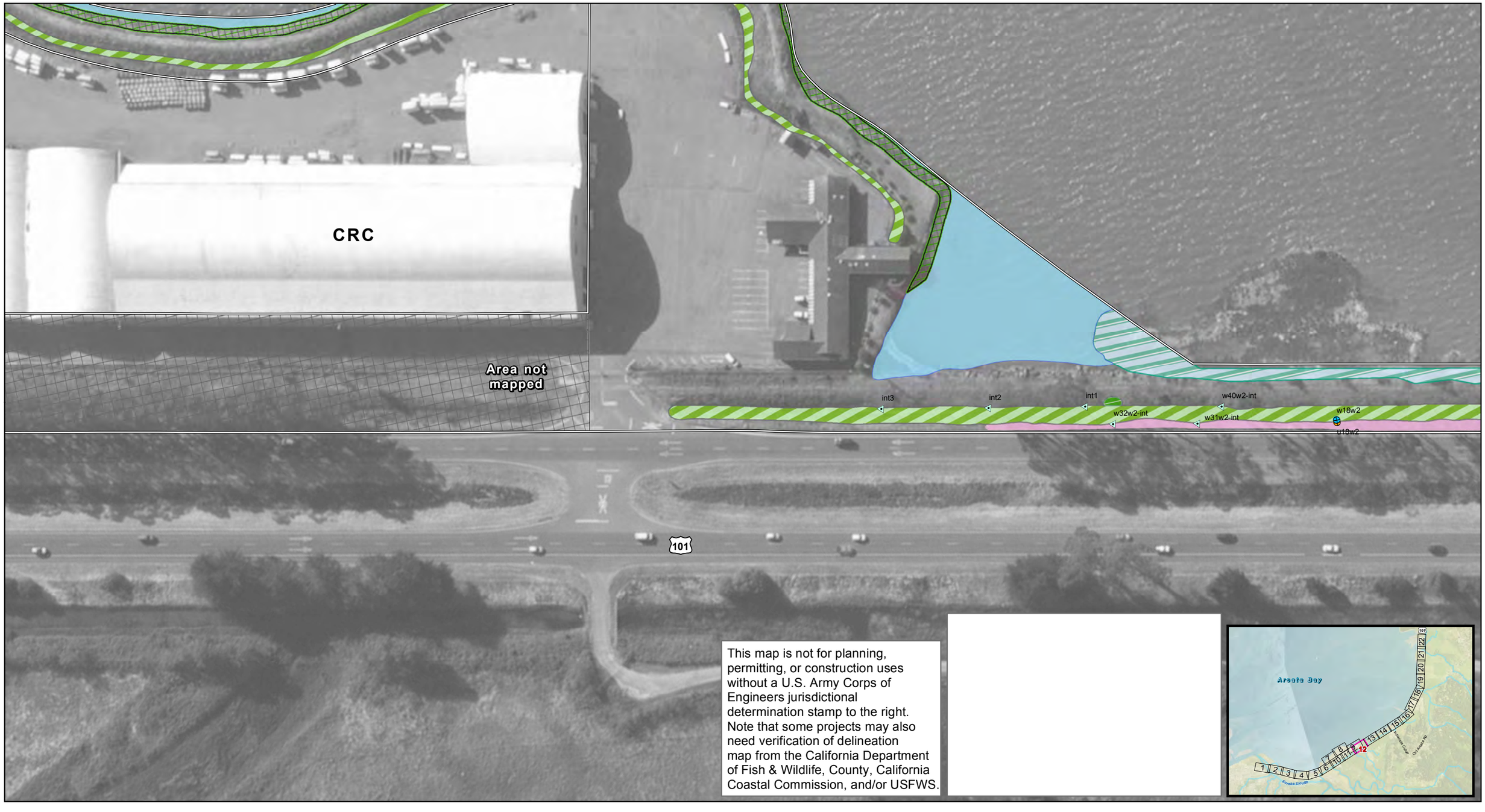

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Paper Size ANSI B

0 50 100 150 200

Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

Area of Potential Effect

Area not mapped

1-parameter wetland

Willow series, dripline

1-parameter wetland

Juncus series

3-parameter wetland

Estuarine Intertidal Emergent Wetland - with Spartina densiflora

Estuarine Intertidal Rocky Shore

Estuarine Intertidal Unconsolidated Bottom

Palustrine Emergent Ditch

Field Data Points

Upland Test Pit

Wetland Test Pit

Intermediate Data Point

Humboldt County Public Works Department
Humboldt Bay Trail - Bay Trail South

Job Number 11110166
Revision H
Date 15 Nov 2017

Wetland Delineation

Figure 2-12

G:\111\11110166 Humboldt Bay Trail South PA&ED PS&E\08-GIS\Maps\Figures\Wetland_Delin\11110166_02_WetDelin_RevH.mxd

Data source: ESRI: aerial basemap; Caltrans: wetland delineation; GHD field survey, 11/17/2016. Created by:gldavidson

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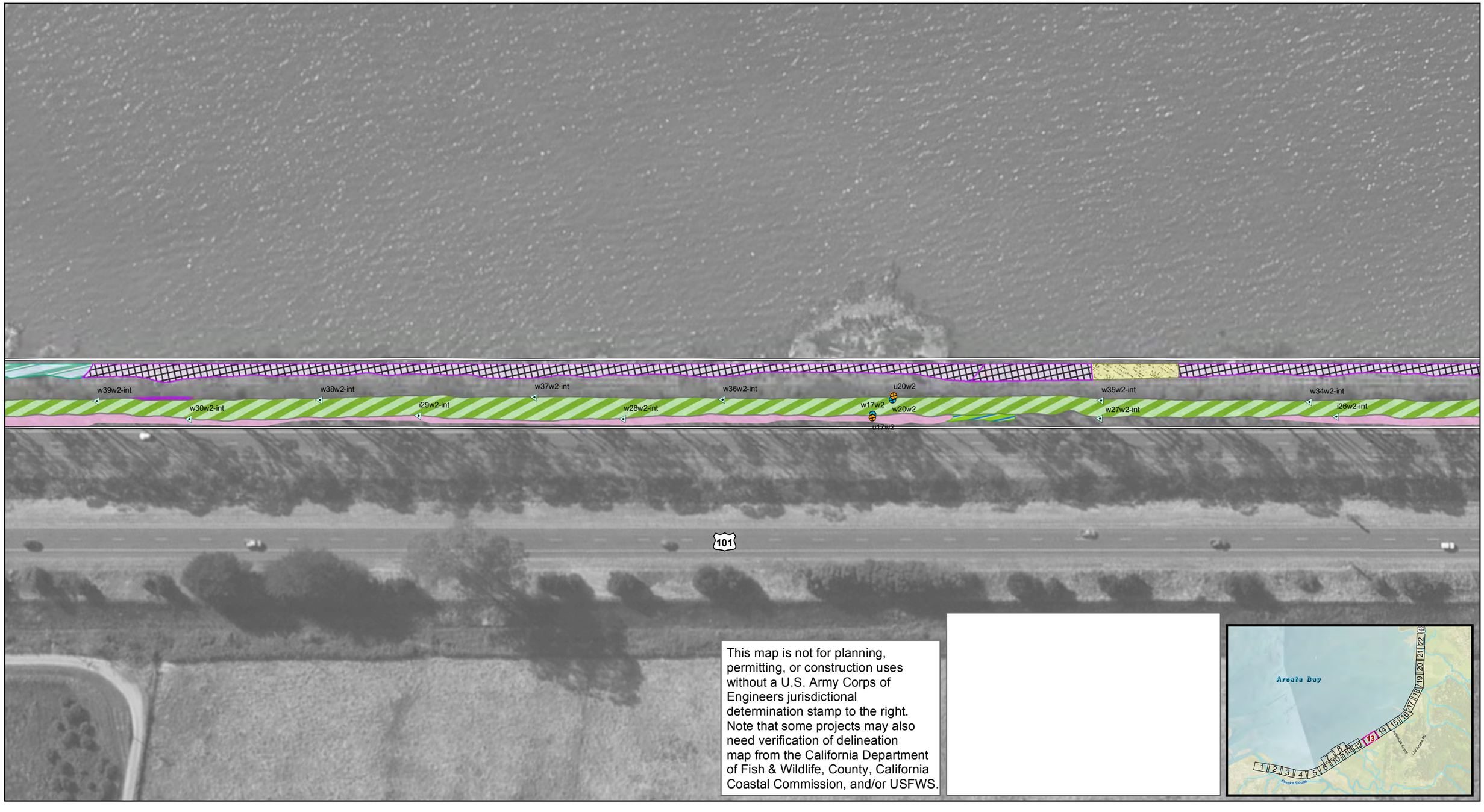

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Paper Size ANSI B

0 50 100 150 200

Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

Area of Potential Effect

1-parameter wetland

- Juncus series
- Deschampsia Series

3-parameter wetland

- Estuarine Intertidal Emergent Ditch - with Spartina densiflora
- Estuarine Intertidal Emergent Wetland - Native
- Estuarine Intertidal Emergent Wetland - with Spartina densiflora
- Estuarine Intertidal Rocky Shore - with Spartina densiflora
- Palustrine Emergent Ditch

Field Data Points

- Upland Test Pit
- Wetland Test Pit
- Intermediate Data Point

Humboldt County Public Works Department
Humboldt Bay Trail - Bay Trail South

Job Number 11110166
Revision H
Date 15 Nov 2017

Wetland Delineation

Figure 2-13

G:\111\11110166 Humboldt Bay Trail South PA&ED PS&E\08-GIS\Maps\Figures\Wetland_Delin\11110166_02_WetDelin_RevH.mxd

Data source: ESRI: aerial basemap; Caltrans: wetland delineation; GHD field survey, 11/17/2016. Created by:gldavidson

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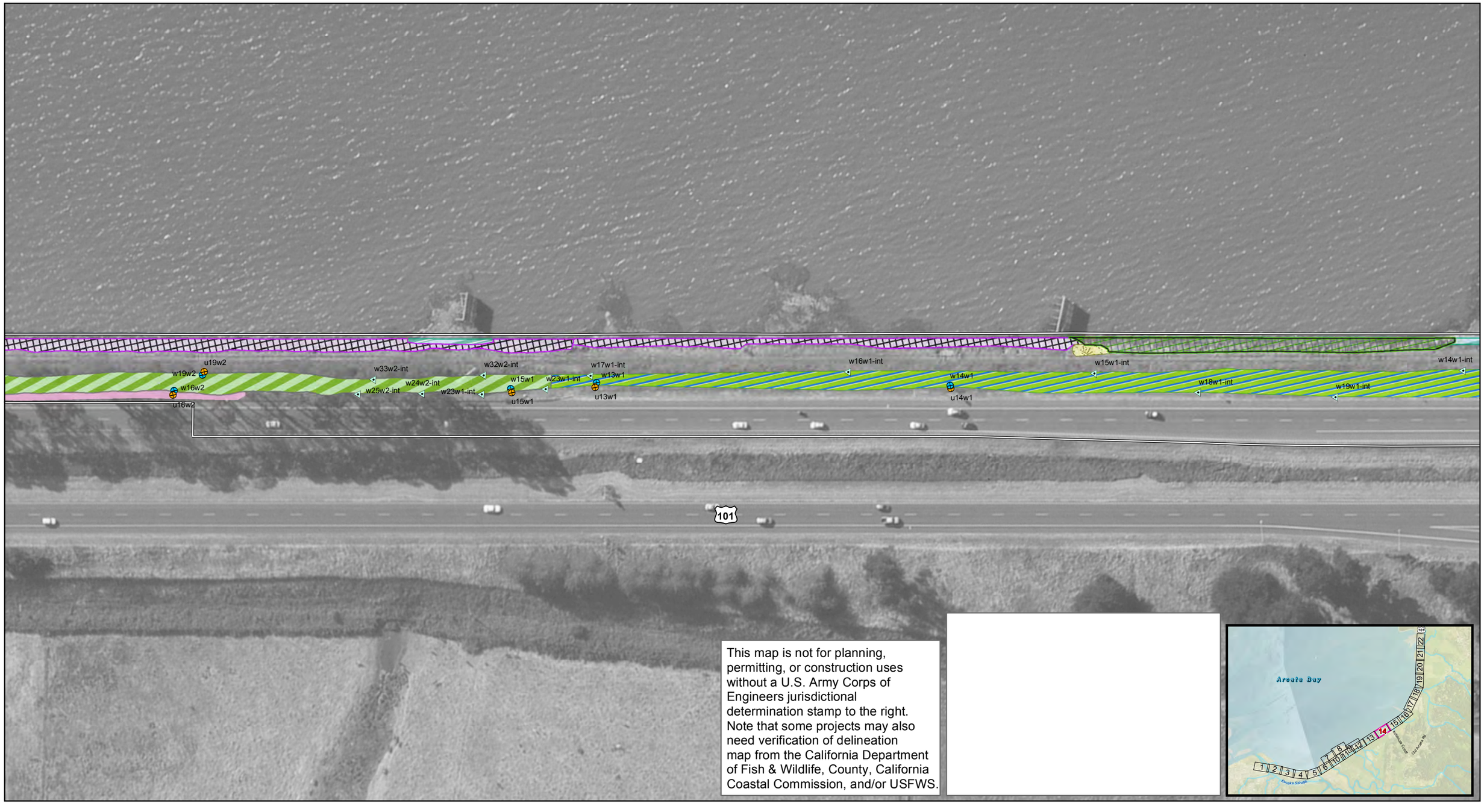

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Paper Size ANSI B

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Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

Area of Potential Effect

1-parameter wetland

- Juncus series

3-parameter wetland

- Estuarine Intertidal Emergent Ditch - with Spartina densiflora
- Estuarine Intertidal Emergent Wetland - Native
- Estuarine Intertidal Emergent Wetland - with Spartina densiflora
- Estuarine Intertidal Rocky Shore - with Spartina densiflora
- Estuarine Intertidal Rocky Shore
- Palustrine Emergent Ditch

Field Data Points

- Upland Test Pit
- Wetland Test Pit
- Intermediate Data Point

Humboldt County Public Works Department
Humboldt Bay Trail - Bay Trail South

Job Number 11110166
Revision H
Date 15 Nov 2017

Wetland Delineation

Figure 2-14

G:\111\11110166 Humboldt Bay Trail South PA&ED PS&E\08-GIS\Maps\Figures\Wetland_Delin\11110166_02_WetDelin_RevH.mxd

Data source: ESRI: aerial basemap; Caltrans: wetland delineation; GHD field survey, 11/17/2016. Created by:gldavidson

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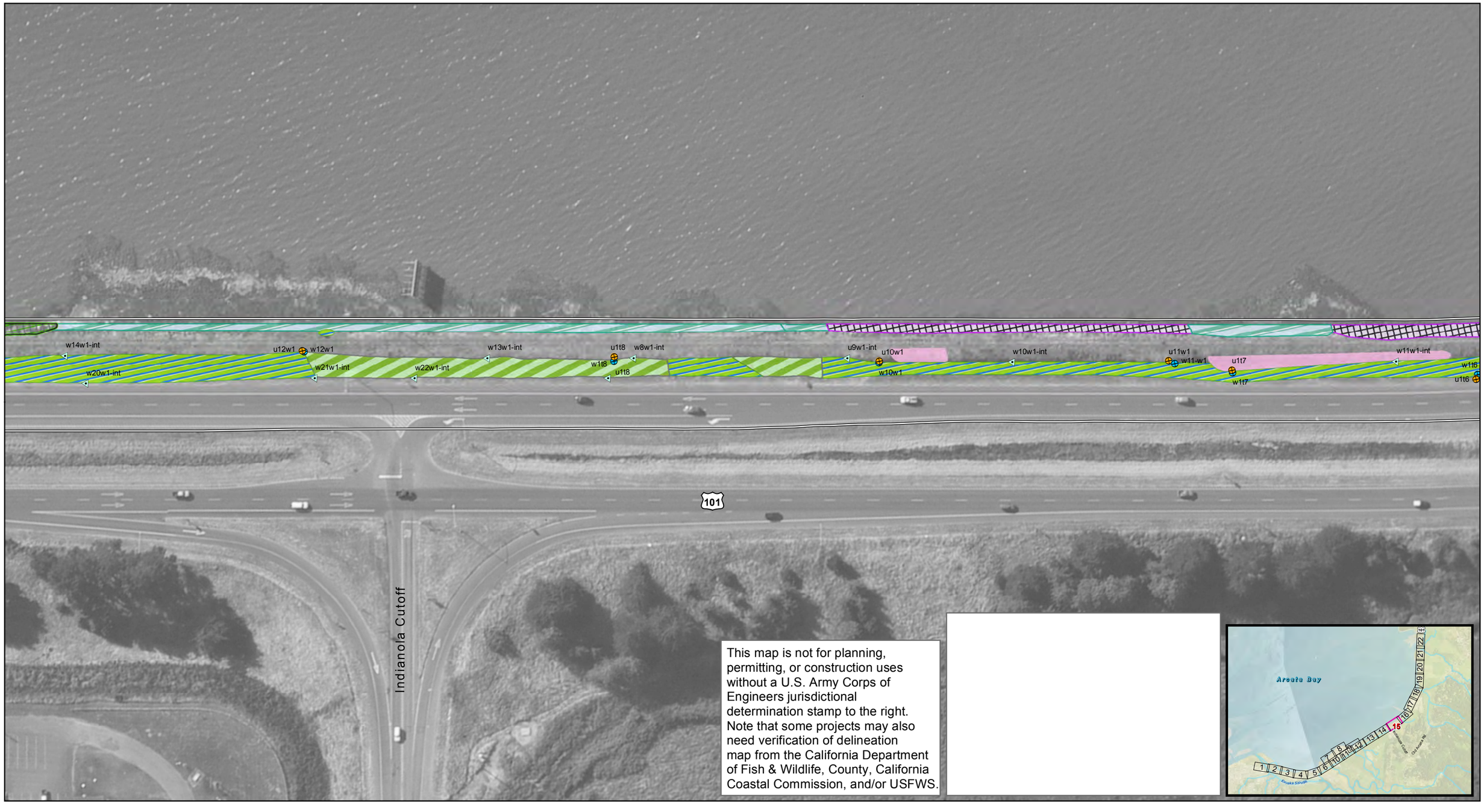

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Paper Size ANSI B

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Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

N

Area of Potential Effect

1-parameter wetland

Juncus series

3-parameter wetland

Estuarine Intertidal Emergent Ditch - with Spartina densiflora

Estuarine Intertidal Emergent Wetland - with Spartina densiflora

Estuarine Intertidal Rocky Shore - with Spartina densiflora

Estuarine Intertidal Rocky Shore

Palustrine Emergent Ditch

Field Data Points

Upland Test Pit

Wetland Test Pit

Intermediate Data Point

Humboldt County Public Works Department
Humboldt Bay Trail - Bay Trail South

Job Number 11110166
Revision H
Date 15 Nov 2017

Wetland Delineation

Figure 2-15

G:\111\11110166 Humboldt Bay Trail South PA&ED PS&E\08-GIS\Maps\Figures\Wetland_Delin\11110166_02_WetDelin_RevH.mxd

Data source: ESRI: aerial basemap; Caltrans: wetland delineation; GHD field survey, 11/17/2016. Created by:gldavidson

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Paper Size ANSI B

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Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

Area of Potential Effect

Area not mapped

1-parameter wetland

Juncus series

3-parameter wetland

Estuarine Intertidal Emergent Ditch - with Spartina densiflora

Estuarine Intertidal Emergent Wetland - with Spartina densiflora

Estuarine Intertidal Rocky Shore - with Spartina densiflora

Estuarine Intertidal Rocky Shore

Palustrine Emergent Ditch

Field Data Points

Upland Test Pit

Wetland Test Pit

Intermediate Data Point

Humboldt County Public Works Department
Humboldt Bay Trail - Bay Trail South

Job Number 11110166
Revision H
Date 15 Nov 2017

Wetland Delineation

Figure 2-16

G:\111\11110166 Humboldt Bay Trail South PA&ED PS&E\08-GIS\Maps\Figures\Wetland_Delin\11110166_02_WetDelin_RevH.mxd

Data source: ESRI: aerial basemap; Caltrans: wetland delineation; GHD field survey, 11/17/2016. Created by:gldavidson

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Area not Mapped

Bracut

w1w1-int
w2w1-int
u1t2
w1t2
w1t1
u1t1
w55w1-INT
w56w1-INT
w59w1-INT
w58w1-INT
w60w1-INT
W62W1INT
W63W1INT
W28W1
U28W1
W64W1INT
W65W1INT
W66W1INT

101

Paper Size ANSI B

0 50 100 150 200

Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

Area of Potential Effect
Area not mapped

3-parameter wetland
Estuarine Intertidal Emergent Wetland - with Spartina densiflora
Palustrine Emergent Ditch

Field Data Points
Upland Test Pit
Wetland Test Pit
Intermediate Data Point

Humboldt County Public Works Department
Humboldt Bay Trail - Bay Trail South

Job Number 11110166
Revision H
Date 15 Nov 2017

Wetland Delineation

Figure 2-17

G:\111\11110166 Humboldt Bay Trail South PA&ED PS&E\08-GIS\Maps\Figures\Wetland_Delin\11110166_02_WetDelin_RevH.mxd

Data source: ESRI: aerial basemap; Caltrans: wetland delineation; GHD field survey, 11/17/2016. Created by:gldavidson

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Area not Mapped

t93int
t91int
t92int
t89int
t90int
t45int
t44int
t87int
t87
t43int
t42int

Paper Size ANSI B

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Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

Area of Potential Effect

Area not mapped

1-parameter wetland

Willow series, dripline

2010 Wetland Delineation

3-parameter wetland

Estuarine Intertidal Emergent Ditch - with Spartina densiflora

Estuarine Intertidal Emergent Wetland - Native

Estuarine Intertidal Emergent Wetland - with Spartina densiflora

Estuarine Intertidal Rocky Shore

Estuarine Intertidal Unconsolidated Bottom

Palustrine Emergent Ditch

Palustrine Emergent Wetland

Humboldt County Public Works Department
Humboldt Bay Trail - Bay Trail South

Job Number 11110166
Revision H
Date 14 Dec 2017

Wetland Delineation

Figure 2-18

G:\111\11110166 Humboldt Bay Trail South PA&ED PS&E\08-GIS\Maps\Figures\Wetland_Delin\11110166_02_WetDelin_RevH.mxd

Data source: ESRI: aerial basemap; Caltrans: wetland delineation; GHD field survey, 11/17/2016. Created by:gldavidson

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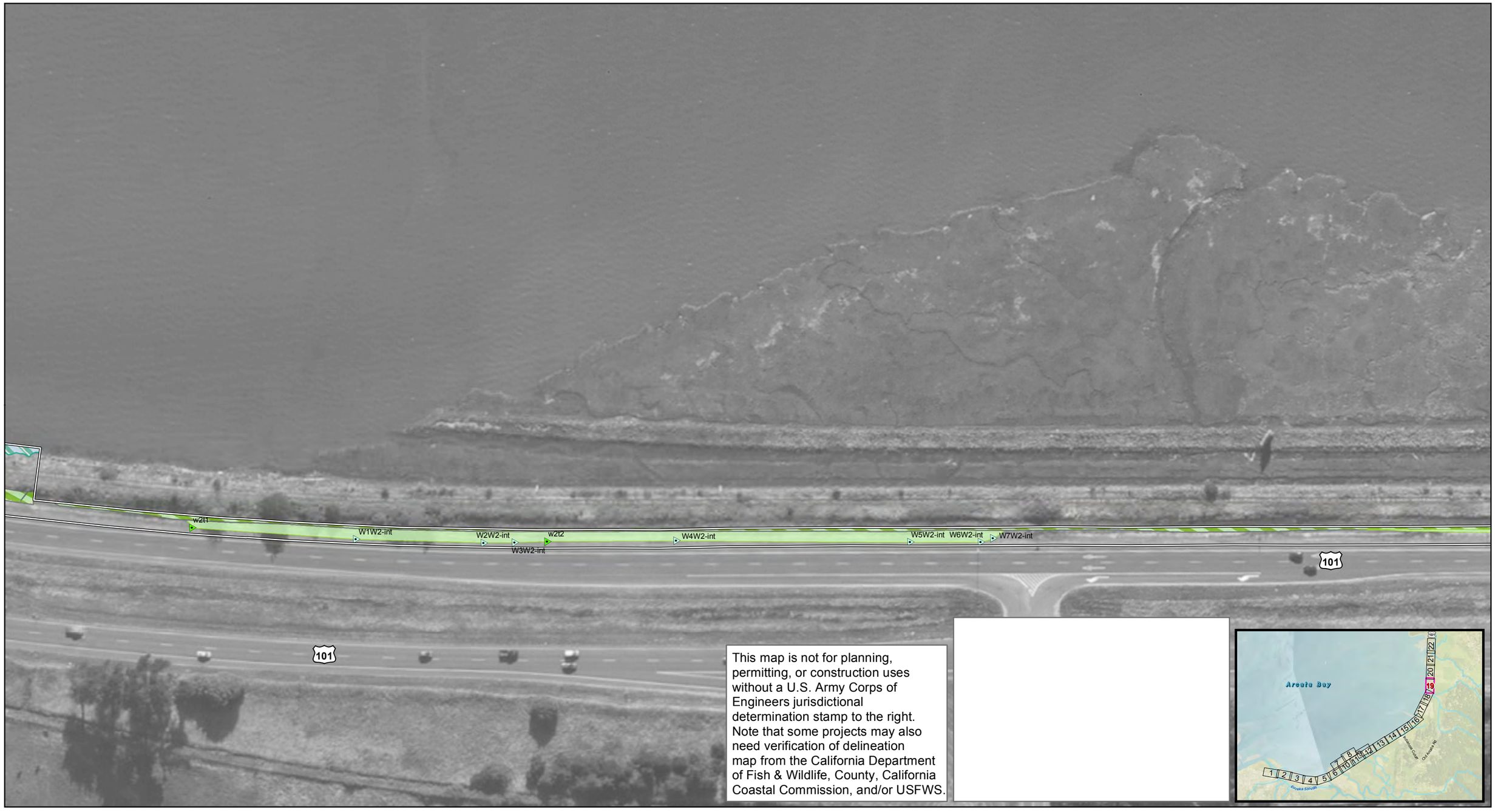

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Paper Size ANSI B

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Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

N

Area of Potential Effect

3-parameter wetland

Estuarine Intertidal Emergent Wetland - with Spartina densiflora

Palustrine Emergent Ditch

Palustrine Emergent Wetland

Field Data Points

Wetland transect

Intermediate Data Point

Humboldt County Public Works Department
Humboldt Bay Trail - Bay Trail South

Job Number 11110166
Revision H
Date 15 Nov 2017

Wetland Delineation

Figure 2-19

G:\111\11110166 Humboldt Bay Trail South PA&ED PS&E\08-GIS\Maps\Figures\Wetland_Delin\11110166_02_WetDelin_RevH.mxd

Data source: ESRI: aerial basemap; Caltrans: wetland delineation; GHD field survey, 11/17/2016. Created by:gldavidson

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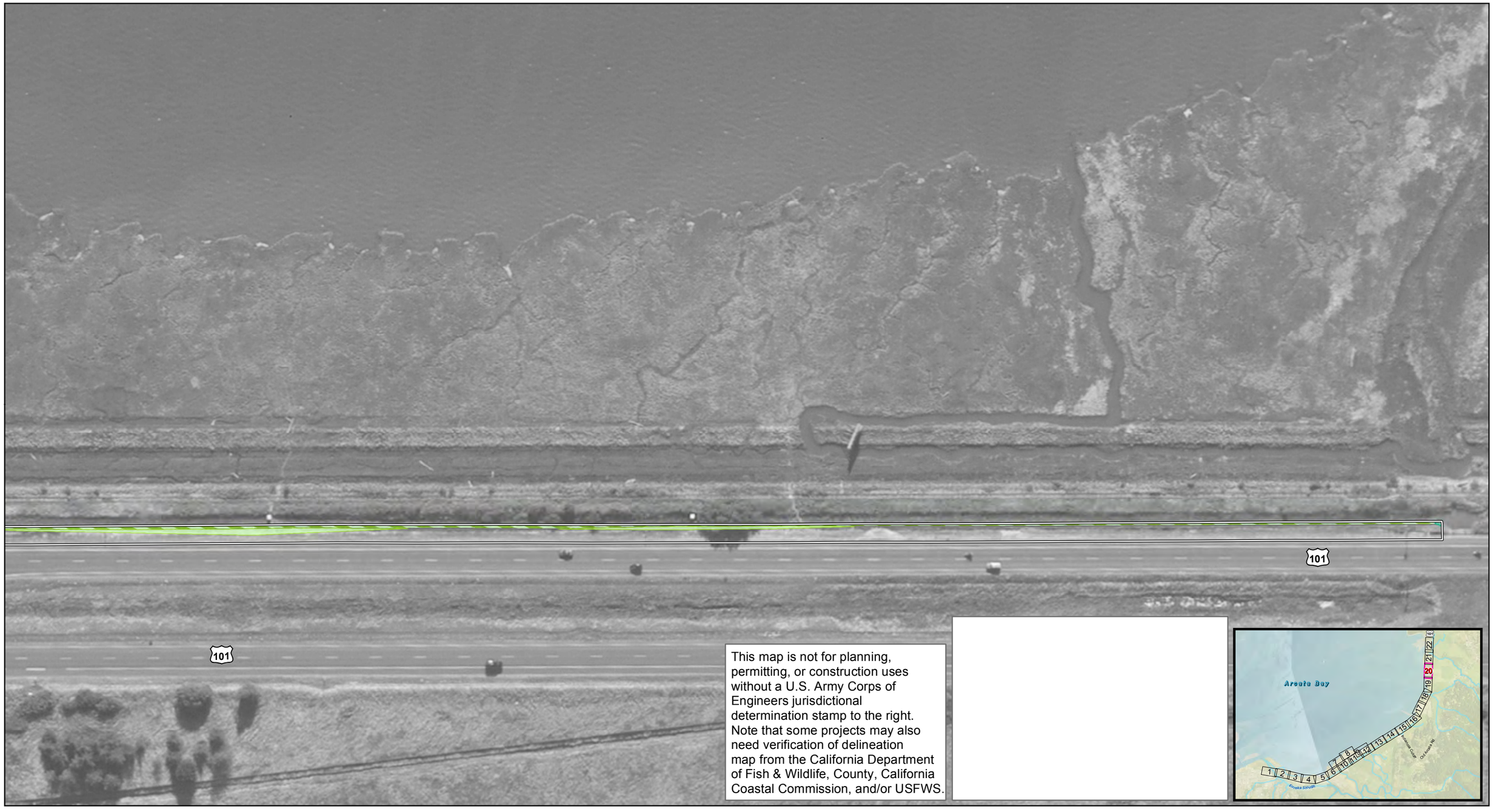

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Paper Size ANSI B

0 50 100 150 200

Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

N

Area of Potential Effect

3-parameter wetland

Estuarine Intertidal Emergent Wetland - with Spartina densiflora

Palustrine Emergent Ditch

Palustrine Emergent Wetland

Humboldt County Public Works Department
Humboldt Bay Trail - Bay Trail South

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Revision H
Date 15 Nov 2017

Wetland Delineation

Figure 2-20

G:\111\11110166 Humboldt Bay Trail South PA&ED PS&E\08-GIS\Maps\Figures\Wetland_Delin\11110166_02_WetDelin_RevH.mxd

Data source: ESRI: aerial basemap; Caltrans: wetland delineation; GHD field survey, 11/17/2016. Created by:gldavidson

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Paper Size ANSI B

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Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

N

Area of Potential Effect

3-parameter wetland

Estuarine Intertidal Emergent Wetland - with Spartina densiflora

Palustrine Emergent Ditch

Palustrine Emergent Wetland

Humboldt County Public Works Department
Humboldt Bay Trail - Bay Trail South

Job Number	11110166
Revision	H
Date	15 Nov 2017

Wetland Delineation

Figure 2-21

G:\111\11110166 Humboldt Bay Trail South PA&ED PS&E\08-GIS\Maps\Figures\Wetland_Delin\11110166_02_WetDelin_RevH.mxd

Data source: ESRI: aerial basemap; Caltrans: wetland delineation; GHD field survey, 11/17/2016. Created by:gldavidson

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Gannon Slough

101

101

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Paper Size ANSI B

0 50 100 150 200

Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

N

Area of Potential Effect

3-parameter wetland

Estuarine Intertidal Emergent Wetland - Native

Estuarine Intertidal Emergent Wetland - with Spartina densiflora

Palustrine Emergent Ditch

Palustrine Emergent Wetland

Humboldt County Public Works Department
Humboldt Bay Trail - Bay Trail South

Job Number	11110166
Revision	H
Date	15 Nov 2017

Wetland Delineation

Figure 2-22

G:\111111110166 Humboldt Bay Trail South PA&ED PS&E\08-GIS\Maps\Figures\Wetland_Delin\11110166_02_WetDelin_RevH.mxd

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Appendix E Botanical Memorandum

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Memorandum

15 November 2017

To	Hank Seeman (Director), Public Works Department, County of Humboldt, 1106 Second Street, Eureka, CA 95501		
Copy to	Josh Wolf (Project Manager), GHD Inc.		
From	Lia Webb (Ecologist) and Amy Livingston (Botanist) GHD Inc.	Tel	707.443.8326
Subject	Botanical Survey Technical Memorandum for the Humboldt Bay Trail South, County of Humboldt Public Works Department, Eureka, CA	Job no.	111-10166.04 (Task 4.3)

1 Introduction

This Technical Memorandum reports results of the 2017 special status plant surveys, and supporting plant surveys conducted to date, in the area of the proposed Humboldt Bay Trail South (HBTS) project. The area of investigation is in Humboldt County, California (Figure 1, Attachment 1). Results of the plant surveys are presented on Figures 2-1 through 2-22.

1.1 Purpose

The purpose of this evaluation was to conduct seasonally appropriate surveys for state, federal, and other sensitive listed plant species in the proposed project area. The surveys attempted to identify all vascular plants within the study area and to document the presence of special status plants within the project footprint, immediately adjacent, and within temporary construction impact areas. The results will be used for planning, design, to avoid or mitigate impacts associated with project construction, and guide future management decisions.

1.2 Location

The proposed multi-use trail project site spans approximately four linear miles along the North Coast Railroad Authority (NCRA) and Caltrans Highway 101 corridor between Bracut and Eureka (Figure 1). An additional area was added to the Project Study Boundary (PSB) within the Humboldt Bay Trail North/Arcata Rail-with-Trail project to accommodate the installation of a barrier that will parallel Highway 101 in locations that currently lack a barrier. The trail would follow the margin of Humboldt Bay between Bracut Industrial Park (south of the City of Arcata) extending south to the City of Eureka east of Y and 2nd Streets. The PSB is partially within the boundary of the City of Eureka, and partially within unincorporated areas of Humboldt County. The site corresponds to portions of Sections 17, 18, 22, 23 and 24, Township 5 North, Range 1 West on the USGS 7.5 Minute Eureka and Arcata South quadrangles.

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1.3 Environmental Setting

The project study area consists of level to slightly undulating areas that run parallel to the Northwest Pacific Railroad which is managed by the North Coast Railroad Authority (NCRA). Elevations within the study area range from -5 feet to 10 feet (North American Vertical Datum 1988 [NAVD 88]). The approximate High Tide Line [HTL] in the vicinity of the study area is 9.2 feet (NAVD 88) based on observed maximum high tide for 2016.

The project alignment runs parallel to and crosses the Eureka Slough which is a tributary to Humboldt Bay. Adjacent to the rail line are salt marsh and mud flats that adjoin to the marine terrace of the Bay. Estuarine salt marsh areas present at the margins of Humboldt Bay and Eureka Slough are subject to tidal inundation with some fresh water influence when located within tidal parts of creek mouths/estuaries. These areas are exposed at low tides and some high tides depending on elevation. This vegetation type contains herbaceous halophytes forming moderate to dense cover.

The area is characterized by high rainfall and summer fog supporting coastal vegetation and occurs within the Northwestern California Region (NW) and North Coast Subregion (NCo) (Baldwin et al. 2012). The project area consists of a mix of plant communities including pickleweed mats (*Sarcocornia pacifica* Herbaceous Alliance), coyote brush scrub (*Baccharis pilularis* Shrubland Alliance), coastal dune willow thickets (*Salix hookeriana* Shrubland Alliance) and ruderal velvet grass and sweet vernal grass meadows (*Holcus lanatus-Anthoxanthum odoratum* Semi-Natural Herbaceous Stands) along the rail bank edges and Highway 101 shoulder. A row of mature blue gum eucalyptus trees (*Eucalyptus globulus*) extends for approximately 1.5 miles adjacent to the Highway 101.

1.4 Project Summary

The Humboldt Bay Trail South (Eureka to Bracut) proposed Class I bike path and the barrier for Humboldt Bay Trail North/Arcata Rail-with-Trail project are needed because the stretch of US Highway 101 between Eureka and Arcata does not adequately provide safe access for non-motorized modes of transportation. The trail will serve as both a non-motorized transportation/commuter corridor and a recreational facility. The proposed project includes the construction of a new Class I multi-use trail, viewing areas and interpretive signs, drainage improvements, fencing, trailheads, lighting, and landscaped buffers. The standard trail width for the project will be 10 feet of asphalt with two 2-foot gravel shoulders. The trail alignment passes through public and private properties.

2 Regulatory Setting

2.1 State Jurisdiction

2.1.1 State-Listed Species

Special status plant species under State jurisdiction include those listed as endangered, threatened, or as candidate species by the California Department of Fish and Wildlife (CDFW) under the the California Endangered Species Act (CESA). Plant species on California Native Plant Society's (CNPS) California Rare Plant Ranking (CRPR) Lists 1A, 1B and 2 are considered eligible for state listing as Endangered or Threatened pursuant to the California Fish and Game Code and CDFW has oversite of these special status plant species as a trustee agency. As part of the CEQA process, such species should be considered as they

meet the definition of Threatened or Endangered under Sections 2062 and 2067 of the California Fish and Game Code. CRPR List 3 and 4 plants do not have formal protection under CEQA. CDFW publishes and periodically updates lists of special status species which include, for the most part, the above categories.

Additionally, there are 64 plant species designated as “rare” which is a special designation created before plants were rolled into CESA in the 1980s (CDFW 2017a). A project is required to have a “Scientific, Educational, or Management Permit” from CDFW for activities that would result in “take,” possession, import, or export of state-listed plant species including research, seed banking, reintroduction efforts, habitat restoration, and other activities relating to any plant designated SE (State endangered), ST (State threatened), SR (State rare), or SC (State candidate for listing).

2.2 Federal Jurisdiction

2.2.1 Federal-Listed Species

Special status animal and plant species under Federal jurisdiction include those listed as endangered, threatened, or as candidate species by the Fish and Wildlife Service (USFWS) under the U.S. Endangered Species Act (ESA).

2.2.2 Critical Habitat

Critical Habitat is defined by the ESA as a specific geographic area containing features essential for the conservation of an endangered or threatened species. The ESA requires consultation with USFWS by federal lead agencies for activities they carry out, authorize, or fund. Under Section 7 of the ESA, critical habitat Federally designated for a listed or proposed species that may be present in project Action Area should be evaluated.

3 Methods

3.1 Project Study Boundary / Action Area

Prior to conducting environmental field work, the project scientist worked in coordination with the project engineer and the applicant to develop the limits of the project study boundary (PSB), also known in some regulatory settings as the Action Area. The PSB is a terminology adopted from definitions and permit procedures promulgated by the U.S. Army Corps of Engineers (USACE). For the purposes of this report, the PSB terminology is synonymous with the Action Area utilized by other federal agencies such as the USFWS. The PSB (i.e. Action Area) is designated on a project specific basis, and as feasible, to take into consideration potential alternate layouts of project, fill/cut slopes, temporary impact areas and/or adjacent areas if feasible, access, new or modified utilities and right of ways, and adjacent areas that may be feasibly included in the study. The PSB may be modified on a project-specific basis according to such issues as private property ownerships, access constraints, and areas excluded from project use. For the purposes of this study and field survey, the 2017 PSB includes (as shown on Figures 2-1 through 2-22):

A. Approximately four linear miles along Humboldt Bay between Bracut Industrial Park and the City of Eureka, and an additional 4,855’ section adjacent to the edge of pavement of highway 101 where a cable barrier will be installed within the Humboldt Bay Trail North/Arcata Rail-with-Trail project.

B. PSB has a variable width to allow for standard trail width of 10 feet with two 2-foot gravel shoulders, fill slopes, bridge footings, adjacent areas used during construction, construction access, staging, and the general locations listed below.

C. The PSB is generally along the northeast perimeter of Humboldt Bay, northwest of Highway 101, and southeast of the railroad.

D. The majority of the HBTS project is proposed to be located between the Highway 101 and NCRA railroad.

E. To the north, the trail is planned to be aligned in front of the Bracut Industrial Park, and the PSB width varies from 70 to 100 feet (Figure 2-17 and 2-18) in this area as designated by the Project Engineer.

F. The trail alignment continues southwest along Highway 101, with a PSB width of 70-80 feet.

G. At the approach to the former California Redwood Company (CRC) site, the PSB widens to over 400 feet to allow for a variety of potential alignments and/or a possible bridge over marshlands and staging area (Figure 2-12).

H. The trail is planned to then extend along the outer perimeter of the former CRC property (80-100 feet wide along the outer berm of CRC) as shown on Figures 2-7, 2-8, and 2-9. At the southwest end of CRC the PSB widens again to up to 400 foot width to allow alignment options to return to the highway and railroad alignment (Figures 2-6 and 2-7).

I. The PSB continues along the Highway 101 and railroad corridor with width of approximately 60-70 feet wide.

J. At the Eureka Slough crossing at the entrance to the City of Eureka, the trail is expected to cooperatively occupy the NCRA bridge and portions of the adjacent rail prism. The PSB here is 60-90 feet wide (Figures 2-1 and 2-2).

In addition to the PSB described above, after the initial 2017 botanical surveys an additional area was added to the PSB within the Humboldt Bay Trail North/Arcata Rail-with-Trail project. This area was added to the PSB to accommodate the installation of a cable barrier that will parallel Highway 101 in locations that currently lack a barrier. The additional area is approximately 20’ wide from edge of pavement by 4,855’ in length. Seasonally appropriate botanical surveys for the entire Humboldt Bay Trail North/Arcata Rail-with-Trail project were completed on 5/28/10 and 7/21/10. The 2010 surveys mapped Humboldt Bay owl’s clover and Pt. Reyes bird’s beak within the PSB for the Humboldt Bay Trail North/Arcata Rail-with-Trail project, however no special status plant species were found within the areas that are now part of the PSB for the Humboldt Bay Trail South (the areas for guardrail installation). The additional PSB area added for guardrail installation was also surveyed on 9/28/17.

3.2 Pre-Survey Research

Prior to field surveys, a scoping list of CRPR plant species with recorded occurrences or likelihood to occur in the project vicinity was compiled by consulting the *California Natural Diversity Database* (CNDDB) [CDFW 2017b], the CNPS *Inventory of Rare and Endangered Vascular Plants* (CNPS 2017), and list of Federally listed plants maintained by the U.S. Fish and Wildlife Service (USFWS 2017). The CNDDB database and CNPS Inventory were also queried for CRPR List 3 and 4 plant species known to occur within the county for

informational purposes while conducting field surveys, although those species are not presented on the scoping list herein unless observed during botanical surveys. The scoping list prepared includes special status plants that occur in habitat similar to the project area and/or with documented occurrences in the project vicinity. The scoping list can also contains other taxa that may occur in the project area whose habitat is suitable if the project is within or near the known range of the species.

The CDFW and the CNPS recommend an assessment area for a project be a minimum of nine USGS quadrangles with the project study boundary (PSB) located in the central quad. The assessment area was defined as the USGS 7.5' minute quadrangles in which the project is located and the surrounding quadrangles (Eureka, Arcata South, Arcata North, Tyee City, Cannibal Island, Fields Landing, McWhinney Creek, Blue Lake, Korbel, and Iaqua Buttes USGS 7.5' quadrangles).

Relevant literature was reviewed, including sensitive species reports, recovery plans, status reports, published articles, and previous regulatory review documents, when available. Where appropriate, the Consortium of California Herbaria database was consulted for site specific species cross reference of rare plant occurrences documented in the project vicinity. Topographic maps and aerial photography were also consulted prior to and during the survey to determine potential habitats for target sensitive plant species occurrence. When available, Geographic Information System (GIS) data was overlaid with the project site.

Critical habitat for federally-listed plant species as designated by USFWS was evaluated as to whether it is designated in the PSB/Action Area (USFWS 2017).

3.3 Survey Methodology

Survey(s) to determine the presence of special status plant species (listed as rare, threatened, endangered, or candidate for rare, threatened, or endangered species listing under the State or Federal Endangered Species Acts, CNPS, or species of local importance) were generally conducted at the appropriate blooming or active period for each species. The one exception to this is the small additional area added to the PSB for the barrier location along HBTN/Arcata Rail-with-Trail, which was added to the PSB after the initial botanical survey and was surveyed on September 28, 2017. To ensure appropriate timing of field surveys, resource agencies and/or local experts were contacted if possible, prior to field survey, to confirm appropriate survey period to allow for climatic micro-variations and bloom period for specific species on a year-to-year basis. Additionally, reference site(s) were briefly visited if possible, where survey target species are known to occur in the project area to verify if the target species were visible and blooming at the time of surveys. Plant phenology for each target species was used to determine the timing of the botanical survey.

The plant survey was floristic in nature following *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* by the California Natural Resource Agency (CDFW 2009) and *General Rare Plant Survey Guidelines* by the Endangered Species Recovery Program (Cypher 2002). An intuitively controlled survey was conducted that sampled and identified potential habitat(s). Plants were identified to the lowest taxonomic level (genus or species) necessary for rare plant identification. Nomenclature follows *The Jepson Manual, Second Edition* (Baldwin et al 2012). Species surveys were conducted in an effort to identify presence and location of special status plant species, if any. The PSB was evaluated by walking the site looking for the presence of target species and habitats identified on the scoping list, as well as presence of any other incidental sensitive-listed plant species. The survey focused on potential habitats for target species and recorded the extent, approximate number, and percent cover of special status plant species observed. Standard brackets for estimating population size were

recorded at the time of survey as follows: percent cover class using the Braun-Blanquet cover/abundance scale of <5%, 6-25%, 26-50%, 51-75%, and greater than 75% (Mueller-Dombois 1974) and number of individuals (0-25, 25-50, 50-100, >100, >1000).

Sensitive plant species locations were recorded with a Trimble GPS with sub meter accuracy when not under tree canopy. The location of individual plants was not recorded, rather a polygon was drawn to encompass the area of species presence.

4 Results

Plant phenology for target species identified on the scoping list was used to schedule botanical survey dates, focusing on June being optimal time to capture bloom time of target species. On May 18, 2017, GHD botanist Amy Livingston conducted preliminary survey efforts to evaluate which species were visible as part of a habitat mapping effort within the PSB. A botanical survey of the PSB was conducted by GHD ecologist Lia Webb on June 14, 2017 and consisted of 6.5 person hours of field effort. At the time of June 2017 survey, Humboldt Bay owl's clover was in full bloom. Due to a very wet winter, Pt. Reye's bird's beak which usually begins to bloom in late May, and has a typical bloom window of late May or June-August, was mostly in vegetative state, although the vegetative plants were clearly visible in the predominantly sparsely vegetated marsh within the PSB. The area added to the PSB along the HBTN/Arcata Rail-with-Trail project was surveyed on September 28, 2017, approximately 2 person hours. This area included a narrow stretch of vegetation paralleling the highway and spanning from the edge of pavement to the newly constructed ditch adjacent to the new trail. Although the survey was outside the blooming window for many of the species identified during scoping, no high quality habitat was observed for any species that would not have been visible vegetatively at the time of survey. The results of the plant surveys are attached on Figures 2-1 through 2-22.

Since the target saltmarsh species are annual/mobile populations with large variation in extent and location from year to year, for precautionary purposes, pre-project botanical survey data conducted by GHD botanist Cara Scott on June 18-19, 2014, are included on Figures 2-1-2-18 within 2017 PSB. Additionally, for informational purposes, planning, design development, and construction planning, historic presence within 100 feet of 2017 PSB are also provided on results map and identified as 2014 historic data in map legend. Historic data for annual species should be considered for informational purposes only, yet is provided to represent the potential range of the species from year to year, and does not represent precise current or necessarily actual future locations of plant occurrences.

For areas south of the railroad bridge within the City of Eureka, results from Eureka Trails Phase C plant surveys conducted on June 12, 2014, by Cara Scott, April 20, 26, 2017, by Amy Livingston, and May 30 and June 1st, 2017 by Lia Webb, are included where coincidental or within 100 feet of the HBTS 2017 PSB.

During the 2017 protocol level survey, four special status plant species were observed, as presented in Table 1, which is consistent with historic results as far as species presence. Extent of 2017 mapped occurrences varied from previous 2014 survey results, and such variations are to be expected with annual plant species. The plant survey results are attached as Figures 2-1 through 2-22.

Table 1 Special Status Plant Survey Results

Scientific Name	Common Name	CRPR Status
Castilleja ambigua var. *humboldtiensis*	Humboldt Bay owl's clover	1B.2
Chloropyron maritimum ssp. *palustre*	Point Reyes bird's beak	1B.2
Spergularia canadensis var. *occidentalis*	western sand spurrey	2B.1
Angelica lucida	sea watch	4.2
Note: the above species are not one of the 64 plants designated as "rare" by CDFW per https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=109390&inline (CDFW 2017).		

USFWS results report that critical habitat has not been designated for the following Federally Endangered plant species with potential to occur in the project area: beach layia (*Layia carnosa*), Kneeland prairie penny-cress (*Thlaspi californicum*), Menzie's wallflower (*Erysimum menziesii*), and Western lily (*Lilium occidentale*).

5 Recommendations

The following are actions that are recommended based on observations of existing conditions at the project site:

- Avoidance, minimization, and/or mitigation shall be developed for project areas that have potential to impact CRPR List 1A, 1B, and/or 2 plant species as project design and permitting proceeds.
- The results of the plant survey are generally considered valid for two to three years. Particularly for the annual marsh species where population size and extent can vary from year to year, possible additional surveys could inform the design process depending on how quickly the project proceeds (i.e., if project is not constructed within three years, additional survey is recommended). At a minimum, preconstruction surveys would be recommended targeting annual saltmarsh species to allow for adequate avoidance fencing depending on conditions at the time of construction.
- Mitigation, if determined necessary, should be species-specific. Particularly for the hemi-parasitic and/or annual species, seed collection from the impact area and/or within nearby habitat should be considered along with other feasible options. It is possible that multiple methods could be employed to optimize success of mitigation. A focus on no net loss should be emphasized.
- Mitigation sites for impacts to sensitive plants, if any, should be carefully considered to ensure appropriate habitat, soil conditions, elevation, and moisture.
- Methods should be employed to avoid impacts to sensitive plant species that could occur within mitigation site selected.
- During construction, temporary avoidance fence should be installed to protect identified populations of special status plant species to ensure avoidance of areas. The area should be identified so that workers avoid trampling the area, avoid stockpiling and staging, material storage, and area is not used for temporary access to project implementation area.

6 Conclusion

The purpose of this survey was to identify and map California Rare Plant Rank (CRPR) plants within the project potential construction limits. This survey identified four California Rare Plant Rank species: *Castilleja ambigua* var. *humboldtiensis, Chloropyron maritimum* ssp. *palustre*, *Spergularia canadensis* var. *occidentalis*, and *Angelica lucida*. This field effort and reporting is intended to help guide the design and construction of the project in a manner which avoids and/or minimizes impacts to plant species described herein. No federally listed species were identified or observed within the PSB.

7 References

Baldwin, B. G., D. H. Goldman, D. J. Keil, R. Patterson, T. J. Rosatti, and D. H. Wilken, editors. 2012. *The Jepson Manual: Vascular Plants of California, Second Edition*. University of California Press, Berkeley.

CDFW, 2017. *State and Federally Listed Endangered, Threatened, and Rare Plants of California*. State of California, The Resources Agency, Department of Fish and Wildlife (CDFW), Biogeographic Data Branch. Accessed: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=109390&inline. Accessed June 29. Updated April.

CDFW, 2017. *California Natural Diversity Database (CNDDB)*. Eureka, Arcata South, Arcata North, Tyee City, Cannibal Island, Fields Landing, and McWhinney Creek, Blue Lake, Korbel, Iaqua Buttes USGS 7.5 Minute Quadrangles. California Department of Fish and Wildlife (CDFW). Sacramento, California. Accessed: http://imaps.dfg.ca.gov/viewers/cnddb_quickviewer/app.asp. March 6.

CDFG, 2009. *Guidelines for Assessing the Effects of Proposed Development on Rare, Threatened, and Endangered Plants and Plant Communities.* California Department of Fish and Game (CDFG) Sacramento, CA.

CDFG, 2009. *Guidelines for Assessing the Effects of Proposed Development on Rare, Threatened, and Endangered Plants and Plant Communities.* Sacramento, CA.

CDFG, 2009. *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities*. California Department of Fish and Game (CDFG). Sacramento, CA.

CNPS, 2017. *Inventory of Rare and Endangered Plants* (online edition, v8-01a). California Native Plant Society (CNPS), Sacramento, CA. Accessed: March 7.

Cypher, E.A., 2002. *General Rare Plant Survey Guidelines*. Endangered Species Recovery Program. California State University, Stanislaus, CA.

Mueller-Dombois, D. and H. Ellenberg, 1974. *Aims and methods of vegetation ecology*. Wiley New York.

Sawyer, J.O., T. Keeler-Wolf, and J.M. Evans. 2009. *A Manual of California Vegetation, Second Edition*. California Native Plant Society. Sacramento, CA.

USFWS, 2017. *U.S. Fish and Wildlife Service IPaC Resources List.* Arcata Field Station, U. S. Fish and Wildlife Service (USFWS). Accessed: March 6.

Attachments

1. Figures

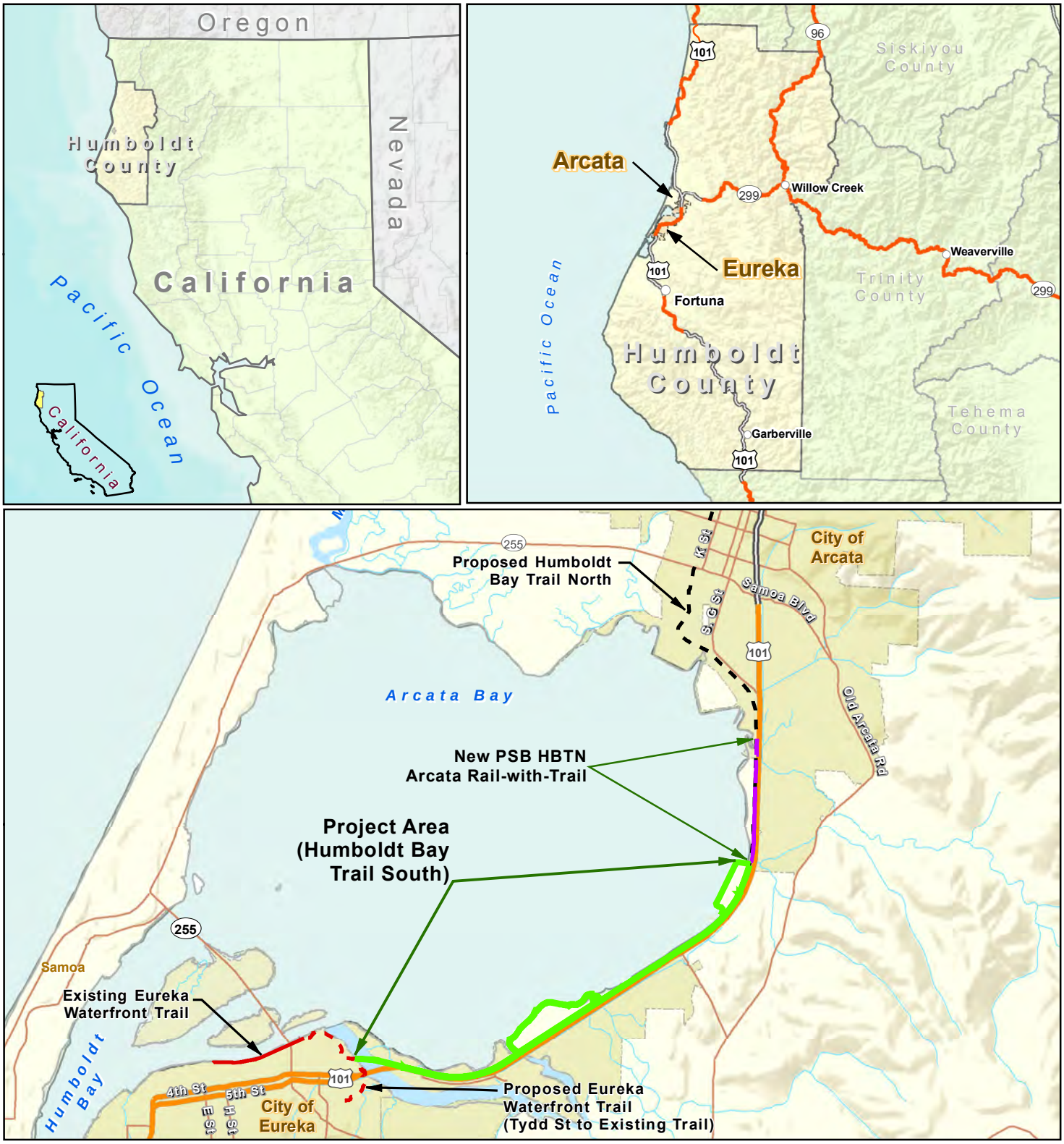
Figure 1: Regional and Location Map

Figure 2-1 - 2-22: Special Status Plant Survey Results

2. Tables

Table 2 Special status plant species with potential to occur in the PSB

Table 3 Species list of plants observed within the PSB



Freeway
Highway
Major Road
Streams
Project Area
New Project Study Boundary HBTN
City Limits
Humboldt County
Counties

Trail Connections

Existing Eureka Waterfront Trail
Proposed Eureka Waterfront Trail (Tydd St to Adorni Trail)
Proposed Humboldt Bay Trail North

1: 72,000 @ 8.5' X 11' (ANSI A)
0 2,000 4,000 6,000 8,000
Feet
Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

N

Humboldt County Public Works Department
Humboldt Bay Trail South (Eureka to Bracut)

Job Number 11110166
Revision B
Date 25 Oct 2017

Regional and Location Map

Figure 1

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718 Third Street Eureka, CA 95501 T 707 443 8326 F 707 444 8330 E eureka@ghd.com W www.ghd.com

Data source: ESRI: Street Map USA. Created by:gldavidson

2017 Rare Plant Survey

2014 Rare Plant Survey

Paper Size ANSI B

0 50 100 150 200

Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

N

Area of Potential Effect

Humboldt Bay's owl clover (CRPR List 2B.1)

Point Reyes Salty Bird's-Beak (CRPR List 1B.2)

Humboldt Bay's owl clover (CRPR List 2B.1)

Humboldt County Public Works Department
Humboldt Bay Trail - Bay Trail South

Job Number	11110166
Revision	G
Date	15 Nov 2017

Special Status Plants Survey 2014/2017

Figure 2-1

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Data source: ESRI: aerial basemap; GHD field survey: 2014,2017. Created by:gldavidson

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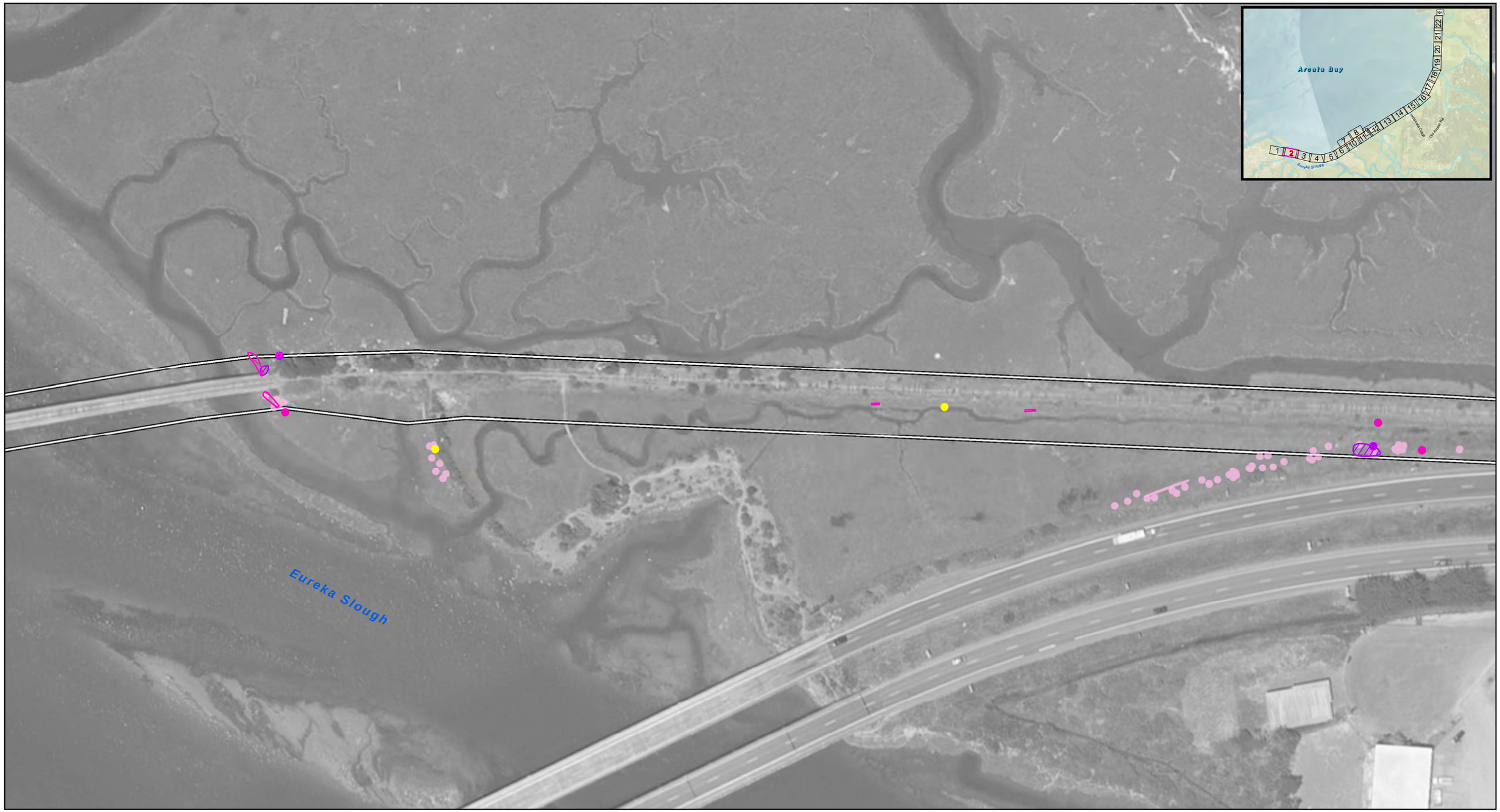

2017 Rare Plant Survey

2014 Rare Plant Survey

Paper Size ANSI B

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Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

N

Area of Potential Effect

Humboldt Bay's owl clover (CRPR List 2B.1)

Point Reyes Salty Bird's-Beak (CRPR List 1B.2)

Humboldt Bay's owl clover (CRPR List 2B.1)

Point Reyes Salty Bird's-Beak (CRPR List 1B.2)

Western sand spurrey (CRPR List 2B.1)

Point Reyes Salty Bird's-Beak (CRPR List 1B.2)

Humboldt Bay's owl clover (CRPR List 2B.1)

Point Reyes Salty Bird's-Beak (CRPR List 1B.2)

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Humboldt Bay Trail - Bay Trail South

Job Number 11110166
Revision G
Date 15 Nov 2017

Special Status Plants Survey 2014/2017

Figure 2-2

G:\111\11110166 Humboldt Bay Trail South PA&ED PS&E\08-GIS\Maps\Figures\Plant_Survey\11110166_02_Plants_RevG.mxd

Data source: ESRI: aerial basemap; GHD field survey: 2014,2017. Created by:gldavidson

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2017 Rare Plant Survey

- Humboldt Bay's owl clover (CRPR List 2B.1)
- Point Reyes Salty Bird's-Beak (CRPR List 1B.2)

2014 Rare Plant Survey

- Humboldt Bay's owl clover (CRPR List 2B.1)
- Point Reyes Salty Bird's-Beak (CRPR List 1B.2)
- Western sand spurrey (CRPR List 2B.1)

Area of Potential Effect

Paper Size ANSI B

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Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

Humboldt County Public Works Department
Humboldt Bay Trail - Bay Trail South

Job Number 11110166
Revision G
Date 15 Nov 2017

Special Status Plants Survey 2014/2017

Figure 2-3

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Data source: ESRI: aerial basemap; GHD field survey: 2014,2017. Created by:gldavidson

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2017 Rare Plant Survey

2014 Rare Plant Survey

Angelica lucida/sea watch (CRPR List 4.2)

Angelica lucida/sea watch (CRPR List 4.2

Paper Size ANSI B

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Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

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Area of Potential Effect

Humboldt County Public Works Department
Humboldt Bay Trail - Bay Trail South

Job Number 11110166
Revision G
Date 15 Nov 2017

Special Status Plants Survey 2014/2017

Figure 2-4

G:\111\11110166 Humboldt Bay Trail South PA&ED PS&E\08-GIS\Maps\Figures\Plant_Survey\11110166_02_Plants_RevG.mxd

Data source: ESRI: aerial basemap; GHD field survey: 2014,2017. Created by:gldavidson

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2017 Rare Plant Survey

2014 Rare Plant Survey

Angelica lucida/sea watch (CRPR List 4.2)

Angelica lucida/sea watch (CRPR List 4.2

Paper Size ANSI B

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Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

N

Area of Potential Effect

Humboldt County Public Works Department
Humboldt Bay Trail - Bay Trail South

Job Number 11110166
Revision G
Date 15 Nov 2017

Special Status Plants Survey 2014/2017

Figure 2-5

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Data source: ESRI: aerial basemap; GHD field survey: 2014,2017. Created by:gldavidson

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2017 Rare Plant Survey

2014 Rare Plant Survey

Paper Size ANSI B

0 50 100 150 200

Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

Area of Potential Effect

Area not mapped

Humboldt Bay's owl clover (CRPR List 2B.1)

Point Reyes Salty Bird's-Beak (CRPR List 1B.2)

Humboldt Bay's owl clover (CRPR List 2B.1)

Point Reyes Salty Bird's-Beak (CRPR List 1B.2)

Point Reyes Salty Bird's-Beak (CRPR List 1B.2)

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Humboldt Bay Trail - Bay Trail South

Job Number 11110166
Revision G
Date 15 Nov 2017

Special Status Plants Survey 2014/2017

Figure 2-6

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2017 Rare Plant Survey

2014 Rare Plant Survey

Paper Size ANSI B

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Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

Area of Potential Effect

Humboldt Bay's owl clover (CRPR List 2B.1)

Point Reyes Salty Bird's-Beak (CRPR List 1B.2)

Humboldt Bay's owl clover (CRPR List 2B.1)

Point Reyes Salty Bird's-Beak (CRPR List 1B.2)

Humboldt County Public Works Department
Humboldt Bay Trail - Bay Trail South

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Date 15 Nov 2017

Special Status Plants Survey 2014/2017

Figure 2-7

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Data source: ESRI: aerial basemap; GHD field survey: 2014,2017. Created by:gldavidson

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2017 Rare Plant Survey

2014 Rare Plant Survey

Paper Size ANSI B

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Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

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Area of Potential Effect

Humboldt County Public Works Department
Humboldt Bay Trail - Bay Trail South

Job Number	11110166
Revision	G
Date	15 Nov 2017

Special Status Plants Survey 2014/2017

Figure 2-8

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2017 Rare Plant Survey

2014 Rare Plant Survey

Angelica lucida/sea watch (CRPR List 4.2)

Paper Size ANSI B

0 50 100 150 200

Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

Area of Potential Effect

Area not mapped

Humboldt County Public Works Department
Humboldt Bay Trail - Bay Trail South

Job Number 11110166
Revision G
Date 15 Nov 2017

Special Status Plants Survey 2014/2017

Figure 2-9

G:\111\11110166 Humboldt Bay Trail South PA&ED PS&E\08-GIS\Maps\Figures\Plant_Survey\11110166_02_Plants_RevG.mxd

Data source: ESRI: aerial basemap; GHD field survey: 2014,2017. Created by:gldavidson

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2017 Rare Plant Survey

2014 Rare Plant Survey

Paper Size ANSI B

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Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

Area of Potential Effect

Area not mapped

Humboldt County Public Works Department
Humboldt Bay Trail - Bay Trail South

Job Number 11110166
Revision G
Date 15 Nov 2017

Special Status Plants Survey 2014/2017

Figure 2-10

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Data source: ESRI: aerial basemap; GHD field survey: 2014,2017. Created by:gldavidson

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2017 Rare Plant Survey

2014 Rare Plant Survey

Paper Size ANSI B

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Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

Area of Potential Effect

Area not mapped

Humboldt County Public Works Department
Humboldt Bay Trail - Bay Trail South

Job Number 11110166
Revision G
Date 15 Nov 2017

Special Status Plants Survey 2014/2017

Figure 2-11

G:\11\11110166 Humboldt Bay Trail South PA&ED PS&E\08-GIS\Maps\Figures\Plant_Survey\11110166_02_Plants_RevG.mxd

Data source: ESRI: aerial basemap; GHD field survey: 2014,2017. Created by:gldavidson

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2017 Rare Plant Survey

2014 Rare Plant Survey

Angelica lucida/sea watch (CRPR List 4.2)

Paper Size ANSI B

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Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

Area of Potential Effect

Area not mapped

Humboldt County Public Works Department
Humboldt Bay Trail - Bay Trail South

Job Number 11110166
Revision G
Date 15 Nov 2017

Special Status Plants Survey 2014/2017

Figure 2-12

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2017 Rare Plant Survey

- Angelica lucida/sea watch (CRPR List 4.2)

2014 Rare Plant Survey

- Angelica lucida/sea watch (CRPR List 4.2)

Area of Potential Effect

Paper Size ANSI B

0 50 100 150 200

Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

Humboldt County Public Works Department
Humboldt Bay Trail - Bay Trail South

Job Number 11110166
Revision G
Date 15 Nov 2017

Special Status Plants Survey 2014/2017

Figure 2-13

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Data source: ESRI: aerial basemap; GHD field survey: 2014,2017. Created by:gldavidson

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2017 Rare Plant Survey

Angelica lucida/sea watch (CRPR List 4.2)

2014 Rare Plant Survey

Angelica lucida/sea watch (CRPR List 4.2)

Area of Potential Effect

Paper Size ANSI B

0 50 100 150 200

Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

Humboldt County Public Works Department
Humboldt Bay Trail - Bay Trail South

Job Number 11110166
Revision G
Date 15 Nov 2017

Special Status Plants Survey 2014/2017

Figure 2-14

G:\111\111110166 Humboldt Bay Trail South PA&ED PS&E\08-GIS\Maps\Figures\Plant_Survey\11110166_02_Plants_RevG.mxd

Data source: ESRI: aerial basemap; GHD field survey: 2014,2017. Created by:gldavidson

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2017 Rare Plant Survey

2014 Rare Plant Survey

Paper Size ANSI B

0 50 100 150 200

Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

Area of Potential Effect

Humboldt County Public Works Department
Humboldt Bay Trail - Bay Trail South

Job Number 11110166
Revision G
Date 15 Nov 2017

Special Status Plants Survey 2014/2017

Figure 2-15

G:\111\11110166 Humboldt Bay Trail South PA&ED PS&E\08-GIS\Maps\Figures\Plant_Survey\11110166_02_Plants_RevG.mxd

Data source: ESRI: aerial basemap; GHD field survey: 2014,2017. Created by:gldavidson

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101

2017 Rare Plant Survey

2014 Rare Plant Survey

Paper Size ANSI B

0 50 100 150 200

Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

Area of Potential Effect

Area not mapped

Humboldt County Public Works Department
Humboldt Bay Trail - Bay Trail South

Job Number 11110166
Revision G
Date 15 Nov 2017

Special Status Plants Survey 2014/2017

Figure 2-16

G:\111\11110166 Humboldt Bay Trail South PA&ED PS&E\08-GIS\Maps\Figures\Plant_Survey\11110166_02_Plants_RevG.mxd

Data source: ESRI: aerial basemap; GHD field survey: 2014,2017. Created by:gldavidson

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2017 Rare Plant Survey

2014 Rare Plant Survey

Paper Size ANSI B

0 50 100 150 200

Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

Area of
Potential Effect

Area not mapped

Humboldt County Public Works Department
Humboldt Bay Trail - Bay Trail South

Job Number 11110166
Revision G
Date 15 Nov 2017

Special Status Plants Survey 2014/2017

Figure 2-17

G:\11111110166 Humboldt Bay Trail South PA&ED PS&E\08-GIS\Maps\Figures\Plant_Survey\11110166_02_Plants_RevG.mxd

Data source: ESRI: aerial basemap; GHD field survey: 2014,2017. Created by:gldavidson

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2017 Rare Plant Survey

2014 Rare Plant Survey

Paper Size ANSI B

0 50 100 150 200

Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

Area of Potential Effect

Area not mapped

Humboldt County Public Works Department
Humboldt Bay Trail - Bay Trail South

Job Number	11110166
Revision	G
Date	15 Nov 2017

Special Status Plants Survey 2014/2017

Figure 2-18

G:\111\11110166 Humboldt Bay Trail South PA&ED PS&E\08-GIS\Maps\Figures\Plant_Survey\11110166_02_Plants_RevG.mxd

Data source: ESRI: aerial basemap; GHD field survey: 2014,2017. Created by:gldavidson

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2017 Rare Plant Survey

2014 Rare Plant Survey

Paper Size ANSI B

0 50 100 150 200

Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

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Area of Potential Effect

Humboldt County Public Works Department
Humboldt Bay Trail - Bay Trail South

Job Number 11110166
Revision G
Date 15 Nov 2017

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Figure 2-19

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Data source: ESRI: aerial basemap; GHD field survey: 2014,2017. Created by:gldavidson

2017 Rare Plant Survey

2014 Rare Plant Survey

Paper Size ANSI B

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Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

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Area of Potential Effect

Humboldt County Public Works Department
Humboldt Bay Trail - Bay Trail South

Special Status Plants Survey 2014/2017

Job Number	11110166
Revision	G
Date	15 Nov 2017

Figure 2-20

G:\111\11110166 Humboldt Bay Trail South PA&ED PS&E\08-GIS\Maps\Figures\Plant_Survey\11110166_02_Plants_RevG.mxd

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Paper Size ANSI B

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Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

N

Area of Potential Effect

Humboldt County Public Works Department
Humboldt Bay Trail - Bay Trail South

Job Number	11110166
Revision	G
Date	15 Nov 2017

Special Status Plants Survey 2014/2017

Figure 2-21

G:\111\11110166 Humboldt Bay Trail South PA&ED PS&E\08-GIS\Maps\Figures\Plant_Survey\11110166_02_Plants_RevG.mxd

Data source: ESRI: aerial basemap; GHD field survey: 2014,2017. Created by:gldavidson

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0 50 100 150 200

Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

N

Area of Potential Effect

Humboldt County Public Works Department
Humboldt Bay Trail - Bay Trail South

Job Number 11110166
Revision G
Date 15 Nov 2017

Special Status Plants Survey 2014/2017

Figure 2-22

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Data source: ESRI: aerial basemap; GHD field survey: 2014,2017. Created by:gldavidson

Table 2 Special status plant species with potential to occur in the PSB

Taxa	Common Name	Listing Status	Typical Habitat	Likelihood of Occurrence
Abronia umbellata var. *breviflora*	pink sand-verbena	1B.1	Coastal dunes	Unlikely. Dune habitat not present
Angelica lucida	sea-watch	4.2	Coastal bluff scrub, coastal dunes, coastal scrub, marshes and swamps (coastal salt)	**High Potential / Present.** Previously identified near the site, and scrub/marsh habitat is present
Astragalus pycnostachyus var. *pycnostachyus*	coastal marsh milk-vetch	1B.2	Coastal dunes | Coastal scrub | Marsh & swamp | Wetland	Unlikely. Dune habitat not present
Astragalus rattanii var. rattanii	Rattan's milk-vetch	4.3	Gravelly streambanks, chaparral, cismontane woodland, lower montane coniferous forest	No Potential. Habitat on and adjacent to the study area is unsuitable
Astragalus umbraticus	Bald Mountain milkvetch	2B.3	Cismontane woodland | Lower montane coniferous forest	No Potential. Habitat on and adjacent to the study area is unsuitable
Cardamine angulata	seaside bittercress	2B.1	Lower montane & North coast (NC) coniferous forest | Wetland	No Potential. Habitat on and adjacent to the study area is unsuitable
Carex arcta	northern clustered sedge	2B.2	Bog & fen | NC coniferous forest | Wetland	Unlikely. Coniferous forest habitat not present
Carex leptalea	bristle-stalked sedge	2B.2	Bog, fen, freshwater marsh, Wetland, swamp, Meadow & seep	**Moderate Potential.** Some of the marsh habitat requirements are present
Carex lyngbyei	Lyngbye's sedge	2B.2	Marsh & swamp | Wetland	**High Potential.** Marsh habitat is present and known to occur along sloughs
Carex praticola	northern meadow sedge	2B.2	Meadow & seep | Wetland	Unlikely. Meadow seep habitat not present
Castilleja ambigua var. *humboldtiensis*	Humboldt Bay owl's-clover	1B.2	Marsh & swamp | Salt marsh | Wetland	**High Potential / Present.** Previously mapped at the site and adjacent
Castilleja littoralis	Oregon coast paintbrush	2B.2	Coastal bluff scrub | Coastal dunes | Coastal scrub	**High Potential**. Scrub habitat present

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Taxa	Common Name	Listing Status	Typical Habitat	Likelihood of Occurrence
Chloropyron maritimum ssp. *palustre*	Point Reyes salty bird's-beak	1B.2	Marsh & swamp | salt marsh | wetland	**High Potential / Present.** Previously mapped at the site and adjacent
Chrysosplenium glechomifolium	Pacific golden saxifrage	4.3	Streambanks, sometimes seeps, sometimes roadsides. NC coniferous forest. Riparian forest	No Potential. Habitat on and adjacent to the study area is unsuitable
Collinsia corymbosa	round-headed Chinese-houses	1B.2	Coastal dunes	No Potential. Dune habitat not present
Coptis laciniata	Oregon gold thread	2B.2	Meadows and seeps | NC coniferous forest	No Potential. Habitat on and adjacent to the study area is unsuitable
Epilobium canum ssp. septentrionale	Humboldt County fuchsia	4.3	Sandy or rocky. Broadleafed upland forest. NC coniferous forest	No Potential. Habitat on and adjacent to the study area is unsuitable
Epilobium oreganum	Oregon fireweed	2B.2	Cismontane woodland | meadows & seeps | sometimes serpentinite, rocky, openings	No Potential. Habitat on and adjacent to the study area is unsuitable
Erysimum menziesii	Menzies' wallflower	F/S E, 1B.1	Coastal dunes	No Potential. Dune habitat not present
Erythronium oregonum	giant fawn lily	2B.2	Cismontane woodland | meadows & seeps, sometimes serpentinite, rocky, openings	No Potential. Woodland or meadow seep habitat not present
Erythronium revolutum	coast fawn lily	2B.2	Bog & fen | broadleaved upland forest | NC coniferous	No Potential. Upland forest habitat not present
Gilia capitata ssp. *pacifica*	Pacific gilia	1B.2	Coastal bluff scrub | coastal prairie | valley & foothill grassland	**Moderate Potential.** Low quality scrub habitat is present
Gilia millefoliata	dark-eyed gilia	1B.2	Coastal dunes	No Potential. Dune habitat not present
Glehnia littoralis ssp. leiocarpa	American glehnia	4.2	Coastal dunes	No Potential. Dune habitat not present

Taxa	Common Name	Listing Status	Typical Habitat	Likelihood of Occurrence
Hesperevax sparsiflora var. *brevifolia*	short-leaved evax	1B.2	Coastal bluff scrub | Coastal dunes	**Moderate Potential.** Scrub habitat is present
Iliamna latibracteata	California globe mallow	1B.2	Chaparral | lower montane & NC coniferous | riparian	No Potential. Chaparral or forested habitat not present
Lasthenia californica ssp. macrantha	perennial goldfields	1B.2	Coastal bluff scrub | coastal dunes | coastal scrub	**Moderate Potential.** Scrub habitat is present
Lathyrus japonicus	seaside pea	2B.1	Coastal dunes	Unlikely. Dune habitat not present
Lathyrus palustris	marsh pea	2B.2	Bog, fen, marsh, swamp | coastal prairie & scrub | lower montane & NC coniferous forest	**High Potential**. Scrub, bog, marsh habitats are present
Layia carnosa	beach layia	FE, SE, 1B.1	Coastal dunes | coastal scrub	Unlikely. Dune habitat not present
Lilium occidentale	western lily	FE, SE, 1B.1	Coastal bluff scrub & prairie | freshwater marsh, bog, fen, & swamp| NC coniferous	Unlikely. Freshwater marsh habitat not present
Lilium kelloggii	Kellogg's lily	4.3	Openings, roadsides | Lower montane & NC coniferous forest	No Potential. Montane coniferous habitat not present
Listera cordata	heart-leaved twayblade	4.2	Bogs and fens | lower montane & NC coniferous forest	No Potential. Montane coniferous habitat not present
Lycopodium clavatum	running-pine	4.1	Lower montane & NC coniferous forest | marsh & swamp	No Potential. Montane coniferous habitat not present
Mitellastra caulescens	leafy-stemmed mitrewort	4.2	Broadleaved upland forest | lower montane & NC coniferous forest | meadow & seep	No Potential. Coniferous or upland habitat not present
Monotropa uniflora	ghost-pipe	2B.2	Broadleaved upland forest | NC coniferous forest	No Potential. Coniferous or upland habitat not present

Taxa	Common Name	Listing Status	Typical Habitat	Likelihood of Occurrence
Montia howellii	Howell's montia	2B.2	Meadow, seep, wetland & vernal pool | NC coniferous	No Potential. Coniferous habitat not present
Noccaea fendleri ssp. *californica*	Kneeland prairie pennycress	1B.1	Coastal prairie (serpentinite)	No Potential. Serpentine habitat not present
Oenothera wolfii	Wolf's evening-primrose	1B.1	Coastal bluff scrub | coastal dunes | coastal prairie	Unlikely. Marginal scrub habitat present
Packera bolanderi var. *bolanderi*	sea coast ragwort	2B.2	Coastal scrub, NC coniferous forest	Unlikely. Marginal scrub and no coniferous habitat present
Piperia candida	white-flowered rein-orchid	1B.2	Broadleafed upland forest | lower montane & NC coniferous	No Potential. Forested habitat not present
Pityopus californicus	California pinefoot	4.2	Mesic. Broadleafed upland forest. Lower montane/Upper montane / NC coniferous forest	No Potential. Forested habitat not present
Pleuropogon refractus	nodding semaphore grass	4.2	Mesic. Lower montane & NC coniferous forest. Meadows and seeps. Riparian	No Potential. Forested habitat not present
Puccinellia pumila	dwarf alkali grass	2B.2	Marsh & swamp | meadow & seep | wetland	**High Potential**. Wetland habitat present
Ribes laxiflorum	trailing black currant	4.3	Sometimes roadside. NC coniferous forest	No Potential. Forested habitat not present
Sidalcea malachroides	maple-leaved checkerbloom	4.2	Broadleaved upland forest | coastal prairie & scrub | NC coniferous & riparian forest	Unlikely. Forested or prairie habitat not present
Sidalcea malviflora ssp. *patula*	Siskiyou checkerbloom	1B.2	Broadleaved upland forest | coastal prairie	Unlikely. Forested or prairie habitat not present
Sidalcea oregana ssp. *eximia*	coast sidalcea	1B.2	Lower montane & NC coniferous forest | Meadow | seep	Unlikely. Forested or prairie habitat not present
Spergularia canadensis var. *occidentalis*	western sand-spurrey	2B.1	Marsh & swamp | wetland	**High Potential / Present.** Previously mapped at the site and adjacent

Taxa	Common Name	Listing Status	Typical Habitat	Likelihood of Occurrence
Tiarella trifoliata var. *trifoliata*	lace flower	3.2	Lower montane & NC coniferous forest	Unlikely. Forested habitat not present
Viola palustris	alpine marsh violet	2B.2	Bog & fen | coastal scrub | wetland	Unlikely. low quality freshwater wetland habitat present in roadside ditches
Non-vascular plants				
Bryoria pseudocapillaris	false gray horsehair lichen	3.2	Conifers | coastal dunes (SLO Co.) | NC coniferous forest (immediate coast)	No Potential. Coniferous habitat not present
Bryoria spiralifera	twisted horsehair lichen	1B.1	NC coniferous forest	No Potential. Habitat on and adjacent to the study area is unsuitable
Fissidens pauperculus	minute pocket moss	1B.2	NC coniferous forest | redwood	Unlikely. Few of the habitat species requirements are present
Trichodon cylindricus	cylindrical trichodon	2B.2	Broadleaved upland forest | upper montane coniferous forest	Unlikely. Few of the habitat species requirements are present
Usnea longissima	long-beard lichen	None	Broadleaved upland forest | north coast coniferous forest | old growth | redwood	Unlikely. Few of the habitat species requirements are present
Terrestrial Communities				
Northern Foredune Grassland		None	Coastal dunes	Not present. Habitat not observed during site surveys
Coastal Terrace Prairie		None	Coastal prairie	Not present. Habitat not observed during site surveys
Northern Coastal Salt Marsh		None	Marsh & swamp | wetland	**Present**. Observed and mapped during wetland delineation(GHD 2017).
Upland Douglas- fir Forest		None	Forest	Not present. Habitat not observed during site surveys
Sitka Spruce Forest		None	Coastal forests	Not present. Habitat not observed during site surveys

Source: CNDDB accessed 3/6/17 and CNPS accessed 3/7/17. Assessment area consists of USGS 7.5 minute quadrangles: Eureka, Arcata South, Arcata North, Tyee City, Cannibal Island, Fields Landing, and McWhinney Creek, Blue Lake, Korbel, Iaqua Buttes.

Note: small font size in table above denotes List 3 or 4 plant species which are provided herein for informational purposes

FEDERAL--U.S. Fish and Wildlife Service (USFWS)

FE - Federal Endangered

FT - Federal Threatened

Taxa	Common Name	Listing Status	Typical Habitat	Likelihood of Occurrence
FC - Federal Candidate for listing				
FSC - United States Fish and Wildlife Service Federal Species of Special Concern				
STATE--California Department of Fish and Wildlife (CDFW)				
SE - State Endangered				
ST - State Threatened				
SR – State Rare				
CSC - CDFW Species of Special Concern				
SLC - Species of Local Concern				
CFP - California Fully Protected Species				
California Native Plant Society Rare Plant Ranks (CRPR)				
1A- Presumed Extirpated in California and either Rare or extinct elsewhere				
1B - Rare, Threatened, or Endangered in California and elsewhere				
2 - Rare, Threatened or Endangered in California, but more common elsewhere				
2A- Plants Presumed Extirpated in California, but more common elsewhere				
2B- Plants Rare, Threatened, or Endangered in California, but more common elsewhere				
3 - Review List (more information needed)				
4 - Watch List (limited distribution in California)				
Threat Ranks:				
_0.1 Seriously threatened in California				
_0.2 Moderately threatened in California				
0.3 Not very threatened in California				
POTENTIAL TO OCCUR				
No Potential	Habitat on and adjacent to the site is clearly unsuitable for the species requirements (cover, substrate, elevation, hydrology, plant community, site history, disturbance regime)			
Low Potential	Few of the habitat components meeting the species requirements are present, and/or the majority of habitat on and adjacent to the site is unsuitable or of very poor quality. The species is not likely to be found on the site.			
Moderate Potential	Some of the habitat components meeting the species requirements are present, and/or only some of the habitat on or adjacent to the site is unsuitable. The species has a moderate probability of being found on the site.			
High Potential	All of the habitat components meeting the species requirements are present and/or most of the habitat on or adjacent to the site is highly suitable. The species has a high probability of being found on the site.			
SURVEY RESULTS				
Not Present	Species not observed during survey and further lacks habitat components and unlikely to be present.			
Not Observed	Species not observed during plant survey although potential habitat is present.			
Present	Species observed on the site or has been recorded (i.e. CNDDB, other reports) on the site recently.			

Table 3 Species list of plants observed within the PSB

Taxon	Common Name
Acer macrophyllum	bigleaf maple
Achillea millefolium	western yarrow
Acmispon americanus var. americanus	spanish lotus
Agrostis exarata	spike bentgrass
Agrostis stolonifera	creeping bent
Aira caryophyllea	silver European hairgrass
Alnus rubra	red alder
Anagallis arvensis	scarlet pimpernel
Anaphalis margaritacea	pearly everlasting
***Angelica lucida* (CRPR List 4.2)**	**sea watch**
Anthoxanthum odoratum	sweet vernal grass
Arrhenatherum elatius	tall oat grass
Atriplex prostrata	fat-hen
Avena barbata	slender wild oat
Baccharis pilularis	coyote brush
Baccharis salicifolia	mule fat
Bellis perennis	English daisy
Briza maxima	rattlesnake grass
Briza minor	annual quacking grass
Bromus carinatus	mountain brome
Bromus diandrus	ripgut brome
Bromus hordeaceus	soft chess brome
Bromus madritensis	foxtail chess
Carex obnupta	slough sedge
***Castilleja ambigua* ssp. *humboldtiensis* (CRPR List 1B.2)**	**Humboldt Bay owl's clover**
Ceanothus thyrsiflorus var. thyrsiflorus	blue blossom
Cedrus atlantica	atlas cedar
***Chloropyron maritimum* ssp. *palustre* (CRPR List 1B.2)**	**Point Reyes salty bird's-beak**
Cirsium arvense	Canada thistle
Cirsium vulgare	bull thistle
Conium maculatum	poison hemlock
Convolvulus arvensis	field bindweed
Cortaderia jubata	pampas grass
Cotoneaster franchettii	contoneaster
Cotula coronopifolia	brass water buttons
Cuscuta sp.	dodder

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Taxon	Common Name
Cynosurus echinatus	bristly dogtail grass
Cyperus eragrostis	tall nutsedge
Cytisus scoparius	scotch broom
Dactylis glomerata	orchard grass
Daucus carota	Queen Anne's lace
Deschampsia cespitosa	tufted hair grass
Dipsacus fullonum	wild teasel
Distichlis spicata	salt grass
Dracena sp. (cultivar)	dracena
Epilobium brachycarpum	willow herb
Equisetum arvense	common horsetail
Equisetum telmateia var. *braunii*	giant horsetail
Eucalyptus globulus	blue gum
Euphorbia peplus	spurge
Festuca arundinacea	tall fescue
Festuca myuros	rattail grass
Festuca myuros	rattail sixweeks grass
Festuca perennis	rye grass
Foeniculum vulgare	fennel
Fragaria chiloensis	beach strawberry
Galium aparine	common bedstraw
Gaultheria shallon	salal
Genista monspessulana	french broom
Geranium dissectum	cranesbill
Geranium molle	cranesbill
Grindelia stricta var. *platyphylla*	gumplant
Hedera helix	English ivy
Helminthotheca echioides	bristly ox-tongue
Heracleum maximum	cow parsnip
Hirshfeldia incana	shortpod mustard
Holcus lanatus	velvet grass
Hordeum brachyantherum	meadow barley
Hordeum marinum ssp. *gussoneanum*	barley
Hypericum perforatum	Klamathweed
Hypochaeris radicata	rough cats-ear
Ilex aquifolium	English holly
Iris douglasiana	Douglas iris

Taxon	Common Name
Jaumea carnosa	jaumea
Juncus bufonius	toad rush
Juncus effusus	common rush
Juncus lescurii	San Francisco rush
Juncus patens	spreading rush
Lathyrus latifolius	everlasting sweet pea
Leucanthemum vulgare	ox-eye daisy
Limonium californicum	western marsh-rosemary
Linum bienne	flax
Lonicera hispidula	honeysuckle
Lonicera involucrata	twinberry
Lotus corniculatus	bird's-foot trefoil
Lupinus arboreus	yellow bush lupine
Lupinus latifolius var. *latifolius*	broad leaf lupine
Malus pumila	apple
Matricaria discoidea	pineapple weed
Medicago polymorpha	California burclover
Melilotus officinalis	yellow sweetclover
Mentha pulegium	pennyroyal
Morella californica	wax myrtle
Oxalis incarnata	oxalis
Parentucellia viscosa	parentucellia
Picea sitchensis	Sitka spruce
Pinus contorta subsp. contorta	shore pine
Pinus muricata	Bishop pine
Plantago coronopus	plantain
Plantago erecta	plantain
Plantago lanceolata	English plantain
Plantago major	common plantain
Poa annua	annual rye grass
Podocarpus sp. (cultivar)	podocarpus
Polygonum aviculare	knotweed
Polypogon monspeliensis	rabbitfoot grass
Polystichum munitum	sword fern
Populus trichocarpa	black cottonwood
Potentilla anserina ssp. *pacifica*	Pacific silverweed
Prunella vulgaris	self-heal

Taxon	Common Name
Prunus laurocerasus (cultivar)	cherry laurel
Pteridium aquilinum var. *pubescens*	bracken fern
Ranunculus repens	creeping buttercup
Raphanus sativus	radish
Ribes sanguineum	red-flowering currant
Rosa nutkana	Nootka rose
Rosa sp. (cultivar)	garden rose
Rubus armeniacus	Himalayan blackberry
Rubus ursinus	California blackberry
Rumex acetosella	common sheep sorrel
Rumex crispus	curly dock
Rumex pulcher	fiddle dock
Salicornia pacifica	pickleweed
Salix hookeriana	coastal willow
Salix lasiandra ssp. *lasiandra*	Pacific willow
Salix lasiolepis	arroyo willow
Scrophularia californica	California figwort
Senecio sylvaticus	woodland ragwort
Sequoia sempervirens	redwood
Sisyrinchium californicum	golden-eyed grass
Sonchus oleraceus	common sow thistle
Spartina densiflora	dense-flowered cord grass
***Spergularia canadensis* var. *occidentalis* (CRPR List 2B.1)**	**western sand spurrey**
Spergularia rubra	sand-spurrey
Spiraea douglasii	Douglas' spirea
Stachys ajugoides	rigid hedge-nettle
Stachys chamissonis	hedge nettle
Symphyotrichum chilensis	Pacific aster
Taraxacum officinale	dandelion
Thuja plicata	western red cedar
Toxicodendron diversilobum	poison oak
Tragopogon porrifolius	oyster plant
Trifolium dubium	little hop clover
Trifolium pratense	red clover
Trifolium repens	white clover
Triglochin maritima	common arrow-grass
Triticum aestivum	wheat

Taxon	Common Name
Typha sp.	cattail
Vaccinium ovatum	evergreen huckleberry
Vicia hirsuta	vetch
Vicia sativa ssp. *sativa*	common vetch
Vinca major	greater periwinkle

Source: HBTS survey dates - June 18-19, 2014 (GHD botanist Cara Scott); May 18, 2017 (GHD botanist Amy Livingston); June 14, 2017 (GHD ecologist Lia Webb). Trail Phase C survey dates - April 20, 26, 2017 (Amy Livingston); May 30 and June 1st, 2017 (Lia Webb)

Bold text in table above denotes CRPR List 1A, 1B or 2 plant species

California Native Plant Society Rare Plant Ranks (CRPR)

1A- Presumed Extirpated in California and either Rare or extinct elsewhere

1B - Rare, Threatened, or Endangered in California and elsewhere

2 - Rare, Threatened or Endangered in California, but more common elsewhere

2A- Plants Presumed Extirpated in California, but more common elsewhere

2B- Plants Rare, Threatened, or Endangered in California, but more common elsewhere

3 - Review List (more information needed)

4 - Watch List (limited distribution in California)

Threat Ranks:

_0.1 Seriously threatened in California

_0.2 Moderately threatened in California

0.3 Not very threatened in California

Appendix F Mitigation Monitoring and Reporting Program

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Mitigation Monitoring and Reporting Program
Humboldt County Humboldt Bay Trail South Project

Impact	Mitigation Measure	Implementation Responsibility	Monitoring/ Reporting Responsibility	Timing
Biological Resources				
BIO-1 Avoidance and Protection Measures for Special-status Plants	The County of Humboldt shall implement the following avoidance and protection measures for special-status plants: 1. Due to the mobility and fluctuation of populations of Humboldt Bay owl's-clover, and Point Reyes bird's beak specifically, seasonally appropriate pre-construction surveys shall occur approximately one year prior to construction within the planned area of disturbance for the project, during the appropriate blooming time (spring or summer) for the target species. Impacts to special-status annual salt marsh plants such as Humboldt Bay owl's-clover, Point Reyes bird's beak, and western sand spurrey shall be avoided to the extent feasible. If these plants occur within the project footprint, and permanent impacts cannot be avoided, they shall be conserved through re-seeding (by hand, by a qualified biologist) into suitable habitat in the immediate project area. Seed will be collected in the late summer or early fall the year before construction when seeds from each target species are mature. Seed will be stored and spread post project construction in the best possible suitable habitat, near areas where impacts have occurred. Seeds should be spread in high elevation tidal marsh environments in the vicinity of salt grass if possible for Point Reyes bird's beak and near other native high salt marsh species, and in areas where invasive cordgrass is absent or sparse. 2. If future pre-construction surveys determine that other special-status species are present within the project footprint, these plants will also be avoided to the extent feasible, and if not feasible, they shall be conserved by measures appropriate for the individual species which may include methods such as plant relocation, seed collection, and/or nursery plant propagation. 3. Pre-construction surveys will also be performed within the planned area of disturbance, less than seven days prior to ground disturbance within habitat appropriate for Humboldt Bay owl's-clover, Point Reyes bird's beak and western sand spurrey. At this time any newly identified impacts to special-status plant species within the planned area of disturbance that cannot be feasibly avoided will be quantified and mapped. In the event that mature seed is available for Humboldt Bay owl's-clover, Point Reyes bird's beak and western sand spurrey and plants cannot be feasibly avoided, the seed will be collected, stored, and spread post construction and as described in this mitigation measure. All special-status plant species found at this time within the planned area of disturbance, but outside the trail footprint will be flagged for avoidance during construction. 4. Any plants that could not be feasibly avoided and that will be impacted will be mapped, and the number of individuals documented prior to construction. The approximate quantity of seed collected from these plants and the dates the seed was collected and spread will also be reported. No monitoring is proposed for the seeded areas as assessing the success of these areas is impractical given the mobility of seeds in the tidally influenced salt marsh environment. 5. Any seed mixes or other vegetative material used for re-vegetation of disturbed sites will consist of locally adapted native plant materials to the extent practicable.	County of Humboldt	County of Humboldt	Prior to construction (surveys) and post construction (monitoring)

Impact	Mitigation Measure	Implementation Responsibility	Monitoring/ Reporting Responsibility	Timing
BIO-2 Avoidance and Minimization Measures for Fish	The County of Humboldt shall implement the following avoidance and protection measures for ESA-listed and other special-status fishes: 1. Prior to complete dewatering of any in-channel or in-bay work areas, coffer dams or barrier nets shall be placed to block off the area. Any fish remaining inside the coffer dams or barriers will be carefully removed by a qualified biologist. In order to minimize potentially adverse effects to aquatic organisms, all translocation/removal of fishes will be conducted by qualified fisheries biologists. Any fish that cannot be herded by seines from the work areas and must be physically handled will be immediately released in suitable habitat away from the action area, with comparable habitat and water quality conditions. Immediately following completion of in-channel or in-bay work, any cofferdams or block nets will be removed allowing free fish passage through the project area during the remainder of the construction period. 2. To minimize the potential hydroacoustic effects on fish of driving piles for bridge footings in and adjacent to tidally influenced stream/slough channels ("in-channel") and on intertidal mudflat areas ("in-bay"), a vibratory driver will be used to the maximum extent practicable. It is anticipated that piles would need to be proofed by driving the final 5 feet with an impact hammer to achieve design tip elevation and to verify load capacity. 3. To protect the most vulnerable life stages of sensitive fish species that occur within the action area, all in-channel and in-bay work will be restricted to the period between July 1 and September 31. This seasonal work window correlates to the period of the year when sensitive fish species are least likely to occur in the action area. To further reduce the potential for hydroacoustic effects on fish potentially occurring in the action area, all pile driving, using either vibratory or impact hammers, of piles placed in-channel and in-bay mudflat areas will be scheduled to occur between the latter 2-hours of outgoing tides and beginning 2-hours of incoming tides, when tidal inundation of work areas is minimal and so that all pile driving will occur out of the water.	County of Humboldt	County of Humboldt	Prior to and during construction
BIO-3 Tidewater Goby Avoidance and Minimization Measures	The County of Humboldt shall implement the following avoidance and minimization measures for tidewater goby: 1. To avoid crushing adult gobies and their breeding burrows, no construction equipment will operate within potential goby habitat and no workers shall walk within the wetted channel in potential goby habitat areas. 2. To avoid barotrauma injury to gobies or damage to breeding burrows, no impact or vibratory equipment shall be used within an active, wetted channel in or contiguous with potential goby habitat or in any location where it could have an adverse effect on breeding burrows and gobies. In addition, heavy equipment used outside the wetted channel, must be operated at a distance as far as possible from suitable breeding habitat to avoid barotrauma injury and/or damage to goby breeding burrows. 3. No pile driving is permitted in the wetted channel within potential goby habitat. 4. New access roads must not enter a wetted channel or watercourse within potential goby habitat.	County of Humboldt	County of Humboldt	During construction

Impact	Mitigation Measure	Implementation Responsibility	Monitoring/ Reporting Responsibility	Timing
BIO-4 Northern Red-legged Frog Avoidance and Minimization Measures	The County of Humboldt shall implement the following avoidance and minimization measures for northern red-legged frogs: 1. Construction in waterways and wetlands with standing water shall be limited to the period of the year between July 1 and October 30 to avoid disturbance to breeding northern red-legged frogs. 2. No more than one week prior to commencement of ground disturbance within 50 feet of suitable northern red-legged frog habitat, a qualified wildlife biologist shall perform a preconstruction survey for the northern red-legged frog and shall relocate any specimens that occur within the work -impact zone to nearby suitable habitat. 3. In the event that a northern-red legged frog is observed in an active construction zone, the contractor shall halt construction activities in the area where observed and the frogs shall be moved to a safe location in similar habitat outside of the construction zone.	County of Humboldt	County of Humboldt	Prior to construction
BIO-5 Avoidance and Protection Measures for Nesting Birds	The County of Humboldt shall implement the following measures to ensure no significant impacts to native migratory bird species: 1. The County will attempt to remove trees and other vegetation that could potentially contain nesting birds outside the bird nesting season (March 15 to August 15). If vegetation removal occurs outside the bird nesting season, no further mitigation is necessary. If vegetation removal occurs between March 15 and August 15, the County shall have a qualified wildlife biologist conduct preconstruction surveys within the vicinity of the impact area, to check for nesting activity of native birds and to evaluate the site for special-status bird species such as Little Willow Flycatcher and White-tailed Kites. The biologist shall conduct a minimum of one preconstruction survey within the seven-day period prior to vegetation removal activities. If vegetation removal work lapses for seven days or longer during the nesting season, a qualified biologist shall conduct a supplemental avian survey before project work is reinitiated. 2. If an active nest is found, the biologist will determine the extent of an appropriate construction-free buffer zone to be established around the nest and/or operational restrictions in consultation with the California Department of Fish and Wildlife. Buffer zones will be delineated with flagging and maintained until the nests have fledged or nesting activity has ceased. Buffer sizes would take into account factors such as (1) highway and other ambient noise levels, (2) distance from the nest to the highway and distance from the nest to the active construction area, (3) noise and human disturbance levels at the construction site at the time of the survey and the noise and disturbance expected during the construction activity; (4) distance and amount of vegetation or other screening between the construction site and the nest; and (5) sensitivity of individual nesting species and behaviors of the nesting birds.	County of Humboldt	County of Humboldt	Prior to construction

Impact	Mitigation Measure	Implementation Responsibility	Monitoring/ Reporting Responsibility	Timing
BIO-6 Avoidance and Minimization Measures for Waters of the United States and Waters of the State	The County of Humboldt shall implement the following avoidance and protection measures for Waters of the United States and Waters of the State: 1. The County shall attempt to avoid or minimize impacts to wetlands/waters to the greatest extent feasible in the final design plans. 2. Areas where wetland and upland vegetation are to be removed shall be clearly identified in the construction documents and reviewed by the County prior to issuing for bid. 3. Within 10 days of completion of construction in those areas where subsequent ground disturbance will not occur for 10 calendar days or more, disturbed areas shall be temporarily stabilized to reduce the potential for short-term erosion. Prior to a rain event or when there is a greater than 50 percent possibility of rain within the next 24 hours, as forecasted by the National Weather Service, appropriate BMPs will be installed upon completion of the day's activities to control erosion and prevent sediment laden stormwater from leaving the construction area. 4. Suitable perimeter control BMPs, such as silt fences, or straw wattles shall be placed below all construction activities at the edge of surface water features to intercept sediment before it reaches the waterway. These BMPs shall be installed prior to any clearing or grading activities. 5. If spoil (or stockpile) sites are used, they shall be located such that they do not drain directly into a surface water feature, if possible. If a spoil site drains into a surface water feature, swales shall be constructed to intercept sediment before it reaches the feature. Spoil sites shall be graded and vegetated to reduce the potential for erosion. 6. Sediment control measures shall be in place prior to the onset of the rainy season and will be monitored and maintained in good working condition until disturbed areas have been revegetated. 7. A site-specific spill prevention plan shall be implemented for potentially hazardous materials. The plan shall include the proper handling and storage of all potentially hazardous materials, as well as the proper procedures for cleaning up and reporting any spills. If necessary, containment berms shall be constructed to prevent spilled materials from reaching surface water features. 8. Equipment and hazardous materials shall be stored 50 feet away from surface water features.	County of Humboldt	County of Humboldt	Prior to, during, and after construction
BIO-7 Compensatory Mitigation for Wetlands Impacts	The County shall compensate for wetlands impacts through restoration, rehabilitation, and/or creation of wetlands. If the wetland mitigation project being led by Caltrans on the Lanphere Parcel in the Arcata Bottoms does not have sufficient capacity to fully compensate for the Humboldt Bay South project's wetland impacts, then the County will identify an alternative site and develop a specific plan for that property to create the necessary wetland amount. A Wetlands Mitigation and Monitoring Plan shall be prepared in coordination with the USACE, NCRWQCB, CCC, and CDFW. Compensation for wetlands shall occur so there is no net loss of wetland habitat. Mitigation ratios will be determined in consultation with the USACE, NCRWQCB, CCC, and CDFW. The Wetland Mitigation and Monitoring Plan shall include the following elements: proposed mitigation ratios; description and size of the restoration or compensatory area; site preparation and design; plant species; planting design and techniques; maintenance activities; plant storage; irrigation requirements; success criteria; monitoring schedule; and remedial measures. The Plan shall be implemented by the County.	County of Humboldt	County of Humboldt	Prior to construction

Impact	Mitigation Measure	Implementation Responsibility	Monitoring/ Reporting Responsibility	Timing
Cultural Resources				
CR-1 Protect Archaeological Resources during Construction Activities	If cultural materials such as chipped or ground stone, historic debris, building foundations, or bone are discovered during ground-disturbance activities, work shall be stopped within 20 meters (66 feet) of the discovery. Work near the archaeological finds shall not resume until a professional archaeologist, who meets the Secretary of the Interior's Standards and Guidelines, has evaluated the materials and offered recommendations for further action. If the find is determined to constitute either an historical resource or a unique archaeological resource per CEQA Guidelines sections 15064.5, the archaeologist shall develop appropriate mitigation to protect the integrity of the resource and ensure that no additional resources are affected. Mitigation could include but would not necessarily be limited to avoidance, preservation in place, archival research, subsurface testing, or excavation and data recovery.	County of Humboldt	County of Humboldt	During construction
CR-2 Protect Human Remains if Encountered during Construction	The County's contractor shall immediately notify the Humboldt County Coroner should human remains, associated grave goods, or items of cultural patrimony be encountered during construction, and the following procedures shall be followed as required by Public Resources Code § 5097.9 and Health and Safety Code § 7050.5. In the event of the coroner's determination that the human remains are Native American, the Native American Heritage Commission would be contacted and would appoint a Most Likely Descendant (MLD). A qualified archaeologist, the County and the MLD shall make all reasonable efforts to develop an agreement for the treatment, with appropriate dignity, of any human remains and associated or unassociated funerary objects. The agreement would take into consideration the appropriate excavation, removal, recordation, analysis, custodianship, and final disposition of the human remains and associated or unassociated funerary objects.	County of Humboldt	County of Humboldt	During construction
Hazards and Hazardous Materials				
HAZ-1 Procedures for Encountering Unknown Hazardous Materials	In the event any hazardous, toxic, noxious, objectionable, or unknown chemicals are encountered during trail construction, construction shall be halted by the construction crew on duty and reported to the general contractor for the project and the County of Humboldt. Prior to resuming any work the County shall be responsible for obtaining a soil sample for analysis. The findings of the analysis shall be submitted, as applicable, to the North Coast Regional Water Quality Control Board (NCRWQCB) and any other appropriate regulatory agencies. Work shall not continue until and unless written approval is obtained from these agencies. The County shall comply at all times with the requirements and regulations of the NCRWQCB and other appropriate regulatory agencies with regard to the handling, transport, and disposal of hazardous materials such as contaminated soils to the satisfaction of these agencies. Disposal of all hazardous materials would be in compliance with all applicable California hazardous waste disposal laws. Construction specifications will include the following measures to reduce potential impacts to vegetation and aquatic habitat resources in the project area associated with accidental spills of pollutants (e.g., fuel, oil, and grease): 1. A site-specific spill prevention plan shall be implemented for potentially hazardous materials. The plan shall include the proper handling and storage of all potentially hazardous materials, as well as the proper procedures for cleaning up and reporting any spills. If necessary, containment berms shall be constructed to prevent spilled materials from reaching surface water features. 2. Equipment shall use non-toxic vegetable oil for operating hydraulic equipment instead of conventional hydraulic fluids. 3. Place plastic materials under asphaltic concrete paving equipment, while not in use to catch and/or contain drips and leaks. 4. Minimize sand and gravel from any new asphalt from getting into storm drains, streets, and creeks by	County of Humboldt	County of Humboldt	During construction

Impact	Mitigation Measure	Implementation Responsibility	Monitoring/ Reporting Responsibility	Timing
	sweeping. Old or spilled asphalt must be recycled or disposed as approved by the Resident Engineer. 5. During any and sweeping operations, petroleum or petroleum covered aggregate must not be allowed to enter any storm drain or water courses. Use silt fence until installation is complete. 6. Use only non-petroleum based substances to coat asphalt transport trucks and asphalt spreading equipment. 7. Drainage inlet structures and manholes shall be covered with filter fabric during application of seal coat, tack coat, slurry seal, and/or fog seal. 8. Seal coat, tack coat, slurry seal, or fog seal shall not be applied if rainfall is predicted to occur during the application or curing period. 9. If dewatering is not required for other purposes, removal of seepage water in the coffered work areas may be ceased after new abutment concrete is poured and is curing (for at least 72 hours after pour) within the form structures, provided that pH of the water inside the cofferdam enclosures and in contact with the concrete forms does not exceed a difference of 0.5 pH units from that of ambient water quality in main slough channel outside of the cofferdams (e.g., 50 ft. upstream and downstream of the new bridge alignment) . If the difference in pH within the cofferdam exceeds 0.5 units, water levels within the coffered area will be kept below the level of the concrete abutment forms and pumped to temporary retention basins or Baker tanks and treated as above for erosion and sediment control.			
HAZ-2 Preliminary Site Investigation and Sampling	The County shall ensure that in areas of ground disturbance, a Preliminary Site Investigation (PSI) that includes pre-construction soil borings is conducted prior to finalization of plans/specifications in order to characterize soil and groundwater in anticipation of implementation of construction activities. Once the areas of ground disturbance and potential dewatering are confirmed, the PSI Workplan shall identify potential contaminants of concern for laboratory analysis, location, and number of borings necessary for pre-characterization, and depth for sample collection. Laboratory analytical results of soil and groundwater samples collected from the borings shall be utilized to ascertain whether health and safety concerns are present for construction workers and determine potential soil and/or groundwater handling and disposal options. Proposed soil borings and/or grab groundwater sample locations shall be determined following identification of the areas and depths of soil excavation and dewatering activities. If soil and/or groundwater impacts are identified, site workers involved in excavation activities shall be Hazardous Waste Operations and Emergency Response (HAZWOPER) trained (Occupational Safety and Health Administration [OSHA] 1910.120).	County of Humboldt	County of Humboldt	Prior to and during construction

Appendix G Trail Alignment Figures

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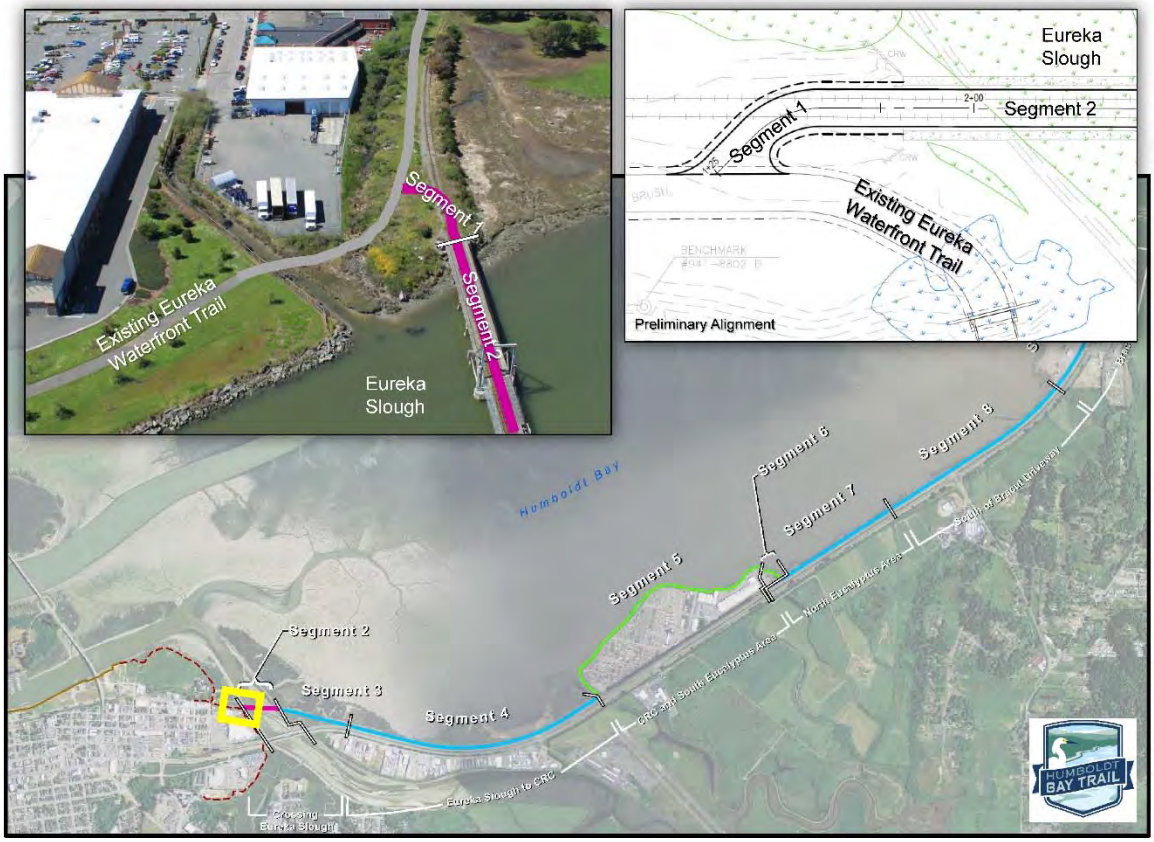
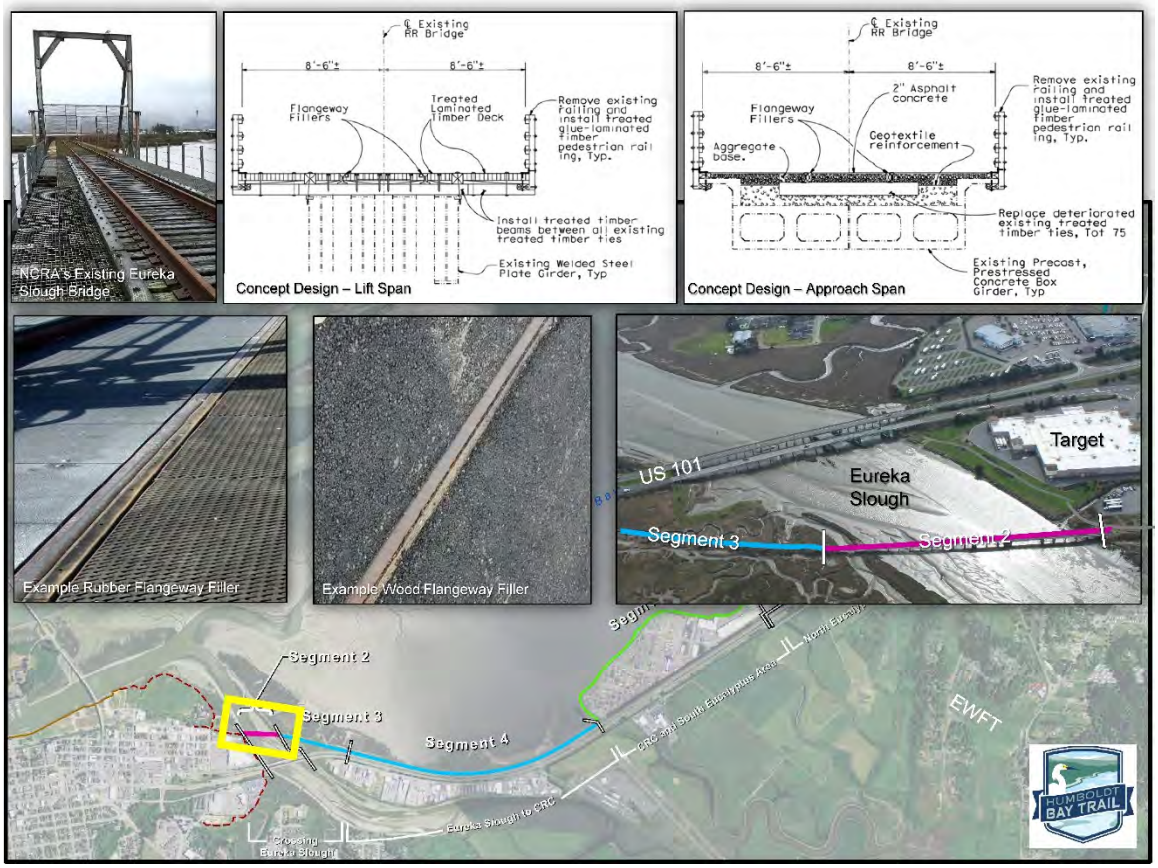
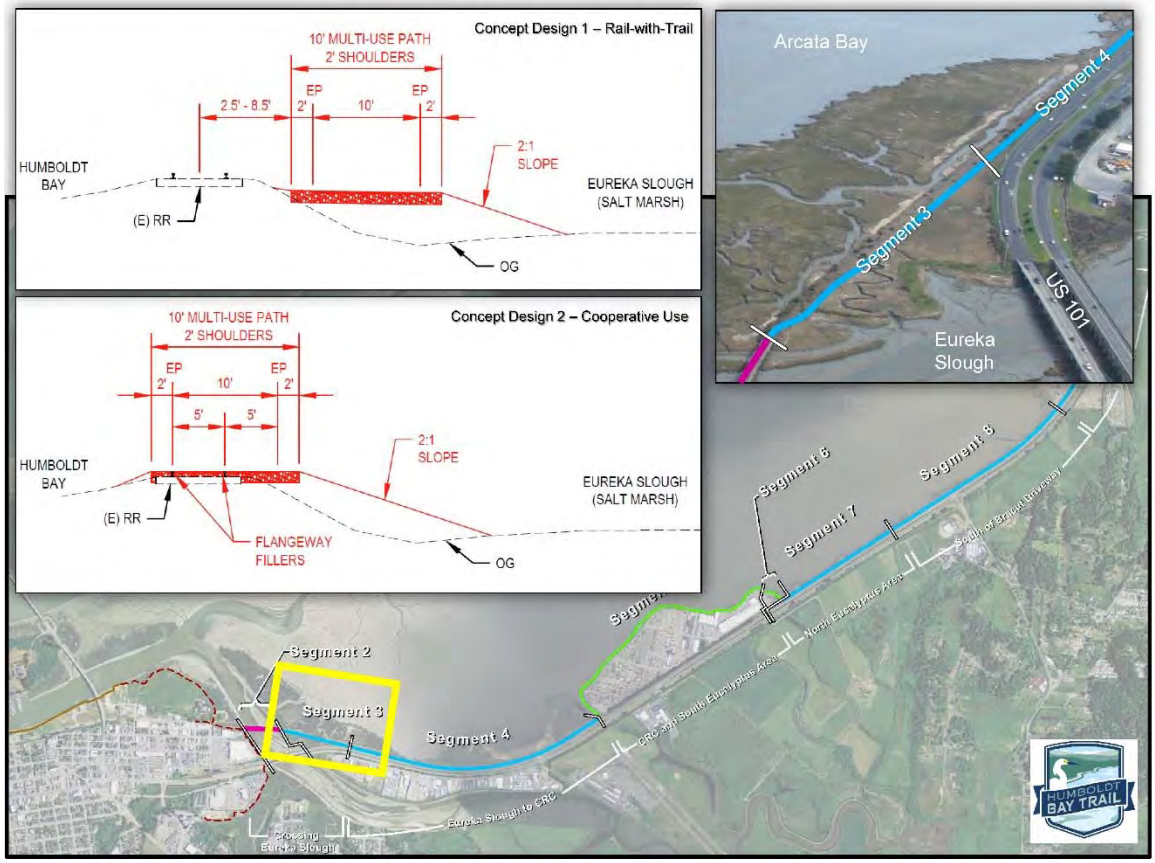


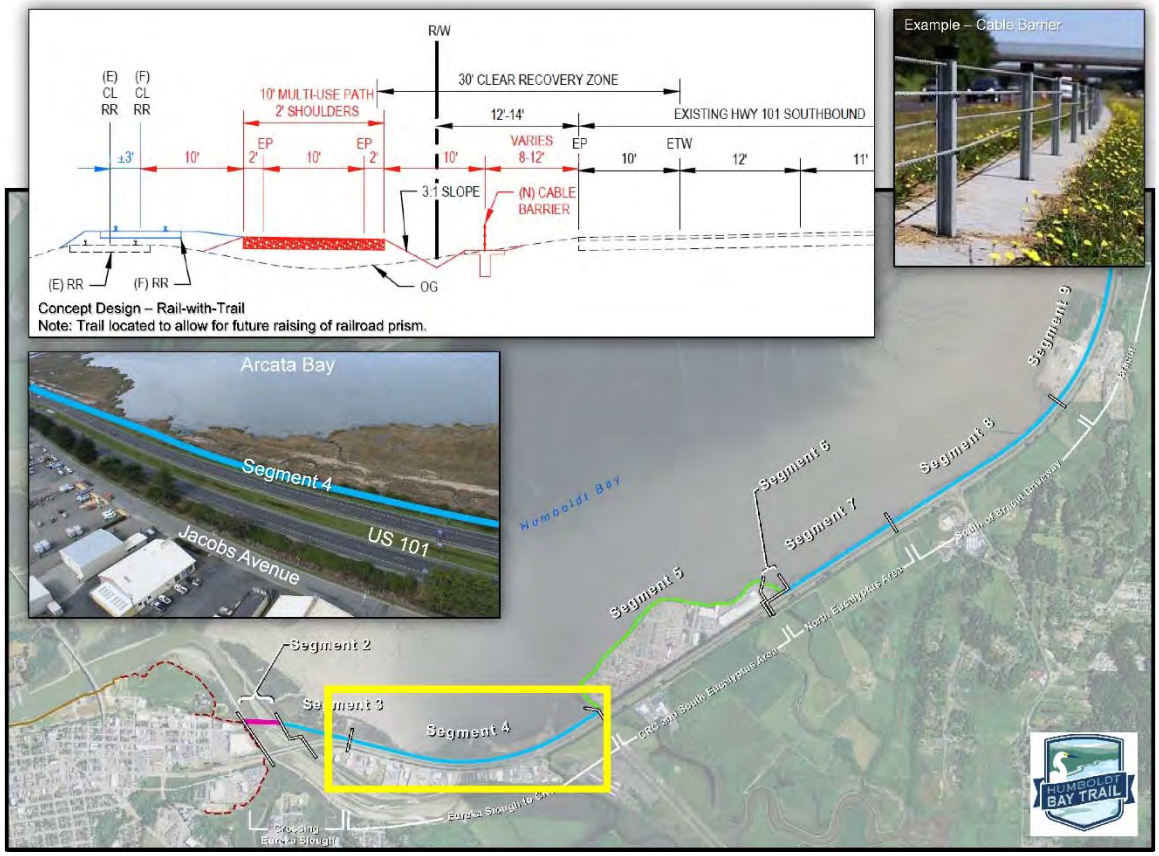
Segment 1 – Connection to Eureka Waterfront Trail



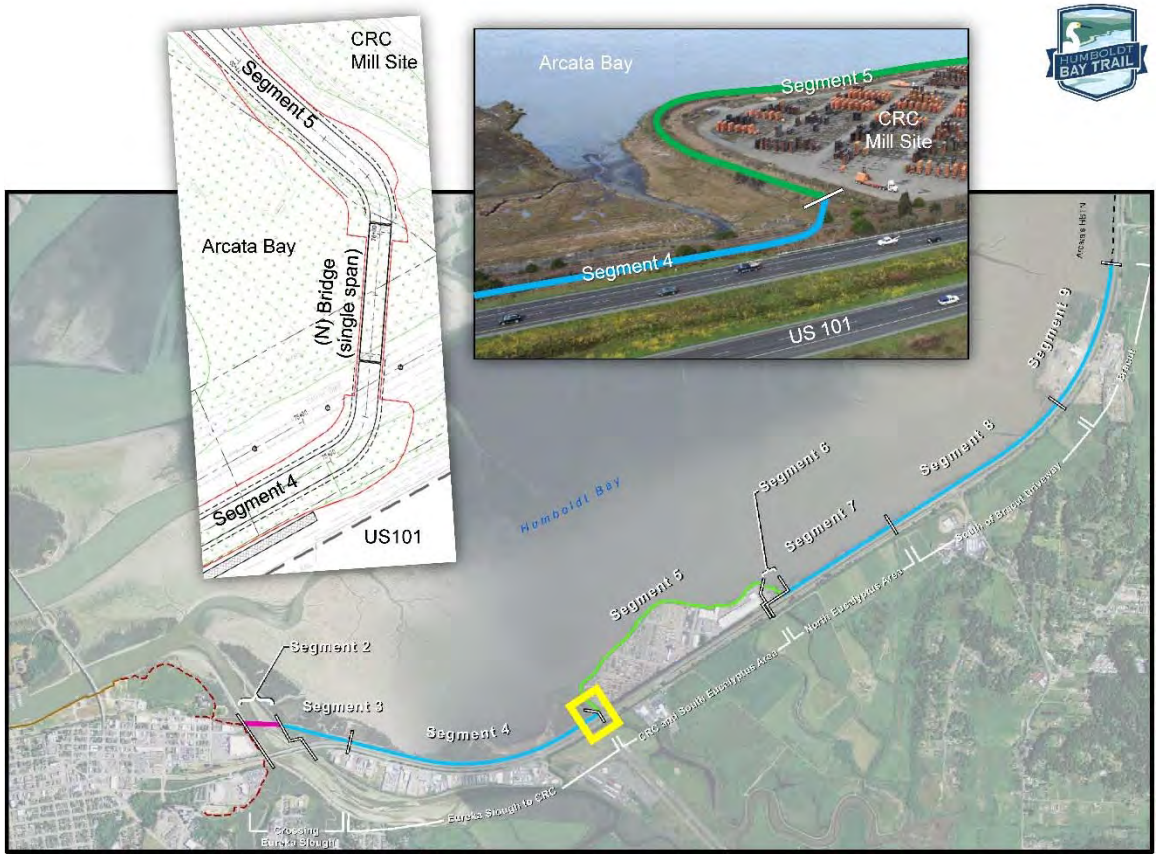
Segment 2 – Eureka Slough Crossing



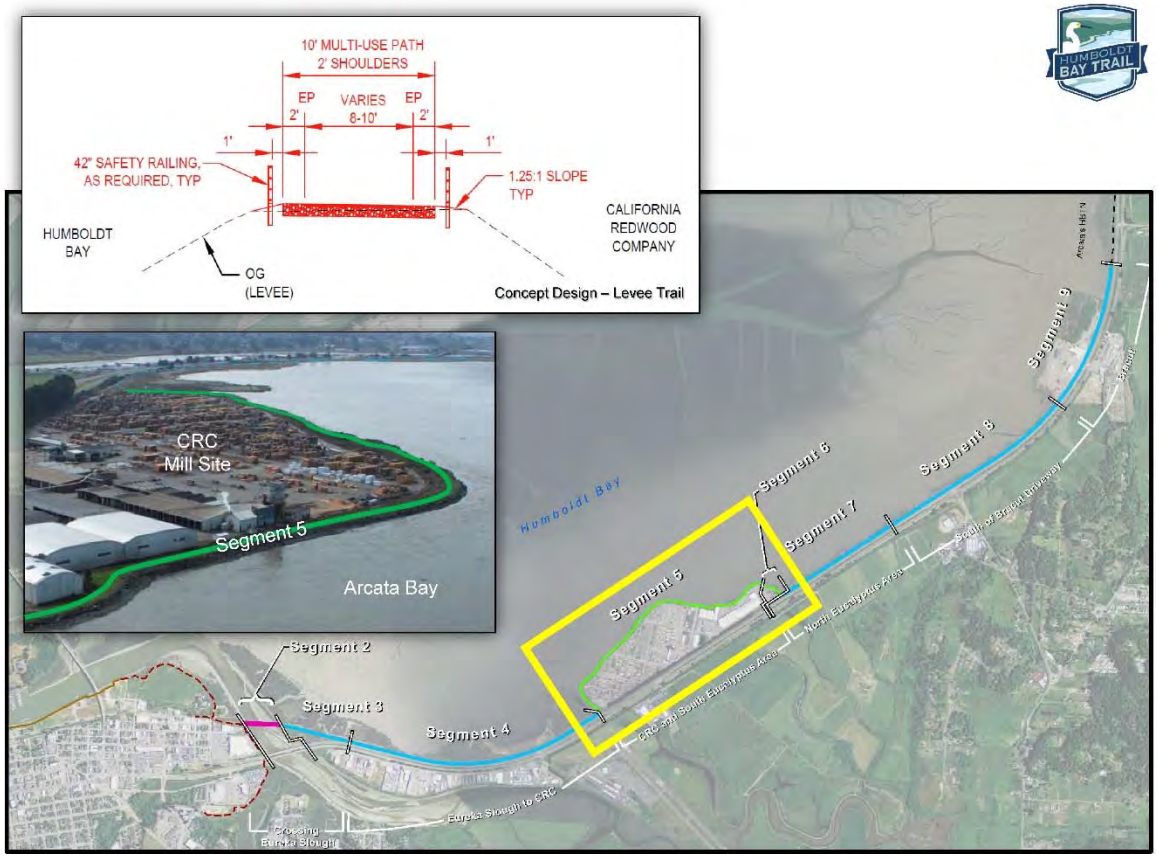
Segment 3 – Eureka Slough North



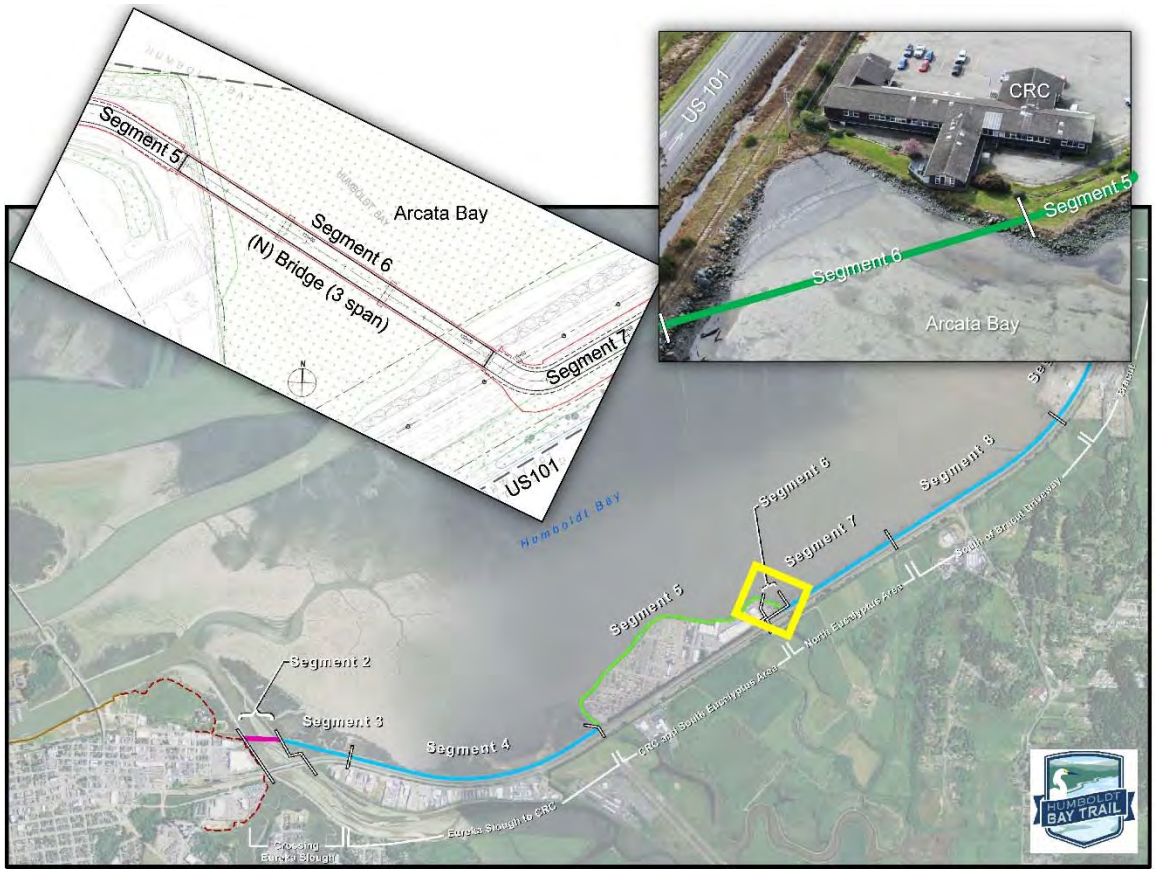
Segment 4 – Eureka Slough to CRC



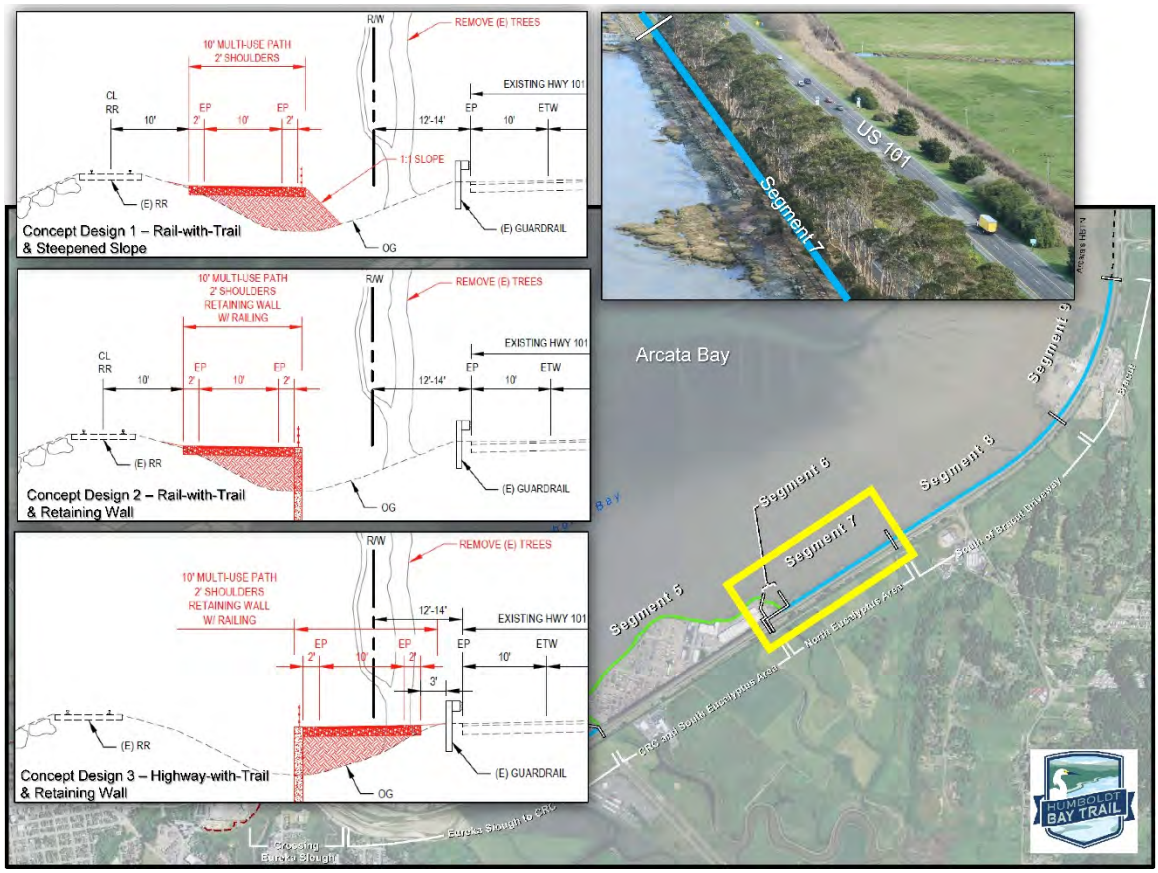
Segment 4/5 – South CRC Bridge



Segment 5 – CRC



Segment 6 – CRC North



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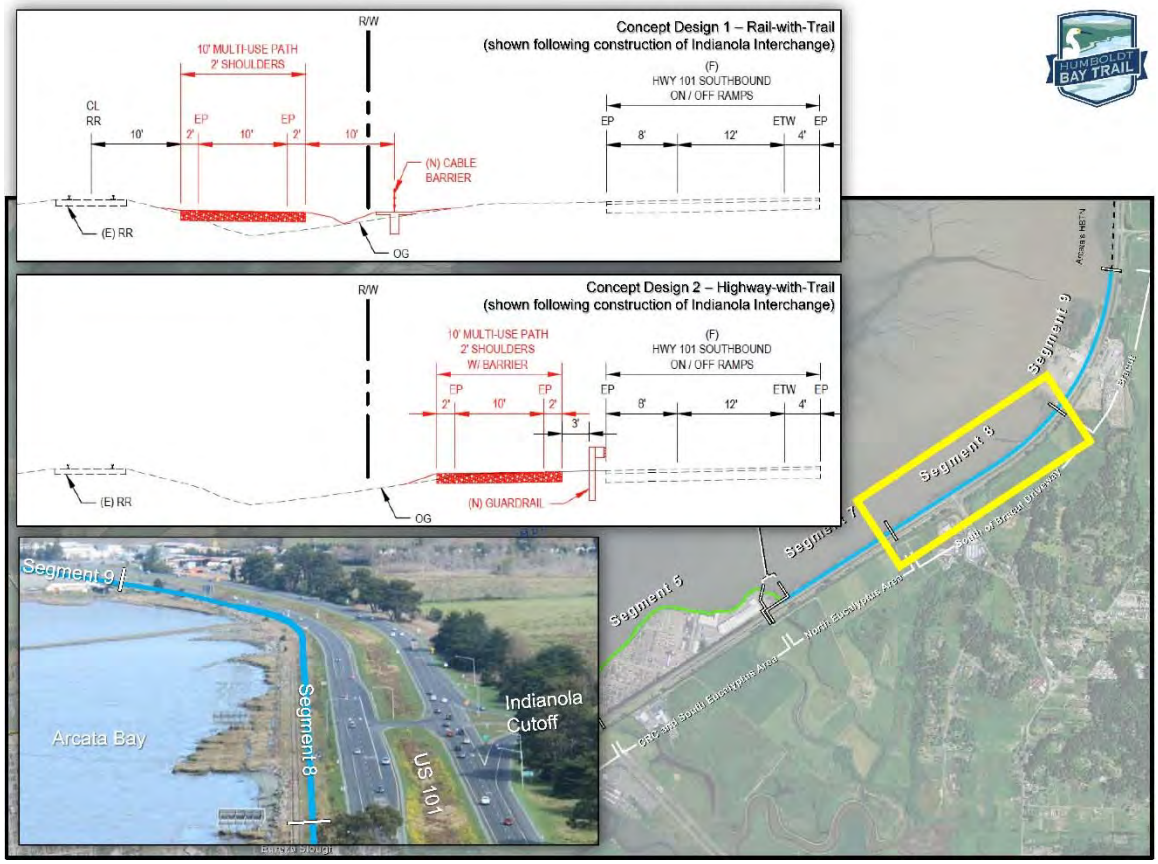
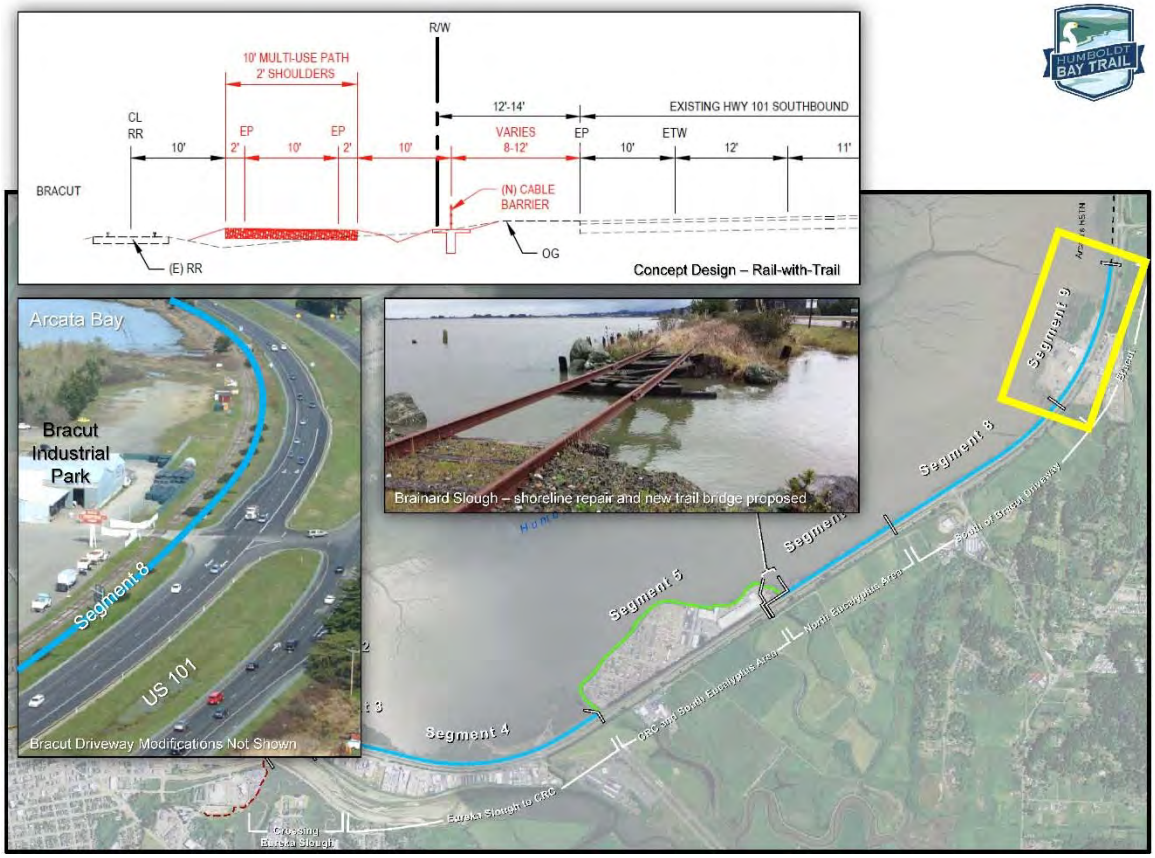
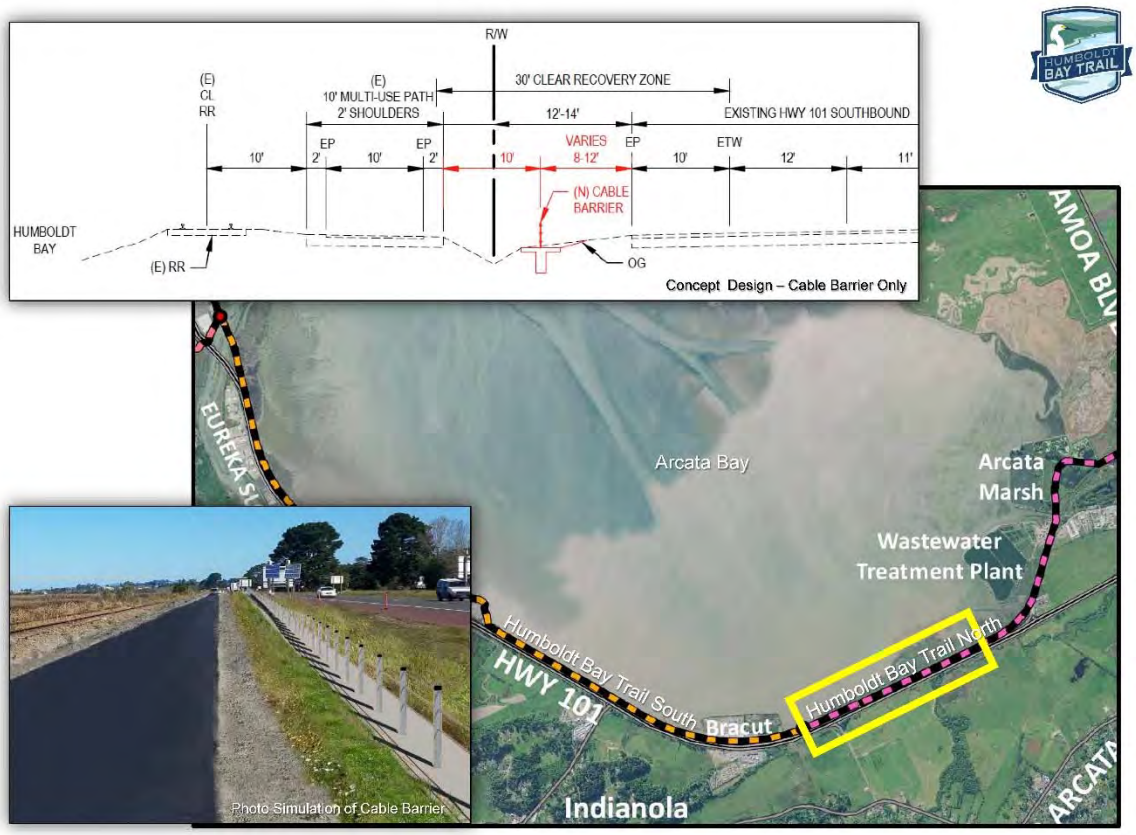


Segment 8 – Eucalyptus to Bracut



Segment 9 – Bracut



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