FINAL ENVIRONMENTAL IMPACT REPORT: SALT RIVER ECOSYSTEM RESTORATION PROJECT

FEBRUARY 2011

SCH# SD2007-05-6

Prepared for:

Humboldt County
Resource Conservation District
5630 South Broadway
Eureka, CA 95503

Prepared by:

Grassetti Environmental Consulting
7008 Bristol Drive
Berkeley, CA 94705
(510) 849-2354

In association with:

California State Coastal Conservancy
Kamman Hydrology & Engineering, Inc.

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Acronyms and Abbreviations

ACG	Aleutian Cackling Goose
ATCM	Airborne Toxic Control Measures
bgs	below the ground surface
BMPs	Best Management Practices
CAL-EPA	California Environmental Protection Agency
CARB	California Air Resources Board
CCC	California Coastal Commission
CDFG	California Department of Fish and Game
CDO	Cease and Desist Order
CDP	Coastal Development Permit
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CFCPA	California Farmland Conservancy Program Act
CHRIS	California Historical Resources Information System
CNEL	Community Noise Equivalent Level
CNPS	California Native Plant Society's
Corps	U.S. Army Corps of Engineers
CRHR	California Register of Historic Resources
CSD	Community Services District
CUP	Conditional Use Permit
CWA	Clean Water Act
cy	cubic yards
dB	decibels
dBA	A-weighted sound level
DFG	Department of Fish and Game
DO	dissolved oxygen
DTMs	digital terrain models
DTSC	Department of Toxic Substances Control
EFH	Essential Fish Habitat

EIR	Environmental Impact Report
EMMP	Excavation Materials Management Plan
EPA	Environmental Protection Agency
ERAP	Eel River Area Plan
ESA	Endangered Species Act
ESA	Environmental Site Assessment
FBFM	Flood Boundary and Floodway Map
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FIS	Flood Insurance Study
FPPA	Federal Farmland Protection Policy Act
FTA	Federal Transit Administration
GHG	greenhouse gases
GPU	General Plan Update
HCGP	Humboldt County General Plan
HCRCD	Humboldt County Resource Conservation District
IPCC	Intergovernmental Panel on Climate Change
IS	Initial Study
LCP	Local Coastal Plan
Ldn	Day-Night Noise Level
Leq	equivalent sound level
LESA	Land Evaluation Site Assessment
m	meters
MHW	Mean High Water
MHHW	Mean Higher High Water
MOU	Memorandum of Understanding
mm/yr	millimeter per year
MSA	Magnuson-Stevens Act
MSL	Mean Sea Level
MUTCD	Manual on Uniform Traffic Control Devices
NAHC	Native American Heritage Commission
NCIC	North Coast Information Center
NCUAQMD	North Coast Unified Air Quality Management District

NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NOP	Notice of Preparation
NOS	National Ocean Survey
NOx	Oxides of Nitrogen
NPDES	National Pollution Discharge Elimination System
NPL	National Priority List
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
OPR	Office of Planning and Research
PAHs	polynuclear aromatic hydrocarbons
PCBs	Polychlorinated Biphenyls
PG&E	Pacific Gas and Electric Company
PRC	Public Resources Code
RCD	Resource Conservation District
RCRA	Resource Conservation and Recovery Act
RCTWG	Redwood Coast Tsunami Work Group
REC	Recognized Environmental Condition
RLF	red-legged frog
ROG	Reactive Organic Gasses
RTS	Redwood Transit System
RWQCB	Regional Water Quality Control Board
SAA	Stream Alteration Agreement
SCC	State Coastal Conservancy
SMA	Streamside Management Area
SMAO	Streamside Management Area Ordinance
SR	State Route
SRAG	Salt River Advisory Group
SRWCB	State Regional Water Resources Control Board
SVOCs	semi-volatile organic compounds
SWPPP	Stormwater Pollution Prevention Plan

SWRCB	State Water Resources Control Board
TAG	Technical Advisory Group
TDS	Total dissolved solids
TEF	toxic equivalency factor
TEQ	toxic equivalent concentration
TMDL	Total Daily Maximum Load
TPH	Total Petroleum Hydrocarbons
TSS	Total Suspended Sediment
USFWS	U.S. Fish and Wildlife Service
VOC	volatile organic compound
WCB	Wildlife Conservation Board
WHO	World Health Organization
WNV	West Nile Virus
WWTF	Wastewater Treatment Facility
WWTP	Wastewater Treatment Plant

Executive Summary

OVERVIEW OF THE PROJECT AND ~~DRAFT~~ EIR

This ~~Draft~~ Final Environmental Impact Report (~~Draft~~ Final EIR) addresses the potential environmental impacts of the Salt River Ecosystem Restoration Project (hereinafter called Salt River Project) near Ferndale in Humboldt County. The proposed project entails creation of a new or expanded Salt River channel, restoration of wetland habitat at Riverside Ranch, and upland restoration and erosion control work in the Wildcat Hills. Currently most of the lands on or near the proposed channel and Riverside Ranch are in agricultural (mostly dairy) uses.

The Proposed Project is comprised of four major components: wetland and upland restoration on the 444-acre-Riverside Ranch property owned by the California Department of Fish and Game (CDFG); erosion-reduction projects on private lands in the Wildcat Hills; excavation of a new Salt River channel, also mostly on private lands; and long-term maintenance. The project is being developed through collaboration between private landowners and multiple public agencies including the Humboldt County Resource Conservation District (HCRCD), the County of Humboldt, the City of Ferndale, California Department of Fish and Game, State Coastal Conservancy, U.S. Army Corps of Engineers, NOAA's National Marine Fisheries Service (NMFS), U.S. Department of Agriculture-Natural Resources Conservation Service (NRCS), and other partners.

Some of the private landowners participating in this project are members of the Salt River Advisory Group, an HCRCD subcommittee working to address Salt River watershed issues and maintain agricultural resources in the Ferndale area, others are members of the Salt River Watershed Council, a non-profit watershed organization. Project implementation is expected to occur in 2011 and 2012.

PROJECT PURPOSE AND NEED

The Salt River watershed is tributary to the Eel River delta. The Salt River watershed ecosystem and hydrology have been significantly impacted as a result of land use changes, which accelerated in the late 19th century. Only a small fraction of the original Salt River estuary complex is currently subject to tidal influence, due to historical land reclamation activities, levee and tide gate construction, and channel aggradation (filling in with sediment). Steep topography, relatively high rainfall, unstable geological structure, and high rates of tectonic activity combine with highly erodible soils to contribute to high potential for upslope landslides and high rates of sediment delivery to tributary watercourses and to the Salt River. The upper portion of the Salt River has been diverted by sediment accumulation, resulting in a 42 percent reduction in the size of the Salt River watershed. The main channel of the Salt River and the lower reaches of its tributaries have become choked with sediment and willows, and have lost nearly all natural hydraulic function.

The hydraulic dysfunction of the Salt River causes significant problems related to flooding, discharge of wastewater treatment plant effluent, and overall water quality. These problems increase each winter as the sediment continues to fill drainages. During the wet season, even small rain events cause the Salt River and the lower reaches of its tributaries to overflow their banks, resulting in almost perpetual flood conditions. Hundreds of acres of dairy and grazing land are taken out of production for almost eight months each year due to chronic flooding. Production losses and additional expenses for supplemental feed, pumping out floodwater, and farming and re-seeding flooded areas are borne by agricultural producers.

In the summer, surface water disappears in several channel reaches as water flows subsurface through the accumulated sediment. Road culverts have become severely plugged by sediment, with complete blockage in some cases. Historically, water flows within the Salt River were sufficient to provide the required dilution for discharge from the City of Ferndale wastewater treatment plant; however, sedimentation has reduced channel capacity and the receiving water flows to the point that the effluent violates water quality standards, for which the North Coast Regional Water Quality Control Board has issued a Cease and Desist Order. Treated effluent often flows undiluted into residential areas and agricultural lands, and sediment deposition near the confluence of Francis Creek and the Salt River puts the entire wastewater treatment plant at increasing risk of being flooded. Impaired channel conditions contribute to other water quality problems by limiting drainage of adjacent agricultural lands.

The Salt River historically functioned as a migration corridor for adult salmonids reaching spawning habitat in tributaries within the Wildcat Mountains and provided rearing habitat for juveniles migrating downstream to the Eel River estuary. However, the current poor fish passage conditions have resulted in drastic population declines of all species of salmonids that formerly used the Salt River and its tributaries. In addition, there has been a substantial loss of wetlands and habitat diversity (Salt River Watershed Assessment; Downie and Lucey, 2004).

The Salt River Ecosystem Restoration Project (Proposed Project) was developed to respond to these problems, with the benefits of reduced flood impacts, improved fish passage, improved water quality, improved and expanded habitat for riparian and wetland species, improved dilution of sewage treatment plant discharge, and improved sediment transport.

SALT RIVER ECOSYSTEM RESTORATION PROJECT COMPONENTS

The Salt River Ecosystem Restoration Project is a watershed-based, ecosystem-scale project with multiple objectives and benefits including habitat restoration and enhancement, water quality improvement, flood alleviation, and carbon sequestration. The project is intended to provide immediate and substantial improvements to the watershed, and to restore natural hydrologic and ecological processes to the extent that conditions within the project area can be feasibly maintained with minimal future adverse impacts. Due to the scale and magnitude of the alterations that have occurred within the watershed, adaptive management projects are expected to be required in the future.

The ~~four~~ components of the proposed project include:

1) **Channel Restoration** – Restoration of hydraulic capacity, in-stream fish habitat, riparian vegetation, and improved water quality in the entire Salt River, and lower Francis Creek, plus indirect improvements to Williams, Coffee, and Reas creeks by excavation of the new Salt River channel. The excavation of the new channel is proposed to extend from Cutoff Slough at Riverside Ranch to approximately 1800 feet upstream of the Williams Creek-Salt River confluence. The channel design for this option optimizes fish passage, riparian habitat and sediment transport. The proposed channel design is based on existing flow conditions from all tributaries.

2) **Riverside Ranch Restoration** – Restoration of Riverside Ranch, an approximately 444-acre property located near the confluence of the Salt River and the Eel River. Riverside Ranch has more than 2.5 miles of Salt River frontage, and the property has been acquired for transfer to the California Department of Fish and Game. Portions of the property would be restored to open water, salt marsh, and other wetland types while nearly 63-acres would continue to be agriculturally managed to create suitable habitat for Aleutian geese.

3) **Upslope Sediment Reduction** – Sediment reduction/erosion control actions in the Williams Creek, Francis Creek, and Reas Creek sub-watersheds, including upslope channel restoration, riparian planting, bank stabilization, livestock fencing, and road drainage upgrades. Projects may also include engineered natural features to capture and trap sediment in off-channel areas that would gradually restore to wetland areas through natural processes. These efforts are primarily intended to improve water quality in the Salt River, while enhancing the hydrologic function of the Salt River by reducing turbidity or sediment load and resulting sediment deposition in the Salt River channel.

Adaptive Management Plan. Project performance thresholds and acceptable practices would be developed for future adaptive management measures to maintain performance of the overall Salt River Ecosystem Restoration Project. This ~~component~~ would be most closely associated with river channel restoration, and includes identification of channel dimensions, channel maintenance access points, target habitat conditions, establishment of maintenance activities compatible with the overall project goals and objectives, and Best Management Practices for performing future channel maintenance activities.

SALT RIVER ECOSYSTEM RESTORATION PROJECT ALTERNATIVES

This ~~Draft~~ Final EIR analyzes a range of restoration alternatives to meet the habitat restoration, drainage, water quality, and flood protection goals of the Salt River Ecosystem Restoration Project, with consideration of economic feasibility and public safety. This ~~Draft~~ EIR considers the environmental effects of the four project components described above as Alternative 1. Three other alternatives are also assessed. These include Alternative 2, which includes the Salt River channel and upland work, but not restoration of Riverside Ranch; Alternative 3, which includes restoration of Riverside Ranch and the adjacent lower portion of the Salt River, as well as upland restoration, but not the bulk of the Salt River channel restoration; and Alternative 4, which is the no project

scenario. This ~~D~~EIR also discusses a range of other possible alternatives and components that have been rejected from further review.

This ~~Draft~~ EIR identifies the potential impacts and mitigation measures for each of the alternatives. These impacts are summarized in Table ES-1.

PURPOSE AND USE OF THIS ~~DRAFT~~ EIR

The ~~Draft~~ EIR was prepared in compliance with CEQA and the CEQA Guidelines, as amended. Possible CEQA responsible agencies for components of this project include:

- California Department of Fish and Game (Streambed Alteration Agreement, permit for electro-fishing and/or seining activities if fish need to be relocated)
- North Coast Regional Water Quality Control Board (401 Certification and/or Discharge Permit, Stormwater Pollution Prevention Plan)
- Humboldt County (Grading Permit, Conditional Use permit, Coastal Development Permit, no agricultural land loss policy, FEMA floodplain/floodway certification)
- State Lands Commission
- California Coastal Commission (Coastal Development Permit)
- North Coast Unified Air Quality Management District (permit for backup diesel generator)

In addition, local permits would be required for grading and levee encroachment/construction.

This EIR has been formatted to facilitate its incorporation into any NEPA documentation that may be required for the project. Federal lead agencies and their permits for the project that may trigger NEPA review include:

- U.S. Army Corps of Engineers: Department of the Army Section 404 Clean Water Act permit would be required for discharge or fill of waters of the United States.
- National Marine Fisheries Service: Federal Endangered Species Act compliance would be required for anadromous fish species federally listed as threatened or endangered
- U.S. Fish and Wildlife Service: Federal Endangered Species Act compliance would be required for resident fish and terrestrial species federally listed as threatened or endangered.
- California State Historic Preservation Office: Section 106 of the National Historic Preservation Act, as codified in 36 Code of Federal Regulations 800.4, requires federal agencies to consult with the California State Historic Preservation Officer for resources that are eligible for listing as a historic resource.
- US Environmental Protection Agency: Oversight responsibility for federal Clean Water Act permits.

This document is a project-level ~~Draft~~ EIR for the Salt River channel and Riverside Ranch restoration components of the project, and assesses the upland sediment reduction projects at a program level.

PUBLIC INVOLVEMENT PROCESS

The District has facilitated numerous public meetings, tours, small group discussions, and individual conversations in order to assure public involvement in this highly collaborative project. In 2004 the Salt River Advisory Group (SRAG) was established under the auspices of the District to build partnerships between private landowners living adjacent to the Salt River, public groups, and resource agencies and to provide information and technical assistance to the project. The SRAG is comprised of numerous landowners and representatives from various public agencies including: HCRCD, California Department of Fish and Game, Natural Resources Conservation Service, California Coastal Conservancy, County of Humboldt, and City of Ferndale. Regular meetings of the SRAG have been held over several years to promote public involvement, encourage dialogue, and share information.

On June 21, 2007 a public scoping meeting to discuss the Notice of Preparation for this EIR was held at the Ferndale City Hall and public comment was received.

During 2006 and 2007 additional public meetings were held inviting landowners and interested citizens to form Salt River Watershed Council. The Council is a community based partnership that encourages long-term cooperative watershed management practices to sustain, protect, and improve water quality, drainage, aquatic and riparian habitat, and other natural resources, while contributing to long-term economic, agricultural and community sustainability in the coastal Salt River watershed. It is anticipated that the Salt River Watershed Council will continue to play a key role in promoting public involvement with the project.

ENVIRONMENTAL IMPACTS, AND MITIGATION MEASURES

The environmental impacts of the Salt River Ecosystem Restoration Project alternatives are summarized on Table S-1 and are briefly described by topic below. ~~Impacts that apply only to the Related Projects are addressed in the Draft EIR text but not shown in this summary table.~~

HYDROLOGY, WATER QUALITY, AND GEOMORPHOLOGY

Alternatives 1-3 would have potentially significant but mitigable impacts to water quality associated with construction. Alternatives 1-3 also could degrade water quality in the Eel River delta if tidal and wetland circulation does not function as planned; this also would be mitigable to a less than significant level. Potentially significant impacts to groundwater quality and channel erosion are unlikely, but also may occur under Alternatives 1-3. A monitoring and management plan would identify and mitigate groundwater and channel erosion impacts, if they develop. Alternative 3 would have less of a beneficial effect on Salt River flooding upstream of Reas Creek than Alternatives 1 and 2. Alternative 3 would also have an increased (but still less than significant) potential scour in

the lower part of the channel, adjacent to Riverside Ranch. Under Alternative 4, existing flooding and water quality problems would continue to worsen.

GEOLOGY AND SOILS

Alternatives 1 and 2 would involve bridge reconstruction or retrofitting, which would be required to conform to current seismic design standards and therefore have a less than significant impact. Similarly Alternatives 1-3 would involve construction of levees and berms designed to current seismic standards. Alternatives 1-3 also would have some erosion potential, however this impact would be reduced to less than significant levels by incorporation of Water Quality section mitigations. Up-land projects in Alternatives 1-3 would reduce erosion and landslide hazards compared to existing conditions and Alternative 4.

BIOLOGICAL RESOURCES: TERRESTRIAL AND WETLANDS

Impacts to Sensitive Habitat. The proposed project would impact some existing habitats that are regionally abundant and not considered to be sensitive habitats. These habitats include developed land, agricultural grassland and ruderal habitat. The conversion of these land cover types to other habitats, such as tidal marsh, aquatic, and riparian, is therefore not considered significant. Restoration of the area would also potentially impact sensitive habitats, including freshwater and brackish marsh, agricultural land and perennial grassland with wetland characteristics, freshwater seasonal wetlands, and riparian forest and scrub habitat. Acreages of these habitat types impacted by the project would vary depending on the project alternative implemented. These impacts are discussed in detail in Impacts 3.3.1-1 through 3.3.1-5 below. Table 3.3-2 summarizes acreage impacts by land cover type for the Riverside Ranch and Salt River Channel Restoration components. The upslope sediment reduction component is not expected to result in significant land cover conversions.

Impacts to Special Status Species. While conversion of regionally common land cover types to restored land cover types is not considered an adverse impact, impacts to special status species potentially using these habitats are analyzed below. The project's sensitive habitat impacts also have the potential to impact associated plant and wildlife species, including special status species. Impacts to special status species are discussed in detail in Impacts 3.3.1-6-3.3.1-12.

Effects on Wildlife Corridors. None of the project alternatives would interfere substantially with wildlife movement, nursery sites, or wildlife corridors. Alternatives 1-3 would have beneficial effects. The restoration of approximately 5 miles of freshwater riparian corridor would improve the connectivity and quality of the riparian corridor for species such as riparian birds and amphibians.

Conflicts with Local Policies or Ordinances Protecting Biological Resources. None of the project alternatives would conflict with local policies or ordinances protecting biological resources. While County regulations protect sensitive habitat such as coastal streams and riparian habitats from disturbance, disturbance and alteration of these habitats is permitted by the County when it is carried out for fish and wildlife habitat restoration or improvement or for flood control channel replacement with DFG consultation (Eel River Area Plan Sections 30233(a), 30607.1, 30236).

Conflicts with Conservation Plans. There are no approved habitat conservation plans in the project area. Therefore, none of the project alternatives would conflict with such a plan.

BIOLOGICAL RESOURCES: AQUATIC

Implementation of Alternative 1 could negatively impact aquatic ecosystems and fish through the following mechanisms:

- Changes in water quality
- ~~Entrainment~~ Entrapment of fish in areas disconnected from the estuary.
- Disturbance of substrate/benthic habitat
- Creation of habitat that will benefit non-native invasive species at the expense of native species

Alternative 1 also provides the most significant and far-reaching benefits of any of the proposed alternatives. By combining a significant increase in tidal prism, restoring five miles of freshwater channel habitat along the main Salt River Channel, and by restoring hydraulic connectivity with tributary streams, the project thereby also provides a net benefit to fish and the aquatic ecosystem.

Alternative 2 possesses nearly all of the potentially adverse impacts of Alternative 1, with two notable exceptions: a) There would be no risk of entrainment in newly restored tidal marsh absent newly created tidal marsh, and; b) The continued low level tidal prism would diminish tidal scouring of the channel, thereby increasing the need for and rate of channel maintenance over time. The construction of a channel in combination with upland restoration can only be considered a palliative treatment for this geologically unstable and ecologically degraded system. Furthermore, repetitive and more frequent disruption of the newly modified channel would more frequently disrupt any benefits associated with improving aquatic habitat conditions in the Salt River channel.

Alternative 3, primarily limited to the restoration of Riverside Ranch, possesses most of the project benefits to aquatic habitat, and relatively few of the adverse effects associated with channel modification and long-term maintenance of the channel.

However, fewer improvements to drainage and main-channel habitat quality would preclude full hydrologic connectivity with and fish passage to Salt River tributary streams.

Alternative 4 (No Action) would avoid all adverse impacts associated with the proposed project, and assures the ongoing sediment deposition, aggradation of the main channel, continued flooding, and none of the benefits associated with conducting the project. In the short term, within 15 years, aquatic habitat would diminish as the channel further closes.

AIR QUALITY

Alternatives 1-3 would result in the emissions of significant levels of PM10 emissions. However, the implementation of mitigation measures to reduce fugitive dust would reduce these emissions to less than significant levels. Alternatives 1-3 would also result in short-term construction related emissions of greenhouse gases, notably CO2. Alternative 1 and 3 would also result in the

restoration of approximately 247 acres of salt marsh, which is expected to be a significant long-term carbon sink and would make the project's impact on greenhouse gas emissions less than significant. Alternative 2 does not include tidal salt marsh restoration. If Alternative 2 were implemented, carbon offsets would be purchased to reduce the greenhouse gas emissions impact to a less than significant level. Alternatives 1-3 would also result in less than significant short-term emissions of other pollutants associated with construction. Levels of emissions for Alternatives 2 and 3 are approximately half the emissions expected under Alternative 1. Alternative 4 would not generate any new pollutant emissions.

NOISE

Noise generated from excavation, hauling, and disposal of soils in Alternatives 1 and 2 could potentially significantly adversely affect nearby residents. This would be mitigated to a less than significant level by implementation of mitigation including limits on work hours, controls on equipment, and development of a haul-truck route plan. Alternative 3 would have a more limited noise impact and would not require mitigation.

AESTHETICS

Alternatives 1, 2, and 3 would all result in temporary impacts to the area's visual quality associated with the removal of vegetation and earthmoving, as well as permanent impacts associated with revegetation and wetlands creation. The proposed Revegetation Plan would reduce this impact to less than significant. No light and glare would occur from any of the alternatives.

LAND USE

None of the alternatives would have significant impacts associated with land use plan compliance, compatibility with surrounding land uses, or substantial alteration of present or planned land uses. No mitigations are required.

AGRICULTURAL RESOURCES

Alternatives 1 and 2 would provide 1- to 2-year flood protection of agricultural areas near the Salt River channel, as well as enhanced drainage to surrounding agricultural lands in all flood events, thereby ~~enhancing~~ ~~agricultural land uses~~ improving agricultural productivity on those lands. This would be partially offset by the loss of some agricultural lands to the new channel. Overall, Alternative 1 would have neutral or beneficial impacts to agricultural productivity. Alternatives 1 and 3 would result in the loss of agricultural lands at Riverside Ranch that would be converted to wetlands. Overall, loss of agricultural lands would be offset by drainage improvements for Alternatives 1 and 2, but not for Alternative 3. Alternative 4 would result in a gradual increase in the duration and frequency of flooding in the project area, with associated losses in agricultural productivity. No mitigations are required.

RECREATION

None of the alternatives would have significant impacts to existing or planned recreational facilities, public access, or other recreational opportunities. No mitigations are required.

CULTURAL RESOURCES

Excavation of the Salt River Channel and Riverside Ranch under Alternatives 1 and 2 could result in significant impacts to unknown historic or prehistoric resources. Alternative 3 would have a lower probability of significant effects because no work would be done at the Port Kenyon Historic District, however significant impacts may still occur. Mitigation measures have been identified to reduce this impact to a less than significant level.

TRANSPORTATION

Alternatives 1 and 2 could result in potentially significant traffic impacts associated with haul-truck trips. This impact could be reduced to a less-than-significant level through use of double trailers and implementation of a traffic control plan. Safety hazards and impacts to pedestrians, bicycles, and transit would be less than significant. Alternative 3 would have earthwork balanced on-site and would have a less than significant truck traffic impact.

PUBLIC SERVICES AND UTILITIES

None of the alternatives would have potentially significant impacts to any public services or utilities. No mitigations are required.

HAZARDS AND HAZARDOUS MATERIALS

Alternatives 1-3 would have less than significant impacts associated with soil contamination and accidental release of hazardous materials during construction. Impacts from mosquito generation would be significant but mitigable for Alternatives 1-3. .

SIGNIFICANT UNAVOIDABLE IMPACTS

~~Significant unavoidable impacts under Alternatives 1, 2, or 3 are limited to creation of habitat that benefits non-native fish.~~ All ~~other~~ impacts are mitigable to a less-than-significant level with implementation of measures identified in this EIR.

COMPARISON OF ALTERNATIVES

As required by CEQA, the Salt River Ecosystem Restoration Project alternatives were analyzed to determine which would be the Environmentally Superior Alternative. Alternative 1 could have somewhat greater short-term environmental impacts to existing environmental resources than Alternatives 2 and 3, considered without reference to long-term environmental benefits. Alternative 2 would provide substantial flood control, channel ecosystem, and fish passage benefits but may

require more maintenance than Alternatives 1 and 2 due to reduced tidal prism. Alternative 3 provides substantial wetland enhancement benefits but limited channel improvements, fish passage, and flood control benefits, but with substantially reduced implementation impacts on biological resources and construction noise that would be associated with the channel excavation. Therefore this EIR considers the Salt River Ecosystem Restoration Project's CEQA Environmentally Superior Alternative to be Alternative 3. It should be noted, however, that even this alternative and mitigation, would result in some significant adverse impacts, as with Alternatives 1 and 2.

Table ES-1 Comparison of Impacts of Salt River Ecosystem Restoration Project Alternatives

Impact Number	Impact	Alternative 1: Full Restoration	Alternative 2: Partial Restoration – Channel Restoration and Upslope Sediment Reduction	Alternative 3: Partial Restoration – Riverside Ranch and Upslope Sediment Reduction	Alternative 4: No Project
Hydrology, Water Quality and Geomorphology					
Impact 3.1.1-1, 3.1.2-1, 3.1.3-1	Long-term impacts on water quality associated with construction	◑	◑	◑	○
Impact 3.1.1-2, 3.1.2-2, 3.1.3-2	Short-term impacts on water quality associated with construction	◑	◑	◑	○
Impact 3.1.1-3, 3.1.2-3, 3.1.3-3	Degrade wetland and Eel River Estuary water quality in the future	◑	⦶	◑	○
Impact 3.1.1-4, 3.1.2-4, 3.1.3-4	Increase in tidal exchange and salinity in upstream waters will adversely impact river hydrology and hydraulics	⦶	⦶	⦶	○
Impact 3.1.1-5, 3.1.2-5, 3.1.3-5	Dewater shallow groundwater	⦶	⦶	⦶	○
Impact 3.1.1-6, 3.1.2-6, 3.1.3-6	Reduce groundwater quality	◑	◑	◑	○
Impact 3.1.1-7, 3.1.2-7, 3.1.3-7	Effects of flows in reconstructed channel on channel erosion	◑	◑	◑	○
Impact 3.1.1-8, 3.1.2-8, 3.1.3-8	Increase channel scour due to increased tidal prism	⦶	⦶	⦶	○
Impact 3.1.1-9, 3.1.2-19, 3.1.3-9	Increase wind-wave generated erosion around restored wetland	◑	⦶	◑	○

KEY:

● = Significant and not mitigable impact ◑ = Significant and mitigable impact ⦶ = Less than significant impact ○ = No impact + = Beneficial impact

? = Unknown/speculative

Note: Impact levels are the same for all Alternatives unless otherwise noted.

Impact Number	Impact	Alternative 1: Full Restoration	Alternative 2: Partial Restoration – Channel Restoration and Upslope Sediment Reduction	Alternative 3: Partial Restoration – Riverside Ranch and Upslope Sediment Reduction	Alternative 4: No Project
Impact 3.1.1-10, 3.1.2-10, 3.1.3-10	Effects of reconstructed channel on off-site flooding	◐	◐	◐	○
Impact 3.1.1-11, 3.1.2-11, 3.1.3-11	Inhibit drainage of surrounding dairy lands	◐	◐	◐	○
Impact 3.1.1-12, 3.1.2-12, 3.1.3-12	Increase frequency of flooding at Riverside Ranch	◐	◐	◐	○
Impact 3.1.1-13, 3.1.2-13, 3.1.3-13	Setback berms could impede or redirect flood flows	◐	◐	◐	○
Impact 3.1.3-14, 3.1.2-14, 3.1.3-14	Setback berms could fail and threaten adjacent properties and structures	◐	◐	◐	○
Impact 3.1.1-15, 3.1.2-15, 3.1.3-15	Effects on water quality and sediment loads from tributary flows to restored channel	◐	◐	◐	○
Impact 3.1.1-16, 3.1.2-16, 3.1.3-16	Effects on water quality and sediment loads from reintroduced flows to the Salt River between Williams and Reas Creeks	◐	◐	◐	○
Impact 3.1.1-17, 3.1-2-17, 3.1.3-17	Inundation by seiche or tsunami	◐	◐	◐	○
Impact 3.1.1-18, 3.1.2-18, 3.1.3-18	Increased scour and erosion at road crossing structures	◐	◐	◐	○
Impact 3.1.1-19, 3.1.2-19, 3.1.3-19	Project impacts associated with sea level rise	◐	◐	◐	○
Impact 3.1.4-1	Inadequate and continued degradation of drainage				○

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Impact Number	Impact	Alternative 1: Full Restoration	Alternative 2: Partial Restoration – Channel Restoration and Upslope Sediment Reduction	Alternative 3: Partial Restoration – Riverside Ranch and Upslope Sediment Reduction	Alternative 4: No Project
	from area dairy lands				
Impact 3.1.4-2	Continued degradation of water quality				○
Geology and Soils					
Impact 3.2.1-1, 3.2.2-1, 3.2.3-1, 3.2.4-1	Expose structures and people to rupture of known earthquake fault	◐	◐	◐	○
Impact 3.2.1-2, 3.2.2-2, 3.2.3-2, 3.2.4-2	Expose structures and people to strong ground shaking and seismic related ground failure, including liquefaction	◐	◐	◐	○
Impact 3.2.1-3, 3.2.2-3, 3.2.3-3, 3.2.4-3	Expose structures and people to landslides	◐	◐	◐	◐
Biological Resources: Terrestrial/Upland/Riparian					
Impact 3.3.1-1, 3.3.2-1, 3.3.3-1, 3.3.4-1	Long-term impacts to wetlands	◐	◑	◐	●
Impact 3.3.1-2, 3.3.2-2, 3.3.3-2, 3.4-2	Medium-term impacts to wetlands	◑	◑	◐	○
Impact 3.3.1-3, 3.3.2-3, 3.3.3-3, 3.3.4-3	Short-term impacts to wetlands	◑	◑	◑	○

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Impact Number	Impact	Alternative 1: Full Restoration	Alternative 2: Partial Restoration – Channel Restoration and Upslope Sediment Reduction	Alternative 3: Partial Restoration – Riverside Ranch and Upslope Sediment Reduction	Alternative 4: No Project
Impact 3.3.1-4, 3.3.2-4, 3.3.3-4, 3.3.4-4	Impacts to riparian forest and scrub	◐ /+	◐	◐	○
Impact 3.3.1-5, 3.3.2-5, 3.3.3-5, 3.3.4-5	Potential increase in noxious weed populations due to site disturbance and changes in tidal influence and light availability (medium- and long-term)	◑	◑	◑	●
Impact 3.3.1-6, 3.3.2-6, 3.3.3-6, 3.3.4-6	Impacts to special status plants	◑	◑	◑	◐
Impact 3.3.1-7, 3.3.2-7, 3.3.3-7, 3.3.4-7	Construction impacts to breeding or nesting migratory and special status birds	◑	◑	◑	○
Impact 3.3.1-8, 3.3.2-8, 3.3.3-8, 3.3.4-8	Operations and maintenance disturbance to nesting birds (medium- and long-term)	◐	◐	◐	○
Impact 3.3.1-9, 3.3.2-9, 3.3.3-9, 3.3.4-9	Impacts to special status birds associated with grassland habitat	◑	◑	◑	○
Impact 3.3.1-10, 3.3.2-10, 3.3.3-10	Impacts to special status birds associated with riparian habitat	◑	◑	◑	●
Impact 3.3.1-11, 3.3.2-11, 3.3.3-11	Impacts to special status bats	◐	◐	◐	○

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Impact Number	Impact	Alternative 1: Full Restoration	Alternative 2: Partial Restoration – Channel Restoration and Upslope Sediment Reduction	Alternative 3: Partial Restoration – Riverside Ranch and Upslope Sediment Reduction	Alternative 4: No Project
Impact 3.3.1-12, 3.3.2-12, 3.3.3-12	Impacts to Northern red-legged frogs	◑	◑	◑	●
Biological Resources: Aquatic					
Impact 3.4.1-1, 3.4.2-1, 3.4.3-1, 3.4.4-1	Impacts to aquatic resources from decreased water quality due to construction/dredging activities	◑	◑	◑	○
Impact 3.4.1-2, 3.4.2-2, 3.4.3-2, 3.4.4-2	Entrainment of fish in areas disconnected from the estuary	◑	⦶	◑	○
Impact 3.4.1-3, 3.4.2-3, 3.4.3-3, 3.4.4-3	Disturbance of benthic habitats	⦶	⦶	○	○
Impact 3.4.1-4, 3.4.2-4, 3.4.3-4, 3.4.4-4	Creation of habitat that benefits non-native fish species	●⦶	●⦶	○	⦶
Impact 3.4.1-5, 3.4.2-5, 3.4.3-5, 3.4.4-5	Sea-level rise considerations	+	+	+	○
Air Quality					
Impact 3.5.1-1, 3.5.2-1, 3.5.3-1, 3.5.4-1	Conflict with implementation of applicable air quality plans	◑	◑	◑	○

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Impact 3.5.1-2, 3.5.2-2, 3.5.3-2, 3.5.4-2	Violate air quality standards or substantially contribute to an existing air quality violation through the release of particulate matter during construction	◑	◑	◑	○
Impact 3.5.1-3, 3.5.2-3, 3.5.3-3, 3.5.4-3	Expose sensitive receptors to substantial pollutant concentrations	◑	◑	◑	○
Impact 3.5.1-4, 3.5.2-4, 3.5.3-4, 3.5.4-4	Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard	◑	◑	◑	○
Impact 3.5.1-5, 3.5.2-5, 3.5.3-5, 3.5.4-5	Expose workers or the public to hazardous toxic emissions or substantial pollutant concentrations.	◑	◑	◑	○
Impact 3.5.1-6, 3.5.2-6, 3.5.3-6, 3.5.4-6	Create objectionable odors affecting a substantial number of people	⦶	⦶	⦶	○
Impact 3.5.1-7, 3.5.2-7, 3.5.3-7, 3.5.4-7	Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment	⦶	◑	◑	○
Impact 3.5.1-8, 3.5.2-8, 3.5.3-8, 3.5.4-8	Conflict with an applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases.	◑	◑	○	○

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Noise					
Impact 3.6.1-1, 3.6.2-1, 3.6.3-1, 3.6.4-1	Construction noise impacts	◑	◑	◫	○
Aesthetics					
Impact 3.7.1-1, 3.7.2-1, 3.7.3-1, 3.7.4-1	Short-term construction impacts on visual quality	◫	◫	◫	○
Impact 3.7.1-2, 3.7.2-2, 3.7.3-2, 3.7.4-2	Long-term effects on scenic vistas and scenic resources	◫	◫	◫	○
Impact 3.7.1-3, 3.7.2-3, 3.7.3-3, 3.7.4-3	Effect on light and glare	○	○	○	○
Land Use					
Impact 3.8.1-1, 3.8.2-1, 3.8.3-1, 3.8.4-1	Physically divide an established community	○	○	○	○
Impact 3.8.1-2, 3.8.2-2, 3.8.3-2, 3.8.4-2	Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project.	○	○	○	○
Impact 3.8.1-3, 3.8.2-3, 3.8.3-3,	Compatibility with surrounding land uses	◫	◫	◫	○

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3.8.4-3					
Impact 3.8.1-4, 3.8.2-4, 3.8.3-4, 3.8.4-4	Conflict with any applicable habitat conservation plan or natural community conservation plan	○	○	○	○
Impact 3.8.1-5, 3.8.2-5, 3.8.3-5, 3.8.4-5	Substantial alteration of the present or planned use of an area	◐	◐	◐	○
Agricultural Resources					
Impact 3.9.1-1, 3.9.2-1, 3.9.3-1, 3.9.4-1	Conversion of prime farmland and other agricultural land	◐	◐	◐	○
Impact 3.9.1-2, 3.9.2-2, 3.9.3-2, 3.9.4-2	Conflicts with land use designation or Williamson Act contracts	○	○	○	○
Impact 3.9.1-3, 3.9.2-3, 3.9.3-3, 3.9.4-3	Changes in the existing environment which could result in conversion of farmland to non-agricultural use	○	○	◑	○
Recreation					
Impact 3.10.1-1, 3.10.2-1, 3.10.3-1, 3.10.4-1	Conflicts with established recreational and educational uses of the site	◐	◐	◐	○

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Impact 3.10.1-2, 3.10.2-2, 3.10.3-2, 3.10.4-2	Interference with public access, degrading the recreational experience, increasing the use of existing facilities, or long-term disruption to an established recreational area	◐	◐	◐	○
Impact 3.10.1-3, 3.10.2-3, 3.10.3-3, 3.10.4-3	New recreational facilities that may have an adverse effect on the environment	◐	◐	○	○
Cultural Resources					
Impact 3.11.1-1, 3.11.2-1, 3.11.3-1, 3.11.4-1	Loss of unknown archaeological and historic resources	◑	◑	◑	○
Transportation					
Impact 3.12.1-1, 3.12.2-1, 3.12.3-1, 3.12.4-1	Impacts due to project-related traffic	◑	◑	◑	○
Impact 3.12.1-2, 3.12.2-2, 3.12.3-2, 3.12.4-2	Impacts due to an increase in the potential for accidents or safety concerns on public roads	◑	◑	◐	○
Impact 3.12.1-3, 3.12.2-3, 3.12.3-3, 3.12.4-3	Impacts on public transit	◐	◐	◐	○
Impact 3.12.1-4, 3.12.2-4, 3.12.3-4, 3.12.4-4	Impacts on pedestrians and bicycles	◐	◐	◐	○

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Impact Number	Impact	Alternative 1: Full Restoration	Alternative 2: Partial Restoration – Channel Restoration and Upslope Sediment Reduction	Alternative 3: Partial Restoration – Riverside Ranch and Upslope Sediment Reduction	Alternative 4: No Project
Impact 3.12.1-5, 3.12.2-5, 3.12.3-5, 3.12.4-5	Impacts on parking	◐	◐	◐	○
Public Services and Utilities					
Impact 3.13.1-1, 3.13.2-1, 3.13.3-1, 3.13.4-1	Impacts on water supply	◐	◐	◐	○
Impact 3.13.1-2, 3.13.2-2, 3.13.3-2, 3.13.4-2	Impacts on wastewater treatment and disposal	◐	◐	◐	○
Impact 3.13.1-3, 3.13.2-3, 3.13.3-3, 3.13.4-3	Impacts on storm drainage	◐	◐	◐	○
Impact 3.13.1-4, 3.13.2-4, 3.13.3-4, 3.13.4-4	Impacts on solid waste collection and disposal	◐	◐	◐	○
Impact 3.13.1-5, 3.13.2-5, 3.13.3-5, 3.13.4-5	Impacts on police protection	◐	◐	◐	○
Impact 3.13.1-6, 3.13.2-6, 3.13.3-6, 3.13.4-6	Impacts on fire protection	◐	◐	◐	○
Impact 3.13.1-7, 3.13.2-7, 3.13.3-	Impacts on schools	○	○	○	○

KEY:

● = Significant and not mitigable impact ◑ = Significant and mitigable impact ◐ = Less than significant impact ○ = No impact + = Beneficial impact

? = Unknown/speculative

Note: Impact levels are the same for all Alternatives unless otherwise noted.

Impact Number	Impact	Alternative 1: Full Restoration	Alternative 2: Partial Restoration – Channel Restoration and Upslope Sediment Reduction	Alternative 3: Partial Restoration – Riverside Ranch and Upslope Sediment Reduction	Alternative 4: No Project
7, 3.13.4-7					
Impact 3.13.1-8, 3.13.2-8, 3.13.3-8, 3.13.4-8	Impacts on parks	○	○	○	○
Impact 3.13.1-9, 3.13.2-9, 3.13.3-9, 3.13.4-9	Impacts to electrical and communications lines	◫	◫	◫	○
Hazards and Hazardous Materials					
Impact 3.14.1-1, 3.14.2-1, 3.14.3-1, 3.14.4-1	Effects of soil contamination	◫	◫	◫	○
Impact 3.14.1-2, 3.14.2-2, 3.14.3-2, 3.14.4-2	Accidental releases of hazardous materials during project construction	◫	◫	◫	○
Impact 3.14.1-3, 3.14.2-3, 3.14.3-3, 3.14.4-3	Health effects from mosquitoes	◑	◑	◑	○

KEY:

● = Significant and not mitigable impact ◑ = Significant and mitigable impact ◫ = Less than significant impact ○ = No impact + = Beneficial impact

? = Unknown/speculative

Note: Impact levels are the same for all Alternatives unless otherwise noted.

Chapter 1 Introduction

1.1 PROJECT OVERVIEW

The Salt River watershed is tributary to the Eel River delta. The Salt River watershed ecosystem and hydrology have been significantly impacted as a result of land use changes, which accelerated in the late 19th century. Only a small fraction of the original Salt River estuary complex is currently subject to tidal influence, due to historical land reclamation activities, levee and tide gate construction, and channel aggradation (filling in with sediment). Steep topography, relatively high rainfall, unstable geological structure, and high rates of tectonic activity combine with highly erodible soils to contribute to high potential for upslope landslides and high rates of sediment delivery to tributary watercourses and to the Salt River. The upper portion of the Salt River has been diverted by sediment accumulation, resulting in a 42 percent reduction in the size of the Salt River watershed. The main channel of the Salt River and the lower reaches of its tributaries have become choked with sediment and willows, and have lost nearly all natural hydraulic function.

The hydraulic dysfunction of the Salt River causes significant problems related to flooding, discharge of wastewater treatment plant effluent, and overall water quality. These problems increase each winter as the sediment continues to fill drainages. During the wet season, even small rain events cause the Salt River and the lower reaches of its tributaries to overflow their banks, resulting in almost perpetual flood conditions. Hundreds of acres of dairy and grazing land are taken out of production for almost eight months each year due to flooding. Production losses and additional expenses for supplemental feed, pumping out floodwater, and farming and re-seeding flooded areas are borne by agricultural producers.

In the summer, surface water disappears in several channel reaches as water flows subsurface through the accumulated sediment. Road culverts have become severely plugged by sediment, with complete blockage in some cases. Historically, water flows within the Salt River were sufficient to provide the required dilution for discharge from the City of Ferndale wastewater treatment plant; however, sedimentation has reduced channel capacity and the receiving water flows to the point that the effluent violates water quality standards, for which the North Coast Regional Water Quality Control Board has issued a Cease and Desist Order. Treated effluent often flows undiluted into residential areas and agricultural lands, and sediment deposition near the confluence of Francis Creek and the Salt River puts the entire wastewater treatment plant at increasing risk of being flooded. Impaired channel conditions contribute to other water quality problems by limiting drainage of adjacent agricultural lands.

The Salt River historically functioned as a migration corridor for adult salmonids reaching spawning habitat in tributaries within the Wildcat Mountains and provided rearing habitat for juveniles migrating downstream to the Eel River estuary. However, the current poor fish passage conditions have resulted in drastic population declines of all species of salmonids that formerly used the Salt

River and its tributaries. In addition, there has been a substantial loss of wetlands and habitat diversity (Salt River Watershed Assessment, California Department of Fish and Game, May 2005).

The Salt River Ecosystem Restoration Project (Proposed Project) was developed to respond to these problems. The Proposed Project is comprised of ~~four~~ three major components: wetland and upland restoration on the 444-acre-Riverside Ranch property owned by the California Department of Fish and Game (CDFG); upland erosion-reduction projects on private lands; and excavation of a new Salt River channel, also mostly on private lands. ~~and~~ The project also includes long-term maintenance for the Salt River channel and Riverside Ranch restorations. The project is being developed through collaboration between private landowners and multiple public agencies including the Humboldt County Resource Conservation District (HCRCD), the County of Humboldt, the City of Ferndale, California Department of Fish and Game, State Coastal Conservancy, U.S. Army Corps of Engineers, NOAA's National Marine Fisheries Service (NMFS), U.S. Department of Agriculture-Natural Resources Conservation Service (NRCS), and other partners. Some of the private landowners participating in this project are members of the Salt River Advisory Group, an HCRCD subcommittee working to address Salt River watershed issues and maintain agricultural resources in the Ferndale area, others are members of the Salt River Watershed Council, a non-profit watershed organization. Project implementation is expected to occur in 2011 and 2012.

The HCRCD has received grant funds to implement the proposed project from two State programs: the Consolidated Grants Program and North Coast Integrated Regional Water Management Plan. Planning funds were provided by the California State Coastal Conservancy (SCC) to develop a project to restore the natural functions of the Salt River ecosystem. Funding for land acquisition of portions of the project area were provided by the State of California Wildlife Conservation Board (WCB) and the United States Fish and Wildlife Service (USFWS). SCC enhancement guidelines emphasize the restoration of saltmarsh habitat, alleviation of flooding and restoration of natural hydrologic functions. WCB grant funding requirements include wildlife habitat preservation, restoration and management, wildlife -oriented education and research, and allow for compatible public uses as may be consistent with wildlife habitat preservation.

1.2 PURPOSE AND USES OF THIS EIR

This Environmental Impact Report (EIR) addresses the potential environmental impacts of a Humboldt County Resource Conservation District (HCRCD) project to restore fish habitat, improve water quality, and alleviate flooding impacts to private property and public infrastructure within the Salt River watershed, tributary to the lower Eel River. The HCRCD is the California Environmental Quality Act (CEQA) Lead Agency for this EIR and, as such, is responsible for identifying and documenting the potential environmental impacts of the proposed project in accordance with CEQA, (Public Resources Code Section 21000 et seq.), and the CEQA Guidelines (California Administrative Code Section 15000 et seq.).

This is a project-level EIR for the Riverside Ranch restoration and the new Salt River Channel (and associated sediment disposal). It also addresses, at a program level, the uplands erosion control projects. Subsequent project-specific CEQA review tiered off of this program EIR may be required

for future uplands erosion control projects. The EIR evaluates the proposed project's potential effects, both adverse and beneficial, as well as a reasonable range of alternatives. The EIR also identifies measures to avoid or reduce impacts, analyze cumulative effects, and include findings necessary for certification. If the proposed project is approved, all mitigations identified in this EIR will be incorporated into any subsequent actions taken by the HCRCD and/or other agencies to carry out the proposed project.

The EIR also will be used by permitting agencies, funding agencies and the public to support project decisions; those agencies are identified in Section 1.5, below. Other state and local agencies requiring permits would be CEQA Responsible Agencies, and would use this document in their consideration and approval actions on their permits. Federal permitting agencies (US Army Corps of Engineers, NOAA Fisheries, NRCS) would be responsible for NEPA review of their portions of the project, and may use portions of this document as the basis for their NEPA analyses.

1.3 THE CEQA PROCESS

The EIR has been prepared in compliance with the California Environmental Quality Act and the CEQA Guidelines, as amended. Because the document may be adapted or otherwise used by the US Army Corps of Engineers, Natural Resources Conservation Service, US Fish and Wildlife Service, or other federal agencies, in support of their documentation in compliance with the National Environmental Policy Act (NEPA), it will be formatted to address all alternatives at an equal level, as required under NEPA. Approval and permitting requirements for the various project components are described in detail in each technical section, and summarized at the end of the project description chapter.

During the proposed project planning phase, HCRCD prepared an Initial Study (IS) to determine what level of Environmental review would be required for the proposed project. Because the proposed project had the potential to result in significant impacts, the HCRCD made a determination to prepare an EIR.

The environmental review process includes the following steps:

Prepare and Distribute a Notice of Preparation

The environmental review process began with a Notice of Preparation (NOP). This is a notice that an EIR will be prepared, and a brief description of the proposed project. The NOP was publicized locally, and also distributed to a wide array of government agencies through the State Clearinghouse. The NOP for this document was distributed on April 27, 2007 and is contained in Appendix A. The following agencies and members of the public responded to the NOP:

- California State Lands Commission
- Denver Nelson
- State of California Native American Heritage Commission
- Will Drew

- Wiyot Tribe

The response letters are also included in Appendix B.

Prepare and Distribute the Draft EIR

The lead agency and its consultants prepared the Draft EIR document, which was distributed for review on April 12, 2010. This Draft EIR ~~is being~~ was circulated to interested agencies and made available for public review for 45 days, or until May 28, 2010.

Receive Comments on the Draft EIR

The Draft EIR ~~is being~~ was circulated for 45 days to allow the public and interested public agencies to review and comment on the document. Copies of the EIR ~~are~~ were available at the four locations listed above. Interested parties ~~may~~ also attended the public hearing on the DEIR. ~~The time and location of the public hearing will be publicized in local newspapers and posted in the County Clerk's office.~~ A public meeting to receive comments on the Draft EIR was held on May 5, 2010 at 7:00 pm at the Community Center at Fireman's Park in Ferndale, CA.

Respond to Comments and Prepare the Final EIR

~~At the end of the public review period, t~~ The HCRCD ~~will~~ has evaluated comments on environmental issues received from the public and agencies that reviewed the DEIR and ~~will~~ prepared a written response (Section 15088 CEQA Guidelines). The comments and ~~the~~ responses ~~will be~~ have been added to the revised DEIR, ~~which then becomes~~ comprising the Final EIR. A copy of the comments and responses ~~Final EIR~~ was forwarded to responding responsible agencies ten days prior to ~~approval~~ RCD Board's certification of the Final EIR.

Certify the Final EIR

At that point, the HCRCD Board certifies that the Environmental Impact Report is complete and accurate.

Prepare Findings and Notice of Determination

The HCRCD will ~~address~~ consider each of the significant impacts that have been identified in the Final EIR, and must determine that either: (a) Alterations or mitigations have been incorporated into the proposed project that reduce to a level of less than significant, or eliminate the significant impacts; or (b) Even though there are significant impacts that cannot be feasibly avoided or mitigated, the proposed project is of overriding social or economic benefit to the community, and therefore should be approved.

If the proposed project would result in significant but unavoidable adverse impacts that cannot be mitigated, the HCRCD will prepare a Statement of Overriding Considerations, explaining why the benefits of the proposed project outweigh the environmental risks. After the Notice of Determination has been published, CEQA provides for a 30-day period during which any legal challenges to the EIR must be filed.

After approval, the HCRCD then posts a Notice of Determination (NOD), files it with the County Clerk, and submits it to the State Clearinghouse for circulation to any agencies that expressed interest in the proposed project. The NOD describes the proposed project, lists all significant adverse impacts on the environment, and lists necessary mitigations for these impacts.

1.4 OTHER AGENCIES WITH PERMITTING OR REGULATORY RESPONSIBILITIES

Under CEQA, a responsible agency is an agency other than the lead agency that has a legal responsibility for carrying out or approving a project or elements of a project (Public Resource Code [PRC] Section 21069). Responsible agencies are encouraged to actively participate in the CEQA process of the lead agency, review the CEQA documents of the lead agencies, and use the documents when making decisions on the project. Possible CEQA responsible agencies for components of this project include:

- California Department of Fish and Game (Streambed Alteration Agreement, permit for electro-fishing and/or seining activities if fish need to be relocated)
- North Coast Regional Water Quality Control Board (401 Certification and/or Discharge Permit, Stormwater Pollution Prevention Plan)
- Humboldt County (Grading Permit, Conditional Use permit, Coastal Development Permit, no agricultural land loss policy, FEMA floodplain/floodway certification)
- State Lands Commission
- California Coastal Commission (Coastal Development Permit)
- North Coast Unified Air Quality Management District (permit for backup diesel generator)

In addition, local permits would be required for grading and levee encroachment/construction.

This EIR has been formatted to facilitate its incorporation into any NEPA documentation that may be required for the project. Federal lead agencies and their permits for the project that may trigger NEPA review include:

- U.S. Army Corps of Engineers: Department of the Army Section 404 Clean Water Act permit would be required for discharge or fill of waters of the United States.
- National Marine Fisheries Service: Federal Endangered Species Act compliance would be required for anadromous fish species federally listed as threatened or endangered
- U.S. Fish and Wildlife Service: Federal Endangered Species Act compliance would be required for resident fish and terrestrial species federally listed as threatened or endangered.
- California State Historic Preservation Office: Section 106 of the National Historic Preservation Act, as codified in 36 Code of Federal Regulations 800.4, requires federal agencies to consult with the California State Historic Preservation Officer for resources that are eligible for listing as a historic resource.

- US Environmental Protection Agency: Oversight responsibility for federal Clean Water Act permits.

Other local, state and federal agencies that may have a non-permitting interest in the project include:

- California State Coastal Conservancy
- National Resources Conservation Service
- City of Ferndale
- California Department of Conservation, Office of Agricultural Land Preservation
- California Air Resources Board

1.5 PUBLIC INVOLVEMENT PROCESS

Nearly all of the land within the footprint of this project is privately owned, so public involvement has been and will continue to be critical to the technical investigations, design, and ongoing success of the proposed project. Efforts to address the issues of sedimentation, flooding and degradation of habitat in the Eel River Basin began in earnest over twenty years ago with the formation of the Eel River Resource Conservation District (March, 1987). Established by popular vote, the District was formed and operated by local landowners to encourage sound conservation practices and wise use of the land in the Eel River Basin. The District was later expanded county-wide and renamed the Humboldt County Resource Conservation District. In March of 1989, one of the first work products leading to the proposed project was produced; the Salt River Watershed Workplan. Prepared by the USDA Soil Conservation Service and the Resource Conservation District, the document acknowledges the information, assistance, advice, tours, and discussions with several residents of Ferndale that helped to inform the plan.

The District has facilitated numerous public meetings, tours, small group discussions, and individual conversations in order to assure public involvement in this highly collaborative project. In 2004 the Salt River Advisory Group (SRAG) was established under the auspices of the District to build partnerships between private landowners living adjacent to the Salt River, public groups, and resource agencies and to provide information and technical assistance to the project. The SRAG is comprised of numerous landowners and representatives from various public agencies including: HCRCD, California Department of Fish and Game, Natural Resources Conservation Service, California Coastal Conservancy, County of Humboldt, and City of Ferndale. Regular meetings of the SRAG have been held over several years to promote public involvement, encourage dialogue, and share information. The SRAG collaboratively developed the holistic, watershed based approach for this project that focuses on complementing and accommodating natural watershed processes.

On June 21, 2007 a public scoping meeting to discuss the Notice of Preparation for this proposed project was held at the Ferndale City Hall and public comment was received.

During 2006 and 2007 additional public meetings were held inviting landowners and interested citizens to form Salt River Watershed Council. The Council was formed and incorporated as a 501 (c) 3 in 2008-2009. The Council is a community based partnership that encourages long-term

cooperative watershed management practices to sustain, protect, and improve water quality, drainage, aquatic and riparian habitat, and other natural resources, while contributing to long-term economic, agricultural and community sustainability in the coastal Salt River watershed. Council members are landowners who represent the ~~four~~ six tributaries, (Russ, Smith, Francis, Williams, Reas and Coffee creeks), the mainstem Salt River, and the City of Ferndale. Members of the Watershed Council help keep the lines of communication open, encourage open dialogue on proposed design elements and reflect the general desires of the community. It is anticipated that the Salt River Watershed Council will continue to play a key role in promoting public involvement with the project.

1.6 DOCUMENT ORGANIZATION

Chapter 1, Introduction. Describes the project background, and project purpose/need, EIR approach, and organization.

Chapter 2, Project Description and Alternatives. Describes the goals of the project and the process used to develop alternatives to the project, as well as descriptions of each alternative and option, and the alternatives and options that were not carried forward for further analysis in this document.

Chapter 3, Environmental Setting, Impacts, and Mitigation Measures. Includes descriptions of the environmental setting, and the impacts that may occur on each resource as a result of implementation of the projects. Mitigation measures for potentially significant impacts are identified, and residual impacts (following application of mitigation measures) are discussed.

Chapter 4, Evaluation of Project Alternatives. Provides a summary comparison of the impacts or effects of each alternative analyzed in the document, and identifies the CEQA "environmentally superior" alternative.

Chapter 5, CEQA Topical Analyses. Summarizes the project's growth inducement, unavoidable significant adverse impacts, cumulative impacts/mitigation, and irreversible/ irretrievable impacts.

Chapter 6, List of Preparers and Contributors. Identifies the preparers of this document.

Chapter 7, References. Lists references cited in the document.

Chapter 8, Comments and Responses on DEIR. This chapter provides the comments submitted on the Draft EIR as well as the Lead Agency's responses to those comments.

Appendices. The appendices provide additional information on the environmental review process and technical information that was used in the EIR analyses. Pursuant to CEQA requirements, materials and literature referenced in the EIR, but not included in Appendices, are maintained at the HCRCD offices in Eureka, California.

Appendix A – Notice of Preparation (NOP)

Appendix B – Responses to NOP

Appendix C – List of Recipients (Distribution List)

Appendix D – Special Status Species Lists

Appendix E – Air Quality Modeling

Appendix F – Mitigation Monitoring and Reporting Program

Chapter 2 Project Description (Revised)

2.1 BACKGROUND AND HISTORY

2.1.1 PROJECT AREA DESCRIPTION

The floodplain of the Eel River extending from the mouth up to the confluence of the Van Duzen River is known as the Eel River Delta. The Delta, located approximately 13 miles south of the City of Eureka, covers approximately 33,000 acres, or 50 square miles (Figures 2-1 and 2-2, Salt River Ecosystem Restoration Area and Estimated Historic Area of Tidal Inundation). Most of the delta lands are relatively flat.

The Eel River Estuary was once comprised of an intricate network of sloughs, side channels and open water, which, in combination with the tidal exchange and a substantial input of freshwater, provided a hospitable environment for a rich assemblage of aquatic species. The Eel River Estuary is still recognized as one of the most ecologically important tidal marsh habitats in California. It is the third largest in the State and, along with Humboldt Bay, the only substantial tidal marsh habitat between San Francisco and Coos Bay. The Estuary is designated critical habitat for salmon and steelhead under the Endangered Species Act.

The Salt River, historically a tidal slough, is the lowermost tributary to the Eel River Estuary. It quite likely has been an overflow channel of the Eel River, possibly even a main channel, though reduced flows are now contributing to aggradation. The Salt River Watershed can be divided into the upslope tributaries and the alluvial delta. The upslope tributaries drain the Wildcat Hills to the south of Ferndale. The Salt River alluvial delta, in contrast with the steep Wildcat Hills tributaries, is characterized by its relatively flat channel slope; elevation of the delta ranges from 3 to 80 feet above mean sea level (MSL). The Salt River watershed ranges in elevation from sea level at the river mouth to approximately 700 feet in upland areas near Table Bluff and the Wildcat Hills. The steep slopes in the Wildcat Hills tributaries are sharply contrasted with their flat alluvial valley floors. Consequently, a series of broad alluvial fans are perched where the tributaries meet the valley floor. Historically, the streams likely meandered over and around these fans, prior to flowing out to the main Salt River channel. The valley floors of the upland tributaries have, in virtually every case, been converted to pasture, and the tributaries have in most cases been channelized.

2.1.2 PROJECT AREA HISTORY

Prior to European settlement and land reclamation on the Eel River delta, the Salt River channel appears to have been the main conduit draining flood waters off of the southern delta plain and back into the Eel River. This was likely an important process in maintaining a deep and wide channel. Historically, the Salt River was largely influenced by the tide, and was referred to as the

"principal slough" of the lower Eel (Westdahl 1888). The Salt River appears to have been tidally influenced to Arlynda Corners, approximately 5 miles upstream from the confluence with the Eel River, and possibly as high as Fulmor Road (Bruce Slocum pers. comm.). The tidal exchange of salt-water upriver was crucial for maintaining the Salt River channel by flushing sediment from the river and limiting the growth of sediment-trapping aquatic vegetation. Tidal scour also helped maintain hydraulic connectivity with the rest of the watershed, thereby providing significant riparian and estuarine habitat benefits.

The historic permanent channel length of the Salt River was 13.4 miles. As such, the Salt River provided extensive and excellent juvenile nursery and rearing conditions for a variety of species, including such commercially important species as salmon, herring, sardine, and Dungeness crabs. The estuary also provided important habitat for a myriad of estuarine species, including red-tailed perch. This expansive estuarine setting contributed to the Eel River's prolific salmon and steelhead population, estimated at the turn of the twentieth century to be approximately half a million adult fish. Historically, the Salt River channel and its tributaries also were sufficient to provide for fish passage upstream. The channel provided a migration corridor for adult salmonids seeking spawning habitat in Salt River tributaries while providing rearing habitat for juveniles migrating downstream to the Eel River estuary. This was true for coho salmon, Chinook salmon, steelhead, and coastal cutthroat trout.

The Eel River Estuary has been significantly altered over the last 150 years. Levees, tide gates, dikes, and berms have been installed to reduce tide-water volume, to reclaim wetlands for agricultural conversion, and to better control high water events. The network of levees and tide gates in the Eel River estuary has, in places, blocked the ebb and flow of the ocean tides and has reduced the volume of water that is exchanged during a tidal cycle. In 1870, the tidal area was estimated to be 6,525 acres. By 1970, the estuary, inclusive of sloughs and side channels, was reduced to 2,200 acres, or 3.4 square miles (DFG –ERSSAP 97' pg 4). In 1989, the Soil Conservation Service estimated that the Eel River Estuary was only 40 percent of its original size. This reduction has led to a general decline in the quality and quantity of the estuarine environment, as well as to a marked reduction in the tidal prism of the estuary, probably in direct relation to the decrease in inundated area. Tidal prism[1] is thought to have been reduced by some 60 percent overall.

Similarly, the Salt River watershed has been significantly impacted since land use changes accelerated in the late 19th century. The tributaries to the Salt River now contribute large quantities of sediment, associated with historic timber harvest, grazing practices, road building, unstable geology, highly erodible soils and high rainfall levels. Flows from nearly half of the upper Salt River watershed have been diverted into the Old River Channel by a sediment plug in the main stem of the Salt River at the Williams Creek confluence. Diverted water ponds on agricultural lands with some flowing to Perry Slough, meeting the Eel River near Fernbridge. This sediment plug has resulted in a 42 percent reduction in the size of the Salt River basin. Currently the lower Salt River only receives flows from Francis Creek, Reas Creek, and Smith Creek (see Figure 2-3, Changes in Salt River Drainage Patterns due to Sedimentation).

[1] The tidal prism is the quantity of water that flows in and out of an area with changes in tides

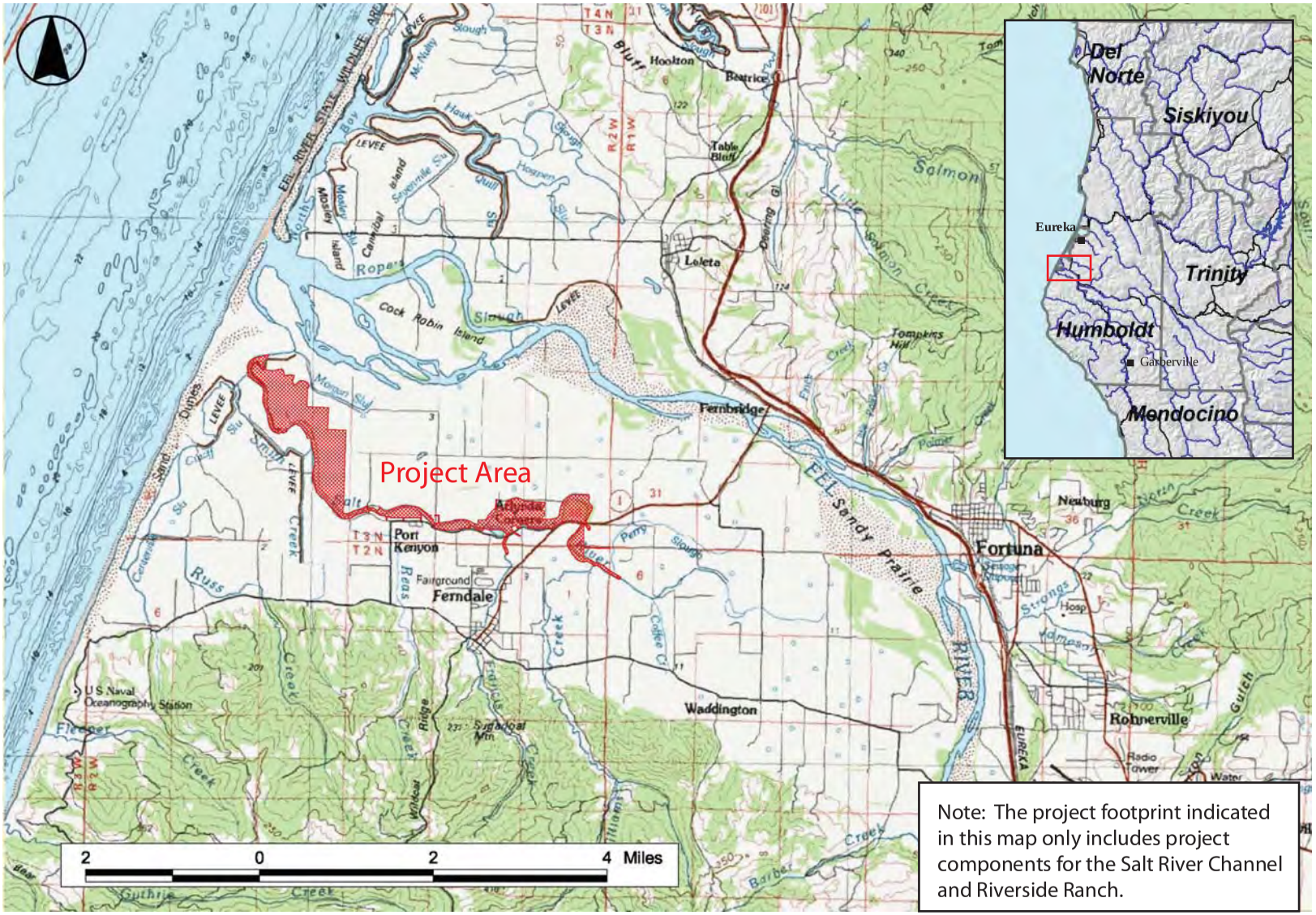


Figure 2-1

Salt River Ecosystem Restoration Project Area

Source: KHE, 2011

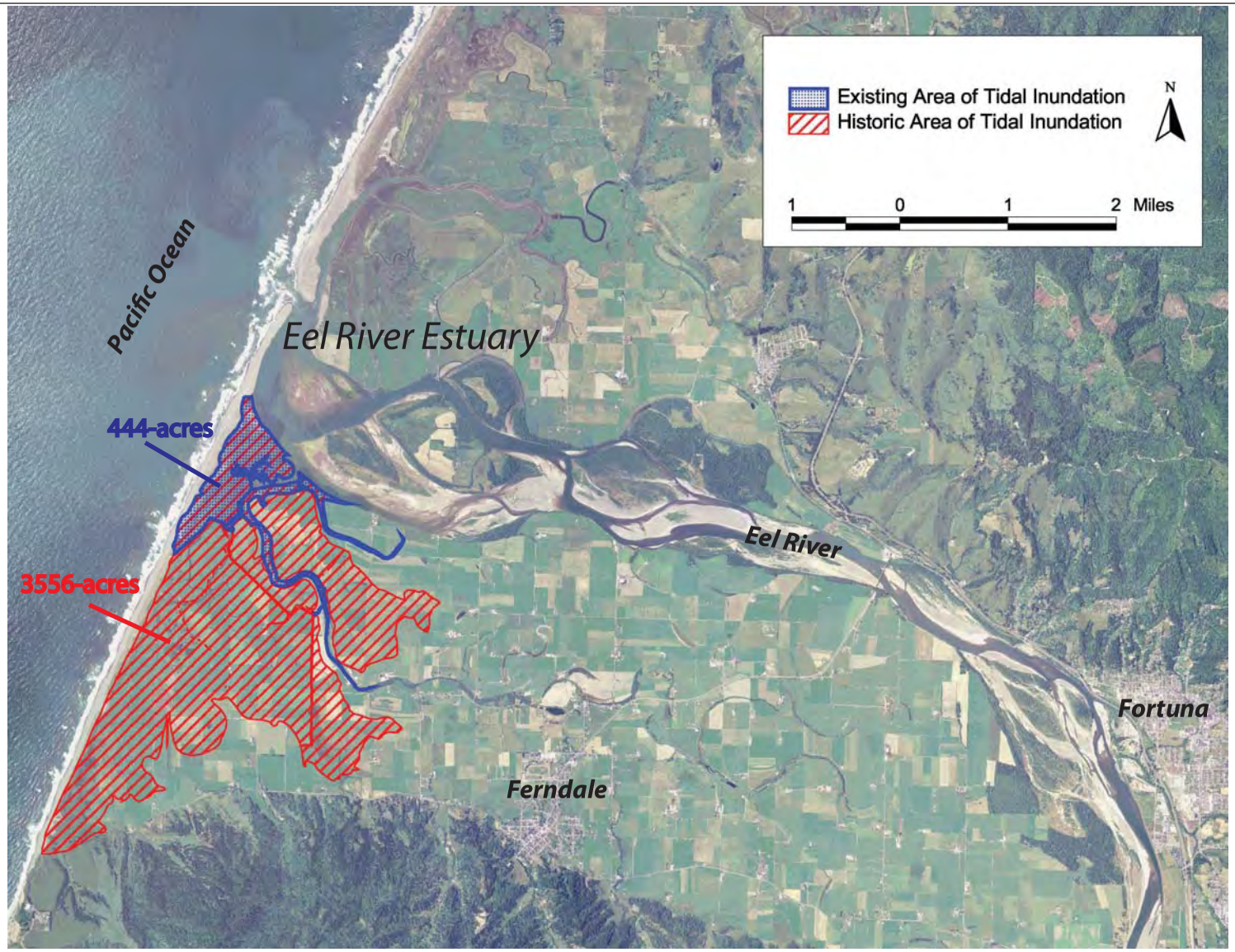


Figure 2-2

Estimated Historic Area of Tidal Inundation

Source: KHE, 2007

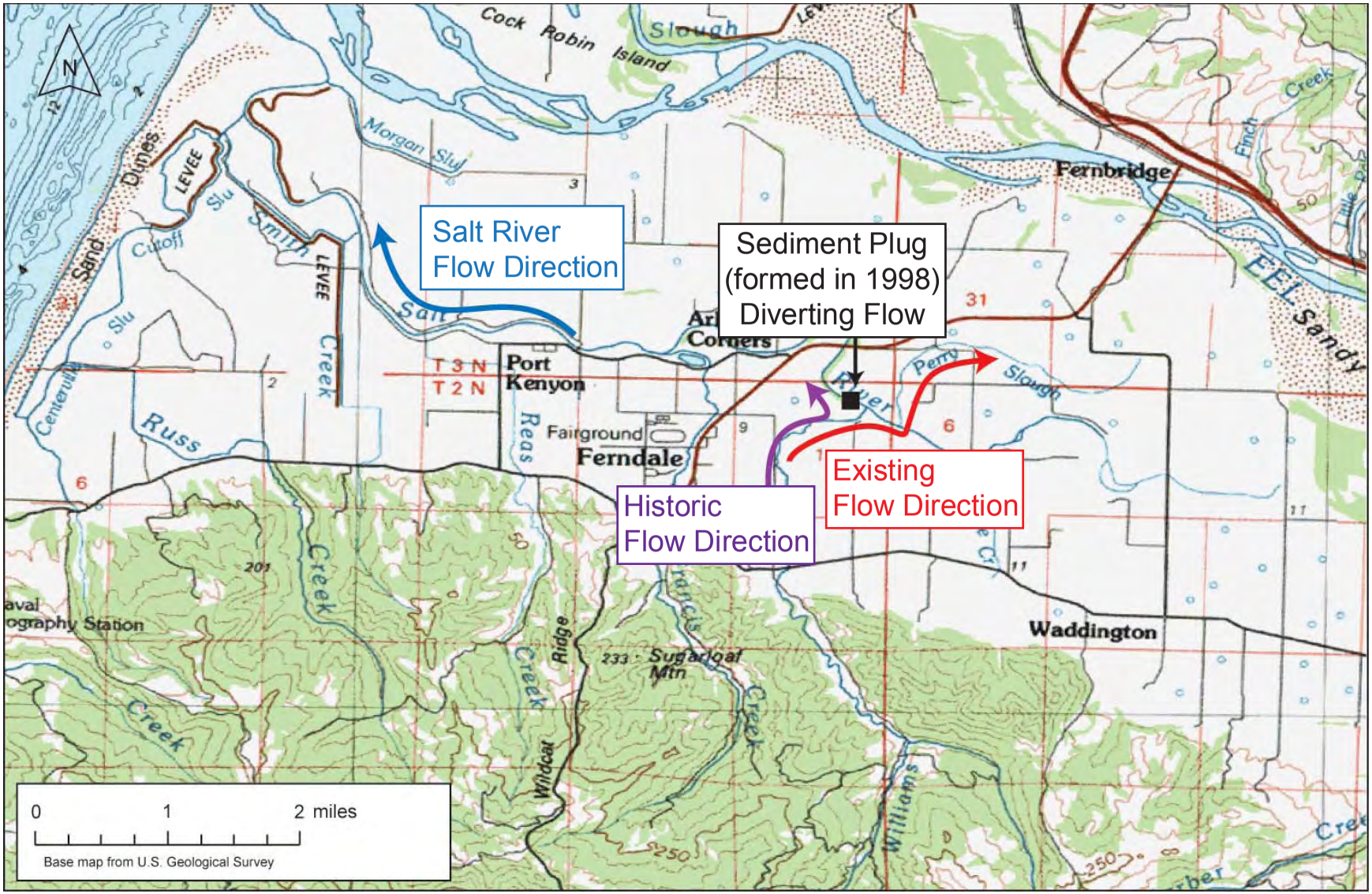


Figure 2-3

Changes in Salt River Drainage Patterns due to Sedimentation

Source: Downie and Lucey, 2005

Due to sediment deposited within and along the historic Salt River channel (aggradation), tidal influence within the Salt River now terminates at river mile 3.5, and channel flow becomes intermittent at river mile 4.8 (See Figure 3.1-2). The middle reach of the Salt River, downstream of Francis Creek to Reas Creek has no clearly defined channel, and no tidally inundated slough channel. Sediment accumulation has substantially reduced cross-sectional area, increasing the amount of vegetation growth in what was once open water. The absence of a clearly defined channel also results in the absence of either freshwater or estuarine aquatic habitat. Some of this aggraded channel is now cleared of riparian vegetation, actively farmed for pasture, and prone to frequent flooding.

The cumulative effects of both anthropogenic and natural conditions within the landscape have limited the ability of anadromous fish to survive and successfully reproduce in coastal streams that historically produced large populations of salmon and steelhead and contributed to drastic population declines of all species of salmonids that formerly used the Salt River and its tributaries.

2.2 PROJECT GOALS AND OBJECTIVES

The purpose of the Salt River Ecosystem Restoration Project (SRERP) is to restore former processes and functions to the Salt River watershed. These processes and functions are necessary for re-establishing a functioning riverine, riparian, wetland and estuarine ecosystem as part of a land use, flood alleviation, and watershed management program. The chronic aggradation of the Salt River channel and resulting flooding have led to loss of habitat, threats to public infrastructure such as the Ferndale Wastewater Treatment Plant and roads, diminished property values, and declining agricultural productivity.

2.2.1 OVERALL PROJECT GOALS

The SRERP would re-connect the Eel River Estuary - via the former Salt River channel- to a series of five streams draining the Wildcat Mountains. In order to do this, 7.7 river/riparian corridor miles and 400 acres (ac) of tidal wetland would be restored. This restoation would support a broad list of special status and native species. The SRERP focuses on re-establishing hydraulic connections across the floodplain and will also serve community needs including water quality improvement, flood alleviation, and carbon sequestration. Specific goals of the Salt River Ecosystem Restoration Project include the following:

- Restore the Salt River channel and adjacent riparian floodplain by increasing hydraulic conveyance and constructing habitat features that re-establish ecological processes beneficial to fish and other native species;
- Restore former estuarine habitat and tidal connectivity within the lower Salt River;
- Improve water quality and drainage efficiency across the floodplain;

- Manage excess sediment loads by maximizing fluvial and tidal channel sediment transport capacity by designing and maintaining active and passive sediment management areas that minimize long-term impacts to land use and ecological function;
- Initiate a long-term corridor adaptive management process that maximizes ecological restoration success in a working landscape by:
  - reducing headwater erosion and sediment delivery to the Salt River floodplain;
  - increasing the volume and efficiency of clear water drainage from the upstream watershed and adjacent agricultural land, and;
  - providing and maintaining sediment management areas that minimize impacts to land use and ecological function.

In an effort to achieve the overall project goals, three project components have been proposed, each of which has accompanying objectives. The project copmponents and related objectives are summarized below. The project components are described in detail later in this chapter.

2.2.2 OBJECTIVES OF RESTORATION OF THE SALT RIVER CHANNEL AND RIPARIAN FLOODPLAIN

This component would re-establish a defined channel and riparian corridor from above the Salt River confluence with Williams Creek near Perry Slough downstream to the confluence of the Salt River with Cutoff Slough, a total corridor length of approximately 7.7 miles. Objectives of this project component are:

- Establish and sustain a dynamic river corridor by optimizing flow and sediment conveyance integrated with natural floodplain interaction and discrete active and passive sediment management areas.
- Integrate sediment capture and removal (sediment management) actions into the Adaptive Management Plan in order to help sustain hydraulic conveyance and ecologic function.
- Minimize the cost, frequency and extent of required sediment management related maintenance activities which disturb the riparian corridor and disrupt ecosystem function.
- Maximize riparian habitat functions and values, extent and complexity by increasing plant species diversity, corridor shading, large wood recruitment, and minimizing invasive species.
- Optimize floodplain habitat complexity.
- Introduce in-stream salmonid rearing and refugia habitat where acceptable and sustainable within corridor design.
- Incorporate opportunities to re-connect the corridor to watershed tributaries to improve fish access to spawning and rearing habitats.
- Improve and maintain adjacent land drainage.

- Integrate a Regional Landowner Drainage Management planning process into the Adaptive Management Plan process that establishes the framework for the development, coordination and funding to enhance the integration of overland drainage with agricultural land practices adjoining the corridor.

2.2.3 OBJECTIVES OF TIDAL MARSH RESTORATION AT RIVERSIDE RANCH:

Tidal marsh restoration at Riverside Ranch would re-establish intertidal wetland habitat to the Eel River Estuary. The increase in tidal exchange associated with a restored marsh also would help sustain a restored Salt River channel. Restoring tidal prism to the lower Salt River, (i.e., increasing the volume of water exchanged on each tidal cycle) increases channel scour and helps maintain and equilibrate the width and depth of the channel. Objectives of this project component are:

- Use the increase in tidal prism to help maintain the constructed Salt River channel geomorphology and conveyance.
- Improve drainage and water quality in the lower Salt River and Eel River estuary.
- Restore tidal connectivity to historic tidal wetlands to allow for the natural evolution of diverse and self-sustaining salt- and brackish water tidal marshes, intertidal mudflat and shallow water habitats.
- Restore the marsh to include and expand the transition zone between tidal wetland and upland.
- Create a template for the natural evolution of a complex tidal drainage network. The network will maximize subtidal and intertidal habitats beneficial to target fish and wildlife species. This includes the enhancement of rearing and migration conditions for estuarine-dependent species including: coho salmon, Chinook salmon, steelhead trout, coastal cutthroat trout, tidewater goby, and commercially and recreationally valuable species such as redtail perch.
- Retain approximately 70 acres where agricultural management techniques can be used for short-grass Aleutian cackling goose habitat.
- Provide wintering habitat for migratory waterfowl and shorebirds.
- Provide public access to the extent feasible without compromising the physical and biological project objectives.
- Avoid adverse impacts to the existing drainage of adjacent parcels.
- Design site components that can support natural geomorphic response to sea-level rise.

2.2.4 OBJECTIVES OF UPSLOPE SEDIMENT REDUCTION PROGRAM:

This component would reduce the amount of sediment entering tributary streams and the Salt River channel. Activities that would be employed under this project component include: on- and off-channel sediment retention basins; debris basins; stream bank stabilization; and road improvements such as culvert replacement, revegetation of riparian habitat, rock armoring, stabilizing stream banks

or small streamside landslides, road rehabilitation, watercourse-crossing improvements, ditch relief culverts and drainage ditches. The objectives of this program are to:

- Reduce sediment loading into the headwater streams.
- Reduce sediment loading into the Salt River channel
- Improve water quality, fish passage, and aquatic habitat in tributary and main Salt River channels

2.3 DESCRIPTION OF PROPOSED PROJECT

The proposed action consists of creating a restored Salt River Channel, restoring tidal wetlands at Riverside Ranch, and an upslope restoration program, as detailed below. Anticipated project activities include: channel dredging and/or excavation, vegetation removal, avoidance of many established riparian stands, establishment of active and passive sediment management areas along the channel, extensive re-vegetation throughout the project footprint, tide gate modification and/or removal, channel realignment, wetland restoration, construction of set-back berms, re-grading of existing levees, spoils transport, staging, placement, and reuse as an agricultural amendment, erosion control projects in the upper watershed, and future adaptive management projects outlined in the AMP. Figure 2-4 presents a summary of proposed project actions on the Salt River Channel and Riverside Ranch.

The project design was developed in close coordination with the National Marine Fisheries Service, U.S. Fish and Wildlife Service, California Department of Fish and Game, U.S. Army Corps of Engineers, California Coastal Commission, and other regulatory agencies. In addition, the County of Humboldt, State Coastal Conservancy, landowners, and others have played an important role in assisting the Humboldt County Resource Conservation District to develop the project.The longevity of this project depends upon the successful restoration of natural ecological processes and the frequency and nature of maintenance activities, but would be heavily influenced by uncontrollable natural events within this highly altered and geologically unstable watershed.

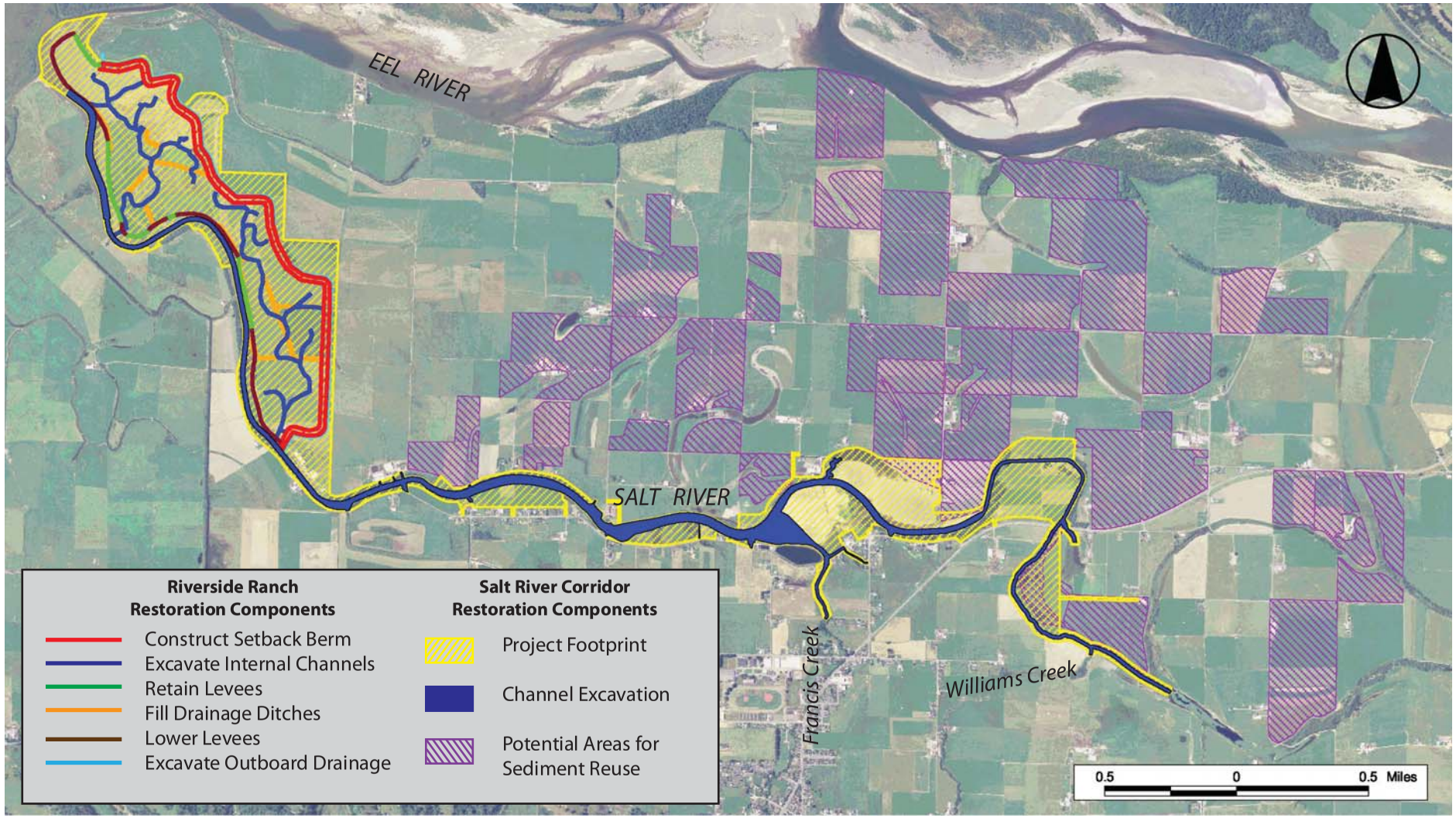


Figure 2-4

Alternative 1: Full Ecosystem Restoration (Proposed Project)

2.3.1 SALT RIVER CHANNEL AND RIPARIAN FLOODPLAIN CORRIDOR RESTORATION

EXISTING CONDITIONS

The current Salt River channel is hydraulically dysfunctional and in most locations non-existent. Virtually all of the historic riparian habitat is gone, and where it remains it consists of willow and alder stands that have colonized the former channel area. Although length estimates for the historic channel range from ten to 13.4 miles, the channel is now intermittent 4.8 river miles from the confluence with the Eel River. Tidal influence extends only to river mile 3.5 (just upstream of Reas Creek confluence). The Salt River channel historically carried the ebb and flow of the Eel Estuary, as well as the downstream flow of the Wildcat Hills tributary streams. Now, the Salt River carries very little water at all before overtopping any banks that remain. When the flow overtops the banks, it spreads out across the relatively flat landscape. Wherever flow is concentrated in remnant riparian areas, the water flows into thick vegetation, slows, and then deposits additional large quantities of sediment throughout the reach further filling any remaining channel. One foot of sediment deposition per year in any given reach of the project area is commonplace.

The upper portion of the Salt River, just downstream of the Williams Creek confluence, has aggraded and plugged with sediment. The "plug" forces the flows entering the Salt River from Williams Creek, Coffee Creek, and the unnamed tributaries, to flow east in the upstream direction. The "backwards" flow causes flooding out of the channel, into old meander scars and depressions, thereby depriving the downstream channel reach of its natural flow regimes. The result is flooding on agricultural and residential properties. Eventually these upper reach flows enter the Old River channel via Perry Slough and flow northeast to the Eel River.

PROPOSED CHANNEL MODIFICATIONS

Overview

The hydrologic dysfunction of the area has resulted in the need for the channel excavation in the proposed project area. A schematic of the spatial patterns of sedimentation is provided in Figure 2-5. The historic channel cannot be fully restored due to the extent of natural and anthropogenic manipulation of historic drainages and current land use, but a properly designed active channel and floodplain configuration can restore some hydrologic and ecologic function to the area. Doing so requires routing high flows to a feasible level, and optimizing sediment transport through the system by maximizing velocity in the active channel. A typical floodplain cross-section is shown on Figure 2-6. Proposed channel modifications and restoration are summarized by reach below.

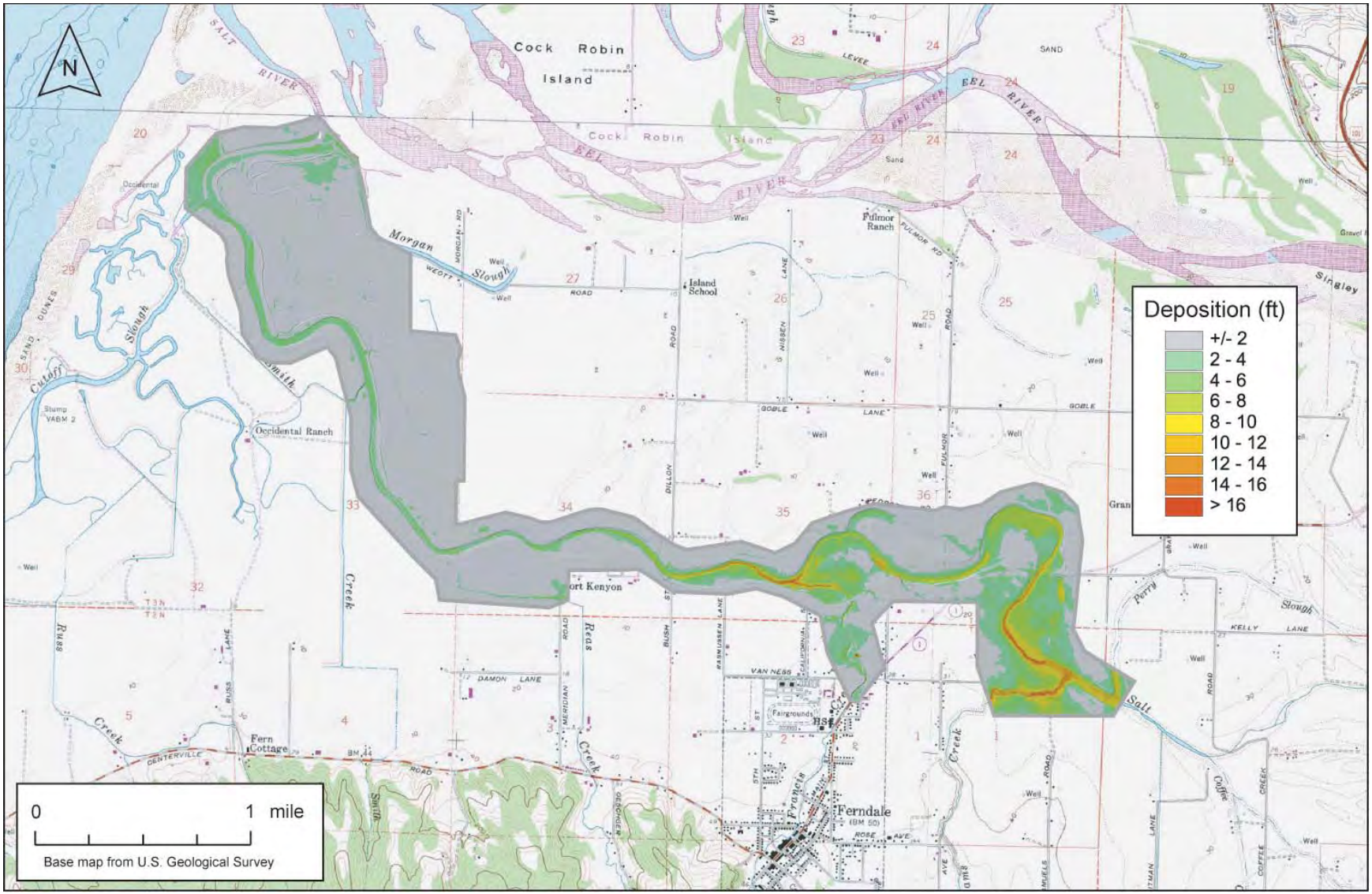
Salt River Fluvial (Non-Tidal) Reach

The fluvial reach of the Salt River channel between Perry Slough and approximately Reas Creek has been designed to connect a proposed channel corridor to passive and active sediment management areas as well as the existing floodplain. The capacity of the proposed channel depends on

topographic relief of the adjoining floodplain and fluctuates between the 1- and 1.5-year return period. Within the channel, there are two principal geomorphic features: the active channel and the active bench. The active bench and floodplain (any area outside of the active channel) would be re-established as riverine wetland habitat populated by sedges, grasses, and forbs within the active channel, while spruce, cottonwood, and other species would be planted at the edge of the active bench. This outer canopy, in combination with riparian willow stands along the active channel, is anticipated to provide shading for the main channel, thereby reducing water temperatures while inhibiting colonization by invasive species such as Reed Canary Grass. In addition, those taller trees would provide important raptor habitat lost when trees were removed from the area for pasture expansion. Expansion of tidal flows, shade from large woody species and zones of higher salinity within the lower Salt River channel would help maintain the desired plant communities and channel configuration by increasing scour effects (reducing sediment accumulation) and inhibiting willow growth within the active channel.

Design Hydrology

The proposed channel design is based on prospective flow conditions from Williams Creek and Coffee Creek. Under current conditions, Williams Creek between Grizzly Bluff Road and the confluence with the Salt River is extremely aggraded, resulting in frequent overbank flows and flooding on adjoining properties. This aggraded reach coupled with the extensive adjoining floodplain, attenuates high flows and limits sediment transport and conveyance into the Salt River channel. Even though the proposed Salt River channel restoration will connect Williams Creek at its confluence, attenuation of contributing higher flows and sediment transport into the restored channel would persist until geomorphic improvements are made to Williams Creek. Additionally the design attempts to accommodate flows from Coffee Creek that appear to be separated at present by a natural high divide between the confluence of Williams Creek and Perry Slough, which currently conveys flow from Coffee Creek into Perry Slough and ultimately the Old River. The proposed channel restoration would extend to the confluence of Perry Slough, capturing flow contributed from the Coffee Creek watershed. Nevertheless, the design assumes that significant flows in Williams and Coffee Creek would continue to overflow their banks before reaching the design channel, although they are expected to drain more quickly towards the Salt River as floods recede.


Deposition (ft)
+/- 2
2 - 4
4 - 6
6 - 8
8 - 10
10 - 12
12 - 14
14 - 16
> 16
0
1 mile
Base map from U.S. Geological Survey
N
Cock Robin Island
Morgan Slough
Occidental Ranch
Island School
Fulmor Ranch
Fern Cottage
Ferndale
Fairgrounds
Salt River
Eel River
Singley
Perry Slough
Smith Creek
Reas Creek
Francis Creek
Coffee Creek
Cutoff Slough
Sand Dunes
Levee
Sand
Well
Gravel
Goble Lane
Kelly Lane
Van Ness
Damon Lane
Centerville Road
Rose Ave
Fulmor Road
Morgan Road
Meridian Road
Rasmussen Lane
Bush St
Dillon Road
Nissen Lane
Geddes
Bliss Lane
Stump
VABM 2
T3N
T2N
BM 44
BM 50
Occidental
Salt River
Eel River
Cock Robin Island
Sand
Well
Gravel
Singley
Perry Slough
Kelly Lane
Coffee Creek
Coffee Lane
Van Ness
Fairgrounds
Ferndale
Francis Creek
Reas Creek
Smith Creek
Bliss Lane
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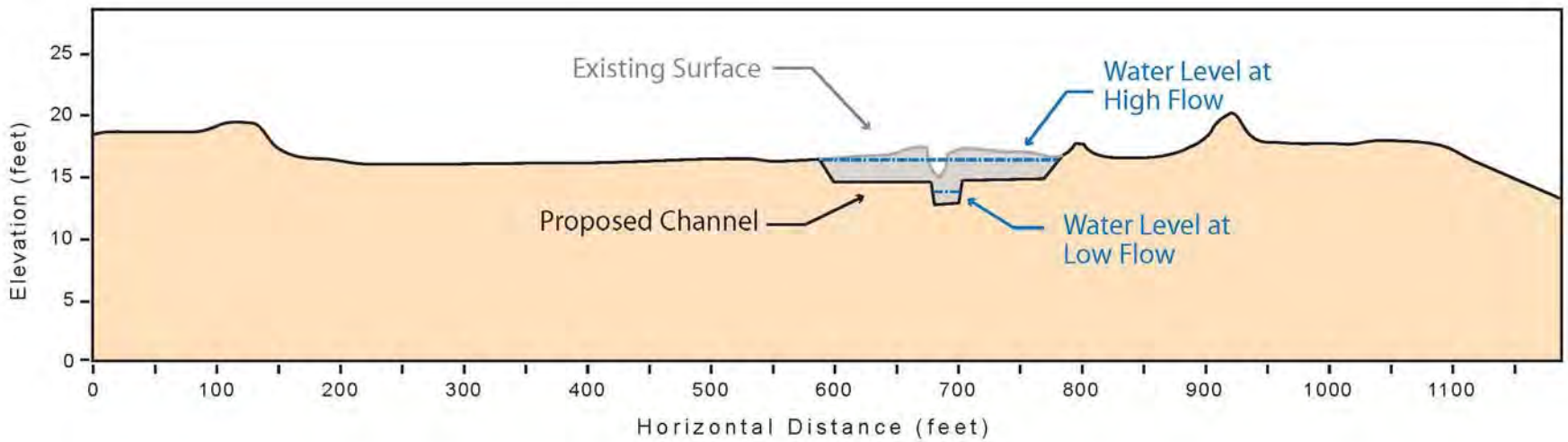


Figure 2-6

Typical Floodplain Cross Section

Source: KHE, 2011

Active Channel

The active channel is intended to function as a higher energy channel that would transport sediment and water over a wide range of flows. The active channel would be confined by planted woody vegetation on either bank to provide bank stability, promote sediment deposition and natural leveeing adjacent to the active channel, and provide vegetated cover and shading once established. The active channel would contain summer base flows and high flow capacity that would be exceeded approximately 60 to 70 days/year, limiting the available woody vegetation species suitable to tolerate the frequent flow and sediment inundation. Recognizing limited suitable species, the active channel banks are proposed to be planted with live willow stakes obtained from nearby native cuttings, as well as other riparian-wetland shrubs. This bioengineering approach provides quick vegetative establishment benefiting bank stability, desirable roughness characteristics and riparian habitat. Discontinuous segments along the vegetated banks of the active channel are proposed to allow hydraulic connectivity to the active bench. Flow would be allowed to exit onto the active bench as well as reenter the active channel encouraging deposition and the formation of side channels and topographic diversity on the active bench. Sustained flow velocities in the active channel are intended to impede re-colonization of woody vegetation that would otherwise promote aggradation. Some natural recruitment of woody vegetation is anticipated to occur in the active channel and would be minimized through adaptive management and long-term maintenance.

Although there is considerable uncertainty regarding the persistence of the constructed active channel due to the unpredictability of sediment loading from uncontrollable natural events in the upper watershed, removal of sediment from the active channel is not anticipated to be necessary. In the event that channel transport and sediment management activities are not capable of eliminating undesirable sediment accumulation in the mainstem Salt River channel or sediment accumulation poses an undesirable threat to property or project performance, excavation may be performed on a smaller scale within the River corridor (excavating specific areas of the channel). Larger-scale excavation across the entire width of the channel corridor may be necessary at sediment deposition-prone areas, such as the Francis Creek confluence

Active Bench

Flows exceeding the active channel capacity would occupy the active bench, providing an area for sediment deposition, morphological diversity outside of the active channel and the establishment of riparian vegetation and wildlife habitat. The active bench is anticipated to be a highly dynamic interface between the active channel and the floodplain. Topographic diversity would be graded into the active bench to both create slower water areas for deposition as well as low-flow constrictions that promote scour of side channels and allow return of flow back into the active channel. Vegetation throughout the active bench would be limited to areas where control of morphology and hydraulics are desired and compatible with passive and active sediment management areas. Outside of active sediment management areas, natural recruitment of woody vegetation is anticipated on the active bench and would be maintained and managed pursuant to the channel design intent. The transition slope from the active bench up to the existing floodplain would be vegetated with a variety of riparian species including Alder, Cottonwood, Maple, Sitka

Spruce and Redwood. The Active Bench would likely transition from riparian dominated habitats to tidal wetland habitat between Dillon Road Bridge and the Reas Creek confluence, in response to increased tidal influence with the lower Salt River and Eel River estuary.

Multi-function Active Bench Habitat Elements

Multi-function habitat elements are integrated into the channel corridor design with the intent to provide habitat and morphologic benefit consistent with the project goals and objectives. These elements would be situated at the interface between the active channel and the active bench, providing opportunities to diversify aquatic habitat, increase morphological complexity and either promote or discourage sedimentation on the active bench. Such elements also would be used to force flow into passive and active sediment management areas and backwater slough alcoves. Depending on their placement and intended purpose, these elements would create aquatic habitat by creating pools, cover, and areas suitable for macro-invertebrates and refugia for fish and amphibians. These elements will integrate design concepts such as elevated vegetated berms, engineered log jams (ELJs), high flow pathways, backwater slough alcoves, areas of seasonal ponding and in-stream wood structures.

Sediment Management Areas

Over time it is expected that sediment inputs to the mainstem Salt River would be reduced through implementation of erosion control and sediment trapping activities in the upper watershed. However, in order to maintain optimal flows, sediment conveyance, riparian forest and associated aquatic and wetland ecosystems along the corridor, clearly enunciated active and passive sediment management practices would be required. The proposed footprint of the Salt River corridor would contain an active channel and associated floodplain. The floodplain would host two types of sediment management areas (SMAs) currently under design as part of the 75% channel design configuration (Kamman 2010). SMAs are intended to be integrated along the mainstem Salt River in coordination with floodplain and riparian vegetation enhancements. SMA size would be kept to a minimum in order to maximize habitat enhancement and restoration. SMA's are referred to as Active and Passive, with Active SMAs including areas of annual or periodic sediment removal and Passive SMAs including areas that promote sediment deposition without sediment removal. Specific locations for each of the SMAs would be designated during the final design phase of the project. The long-term management and maintenance practices required varies based on SMA type. The following sections describe the different SMA types and likely long-term management requirements.

Active Sediment Management Areas

The primary purpose of Active Sediment Management Areas (ASMAs) would be to trap and manage sediment efficiently over the full spectrum of winter flows that transport sediment and that have led to channel filling in the past. ASMAs would be constructed in designated areas in a fashion to reduce flow velocity and create conditions that promote fine-sand to silt-sized grains to settle out. They would be constructed to emulate natural floodplains along the mainstem Salt River by separating existing or created floodplain and low-lying areas from the river channel with a low-relief levee and or barrier consisting of native riparian vegetation. Large portions of the ASMA would be subject to periodic (frequency to be determined based on management triggers outlined in the

Adaptive Management Plan) sediment removal to maintain topography and selected riparian vegetation zones that promote sediment deposition. ASMAs would require sediment removal in order to maintain function and a high sediment trapping efficiency. Although they would be disturbed on a regular basis, ASMAs would focus sediment deposition and management activities in specific areas in order to protect larger reaches of adjacent and downstream River corridor. ASMAs also would provide landowners with areas that can continue to be used for grazing and other agricultural practices. As such, ASMAs would be designed in close coordination with property owners and land managers in order to promote desired land use practices. Accumulated sediment in these areas could be reworked (leveled or tilled) in order to accommodate desired dry season land management practices. Once dry, sediment could be excavated and removed and the area could be seeded and continue to be used for agricultural production, cattle grazing, etc. Planting riparian or permanent vegetation in ASMAs would not be sustainable given the annual disturbance associated with sediment removal. There are three discrete ASMAs currently being designed into the corridor and in total would comprise approximately 20 acres.

Passive Sediment Management Areas

Passive Sediment Management Areas (PSMAs) are intended to ultimately function as floodplain and riparian habitat areas of net sediment deposition and aggradation through natural fluvial processes. Some limited initial earthwork may be required to restore hydraulic connection between these floodplain and low-lying back-water areas to the mainstem Salt River. No long-term sediment removal or maintenance activities are anticipated in these PSMAs. Thus the establishment or enhancement of riparian, wetland, and backwater aquatic habitats would be promoted in these SMAs. However, if excessive sediment deposition occurs in PSMAs, sediment removal per the Adaptive Management Plan (AMP) guidelines may occur.

Routine vegetation maintenance activities within SMAs would occur during late summer or early fall months when the channel flows are lowest to minimize the potential for erosion and sediment transport and to minimize impacts to salmonid and wildlife species. Vegetation removal methods are described in the project's Habitat Maintenance and Monitoring Plan (HMMP) and options include controlled flash grazing, manual removal and mechanical removal.

Sediment Management in the Channel Corridor

In the event that channel transport and SMA performance are not capable of eliminating undesirable sediment accumulation in the mainstem Salt River channel or sediment accumulation poses an undesirable threat to property or project performance, excavation may be performed on a smaller scale within the River corridor (excavating specific areas of the channel). Larger-scale excavation across the entire width of the channel corridor may be necessary at sediment deposition-prone areas such as at the confluence with Francis Creek, if designed SMAs and adjacent Salt River corridor are overwhelmed with sediment, which overflows into the adjacent River corridor. Routine vegetation maintenance activities within SMAs would occur during late summer or early fall months when the channel flows are lowest to minimize the potential for erosion and sediment transport and to minimize impacts to salmonid and wildlife species. Vegetation removal methods are described in

the project's Habitat Maintenance and Monitoring Plan (HMMP) and options include controlled flash grazing, manual removal and mechanical removal.

Salt River Tidal Reach

Design Hydrology

The tidal reach of the Salt River channel below Reas Creek to Cutoff Slough would be expanded to restore hydraulic connection to the upstream Fluvial Reach and between Riverside Ranch tidal marsh and the Eel River estuary. The channel corridor capacity is intended to accommodate optimal tidal exchange to restore wetlands as well as provide flood flow conveyance for the Fluvial Reach. The single-thread project tidal channel would be cut into the existing channel alignment, maintaining the historic channel sinuosity and adjacent marshplain habitat. Natural recruitment of wetland vegetation is anticipated on the adjacent marshplain after construction.

Channel Design

The tidal reach would be sized to accommodate unrestricted tidal exchange of the restored wetland tidal prism, having a characteristic tidal channel shape with relatively steep (1.5:1; H:W) side slopes. Tidal reach channel dimensions (width, depth and area) decrease in an upstream direction in response to reduced tidal prism volumes conveyed by the fluvial reach of the Salt River channel. The tidal reach is designed to maximize tidal amplitudes to the wetland inlet channels. The tidal channel is also designed to maintain naturally high flow velocities during both neap and spring tides to maintain channel equilibrium morphology. The tidal reach would experience regular wetting and drying through tidal cycles; scour velocities and salinity exchange would control the establishment of salt- through brackish-marsh vegetation within the mainstem channel. The tidal reach of the channel has been designed to maintain existing water depths that promote eelgrass colonization. Tides at and above MHHW would overtop the tidal channel, flowing onto the adjacent marshplains. The Salt River tidal reach was designed as an equilibrium channel and is not intended to erode or aggrade substantially after construction. Thus, removal of sediment from the Salt River tidal channel is not anticipated. Tidal exchange is anticipated to extend into the fluvial reach as far as 500-feet upstream of Dillon Road Bridge. Tidal waters would be predominantly restricted to the active channel in the fluvial reach.

Connectivity of Salt River Channel to Francis Creek, Eastside Drainage and Westside Drainage

In addition to the restoration of the mainstem of the Salt River itself, this project would improve the connectivity of the Salt River with Francis Creek, the Westside Drainage, and the Eastside Drainage. These actions are consistent and complimentary to the goals and objectives outlined in the City of Ferndale's Drainage Master Plan Update (Spencer Engineering, 2004). The Drainage Plan recommends excavating the Salt River channel as a means to alleviate flood pressures in the adjoining low-lying areas by improving connectivity. The proposed restoration of Francis Creek includes relocating approximately 2,900 feet of lower Francis Creek. The channel was previously re-aligned in order to maximize grazing lands and accommodate the Ferndale wastewater treatment

plant. However, winter flows regularly exceed the channel capacity and overtop the adjacent banks, flooding adjacent pastures. The flooded area is known locally as "Lake Vevoda," named after the dairy owner whose property is most affected by the flooding. The proposed channel would more closely share the historical alignment of the Salt River, eliminating an existing 90-degree turn, and allow room for the natural creation of a depositional floodplain and sediment retention area. This design is consistent with a newly adopted floodway easement for 100-acres in this vicinity.

The channel improvements also would include the re-connection of Eastside Drainage Ditch to Francis Creek near the City of Ferndale WWTP with an approximately 500-foot-long channel. This connection existed historically, but has been filled in with sediments. The Eastside Drainage Ditch collects seasonal runoff from the east side of the City of Ferndale. These improvements would alleviate flooding in adjacent pastures, dairy barns, and residential areas and increase velocity and flows into Francis Creek, thereby increasing dilution of WWTP discharge and improving water quality. Improving the connectivity of these tributaries to the Salt River is an important component of this restoration project.

BENEFICIAL REUSE OF SEDIMENT (ALL REACHES)

The current Salt River Channel restoration design would result in a total excavation volume of approximately 487,000 cubic yards (CY). Table 2-1 contains the primary earthwork volumes (cuts and fills) associated with this project component. The tidal marsh restoration at Riverside Ranch balances excavation quantities with proposed beneficial reuse of excavated material. Proposed reuse includes placement of agronomically suitable sediment on agricultural uplands for use as a soil supplement, consistent with all existing laws and regulations Table 2-1 presents the balancing of the earthwork volumes. Based on textural classification and results of agronomic analyses, excavated soils from project areas that are non-saline in nature would be suitable for spreading on agricultural lands. The location of proposed sediment reuse areas in agricultural uplands are indicated in Figure 2-4.

Sediment reuse in association with other local projects (including two local projects planned by the U.S. Fish and Wildlife Service for Salmon Creek and White Slough, and any planned CalTrans construction projects and a restoration and enhancement project being pursued by The Wildlands Conservancy on the Connick Ranch, an adjacent property, has been considered, and may be analyzed and proposed in the future.

Table 2-1 Salt River Channel and Riparian Floodplain Corridor Restoration and Total Project Earthwork Volumes

Description	Cut (CY)	Fill (CY)
Excavate Salt River Channel (Reas Creek to Perry Slough)	378,000	
Francis Creek	36,000	
Eastside Drainage	3,000	
Francis Creek Sediment Management Area	70,000	
Beneficial Reuse Opportunity Necessary to Balance cut/fill (3-4inch depth for Agriculture Reuse or other local projects)		487,000
Total	**487,000**	**487,000**

CORRIDOR REVEGETATION PLAN (ALL REACHES)

Introduction

A revegetation and land use plan was developed to support the objectives of the Salt River Ecosystem Restoration Project Plan (H. T. Harvey & Associates, April 2010). The goal of the revegetation program is to create native, forested riparian and wetland habitats along the Salt River corridor as well as riparian, wetland and salt marsh habitat within Riverside Ranch. Since the release of the DEIR, design modifications to the Salt River corridor and Riverside Ranch have resulted in adjustments to the projected revegetation habitat types. Some of the more significant differences include: 1) A broader riparian corridor with planting on both sides of the active channel, planting on the outer slopes of the active bench, an inner active bench that provides complex interior habitat, and overall a design that preserves more of the existing riparian corridor than previous designs, 2) elimination of the 2 stage channel and replacement with an active channel and an active bench that in many areas is broad and will be inundated frequently, 3) an active bench that will support wetland vegetation and also incorporate additional habitat features such as woody structures, seasonal ponds, alcoves, etc., 4) a more complex mosaic of different habitat areas to diversify wildlife habitat, 5) elimination of previously proposed interplanting areas as further field surveys indicate that these areas are already suitably vegetated, 6) addition of three active sediment management areas, 7) addition of small fenced planting clusters in active grazing fields. The project design has also advanced in ways that improve and provide for special status species habitat. This includes a significant reduction in willow impacts to preserve willow flycatcher habitat, and additional channel bank planting and floodplain habitat features to improve salmonid habitat. These updates to the projected vegetation habitat types will be reflected in the Habitat Mitigation and Monitoring Plan (HMMP). Figures 2-7 and 2-8 present existing and projected vegetation habitat types.

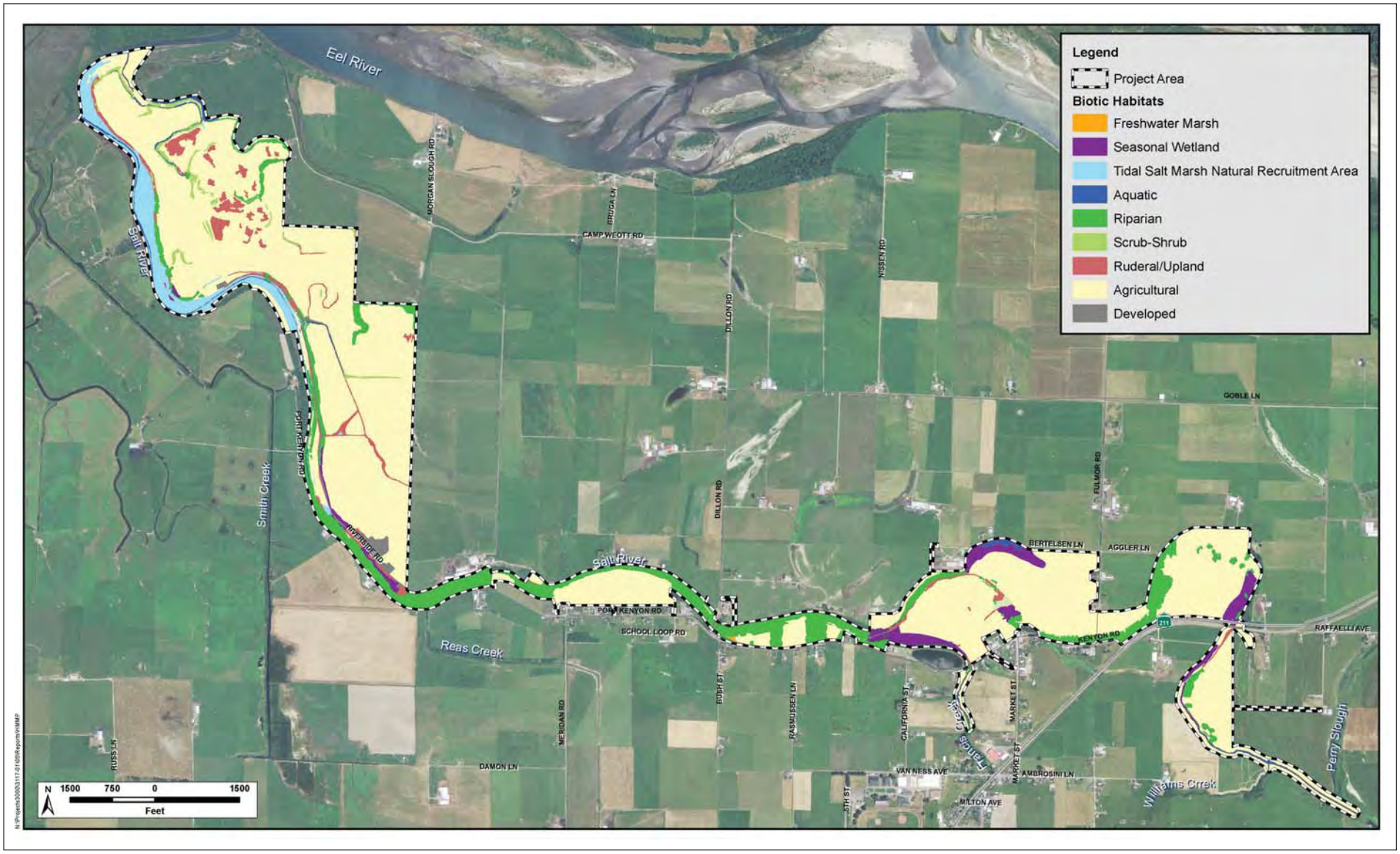


Figure 2-7

Existing Vegetation Habitat Types

Source: H.T. Harvey & Associates, 2011

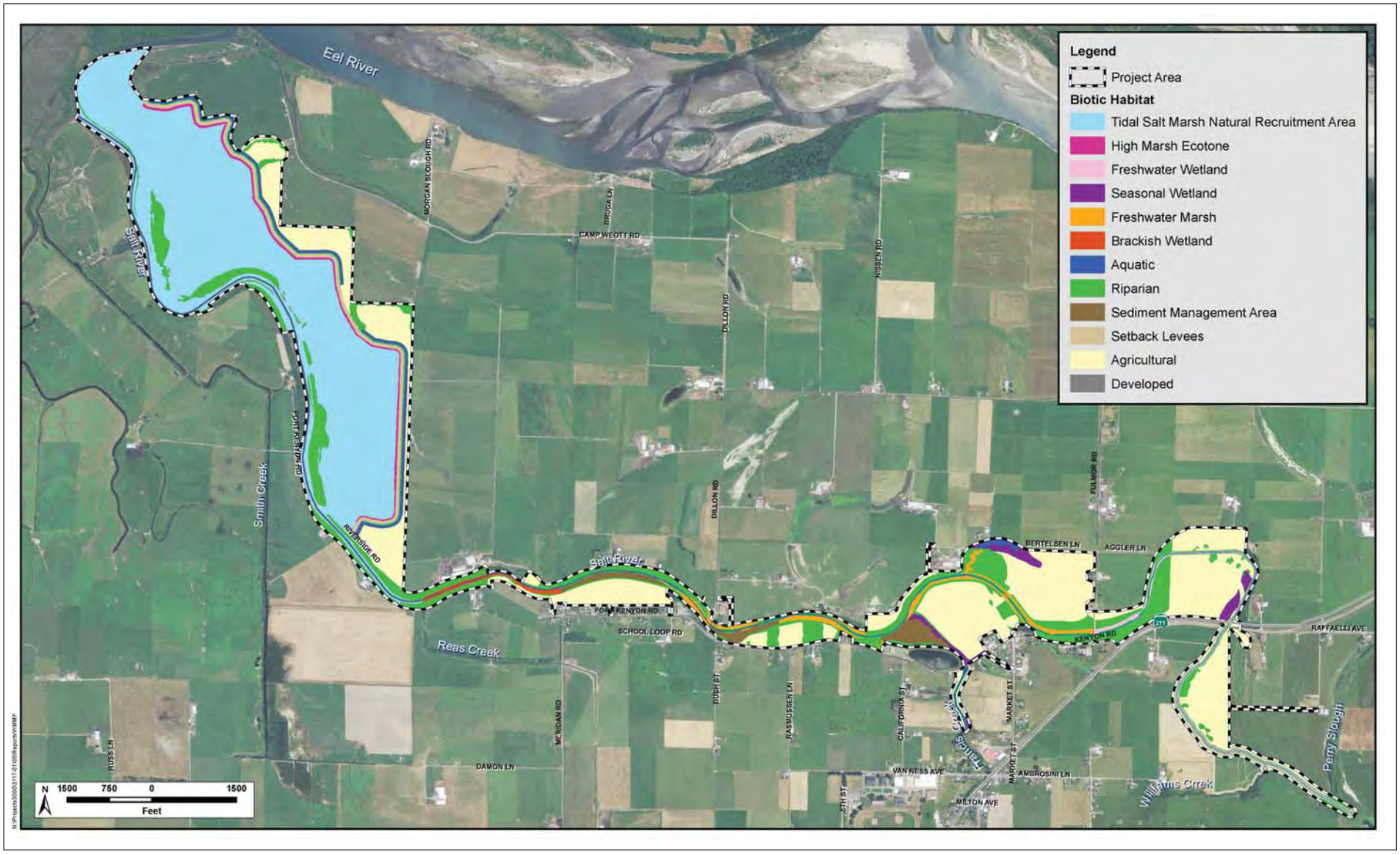


Figure 2-8

Project Vegetation Habitat Types

Source: H.T. Harvey & Associates, 2011

Salt River Channel Overview

Excavated reaches of the Salt River upstream of Riverside Ranch would be revegetated with low growing brackish and freshwater wetland plants (sedges and rushes). Appropriate plant material, to the extent feasible, would be salvaged from the project impact footprint. In addition,riparian forest (Sitka spruce, cottonwood, grand fir, redwood, and alder) species will be planted to restore former Salt River forested habitats along the length of the Salt River Channel. All areas disturbed during grading and other construction activities would be treated with erosion control seeding with native or agricultural grasses as appropriate, forbs and shrubs. Natural recruitment of desirable native plant species would be facilitated to augment the active planting activities.

Active vegetation maintenance would be regularly performed to ensure that the target riparian forest habitat develops along the riparian corridor of the Salt River; this vegetation management would also include measures to limit the development of dense willow thickets during the period that the planted forest species are establishing. Options for limiting undesirable vegetation include intermittent controlled flash grazing (cattle, goat or sheep), manual removal, and mechanical removal. Special attention would be given to non-native invasive species such as dense-flowered cordgrass, and maintenance activities will be coordinated with regional eradication programs, including both timing and methods for removal of specific species. If grazing is employed, exclusion fencing would be placed to protect channel banks, the active channel, newly establishing revegetation plantings, and areas of naturally recruiting desirable native plants. Flash grazing may be carefully employed to control weed cover in active planting areas and natural recruitment areas but will be managed to avoid excessive damage to native plantings and recruits. Grazing by sheep and/or goats would be preferred to cattle grazing to minimize impacts to the restored floodplain areas. No grazing would occur in the low flow active channel.

Flash grazing involves bringing specific levels of grazing animals onsite in the spring for very brief periods when the animals will target new growth of the weeds over the vegetation that has been planted. Grazing would be supervised by someone experiences with weed management and restoration activities to ensure protection of these desired species during grazing activities. In general, grazing would be used relatively less during the first 3-5 years when the plantings are establishing and growing to heights that would put them beyond grazing damage. However, during that period flash grazing can be used for very brief periods, if it is monitored to ensure that damage to plantings is at an acceptable level (e.g., it is not impeding the ability of the site to meet the habitat establishment success criteria). If substantial damage to native plants does occur during flash grazing then it will likely be suspended. Temporary fencing would be employed to allow flash grazing of specific areas in and around the active revegetation and recruitment areas to control expanses of weeds without unduly damaging desirable native plants.

Temporary fencing would consist of insulated fence posts and rods supporting multiple strands of electric wire or tape; the wire and posts could be easily be moved depending on grazing needs in a particular area. Depending on the size of the herd and the capacity of the animals, the Salt River corridor would be broken up into reaches that would be flash grazed for a set number of days. Electricity for the hot wires would need to come from either an established 110-V connection or a

solar charger. Solar chargers may be set up in connection with adjacent landowner's existing operations.

The overstory on newly excavated floodplains of the Salt River corridorl would be actively revegetated, and understory would be actively revegetated wherever natural recruitment is unsuccessful. The perimeter of the active channel would be planted with willow to provide a significant riparian corridor along the active channel. The active bench would be planted with native wetland species and would largely be maintained free of woody vegetation. The transition from the outer edge of the active bench to the outer edge of the corridor would be revegetated with riparian trees and shrubs.

In an effort to reduce gaps in the riparian corridor the HCRCD will work with willing landowners to identify locations where small "planting clusters" can be installed to infill openings in the riparian habitat. These would consist of small fenced groupings of trees, perhaps as few as 3-5, established to improve the continuity of the riparian corridor and provide nesting raptor habitat. The locations for these have not yet been identified but the most likely areas would be in the upper reaches of the project area. The sub-sections below summarize the revegetation approach by river reach.

Williams Creek Confluence to intersection of Salt River and Fulmor Road

Cottonwood/Spruce Riparian Forest with Freshwater Wetland

This upper reach of the project area has no tidal influence and therefore all proposed plant species are freshwater species. The land available for restoration is fairly narrow compared with downstream reaches. This area would be planted with a mixture of riparian trees that will mature to form a forested riparian corridor typical of Sitka spruce forest found historically in the Eel River Delta. Riparian forest would be established on the upper parts of the slopes that rise up from the active bench; species would include black cottonwood (Populus balsamifera ssp. Trichocarpa), Sitka spruce (Picea sitchensis), redwood (Sequoia sempervirens), grand fir (Abies grandis), red alder (Alnus rubra), and big leaf maple (Acer macrrophyllum). As the larger statured evergreen Sitka spruce and redwood develop they would shade out naturally recruiting willow, which would limit the development of undesirable willow thickets onto the active bench where they could limit flow conveyance. The active bench would be planted with a mixture of freshwater marsh wetland species such as slough sedge, spike rush and native freshwater species salvaged from onsite including spike rush, common rush (Juncus patens), sword fern (Polystichum munitum), and native wetland plugs salvaged from on site. A strip of channel edge riparian also would be established, consisting of native willows. This vegetation would provide shading of the aquatic habitat, help shade out invasive reed canary grass, protect the banks from erosion during flood events, and promote scour of the active channel. The species planting and percent composition in this area are shown in the plan view (Figure 2-9) and the conceptual cross-section (Figure 2-10).

Specific areas where beneficial reuse of soil occurs or where temporary construction disturbance occurred on existing pastures would be revegetated with an agricultural seed mix as prescribed by individual landowners. Agricultural seed mixes for this area typically include rye grass and clover (*Trifolium repens*). Revegetation activities here would avoid areas of existing riparian forest and scrub.

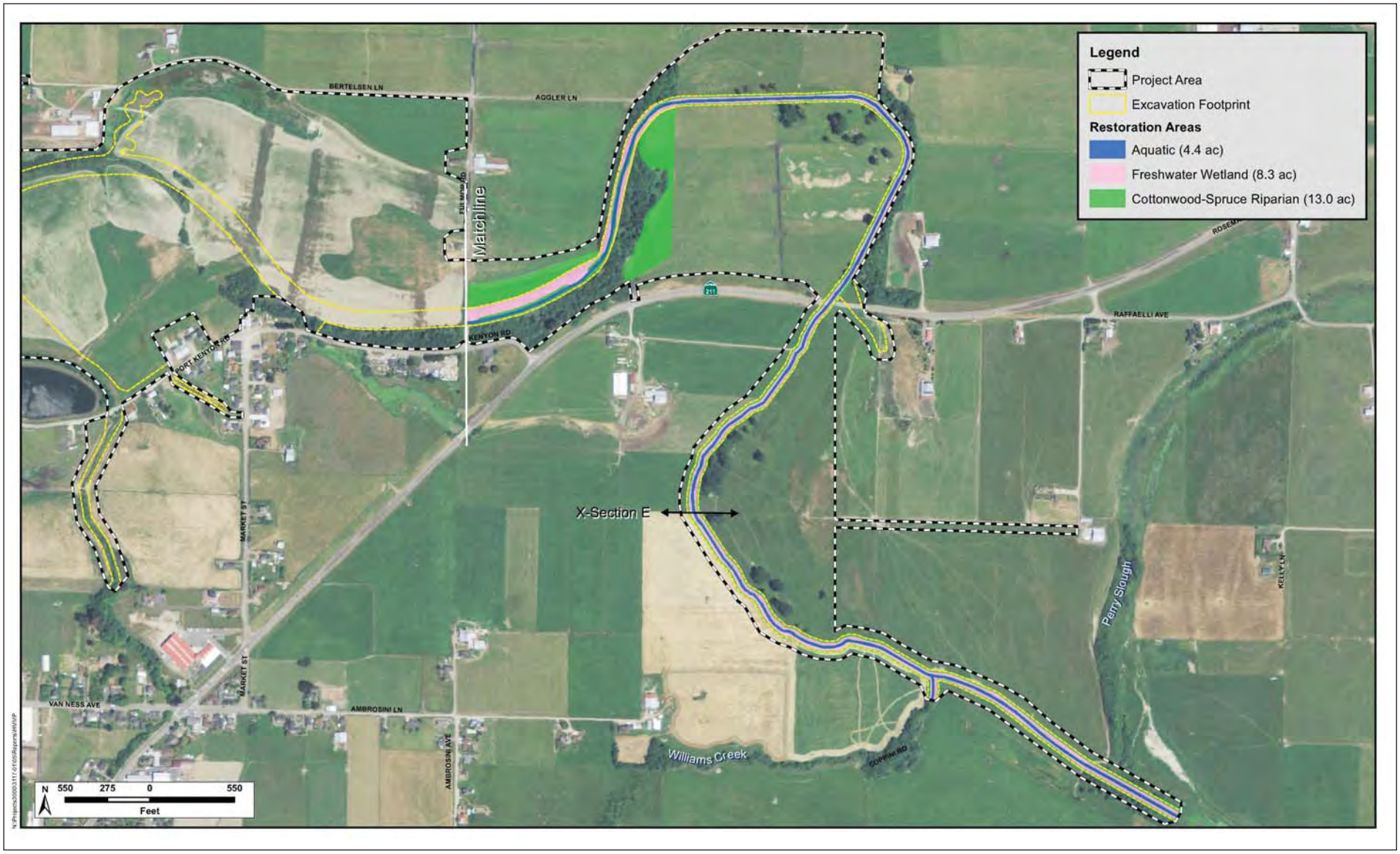


Figure 2-9

Salt River Revegetation Area - Williams Creek Confluence Vicinity

Source: H.T. Harvey & Associates, 2011

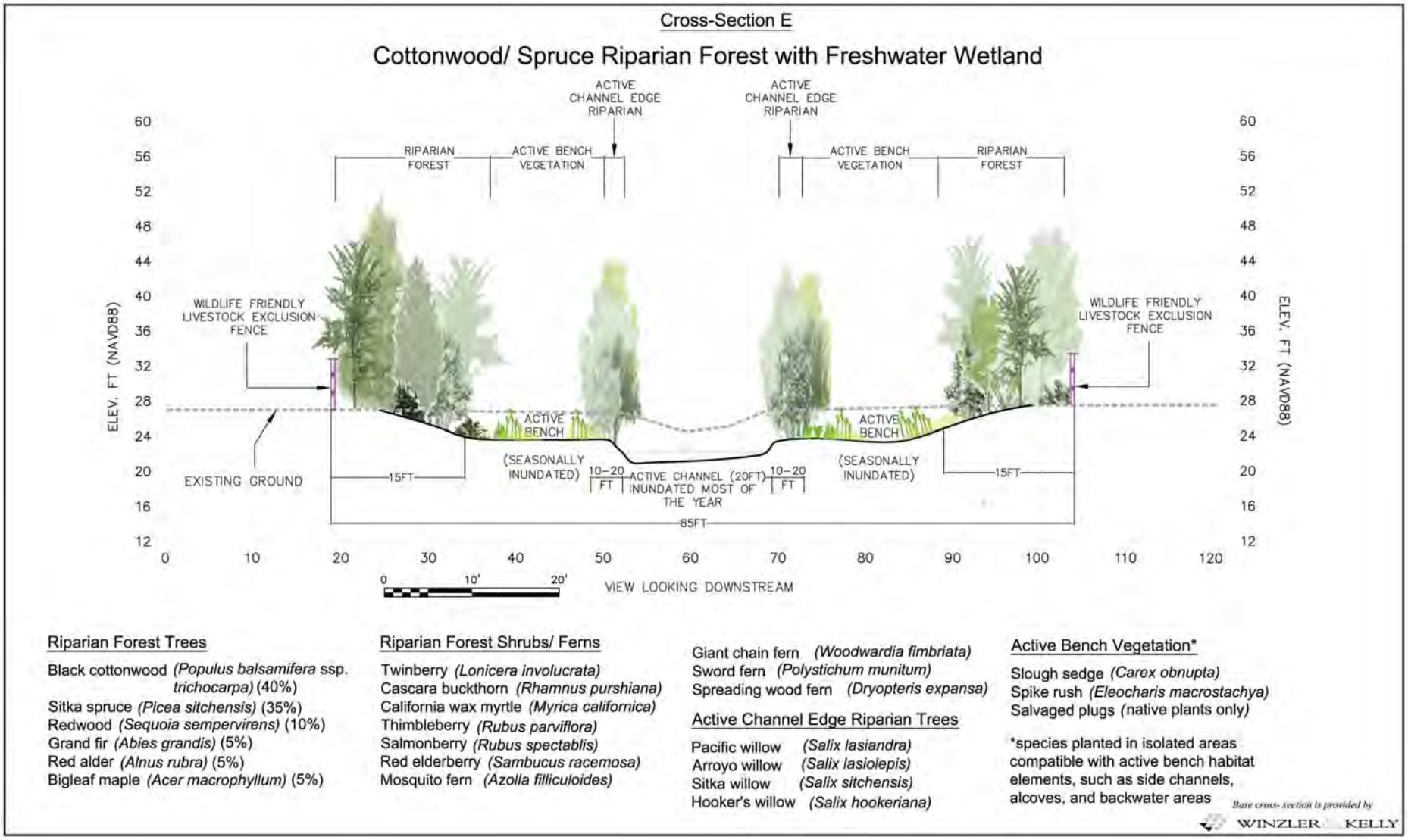


Figure 2-10

Typical Revegetation Section - Williams Creek Confluence Vicinity

Source: H.T. Harvey & Associates, 2011

Naturally recruiting native species throughout the project footprint may include willow species such as Pacific willow (*Salix lasiandra*), Sitka willow, sandbar willow, and arroyo willow. Other recruiting plants may include common horsetail, California blackberry, wild rose (*Rosa nutkana*), spike rush, cattail (*Typha latifolia*), small-fruited bulrush (*Scirpus microcarpus*), common rush, cocklebur (*Xanthium strumarium*), skunk cabbage (*Lysichiton americanum*), water parsley (*Oenanthe sarmentosa*), and dock. The establishment of all naturally recruiting native plants will be encouraged with the exception of species that would increase channel roughness and/or sedimentation and any other woody species that are determined to negatively affect channel conveyance and morphological processes. Willows may recruit in the active channel and are anticipated to recruit on the active bench beyond the prescribed willow planted areas, so these areas would periodically be managed on an as-needed basis per the Adaptive Management Plan. Non-native species such as reed canarygrass also would be discouraged through planting of overstory species and long-term adaptive management and removal.

Fulmor Road Intersection to Dillon Road Bridge

Spruce/Cottonwood Riparian Forest with Tidal Freshwater Marsh

The riparian zone would be planted with a mixture of riparian trees that would mature to form a forested riparian corridor typical of Sitka spruce forest historically found in the Eel River Delta. The mixture of trees in this reach of the corridor would be more diverse than in the brackish reach just downstream (see below). This reach of the project is predominantly freshwater influenced, but the lower section within 500 feet upstream of Dillon Road is subject to tidal inundation in the active channel, but not onto the active bench. The land available for restoration becomes considerably wider in this reach, ranging as high as 500+ ft. in width for riparian forest and corridor areas. The plant species proposed for the riparian forest in this reach are identical to those cited above under Cottonwood Spruce Riparian Forest with Freshwater Wetland, but the percent composition of the species is shifted to establish Sitka spruce as the dominant tree species. The species planted in this area are shown below in the plan view (Figure 2-11) and the conceptual cross-section (Figure 2-12).

The active bench would be vegetated in isolated areas with freshwater marsh species such as slough sedge and spike rush and where scour and deposition are anticipated to be minimal. Naturally recruiting woody vegetation on the active bench would be maintained per the Adaptive Management Plan. A valuable channel edge riparian habitat element has been added to the design on the active berm, shown in the cross-section where riparian strips would be established immediately adjacent to the active channel to provide channel shading, stabilize the channel banks and induce sediment accumulation on natural levees along each side of the channel. These natural levees or active berms would vary in elevation, with the higher elevations receiving inundation approximately 5-10 days per year; this modest level of inundation allows for the planting of Sitka spruce, alder, and cottonwood intermixed with the willow plantings. As these natural levees aggrade over time and the inundation period decreases even further, additional plantings of Sitka spruce and other compatible species can be installed to gradually establish a dense evergreen riparian corridor that would limit willow establishment and also shade out reed canarygrass.

Beneficial reuse areas would be revegetated with an agricultural seed mix as prescribed by individual landowners. Beneficial reuse would avoid areas of existing riparian forest and scrub. Natural recruitment target species are described, above.

Dillon Road Bridge to Confluence of the Salt River with Reas Creek

Spruce Dominated Riparian Forest with Tidal Freshwater Marsh

This reach would be vegetated with species tolerant of tidal brackish conditions. The species planted in this area are shown in Figure 2-13. Figure 2.14A is a cross-section placed just below the Dillon Road bridge in the area where the active bench is still above tidal influence, thus freshwater marsh would occupy the bench. The active channel would be fresh in the winter and brackish in the summer. The inundation regime for the channel and bench are largely influenced by tidal elevations and backwater effects from the Eel River. The plant species to be installed and expected to recruit would remain the same as in the reach upstream for this portion of the reach. Similar to the above reach, the active bench would be vegetated in isolated areas with freshwater marsh species such as slough sedge and spike rush and where scour and deposition are anticipated to be minimal. Naturally recruiting woody vegetation on the active bench would be maintained per the Adaptive Management Plan.

Spruce Dominated Riparian Forest with Brackish Marsh

Figure 2.14B is a cross-section placed just above the confluence with Reas Creek. In this reach there is a shift into tidal influence onto the active bench approximately 1,800 feet downstream of the Dillon Road bridge. The cross-section for this reach has several notable changes from upstream areas. First, a substantial width and acreage of existing riparian would be preserved on both sides of the channel, providing an average riparian corridor width of approximately 280 feet. The outer slopes would be planted with Sitka spruce, red alder and Sitka willow and a mix of native shrubs and ferns. A small fringe of brackish marsh would be established along the lower outer slope, and a mudflat will occupy the active bench.

Other recruiting plants may include common horsetail, spreading bentgrass, common rush, dock, sand spurry and Pacific silverweed. Perennial pickleweed, fat hen (*Atriplex patula*) and salt grass may also recruit in more brackish areas. Invasive Spartina could potentially recruit in this part of the channel and active maintenance may be required to limit the colonization of this species.

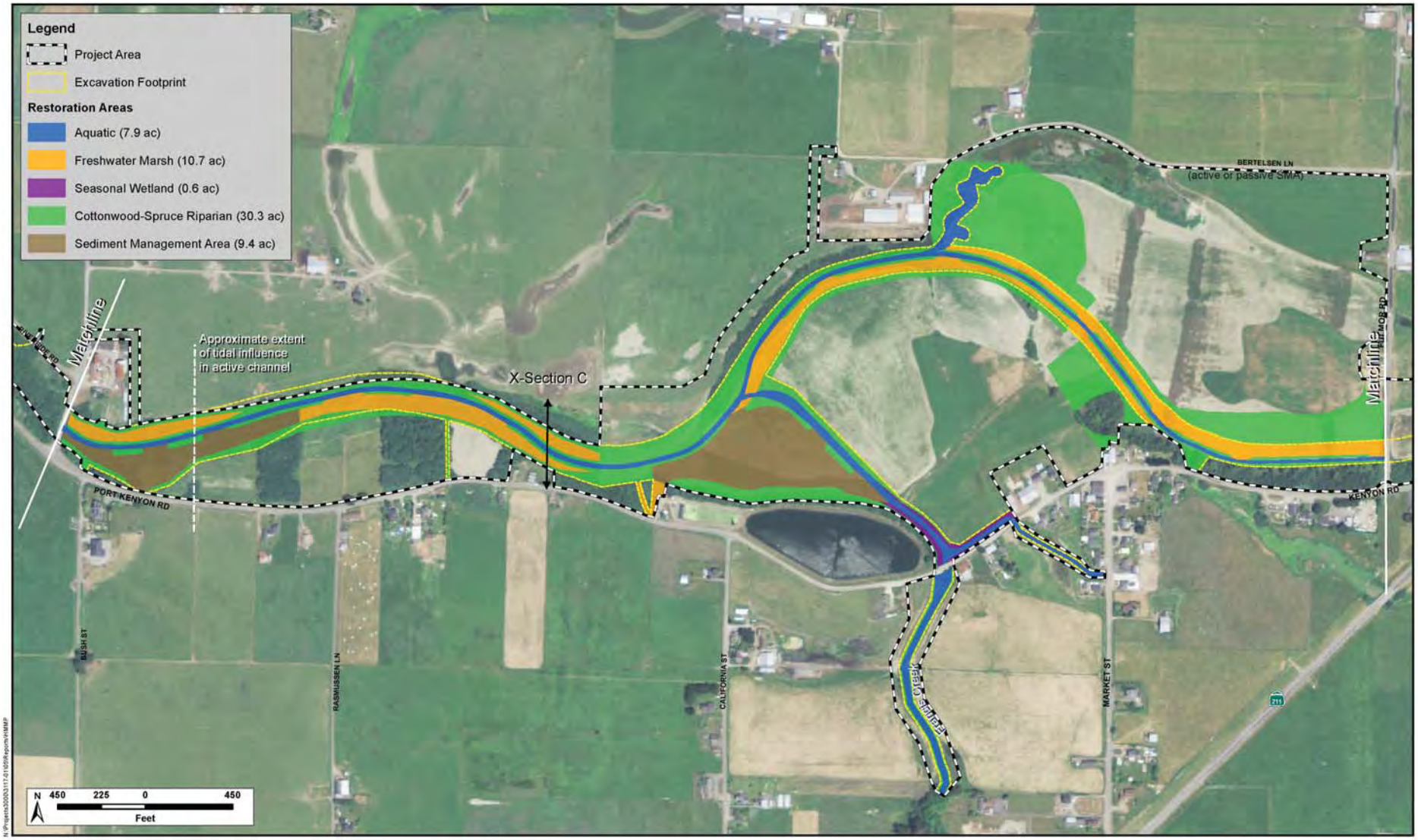


Figure 2-11

Salt River Revegetation Area - Francis Creek Confluence Vicinity

Source: H.T. Harvey & Associates, 2011

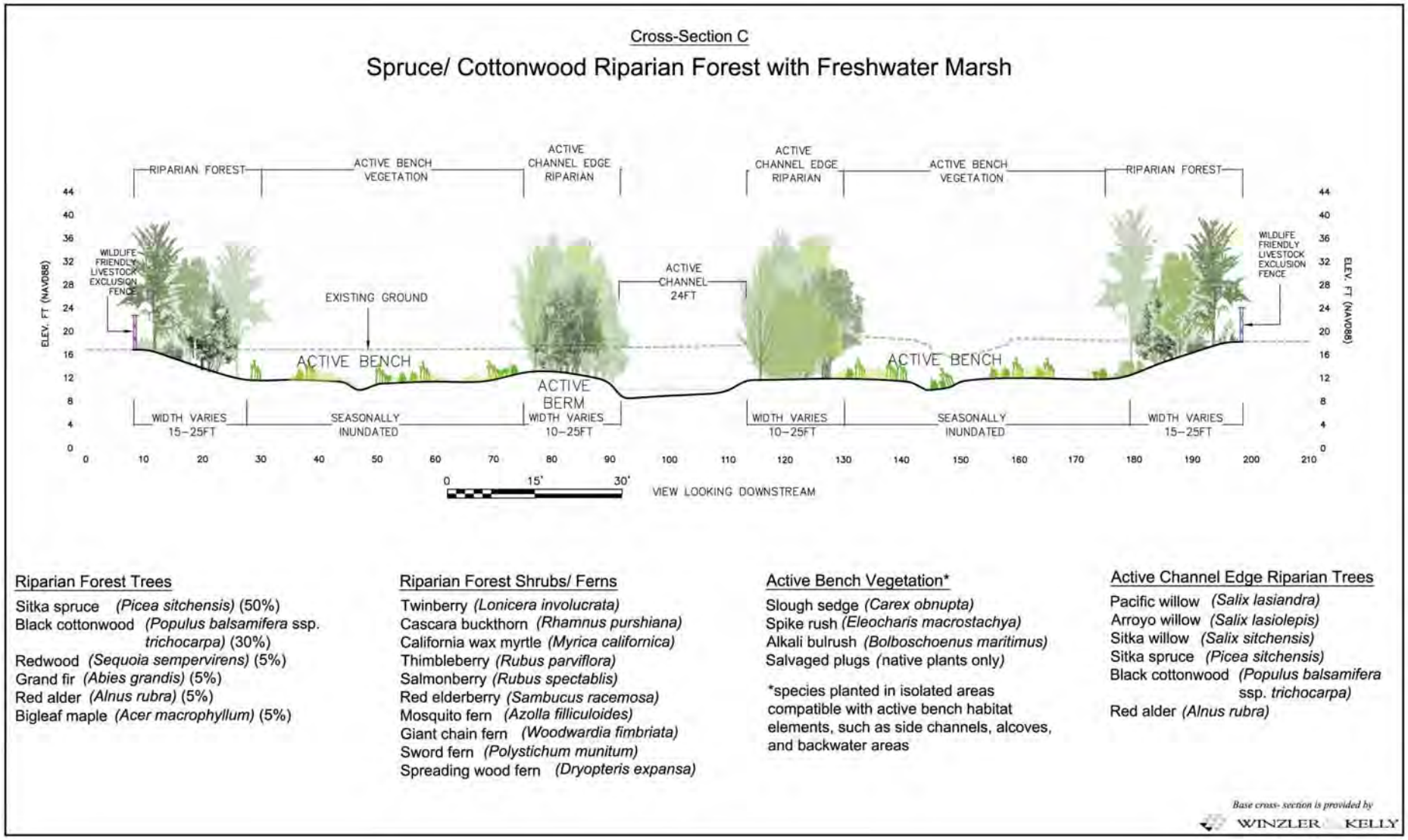


Figure 2-12

Typical Revegetation Section - Francis Creek Confluence Vicinity

Source: H.T. Harvey & Associates, 2011

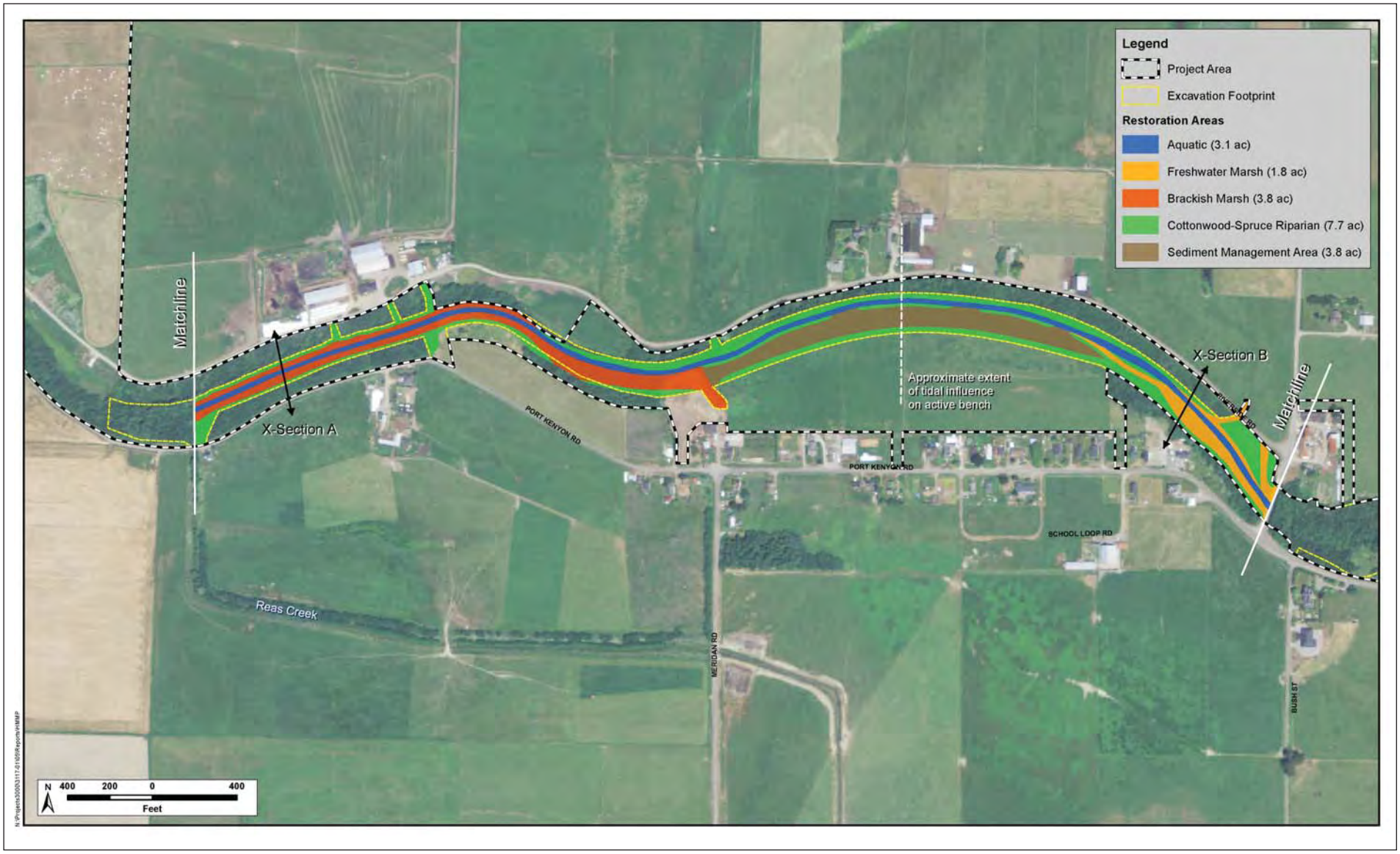


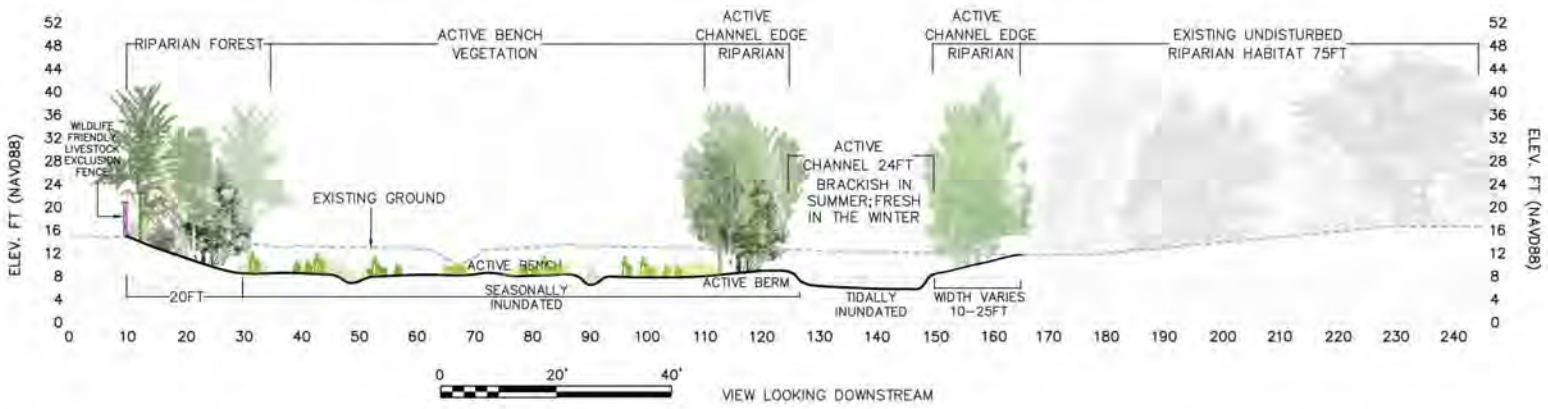
Figure 2-13

Salt River Revegetation Area - Reas Creek Confluence Vicinity

Source: H.T. Harvey & Associates, 2011

Cross-Section B

Spruce/ Cottonwood Riparian Forest with Tidal Freshwater Marsh



Riparian Forest Trees

Sitka spruce *(Picea sitchensis)* (50%)
Black cottonwood *(Populus balsamifera* ssp. *trichocarpa)* (30%)
Redwood *(Sequoia sempervirens)* (5%)
Grand fir *(Abies grandis)* (5%)
Red alder *(Alnus rubra)* (5%)
Bigleaf maple *(Acer macrophyllum)* (5%)

Active Channel Edge Riparian Trees

Sitka willow *(Salix sitchensis)*
Hooker's willow *(Salix hookeriana)*
Arroyo wilow *(Salix lasiolepis)*

Riparian Forest Shrubs/ Ferns

Red currant *(Ribes sanguineum)*
Twinberry *(Lonicera involucrata)*
Cascara buckthorn *(Rhamnus purshiana)*
California wax myrtle *(Myrica californica)*
Thimbleberry *(Rubus parviflora)*
Salmonberry *(Rubus spectablis)*
Red elderberry *(Sambucus racemosa)*
Mosquito fern *(Azolla filliculoides)*
Giant chain fern *(Woodwardia fimbriata)*
Sword fern *(Polystichum munitum)*
Spreading wood fern *(Dryopteris expansa)*

Active Bench Vegetation*

Slough sedge *(Carex obnupta)*
Spike rush *(Eleocharis macrostachya)*
Tufted hairgrass*(Deschampsia caespitosa)*
Common rush *(Juncus patens)*
Salvaged plugs *(*native plants only*)*

*species planted in isolated areas compatible with active bench habitat elements, such as side channels, alcoves, and backwater areas

Base cross- section is provided by WINZLER KELLY

Figure 2-14a

Typical Revegetation Section - Reas Creek Confluence Vicinity

Source: H.T. Harvey & Associates, 2011

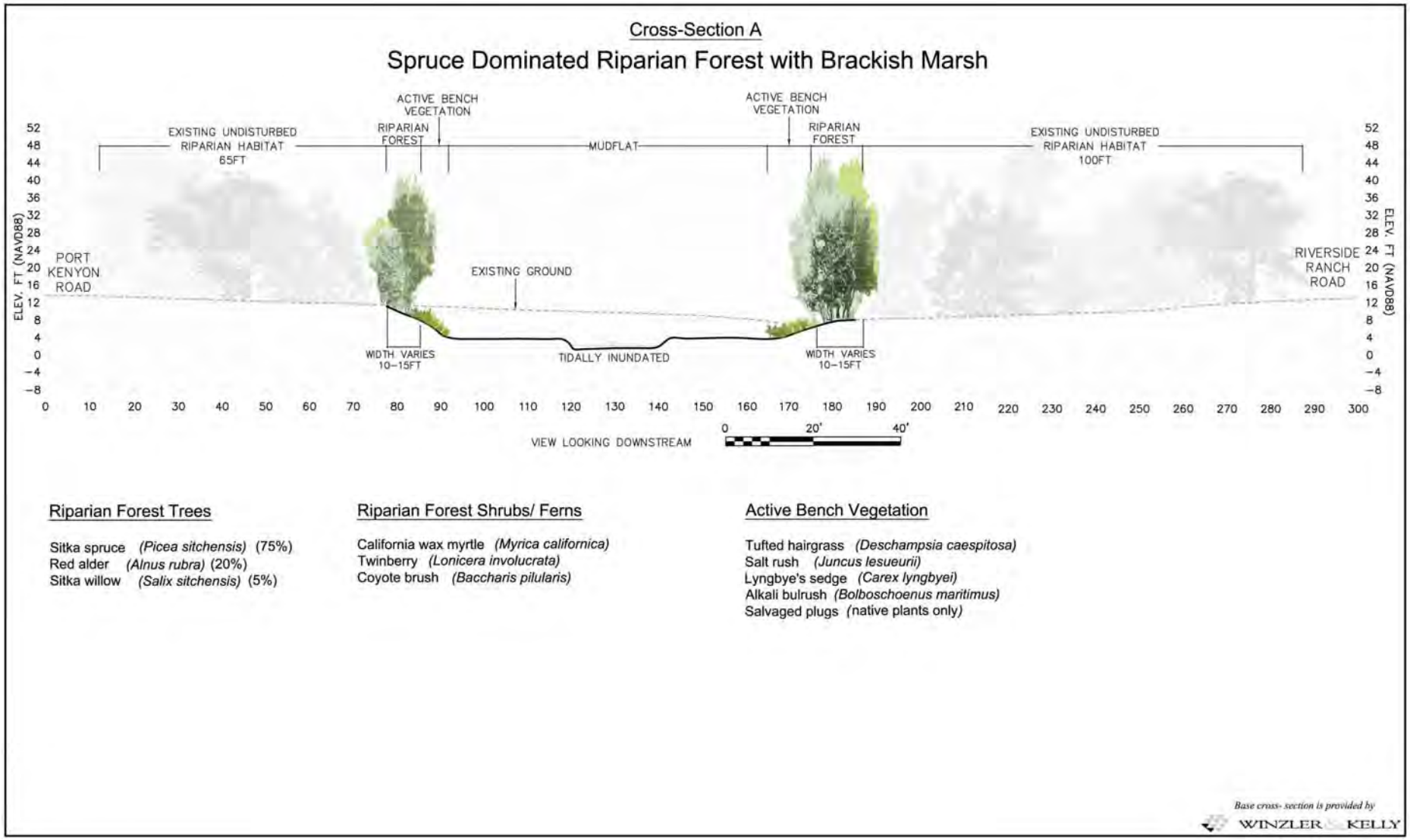


Figure 2-14b

Typical Revegetation Section - Reas Creek Confluence Vicinity

Source: H.T. Harvey & Associates, 2011

2.3.2 RIVERSIDE RANCH TIDAL MARSH RESTORATION

Overview

The Riverside Ranch Tidal Marsh Restoration component is intended to provide extensive habitat improvements and ecological benefits for the overall project. Riverside Ranch is an approximately 444-acre property with over 2.5-miles of frontage along the lower Salt River. The property was acquired in 2007 by the Western Rivers Conservancy with funding from the U.S. Fish and Wildlife Service, the Wildlife Conservation Board, and the State Coastal Conservancy. Western Rivers Conservancy is in the process of transferring the property to the California Department of Fish and Game for long-term management. Once transferred, it will become the Salt River Unit of the Eel River Wildlife Management Area.

The primary purpose for the acquisition of Riverside Ranch is to restore tidal wetlands and to expand the tidal prism in the lower Salt River in order to achieve hydraulically sustainable conditions for a restored Salt River channel. By restoring tidal action to the property, an increased volume of water would be exchanged on each tidal cycle via the Salt River. This increase in the volume of water would increase channel scour and help maintain the width and depth of the tidally influenced channel. In addition to providing hydraulic benefits to the lower Salt River channel, restoration of Riverside Ranch presents a unique opportunity to achieve many other habitat restoration and enhancement objectives. Long-term studies conducted by the Department of Fish and Game in Humboldt Bay have illuminated the importance of the freshwater/saltwater interface for juvenile salmonid rearing. Juvenile salmonid will migrate to habitat where they can utilize the upper salt wedge in a freshwater tributary. The only habitat of this kind in the Eel River Estuary exists in the Salt River, but is currently inaccessible due to sedimentation.

Proposed Riverside Ranch Modifications

A new setback berm would be constructed along the eastern boundary of the project to protect adjacent parcels from tidal flooding. The berm would be constructed from materials excavated from the widening of the channel in this area as well as from earthwork performed to breach and lower existing levees, constructing new marsh channels and from interior grading that would enhance tidal exchange and create marshplain. The berm would have a very gentle compound (20:1 or greater) interior slope to reduce wave erosion and create upland transition habitat. The site has been designed to take full advantage of the restored tidal prism and promote salt marsh development, while at the same time retaining approximately 76 acres for agricultural land uses.

Current conditions and projected conditions in the project area are generally depicted on Figures 2-7 and 2-8. The specific activities for the Riverside Ranch tidal marsh restoration are summarized below.

Channel Excavation

The Salt River channel's tidally influenced area would be excavated to varying degrees under each of the alternatives presented in the subsequent section. Under Alternatives 1 and 2, the maximum

channel excavation would be completed in the river adjacent to the Ranch in order to accommodate flow from both the Riverside Ranch and upper channel excavation components. Under Alternative 3, a minimum channel excavation would be completed in order to direct flow from only the Riverside Ranch project component. In all cases, the Salt River channel excavation associated with the Riverside Ranch project component would extend only as far as Reas Creek.

The rationale and purpose of these excavations is similar. First, the expanded channel would more closely represent the historic channel configuration, and would thereby enhance and expand tidal prism exchange at Riverside Ranch. Second, the expanded channel would enhance tidal exchange within the newly created wetlands on Riverside Ranch, thereby jump-starting the habitat restoration and preventing the development of anoxic conditions within newly created salt marsh habitat. Last, the excavated material is needed to construct the setback berms to protect adjacent properties from flooding following breach of the existing levees at Riverside Ranch and incorporated to provide elevation gradients for transitional habitat.

Levee Breaches

Excavations through the perimeter levees would open the Riverside Ranch site to tidal inundation from the adjacent Salt River (see Figure 2-4). In the northern half of the Ranch, the connection would occur at a historic slough location to capitalize on reconnecting with remnant slough networks. This approach would expedite the natural development of complex and sustainable channel networks. In the southern half of the site, the connection would be located as far upstream along the Salt River as possible in order to maximize the length of Salt River channel exposed to tidal exchange. Although this is not a historic connection point, it would maximize the length of Salt River channel exposed to tidal exchange thereby maximizing the use of tidal exchange energy in expanding and maintaining a larger channel. Levee breach and connector channel dimensions are sized using empirical relationships between tidal channel dimensions and marsh drainage area.

Construct New Setback and Refurbished Berms

A new berm approximately 9,060 feet in length would be constructed along the eastern boundary of the project to protect adjacent parcels from tidal flooding (see Figure 2-4). The berm would be constructed from approximately 153,000 cy of fine sediments excavated from the Salt River channel, as well as any other fill generated on the site and would have a very gentle (20:1 or greater) interior slope to help reduce wave erosion and create upland transition habitat. The berm would have a crest height of 14.75 ft. (NAVD88) and top width of at least 12 ft.; the outboard slope would be 4:1. The design provides for inclusion of culverts, maintenance access, and potential floodways for Eel River flooding. Approximately 3,500-linear feet of existing berm along the northern boundary of Riverside Ranch would be refurbished to match the dimensions of the new berm described above. An additional 32,000 cy of sediment excavated from the Salt River channel would be used to refurbish the existing berms.

Marshplain Enhancement

One large elevated area within Riverside Ranch would be lowered through targeted excavation in order to enhance both tidal exchange and created marshplain as part of the project. This area would

be excavated as low as the mean high water (MHW) tidal datum elevation in order to achieve this enhancement. This work requires excavating approximately 60,600 cy of material.

Levee Lowering

Portions of the outboard Riverside Ranch levee adjacent to the Salt River would be lowered to approximately mean higher high water (MHHW) to create high marsh habitat and restore the high-tide hydraulic connection between the river and the property (see Figure 2-4). However, the majority of flows would be directed to the designed breach locations to maximize the tidal prism and subsequent scour in the Salt River. Lowering of the outboard levees also removes barriers to the deposition of debris and wrack as in more natural systems. A total of approximately 14,150 cy of sediment would be excavated as part of levee lowering. Selected sections of the existing ranch levees are being retained in order to preserve existing willow riparian habitat.

Retain Agricultural Land and Enhance Aleutian Cackling Goose (ACG) Habitat

Project elements are incorporated to retain and/or enhance approximately 63-acres of short grass habitat within the 76 acres dedicated to agricultural use. The 63 acres would benefit regional ACG management strategies and minimize crop depredation damages on private property. The HCRCD and California Department of Fish and Game (CDFG) have a memorandum of understanding (MOU) in place for administering leases for agricultural activities on CDFG lands. This system can be utilized in developing a specific agricultural management plan for Riverside Ranch that is compatible with the ecological goals of the project. Selective grazing may also be used for invasive plant management. The amount of land that remains in use for agricultural activities would affect whether there is future need for continued use for all or portions of the existing barn complex (dairy barn, feeding barn and milking barn).

New Marsh Channels

New marsh channels would be excavated to connect the restored marsh with the receiving waters of the Salt River (Figure 2-4). Internal wetland improvements would include the excavation of new internal slough channels and the deepening of existing drainage ditches and/or remnant sloughs to facilitate channel development. Adequate drainage of the marsh plain is important to marsh development. Poor drainage from damped tides can prolong inundation of the marsh plain, limit sediment supply to the restored site, and inhibit plant colonization. Thalweg (channel bottom) elevations would be determined by a qualified hydrologist during final design. Up to 47,000 cy of material could be excavated to create the new marsh channels.

Filling Ditches

Fill generated on the site would be used to selectively fill existing ranch drainage ditches (Figure 2-4). This would inhibit flow though those ditches and promote scour and flow through the remnant historic channels. To reduce the potential for fish stranding, the fill would be located such that the ditches on either side connect directly to a breach. This would avoid ponding of water between the filled ditches at low tide. Approximately 30,000 cy of material would be needed to fill unwanted ditches and the former dairy lagoon.

Water Control Structures

The existing culverts, both for internal drainage as well as those structures that drain to the Salt River, would be selectively removed or blocked to help facilitate proper drainage and a more natural channel network. New culverts with tide gates would be added to ensure proper drainage from adjacent parcels through the setback levees and into the restored tidal areas of Riverside Ranch. However, to maximize natural estuarine processes and minimize on-going maintenance needs, no new structures would be incorporated into new tidal connections to the Salt River.

Beneficial Reuse of Sediment

The current Riverside Ranch restoration design would result in a total excavation volume of approximately 336,550 cubic yards (CY). Table 2-2 contains the primary earthwork volumes (cuts and fills) associated with this project component. The Riverside Ranch project component balances excavation quantities with proposed beneficial reuse of excavated material. Proposed reuses include: 1) Setback berms and landscape restoration to diversify habitat types and protect adjacent properties from inundation due to estuary restoration, and 2) High Marshplain Enhancement. Geotechnical investigations and soil contaminant testing found that project soils are structurally competent and suitable for all proposed uses. The majority of the sediments tested are comprised of silty fine sands and sandy silts, and suitable for proposed construction activities provided that the low strength characteristics and high erosion potential can be accepted and/or mitigated through design and erosion control measures.

Laboratory analytical results indicate that soils within the Salt River channel adjoining Riverside Ranch have relatively high electrical conductivity (EC), exchangeable sodium percentage (ESP) and sodium adsorption ratio (SAR) values, indicating that they are saline-sodic. In general, the salinity of the soil increases with depth. Reuse of saline-sodic soils excavated from within the Salt River adjoining the Riverside Ranch restoration area for agricultural purposes is not recommended due to the potential for soluble salts within the excavated material to leach into the soil and impede vegetative growth. Graded areas within the Riverside Ranch requiring immediate establishment of non-salt marsh vegetation would be capped with either low- or non saline-sodic soils derived from the surficial soils within the project area.

Table 2-2 Riverside Ranch Tidal Marsh Restoration Earthwork Volumes

Description	Cut (CY)	Fill (CY)
Excavate Salt River Channel (Cut-off Slough to Reas Creek)	183,400	
Excavate Internal Channels	47,000	
Earthwork for new marsh - cut	60,600	
Earthwork for new marsh - fill		121,300
Create Setback Berm (20:1 basal slope)		185,000
Excavate New Eastern Outboard Drainage Ditch	31,400	
Lower Existing Levees	14,150	
Fill Internal Drainage Ditches		25,250
Fill Internal Dairy Barn Ponds		5,000
Total	**336,550**	**336,550**

Revegetation Plan

The Riverside Ranch project intends to restore tidal marsh habitat in an effort to create extensive habitat improvements and ecological benefits to numerous fish, wildlife and vegetation wetland species. The project design has also advanced in ways that improve and provide for special status species habitat. This includes tidal channel design elements for suitable tidewater goby habitat. This effort entails restoring tidal exchange from the Salt River tidal salt marsh reach into Riverside Ranch through removal of levees and excavation of connector and internal slough channels. Restoring tidal wetlands to the Ranch would significantly increase the volume of water exchanged on each tidal cycle (tidal prism) between the restored wetland and the Eel River estuary. This will result in higher flow velocity and increased tidal scour that would maintain the newly restored morphology of the Salt River. Thus, the two main connections between restored marsh and the Salt River channel are strategically located to maximize the length of Salt River tidal channel exposed to increased tidal prism. Restoration efforts also include significant grading of internal Ranch areas to eliminate existing drainage ditches, create more natural sinuous channel networks, and increase microtopography for distinct marsh habitat zones. The project also involves constructing a new setback berm to project adjacent properties from tidal inundation with an outboard drainage ditch to maintain the current level of drainage from surrounding properties.

Because the existing elevations within Riverside Ranch are relatively high, it is anticipated that low- to high-marsh habitats (occupying elevations ranging from mean tide level (MTL) through and above mean higher high tide level (MHHW)) would establish rapidly after restoration is complete. The only subtidal (below MTL) habitat inside Riverside Ranch would be restricted to the internal slough channels. Elevations to accommodate upland ecotone habitat would be maintained and created at selected locations around the perimeter of the restored marsh. The main connector

channels to the Salt River along with internal slough channels are sized to optimize tidal exchange and maintain adequate flow velocity and scour to flush sediments out of the marsh through tidal action if deposited within the marsh channels during storms.

Based on monitoring and modeling data, it is anticipated that these reaches would experience very low salinity through the rainy season, transitioning through brackish conditions and into high/marine salinities by early summer through late fall period, mirroring the salinity signature and seasonal cycle of the Eel River estuary. It is anticipated that a mix of salt and brackish marsh vegetation would naturally recruit and colonize Riverside Ranch based on seasonal inundation and salinity patterns. A number of small terminal ponds and earthen weirs are designed into the primary internal channels to promote low energy perennial ponding and emulate desirable habitat for the tidewater goby. The majority of the internal slough channels are also designed to provide adequate water depths and conditions for eelgrass recruitment.

Areas on Riverside Ranch in the vicinity of the new breaches would be graded to elevations at or below MHW to provide additional drainage from the property and to enhance the tidal prism in the upstream portions of the adjacent Salt River. Additional habitat features include the retention of a grassland area with seasonal wetland characteristics in the northeast corner adjacent to a significant thicket of mature willows. This area would be grazed and managed for Aleutian cackling geese.

Projected habitats include the riparian habitat planting areas (Sitka spruce, shore pine) to restore historic Salt River Delta forested habitat on the Riverside Ranch property. Preservation of existing willow habitat on-site also would increase habitat values for avian species.

The plan view for Riverside Ranch is shown in Figure 2-15 and the cross-section is depicted in Figure 2-16. The cross-section extends across Riverside Ranch and depicts the trapezoidal shaped channel, a riparian strip, and the marsh plain that extends to a new setback berm. The setback berm would have an upper slope at approximately 4:1, and a lower slope at approximately 20:1; this would create a broad high marsh ecotone habitat area of unique ecological value. This interior area of Riverside Ranch is presently dominated by pastures with a salt marsh fringe on the outboard side of the berm. Once a tidal connection is re-established, the newly vegetated portions of the restored ranch would be dominated by naturally recruiting tidal salt marsh species including slough sedge, pickleweed, salt grass, slender arrowgrass, fat hen, jaumea, gumplant and sand spurry. Other naturally recruiting species that may occur include Lyngbye's sedge, common rush and common spike rush. The higher elevation salt marsh would be monitored to determine whether it is developing the diversity representative of native high marshes in Humboldt County estuaries. If necessary, planting may occur in this area to augment natural recruitment and to increase the diversity of salt marsh species. Plantings could include salt marsh species such as gumplant, saltgrass, jaumea, seaside arrowgrass, and sea lavender.

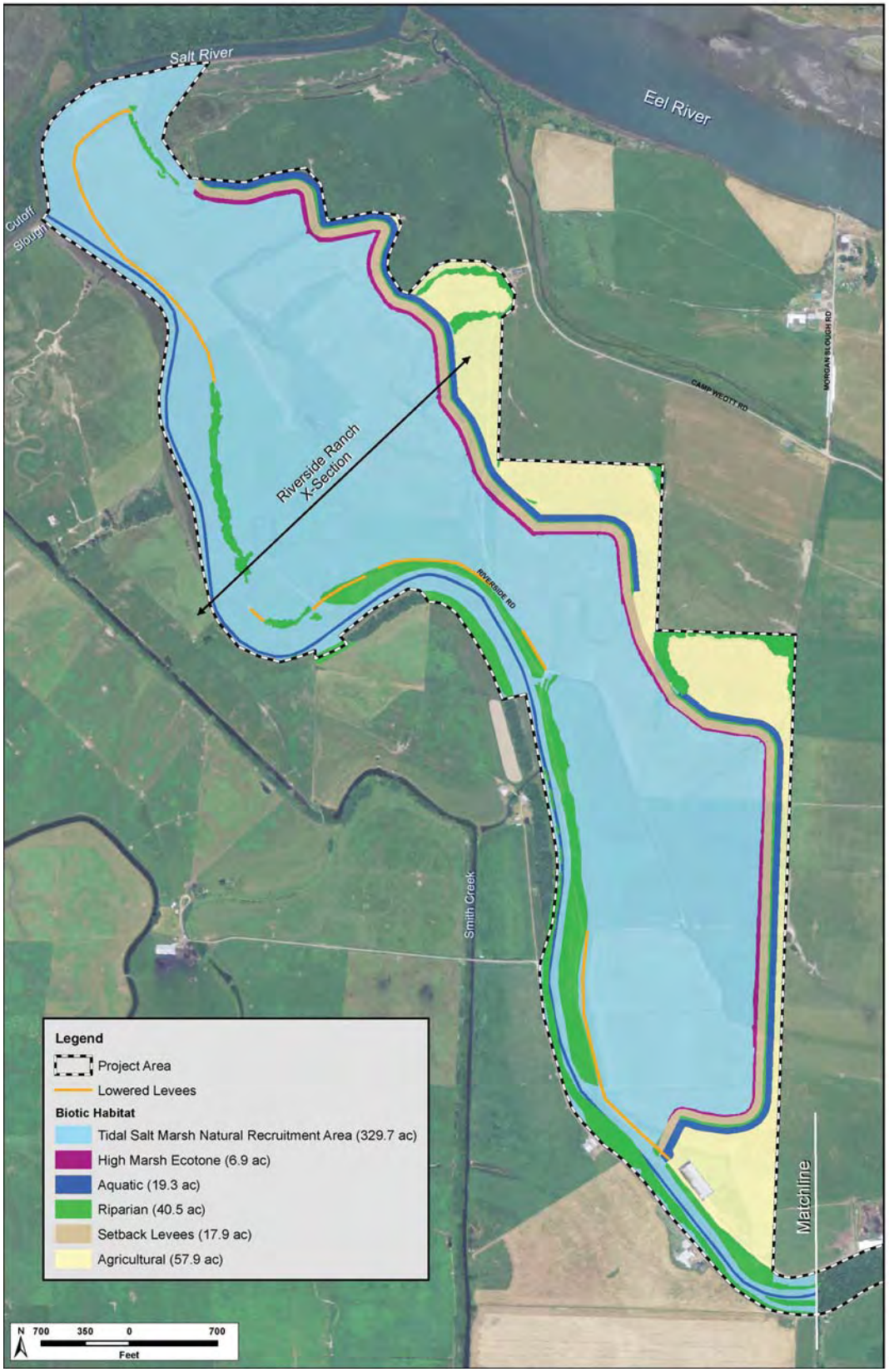


Figure 2-15

Riverside Ranch Revegetation Area

Source: H.T. Harvey & Associates, 2011

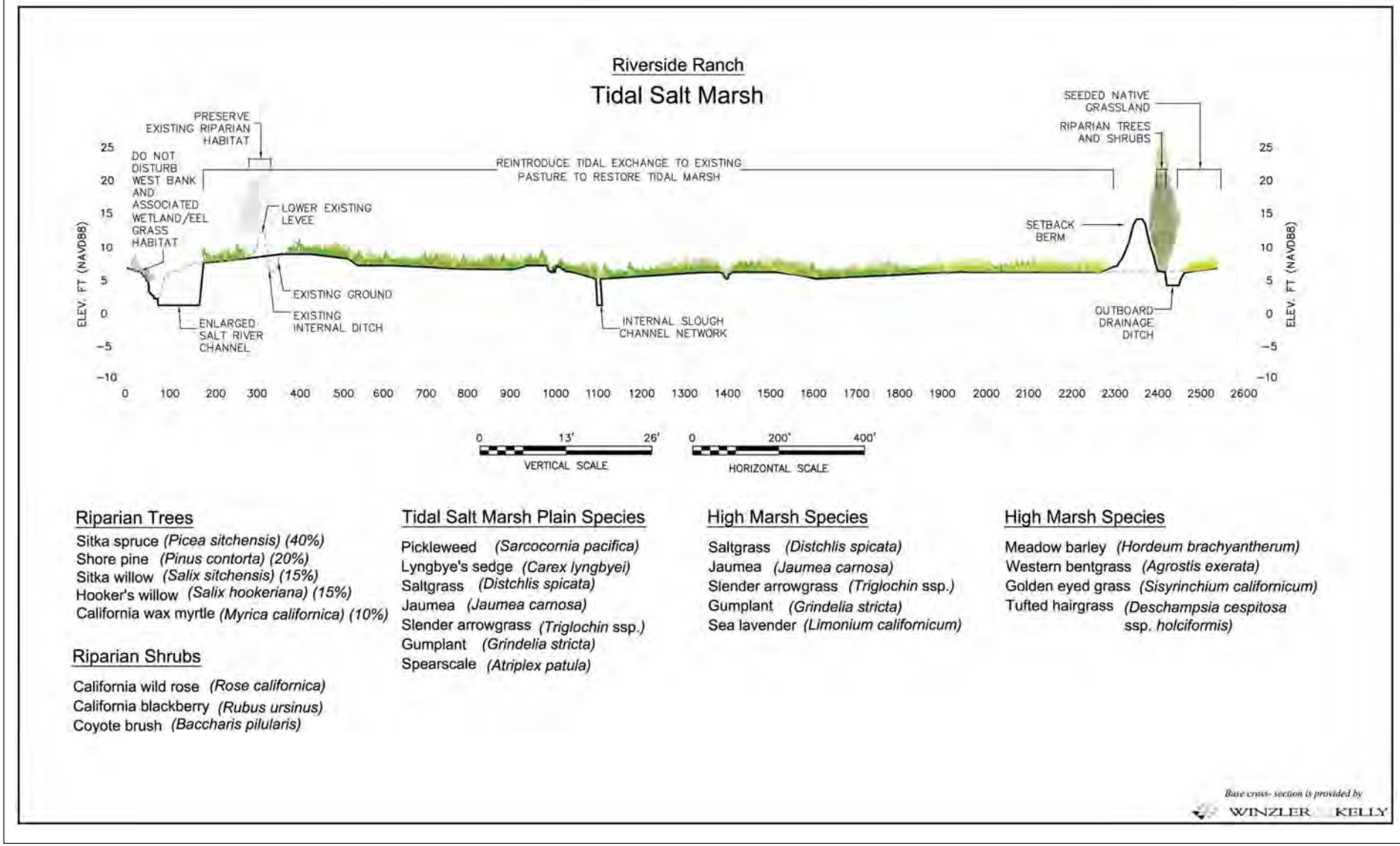


Figure 2-16

Typical Revegetation Section - Riverside Ranch

Source: H.T. Harvey & Associates, 2011

Invasive Species Control and Removal

Non-native cordgrass invasion is a regional problem and Spartina densiflora is present at Riverside Ranch. Active removal would likely take place during the Salt River dredging operations, and targeted manual removal of Spartina could be employed at that time to include small clusters within the Riverside Ranch site as well. In addition, actively planting targeted areas may expedite habitat development and limit colonization or expansion of weedy species. Targeted plantings of some less common high marsh species (such as Humboldt Bay owl's clover), as well as willows in seasonal wetland areas, may accelerate habitat development and increase plant diversity. Passive controls for Reed Canary grass would include revegetation with shade canopy species in the overflow channels.

Transition Zones for High Marshplain Ecotone

Historically, tidal wetlands transitioned into upland zones over very broad areas. As development and agricultural practices reclaimed these areas, those transition zones were lost. The majority of tidal wetlands in the Salt and Eel River estuaries abut levees and then abruptly transition to grazing uses. Excess material generated from the Salt River excavation will be beneficially used to selectively create broader sloped berms and increase high marshplain ecotone areas. Transitional habitat areas have been created at the upper edge of marshes by utilizing fill to produce broad, gently sloping areas leading up to berms. These unique marsh-associated transitional habitats are critical components of wetlands and are part of the project design.

2.3.3 CONSTRUCTION PHASING AND TECHNIQUES

Project construction would be phased into two field seasons, referred to as Phases I and II. Each season would last at least 120 days. Riverside Ranch Tidal Marsh Restoration (including excavation of the adjacent Salt River channel up to approximately Reas Creek confluence) would be done in Phase I. Continuing the Salt River Channel restoration upstream of Reas Creek to Perry Slough would occur in the second year of construction, and is therefore referred to as Phase II. Phase II would also include the excavation of Francis Creek and Eastside Drainage as well as transporting the excavated material to the beneficial reuse locations.

Phase 1 would likely also include partial or complete vegetation removal, where necessary, through the channel corridor in preparation for the second phase of the project; however the project design aims to preserve as much of the existing riparian areas as possible. The vegetation removal would be conducted in late summer to minimize impacts to migratory birds. The existing woody vegetation to be removed consists predominately of Arroyo willow (*Salix lasiolepis*), Pacific willow (*Salix lasiandra*), Sitka willow (*Salix sitchensis*), and Red alder (*Alnus rubra*) with trunk diameters predominately 10 inches or less. Black cottonwood (*Populus balsamifera*) and other larger trees are either being designed around, saved, or otherwise considered separately. Other woody shrub species include California blackberry (*Rubus ursinus*), Thimbleberry (*Rubus parviflorus*), Red elderberry (*Sambucus racemosa*), Coyote brush (*Baccharis pilularis*), and Salmonberry (*Rubus spectabilis*).

Various reuse opportunities for the removed vegetation have been identified. Some removed rootwads and trees will be integrated back into the restored corridor (Phase II) as well as the high

marsh ecotone (Phase I) to add complexity and diversity to these habitat areas. Reuse of live stumps and live woody material may also be utilized for bioengineering various channel elements within the corridor. Remaining vegetation can be chipped and used as mulch for ground cover and erosion control in both Phases and/or hauled offsite for other beneficial reuses.

The multiple agriculture reuse areas coupled with the extent of Phase II excavation are anticipated to necessitate multiple active staging and excavation sites within the corridor. Each work site may include one to four excavators, graders, scrapers, dozers, loaders, dump trucks, small tractors, compactors and water trucks. Each site may also include up to fifteen workers.

Hauling the excavated and loaded material from work sites to beneficial reuse sites would require a fleet of at least 20 dump trucks operating nearly continuously and generating up to 300 trips per day. Table 2-3 shows the range of project construction equipment estimates for both Phases.

Table 2-3 Estimate of Equipment Needed For Project Construction

Equipment Type	Estimated Quantity
Excavators	2-10
Scrapers	2-10
Dozers	2-10
Loaders	2-5
Dump Trucks	5-20
Small Tractors	2-5
Compactors	2-10
Graders	2
Water Trucks	3-5

Source: Winzler and Kelly

During excavation within the channel, management of the stream flow from the Salt River tributaries including Coffee, Williams, Francis, Reas, and Smith Creeks would be required through the construction period. Preventing inflow into the active work zones (both tidal and freshwater) would be required to prevent aquatic and non-aquatic organisms from entering the construction, to reduce the water to be managed in the active work area, and to reduce moisture content in the excavated soils. Inflow control practices include placement of temporary cofferdams to isolate active work zone. The cofferdams may be comprised of native material or washed gravel encased with an impermeable geotextile or visqueen liner in combination with ecology blocks and/or sheetpiles. A combination of pumped and or gravity diversion pipes would be used to route flow around the active work areas. Fish screens would be installed immediately upstream from the cofferdams to prevent aquatic organisms from being transported into the bypass pipe.

2.3.4 LONG-TERM MAINTENANCE AND MONITORING (SALT RIVER CHANNEL AND RIVERSIDE RANCH COMPONENTS)

Ongoing maintenance and monitoring activities would be necessary to assure long-term hydraulic and ecological functions of the overall Salt River Ecosystem Restoration Project. Maintaining the proposed project facilities, including the channel, sediment management areas, drainage ditches, and berms, requires optimizing drainage inflows to the system and integrating sediment and vegetation maintenance areas with existing surrounding land uses. Designated maintenance areas may require vegetation removal, ongoing riparian planting and/or repeated excavation or reworking of deposited sediments.

Establishing a formal and predictable structure is fundamental to preserving the long-term social and biological integrity of the project. To this end, an Adaptive Management Plan (AMP, available for review from the HCRCD) has been prepared that details the organizational structure for the adaptive management process to ensure that project goals and objectives are attained while providing for on-going, long-term input from local property owners and the regulatory community. The adaptive management process is driven by the project goals and objectives together with the regulatory permit requirements. Using adaptive management, restoration activities conducted under the project would be monitored and analyzed to determine if they are producing the desired results (i.e., properly functioning habitats).

The AMP includes the following elements:

- The structure and responsibilities of the Project Management Team;
- Responsibilites to identify/obtain funding for monitoring and adaptive management activities;
- Monitoring program components for use in evaluating the results of project implementation;
- Triggering mechanisms or early stress indicators that will be used to alert the project management team of the need to take action;
- Potential adaptive project management options once trigger thresholds have been reached;
- Development of a conceptual model of adaptive management process

The AMP monitors for achievement of Project goals and objectives. The goals and objectives for the Salt River Channel and Riparian Floodplain Corridor Restoration and the Riverside Ranch Tidal Marsh Restoration were evaluated on the basis of potential requirements for long term monitoring and adaptive management. Four Adaptive Management Summary Tables (AMP, Tables I-IV) have been developed to provide descriptions of how the AMP process would be used to evaluate progress toward individual goals and objectives of the project and permitting requirements. Each table is organized in a similar manner, with separate tables provided for the following categories:

- Erosion, Sediment Deposition, and Geomorphic Condition Monitoring and Adaptive Management for the Salt River Corridor

- Erosion, Sediment Deposition, and Geomorphic Condition Monitoring and Adaptive Management for Riverside Ranch
- Water Quality Monitoring and Adaptive Management for Salt River Corridor and Riverside Ranch
- Habitat Development, Vegetation and Invasive Species Monitoring and Adaptive Management for Salt River Corridor and Riverside Ranch

The AMP identifies initial monitoring activities proposed to evaluate project progress towards meeting project goals and objectives, establishes the triggers or thresholds that would initiate a management response, and describes a range of potential adaptive management actions. If project monitoring determines that a management trigger has been "activated" then there are three possible response pathways:

- determine that more data is required and continue (or modify) monitoring,
- identify and implement a remedial action, or
- modify project goals and objectives (this option would *only* be considered as a last resort and upon careful consideration by and consensus of the Project Management Team).

There may be multiple management action options when a particular trigger or threshold is activated, depending on a variety of factors such as how far the project is from achieving a specific goal, whether the situation is an imminent threat to local infrastructure, ecosystem services/functions or site stability, etc. The adaptive management process applies to the project as a whole, but management actions can be identified and implemented on individual reaches or sub-reaches, as needed. The adaptive management process also accommodates different physical and temporal scales for management actions. Some examples of Management Objectives with related examples of potential triggers and remedial actions are provided below:

Erosion, Sediment Deposition, and Geomorphic Condition for the Salt River Corridor

Examples of Potential Triggers: 1)Any given channel survey indicates that the channel geometry has been reduced or enlarged by 10% or greater as compared to project plans, as-built surveys or previous monitoring surveys, 2) Summer surveys and annual monitoring data indicate that excessive channel or floodplain erosion and/or sediment deposition is affecting the overall channel function or threatens infrastructure such as bridges, culverts and roads, 3) Excessive erosion or sediment deposition at the confluence of tributary channels or drainage outfalls, including head-cuts or knick-point formation.

Potential Actions range from No Action to Implementing Engineered Sediment Detention Basins in designed Sediment Management Areas. Some examples of Potential Actions include: 1) Implement site specific erosion control BMPs such as soil bioengineering and vegetative revetments as needed to reduce streambank mass wasting while maintaining channel function and riparian habitat value. 2) Selective sediment removal from channel in compliance with regulatory requirements. 3) Remove obstructions, observing all regulatory requirements, if deemed necessary based on results of annual monitoring and channel surveys to maintain habitat and hydrologic function.

Erosion, Sediment Deposition, and Geomorphic Condition Monitoring and Adaptive Management for Riverside Ranch

Examples of Potential Triggers: 1) Evidence that former straight line ditches are robbing tidal flows, 2) Surveys indicate excessive channel or floodplain erosion or sediment deposition, 3) Outboard drainage ditch is not conveying flows as designed.

Examples of Potential Actions range from No Action to 1) Excavation of tidal channels and/or re-fill or plug drainage ditches to improve hydrologic connectivity, 2) Excavate plugged culverts or replace or enlarge culverts as needed, 3) Install Erosion control measures upstream and along channel (protecting bare soil, stabilizing banks, etc.)

Water Quality Monitoring and Adaptive Management for Salt River Corridor and Riverside Ranch

Examples of Potential Triggers: 1) For salmonids – average dissolved oxygen is less than 7.0 mg/1 (NCRWQCB 2007), 2) Visual observation of stagnant water areas and/or salt panes, 3) Water temperatures exceed 22-23°C (Madje et al 2006).

Examples of Potential Actions range from No Action to 1)Determine source of problem (e.g., poor circulation, sedimentation, excess decaying organic matter), and repair/modify (i.e., dredge channel, clean out sediment management areas, 2) Additional monitoring to establish temporal and spatial extent of high temperature zones, 3) Provide additional and sufficient streamside revegetation to meet habitat objectives

Habitat Development, Vegetation and Invasive Species Monitoring and Adaptive Management for Salt River Corridor and Riverside Ranch

Examples of Potential Triggers: 1) For salmonids Habitat that should support rearing of juvenile salmonids (freshwater tidal ecotone in spring and summer) is not used annually, 2) Habitat created specifically to support tidewater goby is not used by them sustainable and/or year-round, 3) Temperature thresholds for both species as described in the project's Biological Opinion are not met.

Examples of Potential Actions range from No Action to 1)continue Monitoring, 2) If no salmonids are present at likely habitats within Riverside Ranch and Salt River tidal freshwater ecotone, then Project Management Team confers with the Technical Advisory and Regulatory Work Groups to determine what is preventing them from using habitat and modify design as feasible, 3)If gobies are not present, attempt to determine what is preventing them from using habitat and modify design if feasible.

Maintenance activities described under the AMP would be conducted during seasons that avoid impacts to wildlife. These include conducting in-water activities between July and October to avoid water quality impacts that could affect salmonids, and conducting upland activities, including vegetation removal, after mid-August when the breeding season is over to avoid impacts to actively nesting birds, unless the area has been cleared by pre-construction surveys.

2.3.5 UPSLOPE SEDIMENT REDUCTION PROGRAM

The Upslope Sediment Reduction Program is an important component of the project included to extend the longevity of the proposed project. This component has independent utility and is not dependent on, or causative of, any further actions associated with the larger Salt River Ecosystem Restoration Project.

Within the Salt River tributaries, years of timber harvest and agricultural conversion, combined with earthquakes, flooding, high rainfall events, unstable slopes, and highly erosive soils have led to degradation of native habitats and beneficial uses of waters. Although natural or undisturbed sediment delivery rates from Salt River tributaries are high, human alterations and influences have increased these rates. In Francis Creek, Total Suspended Sediment rates measured during storm events often reach very high levels. The cumulative effects of both anthropogenic and natural conditions within the landscape have limited the ability of anadromous fish to survive and successfully reproduce in coastal streams that historically produced large populations of salmon and steelhead.

In the Francis Creek Watershed, an Upslope and Instream Erosion Hazard Assessment and Inventory completed in 2009 identified some 170 sites with potential for sediment delivery. Of those 170 sites, 132 sites either were currently delivering or had the potential to deliver sediment to Francis Creek. Fifty-six sites were deemed to be high priority meaning that the sites were not adequate for peak storm events and would likely contribute 50+ cubic yards of sediment to a watercourse, if complete failure occurred. To date HCRCD has successfully partnered with a private landowner to treat some 10,234 feet of road and 37 specific erosion sites with best management practices, including shaping and surfacing of the roadway, installing adequately-sized culverts, rock armoring the inlets and outlets, installation of critical dips, rocked rolling dips, rolling grade breaks and performing inside ditch work, preventing some 6,334 cubic yards of sediment from entering the creek.

In the Williams Creek Watershed, an Upslope and Instream Erosion Hazard Assessment and Inventory completed in 2010 identified some 164 sites with potential for sediment delivery. Forty-nine sites were deemed high priority meaning that the sites were not adequate for peak storm events and would likely contribute 50+ cubic yards of sediment to a watercourse, if complete failure occurred.

The HCRCD has worked with private landowners to implement a variety of erosion control activities over the past several years and proposes to conduct additional sediment control and erosion reduction actions within the upper watersheds of Williams Creek, Francis Creek, and Reas Creek tributaries of the Salt River as part of the proposed project and dependent on landowner participation. Figure 2-17 indicates the general location of completed and proposed upslope sediment reduction treatments in relation to the Salt River Ecosystem Restoration Project areas. The purposes of these actions include improvement of water quality, improvement of anadromous fish habitat in the Salt River watershed, and reduction of erosion and sediment deposition on the Salt River delta, thereby extending the longevity of the proposed channel excavation.

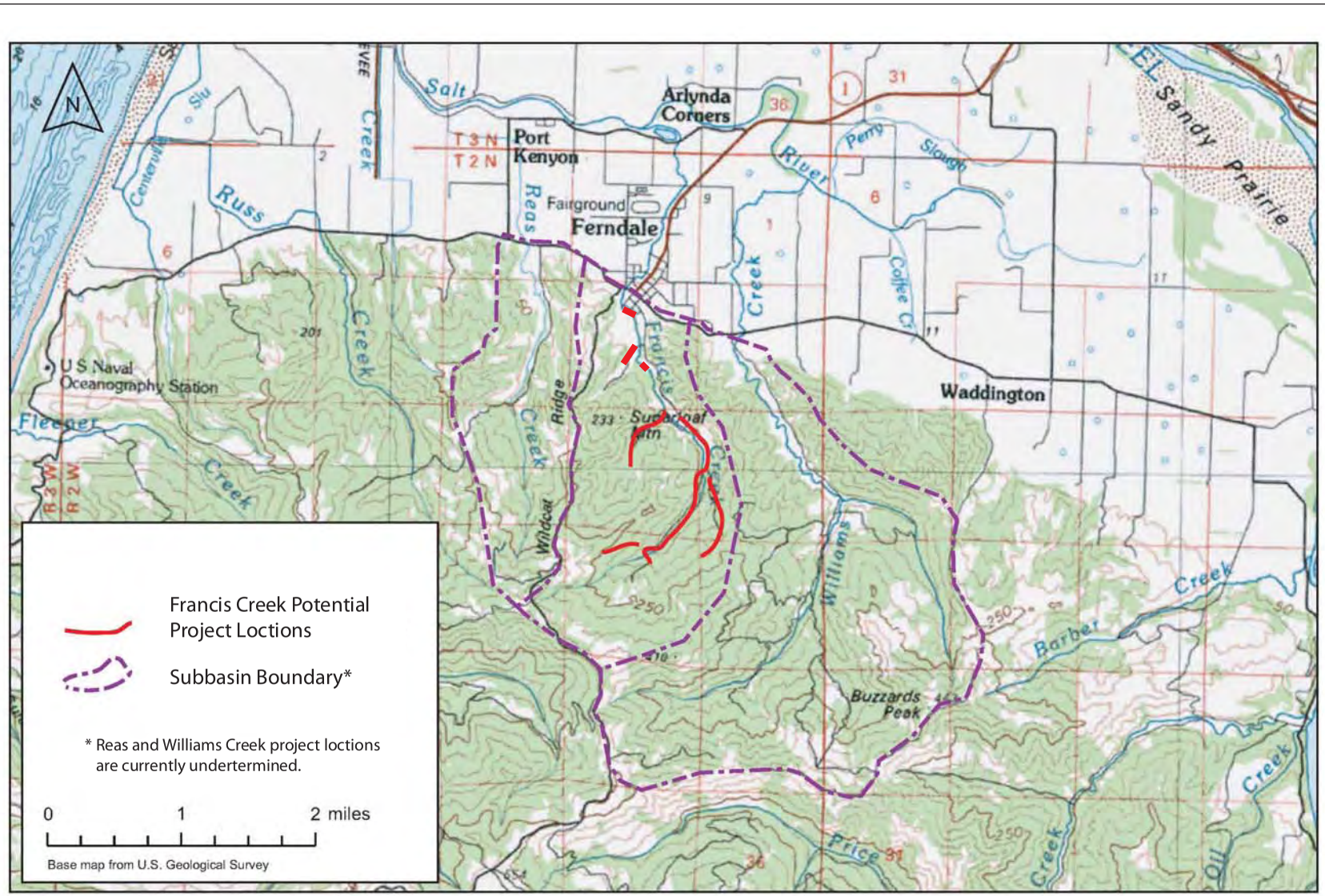


Figure 2-17

Historic and Potential Upslope Sediment Reduction Areas

Source: Timberland Forest Consultants, 2009

Sediment sources targeted for action are prioritized based on previous and ongoing assessments. Treatment priority is based on the expected volume of sediment available to be delivered to a stream (cubic yards), geographic location and accessibility, and cost-effectiveness. Actions are taken as opportunities arise, landowner permission allows, and funding becomes available. The proposed Project includes sediment reduction projects that would augment work already performed to reduce current or potential fine sediment delivery to the Salt River tributaries. Options for sediment and erosion reduction measures include road improvements, drainage improvements, crossing upgrades, bank and slope stabilization, livestock fencing, revegetation, off-channel natural sediment detention areas, and off-channel watering site development.

Specific activities would include road improvements such as culvert replacement, revegetation of riparian habitat, rock armoring, stabilizing stream banks or small streamside landslides, road rehabilitation, watercourse-crossing improvements, ditch relief culverts and drainage ditches. All work would be conducted during the summer and fall (low flow period) and would be completed before the first significant seasonal rainfall. Typically, the proposed restoration activities use dump trucks to deliver logs, root wads, or quarry rock to staging areas and front-end loaders to deliver material to restoration sites. In most cases, existing stream crossings would be used to access the stream. If stream crossings do not exist, the least damaging access point would be selected based on the size, type and density of riparian vegetation. All road upgrading or decommissioning would be done in accordance with techniques described in the California Salmonid Stream Habitat Restoration Manual, available at http://dfg.ca.gov/fish/Resources/HabitatManual.asp. In addition, community education efforts would be implemented to encourage voluntary best management practices related to sediment and erosion reduction. The sediment reduction projects

are designed to increase populations of wild anadromous fish within the watershed by restoring habitat directly and indirectly; inclusive of improving spawning success for adult salmon and steelhead as well as increasing survival for eggs, embryos, rearing juveniles, and downstream migrants.

A program comprised of a number of small projects to reduce upslope erosion within the upper Francis Creek watershed is included in the first phase of this larger restoration effort. The upslope projects are funded through the State Water Resources Control Board, and areas to be restored are depicted on Figure 2-17, Upslope Sediment Reduction Treatments. Some erosion control and streambed restoration projects in the Francis Creek watershed have also been, and are continuing to be, funded by the California Department of Fish and Game. Those projects have undergone separate California Environmental Quality Act (CEQA) review in the Initial Studies and Negative Declarations prepared by CDFG for its annual Fisheries Restoration Grant Program and are considered herein only for the purposes of evaluating cumulative impacts of proposed watershed improvements.

The HCRCD is continuing to reach out to landowners in the Williams, Francis and Reas Creek watersheds to build interest in performing sediment control and erosion reduction work on their lands. Typically projects are implemented under a cost-share agreement with the landowners providing materials and/or equipment.

2.4 PROJECT ALTERNATIVES

2.4.1 ALTERNATIVES ASSESSED IN THIS EIR

The Riverside Ranch Tidal Marsh Restoration and Upslope Sediment Reduction project components would increase the success and longevity of the Salt River channel restoration component. The Riverside Ranch Tidal Marsh Restoration component would restore tidal prism in the lower portion of the Salt River, which would help to scour and flush sediment from the lower channel, maintaining channel capacity. The Upslope Sediment Reduction component would decrease sediment load and deposition in the lower Salt River and its tributaries. However, the various project components could be implemented independent of one another. The alternatives described below would implement the entire project (Alternative 1), the Salt River Channel and Riparian Floodplain Restoration and Upslope Sediment Reduction only (Alternative 2), the Riverside Ranch Tidal Marsh Restoration including some enlargement of the adjacent Salt River channel as well as Upslope Sediment Reduction (Alternative 3), and no project (Alternative 4). As described above, each component would include construction, maintenance, and long-term management activities. The specific project components are described in detail above.

- **Alternative 1: Full Ecosystem Restoration (Proposed Project).** This alternative comprises three main components: 1) Salt River Channel and Riparian Floodplain Restoration; 2) Riverside Ranch Tidal Marsh Restoration; and 3) Upslope Sediment Reduction. Program Actions proposed under Alternative 1 are indicated on Figure 2-4.
- **Alternative 2: Partial Ecosystem Restoration (Channel Restoration and Upslope Sediment Reduction Only).** This alternative comprises two main components: 1) Salt River Channel and riparian Floodplain Restoration, and 2) Upslope Sediment Reduction. This alternative differs from the proposed project only in its omission of Riverside Ranch Tidal Marsh Restoration work. Actions proposed under Alternative 2 are indicated on Figure 2-18.
- **Alternative 3: Partial Ecosystem Restoration (Riverside Ranch and Upslope Sediment Reduction).** This alternative comprises three components: 1) Riverside Ranch Tidal Marsh Restoration, and 2) Upslope sediment reduction. This alternative also would include minimal channel excavation downstream of the Reas Creek confluence. Actions proposed under Alternative 3 are indicated on Figure 2-19.
- **Alternative 4: No Project.** This alternative addresses anticipated results should none of the project components be implemented.

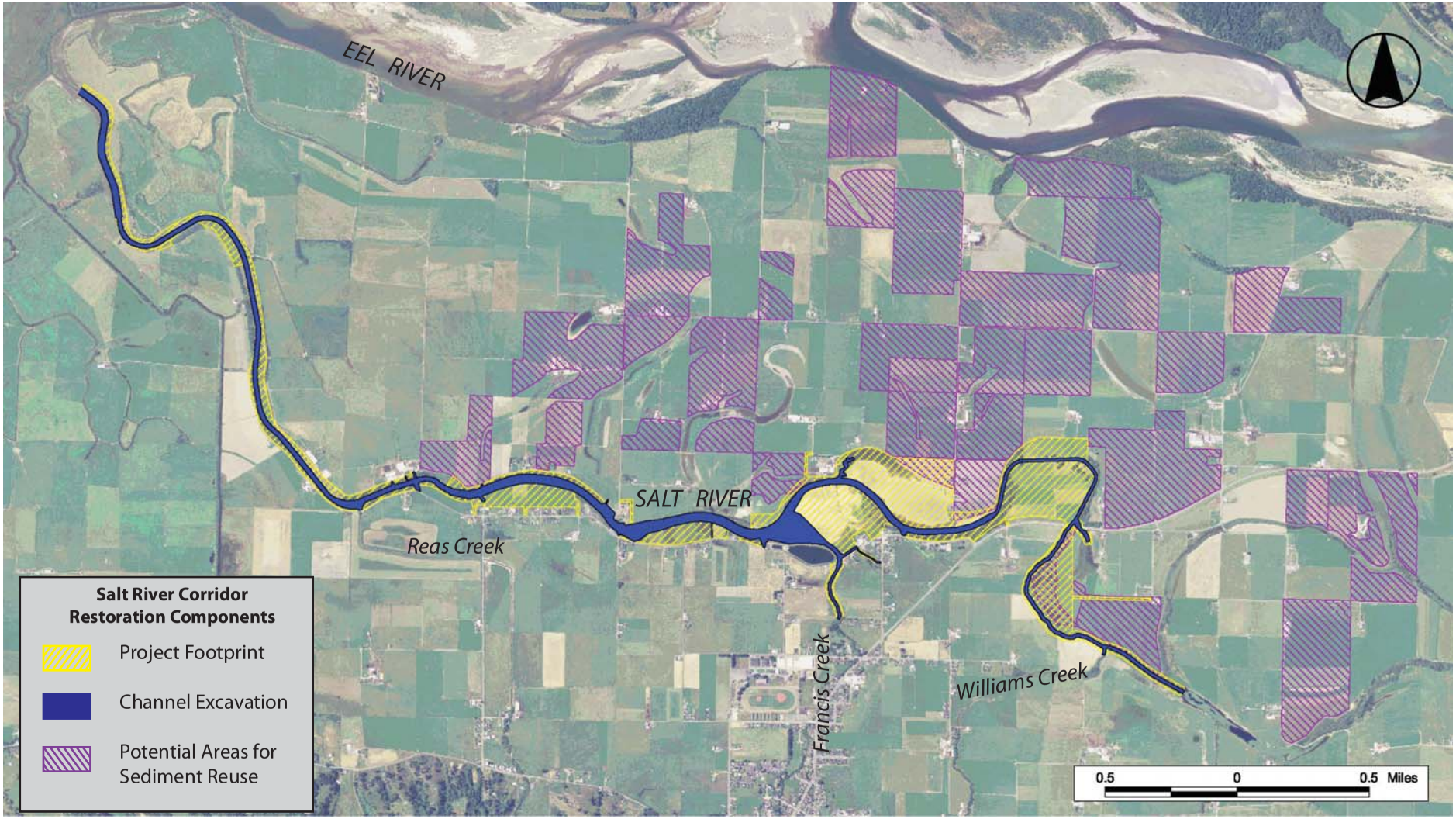


Figure 2-18

Alternative 2: Channel Restoration and Upslope Sediment Reduction Only

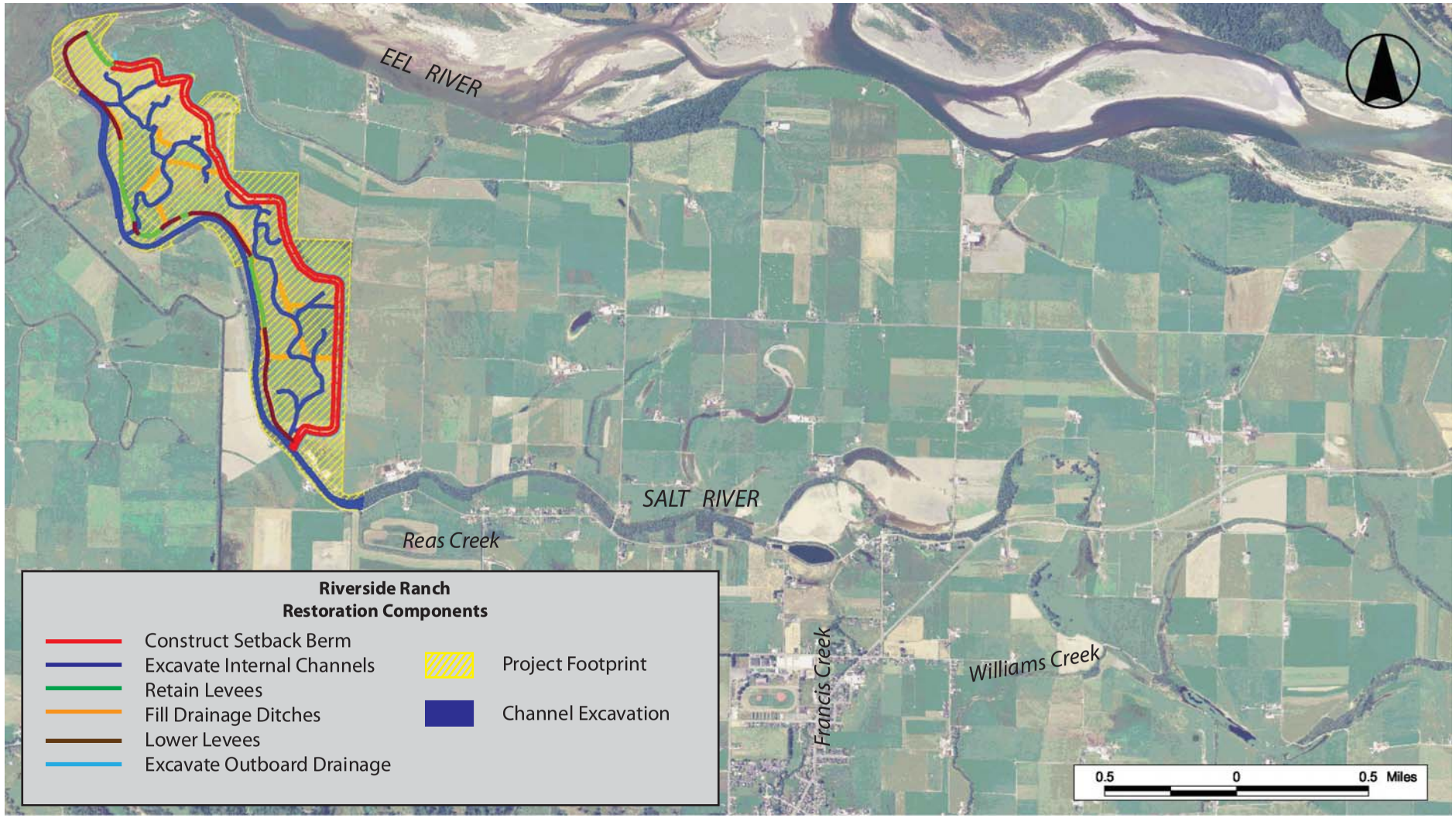


Figure 2-19

Alternative 3: Riverside Ranch and Upslope Sediment Reduction Only

2.4.2 ALTERNATIVES AND COMPONENTS CONSIDERED AND REJECTED FROM FURTHER REVIEW IN THIS EIR

In developing the proposed project and alternatives, a number of possible alternatives and additional project components were considered and subjected to preliminary evaluation of effectiveness, feasibility, and environmental impacts. Since those preliminary evaluations, some features of the alternatives discussed below have been further explored and utilized to enhance the Project design. Some of these potential alternatives were eliminated from further study in this Environmental Impact Report (EIR). These are discussed below, along with the reasons for their elimination from further assessment.

SALT RIVER CHANNEL WITH SEDIMENT DETENTION BASINS

The Salt River Technical Advisory Group (TAG) reviewed and considered a proposed channel combined with a variety of sediment catchment features intended to diminish the high sediment load entering the Salt River. These features included those proposed earlier by the Natural Resources Conservation Service (NRCS), and additional features deemed more compatible with habitat goals of the project.

The NRCS investigated the project area and issued a report, including recommendations, in 1993. Three proposed sediment basins were included as alternative components. These basins were to be located on Reas Creek (100' upstream of Meridian Road), Francis Creek (100' upstream of the Port Kenyon Culvert), and Williams Creek (100 feet upstream of the Salt River confluence). In addition, NRCS proposed constructing a dam on Williams Creek one mile upstream of Grizzly Bluff Road. The purpose of these features was to reduce the amount of sediment entering the Salt River. The TAG determined that obtaining site control for these features would be difficult, and prohibitively expensive.

In addition to the NRCS features, the Salt River TAG contemplated improvements designed to create main-channel backwater areas that provide off-channel habitat and sediment settlement areas. The channel design includes an area that will allow for the natural development of a backwater settling basin near the confluence of the Salt River and Francis Creek. This area is located on the inside bank, where there are natural changes in velocity and where sediment deposition is likely to occur. A larger backwater settling basin could be up to one acre in size, and may accommodate approximately 8,000 to 10,000 cubic yards of sediment deposition. The basin would be surrounded by vegetation to help slow the velocity of the flood flows through the area. This area would be designed to be excavated periodically in an effort to manage sediment deposition. The excavated materials could be beneficially reused as an agronomic application according to prescribed best management practices.

Sediment management design concepts for this confluence region were presented at an agency design charrette meeting in November 2010. Conceptual designs included an instream sediment detention basins as well as side channel and floodplain elements that would promote deposition. The instream sediment detention basin would be highly efficient at capturing sediment and could be

designed to provide juvenile and adult salmonid passage but would require dewatering and fish relocation during maintenance periods. Concepts that would not require routine dewatering and fish relocation also were discussed, but were found to be less efficient at capturing sediment but. The tradeoffs associated with these concepts were discussed in depth and included sediment capture efficiency, long-term maintenance and potential impacts to aquatic species. Based on feedback provided by the resource agencies in attendance at the design charrette meeting, an instream sediment detention basin was not desired.

SALT RIVER CHANNEL WITH ADDITIONAL CHANNEL RESTORATION ON WILLIAMS CREEK

During development of the proposed project, consideration was given to a component that would have included additional restoration on Williams Creek. Currently a sediment plug exists on the Salt River just downstream of the Williams Creek confluence. This plug has redirected the flows from Williams Creek, Coffee Creek and unnamed tributaries; forcing the water to flood out of the channel onto roads and into old meander scars and depressions. The proposed project is designed to excavate the existing sediment plug and recapture some of the flows of Williams and Coffee creeks, allowing them to flow into the Salt River once again. Although further restoration of Williams Creek would have potential long-term benefits to fish habitat and would be valuable to consider in future phases of the project this alternative was not analyzed further for the following reasons: 1) the project as proposed captures tributary flows necessary to the overall success of the project without further restoration of Williams Creek at this time; 2) no funding was available to cover the costs of the technical investigations or actual restoration of Williams Creek; 3) access to upper Williams Creek is dependent on landowner cooperation and the willingness of all affected landowners in the vicinity was not readily apparent during the planning and design phases of the project.

SALT RIVER CHANNEL WITH TIDAL WETLAND RESTORATION AND FISH PASSAGE IMPROVEMENTS ON SMITH CREEK AND REAS CREEK

During development of the proposed project, consideration was given to a fourth project component. This project component included the removal of gated culverts on Smith and Reas creeks a short distance upstream of the Salt River confluence, the development of a sediment detention basin on Smith Creek, and the realignment of Reas Creek to merge with Smith Creek.

Removal of the leaky tide gates now providing muted tidal exchange to upstream and low-lying areas would reintroduce unrestricted tidal exchange to Smith Creek and associated low-lying areas. Much of the low-lying area would be restored back to tidal salt and brackish marsh. In so doing, the overall tidal prism of the project area would increase, and the amount of scour along the lower Salt River channel would increase, thereby increasing the overall longevity of the project. In addition, removal of these structures would allow unrestricted movement of fish into the upper Smith Creek watershed and possibly the Reas Creek watershed if reconnected. However, doing so would also likely increase the frequency of flooding to low-lying upstream areas.

This project component also contemplated the realignment of Reas Creek to merge with Smith Creek within an existing low-lying (flood prone) area located upstream of the Smith Creek confluence with the Salt River. Reas Creek would have been redirected west of its current channel alignment at some point north of the intersection of Meridian Road and Damon Lane. The new alignment would have directed Reas Creek through low-lying terrain, allowing for controlled sediment deposition off of the Salt River channel. The combined flow of Smith and Reas Creeks would have passed down the current alignment of Smith Creek to the existing confluence with the Salt River. The anticipated increase in velocity, combined with the operation and maintenance of the aforementioned detention basin, would have decreased fine sediment input into the system, while increasing the capacity of the stream to mobilize and move sediment through and out of the Salt River. This scenario would also have reduced, if not eliminated, considerable flooding that routinely occurs along Reas Creek north of Centerville Road.

Although a cursory examination of this component suggests that it could be a valuable contribution to the performance and longevity of the project, and provide high quality freshwater wetlands in a converted pasture area, it was rejected as a project component because it was not critical to the overall success of the proposed project and it has independent utility as a habitat restoration project that could be considered and completed as a project separate from the proposed project. Therefore, this project component was not included as a proposed project element.

CHANNEL EXCAVATION BEYOND UPPER WILLIAMS CREEK

Although excavating the historic reach of the Salt River channle east of Upper William Creek would provide optimum hydraulic and ecological function, this alternative was rejected early for one key reason: The Salt River area has been so significantly altered that excavating a channel to depths necessary to provide conveyance over the project reach would drastically increase the sediment excavation volumes. There is insufficient time and funding to pursue this approach.

PROPOSED PROJECT WITHOUT UPSLOPE SEDIMENT REDUCTION

Although it would be feasible to implement the proposed Salt River and Riverside Ranch restoration components without the Upslope Sediment Reduction component, the lack of that component would require substantial additional maintenance activities and/or development of additional sediment catchments downstram. In addition, erosion issues would persist in the upslope areas, and fish habitat and water quality degradation would continue to occur in the tributary streams.

PROPOSED PROJECT WITHOUT LONG-TERM CHANNEL MAINTENANCE AND MONOTORING

Channel maintenance for project performance would have short-term environmental impacts. However, in the absence of a well-conceived channel maintenance and adaptive management program, several adverse impacts would occur. First, the channel would resume aggrading at a rapid rate, and woody vegetation would recolonize the active channel. Unmanaged vegetation would exacerbate and speed up sediment deposition within the newly designed channel. Second, as the

channel rapidly aggrades, flooding would resume, and the ecological and social benefits of the project would be unsustainable.

ALTERNATIVE SALT RIVER CHANNEL DESIGNS

The proposed project includes a design that connects a proposed channel corridor to passive and active sediment management areas as well as the existing floodplain. The capacity of the proposed channel depends on topographic relief of the adjoining floodplain and fluctuates between the 1- and 1.5-year return period with reconnection of the Williams Creek-Salt River Confluence (including Coffee Creek) to Cutoff Slough. The HCRCD considered a range of channel designs for the Salt River and lower Francis Creek corridors. Differences in the channel design and longitudinal extent of the work resulted in different areas of impact, quantities of sediment, and areas of restored habitat. Alternative channel designs included:

- Channel Design 1: Minimal Channel Disturbance, Francis Creek-Salt River Confluence to Smith Creek.
- Channel Design 2: Two-Year Storm Flow Channel, Francis Creek-Salt River Confluence to Cutoff Slough.
- Channel Design 3: Maximum Floodplain, Francis Creek-Salt River Confluence to Smith Creek.
- Channel Design 4: Historic Channel, Francis Creek-Salt River Confluence to Smith Creek.

The channel design alternatives are described briefly below and summarized in Table 2-4, Summary of Channel Design Options. The dimensions, area, and volume estimates presented below are preliminary

Channel Design 1: Minimal Channel Disturbance, Francis Creek-Salt River Confluence to Smith Creek

This design represents the least amount of disturbance to the existing stream and riparian corridor. The channel design is based on existing flow conditions (diversion of the upper portion of the Salt River), and it is assumed that additional excavation may be needed if and when the entire flow of Williams Creek is reconnected to the Salt River.

Channel excavation would occur along 2.6 miles of the lower Salt River between the Francis Creek confluence (near the City of Ferndale wastewater treatment plant) to just upstream of the Salt River's confluence with Smith Creek. The channel would have an average depth of five feet and width of 20 feet. A total of approximately 51,500 cubic yards of sediment would be removed. A 12- to 15-foot-wide band of vegetation would be removed on one side of the channel to allow small mechanized equipment to access the channel. Approximately 16 acres of riparian habitat would be disturbed. Six acres of existing low-quality riparian vegetation would be converted to a mix of open water, permanent fresh and brackish wetland, and forested riparian habitat.

This design was rejected due to the fact that it would result in potentially significant water quality impacts without providing a substantial amount of restored aquatic habitat. Moreover, the limited

channel excavation would still convey much of the floodwaters from upstream, but would not have the capacity to hold them.

Channel Design 2: Two-Year Storm Flow Channel, Francis Creek-Salt River Confluence to Cutoff Slough

This design would improve fish passage and sediment transport based on modeling performed by the National Marine Fisheries Service. (Salt River Ecosystem Channel Design, Margaret Tauzer, Hydrologist NMFS March 30, 2009) The channel design is based on existing flow conditions (diversion of the upper portion of the Salt River), and it is assumed that additional excavation may be needed if and when Williams Creek is reconnected to the Salt River.

Channel excavation would occur along 4.2 miles of the lower Salt River, starting 1,300 feet upstream of Port Kenyon Road and extending downstream to Cutoff Slough. The channel would include a low-flow channel within an inset floodplain. The low-flow channel would have an average depth of three feet. The inset floodplain would be 60- to 100-feet wide and would receive flows under moderate and high-flow conditions. A total of approximately 260,000 cubic yards of sediment would be removed to create the channel and floodplain. Approximately 40 acres of existing low-quality riparian habitat would be converted to a mix of open water, permanent fresh and brackish wetland, and forested riparian habitat.

Channel Design 2 represents a significant improvement over Channel Design 1 in that it provides a significant increase in available aquatic habitat to be restored, provides fish passage to Francis Creek, and includes an inset floodplain more capable of hosting the high flow events likely in this area. However, this design was rejected because the inset floodplain would only be occupied during high flow events, resulting in continued sediment deposition within the low flow channel necessitating routine removal and inherent disturbance to aquatic habitat within the low flow channel. Sediment transport analyses indicated that a single stage, hydraulically efficient trapezoidal channel geometry with maximum attainable longitudinal slope would only transport approximately 50% of the watershed sediment yield thru the system with the remaining being deposited within the channel (KHE, 2010). The sediment transport analysis resulted in a re-evaluation of the channel design approach which included identifying locations within the corridor that could be designated as long-term sediment management areas. Additionally, various cross-sectional channel geometries were assessed that would allow hydraulic connectivity to the established sediment management areas. The final channel design, as previously discussed in this chapter and supporting analyses will be summarized in the Project Basis of Design Report.

Channel Design 3: Maximum Floodplain, Francis Creek-Salt River Confluence to Smith Creek

This design represents a design developed by the HCRCD in 2005. As with Channel Design 1, current flow conditions are assumed, and channel excavation would occur along 2.6 miles of the lower Salt River between the Francis Creek confluence (near the City of Ferndale wastewater treatment plant) to just upstream of the Salt River's confluence with Smith Creek. The channel design for Alternative 3 provides for maximum excavation of the inset floodplain in addition to the low-flow channel. The channel would have a trapezoidal configuration with an upper width of ten

feet, lower width of five feet, and average depth of three to five feet. The width of the excavated floodplain would range from 100 to 200 feet. A total of approximately 282,000 cubic yards of sediment would be removed. Approximately 26 acres of existing low-quality riparian habitat would be converted to a mix of open water, permanent fresh and brackish wetland, and forested riparian habitat.

This design was evaluated and ultimately rejected because the excavation reach was limited and would promote continued flooding upstream of Francis Creek. The diminished velocity of flow in the new channel would decrease the ability of the flow to keep fine sediments mobilized. Increased capacity of the channel would diminish velocities during low to moderate flow events, thereby promoting more rapid deposition of fine sediments within the newly excavated channel. In addition, the dimensions of the channel, and resulting elimination of pasture at Riverside Ranch, would result in significant impacts to existing agricultural operations, without commensurate benefits in other areas.

Channel Design 4: Historic Channel, Francis Creek-Salt River Confluence to Smith Creek

This design represents the most amount of disturbance to the existing stream and riparian corridor. This channel design is based on historic channel conditions, and aims to recreate a slough-type channel in the lower Salt River extending up to the wastewater treatment plant.

Channel excavation would occur along 3.0 miles of the lower Salt River, from the Francis Creek-Salt River confluence to Smith Creek. The channel would have an average width of 300 feet and an average depth of 15 feet. A total of approximately 2.6 million cubic yards of sediment would be removed to create the channel. Riparian areas and pastures adjacent to the existing channel would be converted to approximate historic vegetation conditions. Approximately 109 acres of existing low-quality riparian habitat would be converted to a mix of open water, permanent fresh and brackish wetland, and forested riparian habitat.

This design concept was rejected as infeasible, due to the fact that the sediment volumes would exceed beneficial reuse needs in the project area for the foreseeable future.

Table 2-4 Summary of Channel Design Options

Channel Design	Channel Dimensions	Miles Restored	Sediment Removed (cubic yards)	Existing Riparian Habitat Converted (acres)
1	5’ deep by 20’ wide	2.6	51,500	6
2	3’ deep by 10’ wide, low-flow channel for two-year storm flow, 60’ to 100’ wide inset floodplain	4.2	260,000	40
3	5’ deep by 10’ wide trapezoidal channel with 100’-200’ wide floodplain	2.5	282,000	26
4	15’ deep by 500’ wide slough-type channel	3.0	2,600,000	109

Chapter 3 Environmental Setting, Impacts, and Mitigation Measures

3.1 HYDROLOGY AND WATER QUALITY

This section describes the hydrologic, geomorphic (land-form), and water quality conditions on and in the vicinity of the project site, including tidal action, surface water, runoff, flooding, groundwater flows and seepage, erosion, and sedimentation. Processes and other factors affecting water quality conditions and existing water quality data are described to provide a baseline for environmental review. Effects on hydrologic/geomorphic resources and water quality from the proposed project and alternatives s are identified on the basis of numerous studies conducted for the project area and other reports including those for adjacent properties. Analysis of these reports was completed by Kamman Hydrology & Engineering, Inc. (KHE), the chapter authors. The regulatory framework provides an overview of federal, state and local regulations related to hydrology and protecting water quality. Finally, known and potential impacts to hydrology, geomorphology and water quality are described, as are mitigation measures to prevent and compensate for impacts. Prior studies that inform the hydrology and water quality analyses are listed in Table 3.1-1.

Table 3.1-1 Hydrology and Water Quality Studies Conducted in the Project Area

Study Type	Area Studied	Reference
Hydrology	Watershed Assessment – fishery based watershed assessment of Salt River watershed.	Downey and Lucey, 2004
	Groundwater Conditions – geology and groundwater features of Eel River delta plain.	Everson, 1959
	Groundwater Conditions – groundwater conditions of coastal Humboldt County.	DWR, 2003
Hydraulics/Sedimentation	Tidal Study – potential tidal inundation zones of Riverside Ranch.	KHE, 2008
	Salt R. Channel Design – technical report is support of hydraulic channel design.	Tauzer, 2009
	Local Implementation Plan – investigation in support of addressing flooding, drainage and loss of estuary habitat.	USDA, 1993
	Sediment Accumulation - quantification of sediment accumulation between 1967 and 2006 along Salt River channel.	KHE, 2007
	Francis Creek Sediment – Annual creek flow and sediment yield monitoring reports for 2007 through 2009.	Fenton, 2007-09

Study Type	Area Studied	Reference
	Geotechnical and Sediment Reuse Study – sampling and analysis plan of river and floodplain sediments within project area.	LACO, 2008
Flood Study	FEMA Flood Study – FEMA flood studies for Fortuna, Ferndale and unincorporated Humboldt County.	FEMA, 1982 & 1999
	Sea Level Rise – quantification of rate of sea level rise.	Pacific Institute, 2009
	Sea Level Rise - quantification of rate of sea level rise.	IPPCC, 2007
	Sea Level Rise – design criteria for Corps projects in association with anticipated sea level rise.	USACE, 2009
	Sea Level Rise - quantification of rate of sea level rise.	USEPA, 1988
Water Quality	Salinity Study – summary of historic salinity monitoring results and prediction of Riverside Ranch restored wetland salinity.	KHE, 2008
	Water Quality – water quality impact assessment in association with Ferndale Wastewater Treatment Plant improvement project.	JAA, 2009
	Estuary Study – water quality assessment of Eel River estuary and lower Salt River.	DWR, 1977
	Farm Waste Study – Eel River delta agricultural management and enhancement plan.	LaVen, 1994
	Farm Waste Study – animal waste assessment in Salt River delta.	Anderson, 1997

3.1.1 AFFECTED ENVIRONMENT

Existing hydrologic conditions within the Salt River basin are characterized by the hydraulic dysfunction created from rapid sedimentation within the mainstem Salt River channel. Sedimentation in the Salt River is attributed to a suite of post-settlement land management actions that have combined to increase the supply of sediment delivered to the channel and decrease the river's capacity to transport sediment by fluvial (water flow) processes.

WATERSHED DESCRIPTION

The Salt River Basin is comprised of two geomorphically distinct units: (1) the steep, northern slopes of the Wildcat Hills; and (2) the relatively flat, gently sloping plain of the Eel River Delta (Figure 3.1-1). The Wildcat Hills rise steeply to the south of the Eel River Delta and range in elevation from approximately 50 feet above sea level to a maximum of 1,800 feet along the watershed divide. The Wildcat Hills are extremely steep; average slope is around 42-percent. The sub-watersheds draining the Wildcat Hills account for less than half of the total land area in the basin but produce the majority of runoff and sediment inputs to the Salt River due to their steep terrain. The principal tributaries draining the Wildcat Hills emerge from the canyon areas and traverse the alluvial plain of the delta before joining the Salt River. These tributaries are listed on

Table 3.1-2. Elevations of the alluvial plain range from about 50 feet above sea level in its eastern region to near sea level along the coast. The Salt River flows westerly across the delta and joins the Eel River Estuary at a confluence approximately 0.8 miles from the mouth of the Eel River. Evenson (1959) states that the Salt River "slough" is an abandoned channel of the Eel River. The mainstem Salt River presently terminates upstream of the confluence with Francis Creek.

Table 3.1-2 Salt River Tributary Information

Subwatersheds	Watershed Area[1] (acres)	Elevation Range (feet)	Salt River Mile (miles)	Permanent Stream Length[3] (miles)	Intermittent Stream Length[3] (miles)
Morgan Slough	—	—	0.3	1.3	—
Jack Slough	—	—	0.7	1.0	—
Cuttoff Slough	—	—	1.1	2.2	—
Unnamed Slough[2]	350	9 to 500	—	1.3	—
Centerville Slough[2]	830	30 to 1,000	—	2.6	1.8
Russ Creek[2]	2,335	20 to 1,550	—	5.2	1
Smith Creek	190	35 to 950	2.4	2.6	1.9
Unnamed Tributary	400	30 to 900	2.8	—	0.2
Reas Creek	1,300	40 to 1,500	3.4	3.5	0.7
Francis Creek	2,035	60 to 1,500	5.1	4.3	0.6
Williams Creek*	3,770	50 to 1,750	7.5	7.2	0.6
Perry Slough*	—	—	7.7	—	2.2
Unnamed Tributary*	495	40 to 950	7.9	—	—
Coffee Creek*	505	40 to 925	8.3		2.5
Unnamed Tributary	565	50 to 925	10		0.2
Total Area	**12,775**				

Source: Modified from Downie and Lucey 2004
[1] Watershed areas include only the upland Wildcat drainage and not any portion of the delta.
[2] Tributaries to Cuttoff Slough.
[3] Tributary lengths provided by CDFG river mile stream length estimates for the Eel River Basin, based upon 2004 field observation and mapping.
* Williams Creek, Coffee Creek, and two unnamed tributaries are currently tributary to the Old River. The two unnamed tributaries appear to be separated by a divide that has forced them to the Eel River and not to the Salt River.

The total area contained within the Salt River Basin under present conditions is approximately 17,500 acres; about 57 percent of the approximately 30,400 acres that contributed drainage under historic conditions. Runoff from the eastern tributaries presently drains off of the Eel River Delta via the Old River/Perry Slough system. The diversion of the eastern tributaries occurred because of a series of sediment blockages (see Figure 2-3). In 1978, sediment plugged the channel upstream of Williams Creek and diverted the flow from Coffee Creek into the Old River. In 1998, a second sediment plug developed at the Williams Creek confluence and diverted the flow from Williams

Creek (formerly the largest subwatershed to the Salt River) into Perry Slough (a.k.a., Old River). Perry Slough flows north and crosses under Highway 211 at the Old River Bridge. There is no clear connection to the Eel River from this point and it is thought that most of the water currently ponds in the Old River area with some water flowing overland and finally entering the Eel River about 0.7 miles downstream of Fernbridge (Tauzer pers. comm.)(Figure 3.1-1).

The reduction in channel connections and capacity associated with sedimentation also has lead to chronic overbank flooding and deposition onto adjacent pasture along the lower reaches of Williams, Francis, and Reas Creeks. Sedimentation near the mouths of these tributaries has reduced the flood carrying capacity of these tributary reaches to below a 2-year storm while the upper reaches near the transition to the Wildcat Hills can still convey and deliver the 50- to 100-year flood flow (USDA, 1993). Francis Creek's flood carrying capacity has also been restricted by culverts, bridges, sediment buildup and debris; through the City of Ferndale, the channel contains the 25-year storm flow (Spencer Engineering, 2004). Due to its large size, Williams Creek contributes an estimated 46-percent of the total sediment delivered to the Salt River with the second largest contributor being Reas Creek (Ibid). The USDA (1993) reports that because of the reduced channel capacity in their lower reaches, Francis and Smith Creek overtop their banks more frequently and therefore lose more of their sediment load to floodplain deposition. Sedimentation leads to a reduction in channel capacity, which is then exacerbated by increased vegetation in the channel that slows flows further and contributes to flooding.

The East Side Drainage system consists of a network of street gutters, storm sewers, Culverts and drainage channels that convey runoff to a natural low profile drainage swale referred to as the East Side Channel. The East Side Channel lies about 2,000 feet east of Francis Creek and flows north to Market Street and Van Ness Street where it converges with a County maintained ditch. In addition to draining the easterly portion of the City of Ferndale, the East Side Drainage Channel collects overflows (floodwaters) from both Francis Creek to the west and Williams Creek to the east (Spencer Engineering, 2004).

The West Side Drainage Watershed drainage system consists of a network of street gutters, drainage channels, and culverts. The west side drainage area is absent of any storm sewers except for the Coast Guard housing and a small internal drainage system at the County Fairgrounds. The remaining acreage contains a series of drainage channels all running northerly to Port Kenyon road where runoff ponds, percolates, or drains west in a small agricultural ditch. The drainage channels are draining at maximum capacity and any increase in storm water will only contribute to additional unmanaged run-off. Furthermore, these drainage ditches are densely vegetated, especially during the spring months. This vegetation significantly decreases the hydraulic efficiency of the channels and their capacity to convey stormwater runoff.

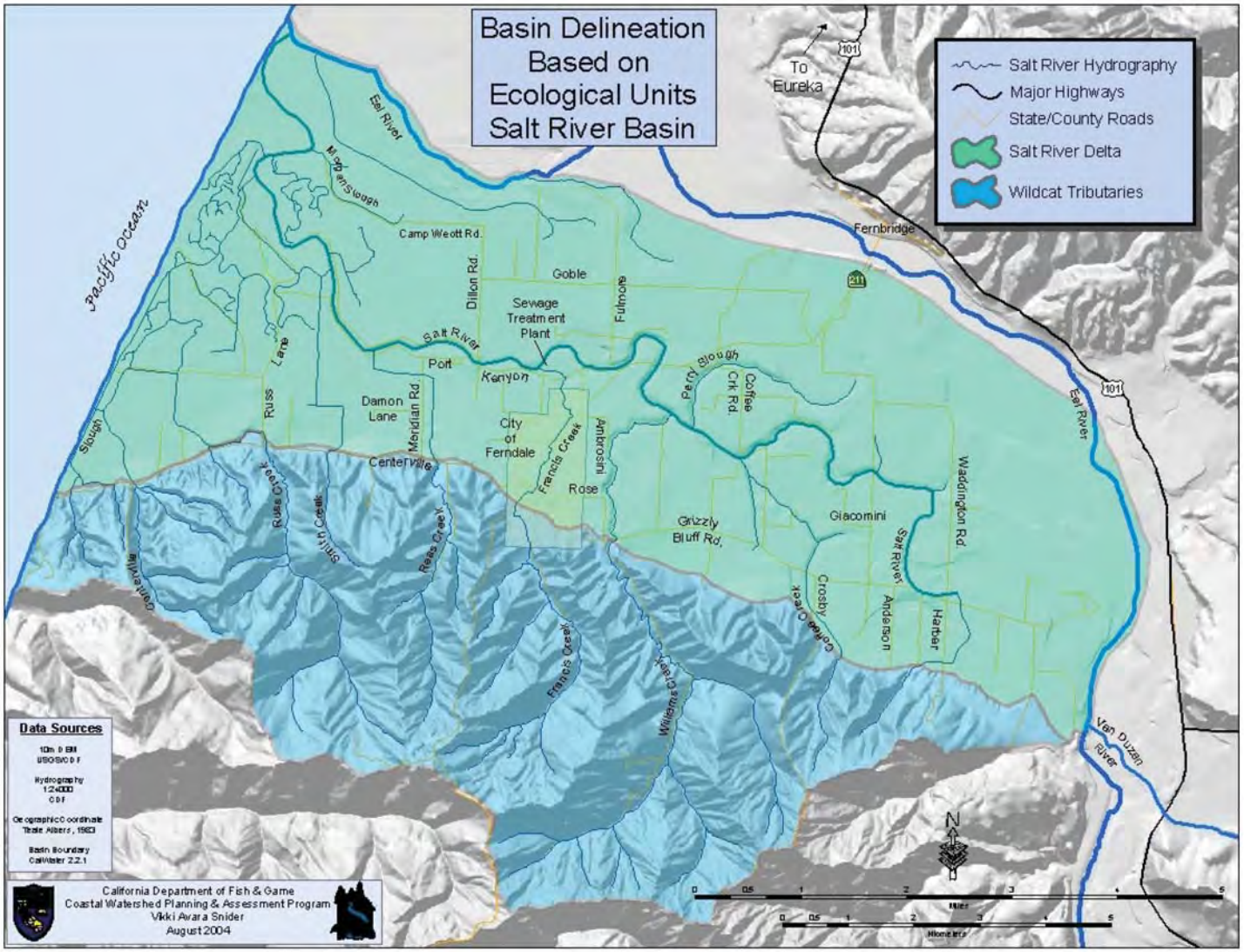


Figure 3.1-1

Salt River Watershed - Delta Plain and Wildcat Tributary Areas

Source: Downie and Lucey, 2004

PRECIPITATION AND RUNOFF

Precipitation in the basin is strongly seasonal and is primarily associated with cyclonic frontal systems that sweep over northern California from the Pacific Ocean. The majority of precipitation falls during the period between October and April. Although rainfall is generally uncommon between May and September, coastal fog and low clouds prevail throughout the summer due to the onshore movement of moist air masses over cold water off the coast. The National Weather Service station at Scotia, CA reports a mean annual precipitation of 48.5 inches. Rainfall totals in the higher elevation areas of the Wildcat Hills can be considerably greater due to orographic (uplift of air mass as it passes over hills and mountains) effects.

Streamflow characteristics of the Salt River basin reflect the regional climate. Tributary streams respond quickly to precipitation in the upper basin as surface runoff enters the channels from the steep hillslope areas. High flows are limited to the wet season between October and April. Baseflow conditions prevail throughout the dry season. Flow in the mainstem Salt River is perennial downstream of the confluence with Francis Creek. Inadequate drainage of the Salt River and adjacent lands has triggered extensive flooding of the lowland areas in recent decades.

TIDAL EXCHANGE

Historically, the Salt River was an estuarine slough and an important component of the Eel River Estuary. A mixed semidiurnal tidal cycle exchanges water through the mouth of the Salt River twice daily. As part of previous project feasibility studies, Kamman Hydrology and Engineering, Inc. (KHE, 2008) completed water level monitoring throughout the tidally influenced zones of the Salt River watershed during the summer and fall of 2005. KHE completed a tidal reckoning analysis using the measured water levels from 2005 and correlation to NOAA's Crescent City gauge. Monitoring water levels used in this analysis were converted from a NGVD29 vertical datum to NAVD88 by adding a 3.35-foot correction factor. Calculated tidal datums representative of the Riverside Ranch site (referenced to the NAVD88 vertical datum) are presented on Table 3.1-3 below. For comparison, reported tidal datums for Crescent City and Humboldt Bay (South Spit) are also reported, referenced to the NAVD88 vertical datum.

Table 3.1-3 Calculated and Reported North Coast Tidal Datums

Tidal Datum	Salt-Eel River Estuary KHE Gauge Elevations (ft, NAVD88)	Crescent City NOAA Gauge 9419750 Elevation (ft, NAVD88)	Humboldt Bay NOAA Gauge 9418767 Elevation (ft, NAVD88)
MHHW	7.55	6.55	6.44
MHW	6.77	5.92	5.74
MTL	4.70	3.37	3.25
MLW	2.63	0.82	0.75
MLLW	1.53	-0.41	-0.49

SEA LEVEL RISE

Tidal influence presently extends ~~upstream to~~ downstream of Port Kenyon (USDA 1993), a short distance upstream of the Reas Creek confluence. Historically, tides extended further upstream, but channel infilling and a sediment plug at the confluence of Reas Creek have reduced the channel conveyance capacity and essentially eliminated upstream tidal exchange except for extreme spring tide events ~~the channel's ability to transmit tidal waters upstream of the Reas Creek confluence~~ (see Figure 3.1-2). Under historic conditions, rising tides flooded a network of slough channels and maintained a large area of tidelands. Land reclamation efforts during the early settlement period included the installation of levees and tidegates, which converted tidelands into dairy grazing and agricultural lands. Approximately 2,900 acres were reclaimed in the western delta during this period (Downie and Lucey 2004). At present, a minimum of six operational tidegates in the Salt River preclude tidal exchange with the adjacent lowland areas. The tidegates, in conjunction with dams and levees built for land reclamation, have reduced the volume of water passing into and out-of the Salt River via tidal exchange with the greater Eel River Estuary. The reduction in tidal prism[1] has in turn reduced the hydraulic energy of the system and contributed to historical changes in stream channel morphology.

Tide heights and tidal datums increase over time with sea level rise. The National Oceanic and Atmospheric Administration's National Ocean Survey (NOS), the federal agency responsible for sea level monitoring and providing tidal data, periodically updates tidal datums to account for sea level rise; their most recent update occurred in 2003 for measuring stations in the region. Based on historic measurements from 1977 to 2006, NOS estimates a 4.73-millimeter per year (mm/yr) sea level rise (equivalent to 1.55-feet in 100-years) at the Humboldt Bay gauge. Conversely, NOS estimates a -0.65-mm/yr decline (equivalent to a change of -0.21-feet in 100-years) in sea level based on monthly sea level data from 1933 to 2006 at the Crescent City gauge. Regardless, a recent study of sea level rise by the Pacific Institute predicts that mean sea level along the California coast is projected to rise from 1.0- to 1.4-meters (m) by the year 2100 (Pacific Institute, 2009; IPCC, 2007; USACE, 2009). Although sea level rise is a natural phenomenon, there is considerable evidence that increases in "greenhouse gases" have lead to global warming, polar ice melting and accelerated rise in sea level (USEPA 1988). Because of accelerated sea level rise, the U.S. Army Corps of Engineers (Corps) established guidance (USACE 2009) for incorporating direct and indirect physical effects of projected future sea-level rise change in managing, planning, engineering, designing, constructing, operating and maintaining all Corps civil works projects. The Corps reports an estimated range of sea-level rise between 20- and 59-inches by the year 2100.

The anticipated life of the Salt River Ecosystem Restoration Project is 50 years. Based on sea-level rise estimates presented the California State Lands Commission's 2009 sea level rise report2, sea level is predicted to rise up to 0.60 meters (2.0-feet) by the year 2060. This equates to a sea level rise rate of 1.2 centimeters per year.

[1] The difference between the mean high-water volume and the mean low-water volume of an estuary.

[2] California State Lands Commission (CSLC), 2009, A report on sea level rise preparedness. December, 62p.

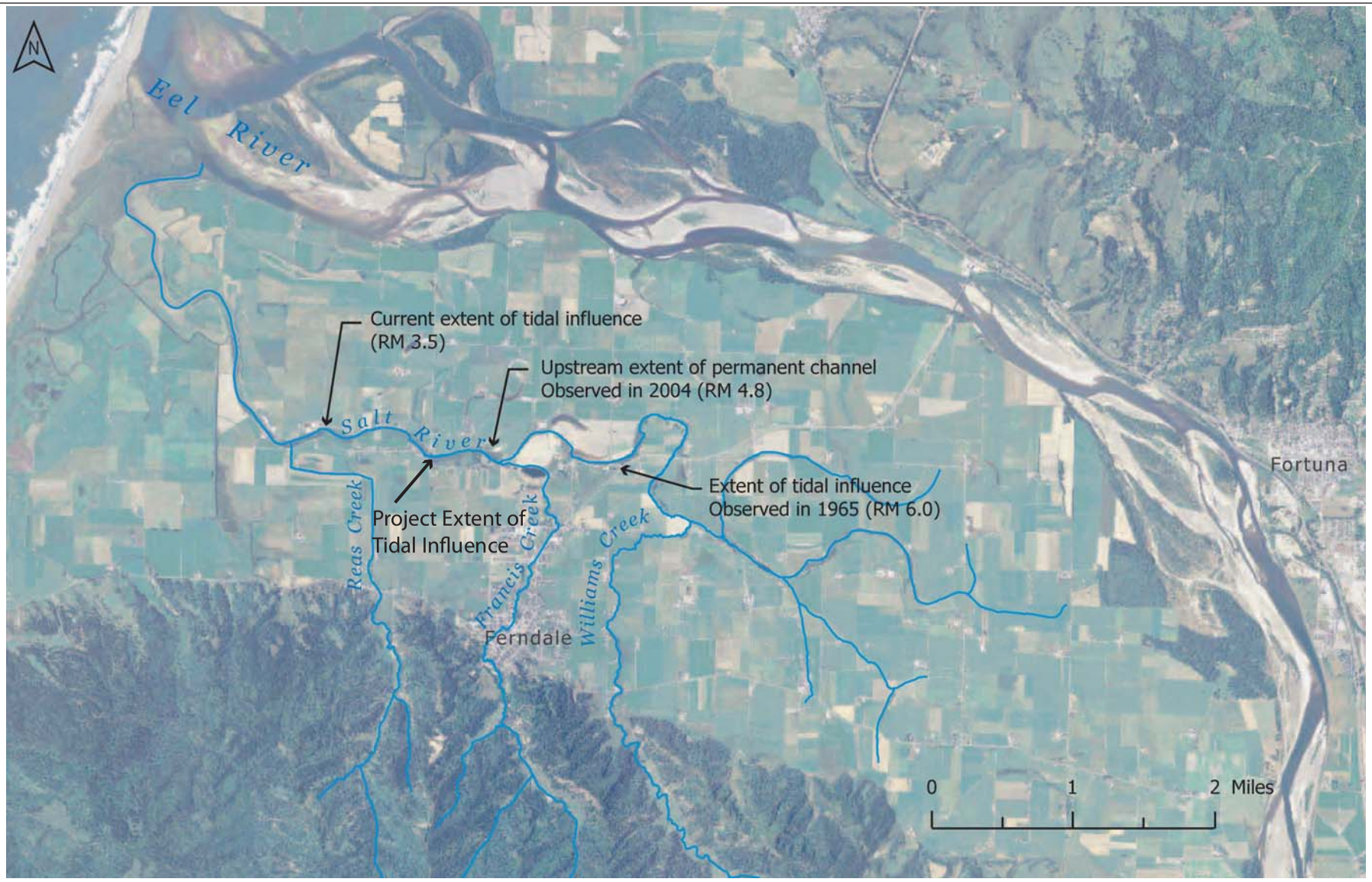


Figure 3.1-2

Pre-Project Extent of Tidal Influence in Salt River

Source: Downie and Lucey, 2004

The Project area is located in a highly active tectonic area and experiences episodic land subsidence in response to earthquakes. Li and Carver (1992)3 report that the Eel River delta region has undergone net subsidence in the late Holocene at an average rate of about 1-3 millimeter per year (mm/yr). However, most of the subsidence occurs during tectonic events that result in 1-3 meters of net permanent subsidence. Their study indicates five rapid subsidence events over the past 200 years, occurring about 300, 800, 1200, 1500 and 2000 years before the present. Their study also revealed:

- Net subsidence across the Eel River delta is non-uniform, with more net subsidence occurring on the south side of the river than the north side.
- Slow rates of sediment accumulation associated with tidal wetland and river flooding occurs across the delta during relatively stable periods following the sudden subsidence events.
- Sedimentation patterns over the last 2000 years indicate that fine grained sediment and the development of stable vegetated surfaces followed the four oldest subsidence events. These sediments contrast with the much coarser sands that deposited as thick flood deposits during the most recent decades.

The effects of sea-level rise will not be significantly different from the natural episodic tectonically induced subsidence, but would occur much more gradually.

The high sedimentation rates on the Eel River delta have effectively kept pace with historic sea-level rise and tectonic subsidence. High sedimentation rates will continue and, over time, will ameliorate the effects of sea level rise to some degree. A conceptual model of the project area in terms of delta plain base levels versus sea levels can be described as episodic tectonic events of rapid land subsidence followed by both gradual and rapid sediment accumulation associated with natural deltaic building processes from the Eel River and its tributaries (tidal wetland and flood deposits, respectively). These cycles of delta building have lead to the accumulation of up to 10,000-feet of alluvium on and below the Eel River delta plain syncline, which will continue. In geologic terms, the impacts of sea-level rise may impart gradual changes, but will not likely significantly alter this large scale land-form generating process in such a tectonically active area.

FLOOD HAZARDS

Flooding is common along the lowland areas of the Eel River Delta and is initiated seasonally in many areas during a moderate rainfall event. The entire channel excavation, soil disposal and Riverside Ranch marsh restoration areas lie within FEMA's 100-year flood zone (FEMA 1982, 1999a through 1999c) (See Figure 3.1-3). In addition, FEMA has completed recent floodplain mapping showing that the Salt River channel and project area (including agricultural sediment reuse sites) upstream of Reas Creek is almost entirely in the Eel River floodway. Flood hazards along the Salt River are related to both overbank flows from the Eel River and storm runoff from the Wildcat tributaries. Flooding and associated geomorphic processes are natural components of the Salt River

[3] Li, W.H. and Carver, G.A., 1992, The Late Holocene stratigraphy of Eel River delta. Prepared for: U.S. Soil Conservation Service, February, 12p (w/ 9 figures).

system; however, loss of natural drainage features and loss of tidal exchange, in combination with high sediment loads and channel filling, have greatly accelerated the frequency of flooding and the duration of inundation for flood-prone areas.

Floodwaters from both the Salt and Eel Rivers periodically overtop the channel banks and spill over the gently sloping lands of the delta. Both sources carry large volumes of sediment contributing to delta building and maintaining delta elevations in the face of sea level rise and tectonic subsidence. Overbank flooding from the Eel River begins at a stage of 19-feet at Fernbridge, with overbank floods occurring on the average of every six years (SCS, 19934). The flood magnitudes of 1861/62, 1955 and 1964 events were all in excess of a 100-year recurrence flood, inundating the entire Salt River project area and deposited significant volumes of sediment, particularly in the lower River adjacent to Riverside Ranch (5- to 6-feet of sediment, personal communication Bruce Slocum, 2010), at the confluence with Francis Creek and immediately upstream of the confluence with Coffee Creek (SCS, 1963)

Analysis of available topography and the local FEMA Flood Information Study (FEMA 1999), indicate the Eel River delta plain starts to flood during Eel River floods having a 12-year recurrence level or greater[5]. Overbank flow enters a network of abandoned meander channels at the eastern side of the delta, inundates the floodplain and adjacent land areas, and eventually drains off of the delta via the Salt River or the Old River/Perry Slough system. Extreme events inundate the entire Salt River portion of the Eel River delta and cause extensive flood damage to the local community. ~~An earthen levee, locally known as the Leonardo Levee, was constructed in 1967 to provide protection from flood events that recur at an annual return frequency of ten years or less.~~

Historically, overbank flood waters from the Eel River were directed into the far upstream reach of the Salt River and directed back to the Eel River via flow through the Salt River. The 1916 USGS topographic quadrangle shows a clear upstream connection between the Eel and Salt Rivers. Historically, floodwater drainage through the Salt River is attributed with scouring and transporting accumulated sediment out of the Salt River channel. However, in addition to areal diking and draining of pasture lands, the Leonardo Levee was constructed at the far upstream end of the Salt River in 1967 to reduce the frequency and extent of floodwater introduction to the Salt River. The Leonardo Levee provides protection up to approximately the 10-year frequency flood event and was repaired at least twice by the Army Corps of Engineers, most recently in 1986 (SCS, 1993). The reduction in Eel River floodwater drainage and sediment scour/transport through the Salt River is attributed with excessive accumulation over the past century. However, as discussed under the Sea Level Rise section of this chapter, tectonic subsidence and sea level rise both work to counter-act the impacts of sediment accumulation in the Salt River, but at a much slower or less frequent rate than overbank flooding and associated sediment deposition.

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[4] U.S. Department of Agriculture, Soil Conservation Service (SCS), 1993, Salt River Local Implementation Plan, Humboldt County, California. Prepared in cooperation with: California State Coastal Conservancy, Humboldt State University, Oscar Larson & Associates, and Questa Engineering Corporation, March, 82p.

[5] The 12-year recurrence interval (or 12-year flood) is the flood even that has an approximately 8 percent chance of occurring in any given year. It does not necessarily occur every 12 years. Similarly, a one-year recurrence interval event is based on a long-term average, and may not occur every year (or, conversely, may occur more than once in a given year).

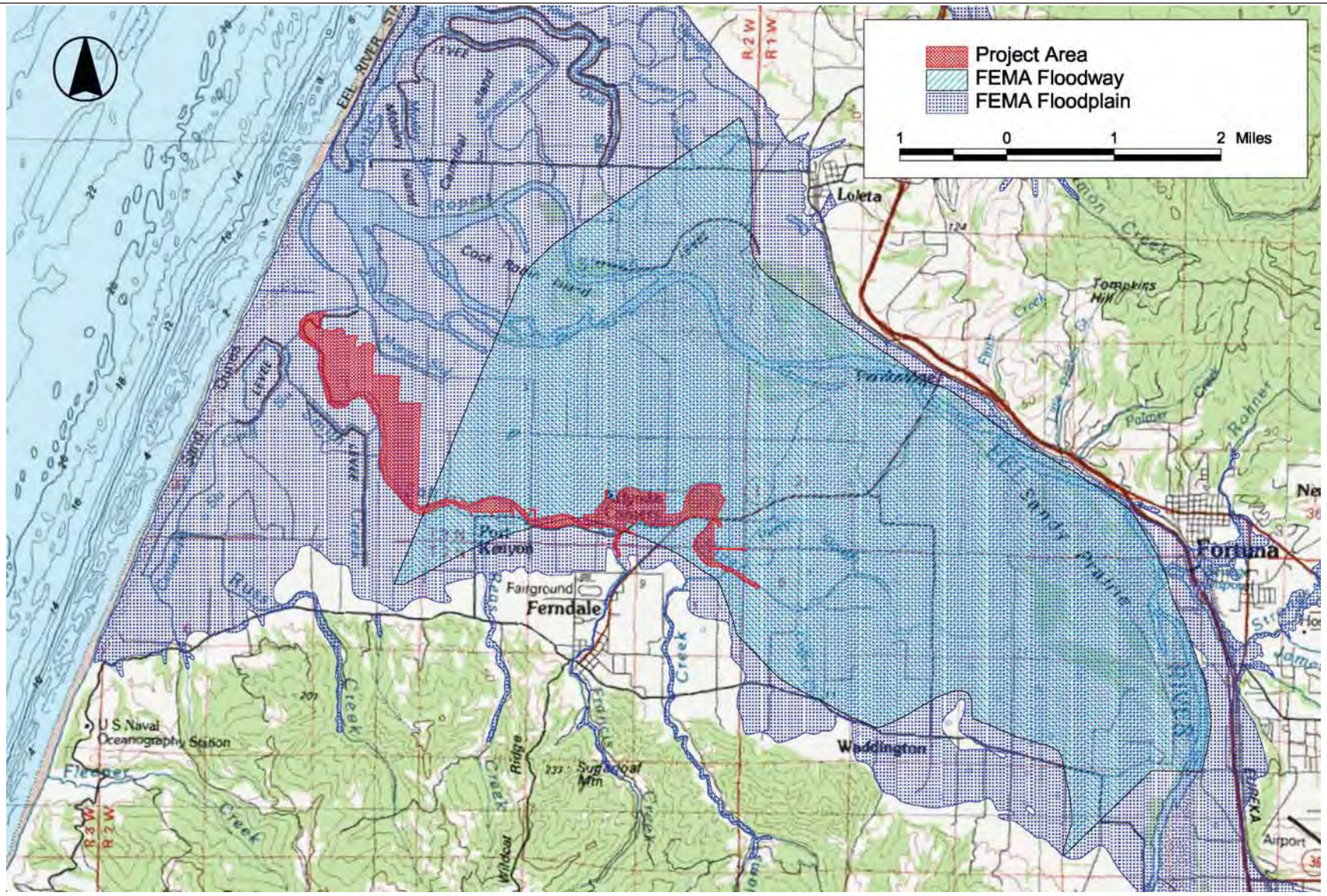


Figure 3.1-3

FEMA Flood Zones

Source: Humboldt County, 2004

Flooding due to overbank flow from the Salt River and its tributaries has increased in recent decades due to geomorphic changes that have reduced the capacity of the Salt River channel to convey runoff. A combination of factors that increased the volume of sediment entering the Salt River system and factors that decreased the energy available to transport sediment out of the system triggered rapid sedimentation across the Salt River portion of the Eel River Delta. The mainstem Salt River at Port Kenyon, once 200-feet wide and 15-feet deep, has filled in leaving a channel approximately 3 feet wide and 2 feet deep. Most areas of the channel upstream of the Reas Creek confluence have filled in completely. Annual flooding of lowland areas is now commonly triggered by relatively minor precipitation events and areas along the Salt River that formerly drained relatively quickly now remain ponded well into the summer. Tauzer (2009) estimates that flooding along the Salt River occurs well under a one-year recurrence interval.

Flooding along Francis Creek is described well in the Ferndale Drainage Master Plan (Spencer Engineering, 2004), including the following passage.

> Ferndale and the surrounding areas have historically had problems with storm water and drainage. Storm runoff associated with heavy winter rains has caused chronic flooding and sedimentation problems in the relatively flat terrain in the City, and in the rural areas north of the City near the Salt River. The City of Ferndale has recognized that continued growth can only take place in or adjacent to those portions of the city experiencing chronic flooding, and that management of storm water runoff is in the public interest.

The following passage from the Salt River Local Implementation Plan (SCS, 1993) also provides further description of the local problem.

> Sediment erosion in the upland areas south of Ferndale contributes to the flooding problem by filling local streams and the Salt River with silt, reducing their capacity to carry peak storm runoff. While flooding and sedimentation are natural processes, the frequency and rate of sediment deposition have increased because of land use activities in the Wildcat Hills (Salt River Watershed Local Implementation Plan, 1993).

There currently is no positive drainage below the confluence with Francis Creek, thus all flood waters (and sediment to some extent) pond and disseminate across the vicinity causing long-standing ponding and inhibit productive land use. Williams Creek is similar to Francis Creek in that it floods during most large storm events. However, over the last two to three decades, the point of overbank flooding appears to have moved progressively upstream, away from the Salt River confluence. Currently, overbank flooding appears to occur at or upstream of the 90-degree bend where the Creek transitions from northward flow to easterly flow into the former Salt River channel. The flood waters then inundate the surrounding properties creating what is locally referred to as "Frog Alley". Sediments are decanted out of the sheet flow and flood waters migrate northward to the Salt River channel, bypassing the 211 loop.

TSUNAMI HAZARDS

Most of Riverside Ranch and the portion of the channel restoration area downstream of the Reas Creek confluence lie inside the County's tsunami wave run-up boundary (see Figure 3.1-4). The

channel lying between the Reas Creek confluence and Highway 211 crossing is subject to moderate tsunami hazards and the section upstream of Highway 211 to lowest hazard.

GROUNDWATER

The Eel River Valley Groundwater Basin is one of the largest groundwater basins in Humboldt County. The area includes the lower eight miles of the Van Duzen River Valley and the Eel River Valley. The basin is bordered on the north by the Little Salmon Fault, on the south by the Plio-Pleistocene Carlotta Formation, and to the east by the Wildcat series; however, the actual extents of the eastern boundary is uncertain. The Wildcat series is a group of five formations ranging in age from Miocene to Pleistocene consisting of sandstone, marine siltstone, and claystone. The Carlotta Formation forms the uppermost formation of the Wildcat series. Surficial deposits of the Carlotta Formation are observed north and south of the Van Duzen River valley, located in the southeastern portion of the basin, and is an important water-bearing formation (DWR 2003).

Locally, the basin includes the Eel River delta and channel gravels, floodplain clays and silts, and older terrace gravels of the Eel River (Everson 1959). Shallow groundwater is present within the alluvial deposits underlying much of the Eel River delta. Eel River delta plain alluvium is of recent age and is composed of gravel, sand, silt and clay. In addition, it includes the clay, mud, and silt underlying the tidal marshes and swamplands. It underlies most of the irrigated agricultural land and is the most productive deposit in the area, yielding water to wells in large amounts.

The deposits underlying the delta of the Eel River consist of blue clay or sandy clay, ranging from less than 1-foot to more than 75-feet in thickness (Ibid). South of the Eel River and north of the Salt River, coarse alluvial deposits of sand and gravel are continuous from the surface to depths of 60 feet or more. In the vicinity of Ferndale, south of the Salt River, and east from the ocean to the Coffee Creek School, the alluvium contains none of the coarse material typical of large river deposits; instead it contains fine deposits derived from the adjacent hillsides (Ibid). Wells in this area encounter a considerable thickness of fine-grained deposits.

The principal groundwater body of the Eel River valley is unconfined and occurs in the coarse sand and gravel of the alluvium and river-channel deposits along the Eel River (Figure 3.1-5). The highly permeable coarse-grained alluvial deposits are tapped by numerous irrigation wells (Ibid). According to Don Laffranchi of Northcoast Pumphouse (personal communication December 26, 2010), irrigation wells constructed immediately north of the Salt River area Screened at depths from 40- to 60-feet bgs, while wells installed immediately south of the River area screened around a depth of 80-feet bgs. The finer grained alluvium found further ~~to the~~ south of the Salt River are poorly permeable and are tapped only by wells along the mouths of the streams draining the Wildcat Hills. ~~North and northeast of this indicated line, highly permeable deposits are tapped by numerous irrigation wells (Ibid).~~ For example, the Port Kenyon and Ferndale community's principal water supplies are derived from shallow, spring-fed wells/cisterns located in the Reas and Francis Creek valley mouths along the base of the Wildcat Hills.

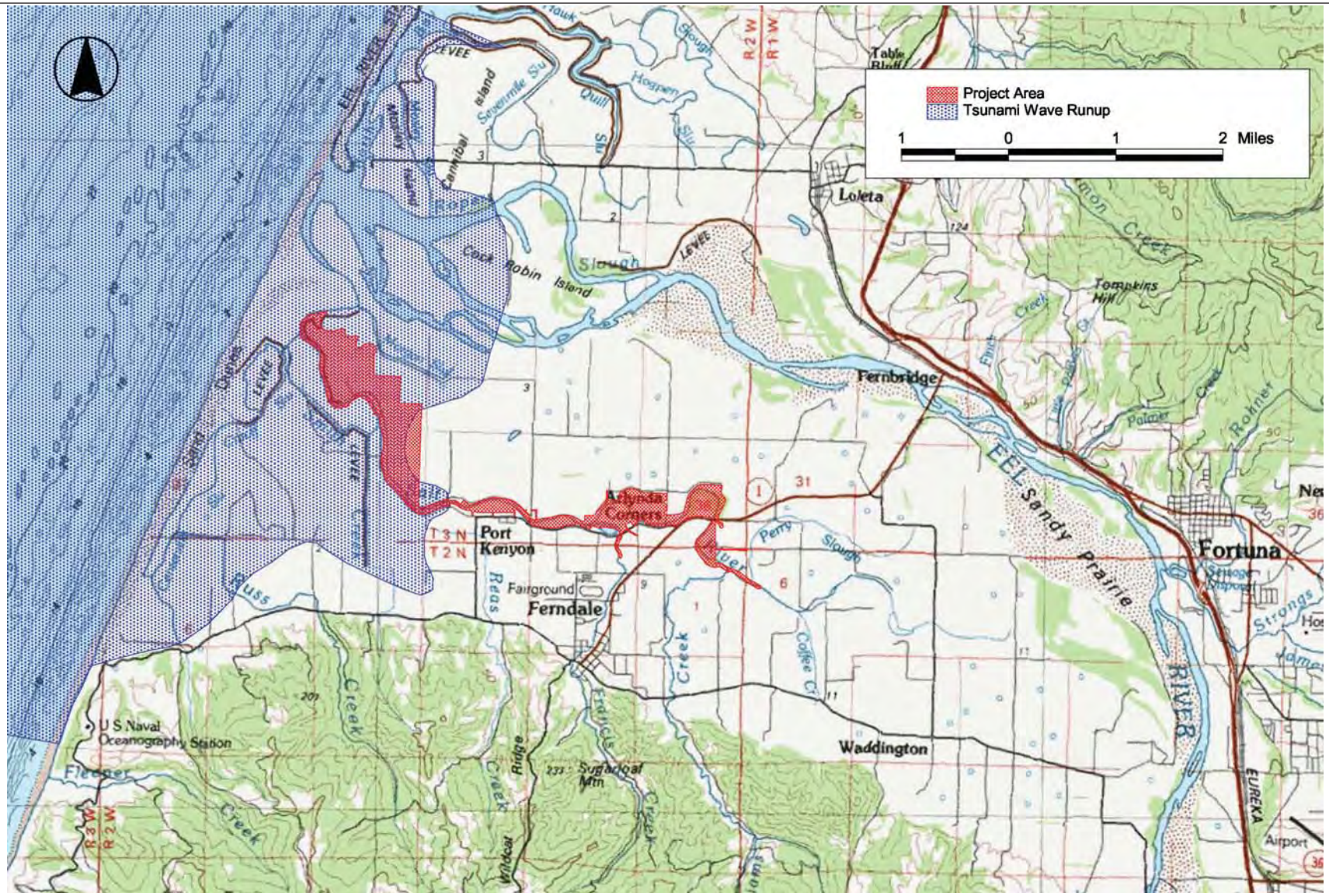


Figure 3.1-4

County of Humboldt's Tsunami Wave Run-up Boundary

Source: Humboldt County GIS, 2009

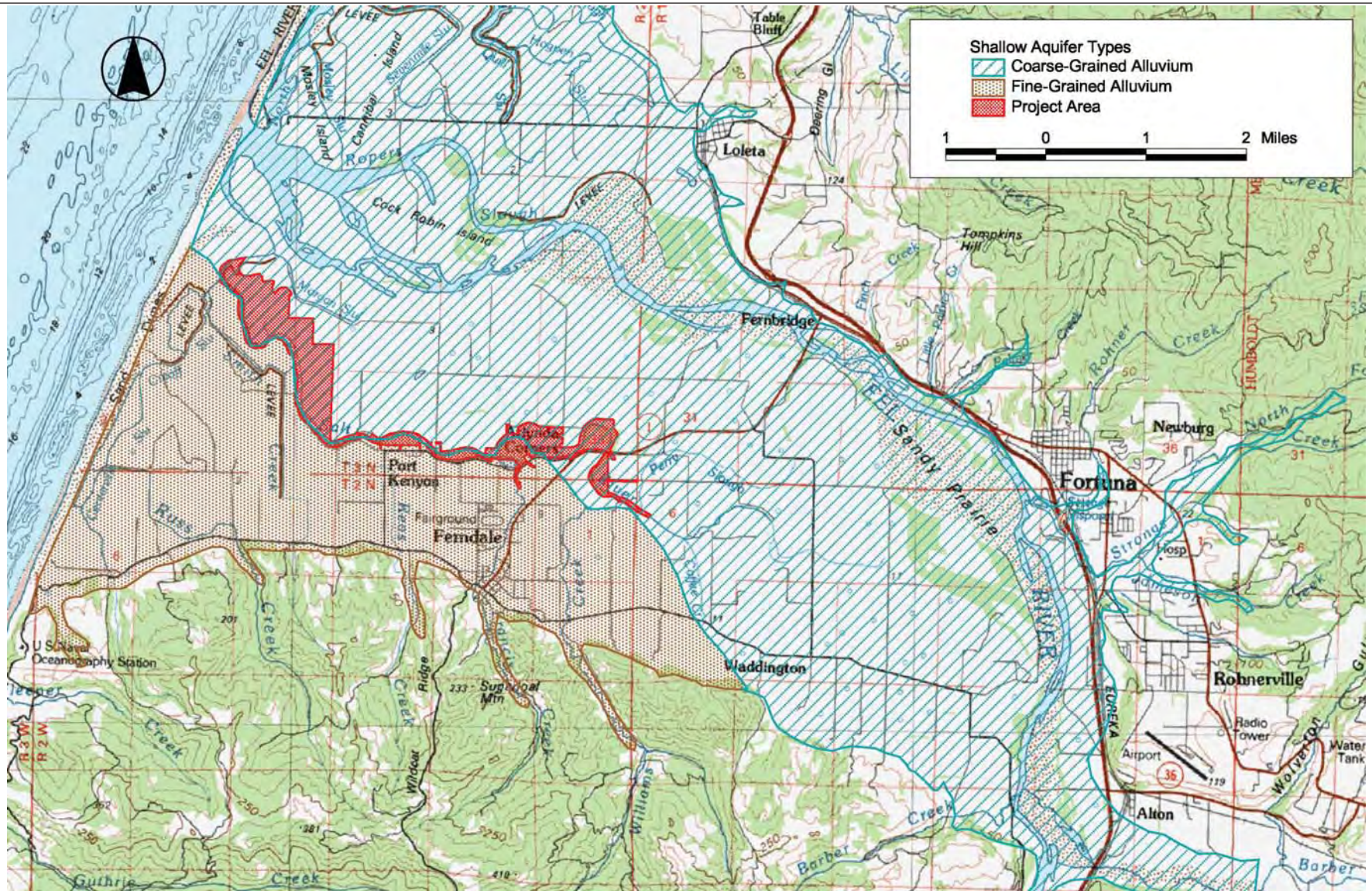


Figure 3.1-5

Boundary Between Shallow Groundwater Types

Source: Everson, 1959

Beneath the shallow alluvium underlying the project area, are partly confined aquifers in the Carlotta formation. In the vicinity of Ferndale, where the coarse gravel in the alluvium is absent, there are at least two aquifers in the Carlotta formation. In the early 1950's, wells tapping these aquifers ranged from 180- to more than 340-feet and displayed artesian conditions (flowing water out of well heads)(Ibid). The deep flowing wells tap confined aquifers that are distinctly separate from the shallow aquifers tapped by other wells in the vicinity of Ferndale. For example, anecdotal information from a local resident indicates that a deep well installed on the north side of the Eel River, opposite Morgan Slough, encountered water of marine salinity at a depth of 300-feet below ground surface.

Depth to groundwater for wells constructed in the Carlotta Formation is to within 35 feet of ground surface (DWR 2003). DWR reports the depth to groundwater in the alluvium ranges from about 3 feet to 20 feet (DWR 2003). Monitoring data available from the California Department of Water Resources (http://www.water.ca.gov/waterdatalibrary/) for local wells indicate seasonal fluctuations of the water table between three and ten feet below ground surface north of the Salt River, between about 15 and 22 feet below the ground surface near Ferndale, and between about 17 and 30 feet below the ground surface in the eastern region of the delta. Triangulation of the water table elevations suggest that the movement of groundwater is directed northwest. Measurements suggest no temporal trends in the groundwater records for recent decades.

Recharge to the alluvium is from direct precipitation and seepage from the Eel River. Some groundwater also moves laterally from adjacent formations and also moves upward due to differences in hydraulic head between the alluvium and underlying formations (DWR Bulletin 118). Groundwater development in the rural area of Humboldt County has generally been directed only to individual domestic requirements or to the irrigation demands of the more extensively farmed areas of the Eel River delta. The prime source of groundwater, by quantity, is in the sediments of the Eel River and Van Duzen delta. Though the storage capacity is about 136,000 acre-feet, the usable yield of this groundwater storage is estimated to be 40,000 to 60,000 acre-feet annually (Humboldt County 2008). Everson (1959) estimated the storage capacity of the basin to be 125,000 acre-feet. Humboldt county states that a little more than 10,000 acre-feet of groundwater is currently being pumped from the basin for agricultural uses (Ibid), while DWR estimates of groundwater extraction for agricultural and municipal/industrial uses are 49,000 and 1,400 acre-feet, respectively (DWR Bulletin 118). Deep percolation from applied water is estimated to be 9,500 acre-feet. Average Well Yield is estimated at 400 gallons/minute (Humboldt County 2008).

SURFACE WATER SALINITY

This section summarizes findings from salinity monitoring completed within the project area.

2005 Water Quality Monitoring Data

During the summer and fall of 2005, KHE completed a comprehensive water level and salinity monitoring program in the lower, tidally-influenced reach of the Salt River. As part of this investigation, continuous salinity monitoring was completed within the Eel/Salt River estuary and the Salt River near the confluence with Smith Creek. Depth discrete salinity measurements were

also repeatedly collected at up to 14 sites within the lower Salt River on a near-monthly basis (see Figure 3.1-6 – all salinity monitoring locations)

Salinity and water level monitoring within the estuary was quite revealing of the overall downstream salinity conditions and seasonal changes of the Salt River system. Figure 3.1-7 presents general estuary salinity concentrations over the June 23, 2005 through October 20, 2005 monitoring period. Water year 2005 had very high late spring flows within the watershed, sustaining relatively high Eel River inflow rates of 6000 to 5000-cfs to the estuary late into June. The long-term average June flow rate into the estuary, as measured at the USGS Scotia gauge is 1290-cfs (see Table 3.1-4)[6].

Table 3.1-4 Average Monthly Eel River Flow Rates (in cfs) at Scotia: 1910 through 2007

JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
20,100	19,900	14,400	9,000	3,810	1,290	346	151	140	632	4,870	14,600

As a result of the high Eel River inflows that persist into June, salinity concentrations in the estuary were very low, with concentrations at or below 1-part per thousand (ppt). As inflow rates decreased, estuary salinity concentrations quickly rose to marine concentrations, stabilizing to around 32-ppt by late July (see Figure 3.1-7). In a more typical year this would likely be the salinity level in June. Over the interim period, concentrations fluctuated daily in response to competing tidal and freshwater inflow processes.

During the 2005 monitoring, KHE also measured vertical salinity profiles in the estuary at the mouth of the Salt River. The June 2005 estuary salinity profile indicates a strongly stratified estuary with a surficial lense of fresh water above a high salinity bottom layer. Evolution of the estuary salinity structure into late summer and fall (repeat vertical salinity profiles measured on August 17, September 23 and October 20), reveals a decrease in stratified structure to near homogeneous marine salinities through the water column experienced by October 20, 2005. Salinity profiles were also measured at locations progressively greater distances upstream from the river mouth. In general, these results reflect a general decrease in salinity concentration with distance away from the river mouth, to perennial freshwater conditions measured at Dillon Road Bridge.

Continuous and discrete salinity concentrations for the Smith Creek gauge are presented along with the estuary salinity concentrations on Figure 3.1-7. Recorded water levels at the Smith Creek gauge are also plotted on Figure 3.1-7. This graphic depicts the salinity range experienced in Salt River at Smith Creek over the summer-fall 2005 monitoring period and indicates the salinity conditions that would have been experienced in Riverside Ranch had it been restored to tidal exchange during the summer of 2005. These results indicate summer salinities in the Ranch would reach 25 ppt.

[6] Mean daily flow data for the Scotia gauge as measured by the USGS for the period 1911 through 2008 was obtained from the National Water Information System web site at: http://waterdata.usgs.gov/ca/nwis/sw

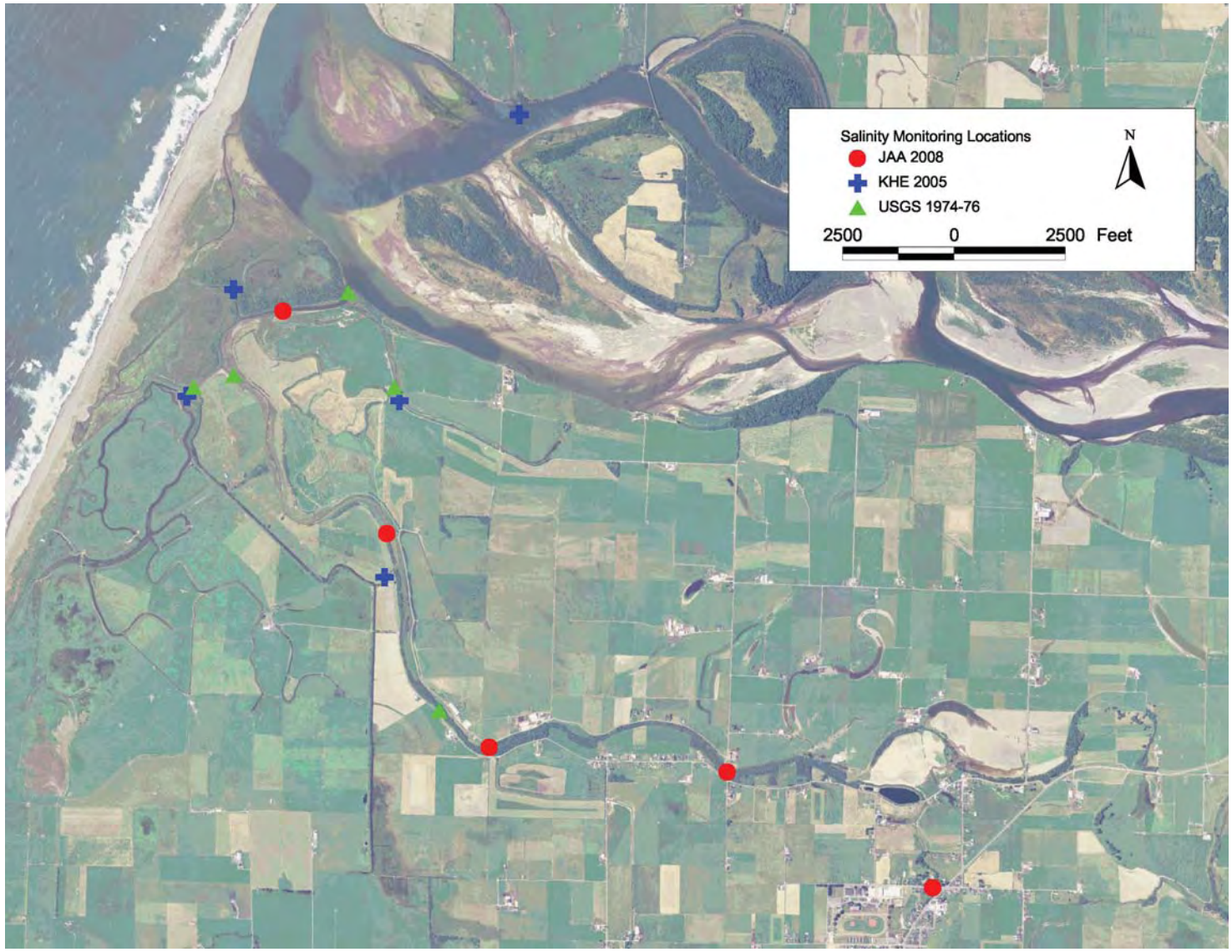
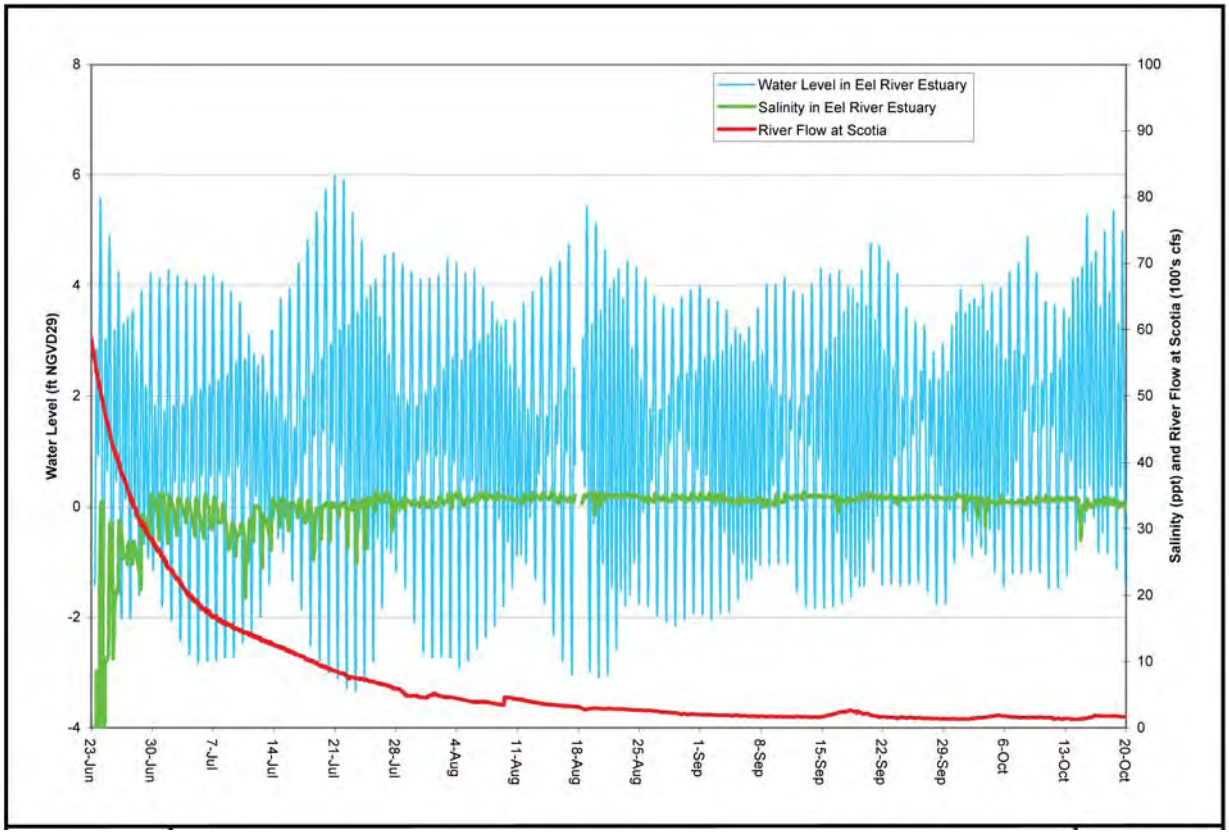


Figure 3.1-6

Salinity Monitoring Locations



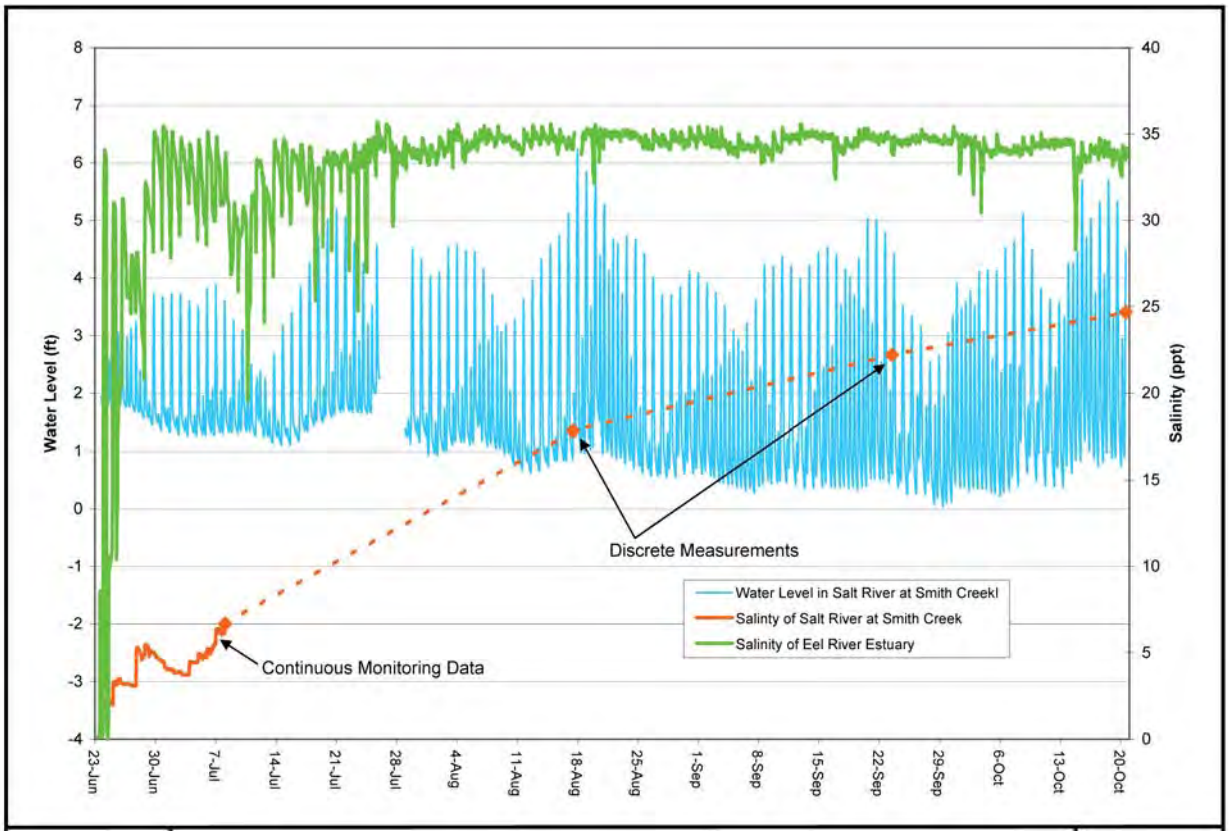


Figure 3.1-7

Eel River Estuary and Smith Cr. Salinity Concentrations - 2005 Source: KHE 2008b

2008 Water Quality Monitoring Data

As part of the planning process for the Ferndale wastewater treatment plant replacement project, Jeff Anderson & Associates (JAA 2009) collected water level and water quality measurements, including salinity, during the spring and summer of 2008. The most relevant data to this study included water level and salinity measurements collected at the mouth of the Salt River and in the Salt River a short distance downstream of the confluence with Smith Creek between March and July 2008. Similar to the 2005 findings, salinity concentrations at each site are controlled by both tidal and freshwater Eel River inflow to the Estuary. Notable findings from the monitoring results at the Salt River mouth include: average daily salinity concentrations increase with time as freshwater inflow (represented by Eel River flow at Scotia) decreases; the amplitude of daily variability in salinity concentration decreases with time as freshwater inflow decreases; and high Eel River runoff events during March and April temporarily depress salinity concentrations as the freshwater flood wave propagates through the estuary. Salt River salinity concentrations and the daily variability in salinity concentration measured near the Smith Creek confluence are notably lower than the salinity concentrations measured at the river mouth during the monitoring period. In general, the average daily salinity concentrations increase seasonally at the near-Smith Creek monitoring station as freshwater inflow to the estuary decreases.

1974-76 Water Quality Monitoring Data

KHE reviewed available historic Salt and Eel River reports to obtain historic salinity monitoring data. Only one source of monitoring data resulted from the literature search and included salinity concentrations measured by the California Department of Water Resources (DWR 1977) on an approximately monthly basis at a number of selected Eel-Salt River sites during the summers of 1974 through 1976. The DWR study was initiated in 1973 to determine the invertebrate and periphyton assemblages and the physical and chemical characteristics of the Eel River estuary. Due to termination of funding, the study was concluded during the 1976 fiscal year. Useful data from this report was used in this study (as presented below) and included discrete salinity measurements in the Salt River at monitoring stations located at Smith Creek, Cutoff Slough and Morgan Slough.

Correlation Between Salinity and Freshwater Inflow

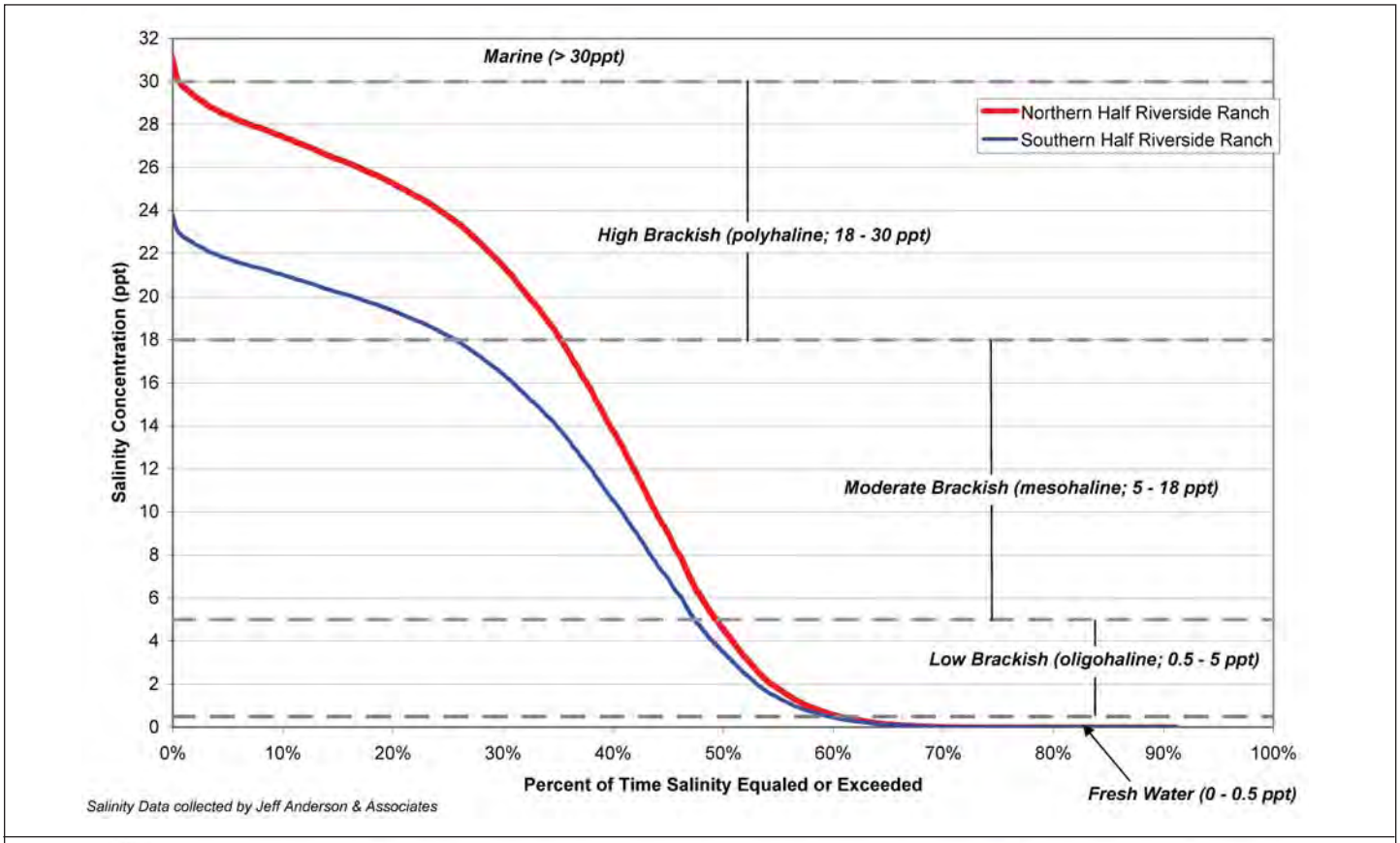
As indicated above, there appears to be a strong correlation between Salt River salinity and the freshwater inflow to the Eel River estuary; the higher the freshwater inflow rate the lower the salinity concentration. Using salinity monitoring data obtained from the studies introduced above, this inverse relationship between flow and salinity at selected locations within the estuary and the Salt River were further evaluated and quantified. Reasonably high correlation coefficients indicate a strong relationship between these variables. Similar correlation curves were generated using the discrete data collected by the DWR in 1974-76 and KHE in 2005 for the monitoring sites maintained at Smith Creek, Cutoff Slough and Morgan Slough. Again, these relationships result in high correlation coefficients and indicate a decrease in Salt River salinity concentration in an upstream direction during any given flow.

Using the correlations between Eel River flow and monitored salinity adjacent to Riverside Ranch, salinity concentrations over the 1911-2008 period were predicted to reflect concentrations of waters that would have inundated Riverside Ranch had it been restored and experienced tidal exchange with the Salt River over this period. Predicted salinity concentrations within the Ranch are presented in Figure 3.1-8 - the upper graphic represents salinity duration curves for the northern and southern halves of the ranch while the lower graphic presents predicted seasonal salinity concentrations for a suite of water year-types ranging from very wet through critically dry. Standard salinity zones are also indicated on both graphics in Figure 3.1-8 to help interpret the amount of time that different salinity regimes (e.g., freshwater, low brackish, etc.) will occur. For example, the salinity duration curves in the upper graphic of Figure 3.1-8 indicate that Riverside Ranch wetland will experience freshwater conditions approximately 40-percent of the time (exceedance range between 60- and 100 percent). These predicted salinities suggest that the restored wetland will fluctuate seasonally between a freshwater and high-brackish marsh.

SURFACE WATER QUALITY

Water quality monitoring within the Salt River basin is limited and much of the following information is excerpted from JAA's 2008 water quality study completed on behalf of the City of Ferndale. The lower Eel River Estuary, including the Lower Salt River Estuary was sampled for nutrients and basic water quality constituents in the 1970s by the Department of Water Resources (DWR 1977). As part of its NPDES/WDR permit, the City of Ferndale collects effluent quality data and some receiving water data immediately upstream and downstream of the POD. From October to December 2006, as part of cease and desist order (CDO) compliance for the City of Ferndale, Spencer Engineering collected instream water quality data in Francis Creek, Reas Creek, and the Salt River. As needed these data supplemented the water quality data collected by JAA in 2008.

JAA developed and implemented a sampling plan for WY 2008 to collect baseline data. An emphasis was placed on documenting water quality during periods of extended low-flows when water quality impacts from effluent discharge are likely to be the highest. Indicators of water quality impairment in the receiving waters include temperature, dissolved oxygen, specific conductance (or salinity), and pH and are the focus of the continuous monitoring stations. These parameters are controlled by the physical, chemical and biological characteristics of each of the contributing water bodies which were measured as point or grab samples throughout the monitoring period. Grab samples were analyzed for nutrients, standard mineral analysis and solids. The following sections summarize results of the JAA 2008 water quality monitoring effort. Results (average, minimum and maximum concentrations) of the JAA 2008 water quality monitoring are presented in Table 3.1-5 along with applicable California North Coast Regional Water Quality Control Board Basin Plan water quality standards. With only one exception, waters monitored as part of the 2008 JAA program complied with Basin Plan standards.



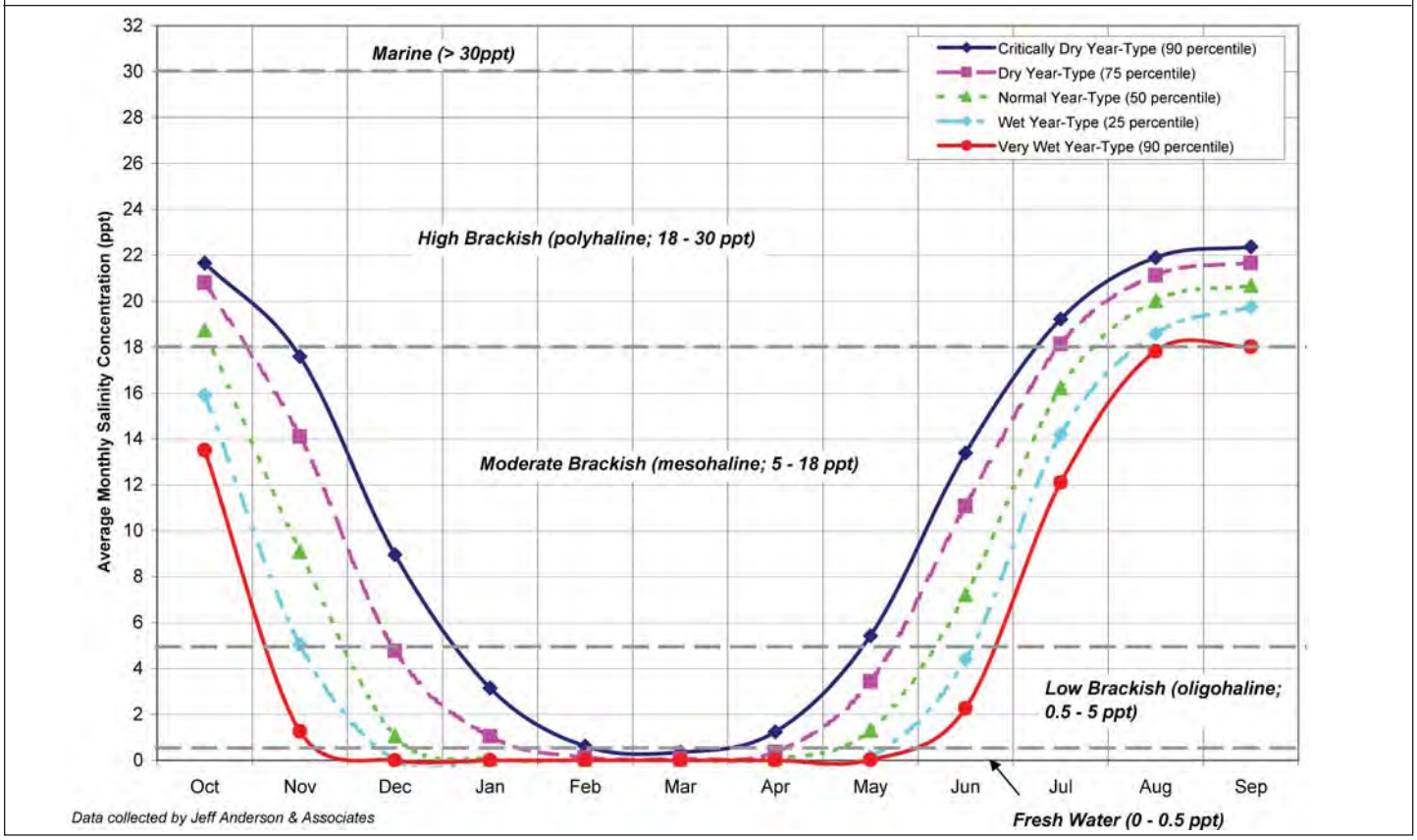


Figure 3.1-8

Riverside Ranch Predicted Salinity

Source: KHE 2008b

Table 3.1-5 2008 Salt River Water Quality Monitoring Results

Constituent	Units	Francis Creek at Van Ness			Reas Creek near Port Kenyan			Salt River at Dillon Rd Bridge			Salt River above Reas Creek			Salt River below Smith Creek			Salt River at Riverside Ranch		
		Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max
Carbonaceous Biochemical Oxygen Demand 5-day (CBOD5)	mg/l	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	2.28	2.28	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00
Carbonaceous Biochemical Oxygen Demand 20-day (CBOD20)	mg/l	2.44	<2.00	3.34	2.29	<2.00	2.54	2.26	2.02	2.5	3	2.18	4.16	<2.00	<2.00	2.32	2.15	<2.00	2.26
Total Suspended Solids (TSS)	mg/l	12.1	2.6	39	120	36	330	19.1	5.2	33	10.1	4.6	19	68.8	17	210	17.4	3.6	39
Total Volatile Solids (TVS)	mg/l	68.5	53	80	77.5	60	90	69.5	57	82	75.3	69	81	748	250	1,400	2,773	540	4,300
Total Dissolved Solids (TDS)	mg/l	293	240	35	255	230	270	300	250	350	280	220	350	5,675	2,000	8,600	21,267	2,600	34,000
Volatile Suspended Solids (VSS)	mg/l	2.2	1	3.8	9.7	4.6	23	2.7	1	4.4	3.43	2	6.3	5.05	1.6	14	2.27	1.4	3.4
Total Phosphorus (TP)	mg-P/l	0.1	0.078	0.121	0.228	0.127	0.488	0.252	0.176	0.327	0.445	0.29	0.823	0.19	0.091	0.401	0.074	0.02	0.122
Dissolved Inorganic Phosphorus (DIP)	mg-P/l	0.034	0.025	0.049	0.019	0.016	0.021	0.148	0.098	0.198	0.276	0.158	0.589	0.049	0.028	0.076	0.038	0.012	0.07
Ammonia (NH4)	mg-N/l	0.04	0.006	0.077	0.166	0.035	0.473	0.503	0.088	0.919	0.961	0.063	3.022	0.182	0.034	0.323	0.048	<0.010	0.093
Nitrate (NO3)	mg-N/l	0.535	0.101	0.952	0.272	0.017	0.827	0.805	0.599	1.011	0.764	0.445	0.978	0.289	0.02	0.741	0.183	0.015	0.379
Nitrite (NO2)	mg-N/l	0.013	0.009	0.019	0.015	0.004	0.03	0.034	0.031	0.036	0.046	0.012	0.096	0.017	<0.002	0.022	0.006	0.002	0.018
Total Nitrogen (TN)	mg-N/l	0.892	0.364	1.37	0.691	0.326	1.56	1.61	1.165	2.046	2.48	1.02	4.8	0.977	0.282	1.98	0.43	0.13	0.657
Alkalinity	mgCaCO3/	147	101	192	127	98.3	161	144	104	185	147	102	190	109	100	117	110	77.4	125
Chlorophyll-a (Chla)	µg/l	9.55	3.74	19.8	12	5.34	24	7.41	2.14	12.7	9.48	2.14	14.4	4.81	2.67	8.01	6.54	0.534	30.7
Phaeophytin a (PHAEO-A)	µg/l	6.57	2.88	15.9	19.8	6.94	56.3	8.01	5.34	10.7	8.65	4.59	13.2	7.11	3.63	15.4	3.88	1.46	6.3
Turbidity	NTU	18.3	6.4	52	125	19	325	26.4	7.7	45	14.3	5.6	31	56.3	15	172	9.68	2.8	33
Hardness	mgCaCO3/	156	109	201	133	106	160	154	106	203	152	104	202	1,084	420	1,622	3,720	537	5,960
Chloride	mg/l	35.4	26.3	45.7	27	24.9	30.4	36	26.4	45.6	38.3	27	46.9	3,017	919	4,858	12,271	1,398	19,800
Chemical Oxygen Demand (COD)	mg/l	17.7	14.7	20.6	19.6	13.5	25	24.7	28.7	20.6	26	16.3	35.7	24.8	<10.0	33.2	20.2	<10.0	64.4
Total Organic Carbon (TCO)	mg/l	4.78	3.84	6.39	5.77	4.55	7.72	6.45	5.01	7.89	6.68	5.15	9.38	3.74	1.55	7.4	1.64	0.745	3.81
Dissolved Organic Oxygen (DOC)	mg/l	4.41	3.75	5.47	5.12	4.13	6.75	5.64	4.64	6.64	6.17	4.88	8.15	3.38	1.43	6.6	1.58	0.712	3.71
Iron	mg/l	1.21	0.673	2.41	6.75	2.36	16.7	1.77	1.33	2.22	0.885	0.149	1.59	2.42	0.232	707	0.392	<0.010	1.57
Manganese	mg/l	0.026	<0.005	0.036	0.088	0.027	0.216	0.02	0.009	0.031	0.036	0.014	0.087	0.141	<0.005	0.198	<0.005	<0.005	0.144
Silica	mg/l	7.53	6.01	10.4	12	6.12	22.1	7.17	5.65	8.69	5.27	4.26	6.93	5.27	0.826	13	1.76	0.433	4.05
Water Temperature	°C	9.8	8.1	11.1	12.2	10.1	14.2	10.2	8.9	11.5	10.8	9.0	11.8	12.8	10.3	15.1	12.0	10.6	13.2
Specific Conductance	mS/cm	0.5	0.4	.06	0.3	0.3	0.3	0.5	0.4	0.6	0.5	0.3	0.6	9.4	3.4	14.4	33.6	18.7	48.5
Total Dissolved Solids (TDS)	g/l	0.3	0.2	0.4	0.2	0.2	0.2	0.3	0.2	0.4	0.3	0.2	0.4	6.1	2.2	9.4	21.8	12.1	31.5
Salinity	ppt	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.3	5.4	1.8	8.4	21.3	11.1	31.5
Dissolved Oxygen Saturation	%	98.7	85.9	116.0	102.2	99.6	104.7	66.8	62.4	71.1	71.8	59.1	87.8	82.6	65.9	90.6	94.2	79.0	118.5
Dissolved Oxygen Concentrate	mg/l	11.18	10.10	13.10	10.98	10.19	11.77	7.49	7.23	7.74	7.97	6.40	9.78	8.51	6.30	9.89	8.85	7.83	10.90
pH	pH units	8.16	7.97	8.52	8.09	8.09	8.09	7.67	7.47	7.87	7.43	7.28	7.53	7.61	7.47	7.82	7.79	7.51	8.06

POLLUTANTS OF CONCERN

The primary sources of pollution affecting water quality conditions in the Salt River are: (1) effluent discharged from the Ferndale Wastewater Treatment Facility (WWTF); (2) farm wastes from agricultural lands; and (3) sediment eroded from the steep hillslopes of the upper basin.

The City of Ferndale WWTF discharges treated effluent into the Salt River via Francis Creek during the winter months (wet season). The WWTF does not discharge directly to the Salt River system during summer months (dry season); rather, the treated effluent is utilized to irrigate agricultural fields. The City's National Pollution Discharge Elimination System (NPDES) permit requires a 100:1 receiving water-to-effluent dilution ratio. Streamflow in Francis Creek and the Salt River is rarely sufficient to achieve the required dilution ratio. The sediment blockage diverting the eastern tributaries, including Williams Creek, out of the Salt River basin via Perry Slough (Old River) has significantly reduced the volume of water available to dilute the City's treated effluent. As a result, the WWTF's chronic violations of water quality requirements triggered the issuance of a Cease and Desist Order by the North Coast Regional Water Quality Control Board (RWQCB). The City of Ferndale is in the process of upgrading the WWTF to improve compliance with water quality and wastewater discharge standards as detailed in their March 2009 Initial Study/Mitigated Negative Declaration.

Dairy farming is the dominant land usage of the Eel River Delta and pollution from farm waste has triggered water quality concerns in the Salt River basin. Potential contaminants from farm wastes include excessive nutrients, salts, organic solids, and bacteria. Two monitoring studies (LaVen 1994; Anderson 1997) assessed the impact of farm wastes on water quality in the Eel River Delta. Both reports identified several locations with the Salt River basin as having water quality problems, however, data from existing reports are insufficient to draw basin-wide conclusions of water quality conditions (Downie and Lucey 2004). The RCD has worked with dairy producers in the area since 1998 to implement a number of nutrient management and water protection measures on local dairies to more effectively manage diary waste and protect water quality.

Temperature and sediment concentration have been identified as additional water quality concerns in the project area. Specifically, elevation of water temperatures and sediment concentrations above natural levels has impaired the Lower Eel River and its tributaries for use as aquatic habitat. EPA (2007) recently set Total Daily Maximum Loads (TMDLs) for temperature and sediment in the Lower Eel River. As a tributary of the Lower Eel River, the Salt River falls within jurisdiction for these TMDLs. Limited sampling in the Salt River tributaries indicate that water temperature is suitable for cold water fish including coho salmon and steelhead trout. The TMDL allocation for temperature in the Salt River basin calls for a minimum of 59 percent shade. The recommended value is less than estimated shade coverage under existing conditions.

The sediment TMDL for all stream reaches was set equal to 898 tons/mi2/yr, 125 percent of the calculated natural sediment loading. For reference, the USDA (1993) estimated sediment yield to the base of the Wildcat Hills to average about 1500 tons/mi2/yr for the Salt River tributaries under present (1993) conditions (USDA 2003). In an effort to guide the design process for the Salt River

Ecosystem Restoration Project, Kamman Hydrology & Engineering, Inc. assessed spatial patterns of recent sediment deposition by comparing topographic survey data from 1967 and 2006 (KHE 2007). The approach assumes that a change in elevation between the two topographic surveys indicates the approximate depth of sediment erosion or deposition at a given location. Comparison of the digital terrain models (DTMs) developed from each topographic map yielded an estimate of approximately 5 million cubic yards of sediment deposition during the period 1967-2006. Of this total, approximately 3.4 million cubic yards, or 100,000 tons per year, were deposited upstream from the confluence of Reas Creek. Assuming that sediment deposited upstream of Reas Creek is derived from the Francis Creek and Williams Creek watersheds, and that the contributing areas for these watersheds are 3.2 and 5.9 square miles, respectively, average annual sediment contributions from tributary areas are estimated as 11,000 tons per square mile during the period 1967-2006, notably higher than the 1993 USDA estimate.

The County established a flow- and sediment-monitoring gauge on Francis Creek in 2007 and has monitored and estimated sediment yields over a partial season in 2007 and full annual periods in 2008 and 2009 (Fenton 2007, 2008 and 2009). Sediment yields for these periods were: 3708 tons/mi2 for the 1/23/07 through 5/31/07 period[7]; 6521 tons/mi2/yr for 2008; and 1965 tons/mi2/yr for 2009[8]. For further comparison, Fenton (2007) also states that the average annual sediment yield for the Eel River is 4330 tons/mi2/yr.

GROUNDWATER QUALITY

Groundwater in the basin is characterized as magnesium-calcium bicarbonate and magnesium-sodium bicarbonate type waters. Total dissolved solids (TDS) range from 110- to 340-mg/L, averaging 237 mg/L (DWR 2003). Impairments to groundwater include high iron concentrations and locally high TDS, manganese, magnesium, calcium, boron, nitrite, and phosphorus (Ibid).

3.1.2 REGULATORY SETTING

Actions that may affect surface and groundwater at the Salt River Enhancement Project site are subject to the requirements of the federal Clean Water Act (33 U.S.C. §§ 1251 et seq.; CWA) and associated regulations, the State Porter-Cologne Water Quality Control Act (Cal. Water Code §§ 13000 et seq.) and associated regulations, and to requirements established by the U.S. EPA, State Water Resources Control Board, the Regional Water Quality Control Board, North Coast Region, County of Humboldt and the City of Ferndale. The North Coast RWQCB is the lead agency for implementing all State regulations, and it has been designated by U.S. EPA as the State agency responsible for implementing the federal CWA Section 402 (National Pollutant Discharge Elimination System) and Section 401 (certification of Federal permits that might result in discharge to State waters/wetlands). Under the permit, the agencies have responsibility for stormwater

[7] Fenton notes (2008) that total annual sediment yield for 2007 was likely two to three times higher than this reported value when taking into account early season storms not monitored during the 2007 season and observations from subsequent monitoring periods.

[8] 2009 was a notably dry year in comparison to 2007 and 2009, resulting in low peak flows and low sediment yields from the basin (Fenton 2009).

management and protection within their respective jurisdictions, and they may prohibit or set limits for discharges to meet water quality objectives set forth in the permit. These agencies and their permitting responsibilities with respect to this project are discussed below.

FEDERAL AGENCIES

U.S. Army Corps of Engineers (Corps)

When earthwork is completed in a river, stream, or wetland, a Corps permit may be required. The regulatory authority of the U.S. Army Corps of Engineers for riparian projects is based on Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act. Section 404 of the Clean Water Act requires Corps authorization for work involving intentional or unintentional placement of fill or discharge of dredged materials into any "waters of the United States." This applies even if there is a chance the winter rains may cause erosion leading to sediment discharges into the "waters." Section 10 of the Rivers and Harbors Act requires Corps authorization for work or structures in or affecting "navigable waters." Corps jurisdiction extends up to the ordinary high water line for non-tidal waters and up to the line of high tide (for dredge and fill) or mean high water line (for work or structures) for tidal waters. The Corps is required to consult with NMFS and USFWS under the CWA for projects that may affect federally listed species under the ESA.

Federal Emergency Management Agency (FEMA)

The Federal Emergency Management Agency (FEMA) completed a series of Flood Insurance Rate Maps (FIRMs) that cover the project area, including maps of unincorporated County areas (Community Panel Numbers 060060 0920, 060060 0940, 060060 1085, 060060 1105, and 060060 1110, completed in 1982) and City of Ferndale (Community Panel Number 060445 0001 C, completed in January 1998). Much of the project area on the FIRMs falls within a Zone AE (100-year floodplain, base flood elevations determined) (see Figure 3.1-3). A natural low-profile drainage swale east of the downtown area, known as the East Side Channel, is also designated to be within a Zone AE.

The specific regulatory considerations related to hydrology and geomorphology are those arising from Humboldt County and FEMA obligations relative to minimizing flood hazards within the Eel River delta plain. Regulations pertinent to the project are covered in policies stipulated in the County's General Plan and the City of Ferndale's Floodplain Management Ordinances, discussed below.

Federal Clean Water Act

The CWA consists of the Federal Water Pollution Control Act of 1972 and subsequent amendments, and it established the basic structure for regulation of discharges of pollutants into surface waters of the Unites States. It authorizes the EPA to set effluent limits for discharges and requires the EPA to set water quality standards for constituents in surface waters.

The CWA established a framework for regulation of municipal and industrial stormwater discharges under the National Pollutant Discharge Elimination System Program. The CWA requires

dischargers to obtain a permit that establishes effluent limits and specifies monitoring and reporting requirements.

Federal Antidegradation Policy

The federal antidegradation policy set forth in 40 CFR §131.12. SWRCB Order No. 68-16 incorporates the federal antidegradation policy into the state policy for water quality control and ensures consistency with federal CWA requirements. This federal regulation establishes a three-part test for determining when increases in pollutant loadings or other adverse changes in surface water quality may be permitted:

1) Existing instream water use and level of water quality necessary to protect the existing uses shall be maintained and protected.
2) Where the quality of the waters exceed levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water, that quality shall be maintained and protected unless the State finds after full satisfaction of the intergovernmental coordination and public participation provisions of the State's continuing planning process that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located. In allowing such degradation or lower water quality, the State shall assure water quality adequate to protect existing uses fully. Further, the State shall assure that there shall be achieved the highest statutory and regulatory requirements for all new and existing point sources and all cost-effective and reasonable best management practices for nonpoint source control.
3) Where high quality waters constitute an outstanding National resource, such as waters of National and State Parks and wildlife refuges and waters of exceptional recreational or ecological significance, water quality shall be maintained and protected.

The federal anti-degradation policy serves as a catch-all water quality standard to be applied where other water quality standards are not specific enough for a particular waterbody or where other water quality standards do not address a particular pollutant.

National Wild and Scenic Rivers Act

The National Wild and Scenic Rivers System was created by Congress in 1968 (Public Law 90-542; 16 U.S.C. 1271 et seq.) to preserve certain rivers with outstanding natural, cultural, and recreational values in a free-flowing condition for the enjoyment of present and future generations. The Act is notable for safeguarding the special character of these rivers, while also recognizing the potential for their appropriate use and development. It encourages river management that crosses political boundaries and promotes public participation in developing goals for river protection. Each river is administered by either a federal or state agency. Regardless of classification, each river in the National System is administered with the goal of protecting and enhancing the values that caused it to be designated.

The Eel River was designated a Wild and Scenic River on January 19, 1981 from the mouth of the river to 100 yards below Van Ardsdale Dam. The primary agencies managing the river under the

Wild and Scenic Rivers act include the California Resources Agency, Bureau of Land Management, Six Rivers National Forest, Mendocino National Forest, and Round Valley Reservation.

STATE AGENCIES

California Department of Fish and Game

The Department of Fish and Game (DFG) is responsible for conserving, protecting, and managing California's fish, wildlife, and native plant resources. To meet this responsibility, the Fish and Game Code (Section 1602) requires an entity to notify DFG of any proposed activity that may substantially modify a river, stream, or lake. The California Department of Fish and Game requires a Stream Alteration Agreement (SAA; 1603 Permit) for projects that will divert or obstruct the natural flow of water, change the bed, channel or bank of any stream, or use any material from a streambed. The SAA is a contract between the applicant and the DFG stating what can be done in the riparian zone and stream course. The department is interested in any work undertaken in or near a river, stream, or lake that flows at least intermittently through a bed or channel. This permit is required for any work that occurs in, on, over or under a waterway, from the bed of a stream to the top of the bank, any work that will divert or obstruct the natural flow of water, change the bed, channel, or bank of any stream, or use any material from the streambed. This permit is also required when removing exotic vegetation from a riparian area.

If DFG determines that the activity may substantially adversely affect fish and wildlife resources, a Lake or Streambed Alteration Agreement will be prepared. The Agreement includes reasonable conditions necessary to protect those resources and must comply with the California Environmental Quality Act (CEQA). The entity may proceed with the activity in accordance with the final Agreement.

North Coast Regional Water Quality Control Board

With the passage of the Porter-Cologne Water Quality Control Act by the State of California in 1969, the State Water Resources Control Board (SWRCB) and the nine Regional Boards became the principal State agencies with responsibility for the coordination and control of water quality. Per the Water Code, the SWRCB is generally responsible for setting statewide water quality policy and is solely responsible for the allocation or determination of surface water rights. One of the most important SWRCB functions is preparing and periodically updating Basin Plans, which are water quality control plans. Regional Boards regulate all pollutant or nuisance discharges that may affect either surface water or groundwater.

Humboldt County is located within the jurisdiction of North Coast Regional Water Quality Control Board, Region 1. The North Coast RWQCB primarily administers water pollution control of waste discharges to lands that might impact surface water and groundwater, as well as direct point source and diffuse or non-point source discharges. Although the Regional Board has many separate programs to help administer, monitor, and enforce its water quality protection authority, the primary programs include: 1) the NPDES Program, 2) the TMDL Program, 3) the Conditional Waiver Program for Agriculture, and 4) the Watershed Management Initiative. In addition to these, the

Regional Board often is involved in the review and issuance of Section 401 water quality certifications for Section 404 (wetland dredge & fill) permit requests. The permits needed from the Regional Water Quality Control Board office are as follows:

- **National Pollution Discharge Elimination System Permit** – This permit is required when proposing to, or discharging of waste into any surface water of the state. For discharges to surface waters, these requirements become a federal National Pollution Discharge Elimination System (NPDES) Permit from the Regional Board in the project area.
- **Federal Clean Water Act Section 401 Water Quality Certification** – This certificate is required for every federal permit or license for any activity, which may result in a discharge into any waters in the United States. Activities include flood control channelization, channel clearing, and placement of fill. Federal CWA Section 401 requires that every applicant for a U.S. Army Corps of Engineers CWA Section 401 permit or Rivers and Harbors Act Section 10 permit must request state certification from the Regional Board that the proposed activity will not violate State and Federal water quality standards. The Regional Board reviews the request for certification and may waive certification, or may recommend either certification or denial of certification to the State Board Executive Director.

Applicable Regulatory Standards

Total Maximum Daily Loads

Section 303(d) of the federal Clean Water Act requires states to develop TMDLs for impaired waterbodies. A TMDL is a written plan that describes how an impaired water body will meet water quality standards. It contains:

- A measureable feature to describe attainment of the water quality standard(s).
- A description of required actions to remove the impairment.
- An allocation of responsibility among dischargers to act in the form of action or water quality conditions for which each discharger is responsible.

TMDLs in California are developed either by RWQCBs or by USEPA. TMDLs developed by RWQCBs are designed as Basin Plan amendments and include implementation provisions. TMDLs developed by USEPA typically contain the total load and load allocations required by Section 303(d), but do not contain comprehensive implementation provisions. TMDLs are currently required for all waters and pollutants on the 303(d) list.

The Lower Eel River Total Maximum Daily Loads for sediment and temperature have been established, under Section 303(d) of the Clean Water Act, because the State of California has determined that the water quality standards are not met due to excessive sediment and temperature. In accordance with Section 303(d), the State of California periodically identifies "those waters within its boundaries for which the effluent limitations ... are not stringent enough to implement any water quality standard applicable to such waters." In 1992, EPA added the Lower Eel River to California's 303(d) impaired waters list due to elevated sedimentation/ siltation and temperature, as part of listing the entire Eel River basin. The North Coast RWQCB has continued to identify the Lower

Eel River as impaired in subsequent listing cycles, the latest in 2006. The primary purpose of the Total Maximum Daily Loads for the Lower Eel River is to assure that beneficial uses of fresh water habitat (such as salmonid habitat) are protected from elevated levels of sediment and temperature. The TMDLs set the maximum levels of pollutants that the water body can receive without exceeding water quality standards for the Lower Eel River basin.

Water Quality Control Plan

The North Coast RWQCB is the primary agency responsible for protecting water quality in natural waters ("waters of the State") within the project area. The North Coast RWQCB's Water Quality Control Plan for the North Coast Region ("Basin Plan") (NCRWQCB 2007) identifies beneficial uses of surface waters, establishes numeric and narrative objectives for protection of beneficial uses, and sets forth policies to guide the implementation of programs to attain certain objectives. The plan is concerned with all factors and activities, which might affect water quality. It emphasizes, however, actions to be taken by the State Water Board and the North Coast RWQCB since they have primary responsibility for maintenance of water quality in the North Coast Region. Existing beneficial uses for surface water and groundwater in the project area are summarized in Table 3.1-6.

A Stormwater Pollution Prevention Plan (SWPPP) is required by the North Coast RWQCB. The SWPPP is required since construction excavation and grading will create ground-clearing disturbance of greater than an acre. The SWPPP will identify methods to prevent soil erosion and pollution of storm water from construction activities. The SWPPP document must be kept on site at all times and made available for review when requested by inspectors or agency personnel. Failure to have a copy on site is a violation of the California State Water Resources Control Board General Permit. Furthermore, failure to comply with the provisions of the General Permit can result in civil penalties and/or criminal charges.

Applicable Water Quality Objectives for Surface Water and Estuaries

Although the Salt River Ecosystem Restoration Project would not intentionally discharge pollutants to Waters of the State as a part of its purpose, there would be incidental discharges as a part of construction or operation, and there may be onsite conditions created that could result in the violation of some water quality objectives. It is not known at this time whether the North Coast RWQCB would choose to regulate all or part of the Salt River Ecosystem Restoration Project activities under Waste Discharge Requirements, however, the following water quality objectives would generally apply:

Color

Waters shall be free of coloration that causes nuisance or adversely affects beneficial uses.

Table 3.1-6 Designated Beneficial Uses of the Eel River Ferndale Hydrologic Subarea, Estuary and Groundwater as Defined By the North Coast Regional Water Quality Control Board

Statewide Standard Basin Plan Beneficial Use Designations	Eel River Ferndale Hydrologic Subarea	Estuaries	Groundwater
Municipal and Domestic Supply	Existing	Potential	Existing
Agricultural Supply	Existing	Potential	Existing
Industrial Service Supply	Existing	Potential	Existing
Industrial Process Supply	Potential	Potential	Potential
Groundwater Recharge	Existing		
Freshwater Replenishment	Existing	Potential	
Navigation	Existing	Existing	
Hydropower Generation	Existing	Potential	
Water Contact Recreation	Existing	Existing	
Non-contact Water Recreation	Existing	Existing	
Commercial and Sport Fishing	Existing	Potential	
Warm Freshwater Habitat		Potential	
Cold Freshwater Habitat	Existing	Existing	
Preservation of Areas of Special Biological Significance			
Inland Saline Water Habitat			
Wildlife Habitat	Existing	Existing	
Rare, Threatened or Endangered Species	Existing	Potential	
Marine Habitat	Potential	Existing	
Migration of Aquatic Organisms	Existing	Existing	
Spawning, Reproduction, and/or Early Development	Existing	Existing	
Shellfish Harvesting	Existing	Existing	
Estuarine Habitat	Existing	Existing	
Aquaculture	Potential	Potential	Potential
Native American Culture	Existing	Potential	Existing
Flood Peak Attenuation/Flood Water Storage			
Wetland Habitat			
Water Quality Enhancement			
Subsistence Fishing			

Source: North Coast Water Quality Control Plan * Includes both cold water (salmon, steelhead) and warm water (striped bass, sturgeon, and shad) species.
** Includes warm water species only

Tastes and Odors

Waters shall not contain taste- or odor-producing substances in concentrations that impart undesirable tastes or odors to fish flesh or other edible products of aquatic origin, or that cause nuisance or adversely affect beneficial uses. Numeric water quality objectives with regards to taste and odor thresholds have been developed by the State Department of Health Services and the U.S. EPA. These numeric objectives, as well as those available in the technical literature, are incorporated into waste discharge requirements and cleanup and abatement orders as appropriate.

Floating Material

Waters shall not contain floating material, including solids, liquids, foams, and scum, in concentrations that cause nuisance or adversely affect beneficial uses.

Suspended Material

Waters shall not contain suspended material in concentrations that cause nuisance or adversely affect beneficial uses.

Settleable Material

Waters shall not contain substances in concentrations that result in deposition of material that causes nuisance or adversely affect beneficial uses.

Oil and Grease

Waters shall not contain oils, greases, waxes, or other materials in concentrations that result in a visible film or coating on the surface of the water or on objects in the water, that cause nuisance, or that otherwise adversely affect beneficial uses.

Biostimulatory Substances

Waters shall not contain biostimulatory substances in concentrations that promote aquatic growths to the extent that such growths cause nuisance or adversely affect beneficial uses.

Sediment

The suspended sediment load and suspended sediment discharge rate of surface waters shall not be altered in such a manner as to cause nuisance or adversely affect beneficial uses.

Turbidity

Turbidity shall not be increased more than 20 percent above naturally occurring background levels. Allowable zones of dilution within which higher percentages can be tolerated may be defined for specific discharges upon the issuance of discharge permits or waiver thereof.

Conductance

The conductance shall conform to a 90 percent upper limit of 375 micromhos at 77F and a 50 percent upper limit of 225 micromhos at 77F[9].

Total Dissolved Solids (TDS)

The TDS shall conform to a 90 percent upper limit of 275 mg/L and a 50 percent upper limit of 140 mg/L.

pH

The pH shall fall between 6.5 and 8.5. Changes in normal ambient pH levels shall not exceed 0.2 units in waters with designated marine (MAR) or saline (SAL) beneficial uses nor 0.5 units within the range specified above in fresh waters with designated COLD or WARM beneficial uses.

Dissolved Oxygen

Dissolved oxygen concentrations shall conform to a 90 percent lower limit of 7.5 mg/L and a 50 percent lower limit of 10.0 mg/L.

Bacteria

The bacteriological quality of waters of the North Coast Region shall not be degraded beyond natural background levels. In no case shall coliform concentrations in waters of the North Coast Region exceed the following:

- In waters designated for contact recreation (REC-1), the median fecal coliform concentration based on a minimum of not less than five samples for any 30-day period shall not exceed 50/100 ml, nor shall more than ten percent of total samples during any 30-day period exceed 400/100 ml (State Department of Health Services).
- At all areas where shellfish may be harvested for human consumption (SHELL), the fecal coliform concentration throughout the water column shall not exceed 43/100 ml for a 5-tube decimal dilution test or 49/100 ml when a three-tube decimal dilution test is used (National Shellfish Sanitation Program, Manual of Operation).

Temperature

Temperature objectives for COLD interstate waters, WARM interstate waters, and Enclosed Bays and Estuaries are as specified in the "Water Quality Control Plan for Control of Temperature in the

[9] For conductance, TDS and dissolved oxygen, The 50 percent upper and lower limits represent the 50 percentile values of the monthly means for a calendar year. 50 percent or more of the monthly means must be less than or equal to an upper limit and greater than or equal to a lower limit. The 90 percent upper and lower limits represent the 90 percentile values for a calendar year. 90 percent or more of the values must be less thanor equal to an upper limit and greater than or equal to a lower limit.

Coastal and Interstate Waters and Enclosed Bays of California "including any revisions thereto. In addition, the following temperature objectives apply to surface waters:

> *The natural receiving water temperature of intrastate waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Water Board that such alteration in temperature does not adversely affect beneficial uses.*

At no time or place shall the temperature of any COLD water be increased by more than 5°F above natural receiving water temperature. At no time or place shall the temperature of WARM intrastate waters be increased more than 5°F above natural receiving water temperature.

Toxicity

All waters shall be maintained free of toxic substances in concentrations that are toxic to, or that produce detrimental physiological responses in human, plant, animal, or aquatic life. Compliance with this objective will be determined by use of indicator organisms, analyses of species diversity, population density, growth anomalies, bioassays of appropriate duration, or other appropriate methods as specified by the Regional Water Board.

The survival of aquatic life in surface waters subjected to a waste discharge, or other controllable water quality factors, shall not be less than that for the same water body in areas unaffected by the waste discharge, or when necessary for other control water that is consistent with the requirements for "experimental water" as described in "*Standard Methods for the Examination of Water and Wastewater*", 18th Edition (1992). As a minimum, compliance with this objective as stated in the previous sentence shall be evaluated with a 96-hour bioassay. In addition, effluent limits based upon acute bioassays of effluents will be prescribed. Where appropriate, additional numerical receiving water objectives for specific toxicants will be established as sufficient data become available, and source control of toxic substances will be encouraged.

Pesticides

No individual pesticide or combination of pesticides shall be present in concentrations that adversely affect beneficial uses. There shall be no bioaccumulation of pesticide concentrations found in bottom sediments or aquatic life. Waters designated for use as domestic or municipal supply shall not contain concentrations of pesticides in excess of the limiting concentrations set forth in California Code of Regulations, Title 22, Division 4, Chapter 15, Article 4, Section 64444.5 (Table 3.1-6), and listed in Table 3-2 of the Basin Plan.

Chemical Constituents

Waters designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the limits specified in California Code of Regulations, Title 22, Chapter 15, Division 4, Article 4, Section 64435 and Section 64444.5, and listed in Table 3-2 of this Plan. Waters designated for use as agricultural supply (AGR) shall not contain concentrations of chemical constituents in amounts, which adversely affect such beneficial use.

Radioactivity

Radionuclides shall not be present in concentrations which are deleterious to human, plant, animal or aquatic life nor which result in the accumulation of radionuclides in the food web to an extent which presents a hazard to human, plant, animal, or indigenous aquatic life. Waters designated for use as domestic or municipal supply (MUN) shall not contain concentrations of radionuclides in excess of the limits specified in California Code of Regulations, Title 22, Division 4, Chapter 15, Article 4, Section 64443 (see Table 3.1-7).

Table 3.1-7 MCL Radioactivity

Constituent	Maximum Contaminant Level, pCi/l
Combined Radium-226 and Radium-228	5
Gross Alpha particle activity (including Radium-226 but excluding Radon and Uranium)	15
Tritium	20,000
Strontium-90	8
Gross Beta particle activity	50
Uranium	20

Applicable Water Quality Objectives for Groundwater

Tastes and Odors

Groundwaters shall not contain taste- or odor-producing substances in concentrations that cause nuisance or adversely affect beneficial uses. Numeric water quality objectives have been developed by the State Department of Health Services and U.S. EPA. These numeric objectives, as well as those available in the technical literature, are incorporated into waste discharge requirements and cleanup and abatement orders as appropriate.

Bacteria

In groundwaters used for domestic or municipal supply (MUN), the median of the most probable number of coliform organisms over any 7-day period shall be less than 1.1 MPN/100 ml, less than 1 colony/100 ml, or absent (State Department of Health Services).

Radioactivity

Groundwaters used for domestic or municipal supply (MUN) shall not contain concentrations of radionuclides in excess of the limits specified in California Code of Regulations, Title 22, Division 4, Chapter 15, Article 5, Section 64443, Table 4.

Chemical Constituents

Groundwaters used for domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the limits specified in California Code of Regulations, Title 22,

Division 4,Chapter 15, Article 4, Section 64435 Tables 2 and 3, and Section 64444.5 (Table 5). Groundwaters used for agricultural supply (AGR) shall not contain concentrations of chemical constituents in amounts that adversely affect such beneficial use.

California Coastal Commission

The California Coastal Act of 1976 requires any person proposing to develop in the coastal zone to obtain a Coastal Development Permit. The coastal zone extends from the State's three-mile seaward limit to an average of approximately 1,000 yards inland from the mean high tide of the sea. In coastal estuaries, watersheds, wildlife habitats, and recreational areas, the coastal zone may extend as much as five miles inland. In developed urban areas, the coastal zone may extend inland less than 1,000 yards. As defined by the Coastal Act, "development" of land above, in or beneath water includes: the placement or erection of any solid material or structure; discharge or disposal of any dredge material or a gaseous, liquid, solid, or thermal waste; grading, removing, dredging, mining or extraction of any material; change in the density or intensity of use of land (including land diversions); construction, reconstruction, demolition, or alteration of the size of any structure; and the removal or harvesting of major vegetation other than for agricultural operations, kelp harvesting, and timber operations which are in accordance with a Timber Harvest Plan issued by the California Department of Forestry and Fire Protection.

Coastal Development Permit applications for projects in or near coastal streams can often be obtained from a local Planning Department. Coastal Development Permits issued by local governments, for projects within 100 feet of a coastal stream, can be appealed to the Coastal Commission. Projects proposed in or adjacent to existing or historic coastal wetland area require Coastal Development Permits issued by the Coastal Commission.

Section 30233 of the California Coastal Act includes requirements for recognizing a project as for "restoration purposes". Under this policy, the project must establish or re-establish former habitat conditions, re-establish landscape-integrated ecological processes, improve habitat value and diversity, and be self-sustaining. Section 30236 of the Coastal Act provides for review of flood control projects. Under this policy it must be demonstrated that no other measure for protecting existing structures in the floodplain is feasible, and such protection is necessary for public safety or to protect existing development. The project must also incorporate the "best mitigation measures feasible".

LOCAL AGENCIES

Local Coastal Plan

The Salt River Ecosystem Restoration Project falls within the jurisdiction of the Eel River Area Plan (ERAP) of the Humboldt County Local Coastal Program. The ERAP, adopted in 1982, presents indicated uses and standards adopted by the County of Humboldt, and certified by the California Coastal Commission that are in conformance and satisfy the policies and requirements for coastal land use contained in the California Coastal Act of 1976 (Public Resource, Code 30000 et seq.) and

other related legislation. Policies and standards within the ERAP that are relevant to the Salt River Enhancement Project water resources management are as follows:

3.41 G. OTHER COASTAL STREAMS

*** 30236. Channelizations, dams, or other substantial alterations of rivers and streams shall incorporate the best mitigation measures feasible, and be limited to (1) necessary water supply projects, (2) flood control projects where no other method for protecting existing structures in the flood plain is feasible and where such protection is necessary for public safety or to protect existing development, or (3) developments where the primary function is the improvement of fish and wildlife habitat.

1. Timber management and timber harvesting activities regulated by the California Department of Forestry and the Board of Forestry, and forest improvement activities under jurisdiction of the Department of Forestry shall be exempt from requirements of this section (3.41G).

2. Within the Eel River Planning Area the following coastal streams (as mapped on USGS 7.5' Quads) have been identified:

Centerville Slough	Morgan Slough
Barber Creek	Russ Creek
Cutoff Slough	Quill Slough
Coffee Creek	Williams Creek
Hawk Slough	Seven Mile Slough
Perry Creek	Unnamed stream north of Loleta
Hogpen Slough	Smith Slough
Reas Creek	Intermittent streams on Table Bluff
Salt River	

3. New development within stream channels shall be permitted when there is no less environmentally damaging feasible alternative, where the best feasible mitigation measures have been provided to minimize adverse environmental effects, and shall be limited to:

a. Wetlands, fishery, and wildlife enhancement and restoration projects.

b. Road crossings, consistent with the provisions of Section 3.41G6e.

c. Maintenance dredging for flood control and drainage purposes consistent with the Transitional Agricultural Lands Policies and within areas planned for agriculture.

d. Maintenance of levees, roads, fences, dikes, drainage channels, flood gates and tide-gates including replacement.

e. Development consistent with 3.41G 6.

f. New fences, so long as it would not impede the natural drainage or would adversely affect the stream environment or wildlife. (Typically, 2-3 strands of barbed wire with fence posts set outside of the stream channel would be consistent with this policy.)

4. The riparian corridor along the Salt River shall be limited to the bankfull channel.

Humboldt County General Plan Update

Many aspects of land development and water resources management fall under jurisdiction of the Humboldt County General Plan (Plan). A Planning Commission hearing draft of the Humboldt County General Plan Update (GPU) was issued in November 2008. The Water Resources Element of the Plan Update addresses water planning issues including river and stream water quality, stormwater runoff, groundwater management, water needs of fish and wildlife, water consumption, conservation and re-use methods, and state and federal regulations. Specific water resource policies (items with "WR-P" precursor) and Standards ("WR-S" precursor) relevant to the Salt River Ecosystem Restoration Project are as follows.

Water Resources and Land Use

WR-P1. Sustainable Management. Ensure that land use decisions conserve, enhance, and manage water resources on a sustainable basis to assure sufficient clean water for beneficial uses and future generations.

WR-P2. Protection for Existing Surface and Groundwater Uses. Impacts on existing beneficial water uses shall be considered and mitigated during discretionary review of land use permits that are not served by municipal water supplies. Compliance measures for un-permitted development not served by municipal water supplies shall include mitigations for surface or groundwater resource impacts.

WR-P5. Critical Watershed Areas. The Board of Supervisors shall designate all or portions of watersheds as "Critical Watersheds" if cumulative impacts from land uses within the area have the potential to create significant environmental impacts to threatened or endangered species, including Coho salmon or steelhead habitat. Water resources within Critical Watersheds shall be protected by the application of specific standards for such areas to avoid the take of threatened or endangered species.

WR-P8. Erosion and Sediment Discharge. Ministerial and discretionary projects requiring a grading permit shall comply with performance standards adopted by ordinance and/or conditioned to minimize erosion and discharge of sediments into surface runoff, drainage systems, and water bodies consistent with best management practices, adopted Total Maximum Daily Loads (TMDLs), and non-point source regulatory standards.

WR-P9. County Facilities Management. Design, construct, and maintain County buildings, roads, bridges, drainages, and other facilities to minimize erosion and the volume of sediment in stormwater flows.

WR-P10. Project Design. Development should be designed to compliment and not detract from the aesthetics and function of rivers, streams, ponds, wetlands, and their setback areas.

WR-P12. Groundwater Quality Protection. Commercial and industrial discretionary uses shall be evaluated for their potential to contaminate groundwater resources, and mitigated as necessary.

WR-P13. Saltwater Intrusion. For discretionary projects involving municipal or large-scale agricultural groundwater withdrawals in proximity to coastal areas, ensure that groundwater will not be adversely affected by saltwater intrusion.

WR-S4. Protection of Groundwater Recharge Areas. Ministerial and discretionary development in Critical Water Supply or Watershed Areas where maintenance of groundwater recharge is determined to be necessary to maintain sustainable groundwater demands or surface water flows shall maintain or increase the site's pre-development absorption to recharge groundwater or be conditioned to reduce effects to water supplies to below levels of significance.

WR-S7. Total Maximum Daily Loads (TMDLs). Implementation. Discretionary development within watersheds containing impaired water bodies as defined under Section 303(d) of the federal Clean Water Act and governed by TMDL pollution prevention plans shall be conditioned to reduce or prevent further impairment consistent with applicable TMDLs.

WR-S8. Erosion and Sediment Discharge. Ministerial and discretionary projects shall conform to grading ordinance standards for erosion and sediment control.

WR-S10. Projects in Proximity to Wild and Scenic Rivers. Projects located within state designated wild, scenic, or recreational river basins shall be consistent with the guidelines in the State Wild and Scenic Rivers Act as amended.

Watershed Planning

WR-P17. Watershed Planning. The County's General Plan Update includes the following policies and guidelines related to watershed planning: use watersheds as the geographic planning framework for water resource planning and coordination with other regional, state, and federal planning, implementation, and funding efforts; maintain relevant land use data on watershed basis to support watershed based management and decision-making processes; encourage and support continued research, investigation, and analysis of the County's water resources by federal and state water resource agencies; and encourage compilation of data on a watershed basis.

WR-P18. Watershed and Community Based Efforts. Support the efforts of local community watershed groups to protect water resources and work with local groups to ensure decisions and programs take into account local priorities and needs.

Stormwater Drainage

WR-P30. Natural Stormwater Drainage Courses. The Humboldt County Public Works Department is responsible for storm drainage within the unincorporated areas of the county and is responsible for the maintenance of flood control levees along the Eel River at Sandy Prairie. Of the unincorporated area around Eureka, the majority of the county does not have improved stormwater conveyance systems. Outside of the county's urban areas, stormwater follows a natural drainage pattern before either infiltrating or entering a waterway. The County also maintains a significant number (estimated in the thousands) of culverts under roadways, which are located throughout the many drainage swales, creeks, and streams.

Natural drainage courses, including ephemeral streams, shall be retained and protected from development impacts which would alter the natural drainage courses, increase erosion or sedimentation, or have a significant adverse effect on flow rates or water quality. Natural vegetation within riparian and wetland protection zones shall be maintained to preserve natural drainage characteristics consistent with the Biological Resource policies. Storm water discharges from outfalls, culverts, gutters, and other drainage control facilities that discharge into natural drainage courses shall be dissipated so that they make no contribution to additional erosion and, where feasible, are filtered and cleaned of pollutants.

WR-P31. Downstream Peak Flows. Peak stormwater discharge shall not exceed the capacity limits of off-site drainage systems or cause downstream erosion, flooding, habitat destruction, or impacts to wetlands and riparian areas.

WR-P32. New Drainage Facilities. Where it is necessary to develop additional drainage facilities, they shall be designed to be as natural in appearance and function as is feasible. All drainage facilities shall be designed to maintain maximum natural habitat of streams and their streamside management areas and buffers. Detention/retention facilities shall be managed in such a manner as to avoid reducing streamflows during critical low-flow periods.

WR-P33. Restoration Projects. The County shall encourage restoration projects aimed at reducing erosion and improving existing habitat values in Streamside Management Areas and wetlands.

WR-P36. Erosion and Sediment Control Measures. The following erosion and sediment control measures shall be incorporated into development design and improvements:

A. Minimize soil exposure during the rainy season by proper timing of grading and construction;

B. Retain natural vegetation where feasible;

C. Vegetate and mulch denuded areas to protect them from winter rains;

D. Divert runoff from steep denuded slopes and critical areas with barriers or ditches;

E. Minimize length and steepness of slopes by benching, terracing, or constructing diversion structures;

F. Trap sediment-laden runoff in basins to allow soil particles to settle out before flows are released to receiving waters;

G. Inspect sites frequently to ensure control measures are working properly and correct problems as needed; and

H. Allow for the construction of public roads, trails, and utilities, when properly mitigated.

WR-P37. Storm Drainage Design Standards. Drainage design standards for new development shall be adopted by ordinance. The design standards shall ensure that storms of specified intensity, frequency, and duration can be accommodated by engineered drainage systems and natural drainage courses.

WR-P38. Storm Drainage Impact Reduction. Develop storm drainage development guidelines with incentives to encourage low-impact development standards to reduce the quantity and increase the quality of stormwater runoff from new developments.

WR-P39. Reduce Toxic Runoff. Minimize chemical pollutants in stormwater runoff such as pesticides, household hazardous wastes, and road oil by supporting education programs, household hazardous waste and used oil collection, street and parking lot cleaning and maintenance, use of bio-swales and other urban stormwater best management practices described in the California Stormwater Best Management Practices Handbooks or their equivalent.

WR-P40. Fish Passage Designs. Work with federal and state agencies to retrofit existing drainage and flood control structures and design new structures to facilitate fish and other wildlife passage in partnership with federal and state agencies.

WR-S14. Storm Water Management. All commercial, industrial, multi-family, quasi-public, and public parking facilities shall, whenever possible, provide stormwater treatment for parking lot runoff using bio-retention areas, filter strips, and/or other practices that be integrated into required landscaping areas and traffic islands. In all other cases, oil/water separators shall be required. A maintenance plan for oil/water separators shall be required.

The Conservation Element of the County Plan Update guides the conservation, development, and utilization of natural resources (water, forests, soils, rivers, mineral deposits, and others), while the Open Space Element guides the comprehensive and long-range preservation and conservation of open-space lands. Together, these elements present a framework of goals and policies for use and protection of all the natural resource and open space assets of the county. Specific Conservation and Open Space Element Standards ("CO-S" precursor) relevant to the Salt River Enhancement Project are as follows.

CO-S1. Conservation and Open Space Element Consistency Determination. New development requiring a building permit or discretionary review for the areas noted in subsections A and B below shall not be approved unless consistent with Conservation and Open Space policies and standards:

A. Located in the following zoning designations:

1) Agriculture Exclusive (AE)
2) Timber Production Zone (TPZ)
3) Commercial Timber (TC)
4) Natural Resources (NR)
5) Public Recreation (PR)
6) Archaeological Resource Combining Zone (A)
7) Alquist-Priolo Combining Zone (G)
8) Streams and Riparian Corridors Protection Combining Zone (R)

B. Located in the following areas:

1) FEMA mapped flood hazard zones
2) An identified cultural resource site
3) Areas mapped as special biological areas
4) Streamside Management Areas and Other Wet Areas
5) Areas mapped of geologic instability
6) Areas mapped as Very High Fire Severity hazard
7) Critical Water Supply
8) Areas mapped as Critical Watersheds

Biological Resources Element of GPU

The Biological Resources section of the GPU is a subsection of the Conservation and Open Space Element. An important goal of this section is the establishment of Streamside Management Areas to protect fish and wildlife and minimize erosion and increased runoff. Relevant Biological Resource Standards ("BR" precursor) to the project include the following.

BR-S6. Development within Stream Channels. Development within stream channels may be approved where consistent with Policy BR-P4 - Development within Stream Channels, and is limited to the following projects.

A. Fishery, wildlife, and aquaculture enhancement and restoration projects.

B. Road crossings consistent with Standard BR-S9 - Erosion Control of this section.

C. Flood control and drainage channels, levees, dikes, and floodgates.

D. Mineral extraction consistent with other County regulations.

E. Small-scale hydroelectric power plants in compliance with applicable County regulations and those of other agencies.

F. Wells and spring boxes, and agricultural diversions.

G. New fencing, so long as it would not impede the natural drainage or would not adversely effect the stream environment or wildlife.

H. Bank protection, provided it is the least environmentally damaging alternative.

I. Other essential projects, including municipal groundwater pumping stations, provided they are the least environmentally damaging alternative, or necessary for the protection of the public's health and safety.

BR-S9. Erosion Control. Erosion control measures for development within Streamside Management Areas shall include the following:

A. During construction, land clearing and vegetation removal will be minimized, following the provisions of the Water Resources Element and the standards listed here.

B. Construction sites will be planted with native or naturalized vegetation and mulched with natural or chemical stabilizers to aid in erosion control and ensure revegetation.

C. Long slopes will be minimized to increase infiltration and reduce water velocities down cut slopes by such techniques as soil roughing, serrated cuts, selective grading, shaping, benching, and berm construction.

D. Concentrated runoff will be controlled by the construction and continued maintenance of culverts, conduits, non-erodible channels, diversion dikes, interceptor ditches, slope drains, or appropriate mechanisms. Concentrated runoff will be carried to the nearest drainage course. Energy dissipaters may be installed to prevent erosion at the point of discharge, where discharge is to natural ground or channels.

E. Runoff shall be controlled to prevent erosion by on-site or off- site methods. On-site methods include, but are not limited to, the use of infiltration basins, percolation pits, or trenches. On-site methods are not suitable where high groundwater or slope stability problems would inhibit or be aggravated by on-site retention or where retention will provide no benefits for groundwater recharge or erosion control. Off-site methods include detention or dispersal of runoff over non-erodible vegetated surfaces where it would not contribute to downstream erosion or flooding.

F. Disposal of silt, organic, and earthen material from sediment basins and excess material from construction will be disposed of out of the Streamside Management Area to comply with Department of Fish and Game and the North Coast Regional Water Quality Control Board requirements. Winter operations (generally October 15 thru April 15) shall employ the following special considerations:

G. Slopes will be temporarily stabilized by stage seeding and/or planting of fast germinating seeds, such as barley or rye grass, and mulched with protective coverings such as natural or chemical stabilizations.

H. Runoff from the site will be temporarily detained or filtered by berms, vegetated filter strips, and/or catch basins to prevent the escape of sediment from the site. Drainage controls are to be maintained.

Safety Element of County GPU

The purpose of the Safety Element is to reduce the risk of death, injuries, property damage, and economic and social dislocation resulting from earthquake, fire, flood, and other hazards. Relevant Safety Element general policies ("S-P" precursor) and standards ("S-S" precursor) to the project include the following.

S-P1. Reduce the Potential for Loss. Plan land uses and regulate new development to reduce the potential for loss of life, injury, property damage, and economic and social dislocations resulting from natural and manmade hazards, including but not limited to, steep slopes, unstable soils areas, active earthquake faults, wildland fire risk areas, airport influence areas, flood plains, and tsunami run-up areas.

S-P2. Coastal Zone. Development within the coastal zone shall minimize risks to life and property in areas of high geologic, flood, and fire hazard; assure stability and structural integrity; and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding areas or in any way require the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs.

S-P10. Federal Flood Insurance Program. The County shall participate in the Federal Flood Insurance Program to regulate land uses in flood hazard areas in order to minimize loss of life and property and public flood-related expense.

S-P11. Flood Plains. Agricultural lands that are in mapped floodplains shall be retained for use in agriculture.

S-S4. Tsunami Emergency Response Plan. The Tsunami Emergency Response Plan shall guide interagency response efforts.

Flood Management

S-S5. Flood Regulations. Regulatory standards for flood mitigation shall be based on Flood Insurance Maps and Regulations (Humboldt County Ordinance 1541).

S-S6. Flood Plains. No new essential facilities that would be rendered inoperable by flooding shall be permitted to locate within the 100-year flood plain.

S-S7. Tsunamis. New development below the level of the 100-year tsunami run-up elevation shall be limited to public access, boating, public recreation facilities, agriculture, wildlife management, habitat restoration, and ocean intakes, outfalls, pipelines, and dredge spoils disposal.

S-S8. Flooding and Drainage Management Activities. Flooding and drainage management shall be principally permitted in all zones when consistent with applicable state, federal, and local regulations.

Humboldt County Streamside Management Area Ordinance (SMAO)

The purpose of the SMAO is to provide minimum standards pertaining to the use and development of land located within Streamside Management Areas (SMAs) and other wet areas such as: natural ponds, springs, vernal pools, marshes, and wet meadows (exhibiting standing water year-long or riparian vegetation). The purpose of establishing the standards are to:

- Create a Streamside Management Area ordinance to implement the Open Space Element of the General Plan within the zoning regulations of the County of Humboldt pursuant to the mandates of state law (Government Code Section 65910).
- Implement portions of the County's General Plan policies and standards pertaining to open space, conservation, housing, water resources, biological resources, and public facilities.

This SMAO is applicable to all development within or affecting SMAs or other wet areas within the unincorporated non-coastal zone areas of the County.

Local Irrigation, Water or Flood Control District

Irrigation, Water or Flood Control Districts are empowered to protect water resources within their jurisdiction that may require a permit for certain projects. Reclamation District 768 is the agency responsible for flood protection and drainage in Humboldt County.

City of Ferndale

Parts of the Salt River Enhancement Project fall within the jurisdiction of the City of Ferndale. The following local ordinances and permit requirements apply to the water resources and construction elements of the Salt River project.

Drainage Master Plan Update

The 2004 Drainage Master Plan Update is an update to the 1990 Drainage Master Plan (Spencer Engineering, 2004). It addresses the current state of stormwater drainage in the City of Ferndale by identifying changes and improvements in stormwater drainage that have occurred since 1990, identifying current and future drainage problems, establishing a list of recommended drainage improvement projects, addressing drainage revenues and the drainage fee rate structure, and recommending changes to the City's drainage ordinance to better address the City's current needs. The document also provides technical information and methods necessary for the hydraulic analysis and design of local drainage projects.

Ferndale and the surrounding areas have historically had problems with storm water and drainage. Storm runoff associated with heavy winter rains has caused chronic flooding and sedimentation problems in the relatively flat terrain in the City, and in the rural areas north of the City near the Salt River. The City of Ferndale has recognized that continued growth can only take place in or adjacent

to those portions of the city experiencing chronic flooding, and that management of storm water runoff is in the public interest. The Drainage Master Plan also recognizes the limits imposed by both the Salt River and the Eel River estuary, in that these areas greatly influence drainage within the City.

There are three storm drainage watersheds that contribute storm water through and adjacent to the City of Ferndale. These are:

- Francis Creek Watershed
- East Side Drainage Watershed
- West Side Drainage Watershed

And they in turn contribute additionally to the Salt River Watershed, and then to the Eel River Watershed.

The objective of the Drainage Master Plan Update is to bring Drainage Master Plan current by:

- identifying improvement projects that have occurred;
- updating and developing relevant maps;
- identifying existing and future drainage problems;
- establishing an updated project list with recommended project costs;
- updating the drainage ordinance No. 94-01.

The Ferndale Drainage Master Plan Update is a long-range planning tool that identifies deficiencies in the existing drainage system, provides a recommended course of action to reduce flood damage, supports the drainage fee ordinance, establishes a fee schedule for development, and provides guidance for the development of future drainage facilities.

Project recommendations presented in the Drainage Master Plan Update relevant to the Salt River Enhancement Project include several projects within the East Side Drainage, the West Side Drainage and Francis Creek watersheds, within the Salt River project footprint. The Drainage Master Plan also recognizes and recommends the dredging of the Salt River as a future drainage improvement need for the City.

City of Ferndale Floodplain Management Ordinance 08-02

The purpose of this ordinance is to promote the public health, safety, and general welfare, and to minimize public and private losses due to flood conditions in specific areas by legally enforceable regulations applied uniformly throughout the community to all publicly and privately owned land within flood prone, mudslide [i.e. mudflow] or flood related erosion areas. In order to accomplish its purposes, this ordinance includes regulations to:

- Restrict or prohibit uses which are dangerous to health, safety, and property due to water or erosion hazards, or which result in damaging increases in erosion or flood heights or velocities;

- Require that uses vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction;
- Control the alteration of natural floodplains, stream channels, and natural protective barriers, which help accommodate or channel floodwaters;
- Control filling, grading, dredging, and other development which may increase flood damage;
- Prevent or regulate the construction of flood barriers which will unnaturally divert floodwaters or which may increase flood hazards in other areas; and

This ordinance shall apply to all areas of special flood hazards within the jurisdiction of City of Ferndale. Basis for establishing the areas of Special Flood Hazard: The areas of special flood hazard identified by the Federal Emergency Management Agency in the "Flood Insurance Study (FIS) for City of Ferndale, FIRM Flood Insurance Rate Map" dated January 7, 1998, with accompanying Flood Insurance Rate Maps and Flood Boundary and Floodway Maps (FBFMs), dated January 7, 1998 and all subsequent amendments and/or revisions, are hereby adopted by reference and declared to be a part of this ordinance.

Development Application for Special Flood Hazard Areas

The Floodplain Management Ordinance establishes a development permit for any development within an area of special flood hazard, as defined in the Ordinance. The Ordinance places responsibility for the collection of information and the review and approval of development permits with the Floodplain Administrator (the City Engineer).

Grading Permits

The procedures currently used by the City to review and process grading permit applications are those enumerated under the applicable sections of the most current UBC, including but not limited to Chapter 33 and its Appendix. Similarly the need for additional accompanying submittals, documents or plans necessary to review and process the subject permit are either enumerated under the referenced UBC Sections or are requested by the City Engineer, and may be required before the application is deemed complete by the City.

All development projects in the City of Ferndale that require a permit are to be reviewed by the City Planner for conformance to the City's General Plan and Zoning Ordinance (and other applicable ordinances); and, unless exempt, also need to be reviewed for CEQA compliance.

Except as exempted, no person shall do any grading without first obtaining a grading permit from the Building Official. A separate permit shall be obtained for each site, and may cover both excavations and fills: 1). Engineered Grading: Grading in excess of 5,000 cy shall be performed in accordance with the approved grading plan prepared by a civil engineer; and 2) Regular Grading: Grading involving less than 5,000 cy, unless the Building Official determines that special conditions or unusual hazards exist, in which case grading shall conform to the requirements for engineered grading.

ASSISTANCE ORGANIZATIONS

Humboldt County Resource Conservation District (RCD)

Resource Conservation Districts (RCDs) are non-regulatory local entities, which give assistance to agricultural and other landowners. RCDs are units of government organized by residents under State law. Districts operate on the premise that local people know more about local problems than anyone else. Bridging agricultural issues with science, education and government, RCDs are an information network assisting with landowner resource issues to provide solutions. Districts are empowered to conduct soil and water resources research, make improvements on public lands, disseminate conservation information, assist private landowners, develop soil and water conservation plans, and establish standards of cropping tillage and range practices. RCDs often work in conjunction with NRCS to provide technical assistance on projects and specific resource problems.

USDA Natural Resources Conservation Service

The Natural Resources Conservation Service (NRCS), formerly the Soil Conservation Service, is an agency of the U.S. Department of Agriculture working with private landowners to conserve and protect soil, water, air, plants and animals. NRCS is non-regulatory and does not provide permits. NRCS helps land users and communities to approach conservation planning and implementation with an understanding of how natural resources relate to each other, and how land use activities affect natural resources. In cooperation with Resource Conservation Districts and other local, state and federal agencies, NRCS provides free technical information and assistance to landowners and land users upon request, to address management concerns for natural resources such as cropland and pastureland, rangeland, woodland, water resources, disturbed areas, and watersheds. NRCS also provides soil survey information. The intent of NRCS planning, whether on an individual farm or in a larger area such as a watershed, is all about helping individuals and organizations make better, informed decisions concerning resource use and the environment. The NRCS process already meets the minimum NEPA EIS requirements. NRCS can provide Conservation Planning, Technical and Financial Assistance, Resource Assessment, and Technology Development.

NRCS-RCD Relationship

The relationship between RCDs and the USDA NRCS has been long-standing. The duo formally ratified their relationship through a Memorandum of Understanding signed over fifty years ago and revised in 1994. NRCS and RCDs have a close working relationship within districts, with NRCS appointing a local District Conservationist to provide technical assistance to districts, as well as acting as a liaison between the district and federal programs. Local offices of the NRCS also frequently employ other specialists, such as soil conservationists and engineers, to provide technical assistance to the district board. RCDs are primarily responsible for providing leadership and locally determined policies within districts, with assistance provided by the state and federal government. The RCD-NRCS relationship reinforces the idea of "locally led conservation" with individual districts being responsible for exerting leadership to identify local resource needs, advocate for effective solutions and work with appropriate parties on implementation.

3.1.3 IMPACTS AND MITIGATION

SIGNIFICANCE CRITERIA

Significance Criteria for the relevant hydrology and geomorphology portions of the project are based upon the CEQA guidelines and professional judgment. Potentially significant impacts could occur if the project results in:

- Substantial modifications to existing hydrological conditions, including surface water inputs and outputs, drainage network, or channel alignment resulting in substantial erosion or siltation on or off-site;
- Substantial modifications to existing infiltration rates and interference with groundwater recharge that would deplete groundwater supplies or lower the local groundwater table level;
- Substantial alterations to existing drainage pattern of the project site or area that would increase surface runoff resulting in on-site or off-site flooding;
- Runoff that would exceed storm water drainage systems or act as source of polluted runoff;
- Structures or sediment reuse placed within a 100-yr flood hazard area that would impede or redirect flood flows;
- Exposure of people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of levee failure.

In the evaluation of project alternatives that follows, a potential impact to water quality was considered significant if the construction or foreseeable post-construction conditions would cause any of the following:

- Violation of any water quality standard indicated in the Regulatory Framework section, above, or any Waste Discharge Requirement or NPDES permit condition;
- Discharge of any toxic substances into the water in concentrations that are lethal to or that produce significant alterations in population or community ecology or receiving water biota;
- Direct or indirect degradation of the existing high quality of water in any waters of the State, in violation of the Anti-degradation Policy; or
- Any change of water quality that would adversely affect designated beneficial uses.

EVALUATION OF ALTERNATIVES

This section considers each of the four Salt River Ecosystem Restoration Project alternatives to determine whether any component of the alternative may result in significant impacts to hydrology, geomorphology, and water quality during or after project construction. If potential impacts are identified, mitigation measures are described that would reduce the impact, ideally to less than significant levels. In some cases, water quality impacts could potentially occur that would also involve impacts to fish or wildlife. In these cases, the water quality impact and mitigation will be

addressed herein, and reference is made to other appropriate sections (e.g., Section 3.4, Biological Resources: Aquatic Resources) for additional evaluation.

An important aspect of the Salt River Ecosystem Restoration Project is that it has been designed with the specific intent of creating an environmentally beneficial project that would have minimal adverse affects. Therefore many "mitigations" for potential water quality impacts have already been incorporated into the Salt River Ecosystem Restoration Project design. This evaluation considers any mitigation that is already a part of the design to be a part of the project being assessed unless the implementation of the measure may be optional or discretionary or warrant further elaboration.

Alternative 1 (Proposed Project): Modified Channel/Riverside Ranch Restoration/Upland Restoration

Impact 3.1.1-1: Long-term impacts on water quality associated with construction

Apart from reducing sediment loads, the project would not change the type and volume of constituents, delivered via the Salt River to the Eel River estuary. The project does propose the beneficial reuse of excavation material to recontour the floodplain in specific areas and for agronomic placement in upland areas located on the valley floor. All sediment reuse areas would be located within the FEMA flood zone and subject to potential remobilization during flood flows from the Eel River having recurrence intervals of 12-years or greater. However, as experienced during past flood events, these areas are more typically locations of sediment deposition – the Eel River carries one of the highest sediment loads in the country and much of that material is deposited within the Eel River delta plain during flood events.

Sediment reuse areas adjacent to the channel are designed and integrated into the project river channel corridor and consist of channel banks and low profile fill areas outside of the active flow channel. These integrated recontoured floodplain areas are designed to contain and convey higher flows as well as directing the drainage of floodwater back to the channel, thereby reducing flood pressures from existing conditions. Floods that inundate the recontoured areas would have been inundated under existing topography, therefore, apart from a reduction in flooding frequency and duration, there is no adverse change in flood conditions in the sediment reuse areas.

Sediment reuse on agricultural areas away from the restored river channel would consist of placing thin flat lifts across the landscape, effectively raising the ground elevation slightly. There would not be protrusions or changes in topographic relief that would modify flood flows. It is not anticipated that there would be any changes in the character of flooding in these areas. Given the low profile and rapid revegetation rate anticipated in the reuse areas, the potential project impacts represent no change from existing conditions. Any beneficial reuse material scoured and/or replaced during Eel River flooding would constitute a small, if not insignificant volume of sediment transported and/or deposited on the Eel River delta plain. It would also represent a natural geomorphic process that would occur regardless of material placement.

Considerable design analysis was completed to develop an optimal restoration design for the Riverside Ranch wetland. Design of the Riverside Ranch wetlands would include further analyses to size connector channels and optimize tidal exchange between the river and wetland. Similarly, internal slough channels would be located and sized to optimize internal marsh circulation and water quality. Any channel erosion that occurs within Riverside Ranch is expected to occur over time and at natural rates that should not greatly increase turbidity and can be accommodated by downstream receiving waters without adversely impacting aquatic ecology.

Increased erosion and turbidity that could occur from the Riverside Ranch restoration would likely be a result of new setback berm erosion, erosion and breaches of former levees and geomorphic evolution (expansion and/or migration) of internal marsh channels. Secondary water quality impacts due to elevated turbidity could include increased temperature and lower DO. In addition, the project could result in temporary impacts to water quality parameters (turbidity, temperature, pH, DO) if increased erosion occurs as design elements adjust to restoration hydrology and revegetation.

No project-induced impacts from increased dairy waste are anticipated. Fenced setbacks would be incorporated to keep cows out of creek channels and the RCD's would continue on-going dairy waste minimization programs in the watershed. The added floodplain and wetland areas would also act to better filter potential runoff caring dairy waste and reduce existing impacts to the river.

Mitigation 3.1.1-1: Implement erosion and water quality monitoring and maintenance plan

The long-term erosion monitoring plan shall routinely screen the project for areas experiencing excessive erosion leading to degraded water quality. Maintenance and adaptive management strategies shall be designed and implemented under the plan to stabilize areas experiencing excessive erosion.

Impact Significance

Less than significant impact with mitigations.

Impact 3.1.1-2: Short-term impacts on water quality associated with construction

The greatest potential project impacts to water quality would result from sediment mobilization during channel/wetland construction and upslope sediment reduction work. Construction activities such as site clearing, grading, excavation, channel widening/deepening, material stockpiling, tide gate removal and installation, demolition, levee removal and berm construction could leave soils exposed to rain or surface water runoff that may carry soil contaminants (e.g., nutrients or other pollutants) into waterways adjacent to the site, degrade water quality, and potentially violate water quality standards for specific chemicals, dissolved oxygen, suspended sediment, or nutrients. This impact would be *potentially significant*.

Mitigation 3.1.1-2.1: Prepare and implement SWPPP

Prior to construction of the Salt River Ecosystem Restoration Project, the Humboldt County Resource Conservation District shall obtain authorization from the North Coast RWQCB. As part

of this application process, the applicant shall develop a SWPPP and identify Best Management Practices (BMPs) for controlling soil erosion and the discharge of construction-related contaminants. BMPs shall be monitored as specified in the SWPPP for successful implementation. This mitigation measure shall apply to all portions of the Salt River Ecosystem Restoration Project and related projects that involve construction activities.

The SWPPP shall be prepared prior to any construction on any portion of the project, and implemented during construction. Individual SWPPPs may be prepared for various construction components or phases (e.g., demolition of existing site structures, grading of one parcel, dredging channels, etc.). The SWPPP would also specifically address:

- Erosion control and maintenance of material stockpiles that remain during the duration of project construction as well as sediment reuse (possibly lasting multiple years).
- Erosion and sediment control measures to eliminate or minimize input to surface waters and generation of fugitive dust.
- Specify silt fencing or fiber rolls to trap sediments and erosion control blankets on graded slopes and channel banks.
- Avoid operating equipment in flowing water by using temporary cofferdams, sheet-piles and/or turbidity curtain and/or other suitable structures to divert flow around the channel and bank construction.

The SWPPP(s) shall be prepared according to requirements of the State's construction Activities Storm Water Permit (Construction Permit; State Board Order No. 99-08-DWQ, NPDES Permit CAS000002), following guidance contained in Section A of that permit, and it shall include all appropriate best management practices for minimizing stormwater runoff and the potential pollution it may cause. The SWPPP should also address protecting stockpiles left over winter wet seasons from erosion associated with rainfall and/or flooding. Coverage shall be obtained under the Construction Permit by filing a Notice of Intent and fee prior to construction of any project component.

Mitigation 3.1.1-2.2: Implement dewatering restrictions

Ponded storm or groundwater in construction areas shall not be dewatered by project contractors directly into adjacent surface waters or to areas where they may flow to surface waters unless authorized by a permit from the North Coast RWQCB. In the absence of a discharge permit, ponded water (or other water removed for construction purposes), shall be pumped into baker tanks or other receptacles, characterized by water quality analysis, and remediated (e.g., filtered) and/or disposed of appropriately based on results of analysis. If determined to be of suitable quality, some of this water may be used on-site for dust control purposes.

Mitigation 3.1.1-2.3: Implement contractor training for protection of water quality

All contractors that would be performing demolition, construction, grading, or other work that could cause increased water pollution conditions at the site (e.g., dispersal of soils) shall receive training regarding the environmental sensitivity of the site and need to minimize impacts.

Contractors also shall be trained in implementation of stormwater BMPs for protection of water quality.

Mitigation 3.1.1-2.4: Minimize potential pollution caused by inundation

Sites shall not be inundated (connected to tidal water or upstream freshwater sources) until surface soil conditions have been stabilized, all construction debris removed, and all surface soils have been removed from the site.

Mitigation 3.1.1-2.5: In-stream erosion and water quality control measures during channel dredging

In instances where excavation and/or dredging occurs in an effort to widen/deepen the existing Salt River Channel, in-stream erosion and turbidity control measures shall be implemented. These measures include installation and maintenance of in-stream turbidity curtains and silt-fence along channel banks as specified in project designs, specifications and erosion control plans.

Impact Significance

Less than significant with mitigation

Impact 3.1.1-3: Degrade wetland and Eel River Estuary water quality in the future

The channel restoration and upslope sediment reduction components would not have a significant effect on the general water quality of existing wetlands and Eel River estuary water quality (apart from sediment impacts addressed above). During the years following construction, revegetation of the Riverside Ranch wetland would help stabilize earthen areas and decrease on-site erosion. Connector channels and internal slough channels would have stabilized having reached an equilibrated geometry. Reconnecting the wetland with the Salt River would restore much needed flood water storage for the Salt River and provide a site for sediment to settle out, effectively reducing sediment loads to the downstream estuary.

One of the largest threats to water quality into the future is related to poor circulation within the wetland and poor tidal exchange with the Salt River. These types of conditions can lead to stagnant ponding, elevated water temperatures and reduced dissolved oxygen concentrations. Although these types of conditions occur to limited degrees in localized areas and yield some desirable habitat types, in excess, they can impart significant adverse impacts to aquatic habitats.

The Riverside Ranch Wetland Restoration Design would be completed in a responsible manner by experienced wetland restoration design experts. A number of technical analysis and modeling tools would be used to simulate wetland circulation and water quality conditions through the diverse seasonal and wet-dry climatic conditions experienced at the project site. Through these analyses, an optimal design would be developed, further refining the project grading plans and ensuring adequate water quality conditions for desired wetland habitat types. However, if large scale floods and sediment deposition, or other external processes alter wetland morphology and adversely impact circulation and quality, this impact may be significant to water quality.

Mitigation 3.1.1-3: Implement water quality monitoring and maintenance plan

The long-term monitoring plan shall routinely screen project water quality and source areas leading to degraded water quality. Maintenance and adaptive management strategies shall be designed and implemented under the plan to modify the morphology of poor water quality source areas.

Impact 3.1.1-4: Increase in tidal exchange and salinity in upstream waters will adversely impact river hydrology and hydraulics

The channel excavation component would restore historic tidal influence further up the Salt River to between Dillon Road Bridge and Francis Creek. Currently, the river only experiences tidal influence to the vicinity of the Reas Creek confluence, but historically, it extended well past the confluence with Francis Creek (see Figure 3.1-2). Increased tidal exchange upriver would allow higher salinity waters to reach further upstream. Dry-season tidal waters would be contained in the proposed channel corridor and would not impart any significant erosion potential or bank instability – tidally-induced flow energy will be distributed across the channel wetted area yielding low scour energy to banks and channel. The channel corridor was designed to contain both high tide conditions and between the one- and two-year flood during winter high flow periods, thus providing sufficient flow conveyance to accommodate the design floods. The channel and introduced tides would not exacerbate existing flood hazards and the channel project is designed to provide more rapid flood water drainage.

Backwater effects associated with tidal and/or floodwater during storms would likely promote sediment deposition, while summer tidal energy will act to scour deposited sediment where there is sufficient tidal prism. Channel areas lying upstream of significant tidal prism exchange may not scour during the summer and sediments would remain. These areas may be flushed during subsequent storms. The AMP also provides triggers and conditions that will call for maintenance in channel areas experiencing chronic sediment deposition.

The introduction of salt water would not impart any adverse effects on channel flow hydraulics. The most notable change that would result from increased salinity in the Salt River channel will be a transition from woody riparian corridor to salt-brackish marsh channel between the Reas and Francis Creek confluences. This transition would occur because woody riparian species are intolerant of higher salinity water. The transition in vegetation types would reduce channel bank roughness and improve flow conveyance, even independent of any channel modifications. Therefore, this impact would be *less than significant*.

Impact 3.1.1-5: Dewater shallow groundwater

The proposed project would not 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. Some short-term lowering of the local shallow groundwater table may result from construction dewatering, but is not anticipated to be long lasting or detrimental to the surrounding environment. The project does not include any further short- or long-term groundwater withdrawals. The channel excavation component of the project would deepen the river, generally between 5- to 10-feet. These excavations may intersect the shallow groundwater

table seasonally, which is between three and ten feet below ground surface north of the Salt River. The shallow aquifer south of the river would not be impacted because the water table is located deeper (between about 15 and 22 feet below the ground surface near Ferndale) and below the influence of the channel excavation. Because the new river channel would occupy a low base level elevation and host tidal incursions from the downstream receiving water, it is not anticipated that the river would dewater local shallow aquifers. Restoring flow in the channel may act to increase groundwater recharge along the river channel that had essentially filled with sediment and no longer conveyed water. Reconnecting the upper water shed to the lower Salt River also would increase the total annual volume of water flowing through the channel allowing for increased groundwater recharge.

The proposed Riverside Ranch Wetland Restoration component would not substantially deplete groundwater supplies or reduce groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level. The wetland creation component of the project includes the excavation/creation of an internal slough network designed to aid water exchange with the river and internal wetland circulation and drainage. Some internal channels may intersect the shallow groundwater table seasonally, which is in close proximity to the ground surface north of the Salt River. Because the these channels would occupy a low base level elevation and host tidal incursions from the downstream receiving water, it is not anticipated that the river would dewater local shallow aquifers. Restoring a large wetland/floodplain area would increase the frequency and duration of ponding across Riverside Ranch, increasing the potential volume of groundwater recharge. Therefore this impact would be *less than significant*.

Impact 3.1.1-6: Reduce groundwater quality

The restoration of tidal exchange into the middle reach of the Salt River would reintroduce higher salinity waters back up the Salt River to approximately the Dillon Road Bridge. ~~into closer contact with the adjacent shallow aquifers~~. No accounts of salt water intrusion into wells adjacent to the river were discovered as part of EIR background review, even prior to around 1984 when the river was wider and saline water was present in the Salt River below the Williams and/or Francis Creek confluences. It is not anticipated that salt water would adversely impact existing wells along the river and channel restoration reach for the following reasons.

1) As indicated in Section 3.1.1, surficial soil and sediment to the south of the Salt River is relatively fine-grained and does not provide high groundwater yields. The water-bearing aquifers lying south of the Salt River are located at depth and wells completed in this area are screened well below the fine-grained alluvium that could potentially receive higher salinity waters from the Salt River (i.e., existing wells are hydraulically disconnected from the shallow river alluvium).

2) The shallow subsurface alluvium becomes more coarse-grained, providing potentially higher groundwater yields to wells moving northward away from the Salt River. However, results of sediment sampling indicate that the alluvium within the channel restoration alignment is fine-grained material consisting predominantly of silty sand and lean clay. Therefore, wells completed to the north of the river are likely screened in deeper water-bearing units or, if

shallow, located well outside of the project footprint within coarser sediments that provide higher groundwater yields.

3) Because of its fine-grained nature, the shallow soil that would contain the restored channel would not transmit significant quantities of groundwater away from the river channel. Also, the transient nature of tidally controlled water levels would generate perpetually reversing hydraulic gradients between the river and shallow aquifer – flow gradients would be from river to adjacent shallow aquifer during high tides and from aquifer towards river during low tides. Existing and proposed river channel grades are such that when compared to predicted river water levels the net hydraulic gradient would be from adjacent shallow aquifer towards the river (i.e., the river will serve as a groundwater discharge point).

4) As indicated in section 3.1.1 and Figure 3.1-8, the lower Salt River near the Reas Creek Confluence would experience fresh to low brackish (<5-parts per thousand; ppt) conditions between 5 to 8 months of the year, depending on water year-type. River water would essentially be fresh during this period, alleviating any potential for salt-water intrusion.

5) The main drinking water supplies for the communities of Port Kenyon and Ferndale come from shallow, spring-fed wells/cisterns located in the Reas and Francis Creek valley mouths along the base of the Wildcat Hills., well outside the influence of the project.

Sediment sampling adjacent to the Salt River and Riverside Ranch reveals soil of "saline-sodic" nature (LACO 2008) due to the presence to salts in the interstices of shallow soil. These salts and saline soils were deposited in a tidal marsh environment, exposed to tidal exchange of saline waters from the Eel River estuary and Pacific Ocean. It is inferred that these same soil conditions occur across the Riverside Ranch, which is "reclaimed" salt marsh. Therefore, reintroducing tidal exchange would not significantly alter the current character of shallow sediments, which host groundwater. It has also reported that salts from shallow sediments are leaching out and may be elevating ranch ditch water salinities (LACO 2008). Groundwater wells completed in the vicinity of Riverside Ranch are likely to have been screened deeper in more coarse-grained, fresh water-bearing aquifers in order to obtain higher well yields and avoid the existing high salinities in shallow soil.

Because of the fine-grained nature of soil underlying Riverside Ranch, the shallow soil that would contain the restored wetland and internal tidal channel network would not transmit significant quantities of groundwater laterally or vertically. Also, as indicated in section 3.1.1 and Figure 3.1-8, the lower Salt River near the Reas Creek Confluence would experience fresh to low brackish (<5-parts per thousand; ppt) conditions between 5 to 8 months of the year, depending on water year-type. The downstream Eel River and estuary water sources along with winter runoff from the upper watershed would consist of fresh water during this period, alleviating any potential for salt-water intrusion. The winter period is also a period of long-term freshwater flooding/ponding on internal and surrounding lands, contributing significant freshwater recharge to the regional shallow aquifer and generating groundwater hydraulic gradients that discharge water to any channels intersecting the ground surface. Therefore, this impact would be *less than significant.*

~~If groundwater wells entrain high salinity waters introduced by the channel and Riverside Ranch wetland restoration project components project, this impact could potentially be significant.~~

~~Mitigation 3.1.1-6.1: Implement groundwater monitoring and maintenance plan~~

~~To ensure no long-term adverse impacts, the project includes a long-term monitoring and maintenance plan that would include groundwater monitoring of existing and available wells within a stipulated distance of the channel restoration project area. Groundwater monitoring shall include discrete measurements of specific conductance and/or salinity to identify and evaluate if reintroduction of saline waters to the restored channel is potentially affecting near-by wells. Dry-season monitoring shall be conducted pursuant to the long-term monitoring and maintenance plan. Specific criteria shall be developed and stipulated in the plan that shall trigger the need for adaptive management and/or maintenance activities (e.g., well relocation) to mitigate for salinity intrusion.~~

~~Impact Significance~~

~~Less than significant with mitigation~~

Impact 3.1.1-7: Effects of flows in reconstructed channel on channel erosion

An objective of the channel restoration effort is to optimize sediment transport to the extent possible through the restored channel corridor. Currently, the sediment supply to the Salt River channel exceeds the transport capacity leading to sediment deposition, accumulation and channel in-filling. At best, the project channel design would maintain a deeper, higher energy low flow channel that would transport sediment, but would also promote sediment deposition along floodplains and overbank areas. Scour and sediment transport would be necessary and healthy attributes of the central and low flow channel, with most stream energy expended on transporting sediment delivered to the River, leaving little excess energy available at eroding channel banks. This distribution of stream energy in the river channel aims at alleviating sediment deposition and associated flooding in adjacent upland pasturelands by restoring balanced sediment dynamics to the main Salt River channel corridor and sustaining the necessary conveyance and channel morphology. It is important to point out that the Salt River channel would behave as a dynamic system that experiences a balance of channel erosion, migration and deposition. The restored river channel and floodplain corridor have been designed to provide adequate room for these natural and desired process to occur without adversely impacting adjacent properties. Mitigation 3.1.1-7 would assure that long-term capacity is maintained.

As part of project design and construction, erosion control measures would be incorporated into the Williams, Francis, Reas and Smith Creek connections as well as new Riverside Ranch internal slough channel connections to the Salt River channel. Connector channel size and alignment would be designed to minimize erosion, down-cutting and bank failure. Bioengineering methods would be used, as necessary, to stabilize bank erosion on both tributaries and mainstem Salt River channels. Hard stabilization measures (e.g., rock slope protection, tributary channel grade controls, etc.) may also be incorporated, if necessary, to prohibit excessive erosion from knick-point propagation upstream in connector channels in an undesirable manner. Mitigation 3.1.1-7 would assure that long-term stability is maintained and adaptive management actions are triggered.

Mitigation 3.1.1-7: Implement erosion monitoring and maintenance plan

To ensure no long-term adverse impacts, the project includes a long-term monitoring and maintenance plan that would monitor for excessive erosion and sediment accumulation and prescribe remedies in the form of channel adjustments and sediment excavation on an "as-needed" basis. Monitoring shall be conducted pursuant to the long-term monitoring and maintenance plan. Specific criteria will be developed and stipulated in the plan that will trigger the need for adaptive management and/or maintenance activities. If erosion is so great that it causes water quality impairments, improvements such as channel armoring shall be implemented to manage and reduce erosion.

Impact Significance

Less than significant with mitigation.

Impact 3.1.1-8: Increase channel scour due to increased tidal prism

The reintroduction of tidal exchange to the excavated channel sections of the Salt River would not impart enough change or energy to increase erosion in any portion of the excavated Salt River channel. The post-excavation geometry for the lower Salt River channel is designed to accommodate the increased tidal prism created through Riverside Ranch Wetland Restoration. Therefore, no additional channel expansion is anticipated - tidal energy would simply maintain the construction channel geometry by transporting sediments introduced from the upper watershed or downstream estuary. Therefore this impact would be less than significant.

Impact 3.1.1-9: Increase wind-wave generated erosion around restored wetland

The orientation and dimensions of the Salt River channel excavation component would not create sufficient surface area for the set up of significant wind-waves. However, during high tides, a large area of the Riverside Ranch Wetland would be inundated and subject to the development of wind-generated waves, which introduce potential erosion along shorelines. Along gently sloping shorelines, vegetated surfaces would provide suitable erosion control to check this process. However, steeper-sloped banks, where existing levees would be retained, may be susceptible to wind-wave erosion.

Mitigation 3.1.1-9.1: Armor berms and wetland fringe

Restoration design shall account for wind-wave erosion control measures in project design that shall include bioengineering and/or hard-bank stabilization measures. Bioengineering methods may include the planting of specific vegetation species that thrive in anticipated environments (accounting for inundation depth-duration-frequency) such as tules or willows and/or installation of large-wood structures such as bank revetments. Hard-bank stabilization measures pertain to the placement of rock and or rip-rap (or other suitable materials) to effectively protect shoreline banks from erosion.

Mitigation 3.1.1-9.2: Implement erosion monitoring and maintenance plan

The Monitoring and Mitigation Plan shall include measures to identify and evaluate erosion problems that evolve in response to wind-waves. Similar to the other erosion monitoring and mitigation components, the Plan shall include wind-wave erosion criteria and thresholds that, if exceeded, will trigger maintenance and/or adaptive management measures to repair and eliminate erosional problems.

Impact Significance

Less than significant with mitigation.

Impact 3.1.1-10: Effects of reconstructed channel on off-site flooding

Specific channel project hydraulic design criteria include improving flood conveyance and drainage from adjacent flooded parcels during flood recession. No alternatives propose introducing habitable structures into the FEMA-defined flood zone or floodway. Channel widening activities would occur within the current/historic alignment and easement of the Salt River with fill being placed at four selected floodplain re-contouring locations indicated by letters A through D on Figure 2-5

Reconnecting the upper half of the Salt River watershed back to the lower half would potentially result in increased flows through the lower river and increased potential for flooding downstream if the channel were not properly designed. Increased flow would result from redirecting Williams Creek and other upstream tributaries away from their current Perry Slough outfall to the lower Salt River.

The channel restoration component has been designed to convey significantly larger volumes of water without increasing flood hazards on adjacent parcels to a higher degree than currently occurs. The channel has been sized to accommodate between the 1- and 2-year recurrence flood, accounting for increased flows resulting from reconnecting the upper watershed. Currently, without the contribution from the upper watershed, normal rain events cause flooding and prolonged inundation of large areas bordering the river through the project reach. The restored channel will convey flood waters and allow for the more rapid draining of flooded parcels bordering the river. Incorporated into the channel design are strategically placed fill areas within current low-lying areas prone to flooding. Re-contouring these areas would stabilize the desired channel, improve flood flow conveyance and alleviate flooding. Floods that inundate these re-contoured areas would have also been inundated under existing topography, therefore, apart from a reduction in flooding frequency and duration, there is no adverse change in flood conditions in the sediment reuse areas.

In order to maintain the flood reduction and improved drainage benefits realized by the channel project, the project includes a long-term monitoring and maintenance plan that would assure monitoring for and adaptive management of the river channel to maintain the desired flood conveyance capacity. Therefore, the project's impact on flooding would be less than significant.

Impact 3.1.1-11: Inhibit drainage of surrounding dairy lands

A primary objective and anticipated result of the channel excavation component is to improve the drainage from surrounding parcels. Beneficial reuse of excavated sediment introduces the opportunity to actually improve and better control drainage by placing the material in a manner that both contains high flows and directs rain runoff toward the channel. Drainage on surrounding dairy land would not be inhibited, and may be improved by also reusing sediment as an agricultural amendment applied in thin (3-6-inch) lifts spread across very broad areas. As recommended in the Ferndale Drainage Plan (Spencer Engineering, 2004), improving the drainage of the Salt River channel will help in alleviating flood pressures in the adjoining low lying areas by improving connectivity of Francis Creek, the East Side Drainage and the West Side Drainage to the Salt River. The proposed project restoration includes relocating approximately 2,900 feet of lower Francis Creek and increasing channel capacity to reduce out-of bank flooding and impacts to adjacent pastures, including the area is known locally as "Lake Vevoda," The proposed channel would more closely share the historical alignment, eliminating an existing 90-degree turn, and allow room for the natural creation of a depositional floodplain and sediment retention area.

The project channel improvements also would include the re-connection of Eastside Drainage Ditch to Francis Creek near the City of Ferndale wastewater treatment plant (WWTP) with an approximately 500-foot-long channel. This connection existed historically, but has been lost due to sediment deposition. These improvements would alleviate flooding in adjacent pastures, dairy barns, and residential areas and increase velocity and flows into Francis Creek, thereby increasing dilution of WWTP discharge and improving water quality. Improving the connectivity of these tributaries to the Salt River is an important component of this restoration project and is consistent with the goals and objectives of the City of Ferndale's Drainage Master Plan.

Currently, much of the pastureland lying east and northeast of Riverside Ranch drains to ditches that carry water across Riverside Ranch to outfalls with the Salt River that border the Ranch property. In order to maintain drainage from these adjacent properties in an unimpeded fashion, the Riverside Ranch Wetland Restoration design includes the creation of a relatively large drainage ditch along the outside perimeter (outboard) of the proposed setback berms (see Figure 2-4). In general, properties along the northern half of the project site would drain to the created drainage that directs flow north to an existing ditch along the northern perimeter of the property. This existing northern perimeter ditch would be improved as needed as part of project construction. Properties along the southern half of the project site would drain to a created ditch that flows southward along the setback berm. Just north of the Salt River, this ditch would pass through the setback berm in a large single or set of culverts and outfall into the main southern connector channel between the Salt River and created wetland (see Figure 2-4). The culverts would be equipped with tide gates to prohibit flow from entering the ditch from the connector channel.

The outboard drainage ditches all parallel the setback or improved berms. These berms would provide access to the outboard ditch, most notably during periods when the surrounding areas are flooded and the berm provides the only dry access in order to remove sediment and debris that inhibit proper drainage. Maintenance equipment also could access the ditch from the bank opposite the berms during drier periods. In order to further accommodate drainage of adjacent properties

during larger, more expansive Eel River floods, a high flow bypass would be excavated near and parallel to the base of the setback berm between the southern berm drainage ditch culvert and Salt River (see Figure 2-4). Therefore this impact would be less than significant.

Impact 3.1.1-12: Increase frequency of flooding at Riverside Ranch

The anticipated life of the Salt River Ecosystem Restoration Project is 50 years. Based on sea-level rise estimates presented the CSLC 2009 sea level rise report, sea level is predicted to rise up to 0.60 meters (2.0-feet) by the year 2060. In terms of the main project structure, the proposed eco-berm for the Riverside Ranch Wetland component is designed to accommodate the added effects of sea level rise, by increasing the berm height from its current level of 10.0 to 12.0-feet in elevation, to a project height of 14-feet. The berm would be protected from wave erosion during extreme tides and low to moderate flood events by vegetation that would be promoted on the berm. Cattle would be precluded from accessing the berm, which would retain a healthy and protective vegetation cover as well as eliminate the potential for physical erosion.

The Riverside Ranch Wetland Restoration would introduce more frequent flooding of the former dairy lands, specifically, during floods having a recurrence interval of 12-years or less. There would be little change in the area and depth of inundation experienced during the larger Eel River overbank floods that occur on an approximate 12-year recurrence interval, as these types of events already flood large portions of the entire Eel River delta and Riverside Ranch site.

As occurs under existing conditions, flooding from the Eel River would cause waters to rise at equal rates and to equal levels on both sides of the Riverside Ranch berms. The presence of the berms will not alter the way or extent Eel River flood waters impact surrounding project areas from current or historic conditions. The project has also incorporated a large drainage channel outboard of the new berm to accommodate drainage and receeding floodwaters from adjacent properties. All Riverside Ranch berms and drainage features are designed to provide a comparable, if not improved, drainage of surrounding properties.

The more frequent floods would be contained to the project site due to the construction of the set-back berm. The internal slough network is designed to optimize post-flood drainage, mimicking natural processes. When compared to pre-project conditions, the internal slough and outboard drainage ditch would likely accelerate drainage of floodwaters from the project site and surrounding properties during the larger, less frequent Eel River overbank floods. Therefore this impact would be less than significant.

Impact 3.1.1-13: Setback berms could impede or redirect flood flows

Apart from changes in flood depth-duration-frequency on Riverside Ranch during floods having a less than 12-year recurrence interval, there would be little change in the nature and extent of flooding experienced by adjacent landowners as a result of the setback berms around the outer edges of Riverside Ranch. The biggest likely change would be a more rapid drainage of flooded areas in the vicinity of riverside Ranch due to the construction of the outboard drainage ditch, increased conveyance of the lower Salt River channel, and internal Riverside Ranch slough channel network. Therefore, this impact would be less than significant.

Impact 3.1.3-14: Setback berms could fail and threaten adjacent properties and structures

The existing levees bordering Riverside Ranch along the Salt River were constructed in an informal manner over decades ago. Levees are eroded and weakened in numerous locations and prone to frequent failures. The proposed setback berms and berm improvements would yield far wider, less steep and taller berms, constructed pursuant to modern construction methods and specifications. These berms would be monitored and maintained into the future pursuant to Project Monitoring and Maintenance Plan. In short, the replacement berms would provide adjacent landowners with superior flood protection than currently exists. The Monitoring and Maintenance Plan also provides a means to monitor and maintain berm integrity into the future. Therefore, this impact would be less than significant.

Impact 3.1.1-15: Effects on water quality and sediment loads from tributary flows to restored channel

The channel restoration component is designed to improve and increase the flow conveyance capacity of the Salt River, which would improve the drainage of existing or planned contributing drainage systems. With the exception of reduced sediment loads, the character and quantity of existing runoff from tributaries to and within the project channel would not change. Therefore, the project would not introduce any new or additional pollutant sources to receiving waters from this portion of the project. This impact would be less than significant.

Impact 3.1.1-16: Effects on water quality and sediment loads from reintroduced flows to the Salt River between Williams and Reas Creeks

The project would reconnect drainage from watershed and pasturelands in the upper watershed to the lower Salt River and may increase nutrient and sediment loads through the lower river. However, this would simply change the delivery pathway to the ultimate downstream receiving water, the Eel River. Additionally, there also would be a corresponding increase in water volume, so load concentrations would not be expected to increase. Therefore, there would be no significant change in the character and quantity of materials being delivered to the Eel River and estuary.

The RCD is actively working with the NRCS and local landowners to implement water quality improvement projects within the project area. These efforts combined with the upslope erosion control measures are constantly reducing sediment and nutrient loads to the Salt and Eel River systems. These activities would continue indefinitely and possibly expand in scope and area. Any potentially significant water quality impacts from the Ferndale Wastewater Treatment Plant (WWTP) would be the responsibility of the City of Ferndale to mitigate. Therefore, this potential impact would be less than significant.

Impact 3.1.1-17: Inundation by seiche or tsunami

Most of Riverside Ranch and the portion of the channel restoration area downstream of the Reas Creek confluence lie inside the County's tsunami wave run-up boundary (see Figure 3.1-4. The channel lying between the Reas Creek confluence and Highway 211 crossing is subject to moderate

tsunami hazards and the section upstream of Highway 211 to lowest hazard. It is possible that the channel restoration component would allow tsunami waters to move further upstream, but these waters would be contained within the created channel – similar to how the channel contains floodwaters. It is also possible that the setback berms of the Riverside Ranch project will reduce the eastward extension of wave run-up. Therefore this impact would be less than significant.

Impact 3.1.1-18: Increased scour and erosion at road crossing structures

With the reintroduction of higher flows through the Salt River channel and possibly lower reaches of tributaries, there is an increased potential for scour and erosion around instream structures associated with road crossings such as bridges and culverts. During design of any project component, scour and stream stability assessments would be performed to identify potential scour hazards. Design will include countermeasures incorporated into a road crossing that would minimize instability and stream scour problems. Countermeasures include river stabilizing works over a reach of the river up- and downstream of the crossing. Countermeasures would be installed at the time of project construction. An action plan for monitoring structures during and/or after flood events would also be incorporated into the project Monitoring and Maintenance Plan. Based on monitoring, countermeasures would retrofitted to resolve stability problems if they develop. Therefore this impact would be less than significant.

Impact 3.1.1-19: Sea Level Rise Considerations

The anticipated life of the Salt River Ecosystem Restoration Project is 50 years. Based on sea-level rise estimates presented the CSLC 2009 sea level rise report, sea level is predicted to rise up to 0.60 meters (2.0-feet) by the year 2060. This equates to a sea level rise rate of 1.2 centimeters per year. Impacts to the project include:

- Inundation of wetlands;
- Increased frequency of flooding; and
- Increased flooding of access routes.

Protections afforded by project include:

- Creation of new wetlands;
- Increased buffer (wetlands) between ocean and urban development;
- Improved flood drainage;
- Increased riparian forest and erosion protection along the main stem of the Salt River; and
- Watershed sediment management strategy to reduce or control aggradation.

Direct impacts of sea level rise include increased inundation of wetlands, riparian corridor and pasture lands. The Project would not amplify or increase impacts to non-project areas. The restored Riverside Ranch wetlands would be relatively high in elevation, thus sea-level rise over the next 50-years would alter habitats, in general, from high to lower marsh. Upland areas also would convert to wetland. For example, the estimated high-, mid- and low-marsh areas within the

Riverside Ranch wetland restoration footprint under as-built and future sea level rise (i.e., 50-years after construction) conditions are tabulated in Table 3.1-8. The tidal datum elevations used to approximate these three wetland habitat zones are indicated on Table 3.1-8 with the future datums reflecting 2-feet of sea level rise. Comparison of these estimates indicate that after with 2-feet of sea level rise, the low marsh habitat area would increase almost three times in area (from 67- to 180-acres), while mid- and high-marsh zones decrease from 146 to 17 and 43- to 21-acres, decreases of almost 900-percent and 200-percent, respectively.

Table 3.1-8 Estimated Changes in Riverside Ranch Wetland Habitat Areas subject to 2-feet of Sea Level Rise

	Elevation Range (ft NAVD88)	As-Built Conditions (acre)
Low Marsh	3.76 to 5.81	67
Mid Marsh	5.81 to 6.99	146
High Marsh	6.99 to 8.50	43

	Elevation Range (ft NAVD88)	Post 2-ft Sea Level Rise (acre)
Low Marsh	5.76 to 7.81	180
Mid Marsh	7.81 to 8.99	17
High Marsh	8.99 to 10.5	21

In terms of the main project structure, the proposed eco-berm for the Riverside Ranch Wetland component is designed to accommodate the added effects of sea level rise, by increasing the berm height from its current level of 10.0 to 12.0-feet in elevation, to a project height of 14.75-feet. The berm would be protected from wave erosion during extreme tides and low to moderate flood events by vegetation that will be promoted on the berm. Cattle would be precluded from accessing the berm, which would retain a healthy and protective vegetation cover as well as eliminate the potential for physical erosion.

The adverse impacts associated with sea level rise would be most prominent in secondary effects, such as erosion, sediment deposition and inundation. The project AMP addresses a monitoring program to identify and address such impacts, if they should occur.

The Project area is located in a highly active tectonic area and experiences episodic land subsidence in response to earthquakes. Li and Carver (1992)[10] report that the Eel River delta region has undergone net subsidence in the late Holocene at an average rate of about 1-3 millimeter per year (mm/yr). However, most of the subsidence occurs during tectonic events that result in 1-3 meters of net permanent subsidence. Their study indicates five rapid subsidence events over the past 200

[10] Li, W.H. and Carver, G.A., 1992, The Late Holocene Stratigraphy of Eel River delta. Prepared for: U.S. Soil Conservation Service, February, 12p (w/9 figures).

years, occurring about 300, 800, 1200, 1500 and 2000 years before the present. Their study also revealed:

- Net subsidence across the Eel River delta is non-uniform, with more net subsidence occurring on the south side of the river than the north side.
- Slow rates of sediment accumulation associated with tidal wetland and river flooding occurs across the delta during relatively stable periods following the sudden subsidence events.
- Sedimentation patterns over the last 2000 years indicate that fine-grained sediment and the development of stable vegetated surfaces followed the four oldest subsidence events. These sediments contrast with the much coarser sands that deposited as thick flood deposits during the most recent decades.

The impacts of sea-level rise would not be significantly different from the natural episodic tectonically induced subsidence, but will occur at a much lower rate.

The high sedimentation rates on the Eel River delta have effectively kept pace with historic sea-level rise and tectonic subsidence. High sedimentation rates will continue and, over time, would ameliorate the effects of sea level rise to some degree. A conceptual model of the project area in terms of delta plain base levels versus sea levels can be described as episodic tectonic events of rapid land subsidence followed by both gradual and rapid sediment accumulation associated with natural deltaic building processes from the Eel River and its tributaries (tidal wetland and flood deposits, respectively). These cycles of delta building have lead to the accumulation of up to 10,000-feet of alluvium on and below the Eel River delta plain syncline, which would continue. In geologic terms, the impacts of sea-level rise may impart gradual changes, but would not likely significantly alter this large-scale landform-generating process in such a tectonically active area. Therefore this impact would be less than significant.

Alternative 2: Modified Channel/Upland Restoration Only

This alternative comprises three main categories of work: 1) Maximum Channel Restoration; 2) Upslope Sediment Reduction; and 3) Maintenance. This alternative differs from the proposed project only in its omission of Riverside Ranch Restoration work.

Impact 3.1.2-1: Long-term impacts on water quality associated with construction

Same as Alternative 1, Impact 3.1.1-1.

Mitigation 3.1.2-1.1: Implement erosion and water quality monitoring and maintenance plan

Same as Alternative 1, Mitigation 3.1.1-1.

Impact Significance

Less than significant impact with mitigations.

Impact 3.1.2-2: Short-term impacts on water quality associated with construction

Same as Alternative 1, Impact 3.1.1-2.

Mitigation 3.1.2-2.1:

Mitigations 3.1.1-2.1, 3.1.1-2.2, 3.1.1-2.3, 3.1.1-2.4, and 3.1.1-2.5 also would apply to this impact.

Impact Significance

Less than significant with mitigation

Impact 3.1.2-3: Degrade wetland and Eel River Estuary water quality in the future

This impact is a secondary impact to water quality associated primarily with the Riverside Ranch wetland restoration. The channel restoration and upslope sediment reduction components would not have a significant effect on the general water quality of existing wetlands and Eel River estuary water quality (apart from sediment impacts addressed above). Therefore, this impact would be less than significant.

Impact 3.1.2-4: Increase in tidal exchange and salinity in upstream waters would adversely impact river hydrology and hydraulics

Same as Alternative 1, Impact 3.1.1-4.

Impact 3.1.2-5: Dewater shallow groundwater

Same as Alternative 1, Impact 3.1.1-5.

Impact 3.1.2-6: Impact groundwater quality

Same as Alternative 1, Impact 3.1.1-6.

~~*Mitigation 3.1.2-6.1: Implement groundwater monitoring and maintenance plan*~~

~~Same as Alternative 1, Mitigation 3.1.1-6.1~~

~~Impact Significance~~

~~Less than significant with mitigation~~

Impact 3.1.2-7: Effects of flows in reconstructed channel on channel erosion

Same as Alternative 1, Impact 3.1.1-7.

Mitigation 3.1.2.7.1: Implement erosion monitoring and maintenance plan

Same as Alternative 1, Mitigation 3.1.1-7.1.

Impact Significance

Less than significant with mitigation

Impact 3.1.2-8: Increase Channel Scour due to Increased Tidal Prism

The reintroduction of tidal exchange to the excavated channel sections of the Salt River would not impart enough change or energy to increase erosion in any portion of the Salt River. Therefore, this impact would be less than significant.

Impact 3.1.2-9: Increase wind-wave generated erosion around restored wetland

The orientation and dimensions of the Salt River channel excavation component would not create sufficient surface area for the set up of significant wind-waves. Therefore, this impact would be less than significant.

Impact 3.1.2-10: Effects of reconstructed channel on off-site flooding

Same as Alternative 1, Impact 3.1.1-10.

Impact 3.1.2-11: Inhibit drainage of surrounding dairy lands

A primary objective and anticipated result of the channel excavation component is to improve the drainage from surrounding parcels. All channel confinement fill would be placed in a manner that drains to the adjacent improved channel. Material used as a beneficial agronomic application would consist of a very thin (3-6-inch) lift spread across very broad areas, essentially imparting no change to the existing drainage pattern. In addition, beneficial reuse introduces the opportunity to improve and better control drainage. Therefore, this impact would be less than significant.

Impact 3.1.2-12: Increase frequency of flooding at Riverside Ranch

The existing levees bordering Riverside Ranch would be retained as part of the channel excavation component. Therefore, there will be no change in the frequency or character of flooding along this reach of the Salt River. Therefore, this impact would be less than significant.

Impact 3.1.2-13: Setback berms could impede or redirect flood flows

No setback berms would be constructed as part of Alternative 2. Therefore, this impact would be less than significant.

Impact 3.1.2-14: Setback berms could fail and threaten adjacent properties and structures

No setback berms would be constructed as part of Alternative 2. Therefore, this impact would be less than significant.

Impact 3.1.2-15: Effects on water quality and sediment loads from tributary flows to restored channel

Same as Alternative 1, Impact 3.1.1-15.

Impact 3.1.2-16: Effects on water quality and sediment loads from reintroduced flows to the Salt River between Williams and Reas Creeks

Same as Alternative 1, Impact 3.1.1-16.

Impact 3.1.2-17: Inundation by seiche or tsunami

Same as Alternative 1, Impact 3.1.1-17.

Impact 3.1.2-18: Increased scour and erosion at road crossing structures

Same as Alternative 1, Impact 3.1.1-18.

Impact 3.1.2-19: Sea Level Rise Considerations

Same as Alternative 1, Impact 3.1.1-18.

Alternative 3: Riverside Ranch Restoration/Upland Restoration Only

This alternative comprises three main categories of work: 1) Minimum Channel Restoration; 2) Riverside Ranch Restoration; 3) Upslope sediment reduction, and; 4) Maintenance. This alternative differs from the proposed project only in its omission of Channel Restoration work upstream of the Reas Creek confluence and minimal channel excavation downstream of the Reas Creek confluence.

Impact 3.1.3-1: Long-term impacts on water quality associated with construction

The impact is the same as Alternative 1, Impact 3.1.1-1 except that there would be less flow and sediment directed through the excavated channel reach under Alternative 3 than compared to Alternatives 1 and 2. This results from not reconnecting a portion of the Williams Creek watershed and flows to the lower river as proposed under Alternatives 1 and 2. The objective of the Salt River channel excavation under Alternative 3 differs from that under Alternative 1 and 2 in that it only needs to improve tidal exchange to the upstream-most connector channel to the Riverside Ranch restoration. Over time, this Salt River channel below this connection point would likely increase in depth and width to an equilibrated geometry in response to the scour associated with increased tidal prism exchange with the restored wetland. Material eroded from the channel during the post-project channel geometry equilibration phase would not exceed normal background levels because of the low frequency and magnitude of these events and exceptionally high existing sediment load transported through the lower Salt River.

Mitigation 3.1.3-1.1: Implement erosion and water quality monitoring and maintenance plan

Same as Alternative 1, Mitigation 3.1.1-1.

Impact Significance

Less than significant impact with mitigations.

Impact 3.1.3-2: Short-term impacts on water quality associated with construction

Same as Alternative 1, Impact 3.1.1-2.

Mitigation 3.1.2-2.1:

Mitigations 3.1.1-2.1, 3.1.1-2.2, 3.1.1-2.3, 3.1.1-2.4, and 3.1.1-2.5 also would apply to this impact.

Impact Significance

Less than significant with mitigation

Impact 3.1.3-3: Degrade wetland and Eel River Estuary water quality in the future

Same as Alternative1, Impact 3.1.1-3.

Mitigation 3.1.3-3.1: Implement water quality monitoring and maintenance plan

Same as Alternative 1, Mitigation 3.1.1-3.1.

Impact Significance

Less than significant impact with mitigations.

Impact 3.1.3-4: Increase in tidal exchange and salinity in upstream waters would adversely impact river hydrology and hydraulics

Currently, the river only experiences tidal influence to the vicinity of the Reas Creek confluence, but historically, it extended well past the confluence with Francis Creek (see Figure 3.1-2). The channel excavation component under Alternative 3 is more limited than under Alternatives 1 and 2, but would improve tidal exchange further up the Salt River to the Reas Creek confluence. Although Alternative 3 channel excavation won't change the limit of salinity movement upstream, it would likely increase the frequency and magnitude of higher salinity waters to reach further upstream. Tidally induced flow energy would be distributed across the channel wetted area yielding low scour energy to banks and channel. During winter high flow periods, the channel corridor was designed to contain high tides and maintain existing flood conditions. The improved channel and tidal exchange would not exacerbate existing flood hazards and the channel project is designed to provide more rapid floodwater drainage. The presence of tidal waters in the restored channel may also dampen flood flow velocities, effectively reducing scour potential. Over time, the increased tidal prism associated with reconnecting Riverside Ranch would further expand channel geometry and improve flood conveyance. Therefore, this impact would be less than significant.

Impact 3.1.3-5: Dewater shallow groundwater

Same as Alternative 1, Impact 3.1.1-5.

Impact 3.1.3-6: Impact groundwater quality

Same as Alternative 1, Impact 3.1.1-6.

~~Mitigation 3.1.3-6.1: Implement groundwater monitoring and maintenance plan~~

~~Same as Alternative 1, Mitigation 3.1.1-6.1.~~

~~Impact Significance~~

~~Less than significant with mitigation.~~

Impact 3.1.3-7: Effects of flows in reconstructed channel on channel erosion

Same as Alternative 1, Impact 3.1.1-7.

Impact 3.1.3-8: Increase channel scour due to increased tidal prism

Alternative 3 incorporates a reduced Salt River channel excavation, limited to the reach downstream of the Reas Creek confluence. Because of limitations in excavation volumes under this Alternative, the constructed Salt River channel may not reflect an equilibrated channel condition and may be considered slightly undersized relative to contributing restored tidal prism[11]. However, restored tidal exchange would provide enough energy to cause channel scour where the reintroduction of tidal flooding and exchange to Riverside Ranch would increase the volume of water exchanged between the river and wetland. This increased exchange volume would increase the erosional forces on the receiving Salt River, leading to increased channel scour potential. Given the fine-grained, non-cohesive nature of sediments lining and boarding the Salt River channel adjacent to Riverside Ranch, the project channel is expected to scour and become deeper and wider simply through increased tidal exchange, if necessary to reach and stable, equilibrated condition. Restored tidal exchange would maintain channel conveyance associated with the created/equilibrated Salt River channel and act to sustain the increased tidal exchange between river and wetland. Increasing the conveyance capacity of the lower river would aid in sustaining the conveyance capacity of the recently restored upstream Salt River channel.

The overall time frame of channel evolution to equilibrium geometry is uncertain, but would initiate immediately upon construction of the project. Under tidal exchange, material mobilized and scoured from the lower Salt River channel would be transported to the Eel River estuary during short duration pulses that occur during spring tidal events when the tidal prism is maximized, leading to short periods of highest channel scour potential. Very little change (channel evolution) can be expected during neap tidal periods, when tidal exchange is minimal. Given the small amounts of channel material that would be mobilized during the necessary tidal periods, no discernable impacts associated with increased turbidity or sediment transport would occur over natural occurring and existing levels. Therefore this impact would be less than significant.

Impact 3.1.3-9: Increase wind-wave generated erosion around restored wetland

Same as Alternative 1, Impact 3.1.1-9.

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[11] The volume of water exchanged between the mean higher high water and mean lower low water tidal datums is referred to as Tidal Prism.

Mitigation 3.1.3-9.1: Armor berms and wetland fringe

Same as Alternative 1, Mitigation 3.1.1-9.1.

Mitigation 3.1.3-9.2: Implement erosion monitoring and maintenance plan

Same as Alternative 1, Impact 3.1.1-9.2.

Impact Significance

Less than significant with mitigation.

Impact 3.1.3-10: Effects of reconstructed channel on off-site flooding

Same as Alternative 1, Impact 3.1.1-10 except that the channel excavation component under Alternative 3 is more limited than under Alternative 1 and 2, but would improve tidal exchange further up the Salt River to the Reas Creek confluence. The proposed Alternative 3 Salt River channel excavation would increase the channel flow conveyance allowing it to better accommodate flood flows relative to existing conditions, especially since Alternative 3 would experience the same flood flow rates as under existing and No Action conditions. Therefore, the channel would not exacerbate existing flood hazards and the channel project is designed to provide more rapid flood-water drainage. The increased presence of tidal waters in the excavated Salt River channel may also dampen flood flow velocities, effectively reducing scour potential. Over time, the increased tidal prism associated with reconnecting Riverside Ranch would further expand channel geometry and improve flood conveyance further. Therefore, this impact would be less than significant.

Impact 3.1.3-11: Inhibit drainage of surrounding dairy lands

Same as Alternative 1, Impact 3.1.1-11.

Impact 3.1.3-12: Increase frequency of flooding at Riverside Ranch

Same as Alternative 1, Impact 3.1.1-12.

Impact 3.1.3-13: Setback berms could impede or redirect flood flows

Same as Alternative 1, Impact 3.1.1-13.

Impact 3.1.3-14: Setback berms could fail and threaten adjacent properties and structures

Same as Alternative 1, Impact 3.1.1-14.

Impact 3.1.3-15: Effects on water quality and sediment loads from tributary flows to restored channel

As the receiving water for the entire project area, the channel restoration component is designed to improve and increase the flow conveyance capacity of the lower Salt River, which would improve the drainage of existing or planned contributing drainage systems, especially Reas Creek, which

would empty into the upstream end of the excavated channel reach. The character and quantity of existing runoff from Francis Creek and downstream tributaries to and within the project channel would continue to remain unconnected to the lower watershed at low and moderate flows due to the significant sediment accumulation between Francis Creek confluence and Reas Creek. Therefore, the project would not introduce any new or additional pollutant sources to receiving waters from this portion of the project. This impact would be less than significant.

Impact 3.1.3-16: Effects on water quality and sediment loads from reintroduced flows to the Salt River between Williams and Reas Creeks

Under Alternative 3, the project would not reconnect drainage from upstream Williams Creek watershed areas to the lower Salt River. No channel improvements would occur upstream of Reas Creek under Alternative 3 as compared to Alternatives 1 and 2. Therefore, this impact would be less than significant.

Impact 3.1.3-17: Inundation by seiche or tsunami

Same as Alternative 1, Impact 3.1.1-17.

Impact 3.1.3-18: Increased scour and erosion at road crossing structures

Same as Alternative 1, Impact 3.1.1-18.

Impact 3.1.3-19: Sea Level Rise Considerations

Same as Alternative 1, Impact 3.1.1-19.

Alternative 4: No Project

This alternative addresses anticipated results should none of the project components be implemented.

Impact 3.1.4-1: Inadequate and continued degradation of drainage from area dairy lands

Under the No Project Alternative, Salt River watershed hydrology and channel hydraulics would remain the same – unable to transport current sediment loads being delivered via tributaries. Under these conditions, sediment would continue to deposit and accumulate further along the main Salt River channel as well as lower reaches of Williams, Francis and Reas Creeks. Flooding during average year rainstorms would continue, inundating area pasture lands and properties that currently and historically drained to the Salt River.

Impact Significance

No impact.

Impact 3.1.4-2: Continued degradation of water quality

Under the No Project Alternative, Salt River watershed hydrology and channel hydraulics would remain the same – unable to dilute and transport effluent released from the Ferndale Waste Water Treatment Plant to the Salt River. This would likely lead to continued water quality violations to the North Coast RWQCB Basin Plan. Poor drainage of area dairy-lands would also allow the buildup of nutrients in local area soils, surface water and groundwater.

Impact Significance

No impact.

3.2 GEOLOGY AND SOILS

The purpose of the Geology and Soils section is to evaluate whether the proposed project would create a physical change in the surface or subsurface soil or rock characteristics, or would expose people or structures to geological hazards.

3.2.1 AFFECTED ENVIRONMENT

GEOLOGIC SETTING

The regional geology of the proposed project area is characterized by: (1) the depositional history of the Eel River basin, (2) dynamic tectonic processes driving uplift of the Wildcat Hills and subsidence of the Eel River Valley, and (3) frequent seismic activity. Figure 3.2-1 provides an overview of the project regional geologic setting.

Surficial geology of the Wildcat Hills consists primarily of Quaternary and Tertiary aged sedimentary rocks in the Wildcat Group (*QTm* on Figure 3.2-2). Sediments composing the Wildcat Group were deposited in the Eel River embayment between about 4 and 11 million years ago (Ogle 1953). The Wildcat Group is divided among five discrete formations with rock types that include mudstone, siltstone, and sandstone. Mudstone is the most common rock type (Ogle 1953). These rocks make up the upland Wildcat Hills.

Surficial geology of the Eel River delta portion of the Salt River basin is divided between alluvium and terrace deposits Quaternary in age, labeled as Qal and Qt on Figure 3.2-2, respectively. Alluvium deposited from the Salt River is typically composed of silt-sized particles. The terrace deposits and alluvium deposited near the Eel River channel are typically composed of coarser material such as sand. The delta plain soils are described in greater detail in the context of groundwater conditions in Section 3.1 of this document (Hydrology and Water Quality) and agricultural potential in Section 3.9 (Agricultural Resources).

The seismic setting of the proposed project area is unique due to its location near the junction of three crustal plates known as the Mendocino Triple Junction (see Figure 3.2-1). South of the triple junction the Pacific plate meets the North American Plate along a boundary marked by the San Andreas Fault Zone. North of the Triple Junction, including the area just offshore from the proposed project area, the Gorda plate meets the North American plate at a boundary forming the southern end of the Cascadia subduction zone. Physiographic characteristics of the region reflect structural deformation caused by the underthrusting of the Gorda Plate and northward migration of the Triple Junction. Key features of this deformation are the downwarping of the crust to produce a tectonic uplift of the Wildcat Hills that has created the steep mountainous terrain that rises high above the broad plain of the Eel River delta.

The Eel River delta formed by depositional processes as the river channel migrated across the Eel River Valley. The channel has likely shifted positions within the valley numerous times during the

development of the delta. Ogle (1953) describes the migration northeast out of its former alignment, now occupied by the Salt River, as a relatively recent event.

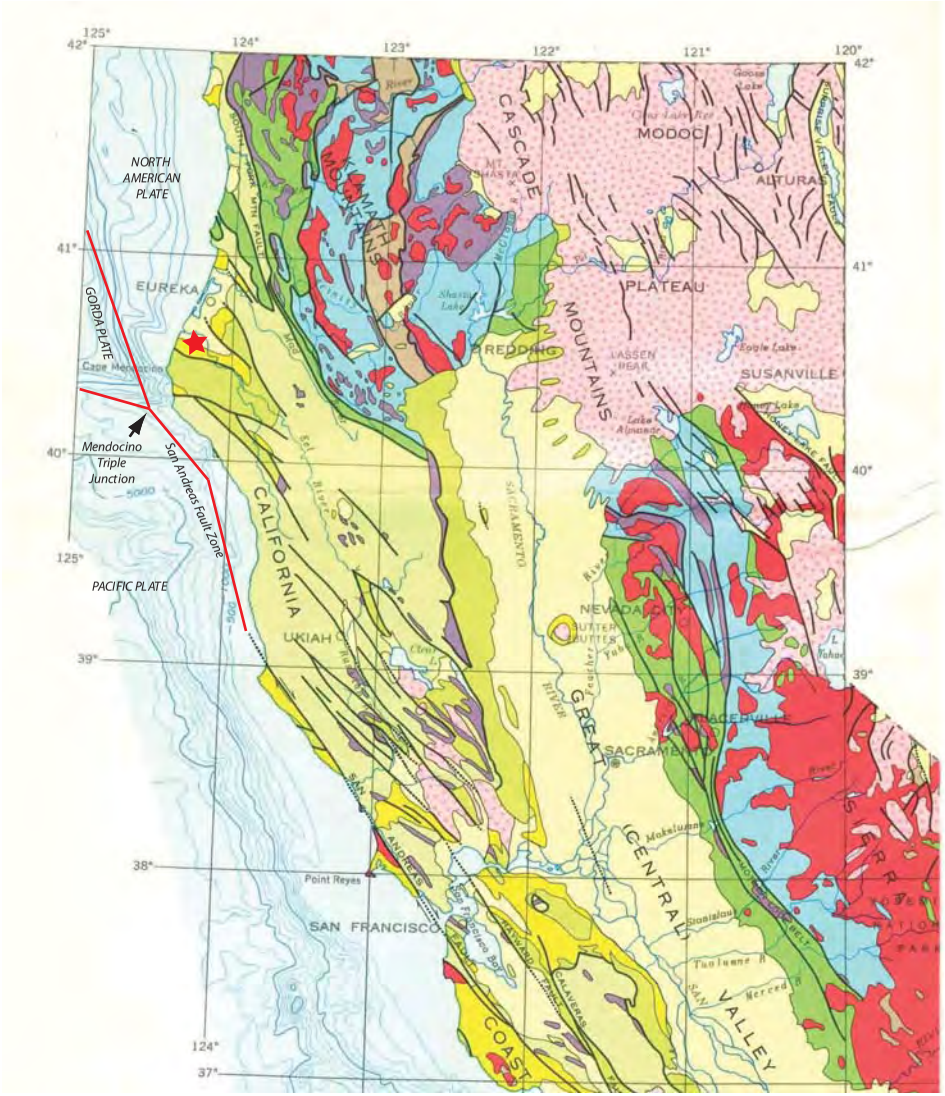
Geologic studies of the surrounding region suggest that the processes of uplift and subsidence continue under present conditions. Ongoing subsidence of the Eel River delta has been estimated to average one to three millimeters per year (Li and Carver 1992; in USDA 1993). Li and Carver (1992; in USDA, 1993) interpret depositional patterns in delta sediments as evidence of episodic subsidence events that lower the delta surface between three and ten feet. Several such events are recorded in the depositional record and suggest repeated episodes of subsidence at a return frequency between 300 and 500 years.

GEOLOGIC HAZARDS

The tectonic setting near the Mendocino Triple Junction makes the region surrounding the Salt River basin especially susceptible to seismic activity and related hazards. The region is affected by subduction zone earthquakes along the Cascadia Megathrust, strike-slip (lateral) earthquakes along the San Andreas Fault Zone, and earthquakes triggered by smaller thrust faults within the Lower Eel River basin such as the Russ fault, the Ferndale fault, and the Little Salmon fault (see Figure 3.2-3). All of these earthquake hazards include the potential for ground-shaking, liquefaction, and landslides.

Ground shaking during an earthquake can be strong enough damage structures. There are additional hazards in areas with shallow groundwater due to the effect of liquefaction. Liquefication occurs in saturated, unconsolidated sediments when ground shaking associated with an earthquake increases the water pressure within the soil and thus causes soil particles to move relative to each other (liquefy). Liquefaction decreases the strength of the soil, reduces the ability of soil to support structures. Shallow groundwater and poorly graded, cohesionless soils (sands and silts) underlying the project site are conditions conducive to liquefaction during a moderate to strong earthquake. Published Potential Liquifaction Zones (Humboldt County General Plan Seismic Safety Maps, Humboldt County, 1979) indicate that the project sites are underlain by relatively stable alluvium (see Figure 3.2-4). However, liquefaction of soils adjacent to or underlying structures could cause settlement or lateral displacement of foundation elements, resulting in structural damage. The risks associated with these hazards can be minimized by application of appropriate design/construction techniques.

Landslides are a prevalent geologic hazard in the Wildcat Hills due in part to the steep, rugged topography, relatively high rainfall, unstable geological structure, and high rates of tectonic activity. Rocks in the Wildcat Group are prone to erosion and contribute to the high potential for landslides. The Rio Dell Formation, in particular, is soft and erodible and landslides failures are common along the interface between beds of mudstone and sandstone. Landslide hazards within the project area are presented in Figure 3.2-5. The Eel River delta plain and project site are mapped as areas of high stability. Seismic activity associated with the tectonic setting further increases the potential for landslides as ground shaking from earthquakes can provide the additional force needed to trigger large landslides.



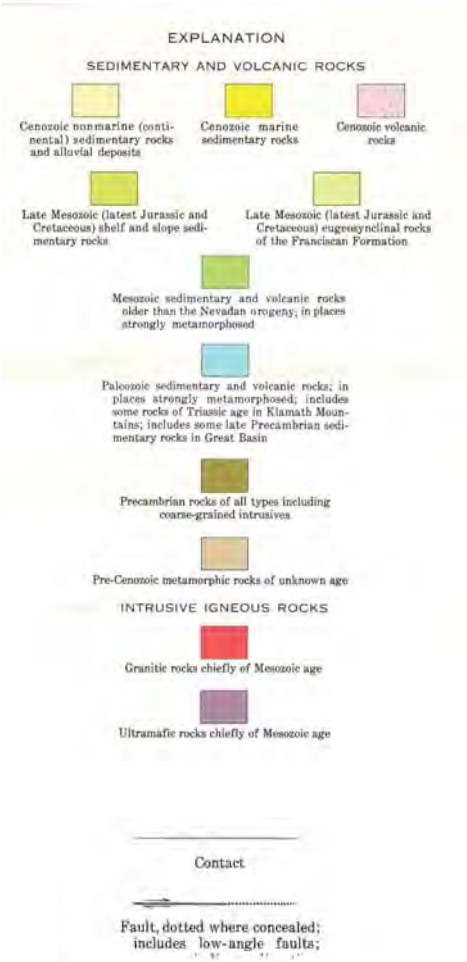


Figure 3.2-1

Regional Geologic Setting

Source: CDMG, 1966

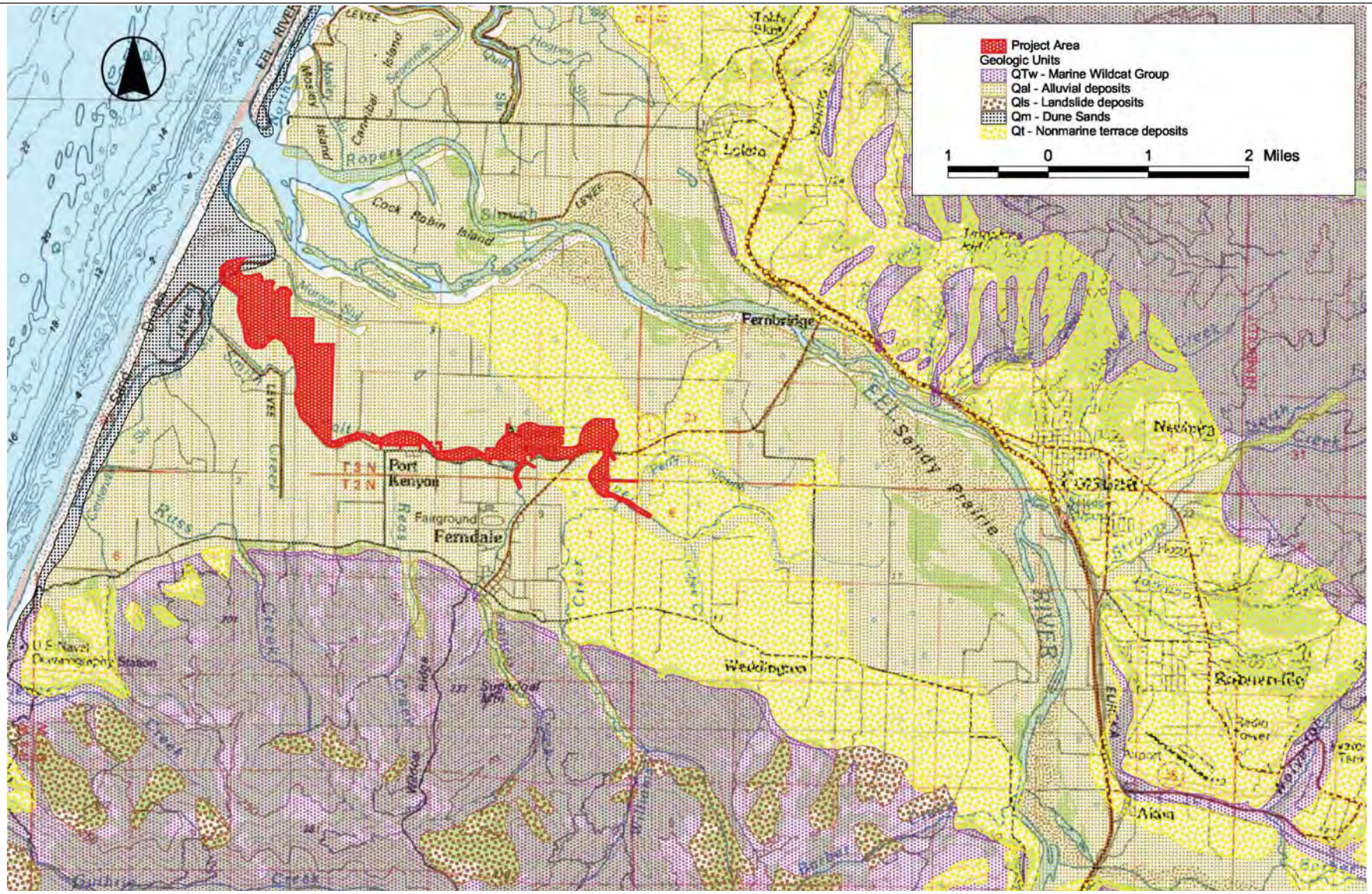


Figure 3.2.2

Project Area Geology

Source: Barnes et al., 2000

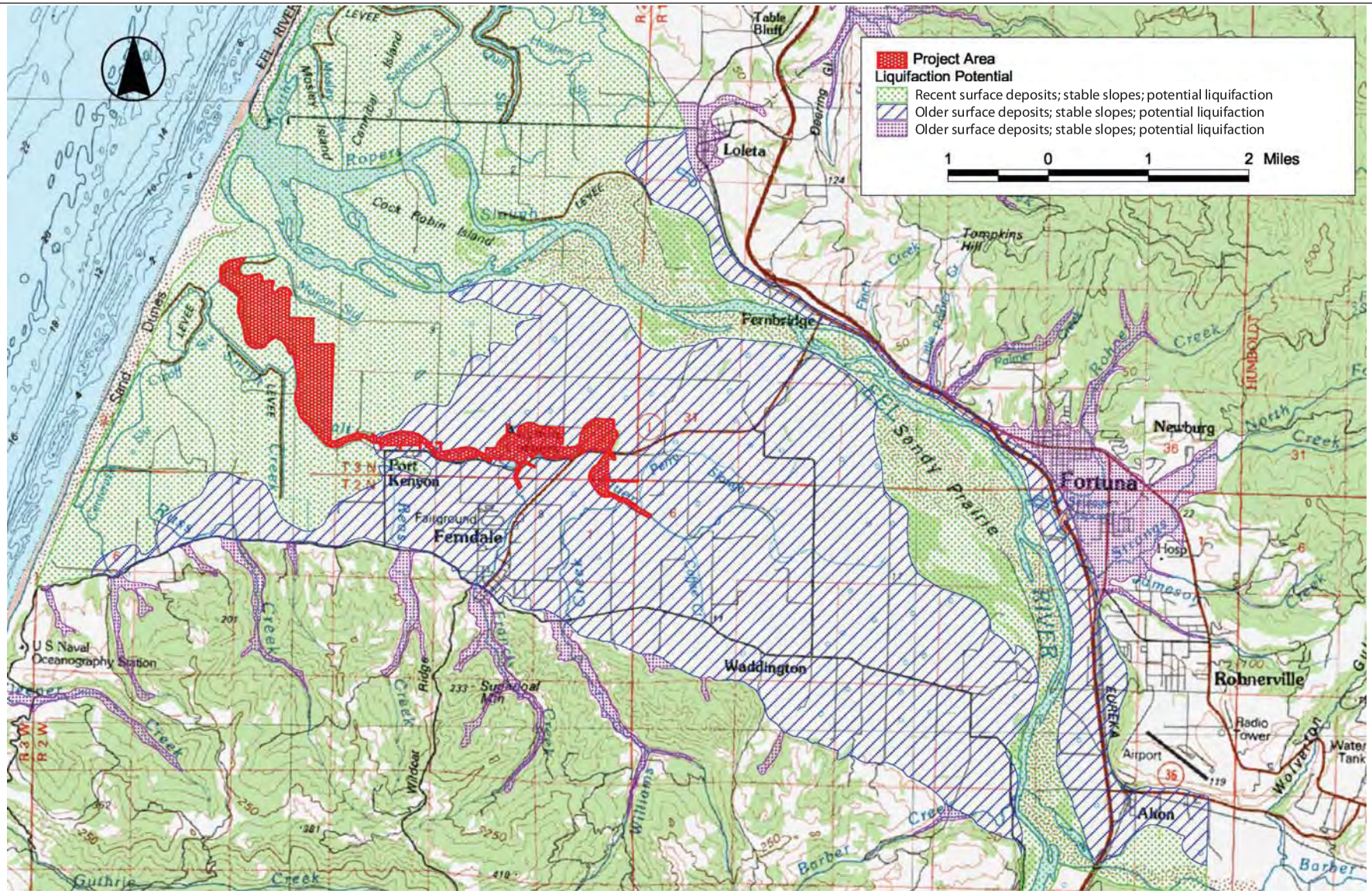


Figure 3.2-3

Liquifaction Potential in Project Area

Source: Humboldt County GIS, 2003

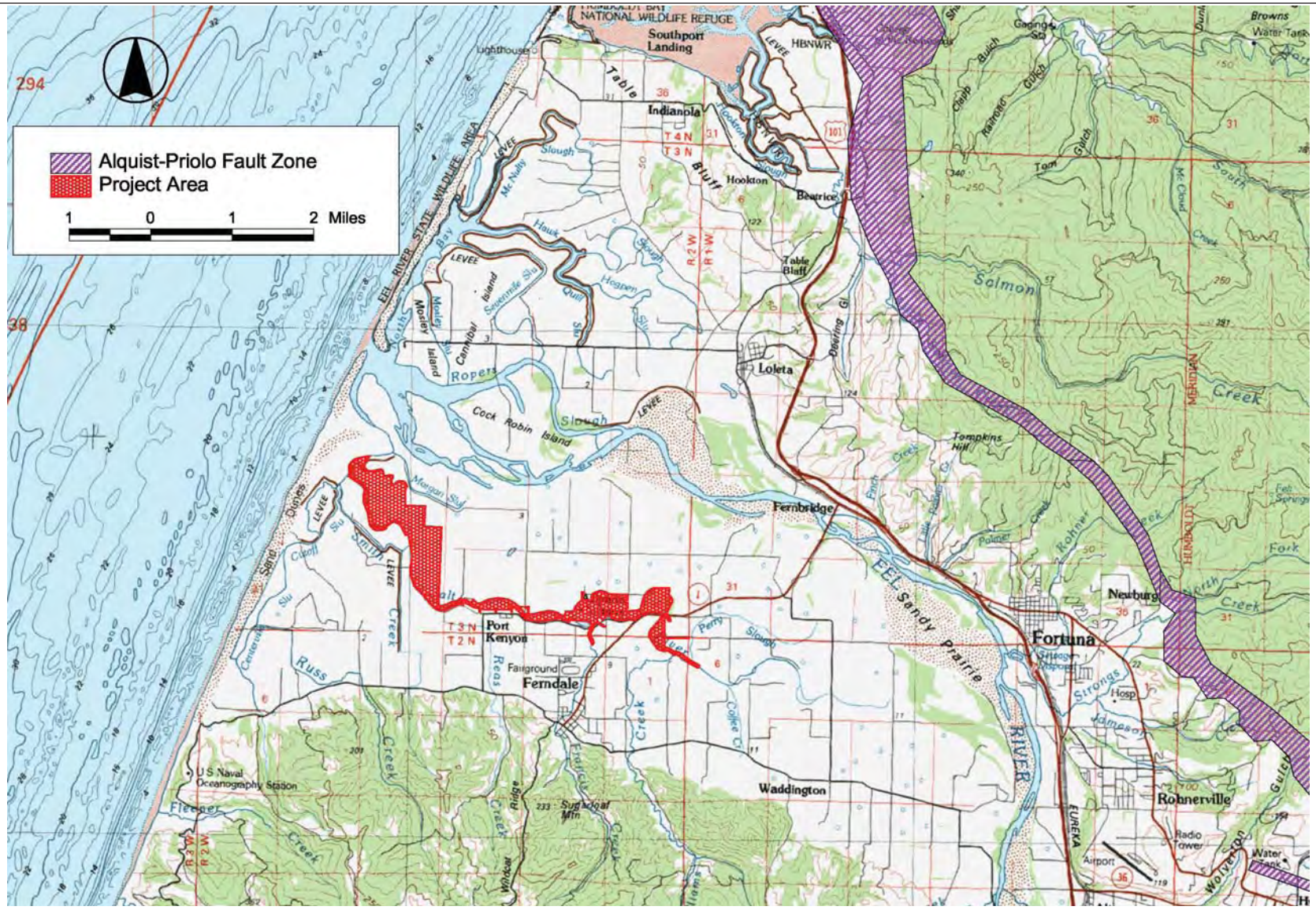


Figure 3.2-4

Earthquake Hazard Map

Source: CDMG, 2002

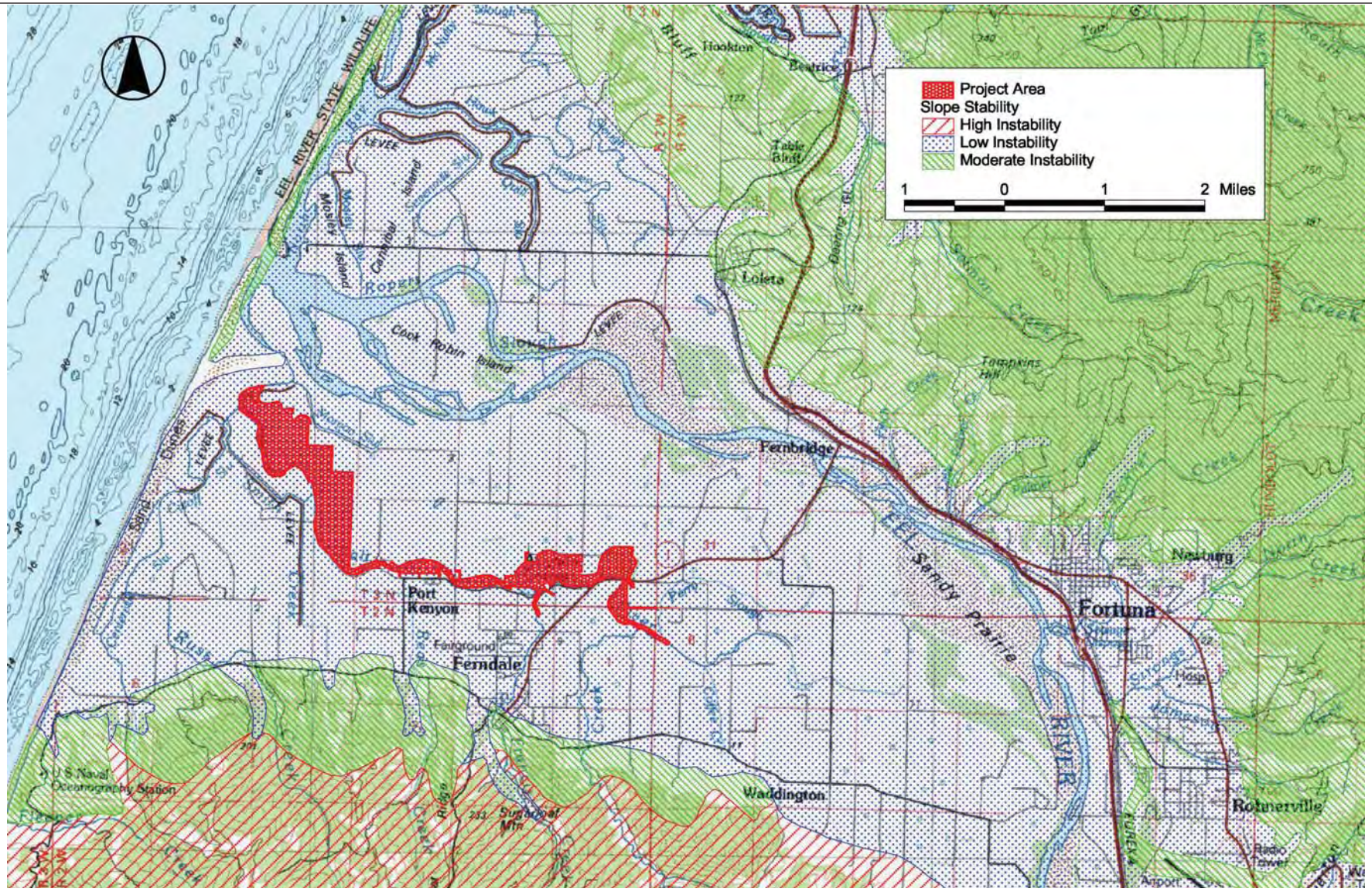


Figure 3.2-5

Landslide Hazard Map

Source: Humboldt County GIS, 2001

The April 1992 Cape Mendocino earthquake provides an example of the impacts associated with a subduction zone earthquake on the proposed project area (a subduction zone earthquake has a greater vertical component than a strike-slip earthquake, such as those typically occurring on the San Andreas fault). That earthquake measured 7.1 on the Richter scale and was centered beneath Petrolia, California. The earthquake caused significant ground shaking, landslides, coastal uplift, and liquefaction. The town of Ferndale was severely affected with significant damage to buildings; however, the town was fortunate in that no major injuries were reported. Coastal uplift of four to five feet was observed at Cape Mendocino and a small (two foot) tsunami was generated from the earthquake.

The potential hazards of seismic activity on the San Andreas Fault system are illustrated by the impacts produced by the California Earthquake of 1906. The 1906 rupture covered a total length of 296 miles and produced an earthquake with an estimated magnitude of 7.9 on the Richter scale. Ground shaking caused significant damage to buildings in the town of Ferndale. Evidence of liquefaction was observed on the Eel River delta. A series of cracks opened in the ground paralleling the river channel and had a vertical displacement of two feet (Lawson 1908).

SOILS

Soils in the proposed project area are derived from alluvial materials. Soil characteristics vary spatially across the landscape and reflect differences in the depositional history and drainage. The most widespread soil type on the Eel River delta is a poorly drained silt loam. Depressional (low) areas on the delta commonly have soils with a higher clay content, silty clay loam, and are very poorly drained. There are pockets of sandier soils, fine sandy loam, present on natural levee features that remain on the delta. The sandier soils are well drained.

Many of the soils in the delta region are classified as hydric soils meaning that they have formed under conditions of saturation long enough to develop anaerobic conditions in their upper part. Soils in the western region of the delta are poorly drained and affected by high salinity content due to their proximity to the coast.

As part of project planning, the County contracted several soil investigations to evaluate the physical and chemical nature of material within the channel excavation and Riverside Ranch wetland restoration areas. Sampling depths ranged from 3 to 7 feet below the ground surface (bgs). All soil samples ranged from silty sand to lean clay.

The County also contracted for the excavation of three test pits within the channel footprint to characterize subsurface materials. The exploration trenches were 10-feet wide by 30-feet long by 3-feet deep. The soils at all three sites are relatively homogeneous silts with minor amounts of clay and fine sand, typical of flood plain deposits. The soil profile indicates that soil is periodically saturated to the ground surface, presumably during the wet season. Excavation activities in these areas should anticipate saturated conditions at depths of 3 to 7-feet. Organic matter (primarily comprised of a thin layer of duff and shallow roots) appears to be confined to the upper 2-feet of the soil profile and comprises less than 10 percent by volume.

3.2.2 REGULATORY SETTING

ALQUIST-PRIOLO EARTHQUAKE FAULT ZONING ACT

The Alquist-Priolo Earthquake Fault Zoning Act of 1972 (subsequently amended) intends to minimize the hazards posed to people and property during and immediately following earthquakes. This Act generally requires disclosure and avoidance. The Act prohibits the location of developments and structures for human occupancy across the trace of active faults and regulates construction activities in the corridors of earthquake faults zones. The Act prohibits and restricts construction activities and zoning classifications based upon fault activity and fault definition, providing legal definitions for active, sufficiently active, and well-defined and establishes a process for reviewing construction proposals in the vicinity of earthquake fault zones. Trained geologists conduct site-specific investigations to determine the appropriate zoning classification. Regulations are more stringent for areas of greater hazard potential. The Act identifies Earthquake Special Study Zones.

Humboldt County has a number of fault zones mapped under this law. The County uses a combining zone designation ("G") to flag these areas where special geologic study is required to identify the precise location of active fault traces to ensure structures for human occupancy are not placed astride them. The areas proposed for excavation for the Salt River project are not located in a Special Study Zone. The closest Alquist-Priolo Earthquake Fault Zone to the project lies to the north – northeast and is associated with the Little Salmon Fault Zone (see Figure 3.2-4).

SEISMIC HAZARDS MAPPING ACT

The Seismic Hazards Mapping Act also intends to provide for a statewide seismic hazard mapping and technical advisory program to assist cities and counties in protecting the public health and safety from the effects of strong ground shaking, liquefaction, landslides, or other ground failure and other seismic hazards caused by earthquakes. Under the Act, the State is responsible for identifying and mapping seismic hazard zones. Cities and counties are required to utilize these hazard maps in issuing building permits, which provides a mechanism to regulate construction and development accordingly in these zones to ensure that building standards provide for safe development. Prior to issuing permits, the Act requires site-specific geotechnical investigations be conducted and development plans incorporate measures to mitigate potential damage in most developments designed for human occupancy within the Zones of Required Investigation.

LOCAL PERMITTING AND SITE-SPECIFIC GEOTECHNICAL INVESTIGATIONS

There are several sections of the County's General Plan Update that relate to the assessment of potential project impacts.

Conservation-Open Space Elements

The Conservation Element of the County Plan Update guides the conservation, development, and utilization of natural resources (water, forests, soils, rivers, mineral deposits, and others), while the

Open Space Element guides the comprehensive and long-range preservation and conservation of open-space lands. Together, these elements present a framework of goals and policies for use and protection of all the natural resource and open space assets of the county. Specific Conservation and Open Space Element Standards ("CO-S" precursor) relevant to the Salt River Enhancement Project are as follows.

CO-S1. Conservation and Open Space Element Consistency Determination. New development requiring a building permit or discretionary review for the areas noted is subsections A and B below shall not be approved unless consistent with Conservation and Open Space policies and standards:

A. Located in the following zoning designations:

1) Agriculture Exclusive (AE)
2) Timber Production Zone (TPZ)
3) Commercial Timber (TC)
4) Natural Resources (NR)
5) Public Recreation (PR)
6) Archaeological Resource Combining Zone (A)
7) Alquist-Priolo Combining Zone (G)
8) Streams and Riparian Corridors Protection Combining Zone (R)

B. Located in the following areas:

1) FEMA mapped flood hazard zones
2) An identified cultural resource site
3) Areas mapped as special biological areas
4) Streamside Management Areas and Other Wet Areas
5) Areas mapped of geologic instability
6) Areas mapped as Very High Fire Severity hazard
7) Critical Water Supply
8) Areas mapped as Critical Watersheds

The purpose of the Safety Element of the County's General Plan Update is to reduce the risk of death, injuries, property damage, and economic and social dislocation resulting from earthquake, fire, flood, and other hazards. The components of this element include:

- Geologic/Seismic Hazards
- Flooding and Drainage
- Fire Hazards

- Airport Safety
- Industrial Hazards
- Emergency Management

This Element identifies hazards and hazard abatement provisions to guide local decisions related to zoning, subdivisions, and entitlement permits. Hazard and risk reduction policies supporting hazard mitigation implementation measures are contained in this Element.

Safety Element

The purpose of the Safety Element is to reduce the risk of death, injuries, property damage, and economic and social dislocation resulting from earthquake, fire, flood, and other hazards. The components of this element include:

- Geologic/Seismic Hazards
- Flooding and Drainage
- Fire Hazards
- Airport Safety
- Industrial Hazards
- Emergency Management

This Element identifies hazards and hazard abatement provisions to guide local decisions related to zoning, subdivisions, and entitlement permits. Hazard and risk reduction policies supporting hazard mitigation implementation measures are contained in this Element. General policies under this element related to geologic and seismic hazards include the following.

> **S-P6. Structural Hazards.** The County shall protect life and property by applying and enforcing state adopted building codes and Alquist-Priolo requirements to new construction. The County shall assist property owners in making upgrades to existing structures to mitigate structural hazards.
>
> **S-P7. Improved Information.** Encourage and support more detailed scientific analysis of Cascadia Subduction Zone earthquake risks, probabilities, and anticipated effects.
>
> **S-P8. Preparation.** The potential for a local earthquake in excess of magnitude 8.4 (Richter scale) shall be considered in disaster planning, risk assessment, and predisaster mitigation efforts.
>
> **S-P9. Cascadia Event Disaster Response.** The County shall maintain readiness for a comprehensive response to a major earthquake consistent with the nationwide emergency management hierarchy and the adopted Emergency Response Plan for the Humboldt Operational Area.

3.2.3 IMPACTS AND MITIGATION

SIGNIFICANCE CRITERIA

Criteria for determining significant impacts are based upon the CEQA Guidelines (Appendix G) and professional judgment. These guidelines state that the project would have a significant impact on geology, soils, and seismicity if it would:

- Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death 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
  - Strong seismic ground shaking
  - Seismic-related ground failure, including liquefaction
  - Landslides
- Result in substantial soil erosion or the loss of topsoil
- 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
- 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 Additional criteria not explicit to CEQA guidelines but evaluated in this section include:
- Levee failure resulting from erosion
- Levee failure resulting from seepage.

EVALUATION OF ALTERNATIVES

This section considers each of the four Salt River Ecosystem Restoration Project alternatives to determine whether any component of the alternative may result in significant impacts related to geologic and soil hazards. If potential impacts are identified, mitigation measures are described that would reduce the impact, ideally to less than significant levels.

Alternative 1 (Proposed Project): Modified Channel/Riverside Ranch Restoration/ Upland Restoration

Impact 3.2.1-1: Expose structures and people to rupture of known earthquake fault

As indicated on Figure 3.2-4, none of the project area falls within a known earthquake fault zone. Any structures constructed or retrofitted as part of the project (such as bridge retrofitting and

roadway culvert replacement) would be required to conform to current seismic design standards. Therefore, this impact would be less than significant.

Impact 3.2.1-2: Expose structures and people to strong ground shaking and seismic related ground failure, including liquefaction

Pursuant to County hazard mapping, the project site is underlain by relatively stable alluvial deposits (see Figure 3.2-3). All project construction, especially setback and refurbished levees, would conform to current seismic design standards and would not introduce any new or elevated potential for ground shaking beyond current conditions. Therefore, this impact would be less than significant.

Impact 3.2.1-3: Expose structures and people to landslides

None of the channel excavation and Riverside Ranch restoration area lies within steep slopes prone to landslides. Although some upslope sediment reduction areas may be subject to these hazards, the project would not involve any structures or other facilities that could be affected by these events. In fact, most upslope sediment reduction projects that are prone to this hazard are specifically intended to stabilize slopes and channel banks and reduce susceptibility to this hazard. Therefore, this impact would be less than significant.

Impact 3.2.1-4: Result in substantial soil erosion or loss of topsoil

Most project actions are designed to reduce flooding hazards and susceptibility of soil to erosion or loss of topsoil. All soil areas disturbed during construction would be treated with adequate erosion control BMPs and revegetated to further ensure long-term stabilization pursuant to SWPPP that will be prepared in compliance with Mitigation 3.1.1-2.1. Additional mitigations that will address protecting water quality from project actions are provided in the Hydrology and Water Quality chapter (Chapter 3.1) and include: Mitigation 3.1.1-1.1 (implement erosion and water quality monitoring and maintenance plan); Mitigation 3.1.1-2.2 (implement dewatering restrictions); Mitigation 3.1.1-2.3 (implement contractor training for protection of water quality); Mitigation 3.1.1-2.4 (minimize potential pollution caused by inundation; and Mitigation 3.1.1-2.5 (in-stream erosion and water quality control measures during channel dredging). Apart from setback and refurbished levees, the low profile configuration and methods of fill placement (including compaction) would not expose placed soil to significant levels of disturbance. Levees would be constructed with adequate BMPs to ensure immediate protection from erosion and also would include design components (dense vegetation and rock slope protection) as needed to ensure long-term stability. Therefore, this impact would be less than significant.

Alternative 2: Modified Channel/Upland Restoration Only

Impact 3.2.2-1: Expose structures and people to rupture of known earthquake fault

Same as Alternative 1, Impact 3.2.1-1.

Impact 3.2.2-2: Expose structures and people to strong ground shaking and seismic related ground failure, including liquefaction

Same as Alternative 1, Impact 3.2.1-2.

Impact 3.2.2-3: Expose structures and people to landslides

Same as Alternative 1, Impact 3.2.1-3.

Impact 3.2.2-4: Result in substantial soil erosion or loss of topsoil

Same as Alternative 1, Impact 3.2.1-4.

Alternative 3: Riverside Ranch Restoration/Upland Restoration Only

Impact 3.2.3-1: Expose structures and people to rupture of known earthquake fault

Same as Alternative 1, Impact 3.2.1-1.

Impact 3.2.3-2: Expose structures and people to strong ground shaking and seismic related ground failure, including liquefaction

Same as Alternative 1, Impact 3.2.1-2.

Impact 3.2.3-3: Expose structures and people to landslides

Same as Alternative 1, Impact 3.2.1-3.

Impact 3.2.3-4: Result in substantial soil erosion or loss of topsoil

Same as Alternative 1, Impact 3.2.1-4.

Alternative 4: No Project

Impact 3.2.4-1: Expose structures and people to rupture of known earthquake fault

No structures or infrastructure would be constructed under this alternative, therefore no impact would occur.

Impact 3.2.4-2: Expose structures and people to strong ground shaking and seismic related ground failure, including liquefaction

No structures or infrastructure would be constructed under this alternative, therefore no impact would occur.

Impact 3.2.4-3: Expose structures and people to landslides

None of the channel excavation and Riverside Ranch restoration area lies within steep slopes prone to landslides. Areas within the upslope sediment reduction areas would continue to be subject to these hazards. Landslide hazards would be greater under Alternative 4 in comparison to

Alternatives 1, 2, and 3 as those alternatives include upslope sediment reduction projects that are specifically intended to stabilize slopes and channel banks and reduce susceptibility to this hazard. However, since there would be no change form existing conditions or the No Project condition, this impact would be less than significant.

Impact 3.2.4-4: Result in substantial soil erosion or loss of topsoil

Soil erosion would be greater under Alternative 4 in comparison to Alternatives 1, 2, and 3 as those alternatives include upslope sediment reduction projects that are specifically intended to stabilize slopes and channel banks and reduce susceptibility to this hazard. However, since there would be no change form existing conditions or the No Project condition, this impact would be less than significant.

Currently, soil erosion and loss of topsoil are not significant problems with in the low-lying project area. In fact, most low-lying project areas are more susceptible to sediment deposition and accumulation that erosion, including topsoil. Therefore, this impact would be less than significant.

3.3 BIOLOGICAL RESOURCES: TERRESTRIAL/UPLAND/ RIPARIAN

This section identifies the existing terrestrial and wetland biological resources potentially impacted by the Salt River Ecosystem Restoration Project. Information in this section is based on a literature review, site reconnaissance including plant and wildlife surveys, and a number of technical reports prepared by H.T. Harvey and Associates, the USDA Natural Resources Conservation Service, the California Department of Fish and Game (DFG), the US Army Corps of Engineers (Corps), and others for the project area. These reports are listed in the references section and are available from the Humboldt County Resource Conservation District (HCRCD). Surveys conducted since 2004 that inform the biological resources analysis are listed in Table 3.3-1.

Table 3.3-1 Biological Surveys Conducted in the Project Area Since 2004

Survey Type	Dates Conducted	Area Surveyed	Reference
Special Status Plants Survey	July 13, 2004	Salt River riparian corridor and adjacent uplands to project area boundaries from west end of Port Kenyon Road to Fulmor Road	Francis 2005
Reconnaissance-level Botanical and Wildlife Surveys	April 27, 2008 May 8, 2008	Riverside Ranch	H.T. Harvey and Associates 2008
Planning-level wetlands delineation	September 5-13, 2007	Riverside Ranch and Channel Restoration Areas	Ericsson et al. 2008

3.3.1 AFFECTED ENVIRONMENT

LANDSCAPE SETTING

The project area is located in the Salt River watershed, which can be divided into the Salt River Delta and the Wildcat Mountains (Ericsson et al. 2008). The Salt River Delta is a gently sloping alluvial floodplain south of the Eel River and drains principally westerly to its confluence with the Eel River. While many sloughs and streams that were historically connected to the Salt River have been disconnected through reclamation activities (see Section 3.1, Hydrology, Water Quality, and geomorphology), four main tributaries to the Salt River remain: Smith Creek, Reas Creek, Williams Creek and Francis Creek. These tributaries extend into the Wildcat Mountains, which rise sharply from the Salt River Delta in the southern portion of the watershed with an average elevation of 800 feet and a maximum of 1,750 feet (Ericsson et al. 2008). The Salt River Delta is part of the Eel River Delta and Estuary. It is thought that the Salt River occupies a former channel of the Eel River that was left behind as the dominant channel of the Eel River migrated north across the delta over centuries of change. The Eel River Estuary includes approximately 24 square miles of delta lands,

wetlands, and estuarine channels that receive runoff from 3,700 square miles of the mountainous Eel River Basin. It is considered one of the most significant estuaries along the entire California coast, and its mosaic of tidal flats, sloughs, marshes and seasonal wetlands supports hundreds of thousands of resident and migratory waterfowl.

CLIMATE

The project area is influenced by coastal fog throughout the year and, along with the rest of the Eel River Delta, is one of the cloudiest areas in the country (Stokes 1981). Precipitation is seasonal, and averages 41 inches of precipitation annually, with 90 percent of the annual precipitation occurring between October and April. Temperatures are moderate and show little fluctuation annually. Summers are cool, with normal highs in the 60s, and dry. Morning fog is common. Winters are mild and rainy, with normal highs in the 50s. Freezing temperatures are rare.

ECOLOGICAL HISTORY

Pre-settlement vegetation conditions of the Salt River delta consisted of "forests of pine, spruce and here and there redwood, with alder growing near the water courses…looking east from the ocean, the forest formed an almost unbroken line cross the low land" (Westdahl 1888 *in* Roberts 1992). Extensive salt marsh and mudflat habitat in the Salt River and Eel River deltas were also documented (Kellogg 1884). Fern prairies were present in parts of the Salt River Delta uplands, notably in the Ferndale and Waddington areas (Genzoli 1972).

Vegetation growing along the banks of the Salt River and within the channel was historically controlled by saltwater intrusion and scour during periods of high flow. Only those plant species tolerant of high salinity were able to survive in or near the river, including within the project area. Plant communities currently growing in the lower reaches of the Salt River, just below the downstream end of the project area, most closely approximate historical channel conditions and associated plant communities. This is likely due to continued saltwater intrusion and the fact that there is still an open channel in this area. Conditions here include riverine wetland (an open, free-flowing slough) bordered by emergent wetland habitat (dense growths of sedges (*Carex* ssp.) on banks and floodplains that are frequently inundated).

A review of aerial photos of the project area indicates that by 1941 reaches within the project area were devoid of vegetation. During this time, landowners removed vegetation along their ownership in an attempt to keep the river channel free from debris and sediment accumulation. DFG curtailed this practice in the late 1970s and currently willow growth is prolific along and within the Salt River channel. Willow (*Salix* spp.) and red alder (*Alnus rubra*) establishment in the channel and its banks and floodplain areas has increased sediment accumulation. Increased sediment accumulation has changed the channel gradient, resulted in loss of a defined channel and has transformed what was formerly riverine and emergent wetland habitat, into a willow thicket/seasonal wetland habitat.

Currently, over 80 percent of the Salt River Delta is utilized for pasture and hay for dairy farming (Downie and Lucey 2005). The remainder of the Salt River Delta consists primarily of salt marshes and riparian vegetation associated with the Salt River and its tributaries, and residential and

commercial development (Ericsson et al. 2008). The Wildcat Hills portion of the watershed consists of northern coastal forest dominated by Sitka spruce (*Picea sitchensis*), Douglas fir (*Pseudotsuga menziesii*), grand fir (*Abies grandis*), and big leaf maple (*Acer macrophyllum*), with riparian forest and scrub dominated by red alder, willow (*Salix* spp.), and black cottonwood (*Populus balsamifera* ssp. *trichocarpa*) (Downie and Lucey 2005).

PROJECT AREA AND ADJACENT HABITATS

The Salt River Ecosystem Restoration Project area can be broadly classified into nine land cover types: tidal marsh, aquatic, willow-alder riparian forest/scrub, freshwater marsh, agricultural grassland (pasture), seasonal wetlands, scrub-shrub habitat, ruderal, and developed (Table 3.3-2 and Figure 2-7). The following descriptions of the vegetation and wildlife associated with each of these land cover types are primarily drawn from HT Harvey and Associates' Riverside Ranch Conceptual Restoration Plan (2008), as well as from the U.S. Army Corps of Engineers planning- level wetland delineation for the area (Ericsson et al. 2008).

~~Table 3.2-2 Existing and Projected Land Cover Types for Salt River Enhancement Project~~

	~~Riverside Ranch Restoration Area~~		~~Salt River Channel Restoration Area~~		~~Overall Project Area~~		
~~Land Cover Type~~	~~Existing Acreage~~	~~Projected Acreage*~~	~~Existing Acreage~~	~~Projected Acreage*~~	~~Existing Acreage~~	~~Projected Acreage*~~	~~Projected Change~~
~~Tidal Marsh~~	~~14.4~~	~~267.6~~	~~16.1~~	~~10.2~~	~~30.5~~	~~277.8~~	~~+247.3~~
~~Riparian Scrub/Forest~~	~~13.9~~	~~28.7~~	~~58.9~~	~~50.5**~~	~~72.8~~	~~79.2**~~	~~+6.4**~~
~~Aquatic~~	~~2.5~~	~~1.0~~	~~6.6~~	~~57.3~~	~~9.1~~	~~58.3~~	~~+49.2~~
~~Agricultural Grassland~~	~~333.3~~	~~80.0~~	~~112.4~~	~~78.3~~	~~445.7~~	~~158.3~~	~~-287.4~~
~~Seasonal Wetlands~~	~~19.0~~	~~<1~~	~~11.6~~	~~3.4~~	~~30.6~~	~~3.4~~	~~-27.2~~
~~Scrub-Shrub~~	~~9.4~~	~~3.6~~	~~0.1~~	~~0.0~~	~~9.5~~	~~3.6~~	~~-5.9~~
~~Freshwater Marsh (Includes Tidal Freshwater)~~	~~<1~~	~~0~~	~~0~~	~~8.5~~	~~<1~~	~~8.5~~	~~+8.5~~
~~Ruderal~~	~~7.9~~	~~26.5~~	~~1.8~~	~~0.0~~	~~9.7~~	~~26.5~~	~~+16.8~~
~~Developed~~	~~8.2~~	~~1.0~~	~~0.6~~	~~0.0~~	~~8.8~~	~~1.0~~	~~-7.8~~
~~**TOTAL**~~	~~**408.6**~~	~~**408.6**~~	~~**208.1**~~	~~**208.1**~~	~~**616.6**~~	~~**616.6**~~	~~**0**~~

~~*Acreage projected 10 years after project implementation.~~

~~** Projected acreages for riparian forest and scrub assume that at least 10 acres of the Vevoda Ranch adjacent to the channel will be restored to riparian forest and scrub. Preliminary restoration plans for Vevoda Ranch propose 25 acres of riparian forest and scrub restoration, adjacent to the project area.~~

Table 3.3-2 Existing and Projected Land Cover Types for Salt River Enhancement Project (all units in acres)[1]

Habitat Type	Riverside Ranch[2]				Salt River[2]				Overall		
	Existing	Removed	Replanted	Projected	Existing	Removed	Replanted	Projected	Total Existing	Total Projected	Projected Change
Tidal Salt & Brackish Marsh	36	14	~15[7]	330	0	-	4	4	36	334	+298
High Marsh Ecotone	0	-	7	7	0	-	-	0	0	7	+7
Aquatic / Mudflat[5]	8	4	-	19	3	-	-	14	11	33	+22
Riparian Forest/Scrub*	39	30	31	40.5	66	32	51	85	105	125.5	+20.5
Freshwater Wetland Habitats:											
a) Tidal Freshwater Marsh	0	-	-	0	0	-	14	14	0	14	+14
b) Seasonal Wetlands	4	>3	-	<1	21	11	-	10	25	10	-15
c) Freshwater Channel Wetland	0	-	-	0	0	-	8	8	0	8	+8
Agricultural/Grassland/ Levees	347	273	18[4]	76	240	52	-	188	587	264	-323
Scrub-Shrub	10	10	-	0	1	1	-	0	11	0	-11
Ruderal	20	20	-	0	3	3	-	0	23	0	-23
Developed	8	8	-	<1	1	<1	1	<1	9	<1	-8
Sediment Management Areas[6]	0	-	-	0	0	1	1	13[3]	0	13	+13
Approximate Total	472			472	336			336	808	808	0

[1] Totals are approximate due to rounding of individual acreage amounts.

[2] The confluence of Reas Creek divides the Riverside Ranch and Salt River Restoration areas.

[3] 13 acres have been depicted on the projected vegetation maps. However, an additional 7 acres are tentatively proposed within the project area on existing agricultural grasslands.

[4] Levee will be seeded with native and erosion control grass species.

[5] Existing habitat type includes impacted areas to existing Eel grass beds (1.2 acres). Projected habitat area includes an estimated 8.7 acres of Eel grass beds created. Reference: Salt River Ecosystem Restoration Project Rare Plant Mitigation and Monitoring Plan (H.T. Harvey & Associates and Winzler & Kelly, January 27, 2011).

[6] The location of proposed Sediment Management Areas currently comprise approximately 85% Agricultural Grasslands and 15% Riparian Forest and have been accounted for in the respective Removed columns

[7] Only about 15 acres of salt and brackish marsh will be actively planted, but approximately 294 acres of this habitat will be restored by restoring tidal influence on Riverside Ranch, resulting in the 330 projected acres indicated in the "Projected" column.

* Project ratio of total acres Replanted (82 acres) to Removed (62 acres) is 1.3:1

Tidal Marsh

Tidal marsh in the project area is found along the Salt River in the lower Salt River Delta. Approximately 30 acres of tidal marsh (5 percent of the total area) is found in the project area.

Vegetation

Some tidal influence occurs in the Salt River in the lower reach of the project area, resulting in brackish to saline conditions. The tidal marsh habitat is dominated by dense-flowered cordgrass (*Spartina densiflora*), pickleweed (*Sarcocornia pacifica*), saltgrass (*Distichlis spicata*), and slender arrowgrass (*Triglochin concinna*). Other common species in the tidal marsh include spearscale (*Atriplex patula*), sand spurry (*Spergularia macrotheca*), and Lyngbye's sedge (*Carex lyngbyei*), which occurs in less saline environments. Humboldt Bay owl's clover (*Castilleja ambigua* ssp. *humboldtiensis*) and gumplant (*Grindelia stricta*) are also present in the tidal marsh. Dense-flowered cordgrass is an invasive species, and a control plan is currently being prepared by the California Coastal Conservancy and its partners for populations of the species in Humboldt Bay, the Eel River Delta, and the Mad River Estuary.

Wildlife

Vegetated tidal marsh provides habitat for a number of avian species, including species found in other habitats in the project area (i.e., the song sparrow [*Melospiza melodia*]) and species that occur primarily in tidal marsh vegetation (i.e., the marsh wren, *Cistothorus palustris*). However, the tidal marsh currently associated with the site is relatively narrow and linear, which reduces the number of birds it can support, especially during the breeding season. For example, herons and rails may forage in these belts of vegetation, but it is not extensive enough to support breeding for most of these larger species. Soras (*Porzana carolina*) and yellow rails (*Coturnicops noveboracensis*) forage in this habitat in the project area. Passerines, such as marsh wrens and song sparrows, may find this habitat extensive enough to nest in it on site. A number of other species occur as transient foragers or roosters in this habitat. These species include blackbirds, migrant warblers such as yellow and yellow-rumped (*Dendroica coronata*), and nonbreeding sparrows including Lincoln's (*Melospiza lincolnii*), white-crowned and golden-crowned. Tidal marsh also provides foraging and loafing habitat for some dabbling ducks such as the mallard (*Anas platyrhynchos*), American green-winged teal (*Anas crecca carolinensis*), and gadwall (*A. strepera*). The vegetation along these channels also provides habitat for Pacific tree frogs. This habitat supports few mammals in the Humboldt Bay region. These species include the California vole and white-footed mouse (*Peromyscus maniculatus*), both native species, as well as Old World introduced murids (rats and house mouse).

Aquatic

The Salt River and its tributaries provide approximately 9 acres of aquatic habitat in the project area. At low tides, a small amount of mudflat habitat is exposed, especially in areas closer to the confluence with the Eel River, where the Salt River is wider. At high tides, these mudflat areas convert to shallow open water or aquatic habitat. Additional areas of aquatic habitat occur as small drainage channels, primarily located behind water control structures or in constructed drainage ditches.

Vegetation

Portions of the lower Salt River channel support eelgrass beds (*Zostera marina*), as well as growth of macroalgae, including *Gracilaria sp.* and *Ulva sp.* Salt River populations of eelgrass generally die back during winter, presumably due to freshwater influences.

Wildlife

Birds, such as herons and egrets, forage in this habitat, especially during retreating and low tides when water is relatively shallow and mudflat is exposed, enabling shorebirds to probe the moist substrate for invertebrates and to easily detect prey in the shallow water. Other species, such as waterfowl and kingfishers, are more likely to use this habitat during incoming or high tides. Birds observed and expected in this habitat include: great blue (*Ardea herodias*) and black-crowned night (*Nycticorax nycticorax*) herons, great (*Camerodius albus*) and snowy (*Egretta thula*) egrets, green-winged teal, mallard, lesser scaup (*Aythya affnis*), northern harrier, greater (*Tringa melanoleuca*) and lesser (*T. flavipes*), yellowlegs and black-bellied plover (*Pluvialis squatarola*). River otter (*Lontra canadensis*) has been observed in this habitat. The non-native soft shelled clam (*Mya arenaria*) is among the benthic invertebrates present in this habitat.

Agricultural Grassland

Agricultural grassland is the dominant land cover type in the Salt River Delta, comprising approximately 446 acres, or 72 percent of the project area. This land cover is also found in the upland agricultural areas proposed for reuse of a portion of the sediment excavated by the project, as well as in some areas along the Salt River's tributaries where upslope sediment reduction work may take place.

Vegetation

Vegetation in low-lying agricultural pastureland in the Salt River Delta is dominated by grassland species such as Kentucky bluegrass (*Poa pratensis*), perennial ryegrass (*Lolium perenne*), saltgrass (*Distichlis spicata*), common velvet grass (*Holcus lanatus*), creeping bentgrass (*Agrostis stonolifera*), reed canary grass (*Phalaris arundinacea*), and common oat (*Avena sativa*). Ruderal species within the pastureland include poison hemlock (*Conium maculatum*), bull thistle (*Cirsium vulgare*), filaree (*Erodium cicutarium*), dandelion (*Taraxacum officinale*), common vetch (*Vicia sativa*), bindweed (*Convolvulus arvensis*), fennel (*Foeniculum vulgare*), wild radish (*Raphanus sativus*), dock (*Rumex* spp.), common ragwort (*Senecio vulgaris*), soft chess (*Bromus hordaceous*), creeping buttercup (*Ranunculus repens*), white clover (*Trifolium repens*), red clover (*Trifolium pratense*), bird's-foot trefoil (*Lotus corniculatus*) and English plaintain (*Plantago lanceolata*) (Francis 2005; Ericsson et al. 2008; H.T. Harvey and Associates 2008).

Wildlife

Agricultural pastureland provides habitat for a suite of wildlife species, many of which also utilize ruderal habitat in the project area. Mammals that typically use pastureland include the California vole (*Microtus californicus*), Pacific shrew (*Sorex pacificus*), and coast mole (*Scapanus orarius*). A number of swallows were observed foraging for aerial insects over the pastureland during the May 2008 site

visit. These species included tree (*Tachycineta bicolor*), cliff (*Petrochelidon pyrrhonota*) and barn swallows (*Hirundo rustica*). Other species observed in this habitat in the project area included Eurasian collared-dove (*Streptopelia decaocto*), Savannah sparrow, and red-winged and Brewer's blackbirds. Shorebirds that occur in pasturelands in coastal Humboldt County include the long-billed curlew (*Numenius americanus*), Marbled Godwit (*Limosa fedoa*), common snipe (*Gallinago gallinago*), dunlin (*Calidris alpina*),whimbrels (*Numenius phaeopus*), least and western sandpipers (*Calidris minutilla* and *C. mauri*), greater yellowlegs (*Tringa melanoleuca*), Black-bellied Plover (*Pluvialis squatarola*)and killdeer (*Charadrius vociferous*).

These fields also provide foraging habitat for a number of raptor species including the the white tailed kite (*Elanus caeruleus*), northern harrier (*Circus cyaneus*), peregrine falcon (*Falco peregrinus*), red-tailed hawk (*Buteo jamaciensis*), barn owl (*Tyto alba*), and the turkey vulture (*Cathartes aura*).

During periods of substantial precipitation, large areas of the pastureland become inundated. During these periods, many species are likely to use these inundated areas, including herons and egrets, waterfowl and shorebirds. Shorebirds that occur in pasturelands in coastal Humboldt County include the long-billed curlew (*Numenius americanus*), Marbled Godwit (*Limosa fedoa*), common snipe (*Gallinago gallinago*), dunlin (*Calidris alpina*),whimbrels (*Numenius phaeopus*), least and western sandpipers (*Calidris minutilla* and *C. mauri*), greater yellowlegs (*Tringa melanoleuca*), Black-bellied Plover (*Pluvialis squatarola*)and killdeer (*Charadrius vociferous*).

Ruderal

Ruderal vegetation is found on approximately 10 acres, or 2 percent, of the project area, primarily along natural and man-made levees, drainages, and roads.

Vegetation

Ruderal areas are dominated by mostly invasive non-native species such as wild radish (*Raphnus sativa*), velvet grass (*Holcus lanatus*), bull thistle (*Cirsium vulgare*), poison hemlock (*Conium maculatum*), bird's foot trefoil (*Lotus corniculatus*), and English plantain (*Plantago lanceolata*).

Wildlife

As is typical of ruderal areas, this habitat on site supports primarily widespread, common wildlife species tolerant of disturbed habitats. Examples of mammals that are found in this habitat in the Humboldt Bay region include coyotes (*Canis latrans*), house mice (*Mus musculus*), black rats (*Rattus rattus*), deer mice (*Peromyscus maniculatus*), striped skunks (*Mephitis mephitis*), raccoons (*Procyon lotor*), opossums (*Didelphis virginiana*), and feral cats (*Felis catus*). Avian species characteristic of ruderal grasslands in this region include the house finch (*Carpodacus mexicanus*), American goldfinch (*Carduelis tristis*), red-winged (*Agelaius phoeniceus*) and Brewer's blackbirds (*Euphagus cyanocephalus*) and various sparrows, including savannah sparrows (*Passerculus sandwichensis*) that likely breed in portions of this habitat (as well as agricultural grassland habitat) that support relatively dense stands of grass. Reptiles and amphibians are relatively sparse in ruderal habitats in the region, but Pacific tree frogs (*Hyla regilla*), garter snakes (*Thamnophis sirtalis*), and western fence lizards (*Sceloporus occidentalis*) forage

in these areas. Other wildlife that may utilize this ruderal habitat include blacktailed deer (*Odocoileus* sp.) and porcupine (*Erethizon dorsatum*).

Scrub-Shrub

Scrub-shrub habitat is found on approximately 10 acres, or 2 percent, of the project area, primarily as row cover along drainage areas and fence lines.

Vegetation

Scrub-shrub habitat forms distinct row cover along drainage areas and fence lines within the project area. Shrub-scrub habitat typically consists of California rose (*Rosa californica*) Himalayan and California blackberry (*Rubus armeniacus* and *R. ursinus*), coyote brush (*Baccharis pilularis*), and poison oak (*Toxicodendron diversilobium*).

Wildlife

The scrub-shrub habitat on the site is relatively narrow and often distinctly linear. As such, it does not support a diverse array of wildlife species. Birds that were noted in these patches of habitat during the May 2008 site visit included the wrentit (*Chamaea fasciata*), orange-crowned warbler (*Vermivora celata*), Wilson's warbler (*Wilsonia pusilla*), song (*Melospiza melodia*) and white-crowned (*Zonotrichia leucophrys*) sparrows, house finch and American goldfinch. This habitat likely supports a few common mammals, primarily rodents such as house mice.

Seasonal Wetlands

Seasonal wetland habitat is found on approximately 31 acres, or 5 percent, of the project area, primarily in low-lying areas within the pastureland. Seasonal wetlands are predominantly freshwater, but include some brackish areas that receive tidal seepage from adjacent diked sloughs or drainages.

Vegetation

Seasonal wetlands are vegetated by spikerush (*Eleocharis macrostachya*), small field bulrush (*Scirpus microcarpus*), common rush (*Juncus effusus*), spreading rush, (*Juncus patens*), field horsetail (*Equisetum arvense*), Pacific silverweed (*Potentilla anserina*), blackberry (*Rubus* sp.), creeping buttercup (*Ranunculus repens*), white clover (*Trifolium repens*), red clover (*Trifolium pratense*), bird's-foot trefoil (*Lotus corniculatus*), manna grass (*Glyceria occidentalis*), dock (*Rumex* spp.*)*, poison hemlock (*Conium maculatum*), canary grass *(Phalaris arundinacea),* and brass buttons (*Cotula coronopifolia*). Fat hen (*Atriplex patula*) is found in brackish seasonal wetlands.

Wildlife

Seasonal wetlands provide habitat for a variety of wildlife. The composition of species using seasonal wetlands varies considerably depending on the extent of the wetlands, the duration and period of inundation as well as the extent of, and species composition of, vegetation associated with the wetlands. More species are associated with the seasonal wetlands than with the flooded pasture on this site. A major factor responsible for the higher diversity of wildlife using the seasonal

wetlands is the wetland vegetation associated with those wetlands relative to the grasses in the pasture. Many of the species that use flooded pasture also use seasonal wetlands when they hold water, however a number of additional species use the vegetation associated with the seasonal wetlands that are absent from the flooded pasture. Amphibians such as Pacific treefrogs (*Pseudacris regilla*) use these ponded areas and breed in them if the duration of ponding is sufficient. Various species of garter snakes (*Thamnophis* spp.) may visit seasonal wetlands in the project area. Northern red-legged frogs (*Rana aurora aurora*) may occur in the project area and visit these wetlands. Small mammals such as rodents and insectivores inhabit vegetated portions of the seasonal wetlands and these species, in turn, provide prey for predatory birds and mammals. Examples of birds found in this habitat that are not likely to use flooded pasture include the green heron (*Butorides virescens*), common yellowthroat (*Geothlypis trichas*), and marsh wren. A seasonal (summer/fall) herd of deer also utilizes this area.

Riparian Scrub and Forest

Riparian scrub and forest is found on approximately 73 acres, or 12 percent, of the project area. Riparian scrub is found in a 50-200 foot corridor along the Salt River and adjacent levees, and also along other drainages. Riparian forest is found along drainages at the edges of the Salt River Delta and in the Wildcat Hills; only a small amount of riparian forest (approximately 2 acres) is found in the project area. Riparian forest is present along the upper reaches of the Salt River's tributaries, where upslope sediment reduction work may take place.

Vegetation

Riparian scrub in the project area is dominated by arroyo willow (*Salix lasiolepis*), Pacific willow (*Salix lasiandra*), and Sitka willow (*Salix sitchensis*). Sandbar willow (*Salix exigua*) is also common. In addition to willows, riparian tree species include red alder (*Alnus rubra*) and black cottonwood (*Populus balsamifera* ssp. *trichocarpa*) (Ericsson et al. 2008). Black cottonwood is more common in riparian forest. Shrubs such as California blackberry and thimbleberry (*Rubus parviflorus*) are common, and the herb layer includes stinging nettle (*Urtica dioica*), sword fern (*Polystichum munitum*), poison hemlock, and cow parsnip (*Heracleum lanatum*).

Wildlife

Healthy riparian habitats support very high wildlife diversity, much of it dependent on this habitat. The willow riparian habitat in the project area is relatively extensive and well developed. This habitat supports relatively high avian species diversity throughout the year (although species composition changes seasonally). Of conservation interest is the importance of riparian habitat to neotropical migrants, including some that likely breed on the site (e.g., Bullock's oriole, *Icterus bullockii*), some that would occur primarily during migration (MacGillivray's warbler, *Oporonis tolmiei*), and some that occur during the winter months (golden-crowned sparrow, *Zonotrichia atricapilla*). Finally, other species are resident in riparian scrub and forest in this area and breed in this habitat (e.g., black-capped chickadee, *Parus atricapillus*). During the May 2008 site visit, a number of birds characteristic of robust willow habitat were singing in the riparian scrub in the project area. These species included Swainson's thrush (*Catharus ustulatus*), Wilson's warbler, yellow warbler (*Dendroica*

petechia), and Bullock's oriole. This habitat is appropriate for willow flycatchers (*Empidonax traillii*), a species listed by the state of California as endangered (the federally listed *E. t. extimus* does not occur in northwestern California). This species occurs on the site as a rare migrant, but is not known to breed at this site (it is rare and very local breeder in northwestern California). Although perhaps somewhat unlikely, this species could appear as a breeder on the site. In addition to birds, riparian areas provide important habitat for other wildlife taxa. A relatively high diversity of reptiles and amphibians occur in riparian habitat in the region and a number of mammals are found in these habitats as well. Overall, riparian habitats are of high wildlife value.

Freshwater Marsh

Freshwater marsh habitat occupies approximately less than one acre, or less than 1 percent, of the project area along edges of streams and sloughs.

Vegetation

Freshwater marsh in the project area is characterized by emergent vegetation including Bull tule (*Scirpus robustus*), creeping spike rush (*Eleocharis palustris*) and common rush (*Juncus effusus*). Water levels in the project area recede in summer, exposing mud and creating habitat for seasonal species. Freshwater marshes in the project area do not appear to be perennial: perennially wet marshes are usually too wet for reed canary grass (*Phalaris arundinacea*), a noxious weed found in the project area.

Wildlife

The freshwater marsh attracts many bird species including the American bittern (*Botaurus lentiginosus*), red-winged blackbird (*Agelaius phoeniceus*), marsh wren (*Cistothorus palustris*), pied-billed grebe (*Podilymbus podiceps*), American coot (*Fulica americana*), great-blue heron, great egret (*Ardea alba*), snowy egret *(Egretta thula*), and cinnamon teal (*Anas cyanoptera*). River otters (*Lutra canadensis*) and Red-legged frogs (*Rana aurora*) have been observed.

Developed

Developed areas cover 9 acres (1 percent) of the project area, and include buildings such as barns and houses, roads, and other agricultural infrastructure, such as holding pens. Developed lands contain no substantial vegetation cover.

Wildlife

Several species of birds and mammals likely use some of the structures in developed areas for shelter and foraging, as well as possibly for nesting. Such species include barn owls, barn and cliff swallows, Norway rats (*Rattus norvegicus*), house mice, and feral cats (*Felis catus*). Structures also provide foraging perches for raptors, such as red-tailed hawks (*Buteo jamaicensis*) and American kestrels (*Falco sparverius*).

SPECIAL-STATUS TERRESTRIAL AND WETLANDS SPECIES

"Special-status" species is a general term that refers to any species or population segment with substantial, legal, policy, or scientifically valid concern for conservation. A "population segment" refers to geographically or genetically distinguished portion of species, subspecies, or variety. Special status species generally include: federally listed or state-listed endangered, threatened, and candidate species; state-listed "rare" species; species identified as "species of concern" in federal endangered species recovery plans; species ranked as "species of special concern" or listed as "fully protected" by the DFG; species ranked as rare, threatened, endangered, or "watch list" in scientifically peer-reviewed nongovernmental conservation organizations (such as the California Native Plant Society's (CNPS) Inventory of Rare, Threatened and Endangered Plants); and species for which substantial evidence ("fair argument") exists to justify conservation significance at a local, regional, or statewide scale, such as evidence of rarity from published scientific surveys, floras, or research. The species lists in Appendix X were generated from these sources as well as DFG's California Natural Diversity Database and Special Animals and Special Plants lists, and lists generated from the USFWS website. The project site is located in the Ferndale and Fortuna USGS quad maps. The CNPS and DFG lists were generated for these two quads as well as the surrounding quads (Fortuna, Scotia, Taylor Peak, Ferndale, Cape Mendocino, Cannibal Island, Capetown, Hydesville, Mcwhinney Creek, and Fields Landing).

Special-Status Plant Species

A review of the sources above indicated that 51 special status plant species have the potential to occur in the project vicinity (Appendix D – Special Status Species Lists). Of these species, 22 species only occur in habitat types, such as coastal dunes, that are not found within the project area, and are therefore presumed to be absent. Of ~~T~~the remaining 29 species ~~have~~ with the potential to occur in the project area, 27 species were not found during surveys of the channel restoration area and the Riverside Ranch area conducted from May to August 2010. Twelve of these 27 species have potential to occur in habitats in or adjacent to upslope sediment reduction areas. Plant surveys would be required to determine whether these species are present (Table 3.3-3). ~~and t~~Two ~~of these~~ species, (Lyngbye's sedge [*Carex lyngbyei*]) and ~~Point Reyes bird's beak (*Cordylanthus maritimus* ssp. *palustris*)~~ Humboldt Bay owl's clover (*Castilleja ambigua* var. *humboldtiensis*), have been confirmed as occurring in salt and brackish marsh in~~or adjacent to~~ the Riverside Ranch Area. In addition, eelgrass (*Zostera marina*) was observed in the Salt River channel from the confluence of Cut-Off Slough to the confluence of Smith Creek.

Eighteen of the special status species potentially occur in habitats present in the Channel Restoration Area and would have been flowering or otherwise readily identifiable at that time. These species are therefore unlikely to be present in the Channel Restoration Area. However, because five years has passed since that survey was conducted, botanical surveys will be repeated to provide more data regarding the presence or absence of special status plant species (DFG 2000). One special status plant species, Hitchcock's blue-eyed grass (*Sisyrinchium hitchcockii*), has a low probability of occurrence in grassland in the Channel Restoration Area and/or on Riverside Ranch. A late spring (June) survey of the Salt River Channel Restoration Area will be necessary to determine if it is

present. The remaining portions of the project area (Riverside Ranch, Upland Sediment Reduction Areas) have not been surveyed for special status plant species. Late spring and summer surveys (e.g. May and July) will be necessary in these areas to determine if special status species are present (See Table 3.3-3 for specific species and survey times).

Species accounts follow for the ~~two~~ special status plant species that are known to occur in or adjacent to the project area.

~~*Point Reyes Bird's-Beak (Cordylanthus maritimus ssp. palustris)*~~

~~This species is a Federal Species of Concern and has no State listing. It is on the CNPS List 1B.2.~~

~~This annual hemi-parasitic herb occurs in coastal salt marsh, specifically in high marsh above 7.0 ft Mean Lower Low Water (Eicher 1987). Seeds germinate in mid-February, and the plant forms haustoria (parasitizing organs) within days of emergence (Bergvall 1991). The blooming period extends from June to October. The range of this species includes 5 counties in California, extending north into southwestern Oregon. Point Reyes bird's-beak has been found in the salt marshes adjacent to project area.~~

Lyngbye's Sedge (Carex lyngbyei)

This species has no state or Federal listing status and is on CNPS List 2.2. This rhizomatous herb occurs in coastal brackish or freshwater marsh, where it can form dense monotypic stands. The blooming period extends from May to August. The range of this species includes four counties in California, extending north from Marin County into Oregon. Lyngbye's sedge has been found in marshes on Riverside Ranch, and was mapped in 2010. Lyngbye's sedge grows in a near continuous band on both banks of the Lower Salt River channel in tidal marsh habitat from the lowest reach to just above the end of Port Kenyon Road (The population grows in the closest proximity to the tidal waters and is approximately 15 feet wide to 3 feet wide, depending on competition from dense-flowered cord grass (*Spartina densiflora*) and canopy closure of riparian forest. Scattered individuals were also observed well away from the tidal channel but often subjected to severe competition from the dense-flowered cord grass.

Humboldt Bay owl's clover (Castilleja ambigua var. humboldtiensis)

This species has no state or federal listing status and is on CNPS List 1B.2. Like Point Reyes Bird's Beak, this annual hemi-parasitic herb occurs in high-elevation salt marshes (Eicher 1987). Also similar to Point Reyes bird's beak, Owl's clover germinates in mid February and forms haustoria within days of emergence. Owl's clover grows more rapidly than Point Reyes bird's beak, and peak flowering in this species occurs mid-May through mid-June. Humboldt Bay owl's clover has a limited distribution, occurring only from Humboldt Bay south to Tomales Bay, California (Grewell et al. 2007). This species was found in the salt marsh on Riverside Ranch in surveys conducted between May and August 2010. Three populations of Humboldt Bay owl's clover were found in tidal marsh habitat from the confluence of Cut-Off Slough to approximately 700 meters above the confluence of Smith Creek. The three populations consisted of approximately 58 individuals. The Humboldt Bay owl's clover apparently was growing in small openings in the tidal marsh habitat that was dominated by thick growing cover of denseflowered cord grass.

Eelgrass (Zostera marina)

Eelgrass is a flowering plant that grows submerged in the shallow subtidal and lower intertidal zones of protected bays and estuaries in temperate regions. Eelgrass is found from Alaska to Baja California, from Quebec to North Carolina, in Hudson Bay, Newfoundland and Nova Scotia, and from the Baltic Sea to Spain. The leaves are ribbon-like, typically less than 0.5 inch wide and may be up to 7 feet long. Eelgrass reproduces both sexually through pollination of seeds and asexually by growth of roots and rhizomes. It provides important structure, habitat, and food for a broad range of birds, fish and invertebrates (Phillips 1984). Eelgrass habitat is protected by federal and state law (Clean Water Act, 1977 protects vegetated wetlands and California Coastal Act, 1976 protects marine resources) and the DFG has a no-net-loss policy for eelgrass habitat in state waters. In the Eel River estuary, eelgrass occurs in the saline to brackish portions of the estuary. Eelgrass is prominent in tributaries near the mouth of the Eel River, including the Salt River adjacent to the project area (Downie and Lucey 2005). Eel River populations of eelgrass generally die back during winter, presumably due to freshwater influences. New growth appears in April and forms locally dense stands during summer (Bruce Slocum, personal communication 2009). During surveys conducted between May and August 2010, eelgrass was observed in the Salt River channel from the confluence of Cut-Off Slough to the confluence of Smith Creek. Although shown as a continuous band of eelgrass on either side of the channel, the eelgrass beds varied in width and varied in plant density. The estimated width of the eelgrass beds varied from approximately 3 feet to 4 feet wide on either side of the channel. Density of individual plants varied from 3 to 5 per square meter. Eelgrass was absent in some sections as well.

Special-Status Wildlife Species

Special-status wildlife species with potential to occur in the vicinity of the project area are listed in Appendix D – Special Status Species Lists. Special status wildlife species with moderate or high probability of occurrence in the project area are listed in Table 3.3-4. The special-status animal species that are likely to occur in the vicinity of the project area are described below. Expanded descriptions are included only for those species for which suitable habitat exists in the project area. There are several special-status species known to occur in habitats that are present on the site or that may forage in the project area, including the ferruginous hawk (*Buteo regalis*) (fall/winter), Cooper's hawk (*Accipiter cooperii*), sharp-shinned hawk (*Accipiter striatus*) (fall/winter), merlin (*Falco columbarius*), short-eared owl (*Asio flammeus*) (fall/winter), burrowing owl (*Atene cunicularia*), Vaux's swift *(Chaetura vauxi*), purple martin (*Progne subis*), black-capped chickadee (*Parus atricapillus*), western snowy plover (*Charadrius alexandrinus nivosus*), Bryant's savannah sparrow (*Passerculus sandwichensis alaudinus*), and yellow warbler (*Dendroica petechia*). Some special-status species are known to occur in the general local area but are thought to be absent from the project site due to lack of habitat, or occur only rarely as stray migrants or transients. These include golden eagle (*Aquila chrysaetos*)~~, burrowing owl (*Athene cunicularia*),~~ and bank swallow (*Riparia riparia*).

Bald eagles (*Haliaeetus leucocephalus*) are consistent, if somewhat rare, winter visitors to the project vicinity. They may occasionally perch on the project site while foraging within the project site and in adjacent water during the winter; however there is no breeding habitat for bald eagles on the site. They have been seen adjacent to the project area, their presence in the vicinity is described in the Eel

River Wildlife Area Management Plan (Monroe 1990) and 4-8 individuals were documented in the Christmas Bird Count circle encompassing the project area in 2005-2008. Bald eagles would benefit from improved foraging in the restored estuarine habitat and a greater abundance of prey.

The following species are likely to be found on portions of the project site that may be affected by the proposed restoration:

Northern red-legged frog (Rana aurora aurora)

This species has no federal status and is a State Species of Special Concern. The northern red-legged frog is typically found in the vicinity of quiet, permanent pools of streams, marshes, and occasionally ponds, in northwestern California. There are records of frogs in the vicinity of the project site (e.g. Russ Park pond) and there is suitable habitat found on the site. Therefore, it is assumed that the northern red-legged frog occurs on the project site. Red-legged frogs have a highly variable diet, probably taking any prey they can subdue that is not distasteful (Hayes and Tennant 1985). Other amphibians and small mammals may form a significant portion of their diet. Northern red-legged frogs breed from January to July (DFG 2008). Northern red-legged frog eggs are attached to vegetation at a minimum depth of 18 inches (46 cm) and at least 2 to 3 feet (61-92 cm) from the waters edge (Licht 1971). Successful larval development depends on sufficiently cool water temperatures and sufficient water for larval growth to metamorphosis. Larval development lasts for 11-20 weeks (DFG 2008). As they continue their transition to adulthood, the froglets move from shallow water to knee-deep water to hide from larger predators. Adult frogs must have emergent riparian vegetation near deep, still or slow-moving ponds or intermittent streams. These well-vegetated areas are needed for escaping from predators, shade to maintain cool water temperatures, and as shelter, especially during the winter. Red-legged frog has the lowest upper and lower embryonic temperatures of any North American ranid frog, ranging from 4 to 21 degrees Celsius (Licht 1971). In addition to water depth and temperature, salinity may also be an important factor. Jennings and Hayes (1989) reported that exposure of pre-hatching embryos to salinity greater than 4.5 percent causes 100 percent mortality.

Table 3.3-3 Special Status Plant Species Requiring Additional Surveys to Determine Presence or Absence in the Project Upslope Sediment Reduction Area.

Species Name (Scientific, Common)	Regulatory Status* (Federal/ State/CNPS)	Potential Habitat in Project Area	Blooming Period	~~Portion of Project Area to Survey~~
~~Species with potential to occur in Riverside Ranch, Channel Restoration Area and Upslope Sediment Reduction Area~~				
Lilium occidentale Western lily	E/E/List 1B.1	Marshes and swamps (freshwater), North Coast coniferous forest (openings)	Jun-Jul	~~Riverside Ranch. Recommend repeating Channel Restoration Area survey. Upslope sediment reduction areas.~~

Species Name (Scientific, Common)	Regulatory Status* (Federal/ State/CNPS)	Potential Habitat in Project Area	Blooming Period	~~Portion of Project Area to Survey~~
Lycopodium clavatum Running pine	-/-/List 4.1	Lower montane coniferous forest (mesic), Freshwater marshes and swamps, North Coast coniferous forest (mesic)/often edges, openings, and roadsides	Jun-Aug	~~Riverside Ranch. Recommend repeating Channel Restoration Area survey. Upslope sediment reduction areas.~~
Sidalcea malachroides Maple-leaved checkerbloom	-/-/List 4.2	Broadleafed upland forest, Coastal prairie, Coastal scrub, North Coast coniferous forest, Riparian woodland/often in disturbed areas	Apr-Aug	~~Riverside Ranch. Recommend repeating Channel Restoration Area survey. Upslope sediment reduction areas.~~
Stellaria obtusa Obtuse starwort	-/-/List 4.3	Riparian woodland	May-Sep (Oct)	~~Riverside Ranch. Recommend repeating Channel Restoration Area survey. Upslope sediment reduction areas.~~
~~Species with potential to occur in Riverside Ranch and Channel Restoration Area~~				
~~*Angelica lucida*~~ ~~Sea watch~~	~~-/-/List 4.2~~	~~Marshes and swamps (coastal salt)~~	~~May-Sept~~	~~Riverside Ranch. Recommend repeating Channel Restoration Area survey.~~
~~*Astragalus pycnostachyus* var. *pycnostachyus*~~ ~~Coastal marsh milk-vetch~~	~~-/-/List 1B.2~~	~~Marshes and swamps (coastal salt, streamsides)~~	~~Apr-Oct~~	~~Riverside Ranch. Recommend repeating Channel Restoration Area survey.~~
~~*Carex buxbaumii*~~ ~~Buxbaum's sedge~~	~~-/-/List 4.2~~	~~Marshes and swamps~~	~~Mar-Aug~~	~~Riverside Ranch. Recommend repeating Channel Restoration Area survey.~~
~~*Carex leptalea*~~ ~~Bristle-stalked sedge~~	~~-/-/List 2.2~~	~~Marshes and swamps~~	~~Mar-Jul~~	~~Riverside Ranch. Recommend repeating Channel Restoration Area survey.~~

Species Name (Scientific, Common)	Regulatory Status* (Federal/ State/CNPS)	Potential Habitat in Project Area	Blooming Period	~~Portion of Project Area to Survey~~
~~*Carex lyngbyeii*~~ ~~Lyngbye's sedge~~	~~-/-/List 2.2~~	~~Marshes and swamps (brackish or freshwater)~~	~~May-Aug~~	~~Present in Riverside Ranch brackish areas. Needs to be mapped. Recommend repeating Channel Restoration Area Survey.~~
~~*Castilleja ambigua* ssp. *humboldtiensis*~~ ~~Humboldt Bay owl's-clover~~	~~-/-/List 1B.2~~	~~Marshes and swamps (coastal salt)~~	~~Apr-Aug~~	~~Riverside Ranch. Recommend repeating Channel Restoration Area survey.~~
~~*Cordylanthus maritimus* ssp. *palustris*~~ ~~Point Reyes bird's-beak~~	~~-/-/List 1B.2~~	~~Marshes and swamps (coastal salt)~~	~~Jun-Oct~~	~~Present adjacent to project area. Needs to be mapped. Riverside Ranch. Recommend repeating Channel Restoration Area survey.~~
~~*Eleocharis parvula*~~ ~~Small spikerush~~	~~-/-/List 4.3~~	~~Marshes and swamps~~	~~(Apr) Jun-Aug (Sep)~~	~~Riverside Ranch. Recommend repeating Channel Restoration Area survey.~~
~~*Gilia capitata* ssp. *pacifica*~~ ~~Pacific gilia~~	~~-/-/List 1B.2~~	~~Valley and foothill grassland~~	~~Apr-Aug~~	~~Riverside Ranch. Recommend repeating Channel Restoration Area survey.~~
~~*Leptosiphon acicularis*~~ ~~Bristly leptosiphon~~	~~-/-/List 4.2~~	~~Valley and foothill grassland~~	~~Apr-Jul~~	~~Riverside Ranch. Recommend repeating Channel Restoration Area survey.~~
~~*Lycopus uniflorus*~~ ~~Northern bugleweed~~	~~-/-/List 4.3~~	~~Marshes and swamps~~	~~Jul-Sep~~	~~Riverside Ranch. Recommend repeating Channel Restoration Area survey.~~
~~*Pleuropogon refractus*~~ ~~Nodding semaphore grass~~	~~-/-/List 4.2~~	~~North Coast coniferous forest, Riparian forest/mesic~~	~~Apr-Aug~~	~~Riverside Ranch. Recommend repeating Channel Restoration Area survey. Upslope sediment reduction areas.~~

Species Name (Scientific, Common)	Regulatory Status* (Federal/ State/CNPS)	Potential Habitat in Project Area	Blooming Period	~~Portion of Project Area to Survey~~
~~*Puccinellia pumila*~~ ~~Dwarf alkali grass~~	~~-/-/List 2.2~~	~~Marshes and swamps (coastal salt)~~	~~Jul~~	~~Riverside Ranch. Recommend repeating Channel Restoration Area survey. Upslope sediment reduction areas.~~
~~*Sisyrinchium hitchcockii*~~ ~~Hitchcock's blue-eyed grass~~	~~-/-/List 1B.1~~	~~Valley and foothill grassland~~	~~Jun~~	~~Riverside Ranch. Recommend repeating Channel Restoration Area survey.~~
~~*Spergularia canadensis var. occidentalis*~~ ~~Western sand-spurrey~~	~~-/-/List 2.1~~	~~Marshes and swamps (coastal salt)~~	~~Jun-Aug~~	~~Riverside Ranch. Recommend repeating Channel Restoration Area survey.~~
~~*Stellaria littoralis*~~ ~~Beach starwort~~	~~-/-/List 4.2~~	~~Marshes and swamps~~	~~Mar-Jul~~	~~Riverside Ranch. Recommend repeating Channel Restoration Area survey.~~
~~Species with Potential to Occur in Upslope Sediment Reduction Areas~~				
Anomobryum julaceum Slender silver moss	-/-/List 2.2	Broadleafed upland forest, Lower montane coniferous forest, North Coast coniferous forest/damp rock and soil on outcrops, usually on roadcuts	No flowering season	~~Upslope sediment reduction areas.~~
Astragalus rattanii var. rattanii Rattan's milk vetch	-/-/List 4.3	Lower montane coniferous forest/gravelly streambanks	Apr-Jul	~~Upslope sediment reduction areas.~~
Erigeron biolettii Streamside daisy	-/-/List 3	North Coast coniferous forest/rocky, mesic	Jun-Oct	~~Upslope sediment reduction areas~~
Erythronium revolutum Coast fawn lily	-/-/List 2.2	North Coast coniferous forest/mesic, streambanks	Mar-Jul (Aug)	~~Upslope sediment reduction areas~~
Montia howellii Howell's montia	-/-/List 2.2	North Coast coniferous forest, Vernal pools/vernally mesic, sometimes roadsides	Mar-May	~~Upslope sediment reduction areas~~
Packera bolanderi var. *bolanderi* Seacoast ragwort	-/-/List 2.2	North Coast coniferous forest/sometimes roadsides	(Feb-Apr) May-Jul	~~Upslope sediment reduction areas~~

Species Name (Scientific, Common)	**Regulatory Status* (Federal/ State/CNPS)**	**Potential Habitat in Project Area**	**Blooming Period**	**~~Portion of Project Area to Survey~~**
Ribes laxiflorum Trailing black currant	-/-/List 4.3	North Coast coniferous forest/sometimes roadside	Mar-Jul (Aug)	~~Upslope sediment reduction areas.~~
Thermopsis gracilis var. gracilis Slender false lupine	-/-/List 4.3	North Coast coniferous forest/sometimes roadsides	Mar-Jul	~~Upslope sediment reduction areas.~~
Usnea longissima Long beard lichen	-/-/List 4	Humid, foggy coniferous forests	NA	~~Upslope sediment reduction areas.~~

*Regulatory status abbreviations are as follows:

CNPS= California Native Plant Society

E= Endangered

List 1B:2. Fairly endangered in California and elsewhere.

List 2:2. Fairly endangered in California, but more common elsewhere.

List 3: Needs more information (Review List).

List 4. Limited distribution (Watch List)

List 4:2. Limited distribution (Watch List), fairly endangered in California.

List 4:3. Limited distribution (Watch List), not very endangered in California.

Table 3.3-4 Special Status Wildlife Species with Moderate or Higher Probability of Occurrence in Project Area

Species	Regulatory Status* (Federal/State)	Habitat	Probability of Occurrence in Project Area
Birds			
Athene cunicularia Burrowing owl	BCC/SSC	Level, open, dry, heavily grazed or low stature grassland or desert vegetation with available rodent burrows	Moderate. Most grassland in project area is unsuitable because it is seasonally flooded, but areas of suitable habitat may be present. Species is known from South Jetty in project vicinity.
Chaetura vauxi Vaux's swift	None/SSC	Nests in large cavities in trees, including redwoods and sycamores, and sometimes in artificial structures such as chimneys. Prefers redwood and Douglas fir forests.	High. Common summer resident and breeder in vicinity. Documented in 2010 surveys. Optimal nesting habitat absent in project area.
Charadrius alexandrinus nivosus Western snowy plover	T/SSC	Breed and winter along ocean beaches and the gravel bars of the Eel River. Nesting occurs above the high tide line in sandy substrate, and occasionally on driftwood. May nest in salt pans. May winter in estuarine sand and mudflats and forage on edges of salt marsh and in salt pans.	Moderate. Documented nearby on Centerville Beach, but not expected to use the lower Salt River for breeding habitat as it does not exhibit the broad expanses of river cobble that plovers are known to prefer where they nest along the Eel River. Could nest in salt pans as these develop in project area. May forage on edges of salt marsh and winter in estuarine sand and mud flats in project area.
Circus cyaneus Northern harrier	None/SSC	(Nesting) Coastal salt marsh and freshwater marsh; nests and forages in grasslands; nests on ground in shrubby vegetation, usually at marsh edge.	High. Documented in project area in 2010.
Dendroicha petechia Yellow warbler	None/SSC	Riparian habitat often dominated by willows, near water in streams and wet meadows	High. Common in riparian habitat in Humboldt County. Documented in 2010 surveys.
Elanus caeruleus White-tailed kite	None/FP	(Nesting) Open grassland and agricultural areas throughout Central California.	High. Common in project area.
Empidonax trailii brewsteri Little willow	None/E	Breeding and foraging habitat for the species includes lowland riparian woodlands dominated by willows, primarily in tree form or in the form of	Spring and fall migrant and casual summer resident and breeder in northwestern California (Hunter et al.

Species	Regulatory Status* (Federal/State)	Habitat	Probability of Occurrence in Project Area
flycatcher		contiguous thickets, and cottonwoods.	2005). Signing male documented in 2010 surveys in riparian area on Riverside Ranch.
Haliaeetus leucocephalus Bald eagle	Delisted/E,FP	(Nesting and Wintering) Ocean shore, lake margins, and rivers for both nesting and wintering. Most nests within 1 mile of water.	High probability of infrequent occurrence. Rare but consistent winter visitor to project vicinity.
Icteria virens Yellow breasted chat	None/SSC	(Breeding) Dense, brushy thickets near water and in the thick understory of riparian woodlands. Forage patterns usually involve gleaning insects, spiders, and berries from the foliage of shrubs and low trees. Nests are often low to the ground in dense shrubs along streams.	Moderate. More common further inland, but documented in lower Eel River. No records from2010 surveys.
Passerculus sandwichensis alaudinus Bryant's savannah sparrow	None/SSC	Breed and winter in low tidally influenced habitats, adjacent ruderal areas, moist grasslands within and just above the fog belt, and, infrequently, drier grasslands. Commonly uses salt marshes for breeding and foraging in much of its range, but not in Humboldt Bay region (Hunter et al. 2005). Around Humboldt Bay, it breeds in extensive dairy pastures, especially in the taller grasses and rushes along roads and fences, and water conveyance canals.	High. Documented breeding in the immediate project vicinity (Hunter et al. 2005).
Poecile atricapillus Black-capped chickadee	None/SSC	Occurs locally in riparian habitat from coast into mountainous areas inland.	High. Documented in project area in 2010 surveys.
Progne subis Purple martin	None/SSC	Uses valley foothill and montane hardwood, valley foothill and montane hardwood-conifer, and riparian habitats. Uncommon local breeder on the northern California coast.	High. Possible in riparian habitat. No records from 2010 surveys.
Amphibians			
Rana aurora Northern red-legged frog	None/SSC	Humid forests, woodlands, grasslands, and streamsides in northwestern California, usually near dense riparian cover. Generally near permanent water, but can be found far from water, in damp woods and meadows, during nonbreeding season.	High. Documented in 2010 in project area.
Mammals			
Antrozous pallidus Pallid bat	None/SSC	Most common in open, dry habitats with rocky areas for roosting. Roost in rock crevices, trees, buildings, and bridges in	Moderate. May forage in project area. No records from 2010 surveys.

Species	Regulatory Status* (Federal/State)	Habitat	Probability of Occurrence in Project Area
		arid regions.	
Corynorhinus townsendii Townsend's big-eared bat	None/SSC	Most abundant in moist habitats. Roosts primarily in mines and caves, but also in buildings and other human structures.	Moderate. May forage in area. No records from 2010 surveys.
Lasiurus cinereus Hoary bat	None/SSC	May be found in any location in CA. Roosts in trees	Moderate. Potential habitat in project area. No records from 2010 surveys
Myotis yumanensis Yuma myotis	None/SSC	Found in open forests and woodlands usually feeding over water. Forms large maternity colonies of several thousand in buildings, caves and bridge structures.	Moderate. May forage in area. No records from 2010 surveys.

*Regulatory status abbreviations are as follows: BCC= Bird of Conservation Concern, SSC=Species of Special Concern, FP= Fully Protected, T= Threatened, E=Endangered, Candidate= Candidate for endangered species listing

Northern harrier (Circus cyaneus)

This bird species has no federal status and is a State Species of Special Concern. Northern Harriers are found in open grasslands, agricultural fields, and marshes throughout much of North America. They perch and fly low, hunting for a variety of prey such as mice, birds, frogs, reptiles, and insects. This species was observed foraging over salt marsh and grassland on the site during the reconnaissance survey and again during surveys conducted May-August 2010, and may nest on the site.

The northern harrier, formerly known as the marsh hawk, is a slim, long-winged, long-tailed, raptor of open country. This hawk nests on the ground in shrubby vegetation, usually at the edge of a marsh. The nest is built out of a large mound of sticks in wet areas, and a smaller cup of grasses on dry sites. Most of the nests are found in emergent wetlands or along rivers or lakes, but it may also nest in grasslands, grain fields, or on sagebrush flats that are several miles from water. Harriers usually perch on the ground but occasionally use low trees, fence posts or other low perches (Peterson 1990). Breeding commences during the months of April through September, and peak activity occurs during June and July. The nesting period lasts approximately 53 days. After the young gain the ability to fly, they are often fed by their parents while in flight. The breeding pair and juveniles may roost communally in the late autumn and winter. Northern harriers can be locally abundant where suitable habitat remains free of disturbance, especially that from intensive agriculture and other human activities. They rely on the use of tall grasses and forbs in wetlands or at wetland/field borders for suitable cover. These borders or edges are especially important for nesting, feeding and cover. Their home range usually includes a freshwater site. They are very defensive of their territory and will attack other birds of prey and humans during breeding season.

White-tailed kite (Elanus caeruleus)

This bird species has no federal status and is a State Protected Species. The White-tailed Kite is found in brushy grasslands and agricultural areas with low ground cover, as well as grassy foothills, marsh, riparian, woodland, and savanna. This species requires tall alders, willows, or other broad-leaved deciduous trees for nesting. Nesting habitats are best described as oak woodlands or trees along marsh edges. White-tailed kites have been reported to nest in any suitable tree that is of moderate height, such as eucalyptus, cottonwood, and even coyote bush, with the nests placed near the tops of these shrubs or trees. Nest trees range from single isolated trees to being within large stands (Dunk 1995). Locally, they are also known to nest in conifers. Prey items comprise primarily rodents and insects, although they will also take reptiles, amphibians, and small birds. White-tailed Kites were seen foraging for the entire length of the project area during surveys conducted between May and August 2010, but no nests were located. Suitable nesting sites were suspected in large Monterey cypress (*Cupressus macrocarpa*) just outside of the project area between Cut-Off Slough and Smith Creek. Local nesting was evident, as a recent fledgling was observed near the Ferndale Water Treatment Plant. ~~There are foraging areas adjacent to the project site, and it is likely that kites use this area primarily for foraging.~~

Nesting by white-tailed kites in California has been reported to occur from February through August with peak activity noted in March, April, and May (Waian 1973). The young fledge in approximately 35 to 40 days. As preferred kite habitats have diminished, kites must compete with larger raptors for nesting sites in remaining woodlands and agricultural settings. Any projects affecting the riparian corridor or open areas could impact the species.

Western snowy plover (Charadrius alexandrinus nivosus)

This species is federally listed as threatened, with designated critical habitat located just downstream of the project area, and is a state species of special concern. The areas designated as Critical Habitat do not include any portion of the Salt River, but do include five to ten miles of gravel bars within the Eel River (beginning at the Salt River/Eel River confluence), as well as the coastal spits and beach north and south of the mouth of the Eel River. The Pacific coast population of western snowy plover nests on beaches from the central Washington coast to the Baja peninsula. They prefer to nest on sand spits, unvegetated sand dune beaches and open areas near river mouths and estuaries, where vegetation and driftwood are sparse or absent. No suitable nesting habitat currently occurs in the project area. Nesting habitat may be present in the Salt River estuary after project implementation. Wintering areas are usually similar to those used for nesting. Pacific coast plovers commonly forage amongst piles of beached kelp and in the wet sand of the intertidal zone. Above the high tide line, they feed in dry sandy areas, saltpans, spoil sites, and along the edges of salt marshes and ponds (USFWS, 2007). Foraging habitat is present in the project area. Western snowy plover are known to breed and nest approximately one mile downstream of the project site in the lower Eel River gravel bars as well as on Centerville Beach, less than one mile southwest of the project area. Plover foraging activities may extend into the project area. Plovers may experience in-stream increases in turbidity levels due to the extensive earthwork and construction activities in Riverside Ranch and the Salt River channel. However, nesting and foraging typically occurs in

sand/gravel bars and should not be adversely affected by the construction and earthwork activities. Plovers would be likely to avoid the project area during construction.

Vaux's swift (Chaetura vauxi)

This bird species has no federal status and is a State Species of Special Concern. The Vaux's swift is a common summer resident and breeder in the project vicinity. During 2010 surveys, Vaux's Swift were seen foraging over open fields from Cut-Off Slough to the Ferndale Water Treatment Plant but no evidence of breeding in adjacent project area structures was observed. They use hollow trees and chimneys for nests and roosts, and there is habitat on the site for these birds to forage but not nest. In coastal northern and central California, where the state's highest breeding densities occur, preferred nesting habitat is old-growth redwood (*Sequoia sempervirens*) forests. In the spring, large numbers of swifts concentrate over lakes and marshes, often mixed with flocks of migrant swallows. Breeding Bird Survey data show sharp declines over much of the breeding range of this species (Bull and Collins 1993). These declines, and the restriction of most of the California breeding population to old-growth forests, led to the placement of this species on the California Bird Species of Special Concern list. A potential threat to migrants is the loss of important, traditional roost sites. Old growth habitat does not occur on site or adjacent to the project site.

California Yellow Warbler (Dendroica petechia brewsteri)

This bird species has no federal status and is a State Species of Special Concern. The California yellow warbler occurs as a summer resident in northern California and is usually found in dense riparian deciduous habitats with cottonwoods, willows, alders, and other small trees and shrubs typical of open-canopy riparian woodlands. Foraging patterns typically involve gleaning and hovering for insects and spiders. Current threats to California yellow warbler include degradation and loss of alder-cottonwood-willow and riparian habitats as well as nest parasitism by brown-headed cowbirds (*Molothrus ater*). The willow-dominated riparian habitat of the lower Salt River provides potential nesting habitat for California yellow warbler, which is a fairly common breeder in riparian habitats in Humboldt County (Heath 2008). Yellow Warbler was documented in 2010 surveys in Salt River riparian habitat from approximately the end of Riverside Road to the Highway 211 crossing. Although no nesting was documented, territorial, singing males provided evidence that Yellow Warblers are breeding in the riparian habitat they occupy on the Salt River.

Yellow-breasted Chat (Icteria virens)

This bird species has no federal status and is a State Species of Special Concern. It is a neotropical migrant that occurs throughout California. Yellow-breasted chats are found in dense, brushy thickets near water and in the thick understory of riparian woodlands. Foraging patterns usually involve gleaning insects, spiders, and berries from the foliage of shrubs and low trees. Nests are often low to the ground in dense shrubs along streams. Yellow-breasted chats typically occur further inland than the project site (Ricketts and Kus 2000). However, singing chats have been recorded in survey of gravel bars on the lower Eel River (Comrack 2008). The riparian habitat of the lower Salt River represents potentially suitable habitat for the species, and there is a moderate

probability that it occurs in the project area. However, surveys in June-July 2010 have resulted in no records of the Yellow-breasted chat in the project area.

Little Willow flycatcher (Empidonax traillii brewsteri)

This bird species has no federal status and is state listed as endangered. The Little willow flycatcher subspecies occurs annually as both a spring and fall migrant and casual summer resident and breeder in northwestern California (Hunter et al. 2005). Breeding habitat for the species includes lowland riparian woodlands dominated by willows, primarily in tree form or in the form of contiguous thickets, and cottonwoods (Craig and Williams 1998). Foraging patterns usually involve gleaning insects, spiders, and occasional berries from the foliage of shrubs and low trees (ibid.). It is an uncommon migrant through Humboldt County in the spring and can be fairly common in the early fall. Summering in Humboldt County by this species appears to be rare (Hunter et al. 2005). Possible breeding by willow flycatcher along the lower Salt River and near the confluence of the Eel and Van Duzen Rivers was documented in 1998 (ibid). The riparian habitat of the lower Salt River represents potentially suitable habitat for the species, and there is a low probability that it occurs in the project area. One singing male Willow Flycatcher was heard and seen in the riparian habitat adjacent to the Riverside Ranch barn. This individual was detected first on June 30, 2010, and also detected July 1, July 10 and last observed July 22, 2010 (Winzler & Kelly, 2010). There was no evidence of a female but the presence of a territorial male suggests suitable breeding habitat is present (Bombay et. al., 2003).

Western yellow-billed cuckoo (Coccyzus americanus occidentalis)

This bird species is a candidate for federal endangered species listing and is state listed as endangered. Western cuckoos breed in large blocks of riparian habitat, particularly woodlands with cottonwoods and willows (USFWS 2009). Dense understory foliage appears to be an important factor in nest site selection, while cottonwood trees are an important foraging habitat in areas where the species has been studied in California (ibid). Western yellow-billed cuckoo have repeatedly been observed in riparian areas of Cock Robin Island in the Eel River, within three miles to the north of the project site. However, cuckoos are not known to enter the project area. Relative to the riparian habitat on Cock Robin Island, riparian habitat in the project area is narrow, with adjacent livestock grazing. While such habitat could be used for foraging and possibly for nesting by cuckoos, it is not considered preferred nesting or foraging habitat and the probability of its use by cuckoos is low. Surveys performed for this project during the spring and summer 2010 have resulted in no observations of the cuckoo (G. Lester, Personal Communication, Winzler & Kelly, July 2010). The cuckoo would be likely to avoid the project area during construction.

Western Burrowing Owl (Athene cunicularia)

This bird species has no federal status and is a State Species of Special Concern. It is a grassland species that is broadly distributed in western North America (Shurford and Gardali 2008). Burrowing owls utilize burrows dug by other species, or in some cases by the owls themselves, for roosting and nesting, and forage in the burrow's vicinity in relatively short vegetation with only sparse shrubs and taller vegetation (Shuford and Gardali 2008). Burrowing owls do not breed in

Northwestern California, but are known to winter in the region. They are documented from the South Jetty in the project vicinity, and may winter in grassland in the project area.

Bryant's Savannah Sparrow (Passerculus sandwichensis alaudinus)

This bird species has no federal status and is a State Species of Special Concern. It is a California endemic whose range extends from Humboldt Bay south to Point Concepcion (Shuford and Gardali 2008). It winters and breeds in low tidally influenced habitats, adjacent ruderal areas, moist grasslands within and just above the fog belt, and, infrequently, drier grasslands (Shuford and Gardali 2008). While the species commonly utilizes salt marsh in much of its range, it is very uncommon in salt marsh in the Humboldt Bay region, where it utilizes moist grasslands preferentially (Hunter et al. 2005). The species is a confirmed breeder from the immediate project vicinity (Hunter et al. 2005) with suitable habitat present in the project area.

Townsend's Big-eared Bat (Corynorhinus Plecotus townsendii)

This bat species has no federal status and is a State Species of Special Concern. The Townsend's big-eared bat was once common in California, but now is considered uncommon to rare. This species frequents rural buildings and woodlands, but is extremely sensitive to human disturbance and will quickly abandon roosting sites if disturbed. . ~~There are no abandoned buildings or other potential roost sites in the project area.~~ A recently abandoned barn on Riverside Ranch provides a potential roost site in the project area. However, no evidence of bat roosting was observed in several search attempts inside and outside the barn. The Dillon Road and Fulmor road bridges were also searched for bat roosting evidence and adjacent dawn foraging but no bats were observed. This species may forage on the project site.

By night this species roosts and feeds on small moths and other insects. Townsend's big-eared bat is considered sedentary; it is not known to migrate more than 15 km over a lifetime of up to 16 years. The bats mate in the late fall and early winter. These bats are thought to eat mainly moths. Townsend's big-eared bats hibernate when wintering in cold areas, and may share hibernation locations with other bat species. This species is found throughout western North America, especially at upper elevations. The wide environmental tolerance of Townsend's big-eared bat is reflected in its wide geographic range. Townsend's big-eared bat prefers mesic habitats, in particular coniferous and deciduous forests. Townsend's big-eared bat is a cave roosting species but will inhabit human-built caves such as mines, tunnels, bridges, and buildings. The bat is sensitive to human intrusion. This sensitivity to human disturbance is possibly the cause of the species' population decline.

Pallid Bat (Antrozous pallidus pacificus)

This bat species has no federal status and is a State Species of Special Concern. Pallid bats are large bats, and the Pacific race represents one of the largest bats in California. Colonies of this species generally roost in rocky outcroppings, in buildings, under bridges, and in hollow trees, ranging from a few to over a hundred individuals in any given roost. The barn at Riverside Ranch is the only potential roost site in the project area.

Pallid bats forage on terrestrial arthropods, and frequent dry, open grasslands near water. This species may forage in the open fields on the project site. Pallid bats leave the day roost to forage about an hour after sunset, and can consume up to half its weight in insects every night. They rarely catch flying insects; instead, pallid bats usually capture their prey on foliage or the ground. They feed on insects such as the ten-lined beetle, and also on crickets and scorpions. The mating season lasts from October through February. Birth takes place during the first half of June. In four to five weeks young bats are capable of short flights, and by eight weeks they attain full adult size.

Hoary Bat (Lasiurus cinereus)

This bat species has no federal status and is a State Species of Special Concern. This bat is migratory and moves northward in spring and southward in winter. Like its relative the red bat, with which it frequently associates, the hoary bat is more or less solitary and frequents wooded areas where it roosts in the open by hanging from a branch or twig. Hoary bats are thought to prefer trees at the edge of clearings, but have been found in trees in heavy forests, open wooded glades, and shade trees along urban streets and in city parks. Their chief food is moths, although they are known to also eat beetles, flies, grasshoppers, termites, dragonflies, and wasps. One to four young are born from mid-May into early July. From August through October, hundreds of hoary bats may travel together during fall migration. In the United States, most apparently overwinter in coastal areas, along the West Coast from San Francisco south.

Yuma Myotis (Myotis yumaensis)

This bat species has no federal status and is a State Species of Special Concern. The Yuma myotis bat occurs along the western quarter of North America from Canada, south to Mexico, and eastward to Idaho and Texas, including parts of Montana, Utah and Colorado. This bat is common in California and found throughout the state except in the Mojave and Colorado deserts of southeastern California. It occupies a variety of habitats below 11,000 feet (3300 meters) and is rare above 8,000 feet (2560 meters). It is found in open forests and woodlands usually feeding over water. It emerges soon after sunset and feeds on a variety of flying insects low to the ground. It roosts in buildings, mines, caves, or crevices (Zeiner et al. 1990). Because the species is common and widespread, it may forage in the project area. However, roosting habitat for the Yuma myotis is lacking in the project area.

The Yuma myotis may make short seasonal migrations from higher elevations to preferred hibernacula. It forms large maternity colonies of several thousand in buildings, caves and bridge structures. It mates in the fall and bears one young between late May and mid-June. The Yuma bat has been found roosting with other bats including pallid, and Mexican free-tailed bats. Animals have lived up to 8.8 years (Zeiner et al. 1990).

3.3.2 REGULATORY SETTING

Assessment of impacts to biological resources in the Salt River Ecosystem Restoration Project area is subject to many public policies, regulations, and laws affecting biological resources. These are described briefly below in the context of the proposed project and summarized on Table 3.3-5.

Table 3.3-5 Summary of Regulatory Setting for Aquatic, Plant and Wildlife Resources

Project-Related Activity	Regulatory Authority
Construction activities within coastal zone wetlands and agricultural lands	California Coastal Commission, permitting authority under the California Coastal Act
Construction activities that could adversely affect water quality	Regional Water Quality Control Board (RWQCB), permitting authority under Section 401 of the Clean Water Act
Construction activities within jurisdictional waters of the United States	U.S. Army Corps of Engineers (Corps) permitting authority under Section 404 of the Clean Water Act (1972) and Section 10 of the Rivers and Harbors Act (1899)
Alteration of stream channel, bed, or bank, including dredging or discharge of fill	Dept. of Fish and Game (DFG), permitting authority under Section 1601 (Lake or Streambed Alteration Agreement) of the California Fish and Game Code
Effects on species or the habitat of species listed or candidates for listing under Endangered Species Act (ESA)	US Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) formal consultation and permitting authority under Sec. 7 of ESA
Effects on species or the habitat of species listed or candidates for listing under Ca. Endangered Species Act (CESA)	DFG, consultation and permitting authority under Sec. 2081 of CESA
Effects on other special-status species, including species of concern and California Native Plant Society (CNPS)-listed plants	DFG and USFWS, responsible agencies to review EIR
Effects on species or the habitat of commercially viable fish	National Marine Fisheries Service (NMFS) consultation under Essential Fish Habitat

FEDERAL LAWS, REGULATIONS, POLICIES

Clean Water Act (33 U.S.C 1252 Et Seq.)

The Clean Water Act is a federal law aimed overall at restoring and maintaining the chemical, physical and biological integrity of United States waters, by reducing or eliminating discharges of pollutants that degrade aquatic resources. The pertinent section of the Clean Water Act in the context of fill placement in wetlands and wetland restoration is Section 404. The regulations for Section 404 prepared by the Environmental Protection Agency (EPA) implement specific policies for discharges of earthen fill materials in wetlands: these are known as the "404(b)(1) Guidelines" (40 C.F.R. Part 230). In addition, the preamble to the Guidelines published in the Federal Register articulates EPA policies specific to discharges of fill for the purpose of habitat construction, such as wetland restoration (Federal Register Vo. 45, No. 249, December 24, 1980, p. 85344, "Habitat Development and Restoration of Water Bodies"). These specific policies as well as the Guidelines are pertinent to the project.

The 404(b)(1) Guidelines describe exceptions for a general rule that fill should not be discharged in waters of the United State if there is a practicable alternative that would overall have less adverse impact on aquatic resources. They presume that for special aquatic sites like wetlands, practicable alternatives to fill discharges in wetlands are available unless otherwise demonstrated. The

Guidelines also prohibit discharges of fill that may cause or contribute to "significant degradation" of U.S. waters, or discharges that may jeopardize a federally listed endangered or threatened species. Finally, for approved fill discharges in U.S. Waters, the Guidelines require that practical steps must be taken to minimize impacts (mitigation; Subpart H). The Guidelines require detailed factual determinations (40 C.F.R. Section 230.11, Subparts C-F) to support permit decisions that must comply with the Guidelines, including physical, chemical, and biological impacts, impacts to special aquatic sites (wetlands, mudflats, refuges, mudflats, vegetated shallows, etc.), and impacts to human uses. These factual determinations identify the specific functions and values of aquatic habitats that must be evaluated for impacts of proposed fill. Permits for fill discharges subject to Section 404 are issued by the U.S. Army Corps of Engineers, with some programmatic oversight from EPA. The Army Corps is authorized to issue a Section 404 Permit for the discharge of dredged or fill material into waters of the U.S., provided that such discharges are found to be in compliance with the Sections 401 and 404(b)(1) guidelines published by the U.S. Environmental Protection Agency

The project alternatives all propose variable amounts of fill in existing non-tidal wetlands, all of which have been determined to be within Federal jurisdiction (Ericsson et al. 2008). The overall purpose of the project is to restore tidal wetlands and the Salt River, increasing the net extent and quality (ecological function) of U.S. Waters in the long term. This is consistent with the "Habitat Development and Restoration" policies of EPA discussed in the preamble of the Guidelines. These policies also advise against substituting one viable aquatic habitat for another, and recommend selection of "obviously degraded or significantly less productive habitats" for restoration.

Rivers And Harbors Act of 1899 (33 U.S.C. 403, Section 10)

The Rivers and Harbors Act of 1899 is principally concerned with regulation of any work or structures navigable waters and impacts to navigation, but "navigable waters" in law is broadly defined to include all tidal waters. Permits authorizing work or structures under this law are issued by the Corps, whose permit process also includes Clean Water Act Section 404 authorization and a consolidated public interest review of factors affecting both laws. Rivers and Harbors Act jurisdiction may in some cases expand the overall federal jurisdiction of the Corps, and may trigger other federal environmental laws. In the Salt River Ecosystem Restoration Project design, the breaching of levees and restoration of tidal flows would be subject to regulation under the Rivers and Harbors Act.

Endangered Species Act (16 U.S.C. 1531 et seq.)

The Endangered Species Act of 1973, as amended (ESA) establishes a national program for conservation (survival and recovery) of species listed as threatened or endangered, and the ecosystems on which they depend. The sections of ESA that apply to the proposed project are Section 4, Section 7, and Section 9. The U.S. Fish and Wildlife Service (Department of Interior) and the National Oceanic and Atmospheric Administration - Fisheries (NOAA Fisheries) are responsible for implementing the Endangered Species Act. Listed plants, wildlife, and non-anadromous fish species are regulated by the U.S. Fish and Wildlife Service, and listed anadromous fish species and marine mammals are regulated by NOAA.

Section 4 of the ESA requires that listed species have federal plans for their recovery, including practical steps for implementation. By policy, recovery plans also include ecosystem restoration objectives and objectives for conserving species of concern that may become threatened or endangered. Federal agencies have an affirmative obligation to use their discretion to further the recovery of listed species by cooperating with the implementation of recovery plans recommendations.

Section 7 of the ESA requires that federal agencies must consult with the Service or NOAA if their actions may affect a federally listed species. Section 7 also prohibits any federal agency from taking actions that are likely to jeopardize the survival and recovery of listed species. Issuance of a federal permit is one type of action that may trigger the requirement to initiate Section 7 consultation. The Service or NOAA concludes formal Section 7 consultation with the issuance of a biological opinion. The biological opinion may also include an "incidental-take statement." The incidental take statement provides authorization for incidental "take" (indirect killing, harm, harassment, injury) of listed fish or wildlife species that is otherwise prohibited by Section 9 of the ESA.

The proposed project includes actions recommended by recovery plans. Construction of the project may have long-term beneficial effects on the recovery of some federally listed endangered species, and also some short-term adverse effects.

Migratory Bird Treaty Act (16 U.S.C. 703 et seq.)

The Migratory Bird Treaty Act governs the "taking" of migratory birds, their eggs, parts, and nests. Actions that harm or kill migratory birds (including their essential feeding, roosting, nesting behaviors) are regulated by the Migratory Bird Treaty Act. Project construction activities could result in short term disturbance of nesting migratory birds, and conversion of riparian scrub habitat to open water and riparian herbaceous habitat will affect migratory birds.

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act, as amended (BGEPA)[1], provides protection for the bald eagle (*Haliaeetus leucocephalus*) and golden eagle (*Aquila chrysaetos*) by prohibiting the taking, possession, and commerce of such birds, their nests, eggs, or feathers unless expressly authorized by permit pursuant to federal regulations. The bald eagle is the only species subject to the provisions of the BGEPA with habitat in the project area. To fulfill the requirements of the BGEPA, the project will be designed to avoid "take," as defined by the BGEPA. Bald eagles are consistent, if somewhat rare, winter visitors to the project vicinity and will benefit from improved foraging habitat due to project implementation, as discussed above.

Executive Order 13112, Invasive Species

This Executive Order inaugurated the National Invasive Species Management Plan and National Invasive Species Council (Council) in 1997. It provides policy direction to promote coordinated efforts of federal, state, and local agencies in monitoring, detecting, preventing, evaluating, man-

[1] 16 U.S.C. 668-668c

aging, and controlling the spread of invasive species and increasing the effectiveness of scientific research and public outreach affecting the spread and impacts of invasive non-native species.

The project has objectives to minimize the spread of invasive species, but also carries some unavoidable risks of increasing the spread of some invasive species.

Executive Order 11988, Floodplain Management

This Executive Order directs federal agencies to avoid long-term and short-term adverse impacts of development in floodplains, to the extent practical. The purpose of this policy is to minimize the risk of flood losses, risk to human safety, health, and welfare. An inherent consequence of this policy is to promote retention of undeveloped floodplains in conditions suitable for wetlands. The proposed project will reduce the risk of flood losses by restoring the conveyance capacity of the Salt River channel.

STATE OF CALIFORNIA LAWS, REGULATIONS, AND POLICIES

California Coastal Act of 1976

The California Coastal Act (California Public Resources Code sections 30000 et seq) was enacted by the State Legislature in 1976 to provide long-term protection of California's 1,100-mile coastline for the benefit of current and future generations. Coastal Act policies constitute the standards used by the California Coastal Commission (Commission) in its coastal development permit decisions and for the review of local coastal programs (LCPs) prepared by local governments and submitted to the Commission for approval. These policies are also used by the Commission to review federal activities that affect the coastal zone. Among other things, the policies require:

- Protection and expansion of public access to the shoreline;
- Protection, enhancement and restoration of environmentally sensitive habitats;
- Protection of productive agricultural lands, commercial fisheries and archaeological resources;
- Protection of the scenic beauty of coastal landscapes and seascapes;

All new development proposed on tide and submerged lands, and other public trust lands must receive a permit from the Coastal Commission (PRC 30519(b), and 30416(d)). Section 30107.5 defines an "environmentally sensitive area" 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." An important Coastal Act policy is the protection, enhancement and restoration of environmentally sensitive habitats, including intertidal and nearshore waters, wetlands, bays and estuaries, riparian habitat, certain wood and grasslands, streams, lakes, and habitat for rare or endangered plants or animals. Article 4 Section 30231 of the Coastal Act provides that "(t)he biological productivity and the quality of coastal water, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and where feasible restored…."

California Endangered Species Act (Fish and Game Code Section 2050 et seq.)

The state equivalent of the federal Endangered Species Act, CESA has similar, but distinct requirements and goals. CESA requires State agencies to coordinate with the California Department of Fish and Game to ensure that state-authorized or state-funded actions do not jeopardize a state-listed species. The state list of species classified as rare, threatened, or endangered does not correspond with the federal list of threatened and endangered species. CESA prohibits unauthorized "take" of a state-listed species.

The Fish and Game Code also includes a less familiar special legal status for some species as "fully protected," a category developed before CESA was authorized. Most "fully protected" species have been placed on the state list of rare, threatened, or endangered species, but some have not. Prohibitions against take of older "fully protected" species are more stringent and inflexible than those of CESA, generally prohibiting nearly all "take", and providing no instrument to authorize "take" except for recovery and research actions. Fully protected species regulations in the Fish and Game Code are found at §3511 for birds, mammals at §4700, reptiles and amphibians at §5050, and fish at §5515 and California Code of Regulations, Title 14, Division 1, Subdivision 1, Chapter 2, Article 4, §5.93. The category of Protected Amphibians and Reptiles in Title 14 has been repealed.

California Native Plant Protection Act (Fish and Game Code Section 1900 et seq.)

In addition to the California Endangered Species Act, the Native Plant Protection Act (NPPA) protects endangered and "rare" species, subspecies, and varieties of native California plants. The species listed under this law, which preceded CESA, now overlap with those of CESA. NPPA contains many exemptions for agriculture and forestry, and many exceptions, but it otherwise generally prohibits unauthorized "take" of listed plants. NPPA contains "notice and salvage" provisions that require landowners to notify CDFG to "salvage" (rescue by transplanting – a technique no longer generally scientifically supported) listed plants in the path of land-clearing or development activities.

Porter-Cologne Water Quality Control Act (California Water Code Section 13000 et seq.; C.C.R. Title 23, Chapter 3, Chapter 15)

The Porter-Cologne Water Quality Act provides the state with broad jurisdiction over water quality and waste discharge, and also provides the state the authority to prepare regional Basin Plans that identify "beneficial uses" of state waters that expressly include biological resources such as wetlands, fish, and wildlife conservation. Biological "beneficial uses" of state waters are subject to regulation through various means, including mandatory conditions attached to state water quality certification of federal Clean Water Act (Sections 401, 404) authorizations. The Regional Water Quality Control Boards frequently provide Porter Cologne compliance with wetland beneficial use policies by attaching mandatory conditions to Section 401 certification for Corps permits for fill discharges in federal jurisdictional wetlands.

Executive Order W-59-93, California Wetlands Conservation Policy

This state policy established by the Governor of California in 1993 provides substantive environmental goals to ensure no overall net loss of wetlands, to achieve a long-term net gain in the quantity, quality, and permanence of wetlands in California, with due concern for private property and stewardship. Although the Salt River Ecosystem Restoration Project will result in the conversion of some wetlands into aquatic habitats, overall the project will result in a significant long-term net gain in the quantity, quality and permanence (dynamic stability) of wetlands, consistent with this policy

Fish and Game Code Section 1600 Et Seq. (Streambed Alteration Agreements)

The California Legislature repealed and re-enacted with modification this section of the Fish and Game Code in 2003. It has as its primary purpose the protection of the state's fish and wildlife resources from harmful impacts of activities that occur near any rivers, streams, lakes and other water bodies in the state, regardless of the amount or duration of flow. "Fish" are broadly defined in the Fish and Game Code (Section 45) as aquatic organisms, including mollusks, crustaceans, invertebrates, or amphibians. Prior to undertaking stream-altering activities that may adversely affect fish or wildlife, applicants must notify the DFG, pay fees, and enter into an agreement with the DFG for authorization. The DFG may authorize (for up to 5 years) alteration of streams with scientifically sound, reasonable conditions to avoid or minimize harm (substantial adverse effects) and protect fish and wildlife resources. The Department has discretionary authority to modify the conditions of a Section 1600 Stream Alteration Agreement.

LOCAL LAWS, REGULATIONS, AND POLICIES

County regulations regarding environmentally sensitive habitat areas such as salt marsh, mudflats, coastal streams and riparian habitats apply to the project area. These regulations are enumerated in the Eel River Area Plan section of the Humboldt County Local Coastal Plan (County of Humboldt 1995). County regulations limit the circumstances under which disruption of sensitive habitat, diking, filling, and dredging of wetlands, and significant alteration of streams is permitted. These activities are permitted by the County when they are carried out for fish and wildlife habitat restoration or improvement with DFG consultation (Eel River Area Plan Sections 30233(a), 30607.1, 30236). Development within riparian corridors is normally prohibited, but it can be permitted in order to maintain or replace flood control channels, among other reasons (Eel River Area Plan Section 30236). In the case of the Salt River, the riparian corridor is defined by the Local Coastal Plan as being limited to the bankfull channel (Eel River Area Plan Section 30236). In other perennial and intermittent streams in the area, the riparian corridor can extend as far as 200 feet from the inner (streamside) edge of riparian vegetation, depending on slope, existing riparian vegetation, and the presence of areas of bank instability and slides (Eel River Area Plan Section 30236).

Regulated Habitats

United States Army Corps of Engineers Jurisdiction

The Corps performed a planning level delineation of aquatic resources within the Salt River watershed that included the project area (Ericsson et al. 2008). Their assessment of wetland and non-wetland Waters of the U.S. was utilized for this summary of existing conditions. The Corps used modified standard delineation sampling protocols and developed wetland probability ratings for Section 404 Regulatory purposes. Sampling protocols outlined in the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys and Coast Region* (US Army Corps of Engineers 2007) and "Waters of the U.S." at 33 CFR 328 were modified for use at the watershed scale. To delineate at this scale, riparian corridors were mapped for hydrogeomorphic surfaces representing a combined bankfull and active floodplain and a separate terrace floodplain, which were later interpreted for return interval requirements under Section 404. Individual vegetation units at the species association level were sampled to develop a characterization of the indicators for both wetlands and other Waters of the U.S. By combining field sampling results for wetland occurrences within various mapped vegetation types with the flood frequency information obtained from the geomorphic surface map, probabilities ratings intended for planning and regulatory purposes were developed to accommodate all variations. Six categories of wetland or Waters of the U.S. ratings were assigned to each of the riparian vegetation units with ratings ranging from always regulated, to upland or not regulated.

Most of the areas within the active floodplain were found to be wetlands (Waters of the U.S.), and therefore are regulated under Section 404 of the Clean Water Act (CWA). The wetland status of vegetation types occurring in the floodplain terrace geomorphic setting varied depending on a number of factors. Due to the variability in both site conditions and patterns of occurrence for certain riparian vegetation types in terraces with similar site conditions, probability ratings were adopted to determine the likelihood of wetlands or non-wetland Waters of the U.S. occurring in both the floodplain and non-floodplain areas.

California Department of Fish and Game Jurisdiction

Areas potentially subject to the jurisdiction of DFG, under Section 1600 of the California Fish and Game Code were identified during this survey as the top of bank and/or the outer edge of the willow riparian habitat along the Salt River and its tributaries.

3.3.3 IMPACTS AND MITIGATION

IMPACT EVALUATION CRITERIA AND METHODOLOGY

Based on the CEQA Guidelines a biological impact is considered significant if the project would:

- 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 CDFG or USFWS.

- Have a substantial adverse effect on any riparian habitat or other sensitive natural community in local or regional plans, polices, or regulations, or by the CDFG or USFWS.
- 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.
- 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.
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional or state habitat conservation plan.

Federal, state and local agencies all have policies and/or ordinances addressing the loss of wetland. In general goals include "no net loss" of wetlands. When wetlands are to be lost and/or filled as result of project implementation, the loss needs to be mitigated by creation of habitat of equal or greater acreage and value.

For the analysis of biological impacts, three impact duration categories are used. The category of "short-term impacts" refers to impacts that would be largely limited to the period of active construction. The category of medium-term impacts refers to a period of approximately 10 years during which vegetation communities and associated wildlife would be in a transitional phase between baseline or construction and long-term conditions. The category of long-term or permanent impacts refers to changes that are expected to persist for 50 years or longer. Changes in extent and type of community were projected based on changes in surface and groundwater elevation and inundation frequency, as calculated by H.T. Harvey and Associates (2008) and Tauzer (2009), as well as based on the revegetation plan for the project area (H.T. Harvey and Associates 2010), as discussed above.

OVERVIEW OF IMPACTS

Overview of Restoration Trajectory

Table 3.3-2 (above) and Figure 2-8 summarizes the projected change in land cover types in the project area after ten years. For the Salt River Channel Restoration Area, the analysis is based on the channel design (including floodplain recontouring) and revegetation plan. For the Riverside Ranch Restoration, restoration features were joined with a Digital Elevation Model (DEM) and proposed levee breaches were simulated. Tidal datum studies performed by Kamman Hydrology & Engineering (cited in H.T. Harvey 2008) as well as relative elevations of existing tidal habitats were utilized in projecting the anticipated habitats associated with a fully tidal hydrologic regime.

Salt River Channel Restoration. The Salt River Channel Restoration Area consists primarily of riparian forest and scrub in the existing Salt River and tributary channels, with adjacent agricultural

grasslands. Implementation of the Salt River Channel Restoration would result in the conversion of riparian forest and scrub to a mixture of aquatic and riparian herbaceous habitat. Riparian forest and scrub would be retained between the elevations of annual and two year floods. In addition, riparian forest and scrub would be planted on the adjacent floodplain where feasible. Riparian herbaceous species would be planted in the depositional floodplain adjacent to the low flow channel. Riparian herbaceous habitat is expected to develop rapidly, within the first two years after construction. Riparian forest and scrub would also be actively planted, but would mature at a slower rate. However, riparian forest and scrub is expected to provide moderate levels of many ecosystem services, including wildlife habitat and channel shading, within five years of construction, as is generally the case with actively planted riparian revegetation projects on the North Coast (Lennox et al. 2007).

Increased availability of aquatic habitat would enhance habitat in the Salt River for fish, including threatened salmonids, and for herons, egrets, and waterfowl, as discussed above in the "Aquatic Habitat" section. However, neotropical migratory birds and other species utilizing riparian habitat are expected to temporarily decline in abundance.

Riverside Ranch Restoration. Much of Riverside Ranch can currently be described as agricultural grasslands with seasonal wetland characteristics. Implementation of Riverside Ranch Restoration would result in the conversion of large areas of agricultural grassland and seasonal wetlands to tidal marsh habitat, with only traces of seasonal wetlands remaining. The increase in ruderal habitat is associated with the construction of the new setback berms, which would result in some ruderal species establishment.

Tidal marsh restoration is expected to proceed rapidly at Riverside Ranch. The majority of the Riverside Ranch site is currently at Mean Tide Level or above and consists of large areas of existing agricultural grasslands. Because much of the future marsh plain at Riverside Ranch is above mudflat elevation, the existing grassland habitat would rapidly convert to salt marsh dominated species once tidal connection is established. Vegetated marsh plains typically form through lateral expansion of rhizomes from each established plant in mudflat areas, and interior marsh areas from plant expansions along the site perimeter. Based on the research of Eicher (1987), the agricultural grassland vegetation on the marsh plain would eventually be replaced by pickleweed (*Sarcocornia pacifica*) and slough sedge (*Carex obnupta*) with a greater diversity on the high marsh including species such as salt grass (*Distichlis spicata*), slender arrowgrass (*Triglochin concinna*), spearscale (*Atriplex patula*), jaumea (*Jaumea carnosa*), gumplant (*Grindelia stricta*) and sand spurry (*Spergularia macrotheca*). Cordgrass (*Spartina densiflora*), if not controlled, may colonize with pickleweed, but with pickleweed occurring at a slightly lower elevation and extending slightly higher as the marsh transitions to high marsh species.

The projected habitats anticipated in Year-5 after breaching include a significant conversion of agricultural/grassland habitat to predominantly low to mid marsh, with some high marsh at the higher elevations, and mudflat and subtidal (ponded) areas at the very lowest elevation. The habitat enhancement features would also provide rapid development of high marsh in some areas, as well as the retention and possible enhancement of willow thickets and seasonal wetlands. In addition,

approximately 14 acres of riparian scrub would be planted in higher elevation areas of Riverside Ranch.

Restoration of other tidal marsh sites in California has resulted in expected shifts in fish and wildlife communities. When sites are first exposed to tidal action, mudflats are typically created, resulting in rich invertebrate communities and large numbers of foraging shorebirds, especially during winter. As vegetation develops (e.g., pickleweed, and potentially cordgrass), the bird community generally shifts to larger shorebirds, and lower abundance. When mature marsh has been established, bird abundance (for many species) and diversity can be quite low, but habitat becomes suitable for the suite of species found in such tidal marshes, including special-status species such as northern harrier and short-eared owl. However, a primary goal of this project is to enhance habitat for fish, as estuaries provide important habitat for juvenile salmonids and other fish species. The restoration of Riverside Ranch is anticipated to significantly increase the amount of estuarine habitat at the confluence of the Salt and Eel Rivers, thus providing a net benefit to salmonids and to other species, such as Dungeness crabs (*Cancer magister*).

ANALYSIS OF PROJECT IMPACTS BY ALTERNATIVE

Alternative 1 (Proposed Project): Modified Channel/Riverside Ranch Restoration/Upland Restoration

Impact 3.3.1-1: Long-term impacts to wetlands

While Alternative 1 would result in net increases in the extent of wetlands in the project area, it would also involve the filling of some wetlands and the conversion of some riparian forest and scrub, seasonal wetlands and aquatic habitat to other types of wetlands and waters (primarily tidal marsh, riparian forest and scrub, and open water; see Table 3.3-2 for projected changes in habitat acreage from the Riverside Ranch and Salt River Channel Restoration project components). The project would therefore result in impacts to Corps jurisdictional wetlands, and California Coastal Commission ESHA – wetlands. The project would involve removal of sediment deposits from wetlands and stream channels, and placement of fill into existing wetlands and drainage ditches. In addition, heavy equipment would be required to operate within areas defined as wetlands.

In the case of the proposed project, conversion of wetlands from one type to another is not considered to be an adverse impact because it would further the objective of restoring historic tidal marsh and the Salt River channel with the capacity to maintain high levels of biological function with minimal maintenance. Project design would minimize filling or excavation of wetlands, but the project is considered self-mitigating in light of the net increase in wetland area and function that it makes possible. Analysis of project impacts to wetlands is informed by state policy regarding coastal wetlands restoration, as enumerated by the California Coastal Commission (CCC) in *Procedural Guidance for Evaluating Wetland Mitigation Projects in California's Coastal Zone* (CCC 1995). In Chapter 8, Paragraph 2, the CCC states that wetland restorations that are not undertaken to satisfy mitigation requirements "should be guided by the desire to achieve functional equivalency with historic conditions or with reference wetlands." Paragraph 3 states that "wetland restoration is defined here as an activity that reestablishes the habitats and functions of a former wetland". This project would

reestablish historic tidal function and salt marsh habitat. Paragraph 5 states that "there are other important distinctions between restoration projects completed for mitigation and restoration projects completed for other reasons. For example, there is no need to consider the various mitigation attributes. In particular it is not necessary to consider project location and mitigation ratios in designing a restoration project, since habitat compensation is not an issue."

Project implementation would result in the filling of approximately 25.4 acres of wetlands, and the creation of approximately 37.6 acres of wetlands. In addition, approximately 340 acres of wetlands and waters would be converted from one wetland type to another. This acreage is currently comprised of 325 acres of mesic grasslands and 15 acres of seasonal wetlands. After project implementation, it would consist of 298 acres of salt marsh, 7 acres of high marsh ecotone, 14 acres of tidal freshwater marsh, 8 acres of freshwater channel wetland, and 13 acres of aquatic/mudflat habitat. This conversion represents a restoration of historic habitat types and of important ecosystem processes and attributes, such as sediment transport and floodplain connectivity. ~~The 305 acres of wetland and waters restored through excavation, new and enhanced channel configurations, and the re-introduction of a natural tidal regime would fully compensate for the 29 acres of wetlands and waters and 247 acres of mesic grasslands impacted by the project.~~ The wetland restoration would provide substantial qualitative enhancement of wetland habitats for the project area as a whole. The project would also remove soil material from other existing channels to deepen or enhance drainage and flood capacity, and increase tidal prism. The channels would not "drain" a wetland; they would become an extension of the Eel/Salt River estuary wetland system. The enhanced channels and surrounding areas would be designed and managed to function as wetlands and riparian habitat with high levels of fish and wildlife habitat function. This would result in an increase in wetland habitat and functioning. Impacts to riparian forest and scrub, parts of which are also wetlands, are discussed further below in Impact 3.3.4. Short-term impacts to wetlands and waters are discussed below in Impact 3.3.3. Long-term impacts to wetlands from each of the four project components are discussed below.

Impacts of Upslope Sediment Reduction: Upslope sediment reduction activities include stream crossing improvements, bank stabilization, and other work that may involve dredging or placement of fill in a wetland or water. The total area of wetlands and waters affected by these activities would be small (<1 acre) in extent. Fill and dredging in wetlands would be avoided to the extent feasible. Improved stream crossings may involve the removal of old stream crossing structures and the installation of new structures (e.g. the replacement of Humboldt Crossings by culverts or bridges). Bank stabilization would involve the use of bioengineering structures, such as willow walls, which would enhance habitat value and water quality. These activities would result in a net reduction in fill in wetlands, and would also enhance water quality by reducing fine sediment influx into streams. No significant long-term impacts to wetlands and waters would occur as a result of the project's upslope sediment reduction activities.

Impacts of Salt River Channel Restoration: Channel excavation activities that are part of the channel restoration would convert ~~6~~11 acres of seasonal wetlands into open water, tidal freshwater marsh, freshwater channel wetlands, and riparian habitat (herbaceous and riparian forest and scrub), and would restore an additional 11 acres of freshwater wetlands. Channel excavation also would result in the removal of 32 ~~convert approximately 4~~ acres of riparian forest and scrub and the

restoration of 51 acres of riparian forest and scrub.~~,~~ ~~s~~Some of ~~which~~ this riparian forest and scrub area meets the criteria for jurisdictional wetlands~~, to open water and riparian herbaceous/freshwater marsh habitat. In addition, approximately 6 acres of riparian forest and scrub habitat in the new channel may have reduced habitat value due to wide spacing of overstory trees and lower density or absence of understory to allow for grazing in these areas. The floodplain recontouring activities that are part of the channel restoration would convert 85acres of seasonal wetland and agricultural grassland with wetland characteristics to agricultural grassland without wetland characteristics. Floodplain recontouring activities will avoid areas that are currently riparian forest and scrub.~~ Channel maintenance activities would not result in long-term impacts to wetlands and waters. The channel restoration component would also include conversion of 524 acres of agricultural grassland to open water, riparian herbaceous habitat, and riparian forest and scrub, reducing the net impact of this component to wetlands and waters. While much of the agricultural grassland to be converted to other habitat types is a jurisdictional wetland, the restored wetland habitats would provide a higher level of ecosystem services and fish and wildlife habitat.~~ The channel restoration component would also include the restoration of approximately 25 acres of riparian forest and scrub on what is currently agricultural grassland with wetlands characteristics on the Vevoda Ranch.~~

Impacts of Riverside Ranch Component: Seasonal wetlands in agricultural grasslands would be filled for the construction of berms on Riverside Ranch to protect agricultural land in the project area and neighboring properties from flooding. Approximately 19~~5~~ acres of berms on Riverside Ranch would be constructed in mesic agricultural grassland ~~dominated by perennial ryegrass, in an area rated by the Corps as having 33-66 percent probability of meeting the criteria for a federally jurisdictional wetland (Ericsson et al. 2008). Approximately an additional 4 acres of berms on Riverside Ranch would be constructed in more mesic agricultural grassland, dominated by creeping bentgrass. This area is rated by the Corps delineation as having a >66 percent probability of meeting the criteria for a federally jurisdictional wetland.~~ In addition, excavation of an outboard drainage ditch associated with the berms would occur in less than 0.5 acre of seasonal wetlands. Approximately two acres of ditches in Riverside Ranch would be filled in order to prevent tidal energy from being drawn away from the historic channel system. Filling agricultural drainage ditches would concentrate tidal energy in pilot channels to facilitate scour of historic tidal channels and restoration of a natural channel system. Implementation of Riverside Ranch restoration would result in the conversion of 3-4 acres of seasonal wetlands to tidal marsh or to riparian forest and scrub. Conversion of agricultural grasslands and seasonal wetlands to riparian forest and scrub would involve placement of fill on approximately 15 acres of Riverside Ranch to raise the elevation of these areas to approximately 2 feet above Mean Higher High Water. These 15 acres of riparian forest and scrub would meet the criteria for California Coastal Commission wetlands because they will be dominated by hydrophytic vegetation, but may not be inundated with sufficient frequency to meet the criteria for Corps wetlands.

Impact Significance

Less than significant (Alternative 1 would be self-mitigating).

Impact 3.3.1-2: Medium-term impacts to wetlands

Medium-term loss of wetland functions while restored wetlands are developing may occur as a result of Alternative 1. However, seasonal wetlands and mesic grasslands currently function at a relatively low level to provide plant and wildlife habitat, flood control, water quality enhancement, and carbon storage. Restored tidal marsh and riparian herbaceous/freshwater marsh wetlands are expected to develop quickly (within 2 years) after construction and planting.

Impacts of Upslope Sediment Reduction. No medium-term loss of wetland functions are anticipated due to upslope sediment reduction activities. Any disturbances to wetlands and water due to these activities would be very limited in extent, and only short-term impacts would be anticipated.

Impacts of Salt River Channel Restoration. Some medium-term loss of wetland functions are anticipated due to the removal of ~~46~~62 acres of riparian forest and scrub in the current channel and the conversion of 52~~4~~ acres of agricultural grassland with wetlands characteristics and 11~~6~~ acres of seasonal wetlands to open water, tidal freshwater marsh, freshwater channel wetlands~~riparian herbaceous~~, and riparian forest and scrub. While riparian forest and scrub and riparian herbaceous vegetation would be planted in and adjacent to the restored channel, there would be a temporal loss of wetland function while these plantings become established and mature. Losses of wetland functions from conversion of agricultural grasslands with wetlands characteristics and seasonal wetlands are not considered significant, because, relative to the restored channel that would replace them, these wetlands currently function at a relatively low level to provide plant and wildlife habitat, flood control, water quality enhancement, and carbon storage. Medium-term losses of wetland function due to removal of mature riparian forest and scrub would primarily consist of loss of high quality plant and wildlife riparian habitat. These impacts are discussed in Impact 3.3.10 below. No medium-term loss of wetland functions is anticipated due to channel maintenance activities. Disturbances to wetlands and water due to these activities would be very limited in extent. Channel maintenance activities would disturb aquatic habitat and riparian herbaceous habitat, but would not disturb riparian forest and scrub. Riparian herbaceous habitat and aquatic habitat is expected to recover quickly from disturbances associated with channel maintenance. Only short-term impacts would be anticipated from channel maintenance activities.

Impacts of Riverside Ranch Restoration. No significant medium-term loss of wetland functions are anticipated due to the conversion of seasonal wetlands and mesic grasslands to tidal marsh and riparian forest and scrub at Riverside Ranch. Seasonal wetlands and mesic grasslands currently function at a relatively low level to provide plant and wildlife habitat, flood control, water quality enhancement, and carbon storage. Restored tidal marsh and riparian herbaceous wetlands are expected to develop quickly (within 2 years) after construction and planting.

Medium-term loss of wetland habitat function under this alternative would be reduced to a less than significant level by implementing Mitigation Measure 3.3.1-2.

Mitigation Measure 3.3.1-2: Preconstruction surveys and possible installation of nest boxes

Before riparian areas are cleared, a count of mature trees with available cavities shall be taken to roughly estimate the number of cavities being lost. If the survey and an analysis by a qualified

individual demonstrates that the project would result in inadequate habitat remaining for cavity nesters, nest boxes shall be erected to match, as closely as possible, the lost value. Should the findings of the surveys result in the conclusion that nest boxes are not necessary, this mitigation measure would not be required.

Impact Significance

Less than significant after mitigation.

Impact 3.3.1.3: Short-term impacts to wetlands

Alternative 1 could result in short-term impacts to wetlands. Construction activities associated with restoration implementation would involve disturbance of wetlands and waters through vegetation clearing activities, grading and installation of restoration features, dewatering activities, and construction and use of access/bypass roads and staging areas for construction equipment, materials and fill. Vegetation clearing activities may occur in advance of other restoration actions, increasing the duration of the site disturbance.

Operation of heavy machinery in or adjacent to wetlands and waters could result in contamination of these habitats with hazardous materials. Hazardous materials associated with construction equipment would be present onsite for the duration of construction of any of the alternatives. Fuel, lubricants, coolants, and other fluids contained with operational equipment are considered hazardous to water resources if accidentally released to surface or ground waters due to poor equipment maintenance or an unforeseeable incident. If these materials are not managed appropriately, long-lasting impairment of water quality, including soils and groundwater, could result as some construction-related materials are highly mobile, persistent, and bioaccumulative in the environment. Potential impacts to water quality from hazardous materials would be avoided through implementation of Mitigation Measure 3.1.1-2.3 (See Section 3.1, Hydrology, Water Quality, and Geomorphology.

Ground disturbing activities in or adjacent to surface water bodies, such as channel excavation, would present an opportunity for sediment to migrate into the water body through accidental releases. Adverse effects could include increased turbidity and water temperature and reducing DO levels, all of which would potentially exceed water quality standards and impair beneficial uses. The sediments could also migrate and deposit to downstream areas, resulting in effects within a larger area. Ground disturbance activities for areas larger than 1 acre require compliance with the General Construction Permit, as described in Water Quality above. Potential impacts to water quality from sediment influx would be avoided through implementation of Mitigation Measure 3.1.1-1.

Short-term impacts to wetlands and waters from Alternative 1 would be minimized through implementation of Mitigation Measure 3.3.1-3.

Mitigation Measure 3.3.1-3: Minimizing construction-related disturbance to sensitive habitats

- The locations of any sensitive habitats to be avoided shall be clearly identified in the contract documents (plans and specifications).

- Before clearing and grubbing commences; construction and staging areas shall be flagged to clearly define the limits of the work area. These areas shall be clearly identified on the contract documents (plans and specifications).
- Contractors awarded contract packages shall sign a document stating that they have read, agree to, and understand the required resource avoidance measures, and shall have construction crews participate in a training session on sensitive area resources.
- A qualified biologist shall be on-site to observe construction activities as appropriate when construction in or adjacent to sensitive habitat such as wetlands or special status species locations occurs.
- Site disturbance shall be minimized to the greatest extent possible by using existing disturbed areas for access roads and staging areas, and concentrating the area of disturbance associated with restoration actions to the minimum necessary to complete the project. Where feasible, temporary measures for access or construction, such as the use of temporary tracks or pads, shall be used to minimize impacts.
- Restoration activities to restore ecological function and integrity to disturbed habitats, such as revegetation, shall take place as rapidly as possible following habitat disturbance.

Impact Significance

Less than significant after mitigation.

Impact 3.3.1-4: Impacts to riparian forest and scrub

Although the restored Salt River channel and riparian corridor would be wider and provide enhanced fish and wildlife habitat and flood control, the channel restoration component of Alternative 1 would result in extensive medium-term loss of mature riparian forest and scrub (Table 3.3-2). ~~In addition, approximately six acres of riparian forest and scrub to be planted in the restored channel would consist of Reduced Planting Areas, with lower canopy and/or understory density to allow for grazing. These Reduced Planting Areas would have lower habitat value than most exisitng riparian forest and scrub in the project area.~~ Because the Riverside Ranch restoration involves planting an additional 31~~14~~ acres of riparian forest and scrub and because the Salt River Channel Restoration component involves restoring approximately 51~~25~~ acres of riparian forest and scrub ~~on the Vevoda Ranch adjacent to the channel~~, Alternative 1 would ~~not~~ result in a long-term ~~loss~~increase of this habitat type from 105 acres of existing riparian to 125.5 acres of projected riparian habitat post-project. Construction activities associated with the channel restoration component could result in a medium-term loss of 62~~46~~ acres of mature riparian forest and scrub habitat along the Salt River Channel between the time when restoration takes place and new riparian vegetation is established. Short-term impacts to riparian forest and scrub could also result from construction activities associated with restoration implementation. These would involve disturbance of riparian forest and scrub through vegetation clearing activities, grading and installation of restoration features and construction and use of access/bypass roads and staging areas for construction equipment, materials and fill. Vegetation clearing activities may occur in advance of other restoration actions, increasing the duration of the site disturbance.

Medium-term loss of riparian habitat would be mitigated by introduction of new riparian habitat, which would not have the same value as mature riparian habitat during the medium-term. Approximately ~~nine~~51 acres of new riparian ~~herbaceous~~forest and scrub habitat would be planted ~~on the annual floodplain of the Salt River channel, while approximately 65 acres of riparian forest and scrub would be planted above the level of the annual flood~~ in and adjacent to the Salt River channel ~~(including approximately six acres of Reduced Planting Areas)~~. In addition, ~~14~~ 31 acres of new riparian forest and scrub would be planted on Riverside Ranch.

Because of the active revegetation program, establishment of a new riparian corridor would begin almost immediately following the completion of channel restoration, but benefits of mature riparian vegetation (i.e., established vegetative structure, older trees with cavities) would not be realized in the short-term. Impacts to riparian birds from loss of riparian forest and scrub are discussed below in Impact 3.3.1-10.

Impact Significance

Less than significant, potentially beneficial.

Impact 3.3.1-5: Potential increase in noxious weed populations due to site disturbance and changes in tidal influence and light availability (medium- and long-term)

Construction activities associated with Alternative 1 could import noxious weed propagules on construction machinery. Extensive ground disturbance and creation of new open areas could result in the colonization of much of the new riparian habitat by noxious weeds such as Himalayan blackberry, purple loosestrife, and reed canarygrass, and colonization of new tidal marsh by dense-flowered cordgrass. Ongoing weed management activities over the lifetime of the project are anticipated to ensure that invasive plants are maintained at minimal levels. Spruce, cottonwood, and other species planted in the two-year floodplain are anticipated to provide shading for the main channel once they mature sufficiently, thereby reducing water temperatures while inhibiting colonization by invasive species. Heavy equipment would be required to be cleaned and weed-free before entering the site.

Implementation of Mitigation Measure 3.3.1-5.1 and 3.3.1-5.2 would reduce the potential increase in noxious weed populations due to Alternative 1 to a less than significant level.

Mitigation Measure 3.3.1-5.1: Pre-construction removal of dense-flowered cordgrass

In order to reduce the likelihood of dense-flowered cordgrass colonizing restored tidal marsh at Riverside Ranch, existing populations in and adjacent to the project area shall be controlled prior to construction using manual, mechanical, and/or approved chemical methods.

Mitigation Measure 3.3.1-5.2: Monitoring and removal of noxious weeds in restored habitats in the project area

Levels of noxious weeds in restored riparian and tidal marsh habitats shall be monitored after project implementation. Noxious weed removal shall be conducted as part of project maintenance over the lifetime of the project. Noxious weed removal techniques shall be described in the

management plans for the Salt River and Riverside Ranch, which shall be prepared in consultation with DFG, FWS, and NMFS.

Impact Significance after Mitigation

Less than significant after mitigation.

Impact 3.3.1-6: Impacts to special status plants

Alternative 1 may result in impacts to special status plant species associated with aquatic, tidal marsh, ~~riparian, grassland,~~ and North Coast coniferous forest habitats. These special status plant species could be directly impacted by short-term increases in turbidity in the channel, vegetation removal, fill, excavation, and movement of construction machinery associated with Riverside Ranch Restoration, Salt River Channel Restoration, and upslope sediment reduction. ~~In addition, special status species associated with riparian forest and scrub may be adversely affected by decreases in the extent of suitable habitat present in the project area (See Impact 3.3.1-4. Impacts to Riparian Habitat). Impacts to special status plant species associated with grassland habitat from conversion of grassland to other habitats would be less than significant due to the abundance of grassland in the project vicinity.~~

The only special status species known to be present in the project area are eelgrass, Humboldt Bay owl's clover, ~~Point Reyes bird's beak~~ and Lyngbye's sedge.~~, which are~~Eelgrass is associated with aquatic habitat in the lower Salt River channel, while Humboldt Bay owl's clover is associated with salt marsh and Lyngbye's sedge is associated with brackish marsh in and adjacent to the Riverside Ranch Restoration Area. If Alternative 1 were implemented, these species, together with other salt marsh and brackish marsh species that may be present in the project area, would benefit from a significant expansion of habitat that is likely to result in increased population sizes. Eelgrass may suffer the loss of approximately 3 acres of existing habitat in the Salt River channel from channel deepening and widening. However, the internal slough network which would be restored on Riverside Ranch would create between 9 to 12 acres of suitable eelgrass habitat, which would be expected to be rapidly colonized. Humboldt Bay owl's clover and Lyngbye's sedge are found in areas where channel excavation is proposed, and may therefore be directly impacted by the project. Details are provided in the Rare Plant Mitigation and Monitoring Plan, available for review or in electronic form from the HCRCD in Eureka. Implementation of Mitigation Measure 3.3.1-3 above, and Mitigation Measure 3.3.1-6, below would reduce this impact to a less than significant level.

Mitigation 3.3.1-6: Minimize, avoid, and compensate for impacts to sensitive plants

Mitigation for special status plant species is addressed collectively for all species, with modifications noted for individual species. Significant impacts to special-status plant species present or likely to be present onsite shall be minimized, avoided, and contingently compensated by complying with the following:

- Pre-construction surveys: Potential habitat for special-status plant species shall be surveyed in appropriate seasons for optimal species-specific detection prior to project excavation/dredging, fill, drainage, or flooding activities associated with project

construction. Survey methods shall comply with CNPS/CDFG rare plant survey protocols, and shall be performed by qualified field botanists. Surveys shall be modified to include detection of juvenile (pre-flowering) colonies of perennial species when necessary. Any populations of special status plant species that are detected shall be mapped. Populations shall be flagged if avoidance is feasible and population is located adjacent to construction areas. Special Status plant surveys were conducted between May and August 2010 in the project area for channel restoration and Riverside Ranch restoration. These surveys documented populations of Lyngbye's sedge and Humboldt Bay owl's clover described above. Special status plant surveys would be conducted in the project area for upslope sediment reduction components of the project where work would be conducted in suitable habitat. For example, maple-leaved checkerbloom (*Sidalcea malachroides*) may occur in broadleafed upland forest or North Coast coniferous forest, often in disturbed areas, and Howell's montia (*Montia howellii*) has been documented on roadsides in North Coast coniferous forest in the Wildcat Mountains and may occur in upslope sediment reduction areas. Surveys for these and other special status plant surveys with potential to occur in the upslope sediment reduction areas listed in Table 3.3-3 shall be conducted prior to upslope sediment reduction project implementation.

- The locations of any special status plant populations to be avoided shall be clearly identified in the contract documents (plans and specifications).
- If special-status plant populations are detected where construction would have unavoidable impacts, a compensatory mitigation plan shall be prepared and implemented in coordination with USFWS or DFG. Such plans may include salvage, propagation, on-site reintroduction in restored habitats, and monitoring. Plans have been developed for Lyngbye's sedge, Humboldt Bay owl's clover, and eelgrass. These plans are available from the HCRCD, and will be further revised in consultation with regulatory agencies. The plans include the following measures:
  - Impacts to these species shall be avoided or minimized to the extent feasible. If feasible, impacts to these species will be minimized by restricting channel excavation in the portions of the lower Salt River where they are found to a single bank of the channel (e.g. only the east bank). It should be noted that populations of owl's clover can fluctuate dramatically between years (Pickart 2001), making the number of individuals impacted difficult to predict.
  - Humboldt Bay owl's clover: A qualified botanist shall collect and conserve seed from local populations of Humboldt Bay owl's clover. These seeds shall be used to replant a population of this species to mitigate for the population lost to construction impacts. The project area shall be monitored for five years and compared with a reference population to determine whether replanting and natural recruitment have resulted in population numbers equal to or greater than those present before project implementation. If the population does not appear to have reestablished during the five year period, seed shall be collected from elsewhere and additional attempts shall be made to reestablish the population.

- Lyngbye's sedge: Seed shall be collected from Lyngbye's sedge in the project area to be used for replanting in the event that natural recruitment does not result in a post-project population size equal to or greater than the pre-project population size. Monitoring and adaptive management will be conducted for a ten year period to determine whether the area and approximate number of Lyngbye's sedge in the project area is similar to the area of sedge before the project. Additional planting efforts (from seed or from rootstock of mature plants) shall be undertaken if the population size is declining below pre-project size during the monitoring period.
- Eelgrass: The extent and density of eelgrass cover within areas of project impact shall be mapped prior to construction. Natural recruitment shall be monitored for 3 years to determine whether eelgrass is naturally recruiting in newly created channels adequately to replace the area of eelgrass lost due to project impacts. If eelgrass does not establish in an area equal to or greater than that lost due to project impacts in the first 3 years, eelgrass shall be actively planted using the most current scientific methods.

- If USFWS or DFG require propagation or transplantation, scientifically sound genetic management guidelines and protocols for rare plants shall be applied to propagation and transplant plans, possibly including the following:
  - maintain some reserve clonal stock of perennial special-status plant populations during the monitoring period to offset the risk of failure in establishing populations in the wild,
  - set aside surplus reserve seed of annual special-status plants from impacted populations
  - conduct long-term monitoring to determine the fate of managed special-status plant populations.

No special-status plant species shall be introduced to the site beyond their known historic geographic range unless such introduction is recommended in a final recovery plan or conservation plan prepared and adopted by the USFWS or the CDFG, in formal consultation with the USFWS.

Impact Significance

Less than significant with mitigation.

Impact 3.3.1-7: Construction impacts to breeding or nesting migratory and special status birds

Grassland, riparian forest and scrub, and North Coast coniferous forest in the project area support nesting by state bird species of special concern, as well as numerous species protected under the Migratory Bird Treaty Act. Construction of Alternative 1 could result in short-term disturbance of breeding or nesting migratory and/or special status birds. Short-term disturbance of breeding or nesting migratory and/or special-status birds would be avoided or minimized by implementing Mitigation Measure 3.3.1-7.

Mitigation 3.3.1-7: Minimize and avoid impact to nesting special status or migratory birds

~~Construction activities would occur during the breeding and nesting season (March 1-August 15) only following pre-construction site-specific surveys by a qualified biologist. Nesting surveys shall be conducted no more than one week prior to the initiation of site preparation. If surveys identify active nests belonging to common migratory bird species, a 100-foot exclusion zone shall be established around each nest to minimize disturbance-related impacts on nesting birds. If surveys identify active nests belonging to special status birds, a no-activity zone shall be established around the nest. The radius of the no-activity zone and the duration of the exclusion shall be determined in consultation with DFG.~~

Construction activities would occur during the breeding and nesting season (March 1-August 15) only following pre-construction site-specific surveys by a qualified biologist. Nesting surveys shall be conducted no more than one week prior to the initiation of site preparation. If surveys identify active nests belonging to common migratory bird species, a 100-foot exclusion zone shall be established around each nest to minimize disturbance-related impacts on nesting birds. If surveys identify active nests belonging to special status birds, an interim no-activity zone of 300 feet shall be established around the nest. If surveys identify active nests belonging to raptors, an interim no-activity zone of 500 feet shall be established around the nest. The radius of the no-activity zone may be modified after consultation with DFG, and the duration of the exclusion shall be determined in consultation with DFG. In order to avoid take of willow flycatchers and western yellow-billed cuckoos during Project activities, in areas where the vegetation is dense and unfeasible to adequately survey, riparian vegetation removal will occur between August 15 and November 30 to avoid the nesting season for these species. For areas with less dense riparian vegetation that can be adequately surveyed, which will be determined in consultation with CDFG, riparian vegetation removal may occur between 1 July and 15 August after surveys for nesting willow flycatchers and presence/absence surveys for other nesting birds are conducted by a qualified biologist prior to the start of vegetation removal. Surveys for willow flycatchers would occur in June and presence/absence surveys for other birds and would occur no more than one week prior to the initiation of site preparation. If active nests belonging to willow flycatchers or western yellow-billed cuckoos are detected during surveys, a 300-foot exclusion zone will be established around each nest in which no construction activities will occur until nesting is completed. The duration of the no-activity exclusion area(s) will be determined in consultation with CDFG.

Impact Significance

Less than significant after mitigation.

Impact 3.3.1-8: Operations and maintenance disturbance to nesting birds (medium- and long-term)

Channel maintenance activities would involve removal of sediment and woody vegetation from the portion of the channel below the elevation of the annual flood. Management of Riverside Ranch may also result in disturbance to nesting birds.

In accordance with the Salt River Enhancement Project Maintenance Plan Standard Operating Procedures for vegetation cutting and removal, operations and maintenance activities with the potential to disturb nesting birds are conducted outside of nesting season.

Impact Significance

Less than significant

Impact 3.3.1-9: Impacts to special status birds associated with grassland habitat

Three special status bird species associated with grassland habitat have been documented as occurring in the project vicinity. The project area contains both nesting and foraging habitat for the Northern Harrier and foraging habitat for the Vaux's swift and White-tailed kite. While short-eared owls (*Asio flammeus*) and burrowing owls (*Athene cunicularia*), state species of special concern, have not been documented in the project area, these species have been documented in the Humboldt Bay region and the project area does contain suitable foraging habitat for wintering individuals (Shuford and Gardali 2008). Alternatives 1-3 would result in a long-term loss of grassland habitat utilized by these ~~three~~ six species. Grassland acreage lost for Alternative 1 would be 287 acres. The loss of grassland habitat would be less than significant for all ~~three~~ six species of concern because there is an abundance of this type of habitat adjacent to the project area, and because ~~all three~~ four of the six species can utilize marsh as well as grassland habitat for foraging[2]. In addition, spruce, cottonwood, and other tree species planted in the two-year floodplain as part of the channel restoration component would provide important raptor habitat lost over the previous 150 years when trees were removed from the area for pasture expansion.

Heavy equipment operations and vegetation disturbance on the site could result in short-term impacts to these ~~three~~ six bird species foraging within the project area, although these impacts would be minor for short-eared owl and burrowing owls, which are only expected to use the project area in the winter when construction would not be underway.. In addition, there may be the potential to significantly impact nesting Northern harrier. Implementation of Mitigation Measure 3.3.1-7 above would minimize adverse impacts to nesting Northern harriers.

Impact Significance

Less than significant after mitigation.

Impact 3.3.1-10: Impacts to special status birds associated with riparian habitat

Three special status bird species associated with riparian habitat are common or have high potential to occur in riparian habitat in the project area. Riparian forest and scrub in the project area provides potential nesting and foraging habitat for yellow warblers, black-capped chickadees, and purple

[2] Burrowing owl do not commonly utilize marshes for foraging, although they may utilize high marsh and wetland-upland transition zones, which will both be present in portions of the project area after implementation. Bryant's savannah sparrows utilize salt marsh in much of their range, but do not appear to utilize salt marsh in the Humboldt Bay region, possibly due to widespread dominance by invasive denseflowered cordgrass (*Spartina densiflora*) (Hunter et al. 2005). The cordgrass control efforts to be implemented by the project may provide suitable habitat in salt marsh for savannah sparrows in the project area.

martins. Yellow warblers and black-capped chickadees have been documented in the project area. A territorial male little willow flycatchers was documented in the project area, and there is a low probability that western yellow-billed cuckoos may forage in the project area, as well.

As discussed above, Alternative 1 would result in a medium-term significant decrease in mature riparian forest and scrub because of removal of mature riparian forest and scrub vegetation associated with Salt River Channel Restoration. There would be no long term impact to special status riparian birds, due to the restoration of riparian forest and scrub habitat in and adjacent to the channel and on Riverside Ranch. Mitigation measure 3.3.1-2, which involves installation of nesting boxes, would reduce the medium-term impact on cavity-nesting species. Heavy equipment operations and vegetation disturbance on the site could result in short-term impacts to these three bird species foraging within the project area. In addition, construction could significantly disturb nesting individuals of these species. Impacts to nesting individuals would be minimized by implementation of Mitigation Measure 3.3.1-7 above.

Impact Significance

Less than significant after mitigation.

Impact 3.3.1-11: Impacts to special status bats

Under Alternative 1, there would be a loss of agricultural grassland areas that provide potential foraging habitat for bats. However, this impact is considered less than significant because agricultural grassland is regionally abundant, and because special status bats have only a moderate probability of occurrence in the project area (See Table 3.3-4). Townsend's big-eared bats and Yuma myotis bats can utilize riparian areas and wetlands as foraging habitat, further reducing the impact of the loss of agricultural grasslands on this species.

Impact Significance

Less than significant.

Impact 3.3.1-12: Impacts to Northern red-legged frogs

Alternative 1 could adversely impact Northern red-legged frogs (RLFs). Implementation of these project alternatives could result in short-term impacts to RLFs through mortality related to construction activity or maintenance activity, and long-term impacts due to the loss of freshwater aquatic habitat and wetlands (portions of Salt River with appropriate salinity levels for larval development, seasonal wetlands, agricultural grasslands with wetlands characteristics, and riparian habitat) that serve as potential breeding, foraging, and dispersal habitat for this species. Seasonal wetlands and agricultural grasslands in the project area are unlikely to provide RLF breeding habitat except in exceptionally wet years, because RLF larval development can only occur in inundated conditions and requires 11-20 weeks. RLF normally uses perennial ponds or streams for breeding. RLF may breed in drainage ditches in the project area, and is likely to use the Salt River and its tributaries for breeding. Restoration of tidal influence in the Salt River and its tributaries would increase salinities and reduce the value of these areas for RLF breeding. However, much of the Salt

River and its tributaries would still be suitable RLF breeding habitat. In normal years, salinity levels in the Salt River upstream of southern half of Riverside Ranch would remain below 0.5 percent (5 ppt) from mid-November to mid-June (Kamman 2008). RLF breeding and larval development occurs from January to June (DFG 2008). Therefore, most of the channel would provide viable RLF breeding habitat after Riverside Ranch restoration and channel restoration are implemented. In addition, the channel excavation component of the project would create new breeding, foraging and dispersal habitat for RLF in approximately 5 miles of newly excavated Salt River and Francis Creek channels. Currently, the Salt River channel becomes intermittent 4.2 miles from its confluence with the Eel River; RLF breeding habitat is marginal or lacking from the channel area after this point.

Short-term impacts to RLF from construction and maintenance activities. Construction activities associated with Alternative 1 could result in the mortality of individual RLFs. This can occur in many ways, but the most likely mechanism is through frogs being crushed by construction equipment in aquatic habitats, or being excavated from burrows or other refugia in upland habitats during ground disturbing activities. Short-term impacts to RLFs would be minimized by the implementation of Mitigation Measure 3.3.1-12.

Long-term impacts to RLF from loss of freshwater wetland and aquatic habitat. RLF cannot successfully breed or spend long periods of time in salty water. The restoration of tidal marsh at Riverside Ranch and of expanded tidal influence to the Salt River channel may result in the loss of RLF foraging and dispersal habitat in seasonal wetlands and in agricultural grasslands with wetland characteristics, and loss of RLF breeding habitat in drainage ditches. There would be a loss of habitat quality in RLF breeding habitat in portions of the Salt River and its tributaries that would experience increased salinities because of Riverside Ranch restoration and channel restoration. Improved fish passage could result in increased predation on RLF by fish.

Impacts of Project Components

Impacts of Upslope Sediment Reduction: Upslope sediment reduction activities include stream crossing improvements, bank stabilization, and other work that may involve dredging or placement of fill in a wetland or water. RLF may utilize affected wetlands or waters for breeding. However, the total area of wetlands and waters permanently affected by these activities would be small (<1 acre) in extent. Fill and dredging in wetlands would be avoided to the extent feasible. Improved stream crossings may involve the removal of old stream crossing structures and the installation of new structures (e.g. the replacement of Humboldt Crossings by culverts or bridges). Bank stabilization would involve the use of bioengineering structures, such as willow walls, which would enhance RLF habitat value. These activities would result in a net reduction in fill in RLF habitat. No significant long-term impacts to RLF habitat would occur as a result of the project's upslope sediment reduction activities.

Impacts of Salt River Channel Restoration: Channel excavation activities would convert six acres of seasonal wetlands into open water and riparian habitat (herbaceous and riparian forest and scrub). Channel excavation would also convert four acres of riparian forest and scrub to open water and riparian herbaceous/freshwater marsh habitat. RLF can utilize riparian and open water areas for breeding, foraging, and dispersal. Therefore, these type conversions of wetlands and waters would

not have a long-term adverse impact on RLF. The floodplain recontouring activities that are part of the channel restoration would convert approximately four acres of seasonal wetland that serve as RLF habitat to agricultural grassland that would not provide RLF habitat. The restoration of tidal influence to the Salt River would degrade RLF breeding habitat quality in reaches that experience increased salinities during the breeding season. However, much of the channel would remain freshwater for the majority of the breeding season, as discussed above. In addition, approximately 5 miles of open water and riparian habitat in areas where the channel is currently intermittent or absent would provide new RLF breeding habitat. Channel maintenance activities would not result in long-term impacts to wetlands and waters. The channel restoration component would also include planting of riparian forest and scrub vegetation in approximately 25 acres that are currently agricultural grassland, reducing the net impact of this component to RLF habitat.

Impacts of Riverside Ranch Restoration: The Riverside Ranch restoration would result in the loss of approximately 19 acres of seasonal wetlands, two acres of freshwater drainage ditches, and 253 acres of agricultural grasslands that currently provide some degree of RLF habitat. Freshwater seasonal wetlands on Riverside Ranch provide potential foraging habitat and refugia for RLF, and may provide breeding habitat if the duration of inundation is sufficient for larval development. Some seasonal wetlands at Riverside Ranch are brackish, due to seepage from adjacent levees; the area of brackish seasonal wetlands has not been quantified. Brackish seasonal wetlands do not provide good habitat for RLF, which is intolerant of elevated salinity, especially for breeding. Drainage ditches on Riverside Ranch may provide RLF breeding habitat, but poor water quality makes conditions in these ditches marginal for RLF. The agricultural grasslands on Riverside Ranch provide low quality RLF habitat. Generally, these grasslands are likely to provide adequate habitat for foraging and dispersal, but are unlikely to be inundated for long enough duration to provide breeding habitat. These areas would be replaced by 14 acres of restored riparian forest and scrub with low enough salinities during the breeding season to provide RLF breeding habitat, and by 253 acres of restored tidal marsh and 5 acres of ruderal habitat (berms), which would not provide RLF habitat. Impacts to RLF would be mitigated to less than significant by implementation of Mitigation Measure 3.3.1-12.

Mitigation Measure 3.3.1-12: Limit construction access routes and equipment staging areas and minimize excavation in existing aquatic habitat when eggs and tadpoles are expected to be present and conduct preconstruction surveys for RLF in all suitable habitat that would be disturbed by construction

Construction access routes and equipment staging areas shall be limited within the study area to the extent feasible. ~~These access routes and all other areas to be disturbed by restoration activities shall be surveyed for the presence of RLF prior to the beginning of construction activities. These preconstruction surveys shall be conducted within 48 hours of the beginning of ground disturbance and shall be planned with a "one step ahead" approach relative to construction activities. All rodent burrows, leaf litter deeper than 2 inches, or other obvious refugia shall be surveyed for the presence of the species. Once it is determined that no individuals are present, exclusion fencing shall be erected and maintained around the construction areas to prevent RLF from entering into the active construction area. The exclusion fence shall be about 3.5 feet high and keyed into the subsurface about 6 inches deep. Exclusion fences used around existing frog habitat shall be fitted with~~

~~intermittent one-way entry devices to allow frogs to enter, but not exit, the protected area. These fences shall be walked every morning to ensure that no frogs have become "stuck" or entangled during nighttime movements and all amphibians observed during these morning checks shall be relocated to the nearest suitable aquatic habitat outside of the construction area. Any RLF discovered shall be relocated at least 1000 feet from the area of disturbance and released into suitable aquatic habitat. Excavation in existing aquatic habitat shall be avoided until May 1 and shall be minimized only occur when egg masses and tadpoles are expected (Beginning of breeding season until August 15) for further protection of frogs.~~ Excavation in existing aquatic habitat shall only occur when egg masses and tadpoles are not expected (August 15–October 31) for further protection of frogs. If disturbance in aquatic habitats is necessary prior to August 15, the area shall be cleared of and any tadpoles relocated to suitable habitat.

Impact Significance

Less than significant after mitigation.

Alternative 2: Modified Channel/Upland Restoration Only

Impact 3.3.2-1: Long-term impacts to wetlands

Alternative 2 would result in the long-term impacts to wetlands identified above in the discussion of upslope sediment reduction and channel restoration in Alternative 1, Impact 3.3.1-1. Impacts to wetlands under this alternative would be reduced to a less than significant level by implementing Mitigation Measure 3.3.2-1.

Mitigation 3.3.2-1: Wetland creation

Long-term loss of wetlands under Alternative 2 would be mitigated by creating a series of 3-parameter wetlands. Design and management of these wetlands are proposed to be consistent with the development of high-quality seasonal wetlands that are anticipated to have rapid establishment of hydrophytic vegetation, followed by pioneering of corresponding wetland fauna and, over time, the formation of hydric soils. The quantity of the mitigation wetlands created would be adequate to mitigate for proposed permanent and temporal losses in a manner resulting in no net loss of wetlands. A ratio of wetlands to be created to wetland fill ranging from 1-2:1 is expected. Quality of the mitigation wetlands would exceed the quality of the wetlands to be filled. Mitigation wetlands would be created on-site within the limits of the project area or in a reasonably close proximity to the project limits.

Impact Significance

Less than significant after mitigation.

Impact 3.3.2-2: Medium-term impacts to wetlands

Alternative 2 would result in the medium-term impacts to wetlands identified above in the discussion of upslope sediment reduction and channel restoration in Alternative 1, Impact 3.3.1-2. Medium term loss of wetland habitat function under this alternative would be reduced to a less than significant level by implementing Mitigation Measure 3.3.1-2.

Impact Significance

Less than significant after mitigation.

Impact 3.3.2-3: Short-term impacts to wetlands

Alternative 2 would result in the same potential short-term impacts to wetlands as Alternative 1. These impacts would be reduced to a less than significant level by implementation of Mitigation Measure 3.3.1-3.

Impact Significance

Less than significant after mitigation.

Impact 3.3.2-4: Impacts to riparian forest and scrub

Alternative 2's medium-term Impact to Riparian Forest and Scrub would be the same as in Alternative 1. Medium-term impacts to riparian forest and scrub would be mitigated by implementation of Mitigation Measure 3.3.1-2. Alternative 2 involves the restoration of approximately 25 acres of riparian forest and scrub on Vevoda Ranch adjacent to the channel. Therefore, there would be no long-term loss of riparian forest and scrub under this alternative.

Impact Significance

Less than significant.

Impact 3.3.2-5: Potential increase in noxious weed populations due to site disturbance and changes in tidal influence and light availability (medium- and long-term)

Potential increases in noxious weed populations due to implementation of Alternative 2 would be similar to Alternative 1. However, because Alternative 2 does not include significant tidal marsh restoration, there would be little potential for a significant increase in dense-flowered cordgrass populations. Implementation of Mitigation Measures 3.3.1-5.1 and 3.3.1-5.2, above, would reduce the potential increase in noxious weed populations due to Alternative 2 to a less than significant level.

Impact Significance

Less than significant after mitigation.

Impact 3.3.2-6: Impacts to special status plants

Alternative 2's potential to impact special status plants is somewhat less than that of Alternative 1. The Salt River Channel Restoration area was surveyed for special status plants in July 2004, when all but one of the special status plant species potentially occurring would have been apparent. No special status plant species were identified by the 2004 survey. In addition, salt and brackish marsh habitats are not present in the area that would be affected by Alternative 2. Implementation of Mitigation Measures 3.3.1-3 and 3.3.1-1-6 would reduce this impact to a less than significant level.

Impact Significance

Less than significant with mitigation.

Impact 3.3.2-7: Construction impacts to breeding or nesting migratory and special status birds

Construction impacts from Alternative 2 on nesting migratory or special status birds would be identical in nature to Alternative 1's impacts, but more limited in extent, due to the smaller project area affected by Alternative 2. Short-term disturbance of breeding or nesting migratory and/or special-status birds would be avoided or minimized by implementing Mitigation Measure 3.3.1-7.

Impact Significance

Less than significant after mitigation.

Impact 3.3.2-8: Operations and maintenance disturbance to nesting birds (medium- and long-term)

Operations and maintenance impacts from Alternative 2 on nesting migratory or special status birds would be identical in nature to Alternative 1's impacts, but more limited in extent, because there would be no potential impacts from Riverside Ranch management. Disturbance of breeding or nesting migratory and/or special-status birds from operations and maintenance activities would be avoided by conducting activities with this disturbance potential outside nesting season.

Impact Significance

Less than significant.

Impact 3.3.2-9: Impacts to special status birds associated with grassland habitat

Impacts from Alternative 2 on special status birds associated with grassland would be identical in nature to Alternative 1's impacts, but more limited in extent, due to the smaller area of grassland converted to other land cover types by Alternative 2. Implementation of Mitigation Measure 3.3.1-7 above would minimize adverse impacts to nesting Northern harriers.

Impact Significance

Less than significant after mitigation.

Impact 3.3.2-10: Impacts to special status birds associated with riparian habitat

Alternative 2 would have the same medium-term and short-term impacts on special status birds associated with riparian habitat as Alternative 1. Mitigation measure 3.3.1-2 would reduce this impact on cavity-nesting species. Heavy equipment operations and vegetation disturbance on the site could result in short-term impacts to these three bird species foraging within the project area. In addition, construction could significantly disturb nesting individuals of these species. Impacts to nesting individuals would be minimized by implementation of Mitigation Measure 3.3.1-7 above.

Impact Significance

Less than significant after mitigation.

Impact 3.3.2-11: Impacts to special status bats

Impacts from Alternative 2 on special status bats would be identical in nature to Alternative 1's impacts, but more limited in extent, because there would be no potential impacts from Riverside Ranch Restoration.

Impact Significance

Less than significant.

Impact 3.3.2-12: Impacts to Northern red-legged frogs

Alternative 2 would result in short-term impacts to RLF discussed above for all action alternatives, and the long-term impacts to RLF identified above in the discussion of upslope sediment reduction and channel restoration. Because this alternative does not include Riverside Ranch restoration, its impact to RLF would be greater than Alternatives 1 or 3, which include the restoration of 14 acres of riparian forest and scrub that would provide RLF habitat. Impacts to RLF under this alternative would be mitigated by implementation of Mitigation Measures 3.3.1-3 and 3.3.1-12.

Impact Significance

Less than significant after mitigation.

Alternative 3: Riverside Ranch Restoration/Upland Restoration Only

Impact 3.3.3-1: Long-term impacts to wetlands.

Alternative 3 would result in the long-term impacts to wetlands identified above in Alternative 1, Impact 3.3.1-1 in the discussion of upslope sediment reduction and Riverside Ranch restoration.

Impact Significance

Less than significant (self-mitigating).

Impact 3.3.3-2: Medium-term impacts to wetlands.

Alternative 3 would result in the medium-term impacts to wetlands identified above in the discussion of upslope sediment reduction and Riverside Ranch restoration in Alternative 1, Impact 3.3.1-2.

Impact Significance

Less than significant.

Impact 3.3.3-3: Short-term impacts to wetlands.

Alternative 3 would result in the same types of potential short-term impacts to wetlands as Alternative 1, although these impacts would be more limited in extent because Alternative 3 does not include the channel restoration. These impacts would be reduced to a less than significant level by implementation of Mitigation Measure 3.3.1-3.

Impact Significance

Less than significant after mitigation.

Impact 3.3.3-4: Impacts to riparian forest and scrub.

Alternative 3 would have a beneficial effect on riparian forest and scrub. Under this alternative, there would be no medium term loss of mature riparian forest and scrub associated with the channel restoration, and there would be a gain of 14 acres of this habitat type due to plantings on Riverside Ranch.

Impact Significance

Less than significant.

Impact 3.3.3-5: Potential increase in noxious weed populations due to site disturbance and changes in tidal influence and light availability (medium- and long-term)

Potential increases in noxious weed populations due to implementation of Alternative 3 would be similar to Alternative 1. However, because Alternative 3 does not include extensive restoration of open water and riparian herbaceous areas, there would be less potential for a significant increase in reed canarygrass populations and other riparian noxious weeds. Implementation of Mitigation Measures 3.3.1-5.1 and 3.3.1-5.2 would reduce the potential increase in noxious weed populations due to Alternative 3 to a less than significant level.

Impact Significance

Less than significant after mitigation.

Impact 3.3.3-6: Impacts to special status plants

Alternative 3's potential to impact special status plants is similar to that of Alternative 1, although there is a somewhat reduced potential for adverse impact because of the exclusion of the Salt River Channel Restoration area from this alternative. Implementation of Mitigation Measures 3.3.1-3 and 3.3.1-6 would reduce this impact to a less than significant level.

Impact Significance

Less than significant with mitigation.

Impact 3.3.3-7: Construction impacts to breeding or nesting migratory and special status birds

Construction impacts from Alternative 3 on nesting migratory or special status birds would be identical in nature to Alternative 1's impacts, but more limited in extent, due to the smaller project area affected by Alternative 3. Short-term disturbance of breeding or nesting migratory and/or special-status birds would be avoided or minimized by implementing Mitigation Measure 3.3.1-7.

Impact Significance

Less than significant after mitigation.

Impact 3.3.3-8: Operations and maintenance disturbance to nesting birds (medium- and long-term)

Operations and maintenance impacts from Alternative 3 on nesting migratory or special status birds would be identical in nature to Alternative 1's impacts, but more limited in extent, because there would be fewer potential impacts from Salt River channel maintenance. Disturbance of breeding or nesting migratory and/or special-status birds from operations and maintenance activities would be avoided by conducting activities with this disturbance potential outside nesting season.

Impact Significance

Less than significant.

Impact 3.3.3-9: Impacts to special status birds associated with grassland habitat

Impacts from Alternative 3 on special status birds associated with grassland would be identical in nature to Alternative 1's impacts, but more limited in extent, due to the smaller area of grassland converted to other land cover types by Alternative 3. Implementation of Mitigation Measure 3.3.1-7 above would minimize adverse impacts to nesting Northern harriers.

Impact Significance

Less than significant after mitigation.

Impact 3.3.3-10: Impacts to special status birds associated with riparian habitat

Alternative 3 would not involve significant removal of riparian forest and scrub. Therefore, there would be no medium or long-term adverse impacts to special status riparian birds. The restoration of 14 acres of riparian forest and scrub on Riverside Ranch would have a beneficial effect on these species. As in the case of Alternatives 1 and 2, heavy equipment operations and vegetation disturbance on the site could result in short-term impacts to these three bird species foraging within the project area. In addition, construction could significantly disturb nesting individuals of these species. Impacts to nesting individuals would be minimized by implementation of Mitigation Measure 3.3.1-7 above.

Impact Significance

Less than significant after mitigation.

Impact 3.3.3-11: Impacts to special status bats

Impacts from Alternative 3 on special status bats would be identical in nature to Alternative 1's impacts, but more limited in extent, because there would be no potential impacts from Salt River Channel Restoration.

Impact Significance

Less than significant.

Impact 3.3.312: Impacts to Northern red-legged frogs

Alternative 3 would result in short-term impacts to RLF discussed above for Alternative 1, and the long-term impacts to RLF identified above in the discussion of upslope sediment reduction and Riverside Ranch restoration. Impacts to RLF under this alternative would be mitigated by implementation of Mitigation Measure 3.3.1-12.

Impact Significance

Less than significant after mitigation.

Alternative 4: No Project

Impact 3.3.4-: 1 Long-term impacts to wetlands

Alternative 4 would result in a long-term disruption of wetland and riparian hydrology, due to sedimentation of the Salt River Channel and adjacent areas. Reaches of the Salt River that carried significant flow in recent decades currently lack a channel and are gradually converting to grassland or riparian scrub. This trend would be expected to continue if no action occurs.

Impact Significance

Significant adverse impact.

Impact 3.3.4-2: Medium-term impacts to wetlands

Alternative 4 would not result in medium-term impacts to wetlands.

Impact Significance

No impact.

Impact 3.3.4-3: Short-term Impacts to wetlands

Alternative 4 would not result in short-term impacts to wetlands.

Impact Significance

No impact.

Impact 3.3.4-4: Impacts to riparian forest and scrub.

No effect on riparian forest and scrub.

Impact Significance

No impact.

Impact 3.3.4-5: Potential increase in noxious weed populations due to site disturbance and changes in tidal influence and light availability (medium- and long-term)

Because Alternative 4 would not involve management to control noxious weeds, existing noxious weed populations may be expected to expand over time, particularly after disturbances such as flooding that provide opportunities for colonization.

Impact Significance

Significant adverse impact.

Impact 3.3.4-6: Impacts to special status plants

Continued aggradation and sediment deposits under Alternative 4 may reduce the riparian habitat utilized by some special status plants with the potential to occur in the project area. However, because no special status plants have been identified in riparian habitats in the project area, this impact would be less than significant.

Impact Significance

Less than significant.

Impact 3.3.4-7: Construction impacts to breeding or nesting migratory and special status birds

Alternative 4 would have no effect on nesting birds.

Impact Significance

No impact.

Impact 3.3.4-8: Operations and maintenance disturbance to nesting birds (medium- and long-term)

Alternative 4 would have no medium- or long-term effect on nesting birds.

Impact Significance

No impact.

Impact 3.3.4-9: Impacts to special status birds associated with grassland habitat

Alternative 4 would have no effect on special status birds associated with grassland habitat.

Impact Significance

No impact.

Impact 3.3.4-10: Impacts to special status birds associated with riparian habitat

Continued aggradation and sediment deposits under Alternative 4 may reduce the riparian habitat utilized by some special status birds occurring in the project area.

Impact Significance

Significant adverse impact.

Impact 3.3.4-11: Impacts to special status bats

Alternative 4 would have no effect on special status bats.

Impact Significance

No impact.

Impact 3.3.4-12: Impacts to Northern red-legged frogs

Continued aggradation and sediment deposits under Alternative 4 may reduce the riparian habitat likely to be utilized by RLF in the project area.

Impact Significance

Significant adverse impact.

3.4 BIOLOGICAL RESOURCES: AQUATIC

This section describes the fish and invertebrates associated with the aquatic environment potentially affected by the Salt River Ecosystem Restoration Project. Analysis focuses on historical versus present condition of the aquatic environment, impacts to the aquatic habitats and how fish and prey utilization of those habitats would be directly or indirectly affected. This discussion subsumes all shallow water habitats, including open water, subtidal, and intertidal, associated with the restoration and project sites and vicinity. Impacts to aquatic resources are based on hydrology and water quality analyses presented in Section 3.1 of this EIR.

3.4.1 AFFECTED ENVIRONMENT

EEL RIVER ESTUARY

The Eel River estuary is California's third largest estuary. In 1854/55 and 1890, the estimated acreage of tidal marsh, inclusive of hydraulically connected channels, was approximately 10,000 acres (Roberts 1992, Laird et al. 2007). This wide area contained a forceful tidal exchange. In 1901, following reclamation of tidal marsh west of ~~Connick~~ Cutoff Slough and at Riverside Ranch, the tidal prism of the Salt River alone, was estimated to be 250,000,000 cubic feet, suggesting a tidal discharge of approximately 13,000 cubic feet per second (cfs) (Downie and Lucey 2005). Then, as now, the average freshwater discharge of the Eel, California's third largest river system, was approximately 7,335 cubic feet per second. The estuary receives runoff from over 800 tributary streams and 3,500 miles of stream channels that drain 3,700 square miles of the mountainous Eel River Basin. Mean annual discharge from the Eel River Basin to the estuary is approximately 5.4 million acre-feet. The highest recorded annual discharge into the estuary was 12.6 million acre-feet in 1983 and the lowest was 410,000 acre-feet in the drought of 1977. The peak flow into the estuary was on December 1964 when 750,000 cubic feet per second was recorded at the USGS gauging station at Scotia. The high winter flows are amply capable of altering the configuration of delta lands and estuarine channels.

Early maps show that, historically, the Eel estuary possessed immense salt marsh habitat. This vast acreage comprised dendritic sloughs, side channels and open water, which, in combination with the tidal exchange and a substantial input of freshwater, provided a hospitable and ever-changing environment for a rich assemblage of aquatic species.

The estimated acreage of tidal marsh for the Eel River estuary was reduced approximately 90 percent by the late twentieth century. Recent estimates suggest a current acreage of 874 acres of hydrologically connected tidal marsh for the entire Eel estuary (Laird et al. 2007). The reduction in estuarine size corresponds directly with the increase of agricultural land within the delta region. It also corresponds to a general decline in the quality and quantity of the estuarine environment, as well as to a marked reduction in the tidal prism of the estuary, probably in direct relation to the decrease in inundated area. This reduction in overall tidal prism is likely commensurate with the reduction in hydrologically connected salt marsh.

The Salt River

The Salt River was and remains intricately linked to the Eel River. Historically, the Salt River was largely influenced by the tide, and was referred to as the "principal slough" of the lower Eel (Westdahl 1888). The historic permanent channel length of the Salt River was 13.4 miles (Downie and Lucey 2005). As such, the Salt River provided extensive and excellent juvenile nursery and rearing conditions for a variety of species, including such commercially important species as salmon, herring, sardine, and Dungeness crabs. This expansive estuarine setting contributed to the Eel River's prolific salmon and steelhead population, estimated at the turn of the twentieth century to be approximately half a million adult fish (Cannata 2009).

Main Channel Habitats

The Salt River aquatic environment has vastly diminished and in many cases disappeared entirely. Where it remains, it is highly degraded. The construction of dikes on many of the small sloughs and tributaries, and subsequent diking, ditching and draining of salt marsh and other wetlands for reclamation, substantially reduced the tidal marsh area, diminished the tidal prism within the Salt River and Eel River estuary, accelerated channel infilling, and degraded or eliminated aquatic habitat. This degradation was further accelerated and expanded by land use practices upstream, such as large-scale timber harvesting, clearing of land for livestock grazing, and extensive road construction.

Anecdotal information indicates that by 1965 the salt-water influence up the Salt River had been halved and extended only to river mile six, near Fulmor Road. A 2004 California Department of Fish and Game (DFG) reconnaissance of the Salt River established that the salt-water influence was further reduced, and that the Salt River became intermittent at river mile 4.8, shortly upstream from the apparent influence of the tide (Downie and Lucey 2005). The current extent of saltwater influence is believed to be at river mile 3.5 (see Figure 3.1-2). This substantial reduction in tidal exchange has reduced channel flushing, diminished sediment erosion, encouraged willows to establish in the channel and floodplain, and thereby accelerated sediment deposition and reduction of the quantity of open water rearing and migration habitat for aquatic species.

During moderate to high flow events, flows in many areas are not directional downstream, but are often reversed, causing water to back up into lowlands and pastures due to the loss of stream gradient and the severely aggraded channel. Near the Ferndale Wastewater Treatment Plant (WWTP), the remnant channel flows through an open pasture. The channel is completely filled with sediment and riparian vegetation is restricted to the south side. The north bank has been repeatedly disturbed by heavy equipment for construction of an earthen berm in an attempt by private landowners to alleviate flooding. The earthen berm is breached by high flows on an annual basis, allowing the entire stream discharge to flow onto adjacent pasture.

Loss of channel capacity and tidal connectivity to wetlands in the project area has reduced or eliminated overall habitat for a variety of aquatic species. This trend has in many cases reduced or eliminated migration opportunities for aquatic species such as emigrating juvenile salmonids. It has also vastly diminished areas of low velocity tidal exchange suitable for federally endangered Tidewater Goby. The overall trend has been towards a steady reduction in available aquatic habitat

Habitats of the Salt River Tributaries

Streams flowing off of the Wildcat Hills and into the Salt River historically provided migration, spawning and rearing habitat for aquatic species (Downie and Lucey 2005). However, Salt River tributary fishery habitat has degraded significantly during the twentieth century. DFG Surveys conducted in 1938 indicated that Russ Creek had "good" spawning areas, pools, and shelter. Reas Creek at that time had "excellent" spawning areas, "good" pools and shelter, and "abundant" fish foods in the creek. Francis Creek was similarly described, although the streambed was characterized as "an unsightly mess of refuse and garbage in frequent places through the town" (Vestal and Shapavalov 1938). Surveys from the 1930s through the 1970s document the presence of rainbow trout/steelhead (*Onchorynchus mykiss*), throughout the system, but extensive planting during that period complicates the interpretation of those findings. Some of those same reports document the presence of Coho salmon (*Onchorynchus kisutch),* Chinook salmon (*Onchorynchus tschawytscha)*, as well as coastal cutthroat trout (*Onchorynchus clarkia)* at the southernmost extent of their range.

A comprehensive, year-long, DFG fish survey of the Eel River Estuary conducted in 1995 indicated the presence of Chinook, coho and steelhead in the lowest reaches of the Salt River downstream of the project area (Downie and Lucey 2005). Surveys in tributaries upstream of Centerville and Grizzly Bluff roads in 2002-2004 documented the presence of steelhead and coastal cutthroat trout in Francis Creek. Sacramento pikeminnow, a predator on salmonids, was observed in all other Salt River tributaries, although the size of the individuals rarely exceeded six inches. During in-channel construction of projects within the City of Ferndale, steelhead and cutthroat trout were recovered by CDFG. On August 11 and October 3, 2005, multiple age 0+ coho salmon were captured in Francis Creek, representing the first recent documentation of coho salmon utilizing any upper Salt River tributaries.

DFG habitat surveys of Salt River tributaries in 2003 reported that, based on target values, habitat in tributaries is generally lacking, unsuitable relative to the amount of high quality, deep pool habitat, and the amount of pool shelter complexity (Downie and Lucey 2005). Canopy densities in tributaries are generally suitable but the conifer component is low along most streams. Based on available data from DFG, Williams, Francis and Russ creeks no longer have suitable spawning gravel, and recruitment and retention of gravel appears to be poor. Substrates in the project area consist of fine silt and mud. Few suitable spawning substrates exist. Lack of large trees in riparian zones limit potential wood recruitment to tributaries, and lack of instream large wood contributes to low habitat complexity. It should also be noted that surveys were conducted primarily in areas upstream of the project area, where access was allowed, agricultural operations were less intensive, and gradient was highest. In lower reaches of these tributary streams, very little riparian vegetation remains, gradient is lower, and habitat conditions are far more degraded.

Tributaries of the Salt River have numerous fish passage barriers, and the streams are not regularly accessible by adult anadromous fish, (Downie and Lucey 2005). Tributary barriers have not been identified for upgrades in Humboldt County's priority ranking system due to "poor habitat conditions upstream." Taylor (2000) reported that Francis Creek was the "poorest habitat encountered during the inventory," referring to his inventory of streams in Humboldt County. This ranking preceded the 2005 recovery of Coho salmon in Francis Creek.

Nevertheless, during high flows, anadromous fish appear to reach upper tributary areas to spawn successfully. Furthermore, *Onchorynchus mykiss* (*O. mykiss*) and Coastal Cutthroat trout (*Onchorynchus clarkii*) continue to populate Francis Creek, although it is not clear that populations persist in other Salt River tributaries.

The box culvert on Francis Creek at Port Kenyon Road is a good example of the hydrologic dysfunction characterizing the Salt River tributaries, and the potential for fish passage and habitat improvement potential within Salt River tributaries. Although the culvert is considered to be adequately sized for fish passage, the channel near it has aggraded nearly six feet in as many years, and the culvert is completely full of sediment. DFG has not evaluated this culvert for fish passage using FishXing software and associated methodologies due to the extreme amount of sediment in the culvert.

Only the lower Salt River extending to river mile 3.5 remains tidally influenced, and only this area, the lower boundary of the project area, still provides consistently good aquatic habitat conditions in a remnant of the slough type channel that historically extended throughout the project area and the greater Eel River estuary. This channel is still open and has vertical banks with some undercutting from tidal action, providing potential rearing habitat for salmonids and allowing migration/emigration. Regular tidal flushing in this section has kept the channel open by reducing sediment deposition and keeping the channel free of vegetation.

Much of the aforementioned condition of Salt River tributary streams is directly attributable to the hydraulic dysfunction dominating the Salt River system at present, and the insufficient level of concerted enhancement activities in the tributaries themselves. High sediment inputs compounded by declining conveyance within the channels combine to increase sediment deposition and degrade available spawning habitat. For this reason, the RCD has sought and received a number of grants to reduce sediment inputs, and to improve habitat conditions in the primary tributaries, such as Francis Creek. The potential for habitat improvement in Russ, Reas, Francis and Williams creeks is high, and the RCD continues to pursue these opportunities.

In summary, current instream habitat conditions in the project area generally, and in the tributary streams particularly, have been adversely altered by cumulative land use impacts and flood events, and are now in dire need of comprehensive enhancement actions linked to a broader ecosystem restoration project. Much of the Salt River channel is filled with sediment: winter flows are dispersed, and most of the historic main Salt River channel dries in summer. Therefore, migration, spawning and rearing opportunities are all constrained, and in need of enhancement. Due to the lack of a defined channel and intermittent flows, recent fish surveys have not been conducted for the Salt River. However, enhancement potential remains high both in the Salt River channel, and in

the tributary streams, particularly in light of prospective estuarine enhancements and systemic restoration.

Aquatic Species

The importance of maintaining the diversity and dynamics of aquatic habitats within the Eel River Estuary for anadromous salmonids and other fish and wildlife is well documented (Murphy and Dewitt 1951, Monroe et al. 1974, Puckett 1976, Roberts 1992, Higgins in Roberts 1992, and Cannata and Hassler 1995). Although natural processes of the estuary ecosystem have been altered and impaired by land management, the estuary still provides essential remnant spawning, nursery and feeding grounds to several commercially and recreationally important species, and the tributary streams provide critical opportunities to enhance adjacent freshwater sources. Forty-four fish species have been collected from the Eel River estuary and several invertebrates including the commercially important Dungeness crab (*Cancer magister*). Many of these fishery resources depend on the estuary habitats to complete a critical life history stage such a spawning or juvenile rearing. The estuary provides critical habitat for eight fish species listed under the federal and/or state endangered species acts or are state special concern species (See Table 3.4-1).

Table 3.4-1 Federal and State Species of Concern in Project Area

Species	Murphy and De Witt (1951)	Monroe et al. (1974)	Puckett (1977)	Cannata and Hassler (1995)	Status
Anadromous Species					
Pacific lamprey, *Lampetra tridentata*	X	X	X	X	
[1] Green sturgeon, *Acipenser medirostris*	X	X		X	FT
[1,2]White Sturgeon, *Acipenser transmontanus*					CSCS
American shad, *Alosa sapidissima*	X	X	X	X	
[1]Coastal cutthroat trout, *Oncorhynchus clarkii*	X	X		X	CSCS
[1]Steelhead, *Oncorhynchus mykiss*	X	X	X	X	FT/ST
[1]Chinook salmon, *Oncorhynchus tshawytscha*	X	X	X	X	FT
[1]Coho salmon, *Oncorhynchus kisutch*	X	X	X	X	FT/ST
Eulachon, *Thaleichthys pacificus*					
[1]Longfin smelt, *Spirinchus thaleichthys*		X	X	X	ST
Marine or Estuarine Species					
Pacific herring, *Clupea harengus*	X	X	X	X	

Species	Murphy and De Witt (1951)	Monroe et al. (1974)	Puckett (1977)	Cannata and Hassler (1995)	Status
Pacific sardine, *Sardinops sagax*	X	X		X	
Northern anchovy, *Engraulis mordax*		X	X	X	
Surf smelt, *Hypomesus pretiosis*		X	X	X	
Pacific tomcod, *Microgadus proximus*	X	X			
Topsmelt, *Atherinops affinis*	X	X	X	X	
Bay pipefish, *Syngnathus leptorhynchus*	X	X	X	X	
Kelp greenling, *Hexagrammos decarammus*		X			
Cabezon, *Scorpaenichthys marmoratus*		X	X	X	
Pacific staghorn sculpin, *Leptocottus armatus*	X	X	X	X	
Coastrange sculpin, *Cottus aleuticus*		X	X	X	
Prickly sculpin, *Cottus asper*		X	X	X	
Buffalo sculpin, *Enophrys bison*			X	X	
Tidepool sculpin, *Oligocottus maculosus*				X	
Ringtail snailfish, *Liparis rutteri*				X	
Threespine stickleback, *Gasterosteus aculeatus*	X	X	X	X	
Jack mackerel, *Trachurus symmetricus*				X	
Redtail surfperch, *Amphistichus rhodoterus*		X	X	X	
Walleye surfperch, *Hyperprosopon argenteum*			X	X	
Shiner surfperch, *Cymatogaster aggregate*	X	X	X	X	
Silver surfperch, *Hyperprosopon ellepticum*				X	
Pile surfperch, *Rhacochilus vacca*	X	X			
Saddleback gunnel, *Pholis ornata*		X	X	X	
Pacific sandlance, *Ammodytes hexapterus*			X		
[1,3]Tidewater goby, *Eucyclogobius newberryi*					FE/CSCS

Species	Murphy and De Witt (1951)	Monroe et al. (1974)	Puckett (1977)	Cannata and Hassler (1995)	Status
Bay goby, *Lepidogobius lepidus*				X	
Sand sole, *Psettichthys melanostictus*			X	X	
English sole, *Parophrys vetulus*			X	X	
Starry flounder, *Platichthys stellatus*	X	X	X	X	
Speckled sanddab, *Citharichthys stigmaeus*		X		X	
Freshwater Species					
California roach, *Hesperoleucas symmetricus*		X	X	X	
Humboldt sucker, *Catostomus occidentalis humboldtiensis*	X	X	X	X	
Brown bullhead, *Ameiurus nebulosus*	X	X	X		
Sacramento pikeminnow, *Ptychochelis grandis*				X	
Green sunfish, *Lepomis cyanellus*	X				

[1] FT – Federally threatened
FE – Federally endangered
ST – State threatened
SE – State endangered
CSCS – California special concern species
[2] Observation made by Michelle Gilroy, CDFG.
[3] Observation made by Greg Goldsmith, USFWS

Historically, the Eel River supported six species of salmon, including coho salmon, O*ncorhynchus kisutch,* Chinook salmon, *0. tshawytscha,* pink salmon, *0. gorbuscha,* chum salmon, *0. keta,* steelhead, *0. mykiss,* including resident rainbow trout, and cutthroat trout, *0. clarkii.* Chinook salmon, coho salmon and steelhead are listed as Threatened under the United States Endangered Species Act; and pink and chum salmon have disappeared from the drainage (Brown and Moyle 1997). Other native fishes of the Eel River include Sacramento sucker, *Catostomus occidentalis,* prickly sculpin, *Cottus asper,* coastrange sculpin, *C. aleuticus,* threespine stickleback, *Gasterosteus aculeatus,* and Pacific lamprey, *Lampetra tridentata.* At least 10 Introduced fish species have established reproducing populations on the Eel River (Brown and Moyle 1997). California roach *Hesperoleuucus* or *Lavinia symmetricus* and Sacramento pikeminnow are the most widespread of the introduced species and probably the most abundant fish in the Eel River (Brown and Movle 1997). Speckled dace *Rhinichthys osculus,* occupy approximately 25 km of the Van Duzen River. American shad Alossa sapidissima, originally introduced into the Sacramento-San Joaquin river system, have strayed into the Eel River. White catfish, *Ameiurus catus,* are present in the mainstem Eel River. Threadfin shad, *Dorosoma petenense,* golden shiner, *Notemigomus crysoleucas*, bluegill, *Lepomis macrochirus*, Largemouth bass, *Micropterus*

salmoides, brown bullhead, Ameiurus nebulosus, green sunfish, *Lepomis cyanellis*, are mainly confined to Pillsbury reservoir, but occasionally encountered in the mainstem Eel River and large tributaries (Nakamoto and Harvey 1999). All but three species collected from the estuary are native to the system. The three non-native introductions are freshwater species: Sacramento pikeminnow (*Ptychochelis grandis)*, brown bulhead (*Ameiurus nebulosus*) and green sunfish (*Lepomis cyanellus*) (Cannata 2009).

- **Coho Salmon (*Oncorhynchus kisutch*).** Coho salmon that reside in the project area are part of the Southern Oregon Northern California (SONCC) Evolutionary Significant Unit (ESU) and are a Federal and State threatened species. The Salt River and its tributaries provide marginal habitat for coho salmon due to loss of channel morphology associated with sedimentation and loss of riparian values. General life history information and biological requirements of SONCC coho salmon have been described in various documents (Shapovalov 1954; Hassler 1987; Sandercock 1991; Weitkamp et al. 1995) as well as NOAA Fisheries' final rule listing SONCC coho salmon (May 6, 1997; 62 FR 24588). Adult coho salmon typically enter rivers between September and February. Spawning occurs from November to January (Hassler 1987), but occasionally as late as February or March (Weitkamp et al. 1995). Coho salmon eggs incubate for 35-50 days between November and March. Successful incubation depends on several factors including dissolved oxygen levels, temperature, substrate size, amount of fine sediment, and water velocity. Fry start emerging from the gravel two to three weeks after hatching and move into shallow areas with vegetative or other cover. As fry grow larger, they disperse up or downstream. In summer, coho salmon fry prefer pools or other slower velocity areas such as alcoves, with woody debris or overhanging vegetation. Juvenile coho salmon over-winter in slow water habitat with cover as well. Juveniles may rear in fresh water for up to 15 months then migrate to the ocean as "smolts" from March to June (Weitkamp et al. 1995). A small percentage (approximately 15 percent) may rear in freshwater for a second year.

  In preparation for their entry into a saline environment, juvenile salmon undergo physiological transformations known as smoltification to adapt them for their transition to salt water. Coho salmon adults typically spend two years in the ocean before returning to their natal streams to spawn as three-year olds.

  Available historical data and most recent published coho salmon abundance for California are summarized by NOAA Fisheries status review update (NOAA Southwest Fisheries Science Center 2001), and DFG's Recovery Strategy for Coho Salmon (DFG 2004). The number of streams with coho salmon present within the SONCC ESU was found to have declined from 1989-2000. In the CC ESU the number of streams identified as having historical coho salmon presence generally ranged between 44 to 48 percent from 1989-2000. The decline of SONCC coho salmon is not the result of one single factor, but rather a number of natural and anthropogenic factors that include dam construction, instream flow alterations, and land use activities coupled with large flood events, fish harvest, and hatchery effects.

All coho salmon stocks between Punta Gorda and Cape Blanco are depressed relative to past abundance, but there are limited data to assess population numbers and trends.

The mainstem Salt River occasionally provides migration habitat for adult coho salmon during higher flows as suggested by the observation of several coho salmon juveniles in Francis Creek in 2005 within the City limits of Ferndale. However, the Salt River is not considered good juvenile rearing habitat in its current condition. Tributaries provide potential rearing and spawning habitat for coho salmon. Restoration of the Salt River meets recommendations contained in CDFG's (2004) Recovery Strategy for California Coho Salmon (see Section 4.1.1 Fisheries Restoration Goals; Section 8.1.1 Eel River Hydrologic Unit Watershed Recommendations; Section 8.1.1 ER-FE-01 Salt River).

- **Chinook Salmon (*O. tshawytscha*).** California Coastal Chinook salmon are listed as threatened under the federal ESA. NOAA Fisheries' (Meyers et al. 1998) status review of Chinook salmon contains information on the biological requirements of Chinook salmon. In summary, Chinook salmon mature between 2 and 6+ years of age (Myers et al. 1998). Fall-run Chinook salmon enter freshwater at an advanced stage of maturity, move rapidly to their spawning areas on the mainstem or lower tributaries of the rivers, and spawn within a few days or weeks of freshwater entry (Healey 1991). Post-emergent fry seek out shallow, near-shore areas with slow current and good cover, and begin feeding on small terrestrial and aquatic insects and aquatic crustaceans. The optimum temperature range for rearing Chinook salmon fry is 50°F to 55°F (Rich 1997, Seymour 1956) and for fingerlings is 55°F to 60°F (Rich 1997). In preparation for their entry into a saline environment, juvenile salmon undergo physiological transformations known as smoltification that adapt them for their transition to salt water. The optimal thermal range for Chinook during smoltification and seaward migration is 50°F to 55°F (Rich 1997). The Eel River estuary has been shown to be important rearing grounds for juvenile Chinook salmon (Monroe et al. 1974, Puckett 1973, Roberts 1992, Higgins in Roberts 1992, and Cannata and Hassler 1995). Chinook salmon addressed in this document exhibit an ocean-type life history, and smolts out-migrate predominantly as subyearlings, generally during April through July, but they have been observed present in the estuary at low densities through the fall season (Puckett 1973 and Cannata and Hassler 1995). Chinook salmon spend between 2 and 5 years in the ocean (Bell 1991; Healey 1991), before returning to freshwater to spawn. Some Chinook salmon return from the ocean to spawn at age two, one or more years before full-sized adults return, and are referred to as jacks (males) and jills (females).

  Chinook salmon juveniles have been recovered by CDFG during seining efforts (in 1973, 1977, 1984 and 1995) in the Eel River estuary. The Proposed project area would provide rearing habitat for juvenile Chinook salmon from the Eel River estuary by extending tidal influence upstream in the Salt River. Chinook salmon were documented by DFG in the lower Salt River and its tributaries in 1979 (Roberg and Kenyon 1979).

- **Steelhead (*O. mykiss*).** Northern California steelhead is a Federal and State threatened species. Winter-run steelhead enter fresh water from the ocean between November and April in the Pacific Northwest (Busby et al. 1996; Nickelson et al. 1992), migrate to spawning

areas, and then spawn, generally in April and May (Barnhart 1986). Some adults, however, do not enter some coastal streams until spring, just before spawning (Meehan 1991). Summer steelhead enter freshwater in the spring and summer months, hold in the mainstem Eel River and large tributaries, and then spawn in fall. Both winter-run and summer-run are found in the Middle Fork Eel River, although summer-run steelhead are considered rare. No summer runs have been recently documented in the lower Eel River watershed, with the exception of the Van Duzen River). Steelhead require a minimum depth of 0.18 m and a maximum velocity of 2.44 m/s for active upstream migration (Smith 1973). Spawning and initial rearing of juvenile steelhead generally take place in small, moderate-gradient (generally 3-5 percent) tributary streams (Nickelson et al. 1992).

A minimum depth of 0.18 m, water velocity of 0.30-0.91 m/s (Smith 1973), and clean substrate 0.6-10.2 cm (Nickelson et al. 1992) are required for spawning. Steelhead spawn in 3.9-9.4°C water (Bell 1986). Depending on water temperature, steelhead eggs may incubate for 1.5 to 4 months (August 9, 1996, 61 FR 41542) before hatching, generally between February and June (Bell 1991). After two to three weeks, in late spring, and following yolk sac absorption, alevins emerge from the gravel and begin actively feeding. After emerging from the gravel, fry usually inhabit shallow water along banks of perennial streams. Fry occupy stream margins (Nickelson et al. 1992). Summer rearing takes place primarily in the faster parts of pools, although young-of-the-year are abundant in glides and riffles. Winter rearing occurs more uniformly at lower densities across a wide range of fast and slow habitat types. Productive steelhead habitat is characterized by complexity, primarily in the form of boulders, and large and small wood. Some older juveniles move downstream to rear in larger tributaries and mainstem rivers (Nickelson et al. 1992). Steelhead prefer water temperatures ranging from 12-15°C (Reeves et al. 1987). Juveniles live in freshwater from one to four years (usually two years in the California ESU), then smolt and begin to migrate to the ocean in March and April (Barnhart 1986). Most of the over summer juvenile steelhead rearing occurs in the upper sections of the estuary near Fernbridge, not within the project area (Cannata pers. comm.). Most steelhead smolt migration to sea occurs by June. Winter steelhead populations generally smolt after two years in fresh water (Busby et al. 1996).

Steelhead have been documented in Francis Creek as recently as 2005 and have been observed in the sloughs of the Salt River in 1973 and 1995 (Puckett 1973; Cannata 1995). Steelhead were stocked on an annual basis into Francis Creek during the 1930's, 1953-1966, and possibly as recently as the 1980's.

- **Coastal Cutthroat Trout (*Onchorynchus clarkia clarkii*).** A State species of Special Concern, the coastal cutthroat trout ranges from Northern California to Prince Williams Sound in Alaska. The coastal cutthroat trout is unlike most of the other salmon species, because it may spawn more than once. Adults commonly enter streams during the fall and feed on the eggs from other salmons' spawn. Like other salmon, the female cutthroat digs a nest or redd and the male fertilizes the eggs. Spawning can occur from December through May, dependent upon the water conditions. The young spend 1 to two weeks in the gravel before emerging. Young cutthroat can spend one to nine years in fresh water before they

migrate to the estuaries and ocean in the spring, most commonly three years from emergence. Coastal cutthroat trout usually spend less than one year in salt water before returning to spawn. The age of adults can range from two to ten, with first time spawners usually being three or four years old. After spawning, the 'spent' or spawned adults, now called 'kelts', often return to salt water in late March or early April. Juveniles and adults are carnivorous, feeding mostly on insects, crustaceans, and other fish throughout their lives.

Large woody debris and in-stream structures play an important role in providing valuable habitat for coastal cutthroat trout. In freshwater, adult cutthroat typically reside in large pools while the young reside in riffles, most commonly in upper tributaries of small rivers. Coastal cutthroat trout utilize a wide variety of habitat types during their complex life cycle. They spawn in small tributary streams, and utilize slow flowing backwater areas, low velocity pools, and side channels for rearing of young. Good forest canopy cover, in-stream woody debris, and abundant supplies of insects are crucial for the young cutthroat's survival. During the estuarine or ocean phase of life, the cutthroat trout utilizes tidal sloughs, marshes, and swamps as holding areas and feeding grounds. These tidal areas are also very important for the survival of the prey fishes that the cutthroat depends on for food. Healthy estuaries with abundant supplies of small schooling fishes and young crustaceans are necessary for the cutthroat's survival (Pacific States Fisheries Management Council 2009). Despite widespread decline throughout its range, coastal cutthroat trout are present in the Eel estuary, and have been observed in the Salt River and in the Salt River tributary streams. (Downie and Lucey 2005)

- **Tidewater Goby *(Eucyclobius newberryi)*.** The Tidewater goby is a State Species of Special Concern and is Federally listed as Endangered. Tidewater goby was federally listed as endangered in 1994 (59 FR 5494). Critical habitat was designated in 2000 (65 FR 69693), and this designation was revised in 2008 (73 FR 5920). The Salt River, including the action area, is not within tidewater goby critical habitat; however, critical habitat occurs in the adjacent Eel River estuary less than 4 km from the action area. The tidewater goby is a small, annual fish that inhabits coastal brackish water within California ranging from the Smith River to northern San Diego County. A recovery plan was completed in 2005 (USFWS 2005), and a five-year status review was completed in 2007 (USFWS 2007). Threats to the species include loss and modification of coastal wetlands, water diversions, predation and competition by introduced species, channelization of rivers, and degraded water quality from agricultural and sewage effluents, increased sedimentation from cattle grazing, and increased water temperatures from riparian vegetation removal (USFWS 2005).

  Tidewater gobies occur in coastal lagoons and brackish marshes and estuaries that are seasonally disconnected from tidal action when sand bars form at the ocean (Moyle 2002). They rarely occur in freshwater habitats but occasionally enter marine environments when flushed out of lagoons, estuaries, and river mouths by normal breaching of sandbars following storm events.

  Tidewater gobies were not previously known to occur in the Salt River, but were known to exist in other locations in the adjacent Eel River Estuary (USFWS 2005). However, in May

2010, tidewater gobies were observed by USFWS at 4 of 6 sites surveyed in Riverside Ranch; gobies were found in small quiet pools (i.e., 4-5 m diameter) downstream of tide gates adjacent to the Salt River channel (USFWS 2010, Appendix A; Figure 4). In contrast, surveys conducted in adjacent Humboldt Bay tended to find tidewater gobies upstream of tide gates (USFWS 2006, Wallace and Allen 2007, Wallace and Allen 2009). Other fish species observed at Riverside Ranch sites included numerous threespine stickleback (*Gasterosteus aculeatus*) at all 4 sites, and 6 Sacramento pikeminnow (*Ptychocheilus grandis*), 1 staghorn sculpin (*Leptocottus armatus*), 1 prickly sculpin (*Cottus asper*), and 1 young-of-the-year coho salmon (*Oncorhynchus kisutch*) each found at 1 of the 4 sites. Emergent vegetation included widgeongrass (*Ruppia maritima*) (Sites 2 and 5), and eelgrass (*Zostera marina*) (Site 5); Site 5 may represent the first site where tidewater gobies were found in association with eelgrass. Tidewater gobies were not detected from multiple seine net hauls and dip net samples taken from both sides of a levee and tide gate at Site 1. This site is adjacent to the Salt River at around river mile 2.0, the most upstream site sampled, and had very low dissolved oxygen levels (<2 mg/L), potentially indicating poor water quality at that site (Table 2). Tidewater gobies were also not detected at Site 4, which was described as a 2 m by 3 m pool surrounded by woody vegetation, where only threespine stickleback were observed.

Surveys following USFWS Protocol were repeated by CDFG at Sites 1, 2, 4, and 5 on 8 September 2010 (CDFG 2010, Appendix B), and by USFWS on 13-14 October 2010 at Sites 1-6 (C. Chamberlain, USFWS, pers comm. 21 October 2010), and no tidewater gobies were detected during either surveys. These survey results suggest that tidewater gobies may only occur seasonally or infrequently in the project area. HCRCD conducted water quality surveys on 21 October 2010 at the sites where surveys were conducted by USFWS on 13-14 October 2010 (A. Shows, HCRCD, pers comm. 27 October 2010). Salinity increased at Sites 2, 3, 5, and 6 between May (ranging 2.0-11.54 ppt) and October (ranging 27.1-31.6 ppt; Table 2).

Numerous tidewater gobies were found in tidal channels within Connick Ranch directly west of Riverside Ranch in August and October (Figure 5), when none were detected on Riverside Ranch (USFWS, unpubl. data). Tidewater gobies were also reported from an unnamed slough in the northern portion of the Eel River estuary, which is north of Riverside Ranch (USFWS 2005). This suggests that Connick Ranch and/or other locations occupied by tidewater gobies in the Eel River Estuary, may function as a "population source" of tidewater gobies to Riverside Ranch. Both the Salt River and Eel River estuaries have been reduced in size through construction of levees, tide gates, berms, and drainage channels; these actions also eliminated some of the natural sandbars between the ocean and the estuaries. However, some of these tide gates and culverts provide habitat conditions similar to those created by a seasonal sandbar, and most tidewater goby have been found in the Eel River and Salt River estuaries above tide gates.

Adult tidewater gobies are not anticipated to be present in the mainstem Salt River because of unsuitable habitat associated with the constant tidal exchange and high-velocities. Therefore, surveys were not conducted in the mainstem reach by USFWS in May 2010 and during subsequent surveys in August, and October 2010.

- ~~Critical habitat was designated in November 2000 and revised in 2008 to include portions of the Eel River estuary, but not the Salt River project area. The Tidewater goby is a small fish that inhabits coastal brackish water habitats entirely within California ranging from the Smith River to northern San Diego County. Tidewater gobies are uniquely adapted to coastal lagoons and the uppermost brackish zone of larger estuaries, rarely invading marine or freshwater habitats. The species is typically found in water less than one meter deep and salinities of less than 12 ppt. Surveys suggest a preference for spatial stability (low energy tidal exchange), and for low salinities in the range of 3 ppt. Principal threats include loss and modification of habitat, water diversions, predatory and competitive introduced species, habitat channelization, and degraded water quality (Chamberlain, C.D. 2006, CBGD 2009).~~

  ~~Despite habitat loss, tidewater gobies have been reported from an unnamed slough in the Eel River estuary (Goldsmith pers. comm.). No intensive systematic surveys have been conducted in the Eel River estuary and sloughs. The recent recovery of tidewater gobies during a limited sampling effort elsewhere in the estuary may indicate that elevated brackish water sloughs throughout the estuary provide suitable habitat for the tidewater goby, and that distribution is more widespread in the Eel River estuary than previously reported.~~

  ~~Tidewater goby have not been documented in seinings of the Salt River, do not occur in areas upstream of Riverside Ranch, and are not known to occur in the project area, but should be assumed to be present in the tidally influenced areas downstream of proposed excavation. By providing at least 1.80 additional miles of elevated brackish habitat within the Salt River main channel, as well as 3.75 miles of marsh tidal slough channels within the Riverside Ranch property, the project makes available 5.55 total miles of additional slough habitat suitable for Tidewater Goby, and other brackish-dependent species. This equates to approximately 253 additional acres of elevated brackish and tidal marsh habitat within the Salt River main channel and the Riverside Ranch property.~~

- **Longfin Smelt (*Spirinchus thaleicthys*).** The Longfin Smelt was listed as a State Threatened Species on March 4, 2009. As of November 14, 2009, the United States Fish and Wildlife Service had rejected a petition to add the species to the Endangered Species Act list. An inhabitant of Pacific coast estuaries from San Francisco Bay to Alaska, the Longfin Smelt is a small sized fish, usually growing to about ten centimeters as an adult. Its primary habitat is open estuary waters, typically in the middle or deeper areas of the water column. Longfin smelt migrate throughout the estuary over the course of their life cycle. They spawn in estuaries in fresh or slightly brackish water over sandy or gravel substrates, with most spawning occurring between January and March. After hatching, longfin smelt larvae disperse widely throughout the estuary. The smelt generally mature at the end of their second year, at which point they migrate to spawn. The smelts favored food is opossum shrimp, but they will eat a variety of crustaceans.

  Longfin smelt have declined significantly in recent years. Causes for decline include water diversions leading to reduced freshwater inflow, entrainment of fish at diversions, direct and indirect impacts of nonnative species on food supply and habitat, and lethal and sub-lethal effects of pesticides and toxic chemicals. In the San Francisco Bay Delta, Longfin smelt are

estimated to be at three percent of their levels measures less than 20 years ago (CBGD 2009).

Longfin smelt have been observed in the Salt River channel during winter months (December-February) (Puckett 1973-1974). They do not occur regularly in the action area, due to the unpredictable nature of the aquatic habitat. By providing at least 1.80 additional miles of elevated brackish habitat within the Salt River main channel, as well as 3.75 miles of marsh tidal slough channels within the Riverside Ranch property, the project makes available 5.55 total miles of additional slough habitat suitable for Longfin smelt, and other brackish-dependent species. This equates to approximately 253 additional acres of elevated brackish and tidal marsh habitat within the Salt River main channel and the Riverside Ranch property.

- **Green sturgeon, (*Acipenser medirostris*).** The green sturgeon is listed as federally threatened. Although the list of critical habitat designated by National Marine Fisheries Service (NMFS) includes Humboldt Bay, it does not include the Eel estuary. The Green sturgeon has a general southern distribution boundary in the Sacramento River with the highest densities in the Colombia River in Washington, and Klamath River. Local recordings in the Eel River have occurred at least as high as Fort Seward. Inasmuch as it is the most common sturgeon in the Klamath and Trinity rivers, it is likely the most common sturgeon in the Eel River. The Green sturgeon enters freshwater only to spawn, between February and July during periods of high flow and cold water. Adults are not now known to be present in the Salt River, but are confined to the larger, fast flowing channels and deep pools of the Eel estuary and river. In other locations, juveniles migrate back to the ocean within a year or two, spending at least three years at sea before returning to spawn. Adults do eat fish, but a preponderance of their diet is derived from the benthos, including crustaceans, amphipods, and mysid shrimp.

  Green sturgeon populations have declined due to fishing practices, poaching, barriers to fish passage, habitat alteration and degradation, introduction of pesticides and other toxics to the aquatic environment, and other factors. Green sturgeon are not known to occur in the Salt River main channel, immediately downstream of the project area, nor do they occur in the action area, due to the unpredictable nature of the aquatic habitat. Adults likely swim directly up the Eel River channel on their way to upstream freshwater holding areas.

- **White sturgeon, (*Acipenser transmontanus*).** White sturgeon, a State Special Concern Species, has a general southern distribution boundary in the Sacramento River with the highest densities in the Colombia River in Washington. However, they range from Ensenada, Mexico to Cook Inlet, Alaska. Found in most estuaries along the Pacific coast, white sturgeon prefer estuaries of large rivers. White sturgeon populations have declined due to fishing practices, poaching, barriers to fish passage, habitat alteration and degradation, introduction of pesticides and other toxics to the aquatic environment, and other factors.

  The largest freshwater fish in North America, the white sturgeon can weigh over 1,500 pounds, be 20 feet in length, and live for over 100 years. The white sturgeon is a slow growing, late maturing anadromous fish. The White sturgeon spawns in large rivers in the spring and summer months and remain in fresh water while young. Older juveniles and

adults are commonly found in rivers, estuaries, and marine environments. Anadromous white sturgeon most commonly move into large rivers in the early spring, and spawn May through June. Spawning usually takes place in swift current with a rocky bottom, near rapids. Juveniles migrate back to the ocean within a year or two, spending at least 3 years at sea before returning to spawn. White sturgeon can spawn multiple times during their life, and apparently spawn every 4-11 years as they grow and mature. Adults do eat fish, but a preponderance of their diet is derived from the benthos, including crustaceans, amphipods, and mysid shrimp.

Adults are not now known to be present in the Salt River or its tributaries, and are confined to the larger, fast flowing channels and deep pools of the Eel River and estuary. The White sturgeon is rarely observed in the Eel River.

3.4.2 REGULATORY SETTING

Activities that could adversely affect water quality or jurisdictional waters of the U.S., alter stream channels or affect special status species or their habitat are under the regulatory authority of several State and Federal agencies. Water quality regulations and permits are addressed in Section 3.1, Hydrology, Water Quality, and Geomorphology. Regulations applicable to biological resources in general are addressed in Section 3.3, Terrestrial, Upland, and Riparian Biological Resources section, with the exception of the National Marine Fisheries Service regulations, which is discussed below:

NATIONAL MARINE FISHERIES SERVICE

Endangered Species Act §7/Essential Fish Habitat Magnuson-Stevens Act

The ESA requires the federal government to designate "critical habitat" for any species it lists under the ESA. The project area provides critical habitat for coho salmon, Chinook salmon and steelhead. Critical habitat is defined as: (1) specific areas within the geographical area occupied by the species at the time of listing, if they contain physical or biological features essential to conservation, and those features may require special management considerations or protection; and (2) specific areas outside the geographical area occupied by the species if the agency determines that the area itself is essential for conservation. Section 7(a)(2) of the ESA requires federal agencies to consult with the Services to ensure that they are not undertaking, funding, permitting, or authorizing actions likely to jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat.

Essential Fish Habitat (EFH) provisions of the Magnuson-Stevens Act (MSA, as amended 1996) require heightened consideration of habitat for commercial species in resource management decisions, including EFH for SONCC coho salmon and CC Chinook salmon. EFH is defined in Section 3 of the MSA as "those waters and substrates necessary to fish for spawning, breeding, feeding, or growth to maturity." The National Oceanic and Atmospheric Administration National Marine Fisheries Service (NOAA Fisheries) interprets EFH to include aquatic areas and their associated physical, chemical, and biological properties used by fish that are necessary to support a sustainable fishery and the contribution of the managed species to a healthy ecosystem. Freshwater EFH for Pacific salmonids includes all those streams, lakes, ponds, wetlands, and other water bodies

currently, or historically, accessible to salmon in Washington, Oregon, Idaho, and California, except areas upstream of certain impassable man-made barriers, and long-standing impassable natural barriers. The MSA and its implementing regulations at 50 CFR 600.92(j) require that before a federal agency may authorize, fund or carry out any action that may adversely effect EFH, it must consult with NOAA Fisheries. The Salt River and tributaries are EFH for Chinook and coho salmon.

California Coastal Commission/County of Humboldt Local Coastal Plan

The Eel River Area Plan, represents one of six County Coastal Planning Areas, and identifies land uses and standards by which development will be evaluated within the Coastal Zone. The indicated uses and standards adopted by the County of Humboldt, and certified by the California Coastal Commission are in conformance and satisfy the policies and requirements for coastal land use contained in the California Coastal Act of 1976 (Public Resource, Code 30000 et seq.) and other related legislation. All current County adopted planning documents, County Ordinances, and State law regulating planning and land use, unless superseded by policies of this document, also govern the relation of the coastal plan to applicable currently adopted County Plan documents.

The Salt River and its tributary streams fall under the LCP's "Other Coastal Streams" guidelines. Under this section, as in the Coastal Act, "(c)hannelizations, dams, or other substantial alterations of rivers and streams shall incorporate the best mitigation measures feasible, and be limited to (1) necessary water supply projects, (2) flood control projects where no other method for protecting existing structures in the flood plain is feasible and where such protection is necessary for public safety or to protect existing development, or (3) developments where the primary function is the improvement of fish and wildlife habitat (Chapter 3.41 G, Coastal Act §30236).

The proposed project's primary goal is to restore and protect the beneficial uses of the waters of the State with an emphasis on restoring and enhancing fish and wildlife habitat. The project is also a feasible and achievable approach to improve drainage and provides substantial corollary flood control benefits necessary to protect public safety. Therefore, the proposed project meets the test for numbers two and three, above. The LCP prescribes activities and presents guidelines for any proposed development in the Coastal Zone. The following sections are germane to the proposed project, although some are drawn from the guidelines for the Eel River.

> *"New development within stream channels, including the Salt River and its tributaries, shall be permitted when there is no less environmentally damaging feasible alternative, where the best feasible mitigation measures have been provided to minimize adverse environmental effects, and shall be limited to: a. Wetlands, fishery, and wildlife enhancement and restoration projects. b. Road crossings, consistent with the provisions of Section 3.41G6e. c. Maintenance dredging for flood control and drainage purposes consistent with the Transitional Agricultural Lands Policies and within areas planned for agriculture. d. Maintenance of levees, roads, fences, dikes, drainage channels, flood gates and tide-gates including replacement. e. Development consistent with [LCP section] 3.41G 6, f. New fences, so long as it would not impede the natural drainage or would adversely affect the stream environment or wildlife. (Typically, 2-3 strands of barbed wire with fence posts set outside of the stream channel would be consistent with this policy.) (LCP 3.41 G 3 (a-f))"*

Although not governed by the Eel River sections of the LCP, that section does provide good guidance regarding the habitat enhancement objectives of the LCP, and have been considered in the development of the proposed project. With respect to Eel River fishery resources, the LCP states that "(t)he Department of Fish and Game, in consultation with the County, local sports and fishing clubs, and property owners adjacent to the Eel River, should investigate opportunities and implement measures to augment and enhance anadromous fish runs in the Eel River. This should include: channel improvements…." (Chapter 3.41, Section F(1)(b)). According to the LCP, "(d)evelopment and uses within the Eel River are limited within stream channels to when there is no less environmentally damaging feasible alternative, where the best feasible mitigation measures have been provided to minimize adverse environmental effects, and shall be limited to wetlands, fishery, and wildlife enhancement and restoration projects. (Chapter 3.41 Section F(2)(a)). In addition, uses are limited to "(m)aintenance dredging for flood control and drainage purposes consistent with the Transitional Agricultural Lands Policies and within areas planned for agriculture (Chapter 3.41, Section F.2(c)).

Riparian corridors are critical to the maintenance of instream habitat, and the LCP defines habitat requirements for riparian corridors and forests habitat. Among other things, the Eel River riparian corridor shall be a minimum of the larger of either: (a) 100 feet, measured as the horizontal distance from the stream transition line on both sides; (b) 50 feet plus four times the average percent of slope, measured as a slope distance from the stream transition line on both sides of the river. (c) 200 feet, measured as the horizontal distance from the stream transition line within mapped Riparian Forests. The LCP also states that (d) If either the County or the landowner requests, they may agree to expand the width of the riparian corridor to protect significant areas of vegetation or special habitat areas adjacent to the corridor described above in 3.41 Section F. 3 (a-c).

The width of the riparian corridor, as described in 3(a)-(d) above, may be reduced where such a reduction would not result in the removal of woody vegetation, and the County determines, based on specific factual findings, that a reduction of the corridor width will not result in a significant adverse impact to the habitat.

While stipulating that the total acreage of Eel River riparian vegetation shall be maintained, the LCP also identifies other riparian protection measures including: (1) Purchasing from willing sellers by public or private entities of fee title or easements; (2) Providing economic incentives for planting riparian vegetation and, where feasible and consistent with habitat values, providing economic use (e.g., timber harvest) of wood species; (3) Encouraging the planting of riparian vegetation as part of bank protection projects and channel improvements. Finally, the LCP states that in order to achieve these measures, "the County should work with property owners and affected State and Federal agencies." (LCP 3.41 Section 6)

A notable exception to the riparian requirements presented in the LCP is made for the Salt River. In this case, the riparian corridor along the Salt River "…shall be limited to the bankfull channel." (LCP Chapter 3.41 G.3 (4)) However, the riparian corridors on all other perennial and intermittent streams, including the Salt River tributary streams, "shall be, at a minimum, the larger of the following: a. 100 feet, measured as the horizontal distance from the stream transition line on both sides; b. 50 feet plus four times the average percent of slope, measured as a slope distance from the

stream transition line on both sides of intermittent and perennial streams. c. Where necessary, the width of riparian corridors shall be expanded to include significant areas of riparian vegetation adjacent to the corridor, slides, and areas with visible evidence of slope instability, not to exceed 200 feet measured as a horizontal distance. It also states that "(t)he width of the riparian corridor may be reduced where such a reduction would not result in the removal of woody vegetation, and the County determines, based on specific factual findings, that a reduction of the corridor will not result in a significant adverse impact to the habitat….New structures, including houses, barns, sheds, etc., shall be placed a minimum of 50 feet from the stream transition line" (LCP Chapter 3.41 G.3.5 (a-c)).

North Coast Regional Water Quality Control Board

Comprehensive water quality planning is mandated by California and federal law. The federal Clean Water Act contains the law protecting navigable waters, and the California Water Code is the state body of law protecting groundwaters and fresh and marine surface waters.

The primary responsibility for the protection and enhancement of water quality in California has been assigned by the California legislature to the State Water Resources Control Board (State Water Board) and the nine regional water quality control boards (regional water boards). The State Water Board provides state-level coordination of the water quality control program by establishing statewide policies and plans for the implementation of state and federal laws and regulations. The regional water boards adopt and implement water quality control plans (basin plans) which recognize the unique characteristics of each region with regard to natural water quality, actual and potential beneficial uses, and water quality problems.

The goal of this Basin Plan is to provide a definitive program of actions designed to preserve and enhance water quality and to protect beneficial uses of water in the North Coast Region. The plan is concerned with all factors and activities that might affect water quality. It emphasizes, however, actions to be taken by the State Water Board and the Regional Water Board since they have primary responsibility for maintenance of water quality in the North Coast Region.

The basis for the discussion of beneficial water uses in the Basin Plan is Section 13050(f) of California's Porter-Cologne Water Quality Control Act, which states: "Beneficial uses" of the waters of the state that may be protected against water quality degradation include, but are not necessarily limited to, domestic, municipal, agricultural, and industrial supply; power generation; recreation; aesthetic enjoyment; navigation; and preservation and enhancement of fish, wildlife, and other aquatic resources or preserves. Beneficial uses specific to the project and project area include, but are not limited to:

- **Commercial and Sport Fishing (COMM)** Uses of water for commercial, recreational (sport) collection of fish, shellfish, or other aquatic organisms including, but not limited to, uses involving organisms intended for human consumption or bait purposes.
- **Cold Freshwater Habitat (COLD)** Uses of water that support cold water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.

- **Inland Saline Water Habitat (SAL)** Uses of water that support inland saline water ecosystems including, but not limited to, preservation or enhancement of aquatic saline habitats, vegetation, fish, or wildlife, including invertebrates.
- **Estuarine Habitat (EST)** Uses of water that support estuarine ecosystems including, but not limited to, preservation or enhancement of estuarine habitats, vegetation, fish, shellfish, or wildlife (e.g., estuarine mammals, waterfowl, shorebirds).
- **Marine Habitat (MAR**) Uses of water that support marine ecosystems including, but not limited to, preservation or enhancement of marine habitats, vegetation such as kelp, fish, shellfish, or wildlife (e.g., marine mammals, shorebirds).
- **Wildlife Habitat (WILD)** Uses of water that support terrestrial ecosystems including, but not limited to, preservation and enhancement of terrestrial habitats, vegetation, wildlife (e.g., mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources.
- **Preservation of Areas of Special Biological Significance (ASBS)** Includes marine life refuges, ecological reserves and designated areas of special biological significance, such as areas where kelp propagation and maintenance are features of the marine environment requiring special protection.
- **Rare, Threatened, or Endangered Species (RARE)** Uses of water that support habitats necessary, at least in part, for the survival and successful maintenance of plant or animal species established under state or federal law as rare, threatened or endangered.
- **Migration of Aquatic Organisms (MIGR)** Uses of water that support habitats necessary for migration or other temporary activities by aquatic organisms, such as anadromous fish.
- **Spawning, Reproduction, and/or Early Development (SPWN)** Uses of water that support high quality aquatic habitats suitable for reproduction and early development of fish. Waters, including wetlands and other waterbodies, that support natural enhancement or improvement of water quality in or downstream of a waterbody including, but not limited to, erosion control, filtration and purification of naturally occurring water pollutants, streambank stabilization, maintenance of channel integrity, and siltation control.
- **Flood Peak Attenuation/Flood Water Storage (FLD)** Uses of riparian wetlands in flood plain areas and other wetlands that receive natural surface drainage and buffer its passage to receiving waters.
- **Wetland Habitat (WET)** Uses of water that support natural and man-made wetland ecosystems, including, but not limited to, preservation or enhancement of unique wetland functions, vegetation, fish, shellfish, invertebrates, insects, and wildlife habitat.

3.4.3 IMPACTS AND MITIGATION

SIGNIFICANCE CRITERIA

Criteria for determining significant impacts to aquatic organisms were based on the State CEQA Guidelines (Appendix G) and on professional judgment. The Guidelines state that the project would have a significant impact on aquatic resources if it:

A. Has 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. Interferes substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impedes the use of native wildlife nursery sites.

Impacts to the fish assemblage in the vicinity of project were assessed by evaluating all potential direct, indirect, temporary, and permanent impacts.

Alternative 1 (Proposed Project): Modified Channel/Riverside Ranch Restoration/ Upland Restoration

The Salt River Ecosystem Restoration Project is intended to produce tidal wetland habitat in an area that is currently diked and managed for agriculture, and thus has the potential to be a net benefit to fish. By providing at least 1.8 additional miles of elevated brackish habitat within the Salt River main channel, as well as 3.75 miles of marsh tidal slough channels within the Riverside Ranch property, the project makes available 5.55 total miles of additional slough habitat suitable for ~~Coastal~~ Tidewater Goby, Longfin Smelt, Coho salmon, Chinook salmon, Steelhead trout, Coastal Cutthroat trout, and other brackish-dependent species. This equates to approximately 253 additional acres of elevated brackish and tidal marsh habitat within the Salt River main channel and the Riverside Ranch property.

The project would also provide approximately 5 additional miles of freshwater channel habitat along the main Salt River Channel, above the reach of tidal influence. By providing additional freshwater habitat, as well as hydraulic connectivity with tributary streams, the project thereby also provides a net benefit to fish. However, implementation of the Salt River Ecosystem Restoration Project could negatively impact fish through the following mechanisms:

- Changes in water quality (See Section 3.1, Hydrology and Water Quality, for additional analyses of this issue)
- Entrainment of fish in areas disconnected from the estuary.
- Disturbance of substrate/benthic habitat
- Creation of habitat that will benefit non-native invasive species at the expense of natives
- Cumulative Impacts

Each of these impacts is discussed below.

Impact 3.4.1-1: Impacts to aquatic resources from decreased water quality due to construction/dredging activities

Implementation of this alternative would require: 1) excavating 7.~~2~~7 miles of channel (3' deep, 50-100' wide) in the now-aggraded bed of the historic Salt River channel; 2) re-grading, lowering, and potentially disking the existing levees surrounding Riverside Ranch, while ensuring that channel excavation adjacent to Riverside Ranch is sufficient to promote tidal exchange within the Riverside Ranch property boundaries; and, 3) creating the final levee breaches to allow full tidal exchange between Riverside Ranch and the lower Salt River channel. Significant channel excavation ~~and land recontouring~~ would occur at Riverside Ranch to allow full tidal drainage to sloughs and other features on Riverside Ranch. The RCD would continue its habitat enhancement and erosion control efforts in the upland areas.

The construction activities, as well as some of the future management and maintenance activities have the potential to dewater existing habitat, and to increase suspended sediments and turbidity, and introduce contaminants (fuel oils, grease) in the vicinity. This impact would apply to all portions of the Salt River within the project area. Since this disturbance could be highest and continuous throughout the excavation/levee construction/maintenance period, and could therefore impact special status species in the immediate vicinity, the impact is considered potentially significant.

Few, if any, adverse impacts are expected from upland habitat enhancement and erosion control activities, which would immediately reduce Salt River sediment load emanating from the Wildcat Mountain tributary streams.

Tidewater gobies and individuals of other aquatic species could be killed or injured during in-channel construction activities as a result of dewatering the Salt River channel and channel excavation. This is most likely to occur during Riverside Ranch restoration (Phase 1) where tidewater gobies and other species were detected in May 2010. A significant number of avoidance and mitigation measures are summarized below and discussed in detail in the Draft Biological Assessment for Tidewater Goby soon to be submitted to the United States Fish and Wildlife Service for consultation.

Potential water quality changes due to the Salt River Ecosystem Restoration Project that could impact fish and macroinvertebrates include changes in suspended sediments, dissolved oxygen (DO), and various contaminants. No adverse impacts are anticipated as a result of changing salinity levels throughout the project area due to the prior acclimation of native fish species to a dynamic estuarine environment. The significance of project-related water quality impacts is based on compliance with standards set forth by the RWQCB North Coast Region Water Quality Control Plan (Basin Plan) (2007) and other supporting documents. Additional information on these standards and how the project would affect water quality is presented in Section 3.1, Hydrology, Water Quality, and Geomorphology.

The most profound project impact anticipated as a result of construction activities is the potential mobilization of high quantities of suspended sediment. Periods of high suspended sediment concentrations can reduce respiratory efficiency in fish due to clogging and abrasion of gill filaments, thus leading to increased stress levels (Waters 1995, Kemp 1949). Increased turbidity due to suspended sediments can lead to reduced feeding efficiency for visual predators like salmon (Hadden et al. 2004). Sediment can also smother eggs, causing increased mortality thus affecting future fish stocks (Hobbs 1937). The Basin Plan states that water in the Eel River estuary shall not contain suspended material in concentrations that cause nuisance or adversely affect beneficial uses (such as supporting fisheries). Further, the Basin Plan states that turbidity shall not be increased more than 20 percent above naturally occurring background levels, although allowable zones of dilution within which higher percentages can be tolerated may be defined for specific discharges upon the issuance of discharge permits or waiver thereof. Based upon existing data collection, background levels within Salt River tributaries appear to be exceedingly high. Francis Creek measurements during modest storm events revealed Total Suspended Sediment (TSS) levels of more than 4,000 ppm.

Low DO concentrations can be common in shallow, isolated bodies of water experiencing limited hydraulic exchange with surrounding areas. Temporary reductions in DO concentrations below an organism's tolerance level can cause undue stress, impede movement, and lead to death if conditions persist long enough. The Basin Plan appears to state that DO levels within the estuary should be maintained at 7.0 mg/l, the level set for designated spawning areas. However, the project area is currently dominated by the marine environment, where the minimum DO level is set at 5.0 mg/l.

Any shallow, isolated water bodies can also experience elevated temperatures. As with DO, temporary periods of water temperatures outside an organism's tolerance range can cause undue stress, can impede movement, and can lead to death if conditions persist long enough. The Basin Plan states that the temperature of intrastate waters such as the Eel estuary shall not be increased more than 5°F above their ambient temperature by outside input.

Most fish are capable of leaving areas where detectable water quality conditions become adverse. However, less mobile organisms such as macroinvertebrates may not be able to avoid such conditions. A decrease in macroinvertebrates could indirectly but significantly affect fish by reducing prey availability.

Contaminants such as petroleum products (fuels, oil, grease) used in conjunction with construction activities can be accidentally introduced into the water. These substances are known to be toxic to fish and prolonged exposure can cause morphological, behavioral, physiological, and biochemical abnormalities (Sindermann et al. 1982). The Basin Plan states that water shall not contain oils, greases, waxes or other materials in concentrations that cause a nuisance, or that otherwise adversely affect beneficial uses.

Recent soil toxicity tests on the Salt River channel and Riverside Ranch indicate little to no contamination of soils, and thus no likely introduction of toxic contaminants to water bodies if channel excavation and sediment mobilization occurs. No elevated concentrations were recorded for a suite of potential harmful contaminants (Freshwater Environmental Solutions 2008). The

results of the soil investigation also indicated that the spatial variation in contaminants was low enough that no further sampling is necessary before soils are excavated and reused.

There is no history of activity in the upper watershed that suggests possible contributions of contaminants from the proposed upslope work. Limited project size of upslope activities further ensures that no significant contributions of sediment or contaminants would impact aquatic resources as a result of upslope activities.

Sediment reuse practices ~~for re-contouring specific areas of the floodplain do~~ have the potential to introduce fine sediment into the newly excavated channel and thereby into the Eel River estuary. Therefore, numerous measures have been included in the project's Excavation Materials Management Plan (EMMP; Winzler and Kelley December 2009) ~~to~~ and into more recent project design elements to eliminate or minimize the potential introduction of sediment into the estuary. These measures would be detailed in the Stormwater Pollution Prevention Plan (SWPPP) to be prepared and implemented in accordance with NPDES requirements and Title III of the County of Humboldt Land Use and Development Division 3 Building Regulations Section 331-12 for Grading, Excavation, Erosion, and Sedimentation Control. Common Best Management Practices for erosion and sediment control that would be applicable to the project include measures such as seeding, straw mulching, and geotextiles; silt fencing, fiber rolls, sediment basins, and check dams.

There are other water quality constituents prevalent in the project area that may be harmful to aquatic life either directly or indirectly. These include excessive nutrients and pathogens from agriculture operations and municipal wastewater. These pollutants could cause harm to fish and macroinvertebrates if they are found in high enough concentrations. In light of the intensive dairy industry of the area, it is likely that nutrient and pathogen levels from surrounding agricultural operations are high. However, the proposed project would not increase existing levels beyond the present level, and the development of revegetation zones and reduced flooding along the riparian area would help buffer the input of nutrients and pathogens to the streams and Salt River channel.

The upland project component, primarily erosion control measures such as culvert replacement, road treatment, and other BMPs, may result in the short-term and insignificant introduction of sediment into the Salt River tributaries, but would result in a mid- to long-term reduction in overall sediment levels

Mitigation 3.4.1-1.1: Develop a Storm Water Pollution Prevention Plan (SWPPP)

Mitigation 3.1.1-2.1 would also apply to this impact.

Mitigation 3.4.1-1.2: Limit initial construction to an extended dry weather season (~~April~~ June 1 – October 1)

Initial project construction activities involving earth moving on any of the sites in an area where material may enter or be transferred to a slough shall be limited to ~~the April 1-November 30 dry season~~ June 1-October 1, or to October 31 in the absence of rain. This dry-season construction would reduce the amount of sediment and contaminants washed into the Salt River and Eel Estuary from the Salt River Ecosystem Restoration Project and related project site by rains. Maintenance activities involving earth moving on any of the sites in an area where material may enter or be

transferred to a slough shall be limited to ~~the April 15-1-November 1 dry season~~ the same or a similar dry-season schedule. This would reduce the amount of sediment and contaminants washed into the Salt River and Eel Estuary from Salt River Ecosystem Restoration Project maintenance activities.

Mitigation 3.4.1-1.3: Adhere to site-specific construction plans

Conduct construction work in accordance with site-specific construction plans that minimize the potential for increased delivery of sediment to surface waters.

Mitigation 3.4.1-1.4: Divert concentrated runoff and discharge away from channel banks

Mitigation 3.1.1-2.1 also would apply to this impact.

Mitigation 3.4.1-1.5: Minimize removal of and damage to native vegetation

During excavation of the main channel, a significant amount of native vegetation must be removed. Where possible, the contractor will use heavy equipment to excavate plants and shrubs with root-wads, and replant these at areas designated by the re-vegetation plan. Native vegetation that is removed or damaged at access ways and within the construction areas shall be replaced under the re-vegetation plan at a 3:1 ratio.

Mitigation 3.4.1-1.6: Install temporary construction fencing to identify work areas

The project contractors shall install temporary construction fencing to identify areas that require clearing, grading, revegetation, or recontouring, and minimize the extent of areas of areas to be cleared, graded, recontoured, or otherwise disturbed.

Mitigation 3.4.1-1.7: Grade and stabilize spoils sites

Mitigation 3.1.1-2.1 also would apply to this impact.

Mitigation 3.4.1-1.8: Avoid operating equipment in flowing water

Mitigation 3.1.1-2.1 also would apply to this impact.

Mitigation 3.4.1-1.9: Fish relocation

Before any potential de-watering activities begin in any creeks or channels within the project area, the RCD shall ensure that native aquatic vertebrates and larger invertebrates are relocated out of the construction area into a flowing channel segment by a qualified fisheries biologist. In deeper or larger areas, water levels shall first be lowered to manageable levels using methods to ensure no impacts to fisheries and other special status aquatic species. A qualified fisheries biologist or aquatic ecologist shall then perform appropriate seining or other trapping procedures to a point at which the biologist is assured that almost all individuals within the construction area have been caught. These individuals shall be kept in buckets with aerators to ensure survival. They shall then be relocated to an appropriate flowing channel segment or other appropriate habitat as identified by the RCD in consultation with the NMFS and the DFG. Construction activities shall be prohibited from

unnecessarily disturbing aquatic habitat. Federally threatened or endangered aquatic species that occur within the project area either as residents or non-residents are Coho salmon, steelhead, Chinook salmon, green sturgeon, and tidewater goby. Introduced species, particularly Sacramento pikeminnow shall be documented and euthanized, as discussed under Impact 3.4.1-4, below.

Mitigation 3.4.1-1.10: Tidewater Goby Measures

Specific measures designed to avoid or mitigate for impacts to tidewater goby include the following stepwise approach, described in detail in the Draft Biological Assessment for Tidewater Goby under preparation for submittal to the United States Fish and Wildlife Service for consultation. These measures are:

1. Prior to commencement of construction, tidewater goby surveys shall be conducted in May at all previously identified tidewater goby survey sites. Tissue samples will be collected for genetic analysis;
2. Construction plans shall ensure avoidance of disturbance to existing tidewater goby habitat at "Site #6" (see Biological Assessment) a possible relocation site for tidewater gobies found prior to dewatering of the Salt River channel;
3. Immediately prior to construction season, a tidewater goby survey shall be conducted in May at all sites and Connick to collect tissue samples for genetic analysis;
4. For any necessary relocation of tidewater goby, or other aquatic species, seining shall be conducted prior to dewatering of the Salt River channel;
5. Captured goby, or other listed species, shall be appropriately relocated as follows:

    a. Relocation of tidewater goby to Connick Ranch, providing genetic analysis so directs;
    b. Relocation of tidewater goby to "Site #6" (as identified in the Draft Biological Assessment) providing genetic analysis so directs and landowner permission is provided;
    c. Retention of existing Riverside Ranch habitat at two suitable sites (see Biological Assessment) and relocate tidewater goby to those sites

6. Most importantly, many acres of habitat suitable for tidewater goby shall be restored at Riverside Ranch as part of the project description;

Impact Significance after Mitigation

Less than significant with mitigation.

Impact 3.4.1-2: ~~Entrainment~~ Entrapment of fish in areas disconnected from the estuary

A primary goal for the habitat enhancement at Riverside Ranch is to restore up to 253 acres of tidal marsh suitable for a variety of estuarine species. Levee breach points would be designed to maximize tidal exchange and to promote maintenance of water quality and habitat condition through channel formation and natural drainage patterns. This design would help avoid the entrainment of fish in areas that, due to undesirable drainage patterns, become disconnected from the estuary. However, the possibility exists that the newly excavated channels would not function properly as designed, and would require modification in order to achieve project goals, and to avoid fish entrainment.

Mitigation 3.4.1-2: Biological monitoring program and adaptive management

The RCD shall conduct reviews of the Riverside Ranch property on three occasions to determine the functionality of the newly constructed breach points and tidal habitat. These reviews shall take place at the time of breaching, three months following breaching, and one year following breaching. If at any time entrainment of fish is occurring, the RCD shall retain a hydrologist to review the performance of the project, and to recommend corrective measures.

Impact Significance after Mitigation

Less than significant with mitigation.

Impact 3.4.1-3: Disturbance of benthic habitats

One biological goal of the Salt River Ecosystem Restoration Project is to reestablish benthic habitat where it has been lost due to high levels of aggradation and subsequent channel infilling. Although the preponderance of the field work would take place on dry land as the contractors excavate the channel, the initial excavation of the channel would disturb up to one-half acre of benthic habitat at the upstream reach of the existing channel. Access to this site and ensuing dredging would disrupt at least one-half acre of substrate, thus removing the benthic habitat and associated macroinvertebrate community. Short term adverse effects to Zostera and soft-shelled clams (Mya arenaria) are anticipated. This action would be limited to one field season, would occur over a short time period, and therefore the impacts should be only temporary. The substrate that would be disturbed as well as the newly established substrate should be rapidly recolonized by benthic macroinvertebrates and fish. Therefore, this impact is expected to be *less than significant* and no mitigation is required.

Impact 3.4.1-4: Creation of habitat that benefits non-native fish species

One biological goal of the Salt River Ecosystem Restoration Project is to expand tidal, freshwater and wetland habitat favorable to native fishes, particularly estuarine dependent species such as Pacific salmon, tidewater goby, and green sturgeon. While the project would restore such habitat, and benefit those species, there is also a chance that the habitats created could favor undesirable non-native species that prey on native species, thus causing a further decline of some special status species. Of particular concern is the Sacramento pikeminnow (Ptychocheilus grandis), a large piscivorous (fish-eating) cyprinid, native to the Sacramento-San Joaquin river drainages and several smaller coastal drainages in California (Taft 1950).

Introduction of non-native predators can adversely affect native species. The ability of introduced species to thrive in a new environment sometimes reflects altered habitat conditions. For example, high predation levels of salmonids by pikeminnow in the Columbia River occur in and around large dams. The high rate of predation results from conditions present at the dams, and the predation is a secondary effect (Fresh 1997). In such instances, the adverse affects of predation and competition magnify but do now serve as the proximate causes of habitat degradation and subsequent population declines. The Salt River is one of the most altered areas within the Eel River watershed, so predation and competition are likely to be disproportionately high. For example, areas once

influenced by brackish, slough-like conditions are now hydrologically disconnected or non-existent. Pikeminnow appear to be thriving in such areas, such as the mid to upper Salt River tributaries (Cannata pers. comm.).

In about 1979, the Sacramento pikeminnow species was introduced into the Eel River drainage of northwestern California, where it has become widespread (Brown and Moyle 1997). Juvenile pikeminnow are abundant in the Salt River (DFG 2005). The life history and ecological interactions of the Sacramento pikeminnow in the Eel River are of considerable interest because the Eel River contains depleted populations of salmonid species that once provided the basis for large commercial fisheries. Sacramento pikeminnow may compete with or prey on salmonids under some conditions (Brown and Moyle 1981).

The extent to which juvenile pikeminnow in the Salt River area compete with native species is not fully understood. A recent study indicates that pikeminnow are more common in the turbid, tidal freshwater habitats of the Sacramento Delta than was previously recognized, and stream flows may play an important role in moving juvenile Sacramento pikeminnow into the Sacramento Delta from upstream areas (Nobriga 2006). This same scenario appears to be true of the Eel River estuary, since there is little evidence of local recruitment.

Pikeminnow are highly mobile. ~~Highly mobile,~~ Adult pikeminnow at the upstream limit of their range in one Eel River tributary moved downstream up to 14.5 miles during the winter, possibly as a result of high flows, but tended to return to their original position the following spring, where they remained through the summer, congregating in deep pools during the summer months (Harvey 1999). This suggests that piscivory by pikeminnow may be concentrated in the deep pools where they are congregating, rather than in the Eel estuary.

Incidence of piscivory rises significantly as individual size increases, but two separate studies failed to detect salmonids in foregut contents (Nobriga 2006, Dugas, unpb.). Similarly, DFG surveys of the project area found few Pikeminnow exceeding 6" in size, and their stomach contents contained a "green goo." No evidence of fish was found in their foregut (Cannata, pers. comm.). In any event, pikeminnow are piscivorous and highly mobile, both daily and seasonally. Furthermore, Sacramento pikeminnow are successful predators in high turbidity environments, though they emphasize benthic (bottom-dwelling) prey under turbid conditions (Harvey pers. comm.). ~~However,~~ Most importantly, pikeminnow have a low tolerance to saline conditions, and do not thrive in estuarine conditions, such as those expected to be restored in much of the proposed project area.

~~Introduction of non-native predators can adversely affect native species. The ability of introduced species to thrive in a new environment sometimes reflects altered habitat conditions. For example, high predation levels of salmonids by pikeminnow in the Columbia River occur in and around large dams. The high rate of predation results from conditions present at the dams, and the predation is a secondary effect (Fresh 1997). In such instances, the adverse affects of predation and competition magnify but do not serve as the poroximate causes of habitat degradation and subsequent population declines. The Salt River is one of the most altered areas within the Eel River watershed, so preadtion and competition are likely to be disproportionately high. For example, areas influenced~~

~~by brackish, slough-like conditions are now hydrologically disconnected or non-existent. Pikeminnow appear to be thriving in such areas, such as the mid to upper Salt River tributaries (Canata, pers. comm.).~~

Restoring historic conditions to the Eel estuary is the single-most important step possible for enhancing conditions for native species. The project would include levee breaches, enhancements of tidal exchange, channel excavation, and other measures to promote habitat favorable to native, estuarine dependent species, and less favorable to the pikeminnow.

In addition, as part of the project, The RCD would conduct annual monitoring for at least five years to assess pikeminnow population levels, habitat preferences, dietary preferences, movement patterns, and other factors. Pikeminnow would be euthanized with non-toxic methods such as pithing, and stomach contents would be examined to assess piscivory. Standard population monitoring methods would be used for both assessment and control to ensure the avoidance of take of listed species, and the protection of water quality during the sampling period.

The goal of this effort is to determine if adult pikeminnow capable of piscivory are present and/or dominant in the project area, if their presence is harmful to native species, and if so whether practicable measures can be taken to control their numbers while native species are recolonizing newly created habitat. Documentation of both pikeminnow and native species would help characterize population dynamics within the project area. Presence and abundance of both pikeminnow and native species would be documented and reported in order to help assess trends and population response to the project. Monitoring would follow standard protocol to avoid take of state or federally listed species.

In the event that adult, picivorous pikeminnow (adults greater than 10" with evidence of piscivory, such as stomach contents) become dominant in the project area, to the exclusion of native species, the RCD would conduct a three-year, pilot, pikeminnow-control-program subsequent to the five year monitoring program. The anticipated approach would be annual seining or netting of the main channel with a suitable mesh size in order to trap, document and euthanize pikeminnow. Native species would be documented and returned unharmed to the channel.

The program would be conducted in coordination with the DFG and the Redwood Sciences Lab over a three-year period, culminating in a survey report of the Salt River fish assemblage no later than twelve years after project implementation. The reports would be posted online at Calfish.org, and made available to the DFG and the Redwood Sciences Lab for interpretation. Eradication of the introduced Sacramento pikeminnow is considered infeasible, so no extension of the pilot program is proposed. However, the pilot program would serve as an intermediate measure to promote the occupation of newly created habitat by native species. Moreover, the information generated in the pilot program would help resource managers determine the effectiveness of the proposed pikeminnow control approach for future projects.

Because of the lack of evidence of salmonid piscivory by pikeminnow in the project area, the estuarine conditions that are likely to occur in much of the restored waters, and proposed design conditions intended to discourage pikeminnow, the significance of the project's impact is considered *less than significant.*

~~However, because of the omnipresence of pikeminnow in the Eel watershed, and the lack of knowledge concerning their rate of predation on species of concern, the significance of this impact cannot be determined and it is considered *potentially significant.*~~

~~Mitigation 3.4.1-4: Conduct Pikeminnow monitoring and pilot control program~~

~~The RCD shall conduct annual monitoring to assess pikeminnow population levels, habitat preferences, dietary preferences, movement patterns, and other factors. In the event that pikeminnow become dominant in the project area, the RCD shall conduct a pilot pikeminnow control program, most likely using periodic seining of the main channel in order to trap and euthanize non-native species, such as pikeminnow. Native species shall be documented and returned unharmed to the channel, and non-natives shall be euthanized. The program shall be conducted in coordination with the DFG and the Redwood Sciences Lab over a three-year period, culminating in a survey report of the Salt River fish assemblage. The reports shall be posted online at Calfish.org, and made available to the DFG and the Redwood Sciences Lab for interpretation. Eradication of the introduced Sacramento pikeminnow is considered infeasible at the present time, so no extension of the pilot program is presented at this time. However, the pilot program would serve as an intermediate measure to promote the occupation of newly created habitat by native species. Moreover, the information generated in the pilot program would help resource managers determine the efficacy of any proposed pikeminnow control proposals in the future.~~

~~Impact Significance After Mitigation:~~

~~**Potentially significant and unavoidable.** The problems caused by pikeminnow are ubiquitous throughout the Eel river watershed, and the subsequent invasion of the site by these species may be an unavoidable consequence of habitat restoration.~~

Impact 3.4.1-5: Sea-level rise considerations

A variety of estimates quantify the range of potential sea level rise, report observed trends and offer predictions of global warming and the potential impacts (IPCC 2001, CCCC 2006). The Intergovernmental Panel on Climate Change (IPCC) reports that over the last 100 years the eustatic (globally averaged) sea level rise was 1to 2 mm/year (0.3 to 0.6 ft/century). The IPCC projects rates of sea level rise to increase over the next century, with projected increases ranging from 0.4 - 2.9 ft by 2100 (IPCC 2001). More recent estimates by the California Climate Change Center report sea level rise in California over the past century to be approximately 7 inches (0.6 ft), and projects increases of 22 to 35 inches (1.8 to 2.9 ft) by 2100 (CCCC 2006). As described in Chapter 3.1, Hydrology, CALFED scientists have projected possible greater sea level rises, ranging from 29-78 inches this century.

Rise in sea level would affect fish primarily by changing the availability of habitat. In the Salt River Ecosystem Restoration Project site, a rise in sea level would cause marsh areas to become shallow open water habitat, and open water areas to become even deeper. This could diminish the marsh habitat created by the restoration project, although existing sedimentation rates in this highly erosive system may very well enable aggradation to compensate sea level rise. Under any scenario, more aquatic habitat, not less, would result, and aquatic resources would benefit from the change.

Alternative 2: Modified Channel/Upland Restoration Only

Alternative 2 possesses nearly all of the potentially adverse impacts of Alternative 1, with two notable exceptions: a) There would be no risk of entrainment in newly restored tidal marsh absent newly created tidal marsh, and; b) The continued low level tidal prism would diminish tidal scouring of the channel, thereby increasing the need for and rate of channel maintenance over time. The construction of a channel in combination with upland restoration can only be considered a palliative treatment for this geologically unstable and ecologically degraded system. Furthermore, repetitive disruption of the newly modified channel would cause comparable disruptions to any improved aquatic habitat conditions in the Salt River channel. Impacts of this alternative are summarized below.

Impact 3.4.2-1: Impacts to aquatic resources from decreased water quality due to construction/ dredging activities

Implementation of this alternative would require excavating 7.2 miles of channel (5-10-feet deep, 30-215-feet wide) in the now-aggraded bed of the historic Salt River channel. The RCD would continue its habitat enhancement and erosion control efforts in the upland areas, including road treatments, culvert replacements, and other sediment reduction projects.

The construction activities, as well as some of the future management and maintenance activities have the potential to increase suspended sediments and turbidity, and introduce contaminants (fuel oils, grease) in the vicinity. This impact would apply to all portions of the Salt River within the project area. Since this disturbance could be highest and continuous throughout the excavation/levee construction/maintenance period, and could therefore impact special status species in the immediate vicinity, the impact is considered *potentially significant*.

Few, if any, adverse impacts are expected from upland habitat enhancement and erosion control activities, which would immediately reduce Salt River sediment load emanating from the Wildcat Mountain tributary streams.

Impacts to aquatic resources from water quality degradation due to construction activities would be similar to those described above for Alternative 1, except that those impacts associated with Riverside Ranch restoration would be eliminated. Alternative 2 presents the likely need for more expansive channel maintenance over time, due to the reduction of tidal prism –and scouring— resulting from the Riverside Ranch component of the project. Therefore, the type of channel-related water quality impacts would remain the same as for Alternative 1, but the frequency of channel disturbance would increase over time for maintenance needs, resulting in repeated, more frequent water quality impacts. All of the same mitigation measures would be required, but those associated with channel maintenance would be required with greater frequency than with Alternative 1.

Mitigation Measure 3.4.2-1:

All mitigation measures applicable to impact 3.4.1-1 also would apply to this alternative.

Impact Significance after Mitigation

Less than significant with mitigation.

Impact 3.4.2.2: ~~Entrainment~~ Entrapment of fish in areas disconnected from the estuary

Without implementing the wetland restoration at Riverside Ranch, the possibility of entraining fish in areas disconnected from the estuary is remote. This is due to the fact that the newly created channel will maintain direct hydrologic connection to the Eel river estuary. Since no dendritic channels would be created at Riverside Ranch, this impact would pose a minor to non-existent risk in the main channel, and is therefore *less than significant*. No mitigations would be required.

Impact 3.4.2-3: Disturbance of benthic habitats

Disturbance to benthic habitat is limited to the benthic environment, now found solely within the Salt River channel. Thus, disturbance to benthic habitat would be the same as under Alternative 1, but newly created benthic habitat would be limited to the 7.2 miles of newly excavated channel habitat, and not augmented by the proposed approximately 270 acres of tidal habitat at Riverside Ranch. As with Alternative 1, this impact is expected to be *less than significant* and no mitigation is required.

Impact 3.4.2-4: Creation of habitat that benefits non-native fish species

As with Alternative 1, the excavation of 7.2 miles of former channel would create new habitat that benefits non-native fish species, particularly pike minnow. Accordingly, mitigation identified for Alternative 1, a monitoring and pilot control program, must be adopted. However, pikeminnow have a low tolerance to saline conditions. The elimination of the Riverside Ranch component would further enhance conditions for pikeminnow within the project area relative to Alternative 1.

Mitigation 3.4.2-4: Conduct Pikeminnow monitoring and pilot control program

Mitigation 3.4.1-4 also would apply to this alternative, however a more extensive control program would be required.

Impact Significance after Mitigation:

Potentially significant and unavoidable. The problems caused by pikeminnow are ubiquitous throughout the Eel river watershed, and the subsequent invasion of the site by these species may be an unavoidable consequence of habitat restoration.

Impact 3.4.2-5: Sea Level Rise Considerations

Rise in sea level would affect aquatic resources primarily by changing the availability of habitat. However, under this scenario, the impacts would not be identical to Alternative One, unless maintenance of existing degraded berms at Riverside Ranch failed to keep pace with sea level rise rates. Under this alternative, a rise in sea level would cause excavated and maintained channel areas to become shallow open water habitat, and open water areas to become even deeper. This could diminish the riparian habitat created by the channel component of the restoration project, and it

could also result in increased flooding levels of surrounding pasture. Similarly, upstream extent of open water areas would likely result in increased sediment deposition and aggradation rates, thereby exacerbating existing flooding conditions. As with Alternative one, and under any scenario, more aquatic habitat, not less, will result, and aquatic resources will benefit from the change.

Alternative 3: Riverside Ranch Restoration/Upland Restoration Only

Alternative 3 possesses most of the project benefits in relation to aquatic habitat, and relatively few of the adverse effects associated with channel modification and long-term maintence of the channel. This alternative would entail 340 acres of restored tidal marsh equating approximately one-half square mile, or approximately 13 percent of the Eel River Estuary restored. It would also entail limited channel excavation adjacent to and upstream of Riverside Ranch to ensure sufficient levels of tidal exchange within newly restored wetlands at Riverside Ranch. The proposed channel excavation under this alternative would extend 0.4 miles upstream of Riverside Ranch to the confluence of Reas Creek and the Salt River.

However, fewer improvements to drainage and main-channel habitat quality would preclude full hydrologic connectivity with and fish passage to Salt River tributary streams, particularly streams with relatively high habitat potential such as Williams Creek and Francis Creek. Approximately 4.3 miles of main channel habitat and associated tributary habitat, would not be restored for the benefit of aquatic resources.

Impact 3.4.3-1: Impacts to aquatic resources from decreased water quality due to construction/dredging activities

Fewer impacts and decreased water quality due to construction are anticipated, except for those impacts associated with Riverside Ranch restoration and limited channel excavation. Riverside Ranch activities are dominated by: 1) re-grading, lowering, and potentially disking the existing levees surrounding Riverside Ranch; and, 2) creating the final levee breaches to allow full tidal exchange between Riverside Ranch and the lower Salt River channel. Although these activities would have moderate short-term impacts to water quality, they do not rise to the level of significance of the proposed channel modification activities. Nevertheless, the mitigations remain the same as those identified in Alternative 1. Proposed channel excavation impacts associated with Riverside Ranch restoration efforts are comparable to and included in this analysis, and mitigated by those measures identified below.

Mitigation 3.4.3-1: Impacts to aquatic resources from decreased water quality due to construction/dredging activities

Same as described for Alternative 1, above.

Impact 3.4.3-2: ~~Entrainment~~ Entrapment of fish in areas disconnected from the estuary

Same as described for Alternative 1, above.

Impact 3.4.3-3: Disturbance of benthic habitats

No benthic habitats exist in areas proposed for inundation and restoration; this alternative would, however create new benthic habitat. Therefore, this alternative would have no adverse impacts to benthic habitat, and no mitigations are required.

Impact 3.4.3-4: Creation of habitat that benefits non-native fish species

Estuarine conditions anticipated in Riverside Ranch would likely be unsuitable to non-native fish species, particularly pike-minnow. Therefore, no impacts would occur and no mitigation is required under this alternative.

Impact 3.4.3-5: Sea Level Rise Considerations

Same as described for Alternative 1, above.

Alternative 4: No Project

In the event that the project is not implemented (No Action), the ongoing sediment deposition and aggradation of the main channel would continue. In the short term, within 15 years, aquatic habitat would diminish correspondingly, as has occurred over time. Under this alternative, there would be no impacts associated with construction, disturbance of benthic habitats, or fish entrainment. As discussed below, it could have a negative impact with respect to non-native species.

In the longer term, the trend towards reduction in aquatic habitat would be at least partially offset by increases in sea level, but the rate of that relationship has not been calculated relative to this project. Current projections suggest a possible rise in sea level of one meter by the year 2100. Most of the project area, indeed much of the historic Eel River estuary, would be underwater at that level of increase.

Impact 3.4.4-1: Creation of habitat that benefits non-native fish species

The constant reduction of saline estuarine conditions, compounded by channel aggradation and the increasing isolation of tributary habitat, appears to have benefitted the pikeminnow population in the Salt River. The No Action alternative is, at best neutral on this impact, and possible helps promote the range of piscivorous pikeminnow within Salt River tributaries and the lower Eel River.

3.5 AIR QUALITY

The Air Quality section describes the impacts on air quality associated with implementation of the proposed project.

3.5.1 ENVIRONMENTAL SETTING

NORTH COAST AIR BASIN

The project site is located within the North Coast Air Basin, which is comprised of Del Norte, Humboldt, Mendocino, and Trinity Counties as well as the northern and western portion of Sonoma County (as defined by the California Code of Regulations). The local climates, or subclimates, within the Basin are affected by elevation and proximity to the Pacific Ocean. Humboldt County, like the North Coast Air Basin, contains sub-climates that are created by local topography and proximity to the ocean. The City of Ferndale and the project site are located in the Eel River Delta Area.

CLIMATE

The project area is influenced by coastal fog throughout the year and, along with the rest of the Eel River Delta, is one of the cloudiest areas in the country (Stokes 1981). Precipitation is seasonal, and averages 41 inches of precipitation annually, with 90 percent of the annual precipitation occurring between October and April. Temperatures are moderate and show little fluctuation annually. Summers are cool, with normal highs in the 60s, and dry. Morning fog is common. Winters are mild and rainy, with normal highs in the 50s. Freezing temperatures are rare.

Weather in the Eel River Delta Area is dominated by a cold upwelling of seawater to the ocean surface off the Humboldt County Coast (City of Arcata 2006). The cold water in turn cools surface air. During the summer, winds blowing from the Pacific Ocean are drawn onshore by the difference in surface temperatures, resulting in daytime northwesterly winds. In winter, this temperature differential is less, and surface winds may blow from many directions depending on storm patterns or periods of calm. These periods of calm can be significant, amounting to 30 percent of the total annual hours (City of Arcata 2006). Wind helps disperse air pollution, while calm periods allow it to increase to potentially unhealthy levels. Temperature inversions, which occur when a higher layer of warm air traps cool air near the surface, inhibit the vertical dispersion of air pollution. Inversions occur most commonly in the area during winter months and trap emissions of all types near the surface (City of Arcata 2006). Dispersion usually occurs when a frontal system, often accompanied by strong winds, passes over the area disturbing the temperature inversion, which allows pollutants to disperse vertically and horizontally.

SENSITIVE RECEPTORS

Land uses such as schools, hospitals, and convalescent homes are considered to be relatively sensitive to poor air quality because infants and children, the elderly, and people with health afflictions, especially respiratory illnesses, are more susceptible to ailments resulting from poor air quality than the general public. Residential areas are also considered to be sensitive to air pollution because residents (including children and the elderly) tend to be at home for extended periods of time, resulting in sustained exposure to any pollutants present. Agricultural areas are less sensitive to poor air quality because population density is low and workers in these areas are, in general, the healthier segment of the public. The project site is located in an agricultural area. The closest schools to the project area are Moore Academy, located approximately 100 feet from the project area, Ferndale High School, located approximately 0.7 miles from the project area, Ferndale Elementary School, located approximately 1.1 miles from the project area, and Ferndale Children's Center, located approximately 1.4 miles from the project area.

Two small residential areas, Port Kenyon and Arlynda Corners, and a number of isolated homes are located adjacent to the channel restoration portion of the project area. The closest significant residential area is the City of Ferndale, located less than one-third of a mile from the channel restoration component location. There are no residential communities near the Riverside Ranch or upslope sediment reduction areas, although scattered residences and farms occur in those areas.

3.5.2 REGULATORY SETTING

Pursuant to the Federal Clean Air Act, the U.S. Environmental Protection Agency sets Federal ambient air quality standards and oversees and approves State air quality programs. Pursuant to the California Clean Air Act, the California Environmental Protection Agency, through the California Air Resources Board (CARB), sets State ambient air quality standards. The mission of the CARB is to protect the public health, and it regulates mobile sources (e.g., cars, trucks, and buses), fuels, consumer products, and air toxics. In addition, the CARB oversees and assists local air pollution control districts. Air quality in Humboldt County is regulated by the North Coast Unified Air Quality Management District (NCUAQMD). The NCUAQMD's primary responsibility is to achieve and maintain Federal and State air quality standards, subject to the powers and duties of the CARB.

AIR POLLUTANTS OF CONCERN

Air pollution is regulated by two types of standards: emission standards and ambient air quality standards. Emission standards establish the levels of air pollutants that a particular source is allowed to release into the air, and ambient air quality standards establish the maximum concentration of air pollutants within the air of an area such as a city or county. Ambient air quality standards are designed to protect those segments of the public most susceptible to respiratory distress, known as "sensitive receptors," including asthmatics, the very young, the elderly, people weak from other illness or disease, or persons engaged in strenuous work or exercise. Healthy adults can tolerate

occasional exposure to air pollution levels somewhat above the ambient air quality standards before adverse health effects are observed.

The Federal Clean Air Act Amendments of 1970 established national ambient air quality standards, and individual states retained the option to adopt more stringent standards and to include other pollution sources. California had already established its own air quality standards when federal standards were established. Because of the unique meteorological problems in the State, there is considerable diversity between State and national standards currently in effect in California. The Federal government currently sets ambient air quality standards for six pollutants and California sets ambient air quality standards for nine pollutants. Pollutants for which ambient air quality standards are set are known as criteria pollutants. Table 3.4-1 lists State and Federal criteria pollutants and the status of these pollutants on the North Coast. As Table 3.4-1 indicates, the North Coast mostly meets, or achieves "attainment" of, State and Federal air quality standards. Attainment means that the values for a particular criteria pollutant that are set by Federal and State regulators are not exceeded in the local area. "Non-attainment" means that the concentration of a criteria pollutant in the local air basin exceeds Federal or State standards.

Table 3.5-1 Status of Criteria Pollutants in the North Coast Air Basin

Criteria Pollutant	North Coast Air Basin Status	
	Federal Standards	State Standards
Sulfur Dioxide	Attainment	Attainment
Nitrogen Dioxide	Attainment	Attainment
Particulate (PM_{10})	Attainment	Nonattainment
Carbon Monoxide	Attainment	Attainment
Sulfates	No Standard	Attainment
Lead	Attainment	Attainment
Hydrogen Sulfide	No Standard	Attainment
Vinyl Chloride	No Standard	Attainment

Source: North Coast Air Quality Facts, NCUAQMD.

The most significant criteria pollutants for the North Coast are further described below.

Ozone

Two main pollutants cause health and welfare problems in California. The first is ozone. High ozone levels can occur near the earth's surface when two classes of chemicals, Reactive Organic Gasses (ROG) and Oxides of Nitrogen (NOx), react in the presence of sunlight to form a third compound, ozone, and the primary component of smog. Ozone is a highly reactive, and sometimes destructive, gas. Substantial research documents that crop yields are reduced when ozone levels exceed 0.06 parts per million. Ozone has not been measured by State or local agencies within the project area. However, air quality data are available from the Eureka-Jacobs Ave. CARB monitoring

station, which is representative of air quality along coastal Humboldt County, including the project area. Data from the Eureka-Jacobs Ave. station are shown in Table 3.4-2.

Table 3.5-2 Ozone Air Quality Data Summaries for Eureka-Jacobs Monitoring Station, 2006-2009

Year	Highest 1 Hr (ppm)	Highest 8 hr (ppm)	Number of Days Exceeding Standard	
			State 1-hr.	Federal 8-Hr.
2006	0.039	0.037	0	0
2007	0.055	0.052	0	0
2008*	0.061	0.055	0	0
2009*	0.054	0.052	0	0

*Data after 2007 may be preliminary.

Source: California Air Resources Board Air Quality and Meteorological Information System (http://www.arb.ca.gov/aqmis2/aqinfo.php, Accessed 12/21/2009)

PM10 and PM2.5

Respirable Particulate Matter that is 10 microns or less in diameter (abbreviated as PM10) is a pollutant of concern in Humboldt County, as it is in most of California. PM10 consists of tiny solid or liquid particles of soot, dust, smoke, fumes, or mists. The size of the particles (about 0.0004 inches or less) allows them to enter the air sacs deep in the lungs, where they may be deposited, resulting in adverse health effects. PM10 includes a subgroup of finer particles called PM2.5. These fine particles pose an increased health risk because they can deposit deep in the lungs and contain substances that are particularly harmful to human health. The EPA promulgated national PM2.5 standards in 1997. However, the transition to the PM2.5 standards is still underway and, therefore, enforcement of PM10 standards is still the primary focus of state and local officials.

PM10 is harmful to human health and is regulated by both State and Federal standards. PM10 can be formed directly, as in dust from driving on a dirt road, or it can be formed by secondary combination of other pollutants such as nitrogen oxides or ammonia (ammonia is a primary emission from feedlots and dairies). Major PM10 sources include motor vehicles, wood burning stoves and fireplaces, dust from construction, landfills and agriculture, wildfires and waste/brush burning, industry, and windblown dust from open lands.

PM10 and PM2.5 levels in the North Coast Air Basin are highest during the late fall and the winter (CARB 2005). In the winter, temperature inversions trap emissions very close to the ground for longer periods than the summer. The colder and more stagnant conditions during winter are conducive to the buildup of PM10, including the formation of secondary ammonium nitrate. The most significant source of PM10 emissions during the cool months is residential wood combustion. These emissions occur primarily during the evening hours, and peak hourly levels may exceed the state daily standard by 400 percent (i.e. 200 $\mu g/m^3$ on a day that reaches 50 $\mu g/m^3$ for 24 hours). However, with the mixing in of cleaner air during the late evening and early part of the day, the average level is significantly reduced.

During the rest of the year, the coarse fraction (particles between PM2.5 and PM10 in size) is more prominent. The coarse fraction is primarily due to activities that resuspend dust, such as emissions from paved and unpaved roads and construction. In some coastal sites, sea salt can also contribute to the coarse fraction. Based on 2000-2003 monitoring data in Eureka, which is representative of conditions in the project area, PM2.5 comprises approximately 50 percent of ambient PM10 during the fall and winter and 35 percent during the spring and summer. On an annual average basis, PM2.5 contributes approximately 43 percent of PM10.

Data collected during 2001-2003 period in Eureka, CA indicate that the region moderately exceeds the State standards for PM10, and meets the federal standard for PM10 and for PM2.5 (CARB 2005) (See Table 3.4-3). Determination of attainment or nonattainment of the standards is based on the designation value for the Eureka monitoring station. The designation value is the highest concentration over a three-year period, after highly irregular or infrequent values have been excluded from the analysis.

Table 3.5-3 Monitoring Designation Values* for State PM10 and PM2.5 Standards at Eureka, CA Monitoring Site (2001-2003 Period)

PM10 (µg/m3)		PM 2.5 (µg/m3)
24-Hour (Std.=50)	Annual Average (Std.=20)	Annual Average (Std.=12)
71	21	9

* Designation value is the value used for determining attainment status. It is the highest measured value over three years after excluding highly irregular or infrequent events.

Note: The Eureka PM10 air sampler is located on the County Health Department roof, 6th and I Streets.

Source: California Air Resources Board 2005. Characterization of Ambient PM10 and PM2.5 in California.

Almost all violations of the state PM10 standard (50 $\mu g/m^3$) occur in the 6-month period from October through March (cool months). About 8 percent of all days during the year exceed the standard; therefore about 16 percent (or one day in 6) violates the standard during the cool months (City of Arcata 2006).

The NCUAQMD's Particulate Matter Attainment Plan (NCUAQMD 1995) adopts a number of strategies for achieving PM10 reductions, including transportation control measures, smart growth land use measures, regulation of open burning, and residential burning controls (including woodstove emission standards). The NCUAQMD has adopted "Regulation 1," which stipulates requirements for air quality management within the air basin. In Regulation 1 particulate generation from different sources is covered by different "Rules." Particulate generation from burning and from non-combustion stationary sources is generally covered by Rule 420. Particulates arising from "fugitive" emissions (such as blowing dust, salt spray, sawdust, and similar anthropogenic sources) are regulated under Rule 430.

Naturally Occurring Asbestos

The NCUAQMD is required by State law to implement and enforce all State Airborne Toxic Control Measures (ATCM). The NCUAQMD has instituted a registration program for all construction, grading, quarrying, and surface mining operations within its jurisdiction. An applicant

must first register with the NCUAQMD prior to engaging in specific activities covered by the regulation. Registration is also required for existing operations, projects, and facilities. As part of the registration process, the applicant may be required to submit a dust control plan. Notification must be made to the NCUAQMD at least 14 days before any activity begins. However, the Naturally Occurring Asbestos ATCM includes a series of exemptions. Projects are exempt if they are located in an area not designated as an ultramafic rock unit area by the California Department of Conservation Division of Mines and Geology (NCUAQMD 2010). The project site is not within an area of mapped ultramafic rock, and there are no mapped ultramafic rock unit areas in the vicinity (DOC 2000). The proposed project would therefore be exempted from NCUAQMD's registration program.

Odors

Natural and created wetlands can be a source of natural odors that may be objectionable to some portions of the population. The existing condition at the site includes natural odors associated with wetlands, bay mud flats, and animal grazing.

GREENHOUSE GASES

Gases that trap heat in the atmosphere are often called greenhouse gases (GHG). Common GHG include water vapor, carbon dioxide, methane, nitrous oxide, chlorofluorocarbons, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, ozone, and aerosols. GHG are emitted by both natural processes and anthropogenic (human-caused) sources. The accumulation of GHG in the atmosphere increases the earth's temperature over time (global warming). GHG emissions from human activities, such as fossil fuel combustion for electricity generation and vehicle use, have elevated the concentration of these gases in the atmosphere, thus contributing significantly to global warming (AEP 2007). Listed below are the principal greenhouse gases that enter the atmosphere from human activities, and their primary anthropogenic and natural sources. Also included are the percent contributions of each to total U.S. anthropogenic GHG emissions (EPA 2008[1]).

- **Carbon dioxide, CO_2.** Natural sources include volcanic eruptions, diffusion from oceans, fires, and respiration by and decay of biological organisms. The primary anthropogenic source of CO_2 is combustion of fossil fuels (oil, natural gas, and coal); it accounts for approximately 94 percent of CO2 emissions. In 2006, CO_2 accounted for 85 percent of all US anthropogenic GHG emissions. CO_2 is removed from the atmosphere (or sequestered) when it is used by plants during photosynthesis or absorbed by seawater.
- **Methane, CH_4.** Anthropogenic sources include fossil fuel production, animal husbandry (digestion of feed by livestock, manure management), and solid waste and wastewater management. In 2006, CH_4 accounted for 8 percent of all US anthropogenic GHG emissions. Natural sources of methane include wetlands (such as tidal marshes), oceans and fresh water bodies, non-wetland soils, wildfires, and other sources.

[1] http://www.epa.gov/climatechange/emissions/usinventoryreport.html

- **Nitrous oxide, N_2O.** The primary natural sources are biological processes in soil and water. It is also emitted during agricultural and industrial activities, as well as during combustion of fossil fuels and solid waste. In 2006, N_2O accounted for 5 percent of all US anthropogenic GHG emissions. Tidal wetlands and nearshore environments cycle nitrogen and are known producers of nitrous oxide (Cartaxana and Lloyd 1999, Cheng et al. 2007, Delaune et al. 1998, Jickells 1998, Neubauer et al. 2005). However, the production of nitrous oxide is relatively independent of marsh area, depending primarily on nitrogen supply from non-point source pollution (Crooks 2009). In the absence of tidal wetland restoration, nitrous oxide would be produced within the large expanse of open waters along the continental shelf (Crooks 2009).
- **Fluorinated gases.** Hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride are synthetic, powerful greenhouse gases that are emitted from a variety of industrial processes. Fluorinated gases are often used as substitutes for ozone-depleting substances (i.e., chlorofluorocarbons, hydrofluorocarbons, and halons). These gases typically are emitted in smaller quantities (2 percent of all 2006 US anthropogenic GHG emissions), but because they are potent greenhouse gases, they are sometimes referred to as High Global Warming Potential gases ("High GWP gases") (USEPA 2006).

The greenhouse gas of most concern is CO_2 because it is the most common, can last in the atmosphere for centuries, and "forces" more climate change than any other greenhouse gas. CO_2 is the standard for GHG, and the effect of all other GHG gases is transformed into 'CO2 equivalents', which is a common measure used to report total GHG emissions. In 2004 (and most years), CO_2 accounted for 85 percent of the greenhouse gas emissions produced in the United States. Approximately 6.65 billion short tons of CO_2 were emitted in the United States in 2004 from all sources. The California Energy Commission (CEC) has estimated that in 2004, the state emitted 542 million short tons of CO_2 equivalent GHG emissions (CEC 2006 Report), which is about 8 percent of the national total.

The California Legislature has determined that global warming poses a serious threat to the economic well being, public health, natural resources, and the environment of California (Health and Safety Code Section 38501). The Global Warming Solutions Act of 2006 (AB 32) codifies California's goal of reducing statewide emissions of greenhouse gases (GHG) to 1990 levels by 2020. This reduction will be accomplished through an enforceable statewide cap on global warming emissions that will be phased-in starting in 2012 to achieve maximum technologically feasible and cost-effective GHG emission reductions. In order to effectively implement the cap, AB 32 directs the California Air Resources Board to develop appropriate regulations and establish a mandatory reporting system to track and monitor global warming emissions levels. As part of AB 32, CARB is proposing to adopt a number of Early Actions. One Early Action would reduce emissions from diesel trucks, which are responsible for 7.5 percent of California's global warming pollution. The proposed "Heavy-Duty Vehicle Greenhouse Gas Emission Reduction Measure" would require trucks to reduce emissions through retrofits or upgrades to newer trucks. In 2007, the California legislature passed legislation (Senate Bill 97) amending CEQA to specifically establish that GHG emissions and their impacts are appropriate subjects for CEQA analysis. As mandated by SB97, the Governor's Office of Planning and Research (OPR) released guidelines for CEQA analysis and

mitigation of greenhouse gas emissions or the effects of greenhouse gas emissions on April 13, 2009. The Natural Resources Agency adopted final guidelines on December 31, 2009. These guidelines have been added to the California Code of Regulations and became effective on March 18, 2010. These guidelines are reflected in the impact evaluation criteria below. Humboldt County has not established its own protocols for analyzing project-generated GHG emissions or set thresholds of significance. The draft Humboldt County General Plan (2008) identifies a range of mitigations for reducing GHG emissions and mitigations to achieve increased carbon storage within the County. The draft HCGP identifies increased carbon storage on timber and agricultural lands as likely to be the County's most effective means to combat global warming. The draft HGCP also states that the County will rely on the air quality standards, permitting processes, and enforcement capacity of the NCUAQMD to define thresholds of significance and set adequate mitigations under CEQA for GHG to the maximum extent allowable. Policies have not been set, in part, because the science required to do so has not been fully developed.

On June 19, 2008, OPR issued a Technical Advisory entitled "CEQA and Climate Change: Addressing Climate Change Through California Environmental Quality Act (CEQA) Review." That technical advisory recognizes the lack of statewide thresholds of significance for GHG emissions and states that OPR has asked the CARB to recommend a method for setting thresholds that will encourage consistency in CEQA analyses. Until uniform guidelines are in place, OPR recommends that each CEQA lead agency establish its own approach to analyzing climate change from projects that generate GHG emissions. Three steps – quantifying emissions, assessing the significance of the impact on climate change, and identifying alternatives or mitigation measures – are recommended by OPR.

This analysis does not attempt to measure a baseline for GHG emissions from the current land use of the project area, but assumes that there is a net emission of GHG. The following are current GHG sources for the project area:

- CH_4 from dairy cattle and their manure
- CO_2 from combustion of fossil fuels (vehicles, heavy equipment, pumps)
- CO_2 and N_2O from disking and ground disturbance

There are approximately 19 acres of freshwater seasonal wetlands, 14 acres of willow riparian shrub, and 14 acres of tidal salt marsh in the project area. Research has indicated that seasonal freshwater wetlands, despite some methane production, are likely to be net carbon sinks (Euliss et al. 2006). Tidal salt marsh has a high rate of net carbon sequestration, with estimates ranging from 134-867 g $CO_2e/m^2/yr$ (Crooks 2009). Estuarine forest, which includes willow riparian shrub, also has a high rate of net carbon sequestration, with estimates ranging from 117-667 g $CO_2e/m^2/yr$ (Crooks 2009). However, it is not known if carbon sequestration in existing wetlands is sufficient to offset their GHG emissions.

3.5.3 IMPACTS AND MITIGATION

IMPACT EVALUATION CRITERIA AND METHODOLOGY

Based on the CEQA Guidelines an air quality impact is considered significant if the project would:

- Conflict with or obstruct implementation of applicable air quality plans;
- Violate air quality standards or substantially contribute to an existing or projected air quality violation;
- Expose sensitive receptors to substantial pollutant concentrations;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard;
- Expose workers or the public to hazardous toxic emissions or substantial pollutant concentrations;
- Create objectionable odors affecting a substantial number of people;
- 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 of an agency adopted for the purpose of reducing the emissions of greenhouse gases.

The significance criteria (thresholds of significance) for GHG above are drawn from the revised amendments to the CEQA guidelines issued by the California Natural Resources Agency in December 2009. These guidelines did not include specific thresholds. The NCUAQMD does not have established CEQA significance criteria to determine the significance of impacts that would result from projects such as the Salt River Enhancement 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 project emissions to its stationary source significance thresholds, which are:

1. Nitrogen oxides (NOx) – 40 tons per year.
2. Reactive organic gases (ROG) – 40 tons per year.
3. PM10 – 16 tons per year.
4. Carbon monoxide (CO) – 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.

However, the NCUAQMD has indicated that construction emissions are not considered regionally significant for projects whose construction will be of relatively short duration and are not located in population centers (Davis pers. comm.).

Project-related air pollutant emissions are anticipated to be almost exclusively short-term construction-related emissions. Some long-term operations-related emissions are expected to occur as a result of channel maintenance, but these emissions are not expected to have a significant impact. Short-term emissions for the project were calculated using the OFFROAD 2007 and Emfac 2007 components of the Urban Emissions model (URBEMIS2007, version 9.2.2). Construction equipment types and numbers specified in the URBEMIS2007 modeling effort are based on the applicant's guidance and the consultant's experience. Construction emissions estimated for the proposed project were modeled over two 120-day (May 2-October 15) construction seasons. The model assumptions and results are included in Appendix B. Results are summarized in Table 3.4-4 below.

Table 3.5-4 Estimated Emissions from Construction of the Proposed Project (tons/yr)

	ROG	NO_x	CO	SO_2	PM10	PM2.5	CO_2
2011 Unmitigated Emissions	3.46	30.62	15.87	0.00	96.45	21.10	3,292.00
2011 Mitigated Emissions	3.46	30.62	15.87	0.00	7.99	2.63	3,292.00
2012 Unmitigated Emissions	3.34	29.57	15.40	0.00	99.51	21.70	3,455.67
2012 Mitigated Emissions	3.34	29.57	15.40	0.00	8.15	2.62	3,455.67
NCUAQMD Annual Threshold	40	40	100	No threshold	16	No threshold	No threshold
Significant After Mitigation?	No	No	No	No	No	No	No*

Figures were calculated using URBEMIS2007, version 9.2.4. See Appendix E for detailed model assumptions and results.

*As discussed below, the project is expected to a long-term carbon sink due to carbon sequestration anticipated in restored salt marsh and other wetlands. Therefore, a specific threshold for short-term CO_2 emissions for the project is unnecessary.

Alternative 1 (Proposed Project): Modified Channel/Riverside Ranch Restoration/Upland Restoration

Impact 3.5.1-1: Conflict with implementation of applicable air quality plans

The CEQA Guidelines provide explicit guidance for a circumstance in which a proposed action may result in a contribution to a cumulative effect on a regional basis, in Guidelines Section 15064(i)(3), where there is an ongoing regulatory concern but for which the relevant regulatory body has adopted an appropriate control plan:

> *"A lead agency may determine that a project's incremental contribution to a cumulative effect is not cumulatively considerable if the project will comply with the requirements in a previously approved plan or mitigation program which provides specific requirements that will avoid or substantially lessen the cumulative problem (e.g., water quality control plan, air quality plan, integrated waste management plan) within the geographic area in which the project is located. Such plans or*

> *programs must be specified in law or adopted by the public agency with jurisdiction over the affected resources through a public review process to implement, interpret, or make specific the law enforced or administered by the public agency."*

The 1995 PM10 attainment plan adopted by the AQMD provides specific requirements for addressing the particulate nonattainment in the air basin, and the plan was adopted pursuant to a formal public review process. Therefore, compliance with the AQMD's plan would constitute the necessary mitigation (see below) to mitigate the project's effects to less than significant levels. Best Management Practices to minimize fugitive dust generation would be implemented as part of project implementation.

As discussed above, existing levels of particulates in the North Coast Air Basin exceed State ambient air quality standards, and the entire Air Basin is designated non-attainment for PM10. According to the NCUAQMD Particulate Matter Attainment Plan (NCUAQMD 1995), Humboldt County must reduce PM10 emissions by nearly 50 percent (based on Humboldt County's proportionate share of North Coast Air Basin PM10 emissions) from 1991 levels to meet State standards. The following activities associated with all components of the project could generate fugitive dust:

1. Grading, excavation, road building, and other earth moving activities;
2. Travel by construction equipment and employee vehicles, especially on unpaved surfaces; and
3. Exhaust from onsite construction equipment.

A portion of this fugitive dust would have particle sizes small enough to be considered PM10. It is estimated that approximately 416,300 cubic yards of earth will be excavated as part of the Salt River Channel Restoration, and an additional 375,100 cubic yards would be excavated as part of the Riverside Ranch Restoration. Short-term construction-related PM10 emissions from the project are estimated to be approximately 98 tons per year for two years (Table 3.4-4). PM10 emissions from the project could contribute to a cumulative effect that would prevent the Air Basin meeting PM10 standards. Over the lifetime of the project, PM10 emissions from the project area would be expected to decrease because agricultural operations would no longer occur on 279 acres of Riverside Ranch. PM10 emissions would also be expected to decrease because the project would reduce the frequency and duration of inundation on pastures adjacent to the project area. Reduced frequency and duration of inundation on these lands would result in a reduced need to run drainage pumps and to disk and reseed pastures impacted by flooding. Over the lifetime of the project, it is therefore expected that there would be a net decrease in PM10 emissions from emissions expected under existing conditions. Short-term PM10 emissions would be reduced to a less-than-significant level by the implementation of Mitigation Measures 3.4.1-1 and 3.4.1-2. Implementation of these mitigation measures would reduce the project's construction-related PM10 emissions from approximately 98 tons per year for two years to approximately 8 tons per year for two years (Table 3.4-4). The NCUAQMD's significance threshold for stationary source PM10 emissions is 16 tons/yr. Therefore, the project's PM10 emissions would be less than significant after mitigation.

Mitigation Measure 3.5.1-1.1: Utilize Best Management Practices to minimize fugitive dust generation and assure compliance with North Coast Air Quality Management District rules for particulates

In order to minimize the generation of fugitive dust, the following best management practices shall be implemented during project construction.

- All active construction areas shall be watered at a rate sufficient to keep soil moist and prevent formation of wind-blown dust.
- All trucks hauling soil, sand, and other loose materials shall be covered, or all trucks shall be required to maintain at least 2 feet of freeboard.
- All unpaved access roads, parking areas, and construction staging areas shall be paved, watered daily, or treated with non-toxic soil stabilizers during construction.
- All paved access roads, parking areas, and construction staging areas shall be cleaned daily with water sweepers during construction.
- If visible soil is carried out onto adjacent streets, the area shall be washed with water or by a water sweeper truck.
- Hydroseeding or non-toxic soil stabilizers shall be applied to inactive construction areas (previously graded areas inactive for ten days or more).
- Exposed stockpiles of dirt, sand, and similar material shall be enclosed, covered, watered daily, or treated with non-toxic soil binders.
- Traffic speeds on unpaved roads shall be limited to 10 miles per hour.
- Sandbags, hay bales, or other erosion control measures shall be installed to prevent silt runoff to public roadways.
- Vegetation in disturbed areas shall be replanted as quickly as possible.
- Outdoor dust-producing activities shall be suspended when high winds (>15 mph) create visible dust plumes in spite of control measures.
- Reasonable precautions shall be taken to prevent the entry of unauthorized vehicles onto the site during non-work hours.

Construction activities associated with the Project shall comply with AQMD Rule 420 (Particulate Matter) and Rule 430 (Fugitive Dust Emissions), or succeeding AQMD rules that carry out the AQMD's management program for particulate matter. Many of the Best Management Practices listed above are also cited in Rule 430.

Mitigation Measure 3.5.1-1.2: Minimize construction machinery emissions

Contractors shall be required to: 1) minimize idling time to 5 minutes for all trucks; and 2) maintain properly tuned equipment.

Impact Significance

Less than significant with mitigation.

Impact 3.5.1-2: Violate air quality standards or substantially contribute to an existing air quality violation through the release of particulate matter during construction

As noted above, construction activities associated with the project represent a potential source of fugitive dust, which may violate PM10 air quality standards or substantially contribute to nonattainment of the PM10 standard for the County.

In addition, during the two construction seasons, construction machinery would produce approximately 30 tons per year of nitrogen dioxide (NO_X) and 16 tons per year of carbon monoxide (CO), in addition to 1.3 tons per year of PM10 exhaust, and 3.5 tons per year of reactive organic gases. The amount of NO_X, CO, and ROG potentially emitted per year is lower than the NCUAQMD annual threshold for significance under CEQA. The emission amounts for these pollutants were estimated from the number and distance of truck haul trips and the hours of operation of other heavy construction equipment. The extent of the impact is reduced by the relatively short duration of construction (approximately 120 days per year over two years) and the location of the project in an area of low population density. This impact would be minimized by implementing Mitigation Measure 3.5.1-1.2.

Impact Significance

Less than significant with mitigation.

Impact 3.5.1-3: Expose sensitive receptors to substantial pollutant concentrations

Construction activities associated with the project could expose schoolchildren and sensitive residents adjacent to the project area to substantial concentrations of fugitive dust, ozone, and NO_2. This impact would be reduced to a less than significant level by implementation of Mitigation Measures 3.5.1-1.1 and 3.5.1-1.2.

Impact Significance

Less than significant with mitigation.

Impact 3.5.1-4: Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard

As noted above, activities associated with the project represent a potential source of fugitive dust, which may violate PM10 air quality standards or substantially contribute to nonattainment of the PM10 standard for the County. The extent of the impact is reduced by the relatively short duration of construction (approximately 6 months per year over two years) and the location of the project in an area of low population density. This impact would be reduced to a less than significant level by implementation of Mitigation Measures 3.5.1-1.1 and 3.5.1-1.2 above.

Impact Significance

Less than significant with mitigation.

Impact 3.5.1-5: Expose workers or the public to hazardous toxic emissions or substantial pollutant concentrations

Construction activities associated with the project could expose construction workers and residents adjacent to the project area to substantial concentrations of diesel particulate matter. This impact would be reduced to a less than significant level by implementation of Mitigation Measure 3.5.1-1.2.

Impact Significance

Less than significant with mitigation.

Impact 3.5.1-6: Create objectionable odors affecting a substantial number of people

The project has the potential to create objectionable odors. Odors can be created during the initial die-off of pastureland when the levee is breached and low tide periods expose the decaying vegetation to air. The potential odor impact likely would be temporary, and limited to low-tide conditions. The potential temporary odor impact would not be expected to be significantly worse than the existing impact from dairy operations, which include manure storage and spreading. Furthermore, the potential odor impact would be a result of the Riverside Ranch Restoration, which is the portion of the project area most distant from residential areas. Therefore, potential odors would not be expected to affect a substantial number of people.

Impact Significance

Less than significant.

Impact 3.5.1-7: Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment

Short-term construction related GHG emissions were calculated for the project using the OFFROAD2007 and EMFAC 2007 components of the Urban Emissions model (URBEMIS2007, version 9.2.4). Construction equipment types and numbers specified in the URBEMIS2007 modeling effort are based on the applicant's guidance and the consultant's experience. Construction emissions estimated for the proposed project were modeled over the course of two 120-day construction seasons. Long-term maintenance of the project would result in some GHG emissions, but these are not expected to be significant. As addressed herein, the primary GHG contributions from the Salt River Restoration Project are short term and temporary, resulting from the construction of the project.

The Salt River Restoration Project would contribute to GHG primarily through the use of diesel-powered construction equipment. There would be no net long-term emissions (permanent sources) of GHG from the Project. The combustion of diesel fuel in off-road construction equipment and on-road vehicles (trucks, etc.) would emit greenhouse gases consisting mainly of carbon dioxide (CO_2), along with small amounts of methane (CH_4) and nitrous oxide (N_2O).

The emissions-based carbon footprint for the construction of the Salt River Restoration Project was estimated using:

- estimated construction equipment needed, their fuel consumption, and total hours of operation;
- estimated number of days for construction;
- estimated volumes of imported fill and on-site grading and cut-and-fill.

Using this methodology, the estimate for construction-related emissions for Alternative 1 is 6,748 tons of CO_2-equivalent. Methods used for this estimate can be found in Appendix B. It is estimated that the 247 ac of salt marsh restored by the project would take between 8.5 and 54 years to sequester this much carbon (Based on range in rates from 134-867 g $CO_2e/m^2/yr$ or 0.5-3.2 tons/ac/yr) (Crooks 2009). While emissions would be created through the operation of construction and earth moving machinery, wetland restoration projects such as the Salt River Restoration Project are expected to become long-term carbon sinks, eventually offsetting emissions from all associated vehicular traffic and short-term operation of construction equipment. Further, the reduction in agricultural activities would greatly reduce current GHG sources such as vehicle traffic, cattle grazing, and pump operation. Vegetation in wetlands can capture carbon by taking in atmospheric CO_2, converting it to plant mass through photosynthesis, and then sequestering the carbon in the inundated soils that form as plant matter decomposes. Studies of salt marshes in San Francisco Bay found rates of soil carbon accumulation ranging from 54g $C/m_2/yr$ and 385 g $C/m_2/yr$ (Trulio et al. 2007). While freshwater wetlands can release greenhouse gases under certain conditions, including methane, methane production from salt marsh is typically very low (Trulio et al. 2007, Bridgham et al. 2006).

In addition, the California Climate Action Registry is underwriting the development of research to help quantify the GHG balance in tidally-influenced wetland systems. Recent research has indicated that net carbon sequestration rates in salt marshes can be as high as 3.2 tons $CO_2e/ac/yr$ (Crooks 2009). These results are widely variable depending upon many factors such as temperature, inundation regime, and plant species. For the Salt River Restoration Project, there would be open water, pasture, scrub-shrub areas, seasonal wetlands, willow riparian, salt marsh, mudflat, and developed areas. Acreage of intertidal wetlands would increase from existing conditions by approximately 253 acres, and all of that area is expected to develop into salt marsh capable of sequestering significant amounts of carbon. All the open water and wetland areas are expected to release methane, though at varying rates depending upon plant type and cover. There would be roughly 345 acres of these habitats. Rates of sequestration and emission depend upon many factors, including plant species, depth and duration of inundation, and the age of the wetlands. There are too many variables to accurately estimate the amount of carbon the mature wetlands would sequester, but based on the current understanding of these systems, the restored wetlands are anticipated to be a significant carbon sink. Because the construction-related emissions will be temporary, and the project is expected to be a net carbon sink, no mitigation is required.

It should be noted that sea level rise could potentially increase or decrease carbon fixation and sequestration, depending on the rate of sea level rise. Carbon sequestration in restored tidal

wetlands is comparatively resilient to sea level rise because of marshes' high sedimentation rates and low decomposition rates (PWA and SAIC 2009). With continued rise in sea level, and an adequate sediment supply, restored tidal wetlands will continue to function and sequester relatively large amounts of carbon, with low risk of reversal. If sea-level rise exceeds sediment accumulation, it is possible for the wetland to drown and even to become a carbon source rather than a sink, as carbon stored in the wetland sediments is eroded away and released to general circulation (PWA and SAIC 2009). However, sediment accumulation in the project area is expected to be high. Natural and anthropogenic sediment supplies in the Salt River are high, with an estimated yield of 6,140 tons of sediment to the Salt River channel annually (Downie and Lucey 2005) The proposed channel design provides for overbank flooding for flows in excess of the two year flood, allowing deposition of sediment onto the floodplain. High sedimentation rates therefore reduce the likelihood that wetlands restored as part of the Project will be drowned due to sea level rise. However, uncertainty associated with the extent of sea level rise means that loss of restored wetlands is possible. For example, the Eel River Delta is subject to both tectonic uplift and subsidence, which has resulted in slight changes in elevation over the last 2,000 years (Downie and Lucey 2005). The effects of subsidence, tectonic uplift, and sea level rise on wetlands in the project area are difficult to predict. This uncertainty does not change the conclusion that the long-term impact of project GHG emissions is considered less than significant and no mitigation is required.

Impact Significance

Less than significant.

Impact 3.5.1-8: Conflict with an applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases

As discussed above, Project implementation is expected to result in a net increase in carbon storage. A short term increase in GHG emissions would occur during construction, but a significant increase in tidal marsh acreage is expected to result in net carbon storage over the lifetime of the project. Therefore, the Project would not conflict with any plans, policies or regulations aimed at reducing GHG emissions. Short-term GHG emissions would be minimized by implementing Mitigation Measure 3.5.1-1.2 above.

Impact Significance

Less than significant with mitigation.

Alternative 2: Modified Channel/Upland Restoration Only

Impact 3.5.2-1: Conflict with implementation of applicable air quality plans

Potential conflicts with the NCUAQMD Particulate Matter Attainment Plan (NCUAQMD 1995) due to the implementation of Alternative 2 would be similar to conflicts from implementation of Alternative 1. However, Alternative 2 would generate less fugitive dust than Alternative 1 because it would not include construction activities associated with Riverside Ranch restoration. This impact would be reduced to a less than significant level by implementation of Mitigation Measure 3.5.1-1.1.

Impact Significance

Less than significant with mitigation.

Impact 3.5.2-2: Violate air quality standards or substantially contribute to an existing air quality violation through the release of particulate matter during construction

The potential to violate air quality standards due to implementation of Alternative 2 is similar to that discussed above for Alternative 1. However, implementation of Alternative 2 would have less potential to violate air quality standards than Alternative 1 because it would not include construction activities associated with Riverside Ranch restoration. This impact would be reduced to a less than significant level by implementation of Mitigation Measure 3.5.1-1.2.

Impact Significance

Less than significant with mitigation.

Impact 3.5.2-3: Expose sensitive receptors to substantial pollutant concentrations

Construction activities associated with Alternative 2 could expose schoolchildren and sensitive residents adjacent to the project area to substantial concentrations of fugitive dust, ozone, and NO_3. Alternative 2 would have a similar impact to Alternative 1, despite the fact that Alternative 2 does not include construction associated with Riverside Ranch Restoration. This is due to the fact that construction associated with Alternative 2 would occur in the portion of the project area closest to schools and to residential neighborhoods. This impact would be reduced to a less than significant level by implementation of Mitigation Measures 3.5.1-1.1 and 3.5.1-1.2.

Impact Significance

Less than significant with mitigation.

Impact 3.5.2-4: Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard

As noted above, activities associated with Alternative 2 represent a potential source of fugitive dust, which may violate PM10 air quality standards or substantially contribute to nonattainment of the PM10 standard for the County. The impacts associated with Alternative 2 would be less than those of Alternative 1 because Alternative 2 would not include construction activities associated with Riverside Ranch restoration. This impact would be reduced to a less than significant level by implementation of Mitigation Measure 3.5.1-1.1 above.

Impact Significance

Less than significant with mitigation.

Impact 3.5.2-5: Expose workers or the public to hazardous toxic emissions or substantial pollutant concentrations.

Construction activities associated with Alternative 2 could expose construction workers and residents adjacent to the project area to substantial concentrations of diesel particulate matter. This impact would be reduced to a less than significant level by implementation of Mitigation Measure 3.5.1-1.2.

Impact Significance

Less than significant with mitigation.

Impact 3.5.2-6: Create objectionable odors affecting a substantial number of people

Alternative 2 would not be expected to create significant objectionable odors because, unlike Alternatives 1 and 3, it involves no significant tidal marsh restoration.

Impact Significance

None.

Impact 3.5.2-7: Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment

Similar to Alternative 1, the GHG contributions from implementation of Alternative 2 would be short term and temporary, resulting from construction of the project. However, Alternative 2 does not include tidal marsh restoration. In addition, Alternative 2 would result in the conversion of approximately six acres of tidal salt marsh, 35 acres of agricultural grassland, 8 acres of seasonal wetlands, 8 acres of riparian forest and scrub[2], and 2 acres of ruderal habitat to 49 acres of aquatic habitat and 8 acres of freshwater marsh (See Table 3.3-2 in the Biological Resources Section).

Construction-related emissions from Alternative 2 were estimated to be 3,456 metric tons of CO_2e (See Appendix E). Impacts from short-term GHG emissions from Alternative 2 would be reduced to a less than significant level by implementation of Mitigation Measure 3.5.2-7.

Mitigation 3.5.2-7: Purchase carbon credits to offset greenhouse gas emissions

Carbon credits shall be purchased through the Climate Action Reserve to offset net GHG emissions associated with implementation of Alternative 2. Net GHG emissions shall be calculated over the lifetime of the project, taking into account carbon sequestration changes due to land cover conversions and reductions in emissions due to reduction in agricultural activity on land converted to natural resource use.

[2] Projected acreages for riparian forest and scrub assume that at least 10 acres of the Vevoda Ranch adjacent to the channel will be restored to riparian forest and scrub. Preliminary restoration plans for Vevoda Ranch propose 25 acres of riparian forest and scrub restoration, adjacent to the project area.

Impact Significance

Less than significant with mitigation.

Impact 3.5.2-8: Conflict with an applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases

A short term increase in GHG emissions would occur during construction of Alternative 2. A long-term change in GHG emissions may occur due to implementation of Alternative 2 because of increases in aquatic habitat and freshwater marsh, and reductions in riparian forest and scrub, tidal salt marsh, seasonal wetlands, and agricultural grassland, as well as reductions in agricultural activity on grasslands converted to natural resource areas. Potential conflicts with any plans, policies or regulations aimed at reducing GHG emissions would be avoided by implementing Mitigation Measure 3.5.2-7 above.

Impact Significance

Less than significant with mitigation.

Alternative 3: Riverside Ranch Restoration/Upland Restoration Only

Impact 3.5.3-1: Conflict with implementation of applicable air quality plans

Potential conflicts with the NCUAQMD Particulate Matter Attainment Plan (NCUAQMD 1995) due to the implementation of Alternative 3 would be similar to conflicts from implementation of Alternative 1. However, Alternative 3 would generate less fugitive dust than Alternative 1 because it would not include construction activities associated with channel restoration. This impact would be reduced to a less than significant level by implementation of Mitigation Measure 3.5.1-1.1.

Impact Significance

Less than significant with mitigation.

Impact 3.5.3-2: Violate air quality standards or substantially contribute to an existing air quality violation through the release of particulate matter during construction

The potential to violate air quality standards due to implementation of Alternative 3 is similar to that discussed above for Alternative 1. However, implementation of Alternative 3 would have less potential to violate air quality standards than Alternative 1 because it would not include construction activities associated with channel restoration. This impact would be reduced to a less than significant level by implementation of Mitigation Measure 3.5.1-1.2.

Impact Significance

Less than significant with mitigation.

Impact 3.5.3-3: Expose sensitive receptors to substantial pollutant concentrations

Construction activities associated with Alternative 3 could expose sensitive residents adjacent to the project area to substantial concentrations of fugitive dust, ozone, and NO_3. Alternative 3 would have a significantly reduced impact compared to Alternative 1. This is due to the fact that construction associated with Alternative 3 would occur in the portion of the project area farthest from schools and residential neighborhoods. This impact would be reduced to a less than significant level by implementation of Mitigation Measures 3.5.1-1.1 and 3.5.1-1.2.

Impact Significance

Less than significant with mitigation.

Impact 3.5.3-4: Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard

As noted above, activities associated with Alternative 3 represent a potential source of fugitive dust, which may violate PM10 air quality standards or substantially contribute to nonattainment of the PM10 standard for the County. The impacts associated with Alternative 3 would be less than those of Alternative 1, because Alternative 3 would not include construction activities associated with channel restoration. This impact would be reduced to a less than significant level by implementation of Mitigation Measure 3.5.1-1.1 above.

Impact Significance

Less than significant with mitigation.

Impact 3.5.3-5: Expose workers or the public to hazardous toxic emissions or substantial pollutant concentrations.

Construction activities associated with Alternative 3 could expose construction workers and residents adjacent to the project area to substantial concentrations of diesel particulate matter. This impact would be reduced to a less than significant level by implementation of Mitigation Measures 3.5.1-1.2.

Impact Significance

Less than significant with mitigation.

Impact 3.5.3-6: Create objectionable odors affecting a substantial number of people

Alternative 3 would have a similar potential to create objectionable odors as Alternative 1 due to restoration of tidal marsh. Similar to Alternative 1, these odors would be temporary, and their impact would be reduced by the low population density in the area and the reduction in odors associated with dairy farming.

Impact Significance

None.

Impact 3.5.3-7: Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment

Similar to Alternative 1, the GHG contributions from implementation of Alternative 3 would be short term and temporary, resulting from construction of the project. Short-term GHG emissions from Alternative 3 would be approximately 3,292 tons of CO_2, about half the emissions from Alternative 1, because Alternative 3 does not include construction activities associated with channel restoration. Like Alternative 1, Alternative 3 would involve the restoration of 247 acres of tidal salt marsh, which would represent a significant carbon sink over the lifetime of the project. Taking into account project-related GHG emissions and increased carbon sequestration, implementation of Alternative 3 would be expected to result in a net increase in carbon sequestration. Impacts from short-term GHG emissions would be minimized by implementation of Mitigation Measure 3.5.1-1.2.

Impact Significance

Less than significant with mitigation.

Impact 3.5.3-8: Conflict with an applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases.

As discussed above, implementation of Alternative 3 would result in a long-term increase in sequestered carbon. Therefore, Alternative 3 would not conflict with any plans, policies or regulations aimed at reducing GHG emissions.

Impact Significance

None.

Alternative 4: No Project

Impact 3.5.4-: 1 Conflict with implementation of applicable air quality plans

There would be no potential conflicts with the NCUAQMD Particulate Matter Attainment Plan (NCUAQMD 1995) due to the No Project Alternative.

Impact Significance

None.

Impact 3.5.4-2: Violate air quality standards or substantially contribute to an existing air quality violation through the release of particulate matter during construction

There would be no potential to violate air quality standards due to the No Project Alternative.

Impact Significance

None.

Impact 3.5.4-3: Expose sensitive receptors to substantial pollutant concentrations

There would be no potential to expose sensitive receptors to substantial pollutant concentrations due to the No Project Alternative.

Impact Significance

None.

Impact 3.5.4-4: Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard

There would be no cumulatively considerable net increase in PM10 levels due to the No Project Alternative.

Impact Significance

None.

Impact 3.5.4-5: Expose workers or the public to hazardous toxic emissions or substantial pollutant concentrations.

There would be no potential to expose construction workers and residents adjacent to the project area to substantial concentrations of diesel particulate matter due to the No Project Alternative.

Impact Significance

None.

Impact 3.5.4-6: Create objectionable odors affecting a substantial number of people

Alternative 4 would not be expected to create significant objectionable odors beyond the existing odors associated with dairy farming activities.

Impact Significance

None.

Impact 3.5.4-7: Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment

Alternative 4 would result in continued GHG emissions associated with dairy farming activities. There would be no significant increase in GHG emission rates from the existing condition due to the No Project Alternative.

Impact Significance

None.

Impact 3.5.4-8: Conflict with an applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases.

As noted above, Alternative 4 would not result in significant increases in GHG emission rates from the existing condition. Therefore, it would not conflict with plans, policies, or regulations to reduce GHG emissions.

Impact Significance

None.

3.6 NOISE

This section briefly characterizes noise concepts and noise in the Salt River Ecosystem Restoration Project area. Potential noise impacts of excavating and maintaining the Salt River channel, constructing and maintaining the proposed wetland restoration project, and continued upslope restoration work in the Francis and Williams Creek watersheds are described. Applicable mitigation measures are identified. This section focuses on noise impacts to sensitive human receptors. Any impacts to wildlife are described in Section 3.4, Terrestrial and Wetland Resources.

3.6.1 AFFECTED ENVIRONMENT

NOISE CHARACTERISTICS

Noise is generally defined as unwanted or annoying sound that is typically associated with human activity and which interferes with or disrupts normal activities. Although exposure to high noise levels has been demonstrated to cause hearing loss, the principal human response to environmental noise is annoyance. Hearing loss requires that noise levels exceed thresholds generally not found in ambient environments. Hearing loss danger is generally associated with occupational exposures. The combination of high noise levels and chronic, persistent exposure pose the greatest risk. The response to environmental noise is mainly psychological. Some physiological effects from loss of sleep, irritation or similar annoyance can be observed in people exposed to elevated environmental noise. The response of individuals to similar noise events is diverse and influenced by the type of noise, the perceived importance of the noise and its appropriateness in the setting, the time of day, the type of activity during which the noise occurs, and the sensitivity of the individual hearing the sound.

Airborne sound is a rapid fluctuation of air pressure above and below atmospheric pressure. Sound levels are usually expressed as the logarithmic ratio of the square of the ambient sound pressure level compared to the pressure from the faintest sound detectable by a young person with good auditory acuity. The units of this ratio are called decibels (dB). Most of the sounds humans hear in the environment do not consist of a single frequency, but rather a broad band of frequencies differing in sound level. The intensities of each frequency add to generate the sound we hear. The method commonly used to quantify environmental sounds consists of determining all of the frequencies of a sound according to a weighting system that reflects that human hearing is less sensitive at low and extremely high frequencies than at the mid-range frequencies. This is called "A" weighting, and the decibel level measured is called the A-weighted sound level (dBA). In practice, the level of a noise source is conveniently measured using a sound level meter that includes a filter corresponding to the dBA curve. Any further reference to decibels expressed at "dB" should be understood to be A-weighted unless otherwise noted.

Although the A-weighted sound level may adequately indicate the level of environmental noise at any instant in time, community noise levels vary continuously. Most environmental noise includes a combination of noise from distant sources that create a relatively steady background noise in which

no particular source is identifiable. A single descriptor called the Leq (equivalent sound level) is most commonly used for environmental noise. Leq is the energy-mean sound level during a measured time interval. It is the 'equivalent' constant sound level that would have to be produced by a steady state source to equal the fluctuating level measured.

The Community Noise Equivalent Level (CNEL) is a noise metric to describe the overall effect of noise throughout a day. It is calculated by adding a 5-decibel penalty to sound levels in the evening (7:00 p.m. to 10:00 p.m.), and a 10 decibel penalty to sound levels in the night (10:00 p.m. to 7:00 a.m.) to compensate for the increased sensitivity to noise during the quieter evening and nighttime hours. CNEL's are used mainly to make land use decisions regarding noise exposure for those noise sources pre-empted from local control such as motor vehicles, airplanes, and trains. In contrast to noise performance standards governing sources amenable to local control, CNEL levels are therefore more reactive to the noise environment rather than being proactive noise control standards. The Day-Night Noise Level (Ldn) is a metric similar to the CNEL, without the penalty for evening noise levels.

APPLICABLE STANDARDS/REQUIREMENTS

Federal Noise Standards

In general, there are no federal noise standards that would directly apply to this project.

State Noise Standards

California state law recommends that development planning use CNEL or Ldn, which are considered to be equivalent for planning purposes, as the appropriate noise/land use compatibility criteria. The State of California has established guidelines for acceptable community noise levels to insure that noise exposure is considered in any development, as shown in Table 3.6-1. CNEL-based standards apply to noise sources whose noise generation is preempted from local control (such as from on-road vehicles, trains, airplanes, etc.) and are used to make land use decisions as to the suitability of a given site for its intended use. These CNEL-based standards are provided in the Noise Element of the Humboldt County General Plan. Since local jurisdictions cannot regulate the noise generator, they exercise land use planning authority on the receiving property.

Table 3.6-1 California Land Use Compatibility Guidelines for Exterior Community Noise

Land Use	Community Noise Exposure CNEL, dB			
	Normally Acceptable	Conditionally Acceptable	Normally Unacceptable	Clearly Unacceptable
Residential – Low Density Single Family, Duplex, Mobile Homes	Below 60	55-70	70-75	Above 75
Residential -- Multi-Family Homes	Below 65	60-70	70-75	Above 75
Schools, Libraries, Churches, Hospitals, Nursing Homes	Below 70	60-70	70-80	Above 80
Transient Lodging: Motels, Hotels	Below 65	60-70	70-80	Above 80
Auditoriums, Concert Halls, Amphitheaters	-	Below 70	-	Above 65
Sports Arena, Outdoor Spectator Sports	-	Below 75	-	Above 70
Playgrounds, Neighborhood Parks	Below 70	-	67-75	Above 72.5
Golf Courses, Riding Stables, Water Recreation, Cemeteries	Below 75	-	70-80	Above 80
Office Buildings, Business and Professional Commercial	Below 70	67-77	Above 75	-
Industrial, Manufacturing, Utilities, Agriculture	Below 75	70-80	Above 75	-

Source: State of California Governor's Office of Planning and Research, General Plan Guidelines, 1998.

Normally Acceptable: Specified land use is satisfactory based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.

Conditionally Acceptable: New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning would normally suffice.

Normally Unacceptable: New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

Clearly Unacceptable: New construction or development should generally not be undertaken.

Humboldt County General Plan: Noise Element Standards

According to the Humboldt County General Plan, "(t)he principal sources of noise in Humboldt County are highways, airports, rail, on-site construction, and industrial activities." (Section 3240). None of these sources are located in the immediate vicinity of the project area. The project area is dominated by agricultural operations, with several small, residential clusters nearby. Large industrial timber harvest operations, gravel mining operations, a creamery, and a large lumber mill (Humboldt Redwoods Company) are found within ten miles of the project vicinity.

The County General Plan includes a Land Use/Noise compatibility matrix that is consistent with the State's Noise/Land Use Compatibility standards (Table 3.6-3, below, section 3240, Humboldt County General Plan, 12/10/84). This matrix categorizes noise exposures by land uses, decibel ranges, and general acceptability.

Table 3.6-3 indicates that, unlike residential areas, higher noise levels are "clearly acceptable" and "normally acceptable" in agricultural land use categories; for livestock farming, the "clearly acceptable" range is between 45 and 60 Ldn and the "normally acceptable" range is between 60 and 75 Ldn. Levels between 75 and 80 Ldn. are "normally unacceptable," while levels higher than 80 Ldn are "always unacceptable." The Humboldt County General Plan stipulates that 65 dBA is the upper acceptable limit for residential units (outside measurement), and 75 dBA is the upper acceptable limit for agricultural activities involving livestock farming.

There are some residential areas near the project site potentially subject to higher Ldn standards than adjacent agricultural operations. A standard-construction wood-frame house reduces noise transmission by 15-20dB. Since interior noise levels for residences are not to exceed 45dB, the maximum acceptable exterior noise level for residences is clearly acceptable at 60dB without any additional insulation being required, and would be normally acceptable up to 65 dB. Acceptable noise levels as measured outside of a residential unit would vary depending on the land use designation, adjacent uses, distance to noise source, and intervening topography, vegetation, and other buffers and factors that attenuate the noise.

City of Ferndale Noise Ordinance

The City of Ferndale has adopted a noise ordinance (Section 8.08.020 of the Ferndale Municipal Code) that focuses on "nuisance" noise. The maximum permissible noise levels are as set forth in Table 3.6-2. It should be noted that temporary construction noise is exempted from the ordinance's requirements.

Table 3.6-2 City of Ferndale Maximum Allowable Noise Levels

Source of Noise by Zone District	Receiving Property by Zone District		
	(1) Residential Single & Multi-family	(2) Business and Commercial	(3) Light Industrial
(1) Residential single & multi-family	55dBA Reduced by 10dBA between hours of 10 p.m. and 7 a.m.	57dbBA	60dBA
(2) Business and Commercial	57 dBA	60 dBA	65dBA
(3) Light Industrial	60 dBA	65 dBA	70 dBA

The applicable noise levels for (2) and (3) may be adjusted by no more than:

(a) 5dBA for a total of 15 minutes in any one-hour period; or

(b) 10 dBA for a total of 10 minutes in any one-hour period; or

(c) 15 dBA for a total of 1.5 minutes in any one-hour period.

EXISTING NOISE LEVELS

Existing noise sources in the project area are associated with industrial/agricultural operations. Sources include waste pumps, irrigation equipment, diesel generators, forklifts, livestock trucks, milk conveyance trucks, semi-trucks, tractors, and other vehicles and equipment. Truck traffic along project roadways is a major source of local noise. However, due to the project area's location away from US 101 and other major highways, time-averaged noise levels in most of the project area are generally low. Due to the project location along the coast, and on the Eel River delta, wind both elevates background noise levels, and can attenuate heavy equipment noise.

Sensitive Receptors

Land uses that are generally sensitive to noise are residential areas, schools, convalescent and acute care hospitals, some parks and recreational areas, and churches and other religious facilities. The only sensitive receptors identified near the proposed project expansion sites are rural residences. These are shown on Figure 3.6-1. The nearest existing residences to the proposed excavation and haul routes are:

- At least 60 residences (many associated with dairies) along Port Kenyon Road extending from the intersection of Meridian Road to Arlynda Corners;
- A cluster of 21 houses along Van Ness Road;
- Scattered dairy residences near soils reuse sites.
- In residential areas, such as those near the intersection of Port Kenyon Road and Meridian Road, most homes are located approximately 50-75 feet from the centerline of the road.

Table 3.6-3 Land Use/Noise Compatibility Standards

CLEARLY ACCEPTABLE	**NORMALLY ACCEPTABLE**	**NORMALLY UNACCEPTABLE**	**CLEARLY UNACCEPTABLE**

Land Use Category	Maximum interior exposure, Ldn*	Land Use Interpretation for Ldn Value									
		55		65	75			85			
Residential-Single Family, Duplex, Mobile Homes	45										
Residential-Multiple Family, Dormitories, etc.	45										
Transient Lodging	45										
School Classrooms, Libraries, Churches	45										
Hospitals, Nursing Homes	45										
Auditoriums, Concert Halls, Music Shells	35										
Sports Arenas, Outdoor Spectator Sports											
Playgrounds, Neighborhood Parks											
Golf Courses, Riding Stables, Water Rec., Cemeteries											
Office Buildings, Personal, Business and Professional	50										
Commercial-Retail, Movie Theaters, Restaurants	50										
Commercial-Wholesale, Some Retail, Ind., Mfg., Util.											
Manufacturing, Communications (Noise Sensitive)											
Livestock Farming, Animal Breeding											
Agriculture (except Livestock), Mining, Fishing											
Public Right-of-Way											
Extensive Natural Recreation Areas											

*Due to exterior sources

Source: Bolt, Beranek, and Newman, Inc. 1974

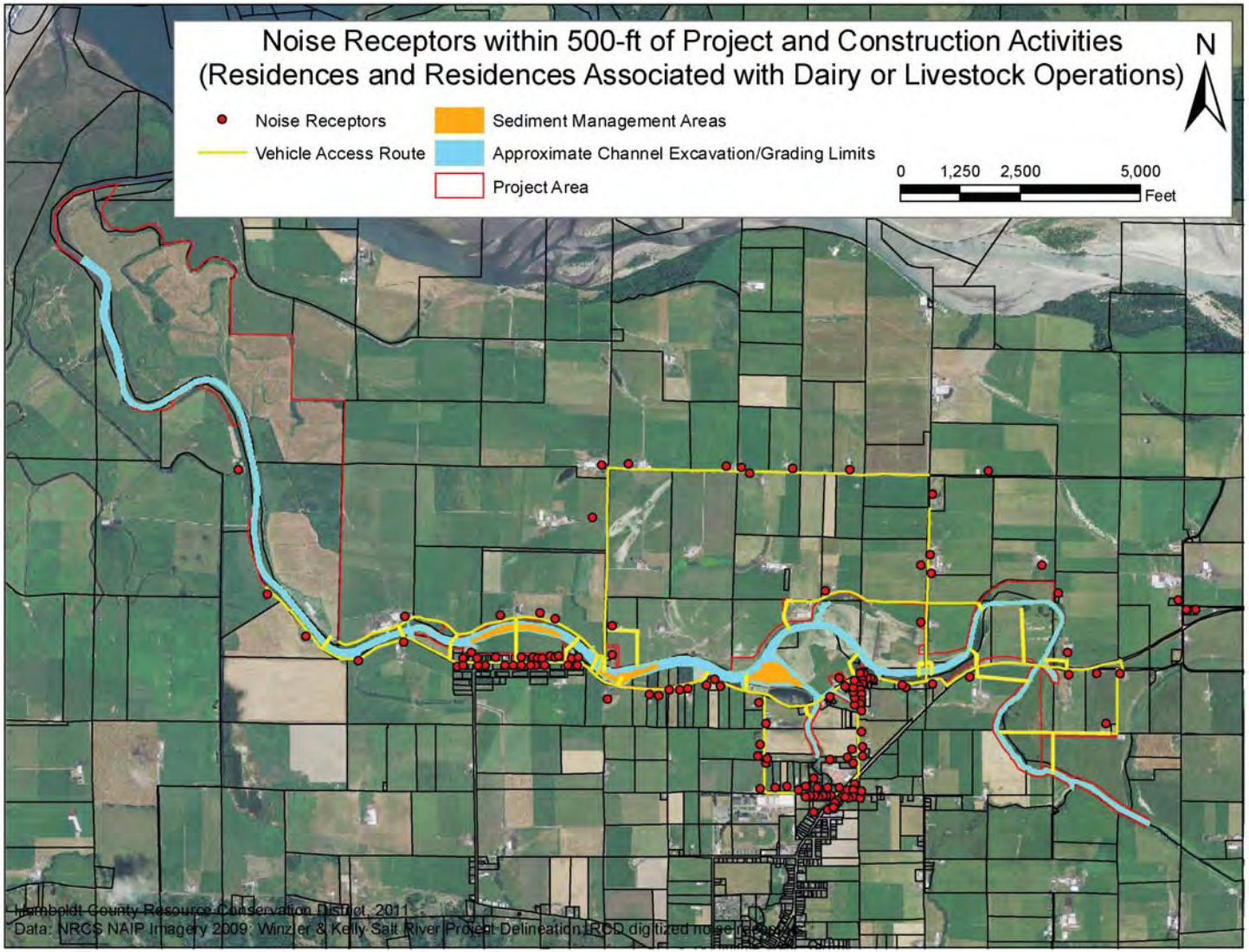


Figure 3.6-1

Noise Receptors with 500-ft of Project and Construction Activities

Source: Humboldt County RCD

3.6.2 IMPACTS AND MITIGATION

METHODOLOGY FOR IMPACT ANALYSIS

Noise concerns identified with the project are evaluated in the context of project implementation impacts (short term noise impacts), and project maintenance and adaptive management (long term) for the project area. For purposes of this discussion, short-term impacts assume a two-field-season construction period, with each season extending approximately 120 days. Upon completion of Phases 1 and 2, maintenance and adaptive management activities would cause occasional increases above background levels in at various locations throughout the project area.

Average daytime construction noise levels were estimated based primarily on predictive calculations developed by the City of Boston to regulate construction noise during that City's "Big Dig" construction project (Massachusetts Turnpike Authority 2000 *in* Thalheimer 2000) and methodology developed by the Federal Transit Administration (FTA) (FTA 2006) (as presented *in* Hamilton Wetland Restoration Project Dredged Material Aquatic Transfer Facility Draft Supplemental Environmental Impact Statement/Environmental Report, October 2008). This included evaluation of the types of construction equipment operating and associated noise emission levels, distance from receiver to construction equipment, effects of topography and ground-to-noise propagation, and period of operation of equipment. Noise levels were evaluated in A-weighted decibels (dBA), a composite frequency-weighting scheme that approximates the way the human ear responds to sound levels.

SIGNIFICANCE CRITERIA

CEQA Guidelines identify significant impacts as those that cause standards to be exceeded where they are currently met. An impact is also considered significant if it "substantially" worsens an existing unacceptable noise environment, or creates an exposure of persons to noise levels exceeding standards established in the local general plan or other applicable regulations.

"Substantially" is not defined in any guidelines. The accuracy of sound level meters and of sound propagation computer models is no better than ± 1.0 dB. This is also the human loudness difference discrimination level under ideal laboratory conditions. Most people cannot distinguish a change in the noise environment that differs by less than 3 dB between the pre- and post-project exposure if the change occurs under ambient conditions. An increase of 3-5 dB is generally considered significant. For this analysis, a significant impact would occur if construction occurs outside the hours of 7 a.m. to 7 p.m. or would raise noise levels above the normally acceptable range for the land use affected (Table 3-6-3).

Alternative 1: (Proposed Project): Modified Channel/Riverside Ranch Restoration/ Upland Restoration

Impact 3.6.1-1: Construction noise impacts

Noise-Generating Activities

The construction activities associated with the proposed action and alternatives that may intermittently generate elevated noise levels at nearby noise-sensitive locations are listed below.

Riverside Ranch Construction

- Preparation of staging areas
- Delivery of equipment to equipment staging areas
- Installation of erosion and sediment control measures
- Clear and grub (remove existing vegetation)
- Construct temporary haul routes
- Excavate Salt River Channel from STA 0 to 104=00
- Construct new set-back berm and refurbish existing berm
- Construct internal improvements including tidal channels
- Revegetation and stabilize disturbed areas
- Lower existing levee and breach entrance to new tidal channels

Under the proposed action, all construction activities at Riverside Ranch (Phase 1) are expected to occur over a 120-day period.

Salt River Channel Restoration

- Preparation of staging areas
- Delivery of equipment to equipment staging areas
- Installation of erosion and sediment control measures
- Construct temporary haul routes
- Clear and grub (remove existing vegetation)
- Excavate Salt River Channel from STA 104+00 to 354+26
- Construct channel confinement fill areas
- Haul excavated material to beneficial reuse locations
- Vegetate and stabilize disturbed areas

Under the proposed action, all construction activities at the Salt River channel (Phase 2) are expected to occur over a 120-day period.

Maintenance and Adaptive Management

- Excavation and periodic maintenance dredging of the direct channel
- Vegetation Removal
- Habitat Enhancement

Maintenance and management activities would occur periodically on an ongoing basis.

Upper Watershed Enhancement Activities

Under the proposed action, all construction activities in the upper watershed (ongoing) are expected to be seasonally occurring on an ongoing basis. These activities are minor in nature, generally would not involve the use of heavy equipment, would have very short-term construction periods, and would be distant from any receptors. Therefore they would not have the potential to result in significant noise impacts.

Construction Period

The project assumes a twelve-hour workday (7:00 a.m. to 7:00 p.m.) extending for two 120-day field seasons. The working days are assumed to be weekdays and non-holidays, however during the development of the construction documents, this would be defined as well as working hours. Modifications to these could occur after the commencement of construction and if approved by the construction manager.

Construction Equipment Noise

The foundation of this analysis is an assessment of typical noise levels of anticipated equipment proposed for use in project implementation and the distance to sensitive receptors.

Table 3.6-4 presents a list of noise generation levels for the anticipated equipment inventory. Table 3.6-5, which assumes this combined source level, summarizes predicted noise levels at various distances from delivery activities using methodology recommended by FTA (2006) (*in* Hamilton Wetland Restoration Project Dredged Material Aquatic Transfer Facility Draft Supplemental Environmental Impact Statement/Environmental Report, October 2008.)[1] A conservative assumption for operation of equipment is simultaneous and continuous operation of the three loudest pieces of equipment (clamshell, loader, and truck) over at least an 8-hour period for a combined source noise level at a single location. The combined sound level of these three pieces of equipment associated with construction is 65 dBA, equivalent sound level (Leq) measured at 700 feet from the source.

For Riverside Ranch construction and channel restoration, all sensitive receptors are at least 700 feet distant from proposed work areas. Therefore, non-haul truck excavation/construction noise associated with Phase 1 would not have a significant noise impact. For channel construction, some houses exist within 100 feet of the proposed excavation. Excavation noise would occur for a few

[1] This analysis was performed for delivery of construction equipment, and the analysis assumes a one-hour duration. Project operations will be for an eight-hour duration, but equivalent sound levels (Leq) remain the same.

weeks at any particular site, and would be limited to normal daytime work hours (7 am to 7 pm). Phase 2 excavation work could have a significant impact if construction equipment and hours are not strictly controlled.

Table 3.6-4 Typical Construction Equipment Noise Emission Limits

Equipment	Typical Noise Level (dBA) 50 feet from Source[1]	Utilization Factor
Crane, Derrick	85	0.2
Dredge, Clamshell	84	0.4
Dredge, Hydraulic	79	1.0
Loader	80	0.4
Pump (Dewatering)	93	0.5
Truck, 10 cy haul	84	0.4

Notes:

[1]The term "source" refers to the noise-generating equipment.

Sources: Massachusetts Turnpike Authority 2000 in Thalheimer 2000; Geier & Geier Consulting 1997; ICF Jones & Stokes measurements for a similar dredging operation (Environmental Science Associates 2003); ICF Jones & Stokes calculations based on Hoover and Keith 2000.

Table 3.6-5 Estimated Construction Noise in the Vicinity of Operations

Distance Between Source and Receiver (feet)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Sound Level (dBA)[1] (multiplication factor)
50	0	0	93 (.94)
100	6	0	86 (.87)
200	12	0	78 (.79)
300	16	0	74 (.75)
400	18	0	71 (.72)
500	20	0	69 (.70)
600	22	0	66 (.67)
700	23	0	65 (.66)
800	24	0	64 (.65)
900	25	0	62 (.63)
1,000	26	0	61 (.62)
2,000	32	0	54 (.55)
3,000	36	0	50 (.51)
4,000	38	0	47 (.48)

[1] Calculations are based on FTA guidance. This calculation does not include the effects, if any, of local shielding that may reduce sound levels further.

Entered Data:

Operation of Construction Equipment

Source Sound level (dBA) at 50 feet = 99

Average Height of Sources—Hs (feet) = 10

Average Height of Receiver—Hr (feet) = 5

Calculated Data:

Effective Height (Hs+Hr)/2 = 7.5

Ground factor (G) = 0.00

Source: FTA 2006 (in Hamilton Wetland Restoration Project Dredged Material Aquatic Transfer Facility Draft Supplemental Environmental Impact Statement/Environmental Report, October 2008)

Construction Truck Traffic Noise

Truck Trip Generation

According to the Excavated Material Management Plan, the proposed project could generate up to 800 daily trips of 10-cubic-yard haul trucks. In light of the near physical impossibility of this volume of traffic, it is likely that this number would be reduced by half or more through the use of larger haul trucks, trailers, and on-site or near-site utilization of material for berms and channel confinement areas. Many of the truck trips could occur within the channel right-of-way, and therefore distant from sensitive noise receptors. However, this analysis assumes that many of the truck trips would occur along County roads adjacent to the channel corridor. It is feasible that haul

routes could receive 200-400 haul truck trips per day. Phase 1 haul truck trips would occur almost exclusively on or near Riverside Ranch, distant from receptors considered in this analysis. Haul truck trips in Phase 2, however, would travel through residential and agricultural areas. Ultimately, due to construction phasing, it is unlikely any specific County road or route would actually experience as many as 400 haul truck trips per day for the full duration of construction.

The County roads also would be used by fueling, equipment maintenance, equipment transport, and construction management/inspection vehicles throughout the construction period. The combined number of daily trips of these vehicles is anticipated to be less than 10 percent of the daily haul truck trips. The use of larger-capacity belly- and end-dump trucks would reduce the number of truck trip estimates presented above.

There would be multiple simultaneous work sites, and it would be necessary to stagger the loading of trucks and their movement along roadways. Therefore, not all noise sources would be additive from the same site, and not all trucks would be operating in the same location simultaneously. In addition, trucking of material along transportation corridors would not result in more than one to two haul trucks operating at any given time and place due to material loading limitations and driving safety practices.

A small portion of the total earthwork volume associated with Phase 1 and 2 would not require haul truck transportation. For example, on Riverside Ranch (Phase 1) material removed from lowering existing berms would likely be placed in the adjoining ditches precluding the need to transport the material. Similarly, a portion of material removed from the Salt River Channel (Phase 2) would be immediately placed on the channel confinement fill areas, or transported a short distance within the corridor by means of a scraper. Because of these discrete locations throughout Phases 1 and 2 where excavated material would not require transport, the truck trips presented in the above table are considered very conservative estimates. Additionally, larger capacity belly and end-dump trucks as well as trailers may be utilized, which would further reduce the number of truck trip estimates presented above.

Table 3.6-6 details the required truck trips for Phases 1 and 2. At the maximum hour of truck activity the estimated noise level for the hour would be 64.5 dBA, Leq at a distance of 50 feet from the roadway. This noise level would be a noticeable increase, but it would only occur during the period of construction and it would not affect typical indoor activities. However, individual truck noise would be substantially higher. This impact would be similar to that of the larger existing dairy-related trucks, but at an increased frequency.

Table 3.6-6 Haul Truck Trips for Riverside Ranch (Phase 1) and Salt River Restoration (Phase 2)

Phase	Total Earthwork Volume to be Transported (CY)	Total Earthwork Volume Including 15% Transportation Expansion (CY)	10-CY Truck Trips/Phase	10-CY Truck Trips/Day[1]	10-CY Truck Trips/Hour[2]	Estimated Hourly Leq (dBA)[3]
1	375,100	431,365	43,137	360	45	64
2	416,300	478,745	47,875	399	50	64.5

[1] Project Phase assumes 120 working days

[2] Assumes an 8 hour work day

[3] Noise levels were determined using the Federal Highway Administration (FHWA) Traffic Noise Model Version 2.5 Look-Up Tables Model. Road center to receptor distance is 15 meters (approximately 50 feet). Heavy trucks travelling at 50 MPH.

Truck Trip Distribution

Figure 3.21-1 in the traffic section depicts the existing County roads that could potentially be utilized as haul routes for Phase 2 construction. Figure 3.6-1 shows sensitive noise receptors (houses) along the haul routes.

Because of its proximity to the channel corridor, Port Kenyon Road between its western terminus and Highway 211 as well as Riverside Road between Riverside Ranch and Dillon Road would likely experience a relatively high proportion of truck traffic usage during that portion of the 120-day construction period of Phase 2 where excavation and hauling begins west of Port Kenyon. As described in Section 3.12, traffic, a traffic control plan would be included as part of the project.

Conclusions of Significance

In summary, the project would result in temporary increases in sound and vibration levels near the project site during construction. Construction would involve a high level of equipment, such as scrapers, tractors, clamshell dredgers, haul trucks, service vehicles, and other moderate to heavy-duty equipment and vehicles, so construction noise is expected to range from moderate to high near the project sites. The generated noise would be substantially above the ambient levels during construction at least 120 continuous workdays per year for two consecutive field seasons. This could be a significant impact, which would be reduced to a less than significant level by incorporation of the mitigation measures identified below.

Mitigation 3.6.1-1: Noise from earthmoving and hauling of soils

a) Hours of construction for outdoor activities exceeding 50 dBA shall be limited to Monday through Friday 7:00 a.m. to 7:00 p.m. and weekends and holidays from 9:00 a.m. to 6:00 p.m. Movement and hauling of material, and associated activities such as re-fueling or maintenance, shall be limited to normal working hours for the area, as specified above.

b) All equipment shall operate with factory-equipped mufflers, and staging areas shall be located as far from residential uses as is practical. These conditions shall be incorporated into project contract specifications.

c) To the degree feasible, haul trucks shall use haul routes along the existing channel excavation path, or along roadways distant from sensitive receptors. The contractor shall determine the feasibility of developing haul roads along the channel excavation path. Design considerations shall include a minimum of three separate work sites (to minimize travel on County roads). Haul road construction shall be designed to minimize impacts; haul road designs shall include, but not be limited to the placement of geotextile fabric under the haul road for facilitated re-excavation and removal of bedload materials following project completion.

d) A haul-truck route plan shall be developed. Hauling shall minimize passing any substantial collection of noise-sensitive land uses (i.e. occupied houses, schools, hospitals), and shall be limited to less than 200 loads per day on any given road.

e) Larger capacity belly and end-dump trucks as well as double-trailers shall be whenever feasible.

Impact Significance

Less than significant with mitigation.

Alternative 2: Modified Channel/Upland Restoration Only

Impact 3.6.2-1: Construction Noise Impacts

Alternative 2 would involve significant mobilization of heavy equipment for earth-moving purposes, and ensuing generation of noise. This alternative would require nearly the same operation of large numbers of scrapers and other noisy equipment as Alternative 1. Noise impacts could be potentially significant.

Mitigation 3.6.2-1: Noise from earthmoving/hauling of soils

Same as Mitigation 3.6.1-1.

Impact Significance after Mitigation

Less than significant with mitigation.

Alternative 3: Riverside Ranch Restoration/Upland Restoration Only

Impact 3.6.3-1: Construction noise impacts

Construction activities for this alternative would require operation of large numbers of scrapers and other noisy equipment. The maximum noise would occur in the primary cut and fill areas, which are typically over 700 feet from any concentration of residential uses. Moreover, all material generated would be used on site, thereby eliminating the need for truck transport to distant locations. Although occasional project truck noise would be audible, the infrequency of such noise events, their similarity to existing truck traffic noise, and the County grading permit's standard restriction of

construction period to 7 am to 7 pm would render this impact as less-than-significant. No mitigation is required.

Alternative 4: No Project

No construction, traffic, or associated noise impacts would be associated with this alternative.

3.7 AESTHETICS

This section describes visual quality of the project site and project vicinity, and assesses the visual quality impacts on views of and from Salt River Ecosystem Restoration Project sites. Visual quality issues addressed include scenic vistas, scenic resources, visual character, light and glare. This analysis is based on field reconnaissance and photos of the project area.

3.7.1 AFFECTED ENVIRONMENT

VISUAL CHARACTER OF THE SALT RIVER AND SURROUNDING AREAS

The Salt River is surrounded by a working landscape of pasturelands with the Wildcat Hills to the south, the hills of Loleta to the north, the coast range to the east and the Pacific Ocean to the west. The Salt River is a tidal slough of the Eel River estuary. The Salt River, with its numerous sloughs and drainage features, enters the Eel River ~~at the northern tip of the Riverside Ranch property~~ at the north end of Seaside Island. The City of Ferndale is situated at the base of the Wildcat Hills on Francis Creek, a major tributary of the Salt River.

Surrounding vistas include forested hillsides to the south and east; the Eel River corridor to the north; and flat bottomlands surrounding and adjacent to the Salt River. Tributary watersheds flow out of the Wildcat Hills down onto the Salt River delta. Road access is limited in these tributary watersheds and vistas are predominantly of dense coniferous forests with sporadic views of narrow valley floodplains/open pasturelands situated in valley bottoms.

The project area has several distinct viewsheds including the forested slopes of the coast range to the east and the Wildcat Hills to the south, the Ferndale Bottoms adjacent to the Salt River, the Eel River corridor to the north and the Victorian Village of Ferndale that is situated along Francis Creek. Grassy pasturelands, picturesque dairy farm complexes, and rural roads characterize the Salt River area landscape, with the backdrop of the City of Ferndale, Coast Ranges and Wildcat Hills in views to the east and south.

The project is part of the Eel River Valley viewshed. Details of the site's visual characters cannot be viewed from Highway 101 or Ferndale because the distance exceeds one-half mile.

EXISTING VISUAL CHARACTER OF THE PROJECT SITE

The project site includes broad views of agricultural fields adjacent to the Salt River in all directions. Rural farm roads bisect pasturelands and provide access to dairy and beef cattle operations and rural homes. There are views of the Eel River corridor along the project area and estuary mudflats at the lower end of the project area. In the distance, the vista includes forested hillsides to the north, south and east. The landscape is dotted with livestock, farm complexes, houses, and barns that reflect the area's agricultural heritage. A variety of farm and dairy equipment is visible and agricultural activities can be observed throughout the area.

The project site is flat land that has been used for dairy cow and crop (corn and hay) production for generations. The area includes the Salt River and its tributaries (Coffee Creek, Williams Creek, Francis Creek, Reas Creek, Smith Creek) and a network of smaller slough channels and drainage ditches in the lower reaches of the Salt River.

Salt River Channel and Riverside Ranch Areas

Main roads along the Salt River that afford views of the project area include Highway 211, which extends into the project area from Highway 101 and Fernbridge, and Port Kenyon Road, which intersects Highway 211 near Arlynda Corners and parallels the Salt River down to Smith Creek. Highway 211 crosses the Salt River at a highway bridge and affords a motorist's view of the upper reach of the Salt River Channel component of the project. Views here include open pastureland, a narrow band of willow and cottonwood riparian zones, and the old Salt River channel. Travelers on the Port Kenyon Road view the entire Salt River Channel Restoration project component, as Port Kenyon Road parallels the Salt River and extends to Riverside Ranch. The Sewage Treatment Plant is located near Arlynda Corners, a short distance west of the intersection of Port Kenyon Road and Fulmor Road. Views are of open pasturelands with a dense, narrow band of willow-alder riparian vegetation along the Salt River channel (See Figures 3.7-1 and 3.7-2). In winter months, pasturelands adjacent to the Salt River become flooded shallow ponds visible from the road (See Figure 3.7-2). In summer months, most of the Salt River channel area that can be viewed from Port Kenyon Road is viewed as dry agricultural fields. Riverside Ranch hosts a variety of views, ranging from open pasture views at the south end of the property to views over the Eel estuary from the north end of the property (see Figures 3.7-5 and 3.7-6).

Upslope Areas

Close-in views of upslope areas and tributary watersheds are afforded from a number of roadways. Francis Creek Road, which runs from the City of Ferndale up into the Wildcat Hills and the Francis Creek watershed allowing travelers to view the lower two miles of Francis Creek and a few private residences. Access ends at a private gate. Public access is not available into the upper watershed. The public can also view Francis Creek from streets in the City of Ferndale including Main Street down to Van Ness Boulevard (See Figure 3.7-3). Views are residential with a narrow band of riparian vegetation along armored creek banks. Williams Creek Road runs from Grizzly Bluff Road near Ferndale up into the Wildcat Hills and the Williams Creek watershed allowing travelers to view the lower two miles of Williams Creek and a few private residences. Access ends at a private gate. Public access is not available into the upper watershed. Oeshger Lane runs from Centerville Road up into the Wildcat Hills and provides access to the lower part of the Reas Creek watershed and a few private residences. Meridian Lane bisects Port Kenyon Road and parallels Reas Creek along its lower reaches. Views are of open pasturelands and highly disturbed banks and channels that have been repeatedly dredged (See Figure 3.7-4). Smith Creek is relatively isolated from road access. Travelers can view the mid-reaches of Smith Creek at a distance from either Centerville Road or Port Kenyon Road

Figure 3.7-1 Ferndale, Looking Northwest Towards Salt River with Eel River and Pacific Ocean in Background

Figure 3.7-2 Salt River Channel near Dillon Road Bridge

Figure 3.7-3 View of Willow-Dominated Salt River Channel Looking Upstream from Dillon Road Bridge

Figure 3.7-4 View of Reas Creek at Meridian Road near Confluence with the Salt River

Figure 3.7-5 View of Salt River Channel at Riverside Ranch

Figure 3.7-6 View of Riverside Ranch (pilings associated with historic shipping use of channel)

REGULATORY FRAMEWORK

The Humboldt County General Plan contains the following Goals and Policies related to scenic resources:

SCENIC HIGHWAYS

3540 Goals

1. *Establish a system of scenic routes that will increase the enjoyment of, and opportunities for, recreational and cultural pursuits and tourism in the County.*
2. *Conserve, enhance, and protect scenic resources observable from scenic routes.*
3. *Provide multiple recreational uses, trails, roadside rests, picnicking and observation points when appropriate on present or future publicly owned lands adjacent to scenic routes.*
4. *Recognize the dual scenic and economic value of lands planned or zoned for the growing and harvesting of timber and other agricultural products by maintaining continued resource harvesting and production along scenic routes.*

3541 Policies

The following policies serve as guidelines for the development of a scenic route system, and for the preparation of specific Scenic Route Plans.

1. *The Scenic Routes System shall be developed and implemented through the adoption of specific Scenic Route Plans. The impetus for preparing Scenic Routes Plans should come from the Board of Supervisors, landowners or interested citizens. Except for Scenic Route Plans initiated by the Board of Supervisors, a petition of support signed by 25% or more of the property owners within the proposed scenic route shall be required to undertake any Route Study.*
2. *The Scenic Route System shall be consistent with adopted County and City General Plans, and shall be coordinated with local, state and federal agencies.*
3. *When considering Scenic Routes where regulations may have to be applied to productive or potentially productive natural resources, primary consideration shall be given to sound resource harvesting and management.*
4. *In both urban and rural areas, uses normally permitted by the General Plan and by zoning shall be allowed in Scenic Routes, except that scenic resources within officially designated Scenic Routes may be preserved and enhanced by supplementing normal zoning regulations with special height, area and setback regulations; by providing architectural and site design review; by regulating billboards, signs not relevant to the main use of the property, obtrusive signs, and automobile wrecking yards and junkyards. Design and location of signs may be regulated to prevent proliferation of unsightly signs along roadsides.*
5. *Specific development controls for any proposed Scenic Route shall be identified and adopted in the specific Scenic Route Plan for such route. The nature and type of controls may vary from route to*

route, and specific controls adopted for any one route or route segment do not necessarily apply to other routes within the scenic route system.

6. *In regard to proposed development projects, the intent of the specific Scenic Route Plan shall be to render projects as aesthetically pleasing or as compatible with surroundings as possible, but not generally to determine whether or not the project itself should occur.*

The Eel River Area Plan of the Humboldt County Local Coastal Program contains the following goals and policies related to scenic resources:

3.42 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 landforms, 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.

30253. New development shall:

(5) Where appropriate, protect special communities and neighborhoods which, because of their unique characteristics, are popular visitor destination points for recreational uses.

3.42 E. Natural Features

Significant natural features within the Eel River Planning Area, and specific protection measures for retention of these resources are as follows:

Area	*Scenic Protection*
Eel River and associated riparian vegetation	*Eel River and riparian protection policies (Sec. 3.41F)*
Eel River delta bottomlands	*Designated Agriculture Exclusive which encourages continuation of current agricultural activities and prohibits conversion to non-resource dependent activities.*

3.7.2 IMPACTS AND MITIGATION

SIGNIFICANCE CRITERIA

While degrees of visual changes and exposure can be objectively described, evaluation of impacts involves a subjective element reflected in the viewer response. Criteria for determining significant impacts are based upon the CEQA Guidelines (Appendix G) and professional judgment of likely

viewer response. These guidelines state that the project would have a significant impact on visual quality if it would:

- Have a substantial adverse effect on a scenic vista
- Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway
- Substantially degrade the existing visual character or quality of the site and its surroundings, or
- Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area

Alternative 1 (Proposed Project): Modified Channel/Riverside Ranch Restoration/Upland Restoration

Impact 3.7.1.1: Short-term construction impacts on visual quality

The project would have short-term impacts to aesthetic and visual resources due to channel and wetland construction activities. Short-term impacts to the visual character of the site would result from the presence of heavy equipment, soil excavation/exposed soil, soil stockpiles, temporary roads for transporting construction material, removal of vegetation and potential damage to the existing vegetation. Sediment disposal on agricultural lands would temporarily change their visual character, but that change would be consistent with typical agricultural operation and therefore would not be significant. Sediment control work in the upper watersheds would be small scale, highly localized, and generally located along existing unpaved roads in forested areas. Therefore it would not result in significant construction-related visual impacts.

Impact 3.7.1.2: Long-term effects on scenic vistas and scenic resources

Salt River Channel

The project would involve excavating the Salt River channel for approximately seven miles in areas that are currently dominated by dense stands of willow and alder with some areas of open pasture. The visual character of the site would change from dense willow thicket and agricultural land to open water, tidal marsh, and wetlands with riparian shrubs and trees on the edges of the floodplain. The long-term conversion of the channel from flat grazing land with a narrow band of willows and alder on the old Salt River channel, to a more complex riverine ecosystem would be a significant change in appearance. Grasslands covering much of the site would be converted to open water, wetland and marsh with the lower portion of the Salt River (downstream of Dillon Road) populated with salt tolerant species.

Views of the Salt River project area from Highway 211 and Port Kenyon Road would be modified as a result of the channel/floodplain dredging along the existing Salt River channel for a width of from 100-200 feet. The existing channel as viewed from Highway 211 is a grassy swale. The view along Port Kenyon road is dominated by a dense thicket of willow and alder. Post-project, the open flat pasturelands would be bisected by open water, wetlands and revegetated floodplains that more

closely approximate historic conditions at the site. Long-term effects of any sediment disposal onto agricultural lands would be minimal, as those lands would retain their agricultural character and level topography.

The proposed Revegetation Plan (described in Chapter 2, Project Description) would reduce these visual impacts to a less than significant level.

Riverside Ranch Area

The visual character of the site would be altered by the removal of tidegates on Riverside Ranch in the lower portion of the Salt River project area, which would result in an open waterway to the Salt River. Construction of new levees around Riverside Ranch would change the visual character of the area surrounding this 444-acre ranch. The proposed Revegetation Plan (described in Chapter 2, Project Description) would reduce these visual impacts to a less than significant level.

If public access is permitted to some of the levees, they would afford views of the restored wetlands.

Upslope Areas

Sediment reduction actions in tributary watersheds would not change the visual character of those areas with the exception of minor revegetation and cattle exclusion fencing. Upslope activities will stabilize and restore the natural character to damaged and eroded sites.

Conclusions

In the long-term, project improvements would blend into the existing surrounding viewshed of open pasturelands, wetlands and forested areas. The project's proposed additional wetlands, levees, and channels would be consistent with surrounding natural resource and agricultural land, and would not impact the quality of character of the any Scenic Route views.

The proposed project's potential long-term benefits to the scenic vista include the creation of open water, marsh and wetland features that would support a diverse community of vegetation and associated wildlife habitat.

There are no scenic resources, such as trees, rock outcroppings, or historic buildings within a State scenic highway within the project area.

Impact Significance after Mitigation

Less than significant impact, no mitigation required.

Impact 3.7.1.3: Effect on light and glare

The project would not include any new lighting or reflective surfaces that would cause glare. Nighttime construction work would not occur. No lighted structures would be developed as part of any of the project components. The existing minimal light and glare from agricultural facilities on the Riverside Ranch site would remain unchanged. Therefore, the proposed project would have no impacts from light and glare.

Alternative 2: Modified Channel/Upland Restoration Only

Impact 3.7.2.1: Short-term construction impacts on visual quality

Impacts would be the same as Alternative 1 for the Salt River Channel area and the Uplands Areas. Sediment disposal areas would continue to be affected in the short-term, however, as with Alternative 1, this impact would be less than significant.

Impact 3.7.2.2: Long-term effects on scenic vistas and scenic resources

Impacts would the same as Alternative 1 for the channel areas, and there would be no changes to the visual quality of Riverside Ranch and associated views.

Impact 3.7.2.3: Effect on light and glare

As with Alternative 1, this alternative would have no impacts associated with light and glare.

Alternative 3: Riverside Ranch Restoration/Upland Restoration Only

Impact 3.7.3.1: Short-term construction impacts on visual quality

Impacts would be the same as Alternative 1 for the Riverside Ranch area and the Uplands Areas. There would be no impacts of the Salt River Channel vegetation removal or excavation, and no disposal of sediments on agricultural lands.

Impact 3.7.3.2: Long-term effects on scenic vistas and scenic resources

Impacts would the same as Alternative 1 except there would be no changes to the visual quality of most of the Salt River channel and associated views.

Impact 3.7.3.3: Effect on light and glare

As with Alternative 1, the project would have no impacts associated with light and glare

Alternative 4: No Project

Impact 3.7.4.1: Short-term construction impacts on visual quality

No construction impacts would occur because there would be no construction under this alternative.

Impact 3.7.4.2: Long-term effects on scenic vistas and scenic resources

No scenic vistas or resources would be affected in the long-term under this alternative.

Impact 3.7.4.3: Effect on light and glare

The existing minimal light and glare from agricultural facilities on the Riverside Ranch site would remain. No changes to light and glare would occur.

3.8 LAND USE

This section describes policies and regulations that set allowable uses including the Humboldt County General Plan, Eel River Area Plan, and California Coastal Act policy, and assesses impacts that would physically divide an established community; impacts due to conflicts with an applicable land use plan, policy or regulation of an agency with jurisdiction over the project; impacts due to compatibility with surrounding land uses; and impacts due to conflicts with any applicable conservation plan or natural community conservation plan.

3.8.1 AFFECTED ENVIRONMENT

EXISTING LAND USE

The project area includes the main stem of the Salt River, three Salt River tributaries in the Wildcat Hills above the town of Ferndale (Williams Creek, Francis Creek, and Reas Creek), and the approximately 400-acre Riverside Ranch, which is contiguous to the Salt River estuary.

The upland areas are primarily forested and agricultural, with a few scattered residences, except for a portion of Francis Creek that flows through Ferndale. The Riverside Ranch is primarily in agricultural use (seasonal livestock grazing), and includes a complex of ranch buildings. Land uses in the Salt River channel area are primarily agricultural, along with a few residences and the wastewater treatment plant of the City of Ferndale.

COASTAL ACT POLICY

The proposed project is within the California Coastal Act's Coastal Zone. Multiple Coastal Act policies governing land and marine resources apply to the proposed project. Coastal Act Sections applicable to land use include:

> *30001.5. The Legislature further finds and declares that the basic goals of the state for the coastal zone are to:*
>
> > *(a) Protect, maintain, and, where feasible, enhance and restore the overall quality of the coastal zone environment and its natural and artificial resources.*
> >
> > *(b) Assure orderly, balanced utilization and conservation of coastal zone resources taking into account the social and economic needs of the people of the state.*
> >
> > *(c) Maximize public access to and along the coast and maximize public recreational opportunities in the coastal zone consistent with sound resources conservation principles and constitutionally protected rights of private property owners.*
> >
> > *(d) Assure priority for coastal-dependent and coastal-related development over other development on the coast.*

(e) Encourage state and local initiatives and cooperation in preparing procedures to implement coordinated planning and development for mutually beneficial uses, including educational uses, in the coastal zone.

30233.

(a) The diking, filling, or dredging of open coastal waters, wetlands, estuaries, and lakes shall be permitted in accordance with other applicable provisions of this division, where there is no feasible less environmentally damaging alternative, and where feasible mitigation measures have been provided to minimize adverse environmental effects, and shall be limited to the following:

(1) New or expanded port, energy, and coastal-dependent industrial facilities, including commercial fishing facilities.

(2) Maintaining existing, or restoring previously dredged, depths in existing navigational channels, turning basins, vessel berthing and mooring areas, and boat launching ramps.

(3) In wetland areas only, entrance channels for new or expanded boating facilities; and in a degraded wetland, identified by the Department of Fish and Game pursuant to subdivision (b) of Section 30411, for boating facilities if, in conjunction with such boating facilities, a substantial portion of the degraded wetland is restored and maintained as a biologically productive wetland. The size of the wetland area used for boating facilities, including berthing space, turning basins, necessary navigation channels, and any necessary support service facilities shall not exceed 25 percent of the degraded wetland.

(4) In open coastal waters, other than wetlands, including streams, estuaries, and lakes, new or expanded boating facilities and the placement of structural pilings for public recreational piers that provide public access and recreational opportunities.

(5) Incidental public service purposes, including, but not limited to, burying cables and pipes or inspection of piers and maintenance of existing intake and outfall lines.

(6) Mineral extraction, including sand for restoring beaches, except in environmentally sensitive areas.

(7) Restoration purposes.

(8) Nature study, aquaculture, or similar resource-dependent activities.

(b) Dredging and spoils disposal shall be planned and carried out to avoid significant disruption to marine and wildlife habitats and water circulation. Dredge spoils suitable for beach replenishment should be transported for such purposes to appropriate beaches or into suitable longshore current systems.

(c) In addition to the other provisions of this section, diking, filling, or dredging in existing estuaries and wetlands shall maintain or enhance the functional capacity of the wetland or estuary. Any alteration of coastal wetlands identified by the Department of Fish and Game, including, but not limited to, the 19 coastal wetlands identified in its report entitled, "Acquisition Priorities for the Coastal Wetlands of California", shall be limited to very minor incidental public facilities, restorative measures, nature study, commercial fishing facilities in

Bodega Bay, and development in already developed parts of south San Diego Bay, if otherwise in accordance with this division. For the purposes of this section, "commercial fishing facilities in Bodega Bay" means that not less than 80 percent of all boating facilities proposed to be developed or improved, where such improvement would create additional berths in Bodega Bay shall be designed and used for commercial fishing activities.

(d) Erosion control and flood control facilities constructed on watercourses can impede the movement of sediment and nutrients, which would otherwise be carried by storm runoff into coastal waters. To facilitate the continued delivery of these sediments to the littoral zone, whenever feasible, the material removed from these facilities may be placed at appropriate points on the shoreline in accordance with other applicable provisions of this division, where feasible mitigation measures have been provided to minimize adverse environmental effects. Aspects that shall be considered before issuing a coastal development permit for such purposes are the method of placement, time of year of placement, and sensitivity of the placement area.

30241. The maximum amount of prime agricultural land shall be maintained in agricultural production to assure the protection of the area's agricultural economy and conflicts shall be minimized between agricultural and urban land uses through all of the following:

…

(c) By developing available lands not suitable for agriculture prior to the conversion of agricultural lands.

(d) By assuring that public service and facility expansions and non-agricultural development do not inhibit agricultural viability, either through increased assessment costs or degraded air and water quality.

Public Resource Code §30241 seeks to maintain the maximum amount of prime agricultural land to assure the protection of the area's agricultural economy and minimize conflicts between agricultural and urban land uses. (See Section 3.9, Agricultural Resources.) Public Resource Code §30230 seeks to maintain, enhance, and, where feasible, restore marine resources. The California Coastal Commission, which has permit jurisdiction over the project site, will have to balance these policies when considering the Coastal Development Permit for this project.

APPLICABLE LAND USE PLANS, ZONING, AND ORDINANCES

The 1983 Humboldt County General Plan designates the Salt River channel and Riverside Ranch portions of the project area as Agricultural Exclusive (AE). Land use designations in the upland portion of the project area are a combination of AE, Agriculture Grazing (AG), and Timber Production (T). Compatible uses in areas designated AE, AG, and T include natural resource uses such as watershed management, fish and wildlife habitat management, and recreation that does not significantly inhibit timber or agricultural production.

The Eel River Area Plan, which was adopted by the Humboldt County Board of Supervisors on March 9, 1982 and certified by the State Coastal Commission on April 8, 1982, is the Local Coastal Plan (LCP) applicable to the project site. The Eel River Area Plan contains policies related to

coastal land use, as required by the California Coastal Act of 1976. In addition, policies in the Humboldt County General Plan that are not related to coastal land use (and that are not superseded by the policies of the Eel River Area Plan) also apply to the project site. The 1983 County General Plan is currently being updated. An updated Housing Element was adopted by the Humboldt County Board of Supervisors on August 28, 2009, and revisions to the Housing Element were adopted on April 27, 2010. All other elements of the 1983 General Plan elements remain in force until a new County General Plan is adopted.

The land use designations of the project site in the Eel River Area Plan (the Local Coastal Plan (LCP) applicable to the project site) are the same as those of the Humboldt County General Plan.

The zoning of the Salt River channel and Riverside Ranch portions of the project area is Agricultural Exclusive, 60-Acre Minimum (AE-60) (see Figure 3.8-1). Conditionally permitted uses in the AE-60 zone include wetland restoration, fish and wildlife management, watershed management, and resource-related recreation. The zoning of the upland portion of the project area is a combination of AE-60, Timberland Production (TPZ), and Unclassified (U). Conditionally permitted uses in the TPZ zone include wetland restoration, fish and wildlife management, and watershed management.

The project would include rehabilitation of upper watershed areas. These fall within the County's Inland Zoning Regulations and may trigger compliance with the County's Streamside Management Area Ordinance (SMAO). Watershed rehabilitation work has been found to be exempt from the SMAO when covered by an environmental document and the work is done with all required permits from responsible and trustee agencies (e.g., U.S. Army Corps of Engineers and California Fish and Game Sec. 1600 Streambed Alteration Agreement) (Werner, 2007).

Humboldt County General Plan policies applicable to the proposed project include:

3330 WATER QUALITY

3360 GOAL

1. To maintain or enhance the quality of the County's water resources and the fish and wildlife habitat utilizing those resources.

3361 POLICIES

1. Ensure that land use decisions are consistent with the long term value of water resources in Humboldt County.

2. Regulate development that would pollute watershed areas.

8. Continue participation in all state, regional or local water resource planning efforts effecting surface run-off or groundwater supplies.

12. Support the development of fisheries enhancement projects on small Humboldt County streams.

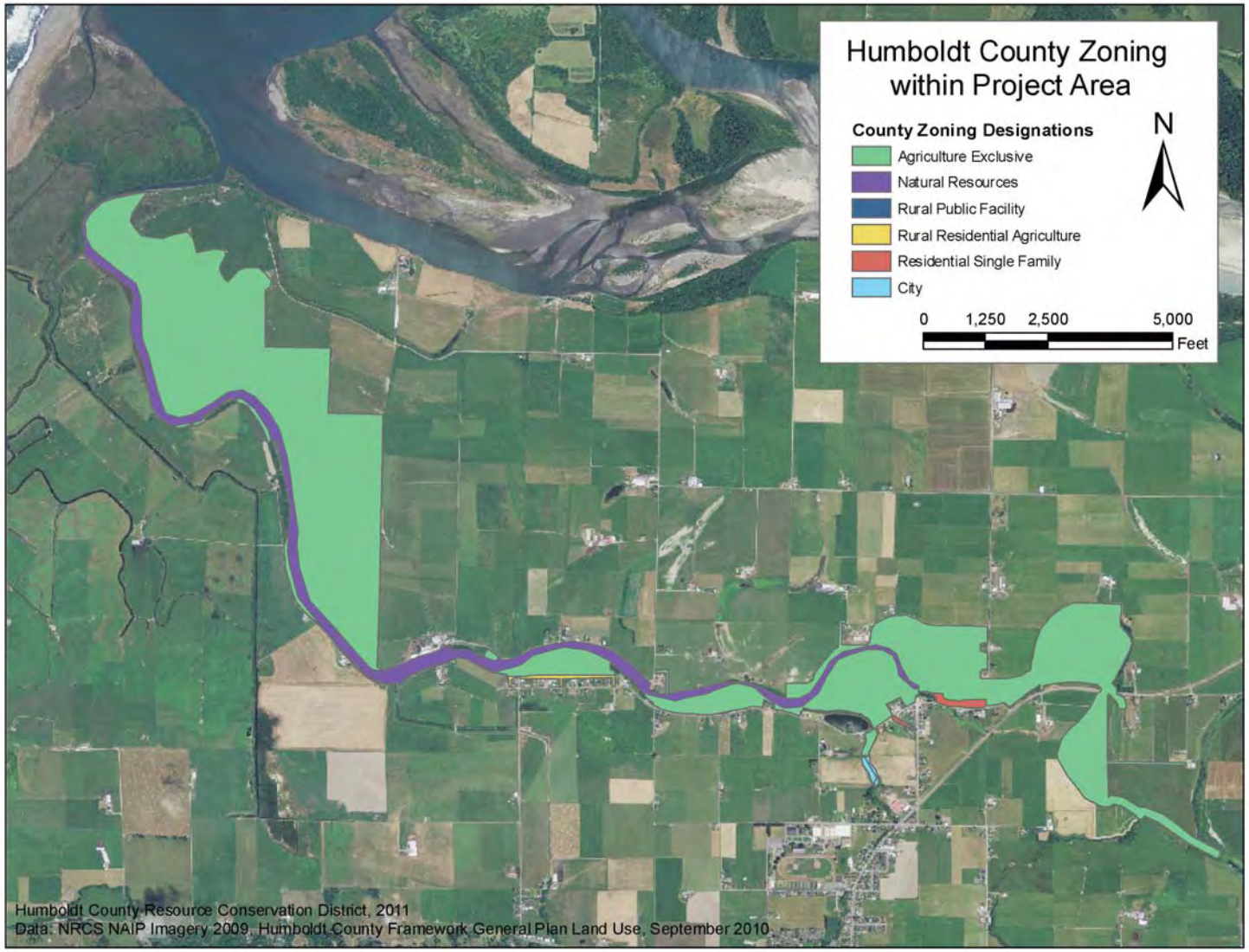


Figure 3.8-1

County Zoning Map

Source: Humboldt County RCD, 2011

3400 BIOLOGICAL RESOURCES

3430 GOAL

To maximize where feasible, the long-term public and economic benefits from the biological resources within the County by maintaining and restoring fish and wildlife habitats.

3431 POLICIES

1. Maintain values of significantly important habitat areas by assuring compatible adjacent land uses, where feasible.

2. Habitats for "critical species" shall be protected under provisions of NEPA and CEQA.

3. Development within stream channels shall be permitted when there is no less environmentally damaging feasible alternative, where the best feasible mitigation measures have been provided to minimize adverse environmental effects, and shall be limited to essential, nondisruptive projects as listed in Standard 6.

4. To protect sensitive fish and wildlife habitats and to minimize erosion, runoff and interference with surface water flows, the County shall maintain Streamside Management Areas (SMA), along its blue line streams as identified on the largest scale U.S.G.S. topographic maps most recently published, and any significant drainage courses identified through the CEQA process.

5. Development within the Streamside Management Areas shall be permitted where mitigation measures (Standard 8) have been provided to minimize any adverse environmental effects, and shall be limited to uses as described in Standard 7.

Project Review

6. The Biological Resource Maps shall be incorporated into the project review process in order to identify sensitive habitat concerns. These maps shall be kept up to date with the most recent information obtainable. Accommodation of new resource information on the Biological Resource Maps may require an amendment to the adopted General Plan.

7. The County should request the Department of Fish and Game, as well as other appropriate agencies and organizations to review plans for development within sensitive habitat areas or Streamside Management Areas. Recommended mitigation measures shall be considered prior to project approval.

3432 STANDARDS

Stream Channels

6. Development within stream channels is limited to the following projects.

A. Fishery, wildlife, and aquaculture enhancement and restoration projects.

B. Road crossings consistent with Standard 9 of this section.

C. Flood control and drainage channels, levees, dikes and floodgates.

D. Mineral extraction consistent with other County regulations.

E. Small scale hydroelectric power plants in compliance with applicable County regulations and those of other agencies.

F. Agricultural diversions and wells.

G. New fencing, so long as it would not impede the natural drainage or would not adversely effect the stream environment or wildlife.

H. Bank protection, provided it is the least environmentally damaging alternative.

I. Other essential projects, including municipal groundwater pumping stations, provided they are the least environmentally damaging alternative, or necessary for the protection of the public's health and safety.

Streamside Management Areas

7. Development within Streamside Management Areas shall be limited to the following uses:

A. Development permitted within stream channels.

B. Timber management and harvests not otherwise excluded by Applicability Section as well as noncommercial cutting of firewood and clearing for pasturage, provided:

1) Cottonwoods are retained.

2) Remaining willows and alders, as well as other unmerchantable hardwoods or shrubs should be protected from unreasonable damage.

C. Road and bridge replacement or construction, when it can be demonstrated that it would not degrade fish and wildlife resources or water quality, and that vegetative clearing is kept to a minimum.

D. Removal of vegetation for disease control or public safety purposes.

8. Mitigation measures for development within Streamside Management Areas shall, at a minimum, include:

A. Retaining snags unless felling is required by CAL-OSHA, or by California Department of Forestry forest and fire protection regulations, or for public health and safety reasons, approved by the appropriate County department. Felled snags shall be left on the ground if consistent with fire protection regulations as long as they have no economic value.

B. Retain live trees with visible evidence of use as nesting sites by hawks, owls, eagles, osprey, herons, or egrets.

C. Replanting of disturbed areas with riparian vegetation (including such species as alders, cottonwoods, willows, sitka spruce, etc.) shall not be required unless natural regeneration does not occur within two years of the completion of the development project.

D. Erosion control measures (Standard 9).

9. Erosion control measures for development within Streamside Management Areas shall include the following:

A. During construction, land clearing and vegetation removal will be minimized.

B. Construction sites will be planted with native or naturalized vegetation and mulched with natural or chemical stabilizers to aid in erosion control and insure revegetation.

C. Long slopes will be minimized to increase infiltration and reduce water velocities down cut slopes by such techniques as soil roughing, serrated cuts, selective grading, shaping, benching, and berm construction.

D. Concentrated runoff will be controlled by the construction and continued maintenance of culverts, conduits, nonerodible channels, diversion dikes, interceptor ditches, slope drains or appropriate mechanisms. Concentrated runoff will be carried to the nearest drainage course. Energy dissipaters may be installed to prevent erosion at the point of discharge where discharge is to natural ground or channels.

E. Runoff shall be controlled to prevent erosion by on-site or off- site methods. On-site methods include, but are not limited to, the use of infiltration basins, percolation pits, or trenches. On-site methods are not suitable where high groundwater or slope stability problems would inhibit or be aggravated by on-site retention or where retention will provide no benefits for groundwater recharge or erosion control. Off-site methods include detention or dispersal of runoff over non-erodible vegetated surfaces where it would not contribute to downstream erosion or flooding.

F. Disposal of silt, organic, and earthen material from sediment basins and excess material from construction will be disposed of out of the Streamside Management Area to comply with California Fish and Game and Regional Water Quality Control Board.

Winter operations (generally October 15 thru April 15) shall employ the following special considerations:

G. Slopes will be temporarily stabilized by stage seeding and/or planting of fast germinating seeds such as barley or rye grass; and mulched with protective coverings such as natural or chemical stabilizations.

H. Runoff from the site will be temporarily detained or filtered by berms, vegetated filter strips, and/or catch basins to prevent the escape of sediment from the site. Drainage controls are to be maintained as long as necessary to prevent erosion throughout construction.

3510 HISTORICAL AND ARCHAEOLOGICAL RESOURCES

3530 GOAL

To provide for the protection and enhancement of cultural resources for the historic, scientific, educational, and social contributions they render to the present generation and to generations that follow.

3531 POLICIES

1. Cultural resources (including but not limited to archaeological, paleontological and architectural sites, grave sites and cemeteries) shall be identified where feasible, assessed as to significance, and if found to be significant, protected from loss or destruction.

2. Concerned citizens, historical organizations and applicable agencies shall be consulted during project review for the identification and protection of cultural resources.

3. Projects located in areas found to have cultural resources shall be conditioned and designed to avoid loss or degradation of these resources.

4. Expert opinions and field reconnaissance at the applicant's expense may be required during environmental assessment to determine the presence, extent, and condition of cultural resources and the likely impact upon such resources.

5. Archaeological and paleontological resources shall not be knowingly destroyed or lost through a discretionary action unless:

A. The site or resource has been found to be of insignificant value by relevant experts and representatives of the cultural resources community, or;

B. There is an overriding public benefit from the project, and compensating mitigation to offset the loss is made part of the project.

6. Mitigation measures shall be required where new development would adversely impact archaeological or paleontological resources.

Eel River Area Plan policies applicable to the proposed project include:

3.34 AGRICULTURE

30241. The maximum amount of prime agricultural land shall be maintained in agricultural production to assure the protection of the areas' agricultural economy and conflicts shall be minimized between agricultural and urban land uses through all of the following:

(a) By establishing stable boundaries separating urban and rural areas, including, where necessary, clearly defined buffer areas to minimize conflicts between agricultural and urban land uses.

(b) By limiting conversions of agricultural lands around the periphery of urban areas to the lands where the viability of existing agricultural use is already severely limited by conflicts with urban uses and where the conversion of the lands would complete a logical and viable neighborhood and contribute to the establishment of a stable limit to urban development.

(c) By developing available lands not suited for agriculture prior to the conversion of agricultural lands.

(d) By assuring that public service and facility expansions and nonagricultural development do not impair agricultural viability, either through increased assessment costs or degraded air and water quality.

(e) By assuring that all divisions of prime agricultural lands, except those conversions approved pursuant to subdivision (b) of this section, and all development adjacent to prime agricultural lands shall not diminish the productivity of such prime agricultural lands.

30242. All other lands suitable for agricultural use shall not be converted to nonagricultural uses unless (1) continued or renewed agricultural use is not feasible, or (2) such conversion would preserve prime agricultural land or concentrate development consistent with Section 30250. Any such permitted conversion shall be compatible with continued agricultural use on surrounding lands.

A. IDENTIFICATION OF AGRICULTURAL LANDS - PRIME/NON PRIME

1. Lands outside Urban Limit Lines that are prime agricultural lands based on the adopted definition of prime lands of the State of California shall be planned for continued agricultural use, and no division or development of such lands shall be approved which would lower the economic viability of continued agricultural operations on them.

2. Lands outside Urban Limit Lines that are not prime agricultural land, but are in agricultural use, have present or future potential for significant agricultural production, and/or are contiguous or intermixed smaller parcels on which non-compatible uses could jeopardize the agricultural use of adjacent agricultural lands shall be planned or continued agriculture.

3. Non-prime agricultural land may be converted to other types of land use only when the long-term economic infeasibility of continued agricultural operation is shown to exist; and no division of or development of such lands shall be permitted which would lower the viability of continued agricultural operations on adjacent agricultural lands.

3.34 B. COMPATIBLE USES

1. The zoning of all agricultural lands shall not permit any use that would impair the economic viability of agricultural operations on such lands; and a conditional use permit shall be required of any proposed use not directly a part of agricultural production of food or fiber on the parcel; except that on parcels of 60 acres or larger, a second house for parents or children of the owner-operator shall be considered a direct part of agricultural production.

Other uses considered compatible with agricultural operations include:

a. Management for watershed

b. Management for fish and wildlife habitat

c. Recreational uses not requiring non-agricultural development under the control of the owner.

d. The erection, construction, alteration, or maintenance of gas, electric, water or communications transmission facilities. (Radio or television transmitting antennae shall require a conditional use permit; but such a development shall not in concept be considered incompatible with agricultural use per se.)

e. Farm labor housing and temporary labor camps of less than one year duration shall require a conditional use permit.

2. Where land zoned for agricultural use is adjacent to land in residential use, the establishment of hog production involving more than three adult animals (over 6 months old) shall require a conditional use permit.

3. No greenhouse shall be approved for use on prime agricultural land, where the greenhouse has a slab foundation that would cover the underlying soil.

3.34 D. GRAZING LANDS - CENTERVILLE BEACH TO GUTHRIE CREEK

1. Non-prime grazing lands located between Centerville Beach and Guthrie Creek, within the Eel River Planning Area, shall be designated for agricultural use to insure the continuation of large acreage grazing operations. Division of these lands may be permitted into parcels of less than 600 acres only when consistent with this plan's agriculture policies and other policies of Chapter 3 and when approved pursuant to rezoning and parcel map procedures provided:

a. The total number of building sites shall not exceed a density of 1 unit for each 160 acres of the original parcel.

b. New lots or parcels shall be no less than 1 acre and no larger than 5 acres, and shall be clustered adjacent to existing developed areas of the ranch or on portions of the site least suited for agricultural use and with least adverse effects on coastal resources, consistent with the policies of this plan.

c. The surplus land area resulting from the division shall be committed to agricultural use through two or more of the following devices:

(1) Execution of an agricultural preserve contract with the County.

(2) Acknowledgment either on the parcel map or in a covenant within the chain of title that the new parcel is of a size considered a viable or economic agricultural unit, its creation was approved for a specific agricultural purpose, and no further division or other conversion from agricultural use will be allowed in the future even if agricultural use of such separate parcel does not provide adequate economic return.

(3) Conveyance of an open space easement to the County of Humboldt or other public entity or private non-profit corporation having as its chief goal the preservation of agricultural or open space lands.

(4) Conveyance of development rights.

d. Rezonings conforming to this section of the land use plan shall be reviewed and considered as minor amendments to the certified local coastal program.

3.35 TIMBERLANDS

B. COMPATIBLE USES

1. No use shall be permitted for Coastal Commercial Timberlands that detracts from or inhibits the growing and harvesting of timber; and compatible uses other than the direct growing and harvesting of timber shall be restricted to:

a. Management for watershed.

b. Management for fish and wildlife habitat.

c. Any use integrally related to the growing, harvesting and processing of forest products, including but not limited to roads, log landings and log storage areas, portable chippers and portable sawmills.

d. The erection, construction, alteration or maintenance of gas, electric, water, or communication transmission facilities.

e. Grazing and other agricultural uses.

f. No more than two single-family dwelling units and normal accessory uses and structure for owner and caretaker. The second dwelling unit shall require a use permit and shall be conditioned so as to not constitute a subdivision of the parcel. Minor conversion of timberland for residential use is limited to an area of 5% of the total parcel, to a maximum area of two acres for a homesite and appurtenant uses. The total area need not be a contiguous unit.

g. Temporary labor camps of less than one-year duration, accessory to timber harvesting or processing operations.

h. Recreational uses of the land by the public, with or without charge, for any of the following: walking, hiking, equestrian, picnicking, boating, fishing, hunting, and skiing.

i. Reforestation activities including site preparation under the authority of the California Department of Forestry and Fire Protection1 (CDF) and other State Agencies having regulatory jurisdiction.

3.40 RESOURCE PROTECTION POLICIES AND STANDARDS

The policies and standards contained in this chapter, apply, where relevant, to all development within the County coastal areas unless specifically stated otherwise. The

contents of this chapter are supplementary in nature to the policies and standards contained in Section 3.20 and 3.30, and are designed to protect natural and cultural resources and to assure public safety. As in the previous two chapters, inset headings under each section are from Chapter 3 of the California Coastal Act and are also enacted as County policy.

3.41 ENVIRONMENTALLY SENSITIVE HABITATS

30240.(a) Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on such resources shall be allowed within such areas.

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.

A. IDENTIFICATION OF ENVIRONMENTALLY SENSITIVE HABITATS

1. Environmentally sensitive habitats within the Eel River Planning Area include:

a. Rivers, creeks, and associated riparian habitats;

b. Estuaries, sloughs, and wetlands;

c. Rookeries for herons and egrets;

d. Harbor seal pupping areas;

e. Critical habitats for rare or endangered species listed on State or Federal lists.

2. Proposed development occurring within areas containing these sensitive habitats shall be subject to conditions and requirements of this chapter. Should an area proposed for development appear, upon examination of the maps to be within or contain the indicated habitat, but upon field inspection is found not to contain the indicated habitat, then the development is exempt from requirements of this section. As an interim measure for habitat areas not currently identified on the maps, information obtained during the CEQA review process will be used by the County in reviewing applications for coastal development permits. The review of these habitat areas and the identification of appropriate land uses and/or mitigation measures shall be in cooperation with the Department of Fish and Game. The County shall review requests to amend the Environmentally Sensitive Habitat maps in terms of the entire plan proposal and supporting policies. Accommodation of new resource information on the maps may also require amendments to the certified land use plan and zoning.

3.41 B. WETLANDS IDENTIFICATION AND DEVELOPMENT POLICIES

30233.(a) The diking, filling, or dredging of open coastal waters, wetlands, estuaries, and lakes shall be permitted in accordance with other applicable provisions of this division, where there is no feasible less environmentally damaging alternative, and where feasible mitigation measures have been provided to minimize adverse environmental effects, and shall be limited to the following:

(1) New or expanded port, energy, and coastal-dependent industrial facilities, including commercial fishing facilities.

(2) Maintaining existing, or restoring previously dredged, depths in existing navigational channels, turning basins, vessel berthing and mooring areas, and boat launching ramps.

(3) In wetland areas only, entrance channels for new or expanded boating facilities; and in a degraded wetland, identified by the Department of Fish and Game pursuant to subdivision (b) of Section 30411, for boating facilities if, in conjunction with such boating facilities, a substantial portion of the degraded wetland is restored and maintained as a biologically productive wetland; provided, however, that in no event shall the size of the wetland area used for such boating facility, including berthing space, turning basins, necessary navigation channels, and any necessary support service facilities, be greater than 25 percent of the total wetland area to be restored.

(4) In open coastal waters, other than wetlands, including streams, estuaries, and lakes, new or expanded boating facilities.

(5) Incidental public service purposes, including, but not limited to, burying cables and pipes or inspection of piers and maintenance of existing intake outfall lines.

(6) Mineral extraction, including sand for restoring beaches, except in environmentally sensitive areas.

(7) Restoration purposes.

(8) Nature study, aquaculture, or similar resource-dependent activities.

30607.1 Where any dike and fill development is permitted in wetlands in conformity with this division, mitigation measures shall include, at a minimum, either acquisition of equivalent areas of equal or greater biological productivity or opening up equivalent areas to tidal action; provided, however, that if no appropriate restoration site is available, an in-lieu fee sufficient to provide an area of equivalent productive value or surface areas shall be dedicated to an appropriate public agency, or such replacement site shall be purchased before the dike or fill development may proceed. Such mitigation measures shall not be required for temporary or short-term fill or diking; provided that a bond or other evidence of financial responsibility is provided to assure that restoration will be accomplished in the shortest feasible time.

1. Wetlands shall be identified according to the Coastal Act's definition of wetlands (See Chapter 6: Definitions; also see Chapter 6 for the definition of "boundary of a wetland.")

2. Estuarine areas, salt marshes and mudflats, and freshwater marshes and swamps are designated Natural Resources. New development in Natural Resource areas shall be limited to:

a. Fish and wildlife management.

b. Nature study

c. Wetland restoration

d. Hunting and fishing, including development of duck blinds and similar minor facilities.

e. In estuaries, maintenance and improvement of boating facilities consistent with Section 4.71 or minor alterations to existing facilities.

f. On private lands, removal of trees for firewood, disease control, and public safety purposes, provided that the removal is consistent with the forest practices rules for stream protection zones in Coastal Commission special treatment areas. Snags shall be retained unless felling is required by CAL-OSHA regulations and live trees with visible evidence of current use as nesting sites by hawks, owls, eagles, osprey, or egrets shall be retained. Heavy equipment shall be excluded from the natural resource area.

g. Incidental public service purposes.

h. Aquaculture.

3.41G. OTHER COASTAL STREAMS

30236. Channelizations, dams, or other substantial alterations of rivers and streams shall incorporate the best mitigation measures feasible, and be limited to (1) necessary water supply projects, (2) flood control projects where no other method for protecting existing structures in the flood plain is feasible and where such protection is necessary for public safety or to protect existing development, or (3) developments where the primary function is the improvement of fish and wildlife habitat.

1. Timber management and timber harvesting activities regulated by the California Department of Forestry and the Board of Forestry, and forest improvement activities under jurisdiction of the Department of Forestry shall be exempt from requirements of this section (3.41G).

2. Within the Eel River Planning Area the following coastal streams (as mapped on USGS 7.5' Quads) have been identified:

Centerville Slough	Barber Creek
Cutoff Slough	Coffee Creek
Hawk Slough	Perry Creek
Hogpen Slough	Reas Creek
Morgan Slough	Russ Creek
Quill Slough	Williams Creek
Seven Mile Slough	Unnamed stream north of Loleta
Smith Slough	Intermittent streams on Table Bluff

Salt River

3.41 G. 3. New development within stream channels shall be permitted when there is no less environmentally damaging feasible alternative, where the best feasible mitigation measures have been provided to minimize adverse environmental effects, and shall be limited to:

a. Wetlands, fishery, and wildlife enhancement and restoration projects.

b. Road crossings, consistent with the provisions of Section 3.41G6e.

c. Maintenance dredging for flood control and drainage purposes consistent with the Transitional Agricultural Lands Policies and within areas planned for agriculture.

d. Maintenance of levees, roads, fences, dikes, drainage channels, flood gates and tide-gates including replacement.

e. Development consistent with 3.41G 6, below.

f. New fences, so long as it would not impede the natural drainage or would adversely affect the stream environment or wildlife. (Typically, 2-3 strands of barbed wire with fence posts set outside of the stream channel would be consistent with this policy.)

4. The riparian corridor along the Salt River shall be limited to the bankfull channel.

5. Riparian corridors on all other perennial and intermittent streams shall be, at a minimum, the larger of the following:

a. 100 feet, measured as the horizontal distance from the stream transition line on both sides.

b. 50 feet plus four times the average percent of slope, measured as a slope distance from the stream transition line on both sides of intermittent and perennial streams.

c. Where necessary, the width of riparian corridors shall be expanded to include significant areas of riparian vegetation adjacent to the corridor, slides, and areas with visible evidence of slope instability, not to exceed 200 feet measured as a horizontal distance.

The width of the riparian corridor may be reduced where such a reduction would not result in the removal of woody vegetation, and the County determines, based on specific factual findings, that a reduction of the corridor will not result in a significant adverse impact to the habitat. New structures, including houses, barns, sheds, etc., shall be placed a minimum of 50 feet from the stream transition line.

6. New development within the riparian corridors shall be permitted when there is no less environmentally damaging feasible alternative, where the best mitigation measures feasible have been provided to minimize adverse environmental effects, and shall be limited to the following uses:

a. Timber management activities, provided:

(1) In precommercial thinning and release activities that at least 50 percent of the treecrown canopy and 50 percent of other vegetation present before management operations shall be left standing. If either the County or the landowner requests, they may agree, after an on the ground inspection, to increase these percentages to protect special habitat values.

(2) Follow-up treatments or other timber management activities which affect the tree canopy shall be permitted only when the canopy has been sufficiently re- established to prevent substantial adverse effects on soil erosion, wildlife, aquatic life, or the beneficial uses of water, these activities shall maintain a tree canopy similar to that which existed upon the completion of the initial thinning or release.

(3) In all timber management activities, including precommercial thinning, release activities, and site preparation, that heavy equipment shall be excluded from any area within 50 feet, measured as a slope distance, from the stream transition line and shall not be permitted in other portions of the riparian corridor except where explained and justified as the least environmentally damaging feasible alternative.

(4) All activities shall be consistent with timber harvest rules of the Board of Forestry applicable to the protection of aquatic life and water quality.

b. Timber harvests smaller than three acres of merchantable timber 18 inches DBH or greater provided that timber harvest practices shall be consistent with those permitted under the forest practices rules for stream protection zones in Coastal Commission special treatment areas. Unmerchantable hardwoods or shrubs shall be protected from unreasonable damage.

c. Maintenance and replacement of flood control and drainage channels, fences, levees, dikes, flood gate, and tide-gates.

d. Wells in rural areas.

e. Road and bridge replacement or construction, provided that the length of the road within the riparian corridor shall be minimized where feasible, by rights of way which cross streams at right angles and do not parallel streams within the riparian corridor.

f. Removal of trees for disease control or public safety purposes.

g. Removal of firewood for personal use on property consistent with the applicable forest practice rules for stream protection zones in Coastal Commission special treatment areas.

3.41 G. 7. Mitigation measures for development with riparian corridors shall, at a minimum, include retaining snags within the riparian corridor unless felling is required by CALOSHA or permitted by California Department of Forestry forest and fire protection regulations, and retaining live trees with visible evidence of current use as nesting sites by hawks, owls, eagles, osprey, herons, or egrets. Replanting of disturbed areas with riparian vegetation (including

such species as alders, cottonwoods, willows, Sitka spruce, etc.) has not been required unless natural regeneration does not occur within two years of completion of the development project.

8. The County shall request the Department of Fish and Game to review plans for development within riparian corridors, the Department may recommend measures to mitigate disruptions to habitats.

9. Natural drainage courses, including ephemeral streams, shall be retained and protected from development, which would impede the natural drainage pattern or have a significant adverse affect on water quality or wildlife habitat. Stormwater outfalls, culverts, gutters, and the like, shall be dissipated, and, where feasible, screened. Natural vegetation within and immediately adjacent to the bankfull channel shall be maintained except for removal consistent with the provisions of this section.

3.42 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 landforms, 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.

30253. New development shall:

(5) Where appropriate, protect special communities and neighborhoods, which, because of their unique characteristics, are popular visitor destination points for recreational uses.

3.42 C. PROTECTION OF HISTORICAL BUILDINGS

1. Historic buildings shall be considered a scenic and visual resource of public importance.

2. Historic buildings shall be defined as those sites on County, State or Federal Historic Registers.

3. The restoration and preservation of historic buildings shall be encouraged consistent with the other requirements of this Plan.

3.52 ACCESSWAY IMPROVEMENTS AND FUNDING

A. Public agencies or other entities having or accepting responsibility for accessways shall provide support facilities compatible with the character of the land and adequate for the number of people using them prior to opening the access to public use.

1. Minimal improvements should be scheduled for unimproved access points in character with the rural nature of the communities they serve, and accessways

accepted by the responsible entity or agency should include but shall not be limited to, the following as they are found consistent with the identified uses, modes of access and limitations as identified in the Access Inventory.

a. parking

b. roads

c. trails, stairs and ramps

d. sanitary facilities (including trash collection)

e. facilities for the handicapped

f. fencing and barriers to inappropriate uses

g. signing of access points, trails and hazard areas

h. maintenance and operation of the accessway and support facilities

2. In reviewing improvements to accessways, the approving authority shall consider:

a. The common use(s) of the shoreline;

b. The proposed mode of access (pedestrian, equestrian, or vehicular) and adverse impacts on adjacent owners' use of their property, and the size of the development;

c. The likelihood of trespass and vandalism on adjacent private property;

d. The need to provide for public health and safety, including the need for:

(1) parking

(2) road capacity and traffic patterns

(3) conflicts in uses (i.e. pedestrian, equestrian, vehicular)

(4) use by the handicapped

(5) capacity of sanitary facilities, including trash disposal

(6) topography of trail

(7) beach hazards (tides, currents, undertows)

e. Conflicts with agriculture including:

(1) vandalism

(2) theft of livestock, agricultural supplies and tools

(3) damage to crops and livestock

(4) trespass on areas not part of accessway

(5) damage to fencing and gates

(6) dogs killing, maiming or harassing livestock

(7) litter

(8) interference with agricultural operations (by access corridor)

Improvement of accessways shall be permitted where the level of development is adequate to support common uses of the shoreline and the mode(s) of access proposed in the Plan, and where the improvements are sited and designed to prevent significant hazards to public health and safety or to agriculture and minimize the likelihood of trespass and vandalism on adjacent private property.

3. When the approving authority finds adverse impacts associated with improving access in conjunction with the criteria within this section appropriate mitigation measures must be provided.

4. Signs at access points are to be supplemented by an atlas of County coastal access points for use by both residents and visitors.

5. Funding for acquisition, improvement, maintenance and operations and coverage for associated liability on new accessways required as part of the Coastal Plan mandated by the State shall be from resources other than Humboldt County.

3.8.2 IMPACTS AND MITIGATION

SIGNIFICANCE CRITERIA

Based on the CEQA Guidelines (Appendix G), a proposed project's land use impact is considered significant if it would:

- Physically divide an established community;
- Conflict with an applicable land use plan, policy, or regulation of an agency with jurisdiction over the project including, but not limited to local coastal program, zoning ordinances;
- Conflict or not be compatible with surrounding land uses;
- Conflict with any applicable conservation plan or natural community conservation plan; or
- Result in a substantial alteration of the present or planned use of an area.

Alternative 1 (Proposed Project): Modified Channel/Riverside Ranch Restoration/ Upland Restoration

Impact 3.8.1-1: Impacts that would physically divide an established community

The project's channel, habitat restoration, and wetlands restoration, do not include design features that would divide the existing established community, and would not result in significant impacts.

Impact Significance

No impact.

Impact 3.8.1-2: Conflicts with an applicable land use plan, policy, or regulation of an agency with jurisdiction over the project

The proposed project would convert ~~359~~ 271 acres of agricultural land on Riverside Ranch and 52 acres of agricultural land in the channel footprint to non-agricultural uses (marsh, wetlands, and berms), which may conflict with policies of the Eel River Area Plan and the 1983 Humboldt County General Plan stipulating preservation of agricultural land, and is considered a potentially adverse impact.

However, the project would result in a net increase in agricultural productivity for agricultural lands in the project vicinity by improving drainage. For this reason, the project would not be inconsistent with policies relating to agricultural land preservation. The~~se~~ impacts of the project on agricultural productivity are addressed in more detail in Section 3.9 – Agricultural Resources~~, of this Chapter~~.

The proposed project would be consistent with the other applicable goals and policies of the Eel River Area Plan and the 1983 Humboldt County General Plan identified in Applicable Land Use Plans, Zoning, and Ordinances, above.

The 1983 Humboldt County General Plan designates the project area a combination of Agricultural Exclusive (AE), Agriculture Grazing (AG), and Timber Production (T). The zoning of the Salt River channel and Riverside Ranch portions of the project area is Agricultural Exclusive, 60-Acre Minimum (AE-60), and the zoning of the upland portion of the project area is a combination of AE-60, Timberland Production (TPZ), and Unclassified (U). Conditionally permitted uses in the AE-60 zone include wetland restoration, fish and wildlife management, watershed management, and resource-related recreation, and conditionally permitted uses in the TPZ zone include wetland restoration, fish and wildlife management, and watershed management. Thus, the proposed project would be consistent with the applicable land use designations and zoning for the site. The project would require a Conditional Use Permit (CUP) from Humboldt County.

Because the project is within the Coastal Zone of the County, it would require a Coastal Development Permit (CDP) from both Humboldt County and the California Coastal Commission. It also would require a County grading permit.

All agency consultations, technical assistance, and permits would be completed prior to project implementation. In addition the project is consistent with the natural resource protection requirements of the California Coastal Act and has been designed to mitigate any potential impacts related to land use.

In conclusion, the project would result in no impacts from conflicts with an applicable land use plan, policy, or regulation of an agency with jurisdiction over the project.

Impact Significance

No impact.

Impact 3.8.1-3: Compatibility with surrounding land uses

Adjacent land uses consist primarily of agricultural and forestry uses, along with scattered residences and the wastewater treatment plant of the City of Ferndale. All of these land uses would be

compatible with the proposed project. In addition, the project would help reduce flooding impacts by improving drainage in the Salt River basin, which will enhance compatibility with surrounding land uses.

Agricultural parcels adjacent to Riverside Ranch would be separated from the project site by construction of levees. Portions of Riverside Ranch would continue to be used for agricultural purposes as well as tidal restoration. Therefore the project would have a *less than significant* impact on land use compatibility with surrounding uses.

Impact Significance

Less than significant impact, no mitigation required.

Impact 3.8.1-4: Conflicts with applicable conservation plan or natural community conservation plan

The project site is not included in any Habitat Conservation Plan or Natural Resource Conservation Plan, and the project would result in no impacts due to conflicts with any applicable conservation plan or natural community conservation plan.

Impact Significance

No impact.

Impact 3.8.1-5: Substantial alteration of the present or planned use of an area

The Salt River channel and upland portions of the project would not substantially alter present or planned uses of the area. The project would allow continued use of dairy farms adjacent to the Salt River with reduced agricultural use on Riverside Ranch. Although the project would reduce agricultural use on Riverside Ranch this would be offset by drainage improvements that would result in increased use and productivity of agricultural lands along the Salt River (as described in detail in Section 3.9). In any case, these changes would not constitute a substantial alteration of present or planned uses of the area.

The proposed project would be consistent with the applicable land use designations and zoning for the site. For these reasons, implementation of the proposed project would result in a *less than significant* impact.

Impact Significance

Less than significant impact, no mitigation required.

Alternative 2: Modified Channel/Upland Restoration Only

Impact 3.8.2-1: Impacts that would physically divide an established community

As with Alternative 1, this alternative does not include design features that would divide the existing established community.

Impact 3.8.2-2: Conflicts with an applicable land use plan, policy, or regulation of an agency with jurisdiction over the project

Unlike Alternative 1, this option would not convert any agricultural land on Riverside Ranch to non-agricultural uses (marsh and wetlands), and therefore would have no impact on the agricultural land on Riverside Ranch or policies stipulating preservation of agricultural land. As with Alternative 1, this alternative would increase productivity on existing agricultural lands along the Salt River by improving drainage. All agency consultations, technical assistance, and permits would be completed prior to project implementation. In addition, this alternative is consistent with the land use designations and zoning for the site, and with the natural resource protection requirements of the California Coastal Act and has been designed to mitigate any potential impacts related to land use. This alternative would result in no impacts from conflicts with an applicable land use plan, policy, or regulation of an agency with jurisdiction over the project.

Impact 3.8.2-3: Compatibility with surrounding land uses

Like Alternative 1, this alternative is compatible with surrounding uses because it would help reduce flooding impacts by improving drainage in the Salt River basin. In addition, adjacent agricultural, forestry, residential, and wastewater treatment land uses would be compatible with this alternative. Agricultural parcels adjacent to Riverside Ranch would not be affected because Riverside Ranch would not be affected by this alternative. This alternative would have a *less than significant* impact on land use compatibility with surrounding uses.

Impact 3.8.2-4: Conflicts with applicable conservation plan or natural community conservation plan

The site of this alternative is not included in any Habitat Conservation Plan or Natural Resource Conservation Plan. Like Alternative 1, this alternative would result in no impacts due to conflicts with any applicable conservation plan or natural community conservation plan, and no mitigation is required.

Impact 3.8.2-5: Substantial alteration of the present or planned use of an area

The Salt River channel and upland portions of this alternative would not substantially alter present or planned uses of the area. This alternative would allow continued use of dairy farms adjacent to the Salt River, with no effect on agricultural use on Riverside Ranch. Under this alternative, drainage improvements would result in increased use and productivity of agricultural lands along the Salt River. This alternative would be consistent with the applicable land use designations and zoning for the site. For these reasons, implementation of this alternative would result in a *less than significant* impact. No mitigation is required.

Alternative 3: Riverside Ranch Restoration/Upland Restoration Only

Impact 3.8.3-1: Impacts that would physically divide an established community

Like Alternative 1, this alternative does not include design features that would divide the existing established community, and would not result in significant impacts

Impact 3.8.3-2: Conflicts with an applicable land use plan, policy, or regulation of an agency with jurisdiction over the project

Unlike Alternative 1, this alternative would not increase productivity on existing agricultural lands along the Salt River by improving drainage. ~~As with Alternative 1, this alternative would~~ Conver~~t~~sion of agricultural land on Riverside Ranch to non-agricultural uses (marsh and wetlands)~~,~~ ~~which~~ is considered a potentially adverse impact. ~~However,~~ Although the proposed habitat restoration is considered an allowable use of agricultural land, there would be a loss of agricultural land that would conflict with policies stipulating preservation of agricultural land. With implementation of Mitigation Measure 3.9.3-1, impacts from conversion of agricultural land would be reduced to a less-than-significant level. ~~and t~~Therefore, this alternative does not conflict with land use policy in the Eel River Area Plan and Humboldt County General Plan, including policies regarding preservation of agricultural land. ~~These i~~Impacts on agricultural land are addressed in more detail in Section 3.9 – Agricultural Resources~~, of this Chapter~~. All agency consultations, technical assistance, and permits would be completed prior to project implementation. In addition this alternative is consistent with the land use designations and zoning for the site, and with the natural resource protection requirements of the California Coastal Act and has been designed to mitigate any potential impacts related to land use. In conclusion, this alternative would result in no impacts from conflicts with an applicable land use plan, policy, or regulation of an agency with jurisdiction over the project.

Impact 3.8.3-3: Compatibility with surrounding land uses

Adjacent agricultural, forestry, and residential land uses would be compatible with this alternative. Agricultural parcels adjacent to Riverside Ranch would be separated from the project site by construction of levees. Portions of Riverside Ranch would continue to be used for agricultural purposes as well as tidal restoration. This alternative would have a *less than significant* impact on land use compatibility with surrounding uses.

Impact 3.8.3-4: Conflicts with any applicable conservation plan or natural community conservation plan

The site of this alternative is not included in any Habitat Conservation Plan or Natural Resource Conservation Plan. As with Alternative 1, this alternative would result in no impacts due to conflicts with any applicable conservation plan or natural community conservation plan.

Impact 3.8.3-5: Substantial alteration of the present or planned use of an area

This alternative would be consistent with the applicable land use designations and zoning for the site, and this alternative's proposed habitat restoration is considered an allowable use of agricultural land and therefore does not conflict with land use policy. The upland portions of this alternative would not substantially alter present or planned uses of the area. This alternative would allow continued use of dairy farms adjacent to the Salt River, with no effect on agricultural use on Riverside Ranch. This alternative would have a greater impact on agricultural uses than Alternative 1. It would reduce agricultural use on Riverside Ranch but, unlike Alternative 1, would not offset this reduction with drainage improvements that would result in increased use and productivity of agricultural lands upstream of Reas Creek along the Salt River. Although the impact of this alternative would be greater than that of Alternative 1, these changes would not constitute a substantial alteration of present or planned uses of the area.

Implementation of this alternative would result in a *less than significant* impact to land use.

Alternative 4: No Project

Impact 3.8.4-1: Impacts that would physically divide an established community

There would be no impacts on established communities under this alternative.

Impact 3.8.4-2: Conflicts with an applicable land use plan, policy, or regulation of an agency with jurisdiction over the project

There would be no construction or new facilities, and no associated impacts, under this alternative.

Impact 3.8.4-3: Compatibility with surrounding land uses

There would be no construction or new facilities, and no incompatibilities with surrounding land uses, under this alternative.

Impact 3.8.4-4: Conflicts with applicable conservation plan or natural community conservation plan

There would be no change to existing conditions, and no conflicts with conservation plans, under this alternative.

Impact 3.8.4-5: Substantial alteration of the present or planned use of an area

There would be no change to existing conditions, and no alternation to present or planned use of the project area, under this alternative.

3.9 AGRICULTURAL RESOURCES

This section describes the project's impacts from converting a portion of the project area from agricultural to natural resources habitat uses. It addresses potential changes in agricultural land uses on the Riverside Ranch, Salt River channel, and upland areas, as well as effects of project maintenance and adaptive management. It considers agricultural productivity losses and gains as a result of the project and identifies mitigations as applicable.

3.9.1 AFFECTED ENVIRONMENT

EXISTING AGRICULTURAL USES

The majority of the project area (approximately 455 acres, or 73 percent) consists of grasslands and is currently used for agricultural production. A small portion of the project area (exact acreage is undetermined), where upland sediment reduction activities will take place, is used for timber harvest/forestry. Less than 1 percent of the project area (4 acres) consists of roads and buildings. The remainder of the project area is used for natural resources, such as fish and wildlife habitat and wetlands.

Riverside Ranch has been used for agricultural purposes, principally as a seasonal dairy farm, over the past decades. The site still has some dairy infrastructure, including a barn and milking parlor. Up until recently seasonal livestock grazing and haying continued on approximately 333 acres of the 409-acre site. Under Department of Fish and Game ownership, agricultural activities to control invasive weeds and create habitat favorable to Aleutian Cackling Geese will continue under a lease arrangement on 76 acres of the property.

STATE FARMLAND PROTECTION POLICIES

Williamson Act

The California Land Conservation Act, better known as the Williamson Act, has been the State's primary agricultural land protection program since its enactment in 1965. The Act preserves agricultural and open space lands by discouraging premature and unnecessary conversion to non-agricultural uses through an arrangement whereby private landowners contract with counties and cities to voluntarily restrict land to agricultural and open space uses. The contract is a rolling 10-year term contract that automatically renews annually unless either party files a "Notice of Non-Renewal." In return these parcels are assessed for property tax purposes at a rate consistent with their actual use, rather than potential market value. According to the Guidelines for Establishment of Agricultural Preserves in the County of Humboldt, Williamson land conservation contracts become void for land that is acquired by a federal, state, or local government agency for necessary public uses and facilities.

California Coastal Act

The project area is within the Coastal Zone. The California Coastal Act contains the following policies that are relevant to the conversion of agricultural land in the Coastal Zone to natural resource uses.

> *Public Resources Code § 30241:*
>
> *The maximum amount of prime agricultural land shall be maintained in agricultural production to assure the protection of the area's agricultural economy and conflicts shall be minimized between agricultural and urban land uses through all of the following:*
>
> *(c) By developing available lands not suitable for agriculture prior to the conversion of agricultural lands.*
>
> *(d) By assuring that public service and facility expansions and non-agricultural development do not inhibit agricultural viability, either through increased assessment costs or degraded air and water quality.*
>
> *§ 30242:*
>
> *All other lands suitable for agricultural use shall not be converted to nonagricultural uses unless (l) continued or renewed agricultural use is not feasible, or (2) such conversion would preserve prime agricultural land or concentrate development consistent with Section 30250. Any such permitted conversion shall be compatible with continued agricultural use on surrounding lands.*
>
> *(2) An analysis of the operational expenses, excluding the cost of land, associated with the production of the agricultural products grown in the area for the five years immediately preceding the date of the filing of a proposed local coastal program or an amendment to any local coastal program.*

State Farmland Conservancy Program Act

State farmland protection policy is laid out in the California Farmland Conservancy Program Act (CFCPA) (Public Resources Code 10201-10202). The CFCPA recognizes the importance of the state's agricultural lands economically, culturally, and in terms of food security, as well as the threat to those lands from urban development. The agricultural conservation strategy established by the CFCPA involves appropriating state funds for the voluntary purchase of agricultural easements, together with restrictions on development through local planning and zoning.

California Resources Agency Policies

Under California Public Resources Code Section 21095(a), the California Resources Agency was required to develop optional methodology that considers the impacts on the environment from the conversion of agricultural land to non-agricultural uses. The California Department of Conservation developed a Land Evaluation Site Assessment (LESA) model to evaluate agricultural conversions, which was incorporated into the CEQA guidelines (Appendix G) as an optional tool under the law. However, an analysis conducted by the California Resources Agency found the LESA model poorly suited to evaluating impacts to agriculture from habitat projects because "wildlife habitat and other open space lands are specifically considered consistent with agricultural land uses in the model." (Resources Agency 2006). Guidance from the California Department of Conservation regarding this

project suggested that it would be unnecessary to conduct a LESA assessment (B. Gwynne pers. comm.).

Federal Farmland Protection Polices

Loss of farmland is an important concern that is captured by the development of federal, state and local policies calling for protection of Prime, Unique or Statewide Important Farmland. Under the Federal Farmland Protection Policy Act (FPPA)(Subtitle I of Title XI, Section 1539-1549), projects are subject to FPPA requirements if they may irreversibly convert farmland (directly or indirectly) to nonagricultural use and are completed by, or with the assistance of, a federal agency. However, as the U.S. Department of Agriculture's Farmland and Conversion Impact Rating form advises, "The purpose of the rating process is to insure that the most valuable and viable farmlands are protected from development projects sponsored by the Federal Government...Accordingly, a site with a large quantity of non-urban land surrounding it will receive a greater number of points for protection from development." The form advises that the "LESA system is used as a tool to help assess the options for land use on an evaluation of productivity weighed against commitment to urban development." (USDA Farmland Conversion Impact Rating Form AD-1006 (10-83) at pages 4 and 7. Emphasis added.) It was determined that a LESA evaluation was not appropriate for this project, as LESA evaluations are designed for residential and commercial development projects, not for ecological restoration projects (B. Gwynne pers. comm.).

Local Ordinances, Land Use Plans, and Zoning

Based on the Humboldt County General Plan (HCGP, 1983), 574 acres, or 92 percent, of the project area is designated for agricultural uses (Agricultural Exclusive [AE] land use designation) (Figure 3.8-1). This includes 409 acres on the Riverside Ranch property, 165 acres in the Salt River channel area, (there is also additional unquantified acreage in the uplands areas, which would not be affected by the project). Conditionally permitted uses of parcels zoned AE include natural resource uses, such as wetland restoration and fish and wildlife habitat management.

The HCGP includes a goal that "The optimum amount of agricultural land shall be conserved for and maintained in agricultural use to promote and increase Humboldt County's agricultural production." Much of the General Plan's discussion of agricultural protection concerns conversion of agricultural land to urban use. The following agricultural protection policies are relevant to the project's conversion of agricultural land to natural resources use.

> *1. Agricultural lands shall be conserved and conflicts minimized between agricultural and non-agricultural uses through the following:*
>
> > *B. By focusing future conversions in areas where land use conflicts would not threaten the viability of existing agriculture.*
> >
> > *D. By allowing development of uneconomical or marginally viable agricultural land, or agricultural lands already severely limited by conflicts with urban uses to limit the market pressures for conversion of more productive lands.*

E. By assuring that public service and facility expansions and non-agricultural development do not inhibit agricultural viability through degraded water supplies, access systems, air quality, and other relevant considerations, such as increased assessment costs.

4. Prime agricultural land should be retained in parcel sizes large enough to provide for an economic management base.

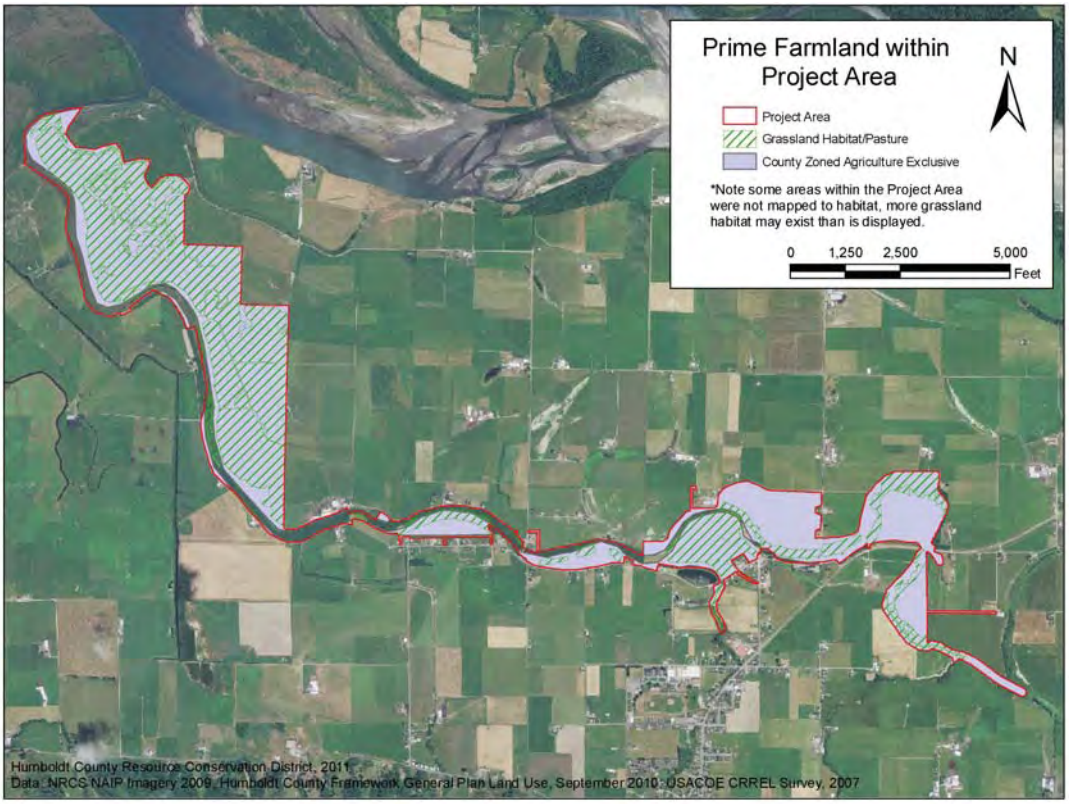
10. The conversion of agricultural land should only be considered where continued agricultural production is not economically feasible and proposed development is consistent with Remote Rural Development Section 2550.

AGRICULTURAL LANDS IN THE PROJECT AREA

Williamson Act Lands

Riverside Ranch, which constitutes 409 acres (66 percent of the project area), is currently under a Williamson Act land conservation contract (Figure 3.9-1). This contract is expected to become void in 2010, before project implementation, when the Western Rivers Conservancy transfers ownership of the land to the California Department of Fish and Game (DFG). According to the Guidelines for Establishment of Agricultural Preserves in the County of Humboldt, land conservation contracts become void for land that is acquired by a federal, state, or local government agency for necessary public uses and facilities. The land acquisition by DFG was reviewed by the California Department of Conservation, consistent with the requirements of the Williamson Act, and found to be in the public interest.

Fifty-eight acres outside of Riverside Ranch (9 percent of the project area) are under Williamson Act contracts and are expected to remain under the contract after project implementation (Figure 3.9-1). As discussed in the project description, the Salt River Channel Restoration component of the project may involve the beneficial re-use of excavated materials on up to 631 acres of agricultural grasslands adjacent to the project area. Some of the agricultural grasslands where beneficial reuse of excavated materials may take place are under Williamson Act contracts.



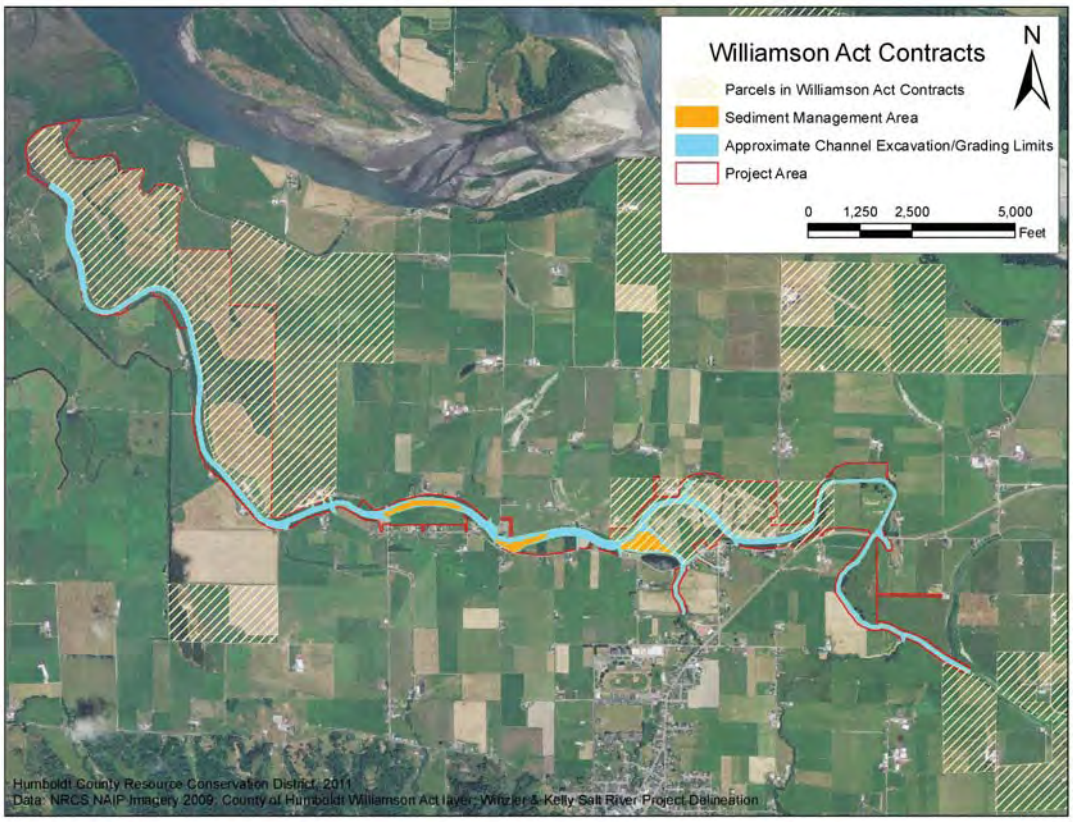


Figure 3.9-1

Prime Farmland and Williamson Act Parcels

Source: Huboldt County RCD, 2011

Prime Farmland

Prime farmland was mapped in the project area using the definition in the 1983 Humboldt County General Plan (HCGP) (1983). The California Coastal Act defines prime agricultural land in essentially the same way, although it is slightly more restrictive, including only land that meets one of criteria a-d in the definition below (Public Resources Code Division 20, Section 30113). ~~The HCGP defines prime agricultural land as follows, per California Government Code Section 51201(c)~~:

a) Land which qualifies for rating as Class I or Class II in the Soil Conservation Service land use capability classifications.

b) Land which qualifies for rating 80 through 100 in the Storie Index Rating[1]. (Res. 85-55, 5/7/85)

c) Land that has a livestock carrying capacity of one animal unit per acre.

d) Land planted with fruit or nut bearing trees, vines, bushes or crops which have a non-bearing period of less than five years and which will normally provide a return adequate for economically viable operations during the commercial bearing period on an annual basis from the production of unprocessed agricultural plant production.[2]

e) Land capable of producing an unprocessed plant production adequate for economically viable operations[3].

f) Additional lands adjacent to 1, 2, or 3 above which presently or historically have been necessary to provide for economically viable agricultural areas. These lands are included to prevent the establishment of incompatible land uses within an area defined by natural or man-made boundaries.

Based on this definition and NRCS soil survey information (USDA NRCS 2008), 372 acres of the project area are considered prime farmland (Table 3.9-1, Figure 3.9-1).

While soils in Riverside Ranch do not qualify as prime agricultural land according to criteria A, B or C (Table 3.9-1), they do qualify due to their ability to produce hay or haylage valued at greater than $200 per acre per year (Criteria D and E; Table 3.9-2) (G. Markegard, pers. comm.). With the exception of tidal marsh, riparian, seasonal wetlands, aquatic, and developed areas (58 acres), Riverside Ranch Soils qualify as prime farmland according to the Humboldt County General Plan and the California Coastal Commission because of their ability to produce an annual hay or haylage crop valued at greater than $200 per acre. 15 acres in the Salt River Channel Restoration Area qualify as prime agricultural land according to criteria A and/or B. Agricultural grasslands in the remainder of the project area also meet the economic productivity criteria for prime agricultural soils (Table 3.9-2). ~~high livestock~~

[1] The Storie Index is a soils classification system based on soil profile, surface texture, slope, and soil limitations.

[3] The 2008 Humboldt County Draft General Plan specifies $200 as the per acre value described here in general terms, and further specifies that this economic return must have been produced for three of the last five years to meet the definition of prime agricultural land.

~~carrying capacity (criterion C) and may also qualify due to criteria E or F. While Riverside Ranch Restoration area soils are generally unable to accommodate year-round livestock or agricultural production, a combination of livestock grazing in the dry season and feeding haylage grown in the Riverside Ranch Restoration area allows the site to support approximately one animal unit per acre per year (R. Ambrosini, pers. comm.)~~.

The NRCS soil survey maps prime farmland using a slightly different definition, which does not include the livestock support capacity criterion. Using the NRCS definition, 186 acres of the project area would be considered prime farmland if irrigated (Figure 3.9-1). The following general definition of prime agricultural lands is taken from the Natural Resources Conservation Service's National Soil Survey Handbook (USDA-NRCS 2007):

> *Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and that is available for these uses. It has the combination of soil properties, growing season, and moisture supply needed to produce sustained high yields of crops in an economic manner if it is treated and managed according to acceptable farming methods. In general, prime farmland has an adequate and dependable water supply from precipitation or irrigation, a favorable temperature and growing season, an acceptable level of acidity or alkalinity, an acceptable content of salt or sodium, and few or no rocks. Its soils are permeable to water and air. Prime farmland is not excessively eroded or saturated with water for long periods of time, and it either does not flood frequently during the growing season or is protected from flooding.*

Table 3.9-1 Soil Types and Characteristics in the Project Area

Soil Type	Acres in Project Area	Percentage of Total Project Area	NRCS Farmland Classification	NRCS Soil Capability Classification	Storie Index Rating[9]	Prime Agricultural Soil[10]
Riverside Ranch (RR)						
Weott, 0-2% slopes	32	5	Prime if irrigated	5w[1]	4 (Poor)	No
Swainslough, 0-2% slopes	98	16	Prime if irrigated	5w[1]	Not available[12]	No
Arlynda, 0-2% slopes	2	<1	Prime if irrigated	5w[1]	Not available[12]	No
Occidental, 0-2% slopes	240	39	Not prime	7s[2]	Not available[12]	No
Fluvents-Riverwash complex, 0-2% slopes	37	6	Not prime	6w[3] (Fluvents), 8[4] (Riverwash)	Not rated	No
Fluvaquents, 0-2% slopes	<1	<1	Not prime	6w[3]	4 (Poor)	No
Subtotal RR Prime Soils	357[11]	58[11]				
Salt River Channel Restoration Area (including Channel confinement Areas) (SR)						
Ferndale, 0-2% slopes	1	<1	Prime if irrigated	1[5] (irrigated), 2s[6] (unirrigated)	1 (Excellent)	Yes
Worswick, 0-2% slopes	6	1	Prime if irrigated	5w[1]	4 (Poor)	No
Udifluvents, 0-2% slopes	9	1	Not prime	3s[7]	Not available[12]	No
Canalschool, 0-2% slopes	9	1	Prime if irrigated	3w[8]	2 (Good)	Yes

Soil Type	Acres in Project Area	Percentage of Total Project Area	NRCS Farmland Classification	NRCS Soil Capability Classification	Storie Index Rating[9]	Prime Agricultural Soil[10]
Dungan, 0-2% slopes	4	1	Prime if irrigated	2s	1 (Excellent)	Yes
Madriver, 0-2% slopes	1	<1	Prime if irrigated	2s	1 (Excellent)	Yes
Water	<1	<1	NA	NA	Not rated	No
Swainslough, 0-2% slopes	1	<1	Prime if irrigated	5w[1]	Not available[12]	No
Arlynda, 0-2% slopes	1	<1	Prime if irrigated	5w[1]	Not available[12]	No
Weott, 0-2% slopes	31	5	Prime if irrigated	5w[1]	4 (Poor)	No
Occidental, 0-2% slopes	1	<1	Not prime	7s[2]	Not available[12]	No
Fluvents-Riverwash complex, 0-2% slopes	35	6	Not prime	6w[3] (Fluvents), 8[4](Riverwash)	Not rated	No
Fluvaquents, 0-2% slopes	114	18	Not prime	6w[3]	4 (Poor)	No
Subtotal SR Prime Soils	15	3				
Total SR Non-Prime Soils	198	32				
Total Prime Soils	372	60				
Total Non-Prime Soils	247	40				

1 Class 5w soils have little or no hazard of erosion but are limited by water in or on the soil that interferes with plant growth or cultivation. The use of these soils is mainly limited to pasture, range, forestland, or wildlife food and cover (USDA-NRCS 2007).
2 Class 7s soils have very severe limitations due to shallowness, drought, or stoniness that make them unsuitable for cultivation.
3 Class 6w soils are severely limited by water in or on the soil that makes them generally unsuitable for cultivation.
4 Class 8 soils have limitations that nearly preclude their use for commercial crop production.
5 Class 1 soils have few limitations that restrict their use.
6 Class 2s soils have moderate limitations due to shallowness, drought, or stoniness that reduce the choice of plants or that require moderate conservation practices.
7 Class 3s soils have severe limitations due to shallowness, drought, or stoniness that reduce the choice of plants or that require special conservation practices, or both.
8 Class 3w soils have severe limitations due to water in or on the soil that reduce the choice of plants or that require special conservation practices, or both.
9 California Revised Storie Index (O'Geen et al. 2008) rating. Classifications are as follows: Grade 1 (excellent), 100 to 80; grade 2 (good), 79 to 60; grade 3 (fair), 59 to 40; grade 4 (poor), 39 to 20; grade 5 (very poor), 19 to 10; and grade 6 (nonagricultural), less than 10.
10 Prime Agricultural Soils according to Criterion A (NRCS Land Capability Class 1 or 2) in the HCGP and California Government Code definitions.
11 With the exception of tidal marsh, riparian, seasonal wetlands, aquatic, and developed areas, Riverside Ranch Soils qualify as prime farmland according to the Humboldt County General Plan because of their high livestock support capacity.
12. These soil types did not receive a Storie Index rating because they have organic surface horizons, a characteristic that can not be accommodated in the current rating system. However, all of these soil types in the project area would receive a Storie Index rating of Poor, Very Poor, or Nonagricultural due to their wetness, flooding, or drainage situations (J.Wood pers. comm.)

Some soil types in the project area, such as the Swainslough, Arlynda, and Weott soils, are subject to severe flooding and inundation during the winter months, and therefore do not meet criteria A or B for prime farmland under the HCGP. The NRCS has determined that prolonged inundation of these areas does not interfere with the growth of perennial pasture, the primary crop in this area, and has therefore classified them as prime farmland (J. Wood pers. comm.).

3.9.2 IMPACTS AND MITIGATION

The potential for impacts to agricultural resources was evaluated with respect to the criteria described in the Appendix G checklist of the California Environmental Quality Act (CEQA). An impact is considered potentially significant if it would:

- Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps for the Farmland Mapping and Monitoring Program by the California Resources Agency, to non-agricultural use;
- Conflict with existing zoning for agricultural use or a Williamson Act contract; or
- Involve other changes in the existing environment, which because of their location or nature, could result in conversion of Farmland to non-agricultural use.

The following sections describe the anticipated environmental impacts on agricultural production and soils due to the project.

Alternative 1 (Proposed Project): Modified Channel/Riverside Ranch Restoration/Upland Restoration

Impact 3.9.2-1: Conversion of prime farmland and other agricultural land

Project implementation would convert 353 ~~294~~ acres of prime farmland to salt marsh, open water, or riparian habitat or to setback berms (Figure 3.9-1). Of this acreage, 323~~279~~ acres is currently in agricultural use, while the remaining area consists of other land cover types, such as ruderal vegetation. ~~In addition to the 294 acres of prime farmland impacted by the project, an additional 49 acres of non-prime agricultural land would be converted to salt marsh, open water, or riparian habitat.~~ It should be noted that some portion of these agricultural lands are public trust lands. These lands were once tidal lands that were part of the Salt River channel and floodplain, but are now farmed due to aggradation of the channel. The California State Lands Commission is currently determining the boundaries of public trust lands within the project area, but preliminary information suggests that approximately 40 acres of public trust lands are present on Riverside Ranch and additional public trust acreage is present upstream, at least as far as Port Kenyon. Public trust land should not be considered prime agricultural land. The presence of public trust lands in the project area reduces the extent of the project's actual impact on agriculture.

While the project would preclude continued grazing on approximately 323~~0~~ acres of the project area, it would nonetheless result in a net increase in agricultural productivity for agricultural lands in the vicinity. Agricultural land in the project area and in the vicinity suffers from prolonged inundation during the winter months. For example, in 1989 it was reported that between 600 and 1,000 acres of irrigated and dry pasture along the Salt River were affected each year by annual overbank flow caused by flooding and poor drainage; overbank flows were reported to reduce the value and productivity of the inundated land and damage fences and equipment (USDA-SCS 1993). Since the 1989 report, sedimentation has continued and a significantly larger area is now inundated for long periods each year. These periods of inundation preclude use of the land for grazing during the winter. Humboldt County Resource Conservation District staff conducted interviews in September

2009 with four ranchers adjacent to the project area to collect more information regarding the nature and magnitude of agricultural impacts from increases in inundation in recent decades (M. Bertelson pers. comm.; J. Davis, Nelson, and Drew, pers. comm.; R. Jackson and Christiansen pers. comm.; J. Regli pers. comm.). In addition, the operators of Vevoda Holsteins Ranch, which is also located in and adjacent to the project area, submitted a detailed account of losses due to flooding to the State Water Resources Control Board in 2006 (Vevoda 2006). These ranchers report losing significant acreage to production (approximately 180 acres that are unusable due to flooding from October through May, and approximately 10 acres that are flooded year round). Due to the resulting loss of forage and cropland, these ranchers report reducing their herd size and/or buying supplemental feed. The overall herd reduction reported by these ranchers is approximately 80 animal units. Additional expenses incurred by these five ranches for supplemental feed, farming and reseeding flooded areas, pumping out floodwater, and crop loss total more than $160,000 annually. ~~A comprehensive assessment of losses incurred by all ranches adjacent to the project area would doubtless put the lost livestock capacity and farm income much higher.~~

RCD staff gathered additional data from other landowners regarding agricultural productivity losses due to flooding. The RCD's overall estimate of agricultural land in the greater Ferndale Bottoms that routinely experiences a significant production loss due to Salt River flooding is 782 acres. Of these 782 acres, 35.5 acres will be converted to other land cover types by project implementation. Thus, 746.5 acres currently experiencing flooding-related losses in agricultural productivity may benefit from project implementation. This acreage represents the areas historically drained by the Salt River and its tributaries where producers have reported to the RCD that they experience new and/or increased damages due to flooding. There are additional areas across the Ferndale Bottoms, which may also experience flooding damage, but were not included in the RCD's estimate because the RCD has not interviewed the producer. The 782 acre affected area all meets the County's and the Coastal Commission's definition of prime agricultural land, because of its ability to produce hay or haylage valued at greater than $200 per acre per year. Flood-related agricultural losses in the 782-acre area occurred for a number of reasons. For most of the land in question, losses occurred because the land was underwater or waterlogged due to Salt River flooding during a period when it would otherwise have been grazed. Some losses occurred because flooding cut off access to areas that would otherwise have been farmed. Flooding of pasture resulted in economic losses for producers, as in the cases discussed above. If pasture is inaccessible or waterlogged when forage would normally be ready to graze, livestock grazing must be delayed. In some cases, this may result in forage becoming overly mature. Forage plants decline in nutritional value as they advance in maturity (George and Bell 2001). Therefore, when such pasture is grazed, the forage may be less nutritious and forage may be lost to trampling as the livestock move through the pasture (G. Markegard, pers. comm.).

Flooding losses were reported by landowners to have occurred since approximately the 1980s, at which time substantial portions of the Salt River had been largely filled by sediment and flooding conditions in the project area began to significantly worsen.

Project implementation would substantially reduce the frequency and duration of flooding on land adjacent to the project area, enhancing its capacity to support livestock. The 1993 Salt River Implementation Plan indicates that channel flood capacity along lower Francis Creek was reduced to

the 2-year storm. Current (circa 2010) observations indicate that overbank flows occur in the lower reach at Port Kenyon Road at flows less than the annual flood level. Similarly, the 1993 Implementation Plan indicates that channel capacities on lower Williams Creek were reduced to convey a flood having only a 5-year recurrence. Current observations indicate that overland flows in the Williams Creek area occur at less than the 1-year flows.

Although the Salt River corridor restoration is not designed to convey a specific design flood magnitude, modeling analyses indicate that it would be able to contain and drain the annual peak flow without any overbank flooding, as long as annual maintenance and management activities preclude instream deposition of sediment. There currently is no positive drainage below the confluence with Francis Creek, thus all flood waters (and sediment to some extent) pond and disseminate across the vicinity causing long-standing ponding and inhibit productive land use. As long as the project channel is maintained, it would provide the opportunity for drainage of surrounding lands, assuming local drainage ditches are maintained to direct runoff to the river. The improved channel also would relieve backwater effects on lower tributary channels, allowing improved drainage of tributaries to the mainstem Salt River and providing a mechanism to alleviate long-standing ponding on vicinity lands. The duration of time required to drain flooded lands via the project channel would depend primarily on the magnitude and extent of regional flooding.

Although not quantified through modeling, reconnecting the upper watershed to the mainstem Salt River corridor at Williams Creek would act to relieve upstream flood pressures for the same reasons just described. The added flow magnitude associated with reconnecting the upper watershed may also assist in sustaining a clear and high flow capacity channel in the mainstem Salt River corridor.

While sufficient data are not available to calculate the livestock capacity for the project area and surrounding lands before and after project implementation, it is reasonable to expect that the project would not result in a significant loss in livestock capacity for the project vicinity. Therefore, although the project would convert prime farmland and other agricultural land to other land cover types, it would likely have a neutral or beneficial impact on agricultural productivity of the project vicinity overall. Conversion of agricultural land associated with each of the project components is discussed below.

Impacts of Upslope Sediment Reduction: Upslope sediment reduction activities would be limited in extent and focused on roads and stream crossings. These activities would not result in the conversion of agricultural land to other land cover types.

Impacts of Salt River Channel Restoration: Channel excavation activities that are part of the channel restoration would convert 52 acres of prime farmland ~~and 24 acres of non-prime farmland~~ that is currently utilized for agricultural grassland into open water, ~~and~~ riparian habitat (herbaceous and riparian forest and scrub), active and passive sediment management areas (SMAs), tidal salt and freshwater marsh, and freshwater wetland. It should be noted that active SMAs would be designed to support some continued agricultural use during the dry season, which reduces the extent of this impact. See the Project Description for a complete discussion of Active SMAs and their agricultural use. In addition, there would be a temporary impact to an undetermined acreage of agricultural grassland due to the construction of temporary construction access and sediment hauling roads. An undetermined area of agricultural grassland within a construction buffer area of variable width will

be temporarily closed to grazing. However, there will be only minimal ground disturbance in the construction buffer area. The duration of the impact from temporary access road construction would be minimized by stripping the top sod layer before placement of berms or access roads. Reusing the sod after road removal would reduce the loss of agricultural productivity due to construction. ~~The floodplain recontouring activities that are part of the channel restoration would enhance the productivity of 13 acres of prime farmland and 13 acres of non-prime agricultural grassland by reducing the frequency and duration of inundation in those areas.~~ In addition, the channel restoration component would involve application of up to several hundred thousand cubic yards of excavated materials from the channel footprint to up to 631 acres of agricultural grasslands and crop fields in the vicinity. Samples of materials from the Salt River channel have been characterized and evaluated for their agronomic suitability (LACO 2008). The soils report concludes as follows:

> Based on textural classification and results of the agronomic analysis, a majority of the excavated sediments (with the removal of large organic matter and potentially sieved as described in Section 5.0) would be useable in the sediment reuse plan on existing farm fields or upland vegetation area. Laboratory analytical results from agronomic testing of samples… indicat[e] salinity of soil from these areas should not adversely affect plant growth.

California Certified Organic Farmers has also confirmed that these materials are suitable for use on organic farms (Chambers, pers. comm.).

Placement of excavated materials would further enhance the productivity of the agricultural lands to which they are applied by reducing inundation and adding organic matter and nutrients. Dredged materials from portions of the channel located closer to the confluence of the Salt and Eel Rivers had salinity levels that would prevent their agronomic use; these soils would be used in constructing setback berms on Riverside Ranch and for other purposes.

Impacts of Riverside Ranch Component: Riverside Ranch Restoration would convert 301 acres of prime farmland to salt marsh, riparian habitat, and aquatic/mudflat habitat~~setback berms~~. Of the 301 ~~292~~ acres of prime farmland to be converted, 271 acres are currently agricultural grassland. The remaining 30 ~~13~~ acres consist of ruderal and scrub-shrub vegetation. Agricultural activities such as grazing and haying would be retained on 76 acres of prime farmland on Riverside Ranch.

Prolonged inundation and market factors have reduced the economic viability of the property for agriculture. These same factors limit the significance of the conversion of agricultural land on Riverside Ranch to other uses. As a result, and for many years, various parties attempted to transfer the property for the overall benefit of a Salt River enhancement project that would alleviate flooding in the project area. From the earliest stages of the original negotiations, it was recognized that transfer and conversion of the property would significantly reduce flooding in other areas of the Salt River project area. The Riverside Ranch Restoration area was ultimately acquired by the Western Rivers Conservancy from a willing seller for the express purpose of achieving the goals and objectives of a broad Salt River enhancement project. Sale of the property was therefore based partly on support of the enhancement project goals, and partly on economic motivations dictated by the condition of the site (M. Bowen, pers. comm.).

Impact Significance

Less than significant (self-mitigating due to increases in agricultural productivity associated with reduced frequency and duration of inundation, ~~floodplain recontouring,~~ and placement of dredged materials on adjacent agricultural land).

Impact 3.9.1-2: Conflicts with land use designation or Williamson Act contracts

Land Use Designations and Zoning

This project does not involve a change in land use designation that would conflict with agricultural use or a Williamson Act contract. The Humboldt County 1983 General Plan and 2008 Draft General Plan land use designation of the project site, Agricultural Exclusive, preserves the land for agricultural purposes, but allows wetland restoration and fish and wildlife management as conditional uses. Therefore, the project is compatible with land use zoning. A conditional use permit would be sought from the County as part of the project.

Williamson Act Contracts

Riverside Ranch, which constitutes 65 percent of the project area, is currently under a Williamson Act land conservation contract. This contract is expected to become void before project implementation in 2010, when the Western Rivers Conservancy will transfer ownership of the land to the California DFG. According to the Guidelines for Establishment of Agricultural Preserves in the County of Humboldt, land conservation contracts become void for land that is acquired by a federal, state, or local government agency for necessary public uses and facilities. The land acquisition by DFG was reviewed by the California Department of Conservation, consistent with the requirements of the Williamson Act, and found to be in the public interest.

Fifty-eight acres (9 percent of the project area) of the project area outside Riverside Ranch also is under Williamson Act contract. Williamson Act contracts require the majority of the land under contract be used for agriculture, but do not require that the entire parcel be used for agriculture. Restoration of open water and riparian habitat in these areas would not conflict with Williamson Act contracts, because the majority of the parcels in question would still be used for agriculture. The 58 acres of the project area outside of Riverside Ranch is located on the Vevoda Ranch and is under one Williamson Act contract. The land to be converted to non-agricultural use represents approximately 8 percent of the parcel under Williamson Act contract. Furthermore, project implementation would reduce the duration and severity of flooding on the remainder of the Vevoda Ranch. Therefore, the agricultural productivity of these lands would not be diminished, consistent with the terms of the Williamson Act.

Impact Significance

No impact.

Impact 3.9.1-3: Changes in the existing environment which could result in conversion of farmland to non-agricultural use

Aside from the direct conversion of some farmlands to tidal marsh, open water, riparian habitats or setback berms, discussed above in Impact 3.9.1-1, the project is not expected to result in any changes in the existing environment, which could result in the conversion of farmland to non-agricultural use. Rather, the project would result in ~~increases~~ a neutral or beneficial effect ~~i~~on agricultural productivity due to decreased frequency and duration of inundation, as discussed above in Impact 3.9.1-1. Furthermore, input on the project design has been solicited from adjacent landowners and from the Salt River Advisory Group (SRAG) throughout project development. Input from adjacent landowners and the SRAG aided in developing appropriate configurations to achieve optimal balance between resource effects and benefits, and to minimize the project's impacts on agriculture.

Impact Significance

No impact.

Alternative 2: Modified Channel/Upland Restoration Only

Impact 3.9.2-1: Conversion of agricultural land

Alternative 2 would result in the conversion of agricultural land identified above in the discussion of channel restoration in Alternative 1, Impact 3.9.1-1. As with Alternative 1, there would be no adverse impacts associated with upslope sediment reduction. Under this alternative, the conversion of agricultural land associated with Riverside Ranch would not occur. Although channel restoration would reduce flooding to some extent, the reduced flooding and enhanced channel sediment transport capacity associated with Riverside Ranch would not occur, reducing the project's agricultural benefits. The reduction in adverse and beneficial impacts would result in a similar level of impact to Alternative 1.

Impact Significance

Less than significant (self-mitigating due to increases in agricultural productivity associated with reduced frequency and duration of inundation, floodplain recontouring, and placement of dredged materials on adjacent agricultural land).

Impact 3.9.2-2: Conflicts with land use designation or Williamson Act contracts

Alternative 2 would not result in conflicts with land use designations or Williamson Act contracts, as discussed above in Alternative 1, Impact 3.9.1-2.

Impact Significance

No impact.

Impact 3.9.2-3: Changes in the existing environment which could result in conversion of farmland to non-agricultural use

Alternative 2 would not result in changes in the existing environment that could result in conversion of farmland to non-agricultural use, aside from those discussed above in Impact 3.9.2-1, as discussed above in Alternative 1, Impact 3.9.1-3.

Impact Significance

No impact.

Alternative 3: Riverside Ranch Restoration/Upland Restoration Only

Impact 3.9.3-1: Conversion of agricultural land

Alternative 3 would result in the conversion of agricultural land identified in Alternative 1 for the Riverside Ranch restoration, Impact 3.9.1-1. Under this alternative, the conversion of agricultural land associated with channel restoration would not occur. Although Riverside Ranch restoration would reduce upstream flooding to some extent by providing flood storage, excavating the channel up to Reas Creek, and enhancing the channel's sediment transport capacity, there would be less of a reduction in flooding under Alternative 3 than under Alternatives 1 and 2, reducing the project's agricultural benefits. As with Alternative 1, there would be no adverse impacts associated with upslope sediment reduction. Impacts from conversion of agricultural land would be mitigated by the implementation of Mitigation Measure 3.9.3-1.

Mitigation Measure 3.9.3-1: Preservation of agricultural land

The project proponent shall purchase easements on agricultural land in the region to offset losses in agricultural land due to project implementation. The ratio of agricultural land protected to agricultural land converted is expected to be 1:1, although gains in agricultural productivity due to project implementation may be taken into account to reduce this ratio. The project proponent shall coordinate with the California Department of Conservation's Division of Land Resource Protection to ensure that the agricultural protection put in place would be adequate to mitigate for agricultural lad converted due to implementation of Alternative 3.

Impact Significance

Less than significant with mitigation.

Impact 3.9.3-2: Conflicts with land use designation or Williamson Act contracts

Alternative 3 would not result in conflicts with land use designations or Williamson Act contracts, as discussed above in Alternative 1, Impact 3.9.1-2.

Impact Significance

No impact.

Impact 3.9.3-3: Changes in the existing environment which could result in conversion of farmland to non-agricultural use

Alternative 3 would not result in changes in the existing environment which could result in conversion of farmland to non-agricultural use, aside from those discussed above in Impact 3.9.3-1, as discussed above in Alternative 1, Impact 3.9.1-3.

Impact Significance

No impact.

Alternative 4: No Project

Impact 3.9.4-: 1 Conversion of agricultural land

Although this Alternative would not result in any direct conversion of agricultural lands, it would result in the continued loss of agricultural productivity in the project vicinity. Agricultural productivity losses would be expected to increase as sedimentation in the Salt River channel increases, further disrupting agricultural drainage. The continued economic viability of agricultural operations in many of the area's farms could be compromised.

Impact Significance

Significant.

Impact 3.9.4-2: Conflicts with land use designation or Williamson Act contracts

Alternative 4 would not conflict with land use designation or Williamson Act Contracts.

Impact Significance

No impact.

Impact 3.9.4-3: Changes in the existing environment which could result in conversion of farmland to non-agricultural use

As discussed above under Impact 3.9.1-1, Alternative 4 would result in the continued loss of agricultural productivity in the project vicinity. Agricultural losses would be expected to increase as sedimentation in the Salt River channel increases, further disrupting agricultural drainage. The continued economic viability of agricultural operations in the area could be compromised.

Impact Significance

Significant.

3.10 RECREATION

This section describes recreation facilities and uses of the project site and project vicinity, and assesses the impacts of the Salt River Ecosystem Restoration Project on recreation. Recreation issues addressed include potential conflicts with established recreational and educational uses, interference with public access, degradation of the recreational experience, increasing use of existing facilities, and long-term disruption to established recreation areas.

3.10.1 AFFECTED ENVIRONMENT

The Salt River channel and upland portions of the project site are located in the Eel River Valley within the Salt River and its primary tributaries, and are limited to stream channels and riparian zones which flow through private lands. Tributary watersheds are in private ownership. The Riverside Ranch portion of the project area is adjacent to the lower Salt River and is owned by the Western Rivers Conservancy, which is preparing to transfer ownership of that property to the California Department of Fish and Game (DFG). The only public access is on County roads that run adjacent to the project area. Hikers, bikers, runners, horseback riders, and bird watchers use the County roads for recreation and can view the project area from a distance. There are no hiking trails that bisect or fall within the Salt River riparian zone. The project area is undeveloped for recreational use. In tributary watersheds, public access is on County roads that are surrounded by private lands, and Russ Park and Fireman's Park in the Francis Creek watershed. These two parks provide hiking trails and public parking facilities.

The California Department of Fish and Game is currently not planning to develop public access to Riverside Ranch, but public access may be considered in the future. The public trails, if any, would be limited due to the amount of wetlands and anticipated continued use of some areas for cattle grazing. Possible future public access at Riverside Ranch, the extent of which is currently unknown, is not part of the proposed project evaluated in this EIR.

3.10.2 IMPACTS AND MITIGATION

SIGNIFICANCE CRITERIA

The project would have a significant impact on recreation if it would:

- Conflict with the established recreational and educational use of the site;
- Substantially interfere with public access to an established recreational area;
- Substantially degrade the recreational experience of an area;
- Create project-related operational or construction activities that would cause a substantial long-term disruption of any institutionally recognized recreational activities; or

- Create an increase in the use of existing neighborhood and regional parks or other recreational facilities, such that such that substantial physical deterioration of the facility would occur or be accelerated.
- Include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment.

Alternative 1 (Proposed Project): Modified Channel/Riverside Ranch Restoration/ Upland Restoration

Impact 3.10.1-1: Conflicts with established recreational and educational uses of the site

There is currently no public recreational access to the project sites with the exception of public roadways.

The project would not conflict with any established recreational or educational uses or sites because there are no such established sites along the Salt River. The adjacent recreational uses of the County roads would not be affected and may be enhanced by the increased habitat complexity of the area (open water and wetlands). Although not currently planned, if public access were to be provided to Riverside Ranch in the future, it would not conflict with established recreational or educational sites, for similar reasons.

The project would not conflict with recreational or educational use of Russ Park or Fireman's Park in Ferndale as no actions are planned in or around these areas. Restoration in tributary watersheds would occur outside of the view of these parks and would not affect use.

The proposed project would have no impacts due to conflicts with established recreational or educational uses of the site.

Impact Significance

Less than Significant impact; no mitigation required.

Impact 3.10.1-2: Interference with public access, degrading the recreational experience, increasing the use of existing facilities, or long-term disruption to an established recreational area

During construction of the project, some traffic control may occur on Port Kenyon Road, Dillon Road, or Fulmor Road but existing access on County roads would remain open to the public. Substantial disruption of recreational activities would not occur due to the project's construction related activities, which would take place primarily during summer of 2010 and/or 2011/2012. During project operation, maintenance of trails, use of power equipment for vegetation planting and exotic vegetation control, and long-term maintenance of the levee system would occur. These operations would not cause substantial interference with public access, substantial degradation of the recreational experience, or long-term disruption of recreational activities.

The project would establish habitat for more biological diversity, and add a diversity of views for visitors on County roads to experience. The project would also enhance recreational fishing

opportunities by restoring fish habitat in the Salt River channel, upland tributaries, and Riverside Ranch. The proposed project site, which consists primarily of private lands, is not currently accessible to the public except where crossed by roads and bridges. The project does not currently proposed to incorporate public access. In any event, increased use of this site due to public access developed separately by DFG for Riverside Ranch would constitute a beneficial impact on public access and recreation.

The project would not cause an increase in the use of existing City of Ferndale parks (Russ Park and Fireman's Park). Visitation to these parks would not increase due to the project because the existing parks are already familiar to the local community, no new residents are proposed by the project, and alteration of these facilities is proposed.

Impact Significance

Less than Significant impact; no mitigation required.

Impact 3.10.1-3: New recreational facilities that may have an adverse effect on the environment

The proposed project would not incorporate public access. In any event, the anticipated level of recreational use at Riverside Ranch would be below the level that would have a significant adverse impact on the recreational experience or existing recreational facilities.

Impact Significance

Less than Significant impact; no mitigation required.

Alternative 2: Modified Channel/Upland Restoration Only

Impact 3.10.2-1: Conflicts with established recreational and educational uses of the site

Impacts would be the same as Alternative 1 for the Salt River Channel area and the Uplands Areas; there would be no conflict with any established recreational or educational sites.

Impact 3.10.2-2: Interference with public access, degrading the recreational experience, increasing the use of existing facilities, or long-term disruption to an established recreational area

Similar to Alternative 1, this alternative would not interfere with, degrade, or disrupt use of any established recreational areas. This alternative would enhance recreational fishing opportunities in the Salt River and upstream tributaries by restoring fish habitat in the Salt River channel and upland tributaries, but, unlike Alternative 1, would not restore fish habitat at Riverside Ranch.

Impact 3.10.2-3: New recreational facilities that may have an adverse effect on the environment

This alternative would not incorporate public recreational access to Riverside Ranch or other parts of the project area, and there would be no impact due to new recreational facilities.

Alternative 3: Riverside Ranch Restoration/Upland Restoration Only

Impact 3.10.3-1: Conflicts with established recreational and educational uses of the site

Impacts would be the same (less than significant) as Alternative 1 for the Riverside Ranch area and the Uplands Areas. There would be no impacts on the Salt River Channel.

Impact 3.10.3-2: Interference with public access, degrading the recreational experience, increasing the use of existing facilities, or long-term disruption to an established recreational area

Similar to Alternative 1, this alternative would not interfere with, degrade, or disrupt use of any established recreational areas at the Riverside Ranch area and the Uplands Areas. There would be no impacts on the Salt River Channel area. This alternative would enhance recreational fishing opportunities by restoring fish habitat at Riverside Ranch, but, unlike Alternative 1, would not restore fish habitat in the Salt River channel and upland tributaries.

Impact 3.10.3-3: New recreational facilities that may have an adverse effect on the environment

Under this alternative, as discussed above, public access is not currently proposed for Riverside Ranch. There would be no impacts of the Salt River Channel or upland areas.

Alternative 4: No Project

Impact 3.10.4.1: Impacts due to conflicts with established recreational and educational uses of the site

There would be no impacts on established recreational or educational sites under this alternative.

Impact 3.10.4.2: Impacts due to interfering with public access, degrading the recreational experience, increasing the use of existing facilities, or long-term disruption to an established recreational area

There would be no impact on recreational resources in regard to public access, the quality of an existing recreational experience, use of existing facilities, or long-term disruption to an established recreational area under this alternative.

Impact 3.10.4.3: impacts due to new recreational facilities that may have an adverse effect on the environment

There would be no new recreational facilities, and no associated impacts, under this alternative.

3.11 CULTURAL RESOURCES

This section addresses the cultural resources issues associated with the Salt River Ecosystem Restoration Project. Cultural resources are defined as prehistoric and historic sites, structures, and districts or landscapes, or any other physical evidence associated with human activity for scientific, traditional, religious, or other reasons. These include resources considered important to contemporary cultures, subcultures, or communities that have been integral to the culture of that population for at least the past 50 years.

Prehistoric and historic resources of the project area were assessed in a March 2008 Cultural Resources Evaluation prepared by Roscoe and Associates (R&A). Except where noted, the R&A study forms the basis for this chapter. This cultural resources investigation was designed to satisfy environmental requirements specified in CEQA and its guidelines (Title 14 CCR 15064.5) and Section 106 of NHPA by: (1) identifying and recording significant cultural resources within the project area and APE, (2) offering a preliminary significance evaluation of the identified cultural resources in accordance with a Phase I investigation, (3) assessing the potential impacts to cultural resources resulting from the implementation of proposed project activities, and (4) offering recommendations designed to protect resource integrity, as warranted. Cultural resources evaluation forms and findings are on file at the Humboldt County RCD offices in Eureka.

3.11.1 AFFECTED ENVIRONMENT

PREHISTORIC BACKGROUND

The project area is located within the ethnographic territory of the Wiyot Indians who had an original population of 1,000 to 3,300 prior to European settlement. According to Humboldt State University linguist Victor Golla, the Wiyots arrived in the Humboldt Bay area approximately 2,000 years ago, inhabiting a lagoon environment that afforded the use of coastal resources. The Yuroks then came "at a much later date," sometime subsequent to the arrival of the first Athabascan speakers, who came after 600AD. The earliest carbon-14 date in the Wiyot's region is approximately 900 AD.

The Wiyot lived almost exclusively in villages along the protected shores of Humboldt Bay and near the mouths of the Eel and Mad Rivers. Villages consisted of dwellings that were rectangular in shape and made from split redwood planks. The Wiyot utilized a wide range of plant and animal resources gathered within their territory, including mollusks, sea lions, stranded whales, deer, elk, and acorns. The most important food source was anadromous fish from coastal streams such as the Mad and Eel Rivers and smaller tributaries.

After the start of the California Gold Rush, from 1850 to 1860, Wiyot territory became the center for the largest concentrations of European settlers in California north of San Francisco. The settlers utilized Humboldt Bay as a major shipping point for supplies to the gold mines on the Trinity, Klamath, and Upper Sacramento Rivers. In addition, the establishment of the redwood timber

industry, and homesteading of the Eel River and Arcata Bottom for ranching and farming purposes, brought more people into the area. The influx of new settlers included violence that nearly destroyed the entire Wiyot population.

HISTORIC BACKGROUND

The project area is located along Salt River in the vicinity of the communities of Port Kenyon and Arlynda Corners. Before the arrival of Euro-American settlers in the area, members of the Wiyot division of the Wiyot tribe claimed the land. Later, Salt River formed the southern boundary for a somewhat vague community called Eel River Island ("The Island"), which had its northern boundary at the Eel River. J. Gardner Kenyon developed two towns just south of Salt River, Port Kenyon, in 1876, and, in 1879, the smaller but more sustained Arlynda Corners. Arlynda had a grocery store, saloon (later converted to another store), blacksmith shop, starch factory (which later became the Humboldt Creamery), and a feed mill/cooper shop.

Euro-American settlers saw an area of unparalleled natural resources that with enterprise could reap rewards. Flat land free of the dense redwood forests of the uplands was ideal not only for family farming, but also for cash crops. A large river like the Eel, right on the ocean, looked like an opportunity for shipping. The Eel, in the right season, hosted plentiful fisheries. Farming (eventually dairying) and associated reclamation, navigation/shipping, and a lucrative fishery set the historic stage for the Delta and Salt River and provide the contexts for understanding the changes on that landscape and the built environment. For a time Port Kenyon served as a shipping point for ocean-going commerce, but the treacheries of the route to the open sea proved overwhelming. Dairy farming ultimately became (and remains) the dominant activity along the banks of the Salt River.

STUDY METHODS AND RESULTS

Prefield Research

Archival Research

The background research for this project included archival research at the Humboldt State University Library, Humboldt County Library, Humboldt County Historical Society, Humboldt County Assessors and Recorders Office, and the Department of Public Works. The California Historical Resources Information System (CHRIS) Records Search included an examination of the archaeological site records, maps, and project files at the North Coast Information Center (NCIC), one of the regional information centers of the CHRIS. The NCIC is located at 15900 Highway 101 N, Klamath, CA 95548. Jennifer Burns, M.A. and James Roscoe, M.A. conducted the record search on December 19th, 2007. Following completion of this archaeological study, a copy of this report will be filed with the NCIC.

In addition to the library and NCIC record search, the following inventories were consulted: the Historic Property Directory, the National Register of Historic Places (NRHP), Determinations of Eligibility for the National Register of Historic Places, Historic Spots in California, California

Historical Landmarks, and California Points of Historical Interest, California Register of Historical Places, the California Inventory of Historic Resources. The literature search is undertaken to determine if there are any previously recorded archaeological resources or historic structures within the project area and whether the area has been included within any previous archaeological research or reconnaissance projects.

The records search at the NCIC revealed that three cultural resource studies have been conducted within one-half mile of the project area (Table 3.11-1). Eight previously recorded archaeological or cultural sites were documented within one-half mile of the project area (Table 3.11-2).

Table 3.11-1 Previous Studies within One-half Mile of the Project Area

Survey Number	Title	Author/Date	Results
S9861	Ferndale Wastewater Rehabilitation Project	Eidsness/1988	
S23991	HMGP #1046-380-1008		
HU21420	Ferndale Wastewater Treatment Marsh Project	Winter/2001	Negative

Table 3.11-2 Previous Cultural Resources Recorded within One-half Mile of the Project Area

P Number/Trinomial	Site Type	Recorder	Distance from Project Area
P1550 CA-HUM-1025	(HP2) Single Family Property; (HP33) Farm/Ranch	K. Winter	200 Meters
P1548H CA-HUM-1023	(HP2) Single Family Property; (HP33) Farm/Ranch	K. Winter	315 Meters
P1552 CA-HUM-1027	(HP2) Single Family Propter; (HP33) Farm/Ranch	K. Winter	110 Meters
P1549 CA-HUM-1024	(HP4) Ancillary Building; (HP8) Industrial Building	K. Winter	50 Meters
P1553 CA-HUM-1028	(HP2) Single Family Property	K. Winter	370 Meters
P1546 CA-HUM-1021	(HP2) Single Family Property	K. Winter	385 Meters
P1551 CA-HUM-1026	(HP2) Single Family Property; (HP33) Farm/Ranch	K. Winter	435 Meters
P1547 CA-HUM-1022	(HP2) Single Family Property	K. Winter	2609 Meters

The County of Humboldt's Natural Resources Division identified eight properties to be surveyed for historic resources. All are in private ownership. For each property, deed searches were conducted in the Humboldt County Recorder's Office, Eureka, California in January 2008. Tax assessment records, federal census schedules and newspaper microfilm at the Humboldt County Library in Eureka and Humboldt State University Library in Arcata provided historical information

on the properties. Site visits were made and interviews conducted during January and February 2008. Parcel maps, U.S.G.S. Quad maps, the historic Belcher and Forbs maps, maps from the "Humboldt Bay Historical Atlas" (Laird), and surveys and maps in the Recorder's Office were used to locate property ownerships and structures.

These parcels are:

- 100-111-001 and 100-091-008 - 1409 Riverside
- 100-171-005 349 Port Kenyon Road
- 100-171-006 Adjacent on west to 349 Port Kenyon Road
- 100-161-007 441 Port Kenyon Road
- 100-191-009 3155 State Route
- 100-002-014 1009 Bertelsen Lane
- 100-172-020/031 190 and 160 Port Kenyon Road
- 106-021-076 50 Fulmor Road, Ferndale, CA 95536
- 106-021-077 215 Fulmor Road, Ferndale, CA 95536

Native American Consultation

Consultation included a letter faxed to the Native American Heritage Commission from Curtis Ihle with the Humboldt County Resources Conservation District in June 2007. The Native American Heritage Commission (NAHC) reviewed the Notice of Preparation and recommended contacting the appropriate Information Center and conducting an archaeological inventory. Hélène Rouvier, Cultural Director for the Wiyot Tribe, responded on May 19, 2007 that "[t]he Salt River is within Wiyot ancestral territory and has a high potential for cultural use and resources . . . Additionally, the watershed may have cultural significance as a traditional cultural property, particularly for traditional subsistence and gathering".

Consultation initiated by Roscoe and Associates included a letter faxed to the Native American Heritage Commission on December 26, 2007. The NAHC was asked to search their Sacred Lands Inventory File and to provide a list of Native American representatives for the project area. The NAHC replied on December 28, 2007 that no sacred lands were present within the project area and provided a list of interested Native American tribes near the project area. A letter was sent to all representatives on the NAHC list on December 26, 2007. Hélène Rouvier, Cultural Director for the Wiyot Tribe, responded on December 31, 2007 "…the Wiyot Tribe has no known cultural sites in the area. However, there is potential for cultural use and resources" and "this department requests intensive pedestrian survey and surface scrapes." Nick Angeloff, Tribal Historic Preservation Officer for the Bear River Tribe, replied on January 7, 2007 "[w]e have no knowledge of cultural resources within your project area beyond what is commonly known."

On January 14, 2008, Hélène Rouvier wrote an e-mail stating that a tribal representative "thinks that there was a village somewhere in that area (it was wiped out in the 1860 massacres)…" Consultation continued throughout the duration of the project including phone conversations with Ms. Rouvier.

On March 13, 2007, Jennifer Burns contacted Ms. Rouvier to discuss the letter dated May 19, 2007 that recommended considering the Eel River watershed as a Traditional Cultural Property. Studies to determine whether the project area is eligible as a Traditional Cultural Property were not conducted as a part of this Cultural Resources Inventory and are considered outside the scope of the current project. Further studies are recommended to address the Wiyot Tribe's concerns. Ms. Rouvier indicated that the Wiyot Tribe is concerned about the health of the watershed and that restoration projects such as the currently proposed project are important in maintaining traditional subsistence and gathering practices.

Field Inventory

An archaeological field reconnaissance of the project area was conducted by James Roscoe, M.A., William Rich B.A., and Erik Whiteman M.A., on January 1, 17, 18, 26 and 27 and February 12, 2008. The archaeological field investigation involved a systematic, mixed-strategy archaeological field survey of the entire Salt River Ecosystem Restoration project area. The survey was designed to suit the study area's sensitivity for the occurrence of prehistoric and historic cultural resources based on pre-field research. The highest priority was given to potentially sensitive areas identified through pre-field research as having been the focus of historic land-use and settings where prehistoric archaeological sites might be located. Intensive field reconnaissance included systematically traversing the project area at 25-meter intervals or less. At regular intervals the surveyors scraped the ground surface, using a hoe or shovel, to allow inspection of the mineral soil.

Areas of predicted low archaeological sensitivity were subjected to less intensive, cursory survey. Cursory inspections were conducted by covering areas in widely spaced transects which enabled surveyors to visually inspect sensitive landforms and topographic features from a distance. The aim of this survey method was to cover the entirety of the project and to identify areas of high archaeological sensitivity not indicated through pre-field research.

Linear historic sites such as dikes and ditches were inspected along their lengths to identify associated features, and to assess integrity. Historic and topographic maps and aerial photographs were utilized as an aid in locating and mapping linear systems.

The field survey was hindered by winter conditions and flooding of low-lying areas of the project area. The fieldwork was conducted during and after periods of heavy rain and a portion of the Vevoda property and several other areas aloud the banks of the Salt River were flooded thus hindering surface survey visibility.

Expected prehistoric cultural resource indicators included chert and obsidian tools, lithic debitage, ground stone implements, milling stone features, locally darkened soil, shell and/or bone debris, and pit features. Expected historic cultural resource indicators included ceramic, glass, or metal artifacts; structures; and pits.

Inventory Results

During the field investigation twelve historic era resources were identified. These include eight farmsteads (RA-SR-01 to 08), a linear dike and ditch system (RA-SR-09), a barn foundation and corral (RA-SR-10), Salt River channel improvement features (RA-SR-11), and a cement feature at

the site of Port Kenyon (RA-SR-12). In addition to the identified resources, one culturally sensitive area has been delineated within the project area.

Surface survey did not detect cultural materials within the sensitive area; however, background archival research revealed that this location is the approximate footprint of the Historic Town of Port Kenyon (Appendix C). During the pedestrian survey, crews were not allowed to conduct subsurface archaeological investigations to determine a presence or absence of archaeological materials. Additionally, a foundation (RA-SR-12) that is likely to be associated with historic operations at Port Kenyon was documented within this area (Appendix A). Due to an extensive history of flooding and silt deposits in the area it is possible that buried archaeological materials are present at this site.

Eight parcels with structures were inventoried to satisfy CEQA and NHPA Section 106 provisions that require the identification of historically significant properties that could be impacted by implementation of the project. This survey recorded thirty-eight structures on ten separate assessor's parcels, consisting of five farmsteads (RA-SR-01 to 05), two lots at Arlynda Corners (RA-SR-06 and 7), and a property on two lots at 160 and 190 Port Kenyon Road (RA-SR-08). National Register of Historic Places eligibility criteria as delineated by Section 106 and California Register of Historic Resources (CRHR) criteria were applied in the evaluation of individual buildings. The criteria are similar, one more focused on California history and cultural heritage and the other more broadly applied (see 2.0 Regulatory Framework). The eligibility criteria for listing on the NRHP and the CRHR outline the regulations for properties that are associated with the broad patterns of history (criterion A) and/or important people (criterion B), are notable examples of the built environment (criterion C), and have or may have archaeological value (criterion D).

Within a context of dairying on lower Eel River, the period of significance begins with the institution of commercial dairy operations c. 1880 and extends to the present. One of the surveyed resources—the barn on the Sousa-Vevoda Ranch (RA-SR-03) may have its association with the agricultural period prior to dairying; however, that association was not documented.

When dealing with farmsteads and the landscape on which these complexes are located, the focus was more on the collection of structures, rather than on any single structure. The farmsteads and landscape are not considered eligible under criterion B, the association with important persons in our past following extensive archival research. Criterion D, resources containing data pertinent to understanding an indigenous culture and the historic occupying culture is a possibility; however, no specific sites were identified that would meet this criterion following extensive archival research.

The two remaining criteria are applicable to this cultural landscape. The surveyed properties contribute in some meaningful way to the board patterns of this region's heritage (A), most notably an agricultural heritage represented by a dairy industry and culture that has sustained life on lower Eel River for 125 years. Criterion C that looks at the craftsmanship, integrity, and the special built qualities of houses and barns on this landscape is also applicable. However, the overarching standard in determining eligibility for the CRHR or NRHP focuses on the context of farmsteads, landscape features, and the natural environment, and how this collection creates the lower Eel River cultural landscape.

Farmstead Complexes: Four of the five farmsteads surveyed retain sufficient integrity to convey their significance within a context of dairying on lower Eel River: the Christiansen-Martin Ranch (RA-SR-05), the Scalvini Ranch (RA-SR-01), the Sousa-Vevoda Ranch (RA-SR-03), and the Silva-Vevoda Ranch (RA-SR-02). Of these farmsteads, only the Christiansen-Martin Ranch (RA-SR-05) retains a house of sufficient integrity to be associated with this significance. The Scalvini Ranch (RA-SR-01) house no longer retains sufficient integrity to convey this significance; the house at the Sousa-Vevoda Ranch (RASR-03) is a contemporary house built in 1988; and the house associated with the Riverside Ranch (RASR- 06) is no longer extant. Of the two houses located on the Silva-Vevoda Ranch (RA-SR-02), the 1950 house does not meet any of the criteria. The 1920s bungalow has compromised integrity due to changes in siding, windows, and front door and stoop, but it is, nonetheless, part of the Silva-Vevoda Ranch (RASR- 02) and does not detract from this farmstead.

The six, free-standing, metal loafing/feeding barns, all built within the past twenty-five years, do not meet qualifying criteria for the listing on the CRHR or NRHP. Although they are not considered historic because they are of modern construction, they do not detract from their associated farmsteads, and are, in fact, integral to present dairy operations. The wood-constructed loafing/feeding barns on the Christiansen- Martin Ranch (RA-SR-05) and the Sousa-Vevoda Ranch (RA-SR-03) are contributors to the farmsteads, regardless of age, because of their wood construction and compatibility with the historic buildings. The milking barns at the Scalvini Ranch (RA-SR-01) and Sousa-Vevoda Ranch (RA-SR-03), currently not in use, are essential to modern dairying operations. Their age precludes historic designation, but they do not detract from the significance of their respective farmsteads and are included in those farmsteads as noncontributing structures.

Seven outbuildings—workshops, garages, apartments, and offices/storage spaces were surveyed. Individually, none meet qualifying criteria for the listing on the CRHR or NRHP; however, the workshop on the Sousa-Vevoda Ranch (RA-SR-03) and the garage at the bungalow on the Silva-Vevoda Ranch (RA-SR-02) are part of those significant farmsteads. The milk houses at the Scalvini Ranch (RA-SR-01) and the Sousa-Vevoda Ranch (RA-SR-03) are integral to their respective farmsteads. The milking barn at the Silva-Vevoda Ranch (RA-SR-02) which incorporates under one roof a milking area, the milk house identified above, and an equipment shed is a contributor to its farmstead.

The dairy barns on the Scalvini Ranch (RA-SR-01), the Silva-Vevoda Ranch (RA-SR-02), Riverside Ranch (RA-SR-06), and the Christiansen-Martin Ranch (RA-SR-05) are considered eligible under criteria A and C. They are excellent examples of a unique construction found on the bottom lands in the Humboldt Bay region and specifically associated with the dairy industry that has continued for 125 years. They display, with some variations, the standard arrangement of cow stables, driveways, and mows. The barn at the Sousa-Vevoda Ranch (RA-SR-03) is not the standard dairy barn and in its unique construction is considered eligible under criteria C. Exceptionally long and very low, it appears to have been constructed for a use other than dairying, which suggests an early date of construction, perhaps earlier than the 1880s.

Buildings at Arlynda Corners: The Fuller-Hamblin House (RA-SR-04), although constructed in the 1880s and originally a good example of center-gable architecture, has lost the integrity of style that could convey that significance. Loss of the central entry, changes in window materials, the

addition of an intrusive window, and modern siding have all diminished the original architecture and compromised the building's integrity.

The commercial building (RA-SR-07) in which Hamblin's farm equipment business was located is not significant architecturally. It was built as a utilitarian structure with little architectural interest. It does have historic value, however; for approximately twenty years, it was part of the commercial activity at Arlynda Corners. As a farm equipment business, Hamblin's was important to local ranchers, serving their equipment and repair needs. The building's history prior to the Hamblin enterprise needs to be documented to more fully understand its role in local commercial activities, including the Frederiksen's blacksmith business. The blacksmith shop (RA-SR-07) to the rear of Hamblin's building was not adequately documented as part of this survey. A construction date could not be determined. However, this building was part of the Arlynda commercial district and served area ranchers for years. Additional research is recommended before determination of eligibility to the CRHR or NRHP.

160 and 190 on Port Kenyon Road (RA-SR-08): This property contains a single commercial building comprised of two different constructions. The entire building dates from between 1958 and 1965. It meets none of the qualifying criteria for designation as a historic resource under CEQA nor a historic property under NHPA.

Historic Era Landscape Features (RA-SR-09 to 11): The Dike and Ditch System (SR-RA-09), Barn Foundation and Corrals Site (RA-SR-10), and River Improvement Features (RA-SR-11) are not considered historic resources eligible for listing on the CRHR nor historic properties eligible for listing on the NRHP. The sites may be associated with an important event or theme on the local level; however, they do not retain integrity of the context to be considered significant for listing on the CRHR or NRHP under Criterion A. The sites are not significant under criterion B because they are not likely to be directly associated with an important person. These sites cannot be considered significant under Criterion C because they do not posses a particular quality such as the oldest type or best available example of its type. The sites are not eligible under criterion D because they do not posses data to address important research questions.

These sites were intensively recorded, documenting the information potential each of these sites offers. The dike and ditch system was thoroughly surveyed and mapped. Cross section sketches were completed at six locations. Associated features included a tide gate and cement spillway that was documented. The barn and corral site was recorded and mapped. The barn foundation was measured and described. The River Improvement Features are a series of vertical logs (pilings) imbedded into the bank of the Salt River with horizontal wooden cross bracing, forming a riverwall intended to protect the bank from erosion. This feature was also measured, mapped, and described. Each site was photographed. The information potential that each of these sites offers was recorded and is presented in the archaeological site records for each site.

Historic Port Kenyon culturally sensitive area and RA-SR-12: The site and culturally sensitive area are situated along the north and south bank of the Salt River approximately 380 meters northwest of the intersection of Port Kenyon Road and Meridian Road. This location was determined sensitive for historic-era cultural resources associated with the milling, canning and shipping activities that occurred at Port Kenyon between the 1860s to the early 1900s. It is probable

that buried archaeological deposits are present at this location. Surface survey identified one cement feature (RA-SR-12), which appears to be a foundation for machinery and may indicate where additional features and artifacts may be buried (i.e. building alignments or foundations). The site is considered potentially eligible for listing on the CRHR under criterion A for its association with early settlement and development of Port Kenyon and the Eel River valley. The site may be significant under criterion B because it is directly associated with John Gardner Kenyon, an important person in local history. This site cannot be considered significant under Criterion C because it does not posses a particular quality such as the oldest type or best available example of its type. The site may be eligible under criterion D because it may possess data to address important research questions.

Summary of Findings

No surveyed properties are listed on the National Register of Historic Places or on the California Register of Historical Resources (National Park Service, National Register; State of California, CHRIS). None of the surveyed properties are listed in an existing survey or register. A previous survey for the Ferndale Wastewater Treatment Marsh Project, conducted in 2001, does not include any of the properties surveyed in this investigation (Winter and Morgan 2001).

No individual properties were determined eligible for listing on neither the CRHR nor the National Register of Historic Places. Farmsteads, as a complex of buildings, determined eligible for listing on the CRHR and NRHP under Criterion A for their significant contribution to the broad patterns of California's history and cultural heritage:

a. Christiansen-Martin Farmstead (RA-SR-05). Contributing structures: dairy barn, milk house, loafing/feeding barn, and Canty House. Non-contributing: shed and garage/apartments

b. Sousa-Vevoda Farmstead (RA-SR-03). Contributing structures: barn, milk house, wood constructed loafing/feeding barn, and workshop. Non-contributing: metal loafing/feeding barns, milking barn, and house.

c. Silva-Vevoda Farmstead (RA-SR-02). Contributing: dairy barn, milking barn/milk house/equipment shed, bungalow and garage. Non-contributing: 1950 house and loafing/feeding barn.

d. Scalvini Farmstead (RA-SR-01). Contributing: dairy barn, calf barn, milk house, hog barn. Non-contributing: milking barn, loafing/feeding barn, office, and house.

Individual buildings determined eligible for the California Register of Historical Resources under Criterion C because each embodies the distinctive characteristics of a type and method of construction and/or possesses high artistic value:

a. Dairy barns on Riverside Ranch (RA-SR-06), Christiansen-Martin Ranch (RA-SR-05), Silva-Vevoda Ranch (RA-SR-02), and Scalvini Ranch (RA-SR-01)

b. Barn on Sousa-Vevoda Ranch (RA-SR-03)

The two buildings at RA-SR-07 need further research to determine eligibility for the California Register of Historical Resources under Criterion A:

a. Hamblin Farm Equipment Building (the two structures)

b. Blacksmith Shop

The Salladay-Bugbee property (RA-SR-08) at 160 and 190 Port Kenyon Road was determined to be ineligible for designation as a historic property, meeting none of the qualifying criteria.

The Dike and Ditch System (SR-RA-09), Barn Foundation and Corrals Site (RA-SR-10), and River Improvement Features (RA-SR-11) are not considered eligible for listing on the CRHR nor the NRHP. No specific site protection recommendations are warranted for these sites.

The cement feature (RA-SR-12) and surrounding culturally sensitive area are potentially eligible for listing on the CRHR under criteria A, B, and D. Further research is recommended to determine eligibility.

Cultural Landscape

The surveyed properties are part of a larger landscape, one that should be more fully documented to determine eligibility for listing on the California Register of Historical Resources and/or the National Register of Historic Places as a cultural landscape that has made a significant contribution to the broad patterns of California's history and cultural heritage and the history of this nation. Certainly, the farmsteads and many of the buildings are important in their own right as examples of area ranches and necessary buildings associated with the dairy industry, but it is the collection as a whole that gives significance to an entire landscape. Shaped by an incredibly rich and dynamic environment created by the Eel River and its tributaries, wetlands, riparian forests, tidal sloughs and marshes, topography, and the Pacific Ocean, this landscape reflects human use/alteration, creating a cultural overlay now visible in the built environment of structures, features, and buildings. They represent the history and cultural heritage of this landscape and a vibrant dairy industry that persists and has through multiple family generations. The region portrays a unique natural environment, human use of and adaptation to that environment, the physical overlay on that environment; all integral to the highly significant lower Eel River cultural landscape.

REGULATORY SETTING

Numerous laws and regulations require federal, State, and local agencies to consider the effects a project may have on cultural resources. These laws and regulations stipulate a process for compliance, define the responsibilities of the various agencies proposing the action, and prescribe the relationship among other involved agencies (e.g., State Office of Historic Preservation [OHP] and the Advisory Council on Historic Preservation). The National Historic Preservation Act (NHPA) of 1966, as amended; the California Environmental Quality Act (CEQA); and the California Register of Historical Resources, Public Resources Code (PRC) 5024, are the primary federal and State laws governing and affecting preservation of cultural resources of national, State, regional, and local significance.

Implementation of the proposed action or an alternative would require compliance with Section 106 of the National Historic Preservation Act and CEQA. Federal and State significance criteria are provided below. The significance of project impacts on cultural resources is related to the following factors: the presence, nature, and importance of any cultural resources that may be present in the treatment area; the location, size, and access requirements of the treatment areas; and need for heavy equipment.

Federal Regulations

The NHPA defines the nation's policy for the protection and preservation of the country's most significant cultural resources, which are those resources identified as eligible for listing in the National Register of Historic Places (National Register). Cultural resources eligible for the National Register are referred to as historic properties.

To be eligible for listing in the National Register, a resource must be significant in American history, architecture, archaeology, engineering, or culture. Districts, sites, buildings, structures and objects of potential significance must meet one or more of the following four established criteria, as defined under Title 36 Code of Federal Regulations (CFR) Part 60.4:

a. Are associated with events that have made a significant contribution to the broad patterns of our history;

b. Are associated with the lives of persons significant in our past;

c. Embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction;

d. Have yielded, or may be likely to yield, information important in prehistory or history.

In addition to meeting these four criteria, a historic property must also possess integrity. The various aspects of integrity include location, design, setting, materials, workmanship, feeling, and association. Furthermore, unless the resource possesses exceptional significance, it must be at least 50 years old to be considered for National Register listing.

The implementing regulations for the protection of historic properties are defined under Title 36 Code of Federal Regulations (CFR) Part 800. The regulation defines effect and adverse effect on historic properties as follows:

Section 800.9(a) Criterion of Effect: An undertaking has an effect on a historic property when the undertaking may alter characteristics of the property that may qualify it for inclusion in the National Register. For the purpose of determining effect, alteration to features of a property's location, setting, or use may be relevant depending on a property's significant characteristics and should be considered.

Section 800.9(b) Criteria of Adverse Effect: An undertaking is considered to have an adverse effect when the effect on a historic property may diminish the integrity of the property's location, design,

setting, materials, workmanship, feeling, or association. Adverse effects on historic properties include, but are not limited to:

- Physical destruction, damage, or alteration of all or part of the property;
- Isolation of the property from or alteration of the character of the property's setting when that character contributes to the property's qualification for the National Register;
- Introduction of visual, audible, or atmospheric elements that are out of character with the property or alter its setting;
- Neglect of a property resulting in its deterioration or destruction; and/or
- Transfer, lease, or sale of the property without adequate provisions to protect historic integrity.

State Regulations

Policy for the protection and preservation of the State's most significant cultural resources is found in various sections of CEQA, the State CEQA Guidelines, and in statutes of the PRC. In September 1992, Governor Wilson signed Assembly Bill 2881 which created more specific guidelines for identifying historic resources during the project review process under the CEQA:

A project that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment. For purposes of this section, an historical resource is a resource listed in, or determined eligible for listing in, the California Register of Historical Resources (California Register).[1]

Consequently, under Section 21084.1 of the PRC, an historic resource eligible for the California Register would by definition be an historic resource for purposes of CEQA compliance. The regulations for nominating resources to the California Register were published January 1, 1998. Under the regulations, a number of historic resources are automatically eligible for the California Register if they have been listed under various state, national or local historic resource criteria. California historic resources listed in, or formally determined eligible for the National Register are automatically listed on the California Register.

In order for a resource to be eligible for the California Register, it must satisfy all of the following three criteria:

A. A property must be significant at the local, state or national level, under one or more of the following four criteria of significance (these are essentially the same as National Register criteria with more emphasis on California history):

   1. The resource is associated with events or patterns of events that have made a significant contribution to the broad patterns of local or regional history and cultural heritage of California or the United States.

[1] California State Assembly, Assembly Bill 2881, Frazee, 1992. An Act to Amend Sections 5020.1, 5020.4, 5020.5, 5024.6 and 21084 of, and to add Sections 5020.7, 5024.1, and 21084.1 to, the Public Resources Code, relating to historic resources.

2. The resource is associated with the lives of persons important to the nation or to California's past.
3. The resource embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of a master, or possesses high artistic values.
4. The resource has the potential to yield information important to the prehistory or history of the state or the nation (this criteria applies primarily to archaeological sites).

B. The resource retains historic integrity (defined below) and

C. It is 50 years old or older (except for certain cases described in the California Register regulations).

The California Register regulations define "integrity" as "… the authenticity of a property's physical identity, evidenced by the survival of characteristics that existed during the property's period of significance," that is, it must retain enough of its historic character or appearance to be recognizable as an historical resource. Following the National Register integrity criteria, California Register regulations specify that integrity is a quality that applies to historic resources in seven ways: location, design, setting, materials, workmanship, feeling and association. A property must retain most of these qualities to possess integrity.

The use of the phrase " . . . appears potentially eligible or not eligible" for the California Register is standard practice in an evaluation discussion. Only the State Office of Historic Preservation can make an actual determination of eligibility for the California Register.

Humboldt County Regulations

The County of Humboldt has no formal historic preservation statutes, but relies on CEQA for the assessment and protection of historical resources. In the spring of 2005, the Planning Division of Community Development Services drafted a four-page paper entitled "Historical Resources Report Information," which contains three sections: Historic Resources and the California Environmental Quality Act, Historic Assessment Study Contents, and Professional Qualifications Standards. This paper, however, has not been incorporated into the County's environmental review process, so application of CEQA Section 15064.5 currently satisfies that review.

3.11.2 IMPACTS AND MITIGATION

SIGNIFICANCE CRITERIA

Under Appendix G of the CEQA Guidelines, a proposed project is considered to have a significant impact if it would result in any of the following:

- A substantial adverse change in the significance of a historical resource that is either listed or eligible for listing in the National Register, the California Register, or a local register of historic resources;
- A substantial adverse change in the significance of a unique archaeological resource;

- Disturbance or destruction of a unique paleontological resource or site or unique geologic feature; or
- Disturbance of any human remains, including those interred outside of formal cemeteries.

CEQA provides that a project may cause a significant environmental effect where the project could result in a substantial adverse change in the significance of a historical resource (Public Resources Code, Section 21084.1). CEQA Guidelines Section 15064.5 defines a "substantial adverse change" in the significance of a historical resource to mean physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of a historical resource would be "materially impaired" (CEQA Guidelines, Section 15064.5[b][1]).

CEQA Guidelines, Section 15064.5(b)(2), defines "materially impaired" for purposes of the definition of "substantial adverse change" as follows:

The significance of a historical resource is materially impaired when a project:

- Demolishes or materially alters in an adverse manner those physical characteristics of a historical resource that convey its historical significance and that justify its inclusion in, or eligibility for, inclusion in the California Register; or
- Demolishes or materially alters in an adverse manner those physical characteristics that account for its inclusion in a local register of historical resources pursuant to Section 5020.1(k) of the Public Resources Code or its identification in a historical resources survey meeting the requirements of Section 5024.1(g) of the Public Resources Code, unless the public agency reviewing the effects of the project establishes by a preponderance of evidence that the resource is not historically or culturally significant; or
- Demolishes or materially alters in an adverse manner those physical characteristics of a historical resource that convey its historical significance and that justify its eligibility for inclusion in the California Register as determined by a lead agency for purposes of CEQA.

In accordance with CEQA Guidelines Section 15064.5(b)(3), a project that follows the Secretary of the Interior's Standards for the Treatment of Historic Properties is considered to have mitigated impacts to historic resources to a less-than-significant level.

Alternative 1 (Proposed Project): Modified Channel/Riverside Ranch Restoration/ Upland Restoration

Impact 3.11.1-1: Loss of unknown archaeological resources

No adverse effects to the eight building complexes (RA-SR-01 through 08) or cultural landscape would occur as a result of project implementation; therefore, no specific mitigation measures are recommended at this time. Should the proposed project be amended to include adverse affects to any of the following sites: RA-SR-01, RA-SR-02, RA-SR-03, RA-SR-05, RA-SR-06, or RA-SR-07 further research is recommended.

The historic sites (RA-SR-09 to 11) recorded during this investigation are not considered historic resources under CEQA nor historic properties under NHPA and therefore do not warrant specific

mitigation measures. No specific site protection recommendations are warranted for the identified historic-era sites: Dike and Ditch System (RA-SR-09), Barn Foundation and Corrals Site (RA-SR-10), and River Improvement Features (RA-SR-11). These sites were intensively recorded, documenting the information potential each of these sites offer.

The culturally sensitive area is situated along the north and south bank of the Salt River approximately 380 meters northwest of the intersection of Port Kenyon Road and Meridian Road. This location was determined sensitive for historic-era cultural resources associated with the milling, canning and shipping activities that occurred at Port Kenyon between the 1860s to the early 1900s. It is probable that buried archaeological deposits are present at this location. The surface survey identified one cement feature (RA-SR-12), which appears to be a foundation for machinery and may indicate where additional features and artifacts may be buried (i.e. building alignments or foundations). During the background archival research, interviews with knowledgeable individuals, and the archaeological field survey, four archaeological sites and eight building complexes were identified and recorded. The location of Port Kenyon, where it coincides with the project's APE, has been designated as a "Culturally Sensitive Area," due to the high probability for buried historic-era archaeological materials. It is also possible that project excavation could inadvertently unearth previously unidentified cultural resources. Therefore, the project could have a potentially significant impact to any such resources.

The Wiyot Tribe has recommended that the Eel River watershed be considered as a Traditional Cultural Property. Studies to determine whether the project area is eligible as a Traditional Cultural Property were not conducted as a part of this Cultural Resources Inventory and are considered outside the scope of the current project. The project area has experienced significant disturbances in the last century, not the least of which is the 1964 flood event, a record, catastrophic flood which deposited several feet of sediment in some portions of the project area. Due to the periodic and historic disturbances within the project footprint, it is highly unlikely that any adverse effects to traditional cultural properties.

Mitigation Measure 3.11.1-1: Cease work and conduct assessment

Inadvertent Discovery of Cultural Resources

If cultural resources, 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, per the requirements of CEQA (January 1999 Revised Guidelines, Title 14 CCR 15064.5 (f)) and 36 CFR § 800.13 (a-b). 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. Prehistoric materials that could be encountered include: obsidian and chert flakes or chipped stone tools, grinding implements, (e.g., pestles, handstones, mortars, slabs), bedrock outcrops and boulders with mortar cups, locally darkened midden, deposits of shell, dietary bone, and human burials. Historic materials that could be encountered include: ceramics/pottery, glass, metal, can and bottle dumps, cut bone, barbed wire fences, building pads, structures, trails/roads, railroad rails and ties, trestles, etc.

Inadvertent Discovery of Human Remains

If human remains are discovered during project construction, work will stop at the discovery location, within 20 meters (66 feet), and any nearby area reasonably suspected to overlie adjacent to human remains (Public Resources Code, Section 7050.5). The Humboldt County coroner will be contacted to determine if the cause of death must be investigated. If the coroner determines that the remains are of Native American origin, it is necessary to comply with state laws relating to the disposition of Native American burials, which fall within the jurisdiction of the NAHC (Public Resources Code, Section 5097). The coroner will contact the NAHC. The descendants or most likely descendants of the deceased will be contacted, and work will not resume until they have made a recommendation to the landowner or the person responsible for the excavation work for means of treatment and disposition, with appropriate dignity, of the human remains and any associated grave goods, as provided in Public Resources Code, Section 5097.98. Work may resume if NAHC is unable to identify a descendant or the descendant failed to make a recommendation.

The following text details procedures for treatment of an inadvertent discovery of Human Remains:

- Immediately following discovery of known or potential human remains all ground-disturbing activities at the point of discovery shall be halted,
- No material remains shall be removed from the discovery site, a reasonable exclusion zone shall be cordoned off,
- The Project Manager shall be notified and the Project Manager shall contact the county coroner.
- It is highly recommended the services of a professional archaeologist be retained to immediately examine the find and assist the process.
- All ground-disturbing construction activities in the discovery site exclusion area shall be suspended.
- The discovery site shall be secured to protect the remains from desecration or disturbance, with 24-hour surveillance, if prudent.
- Discovery of Native American remains is a very sensitive issue, and all project personnel shall hold any information about such a discovery in confidence and divulge it only on a need-to-know basis.
- The Coroner has two working days to examine the remains after being notified. If the remains are Native American, the Coroner has 24 hours to notify the Native American Heritage Council (NAHC) in Sacramento (telephone (916) 653-4082). The NAHC is responsible for identifying and immediately notifying the Most Likely Descendant (MLD) of the deceased Native American.
- Within 24 hours of their notification by the NAHC, the MLD shall be granted permission by the landowner's authorized representative to inspect the discovery site, if they so choose.
- Within 24 hours of their notification by the NAHC, the MLD shall recommend to the landowner and Project Manager means for treating or disposing, with appropriate dignity,

the human remains and any associated grave goods. The Recommendation may include the scientific removal and nondestructive or destructive analysis of human remains and items associated with Native American burials.

- Whenever the NAHC is unable to identify a MLD, or the MLD identified fails to make a recommendation, or the landowner or his/her authorized representative rejects the recommendation of the MLD and mediation between the parties by the NAHC fails to provide measures acceptable to the landowner, the landowner or his/her authorized representatives shall re-inter the human remains and associated grave offerings with appropriate dignity on the property in a location not subject to further subsurface disturbance.
- Following final treatment measures, the Project Manager or professional archaeologist shall ensure that a report is prepared that describes the circumstances, nature and location of the discovery, its treatment, including results of analysis (if permitted), and final disposition, including a confidential map showing the reburial location. Appended to the report shall be a formal record about the discovery site prepared to current California standards on DPR 523 form(s). Report copies will be distributed to the NCIC, NAHC and MLD.

Port Kenyon Culturally Sensitive Area

It is recommended that pre-project archeological testing be conducted at this location to determine presence or absence of cultural materials within the proposed area of potential effects for this project. It appears that this location contains substantial overburden of flood soils, capping the historic ground surface. Deep auger boring or backhoe trenching is recommended to determine presence or absence of cultural materials within this sensitive area prior to any project related excavations.

Impact Significance after Mitigation

Less than significant after mitigation.

Alternative 2: Modified Channel/Upland Restoration Only

Impact 3.11.2-1: Loss of unknown archaeological resources

Same as Alternative 1 but any potential Riverside Ranch cultural resources would be avoided.

Mitigation Measure

Same as Alternative 1.

Alternative 3: Riverside Ranch Restoration/Upland Restoration Only

Impact 3.11.3-1: Loss of unknown archaeological resources

Same as Alternative 1 but the Port Kenyon APE and any other resources along the proposed channel excavation would be avoided.

Mitigation Measure

Same as Alternative 1.

Alternative 4: No Project

Under the No Project alternative, no excavations would occur and no structures would be affected. In addition no as-yet undiscovered archaeological resources would be affected.

3.12 TRANSPORTATION

This section describes roads, public transportation, and pedestrian and bicycle facilities of the project site and project vicinity, and assesses the potential impacts on roads, public transportation, and bicycle and pedestrian facilities of and from Salt River Ecosystem Restoration Project sites. Transportation issues addressed include project-related traffic, potential for accidents or safety concerns on public roads, and potential increase in demand for public transit services and pedestrian and bicycle facilities.

3.12.1 AFFECTED ENVIRONMENT

ROADS

The existing roadway system in the project area includes one highway (State Route 211) that runs from State Route 101 to the City of Ferndale, and a system of County roads comparable to other rural communities. There are no signalized intersections. Primary streets in the Ferndale commercial district are two-lane with gutters, curbs, and sidewalks. Local streets and rural roads have only road shoulders and no sidewalks.

The roads adjacent to the project site are County Roads including Port Kenyon Road, Dillon Road, Fulmor Road, Francis Creek Road, Williams Creek Road, Oeschger Lane, and Meridian Road. All of these roads are two-lane roads classified as rural roads with narrow, variable widths, and no passing areas. These roads serve isolated farms and residences in the Salt River watershed and generally have a low volume of use. Streets in Ferndale terminate at the edges of town, are classified as local streets, and primarily provide low-speed roadway access connecting Ferndale with surrounding rural areas.

At the time this EIR was prepared, the Alton Interchange project was under construction on a segment of SR 101 southeast of the proposed project area. The Alton Interchange project will convert the segment of State Route (SR) 101 from just north of the Van Duzen River Bridge to just north of the intersection of SR 101/Drake Hill Road from four-lane expressway to four-lane freeway. The interchange project includes a grade separated interchange to replace the existing at-grade intersection of SRs 36 and 101, and local road extensions on the west side of SR 101 eliminating seven existing at-grade road approaches to SR 101. The Alton Interchange project will not alter the SR 101 interchange nearest the proposed project site, which connects SR 211 and SR 101.

PUBLIC TRANSPORTATION

There is no public transit in the project area, including the City of Ferndale. The Humboldt Transit Authority's Redwood Transit System (RTS) provides bus service from Scotia to Trinidad along the State Route 101 corridor, with the closest stop to the project area being in Fernbridge, about five

miles east of the project area. The project site is not located directly along the existing RTS bus route.

PEDESTRIAN AND BICYCLE FACILITIES

The City of Ferndale's pedestrian system consists primarily of sidewalks and pedestrian crosswalks on several public streets. The City does not have bike lanes (Class II facilities) or bike routes (Class III facilities). The project site does not currently have any bike or pedestrian facilities. The project site itself has minimal use by pedestrians, although pedestrian use on adjacent County roads occurs at a low level. The project site would not be accessible using bike lanes and bike routes, and there is no bicycle use within the project site.

3.12.2 IMPACTS AND MITIGATION

SIGNIFICANCE CRITERIA

The project would have a significant impact on transportation and circulation if it would:

- Cause an increase in traffic, which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume-to-capacity ratio on roads, or congestion at intersections)
- Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways
- 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
- Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)
- Result in inadequate emergency access
- Result in inadequate parking capacity, or
- Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)

Alternative 1 (Proposed Project): Modified Channel/Riverside Ranch Restoration/ Upland Restoration

Project Trip Generation

Using the balanced earthwork volumes presented in Section 6 of the EMMP, earthwork production rates were developed for Phases 1 and 2. The production rates provide a general understanding of the number and frequency of truck trips necessary to haul the excavated material to a reuse site. Hauling excavated material from the excavation site to the reuse site and returning to the excavation

site would be defined as two truck trips. Table 3.12-1 contains the tabulated conversions from the total excavated material to the required truck trips for Phases 1 and 2.

Table 3.12-1 Haul Truck Trips for Riverside Ranch (Phase 1) and Salt River Restoration (Phase 2)

Phase	Total Earthwork Volume to be Transported (CY)	Total Earthwork Volume Including 15% Transportation Expansion (CY)	10-CY Truck Trips/Phase	10-CY Truck Trips/Day[1]	10-CY Truck Trips/Hour[2]
1	375,100	431,365	86,273	719	90
2	416,300	478,745	95,749	798	100

1 - Project Phase assumes 120 working days

2 - Assumes an 8 hour work day

A small portion of the total earthwork volume associated with Phase 1 and 2 would not require haul truck transportation. For example, on Riverside Ranch (Phase 1) material removed from lowering existing berms would likely be placed in the adjoining ditches precluding the need to load and transport the material. Similarly, a portion of material removed from the Salt River Channel

(Phase 2) would be immediately placed on the channel confinement fill areas, or transported a short distance within the corridor by means of a scraper. Because of these discrete locations throughout Phases 1 and 2 where excavated material would not require transport, the truck trips presented in the above table are considered conservative estimates. Additionally, larger capacity belly- and end-dump trucks could be utilized and would further reduce the number of truck trip estimates presented above. Because of the unknowns associated with the vegetation removal, such as the volume to be removed and transported off site verses to remain on site for mulch or replanting, truck trips were not estimated for vegetation off-haul.

Figure 3.12-1 depicts the existing County roads that could potentially be utilized as haul routes for Phase 2 construction. As previously stated, it is anticipated that the channel corridor would be utilized to transport material in combination with County roads. Providing the contractor this flexibility would allow for circular haul patterns and increased construction efficiency. Allowing flexibility for the contractor to use both the channel corridor and existing County roads to transport material makes it difficult to estimate the predicted haul truck traffic volume on each County road. It is possible that any County road depicted as a potential haul route could receive approximately 800 haul truck trips per day, depending upon the location of the excavation with respect to the reuse site. However it is unlikely any particular County road would experience this level of haul truck trips for the full duration of Phase 2. Furthermore, in order for the contractor to meet the production rates necessary to complete the project within the limited construction period, it is anticipated that multiple crews would be working at multiple excavation and reuse sites concurrently and thereby potentially distributing the truck trips throughout various locations of the project area.

Because of the close proximity to the channel corridor, Port Kenyon Road between its western terminus and Highway 211 as well as Riverside Road between Riverside Ranch and Dillon Road

would likely experience an overall greater duration of truck traffic usage during the 120-day construction period of Phase 2, relative to other local County roads. The County roads also would be used by fueling, equipment maintenance, equipment transport, and construction management/inspection vehicles throughout the construction period. The combined number of daily trips of these vehicles is anticipated to be less than 10 percent of the daily haul truck trips.

The County roads depicted on Figure 3.12-1 as potential haul routes are currently used to support the transportation needs of the local agricultural industry. These roads are frequently used by agricultural equipment including tractors and manure spreaders as well as milk and feed trucks with weights similar to the expected proposed haul trucks. Under existing conditions, the County roads currently shown as potential haul routes are not anticipated to require improvements prior to construction to support the increase frequency of haul truck traffic. Minor repairs or overlays could be preferable after completion of the project due to the temporary increase in construction traffic and the generally poorly maintained roads in the project area. Maintenance activities on County Roads are typically at the discretion and responsibility of the County. The County maintains control of the roadways in general and through their encroachment permit process for temporary uses such as construction projects.

Maximum haul route distances were determined for Phase 1 and Phase 2. These routes connect the most remote excavation location to the most remote reuse location, and thereby provide a maximum haul route distance. The maximum haul route distance for Phase 1 could include transporting excavated material from the Salt River at Station 0+00 to the southern end of the new Riverside Ranch berm. This maximum distance (including the return trip) would be approximately 4 miles and located along the temporary haul route buffer.

The maximum haul route distance for Phase 2 could include transporting excavated material from Salt River STA 104+00 to the agricultural reuse parcels (APN 106-021-02, 03, 07, and 62) located on Fulmor Road. This maximum distance (including the return trip) would be approximately 7 miles and would include travel in the easterly direction along Port Kenyon Road from approximately its western terminus to its intersection with Fulmor Road and then north on Fulmor Road to the reuse parcel.

Only a small percentage of the total excavated material would actually be hauled the maximum distances presented above, however this maximum distance provides an upper limit on haul distances for both Phases 1 and 2. Using a distance that is half of the maximum presented above for each Phase would provide a haul distance that would be a more typical representation of the average truck trip distance.

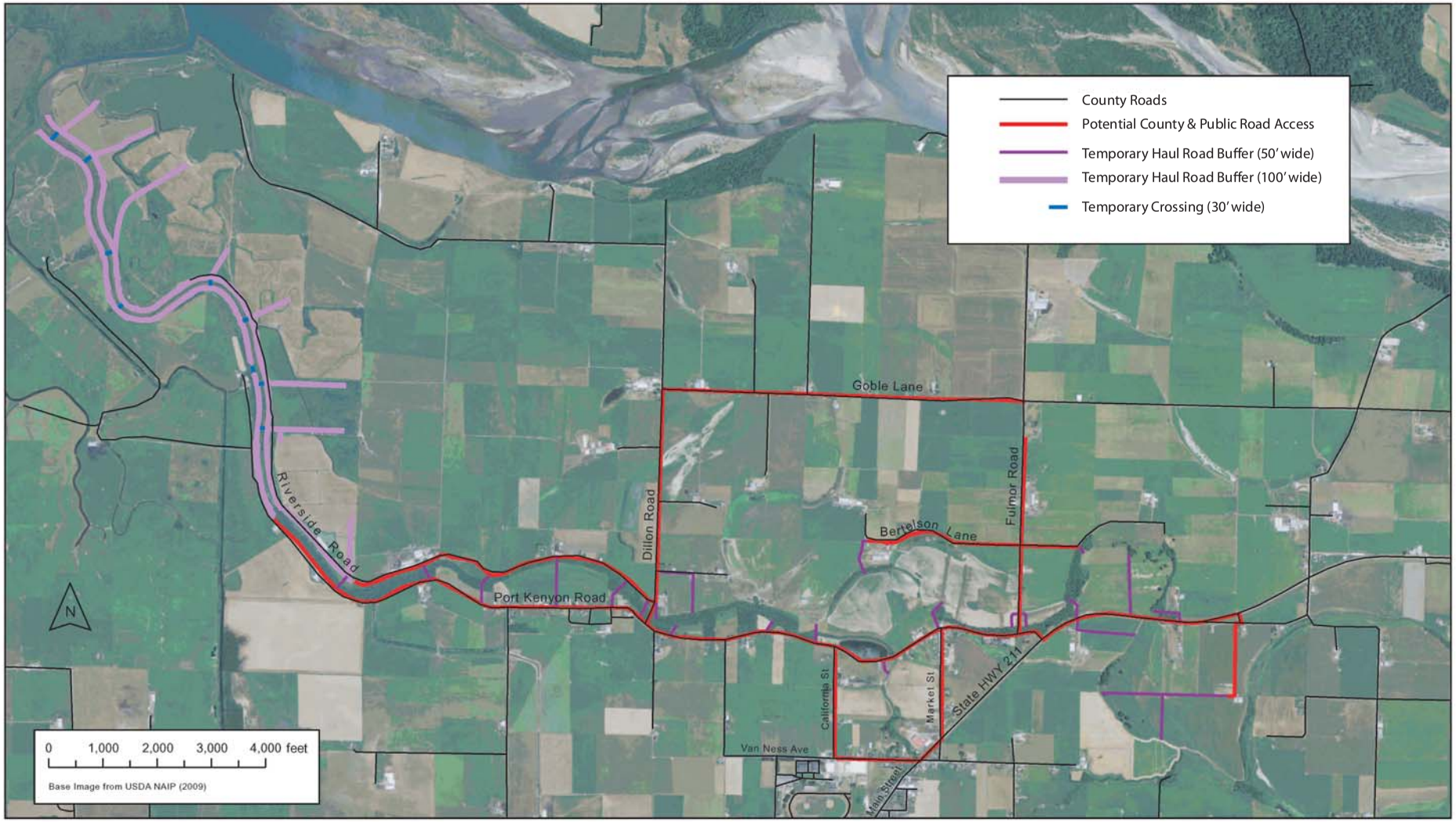


Figure 3.12-1

Regional Roadway Map

Source: Winzler & Kelly, 2009

Impact 3.12.1.1: Impacts due to project-related traffic

Project-related traffic would include vehicles used by construction crews to access the site during construction, trucks being used to transport materials and heavy equipment to the site, and trucks hauling sediment to various locations. As described above, much of the traffic would be internal to the project site using the channel construction corridor and other private lands. Excavated material would both remain on site and be transported on County Roads and public roadways.

During project construction, the number of construction-related vehicles in the area would increase substantially. This traffic increase would be noticeable because it would include a high number of large construction vehicles, but it would be temporary (i.e., during the project construction phase). Depending on the timing and distribution of project traffic, the project could potentially significantly affect on street and intersection operations.

Construction crews would use Port Kenyon Road, Dillon Road, and Fulmor Road for main access to the project area. The majority of project traffic would use Port Kenyon Road, which is one of the highest capacity roads in the project vicinity. Secondary access would be through rural ranch roads and temporary roads needed to access the river channel. Traffic on roads adjacent to the project is light and occurs intermittently throughout the day. Traffic on Port Kenyon Road and State Route 211 is greater than on any of the other access roads. Construction crews would generate a few tens of vehicle trips per day, which would not significantly affect operations of these roadways.

The project also would involve work on the Francis Creek crossing of Port Kenyon Road, either in the form of installing new large culverts or a new bridge. The final design of the replaced crossing would dictate the construction duration, which could range from 45 to 90 working days. Closure of Port Kenyon Road at the crossing during construction is recommended over maintaining a temporary crossing with traffic control because of the increase in construction efficiency and reduced construction costs. Providing a temporary road crossing would increase project cost and prolong construction. The road closure would require establishment of an alternative detour route. T his proposed crossing replacement location and detour route has been depicted on Figure 3.12-1. The Traffic Control Plan (see Mitigation 3.12-1) would include the necessary provisions including public notification, signage, and location of safety barriers. The replacement of the crossing is anticipated to occur during the Phase 2 construction season and during the channel excavation of Francis Creek.

Because the majority of project traffic would be associated with hauling of excavated materials from excavation areas to disposal sites, all of which would be west of US 101, project traffic on that highway would be limited to construction workers and equipment delivery, and would be minimal in the context of highway and interchange capacity.

Mitigation 3.12.1.1: Traffic Control Plan

As part of the final construction documents, the contractor shall be required to submit a Traffic Control Plan corresponding to a Work Sequencing Schedule for review and approval by the construction manager prior to commencement of work. The Traffic Control Plan shall provide a narrative supported with figures depicting the haul routes anticipated to be utilized throughout the

construction period and shall be developed in accordance to the California Manual on Uniform Traffic Control Devices (MUTCD) and applicable County of Humboldt encroachment permit conditions. The Traffic Control Plan shall detail the desired haul routes, public notification, required signage/flagging, potential lane/road closers, detour routes, provisions for providing temporary pedestrian access (if applicable) and provisions for maintaining access to all parcels. The use of Port Kenyon Road would be important for the transport of material and therefore the crossing replacement shall be scheduled for a time period when haul trucks would be using that portion of the road less frequently. The Traffic Control Plan shall be periodically updated throughout the course of the project.

Significance after Mitigation

Less than significant.

Impact 3.12.1.2: Impacts due to an increase in the potential for accidents or safety concerns on public roads

The proposed project would result in a less than significant impact on transportation safety. The project would generate additional traffic on roads adjacent to the project for transportation of workers and some materials during construction. Some of the sediment excavated and transported will be reused on site, and therefore would not be hauled on public roadways. The project does not include any new public roads or any new intersections. The project would not include the permanent closure or alteration of roads. During construction, traffic control would occur during any portions of work when equipment operation is occurring within or immediately adjacent to a road right-of-way (see Mitigation 3.12-1, above). Traffic control would also occur during loading and unloading of equipment from transport vehicles. As a result, there would be no substantial effect on transportation safety, including bicycle and pedestrian safety, or on emergency access.

Significance after Mitigation

Less than significant with adoption of Mitigation 3.12-1.

Impact 3.12.1.3: Impacts on public transit

The proposed project would not increase use of the public transit system because the project site is not served by public transit. The project would also not induce a substantial demand for additional public transit services because it would not significantly increase use of the area.

The proposed project would have a less than significant impact on demand for public transit services. The project would result in no impacts due to conflicts with adopted policies supporting public transportation, or on adopted policies promoting or supporting alternative transportation.

Significance

Less than significant, no mitigation required.

Impact 3.12.1.4: Impacts on pedestrians and bicycles

The project would not involve construction of new bike lanes or routes, and would not require the addition of new facilities. No part of the project construction would be within or adjacent to an existing bike lane or route. The project would not construct new pedestrian trails or generate conflicts between motor vehicles and pedestrians or bicycles, and therefore would not increase the potential for accidents. The project would result in no impact to bicycle or pedestrian facilities, accidents, or safety concerns.

Significance

Less than Significant impact; no mitigation required.

Impact 3.12.1.5: Impacts on parking

The project would not significantly increase use of the area, and therefore would not substantially affect parking conditions.

Significance

Less than Significant impact; no mitigation required.

Alternative 2: Modified Channel/Upland Restoration Only

Impact 3.12.2.1: Impacts due to project-related traffic

Impacts would be the same as Alternative 1 for the Salt River Channel area and the Uplands Areas. There would be no impacts due to restoration at Riverside Ranch. Since the bulk of Riverside Ranch excavated materials would be disposed of on site, this alternative would not significantly change traffic impacts from those described for Alternative 1.

Impact 3.12.2.2: Impacts due to an increase in the potential for accidents or safety concerns on public roads

Impacts on transportation safety would similar to those described above for Alternative 1, and less than significant.

Impact 3.12.2.3: Impacts on public transit

Impacts on public transit would the similar to Alternative 1, and less than significant.

Impact 3.12.2.4: Impacts on pedestrians and bicycles

Impacts on pedestrians and bicycles would similar to Alternative 1, and less than significant.

Impact 3.12.2.5: Impacts on parking

Impacts on parking would the same as Alternative 1, and less than significant.

Alternative 3: Riverside Ranch Restoration/Upland Restoration Only

Impact 3.12.3.1: Impacts due to project-related traffic

Impacts would be the same as Alternative 1 for the Riverside Ranch area and the Uplands Areas, and, similar to Alternative 1, but overall traffic would be substantially reduced compared with Alternatives 1 and 2 because excavated material hauling would be substantially lower. This impact could still be potentially significant, and would be reduced to a less than significant level by implementation of Mitigation Measure 3.12-1.

Significance after Mitigation

Less than Significant impact with adoption of Mitigation 3.12-1, no additional mitigation required.

Impact 3.12.3.2: Impacts due to an increase in the potential for accidents or safety concerns on public roads

Impacts on transportation safety would the less than with Alternative 1, and less than significant.

Impact 3.12.3.3: Impacts on public transit

Impacts on public transit would similar to Alternative 1, and less than significant.

Impact 3.12.3.4: Impacts on pedestrians and bicycles

Impacts on pedestrians and bicycles would the same as Alternative 1, and less than significant.

Impact 3.12.3.5: Impacts on parking

Impacts on parking would the similar to Alternative 1, and less than significant, except there would be no effects due to modification of the Salt River channel area.

Alternative 4: No Project

Impact 3.12.4.1: Impacts due to project-related traffic

No traffic impacts would occur because there would be no changes to traffic under this alternative. No mitigation would be required.

Impact 3.12.4.2: Impacts due to an increase in the potential for accidents or safety concerns on public roads

No transportation safety impacts would occur because there would be no changes to traffic or the existing transportation network under this alternative.

Impact 3.12.4.3: Impacts on public transit

There would be no effect on public transit under this alternative.

Impact 3.12.4.4: Impacts on pedestrians and bicycles

There would be no effect on pedestrians and bicycles under this alternative.

Impact 3.12.4.5: Impacts on parking

There would be no effect on parking under this alternative.

3.13 PUBLIC SERVICES AND UTILITIES

This section describes public services at the project site and project vicinity, and assesses impacts on public services at the Salt River Ecosystem Restoration Project sites. Public Services addressed include water supplies, wastewater treatment and disposal, solid waste collection and disposal, storm drainage, police protection, fire protection, schools, and parks.

3.13.1 AFFECTED ENVIRONMENT

PUBLIC UTILITIES

Water Supply

The Del Oro Water Company Water provides water to residences in the City of Ferndale and to many rural residences along Port Kenyon Road and other areas outside of the City limits. Del Oro Water Company provides water from a well facility located upstream of the City of Ferndale along Francis Creek. Most of the small neighborhoods along Port Kenyon Road and rural residential areas in tributary watersheds of the Salt River are served by private wells. Riverside Water District serves water to some residences along Port Kenyon Road. Riverside Water District provides water from a facility located near Centerville Road. Riverside Community Services District (CSD) provides water to Riverside Ranch and other adjacent users.

Wastewater Treatment and Disposal

Wastewater treatment in most of the small neighborhoods along Port Kenyon Road and rural residential areas in tributary watersheds of the Salt River is provided by private septic tanks.

The City of Ferndale provides wastewater service to residences and businesses within the City limits. The City's wastewater treatment facility is located on Port Kenyon Road within the project area. The City regulates wastewater disposal, including industrial pretreatment standards. Treated effluent is discharged into lower Francis Creek near its confluence with the Salt River during the wet season, generally winter and spring months. During the dry season, effluent is applied to adjacent pastures for irrigation.

The City of Ferndale's wastewater treatment system does not meet discharge requirements in its permit issued by the California Regional Water Quality Control Board and is currently operating under an (effluent) discharge Cease and Desist Order (CDO) issued by the RWQCB on May 15, 2003, with a task list outlining a compliance timetable.[1] The City has investigated alternatives to

[1] Cease and Desist Order (CDO No. R1-2003-0049) issued by the RWQCB on May 15, 2003. This CDO was amended with CDO Nos. R1-2005-0087 on October 12, 2005 and R1-2006-0109 on November 29, 2006; and most recently with CDO No. R1-2008-0110 on December 11, 2008.

achieve compliance with its discharge permit by complying with the CDO tasks, and, at the time this EIR was prepared, was in the process of upgrading the wastewater treatment plant.[2]

Storm Drainage

As discussed in Chapter 2, Project Description, the Salt River has become hydrologically disconnected and dysfunctional, which causes significant problems related to flooding. During the wet season, even small rain events cause the Salt River and the lower reaches of its tributaries to overflow their banks, resulting in almost perpetual flood conditions. In the summer, surface water disappears in several channel reaches as water flows subsurface through the accumulated sediment. Road culverts have become severely plugged by sediment, with complete blockage in some cases. Conditions in the Salt River and its tributaries continue to worsen with each storm event and the associated delivery and buildup of sediment.

Solid Waste Collection and Disposal

The City of Ferndale has a three part solid waste program including waste reduction, recycling, and solid waste collection and disposal. The City actively manages the collection and processing of recyclable materials, composting organic debris from the City's operations, and performance of recycling-related public education. A franchised contractor provides the solid waste collection and disposal. The waste reduction component of the City's solid waste management includes community education.

Solid waste collected by the franchised contractor is transported to the Eureka transfer station, after which it is shipped to Dry Creek Landfill in Medford, Oregon. The Eureka transfer station is a publicly owned facility of the Humboldt Waste Management Authority of which Ferndale is a member agency.

Electricity and Natural Gas

Pacific Gas and Electric Company (PG&E) provide electrical service to the project area. Electrical service is via overhead lines, mostly located along public roadways. Several utility poles are located within the project's proposed construction areas. No natural gas pipeline system exists in the project area; residents are served by residential natural gas tanks.

Communications

Frontier Communications provides basic and long-distance telephone, dial-up internet and DSL service in the project area. Suddenlink (formerly Cox Cable) provides cable T.V. and cable internet service. Cellular telephone service and satellite TV are available from a variety of companies. Phone and cable lines are overhead and generally share PG&E poles.

[2] City of Ferndale, Initial Study/Mitigated Negative Declaration For the City of Ferndale Wastewater Treatment Facility, State Clearinghouse No. 2006062115, March 2009, page 4.

PUBLIC SERVICES

Police Protection

Within the City of Ferndale, police protection is provided by the City of Ferndale Police Department. The City Police are based at the main station office at 600 Berding Street in Ferndale. The Department employs a chief and three officers. Police protection in the project area outside the city of Ferndale is provided by the Humboldt County Sheriff's Department. The County Sheriff's office is located approximately 20 miles from the project area at 826 Fourth Street, Eureka.

California Department of Fish and Game (CDFG) wardens provide law enforcement for natural resources for the State of California. Riverside Ranch, within the project area, is owned by CDFG, and wardens would continue law enforcement activity at the site. CDFG wardens and staff provide regular unscheduled visits to the site. Wardens respond to emergency calls placed on the CALTIP hotline and calls directly to the CDFG office, and 911 calls specific to wildlife.

Fire Protection

The Ferndale Volunteer Fire Department is responsible for the preservation and protection of life and property for the City of Ferndale, and the surrounding rural area. The department is composed of three engine companies and one medical company. The Ferndale Volunteer Fire Department was founded in 1897 and currently is comprised of 30-40 members. The historic Fire Hall in Ferndale, built in 1910, is located on Brown Street. The Volunteer Fire Department has one Rescue Truck, three Fire Engines (pumpers), two Water Tenders, a Utility Truck and other assorted equipment. The District follows the Eel River from just west of Price Creek down to the mouth of the Eel River, to just south of the Navy base back to Price Creek, crossing the Wildcat a mile or two up.

Schools

The proposed project site is located within the Ferndale School District. School age persons in the area requiring public schooling from kindergarten through eighth grade attend Ferndale Elementary School, located at 164 Shaw Avenue in Ferndale. Public high school students attend Ferndale High School, located at 1231 Main Street in Ferndale.

Parks

The project area is undeveloped for recreational use. Russ Park and Fireman's Park in the Francis Creek watershed provide hiking trails and public parking facilities.

3.13.2 IMPACTS AND MITIGATION

SIGNIFICANCE CRITERIA

An impact to public facilities and services is considered to be significant if it would:

- Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board;
- Require or result in the construction of new water or wastewater treatment facilities or expansion or relocation of existing facilities;
- Require or result in the need for relocation or existing utility systems that could result in the interruption of service;
- Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities;
- Have insufficient water supplies available to serve the project from existing entitlements and resources, or need new or expanded entitlements;
- Result in a determination by the wastewater treatment provider which serves or may serve the project that it does not have adequate capacity to serve the project's projected demand in addition to the provider's existing commitments;
- Not be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs;
- Not comply with federal, state, and local statutes and regulations related to solid waste; or
- Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or need 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

Alternative 1 (Proposed Project): Modified Channel/Riverside Ranch Restoration/ Upland Restoration

Impact 3.13.1-1: Impacts on water supply

The project would not create a new demand or use for water with the exception of small amounts of water to be trucked to the site for use during construction.

Mapping indicates that Del Oro Water Company has a 1-inch diameter steel water pipe approximately 24 inches below Port Kenyon Road at Eastside Drainage crossing serving one residential customer may need to be relocated as part of the project. The Riverside CSD reports one water main crossing under the Salt River (4-8-inch diameter PVC piping) at STA 142+00. If

necessary, these would be relocated as part of the project, in coordination with Del Oro and the CSD, respectively. Temporary service would be provided as needed as part of the project.

Significance

Less than Significant impact; no mitigation required.

Impact 3.13.1-2: Impacts on wastewater treatment and disposal

The project would not create additional wastewater. Wastewater from the City of Ferndale Wastewater Treatment Plant would continue to be released to Francis Creek during the wet season just above where it enters the Salt River. Currently, wastewater is discharged into Francis Creek and then disperses across pastures because of the loss of a defined channel in the Salt River. The project would improve dilution of wastewater by restoring Williams Creek flows and would improve the transport of effluent downstream by restoring a defined channel in the Salt River. Thus, the restoration project would improve water quality in the Salt River.

City of Ferndale Mapping indicates a 12-inch diameter concrete sewer pipe encased in concrete under Eastside Drainage at Port Kenyon Road that spans two manholes located approximately 40-feet apart, and a 12-inch diameter concrete sewer pipe encased in concrete under Francis Creek at Port Kenyon Road that spans two manholes located approximately 37.5-feet apart. The proposed channel design would be modified as necessary or the sewer piped deepened to not interfere with operations of the Eastside Drainage pipe. For the Francis Creek pipe crossing, the project would include new sewer pipe crossing to accommodate new road crossing that would likely require replacement of both manholes and approximately 100-feet of 12-inch diameter concrete sewer pipe. These modifications would be coordinated with, and subject to approval by, the City of Ferndale.

The project would realign Francis Creek by shifting its location away from the Wastewater Treatment Plant by 100- to 300-feet, thus creating a more natural curve that would sustain velocity and thereby reduce future deposition. This realignment would require the effluent outfall location to be moved 200-feet from its current location to the proposed location of Francis Creek and either replacing or extending the existing outfall pipe. The outfall would remain in Francis Creek just upstream of where it enters the Salt River.

Significance

Less than Significant impact; no mitigation required.

Impact 3.13.1-3: Impacts on storm drainage

The project would not create any new impervious surfaces or structures. The project would restore the Salt River channel and connect other existing channels and drains to the restored Salt River, which would improve storm drainage in the project area. Similarly, drainage improvements in the Upland Restoration Areas would have a beneficial effect on storm drainage. The proposed channel design would require the removal of the existing Port Kenyon Road crossing over Francis Creek and replacement with a large box culvert embedded below design grade (Tauzer and Chow 2009). The alignment of the proposed channel under Port Kenyon Road is at a skew resulting in an

approximately 80-foot wide channel top width. This width would require multiple side-by-side box or arch culverts. A free span bridge structure also would be considered during final design. Traffic impacts associated with these improvements are addressed in Section 3.12.

Significance

Less than Significant impact; no mitigation required.

Impact 3.13.1-4: Impacts on solid waste collection and disposal

The project would generate only a minimal amount of solid waste during construction and would not generate solid waste after implementation.

Significance

Less than Significant impact; no mitigation required.

Impact 3.13.1-5: Impacts on police protection

The project area outside Ferndale is currently patrolled by the County Sheriff, and areas within the City limits are patrolled by City of Ferndale Police. The project site is currently used by dairy farmers, rural residential landowners, and renters. The majority of the site is currently not regularly used by the public. Private lands are used by a small number of waterfowl hunters. County roads in the project area are used by local walkers, joggers, and horseback riders, as well as for special events including the Foggy Bottoms Milk Run and Kinetic Sculpture Race. Public access may be provided in the future at Riverside Ranch, but this is not currently proposed. The project would not increase use or access or increase the area needing regular patrol by Humboldt County or the City of Ferndale. Additional patrol would not be required.

Significance

Less than Significant impact; no mitigation required.

Impact 3.13.1-6: Impacts on fire protection

The project would not increase population, therefore, it is not anticipated that the project would increase the need for fire protection or emergency medical services, or affect service ratios or response times of these public services. The fire hazard at the site is low because the majority of the project area is open pasture kept moist by summer fog and irrigation. The project would reduce fire hazard by restoring an open channel in the Salt River, which would serve as a firebreak. Public access may be provided in the future at Riverside Ranch, but this is not currently proposed.

Significance

Less than Significant impact; no mitigation required.

Impact 3.13.1-7: Impacts on schools

The project would not result in an increase in population and therefore would not create a need for new schools or increase any school population. The project would not affect school funding.

Significance

Less than Significant impact; no mitigation required.

Impact 3.13.1-8: Impacts on parks

The project would have no effect on Russ Park or Fireman's Park. There are no other parks in the project vicinity.

Significance

Less than Significant impact; no mitigation required.

Impact 3.13.1-9: Impacts to electrical and communications lines

The project would require relocation of up to four PG&E poles, which may be in conflict with proposed excavation. Two of these poles are on the north side of the Salt River and the other two are in proposed channel confinement area B. The locations of the poles would be surveyed to confirm if conflict exists with channel excavation. If conflict exists, the project design team would coordinate any proposed temporary and permanent relocations with PG&E. Temporary services would be provided as needed. PG&E would have review authority of any proposed changes to their facilities. Therefore impacts would be less than significant.

Communication lines in the project area typically share poles with PG&E electrical lines. If utilities are determined to be in conflict with project excavation and filling, based on subsequent design surveys, the project would coordinate any temporary and permanent relocation with Suddenlink and Frontier, and provide temporary services as needed. Suddenlink and Frontier would have review and approval authority of any proposed changes to their utilities. Therefore impacts would be less than significant.

Alternative 2: Modified Channel/Upland Restoration Only

Impact 3.13.2-1: Impacts on water supply

Impacts would be the same as Alternative 1 for the Salt River Channel area and the Uplands Restoration Areas. Under this alternative, there would be no restoration at Riverside Ranch, and no associated impact on water supply or associated facilities.

Impact 3.13.2-2: Impacts on wastewater treatment and disposal

Impacts would be the same as Alternative 1 except there would be no changes at the Riverside Ranch, and no associated impact on wastewater treatment and disposal.

Impact 3.13.2-3: Impacts on storm drainage

As with Alternative 1, this alternative would not create any adverse impacts related to storm drainage. Improvements at the channel under Port Kenyon Road would still be required and provided as part of the project.

Impact 3.13.2-4: Impacts on solid waste collection and disposal

As with Alternative 1, this alternative would have a minimal impact on solid waste collection and disposal.

Impact 3.13.2-5: Impacts on police protection

As with Alternative 1, this alternative would not create any additional need for police protection services.

Impact 3.13.2-6: Impacts on fire protection

As with Alternative 1, this alternative would not create any additional need for fire protection services, and would reduce fire hazard by restoring an open channel in the Salt River, which would serve as a firebreak.

Impact 3.13.2-7: Impacts on schools

As with Alternative 1, this alternative would not affect schools or school funding.

Impact 3.13.2-8: Impacts on parks

As with Alternative 1, this alternative would not affect Russ Park, Fireman's Park, or other parks.

Impact 3.13.2-9: Impacts to electrical and communications lines

This alternative would have similar impacts to electrical and communication line infrastructure as Alternative 1.

Alternative 3: Riverside Ranch Restoration/Upland Restoration Only

Impact 3.13.3-1: Impacts on water supply

Impacts would be the same as Alternative 1 for the Riverside Ranch area and the Uplands Areas. Under this alternative, there would be no modification of the Salt River Channel, and no associated impact on water supply or associated utilities.

Impact 3.13.3-2: Impacts on wastewater treatment and disposal

Impacts would be the same as Alternative 1 except there would be no modification of the Salt River Channel and no need to relocate/replace any of the existing infrastructure in the channel excavation or materials disposal/reuse areas. Relative to Alternative 1, there would be a smaller beneficial impact on dilution of wastewater discharges from the wastewater treatment plant, but, similar to

Alternative 1, there would be no adverse impact on wastewater treatment and disposal from this alternative.

Impact 3.13.3-3: Impacts on storm drainage

Unlike Alternative 1, this alternative would not have a beneficial effect on storm drainage due to restoration of the Salt River channel; however, this alternative would not create any adverse impacts related to storm drainage.

Impact 3.13.3-4: Impacts on solid waste collection and disposal

As with Alternative 1, this alternative would have a minimal impact on solid waste collection and disposal.

Impact 3.13.3-5: Impacts on police protection

As with Alternative 1, this alternative would not create any additional need for police protection services.

Impact 3.13.3-6: Impacts on fire protection

Unlike Alternative 1, this alternative would not reduce fire hazard by restoring an open channel in the Salt River; however, this alternative would not create any additional need for fire protection services.

Impact 3.13.3-7: Impacts on schools

As with Alternative 1, this alternative would not affect schools or school funding.

Impact 3.13.3-8: Impacts on parks

As with Alternative 1, this alternative would not affect Russ Park, Fireman's Park, or other parks.

Impact 3.13.3-9: Impacts to electrical and communications lines

This alternative would have similar impacts to electrical and communication line infrastructure as Alternative 1, but would eliminate the need for pole relocation and temporary service associated with channel excavation.

Alternative 4: No Project

Impact 3.13.4-1: Impacts on water supply

There would be no change in water demand, and no impact on water supply or associated infrastructure, under this alternative.

Impact 3.13.4-2: Impacts on wastewater treatment and disposal

There would be no change in wastewater generation, and no impact on wastewater treatment and disposal or associated facilities, under this alternative.

Impact 3.13.4-3: Impacts on storm drainage

There would be no effect on existing storm drainage or associated infrastructure under this alternative.

Impact 3.13.4-4: Impacts on solid waste collection and disposal

Under this alternative, there would be no solid waste generation and no impact on solid waste collection and disposal.

Impact 3.13.4-5: Impacts on police protection

There would be no effect on police protection services under this alternative.

Impact 3.13.4-6: Impacts on fire protection

There would be no effect on fire protection services under this alternative.

Impact 3.13.4-7: Impacts on schools

This alternative would have no effect schools or school funding.

Impact 3.13.4-8: Impacts on parks

This alternative would have no effects on Russ Park, Fireman's Park, or other parks.

Impact 3.13.4-9: Impacts to electrical and communications lines

This alternative would have no impacts to electrical and communication line infrastructure.

3.14 HAZARDS AND HAZARDOUS MATERIALS

This section describes known soil contamination on the Salt River Channel and Riverside Ranch sites as a result of past agricultural uses. It is based on Phase I and II Environmental Site Assessments (ESAs) for the Riverside Ranch parcels and on soil sampling performed in the Salt River Channel area proposed for excavation. It also addresses health risks associated with mosquito-borne diseases. Issues associated with groundwater quality and groundwater contamination are addressed in Section 3.1, Hydrology and Water Quality.

3.14.1 AFFECTED ENVIRONMENT

RIVERSIDE RANCH

A Phase I Environmental Site Assessment (Phase I ESA), dated January 2007, was performed by SHN Consulting Engineers and Geologists on behalf of the Western Rivers Conservancy for the Riverside Ranch (SHN, Inc. 2007). The Site Assessment included a review of historical records and aerial photographs (since 1948) for the property and of the regulatory databases maintained by county, state and federal agencies, in a search for potential hazards. It also included a survey of the vicinity and site perimeter to identify possible sources of contamination that may have migrated onto the site. Local and regional groundwater conditions were reviewed. A field reconnaissance was conducted and the property owners were interviewed. No data gaps were identified.

The Phase I ESA included a search for records pertaining to the property in the following agency data-bases: Humboldt County Division of Environmental Health; City of Ferndale Building and Planning Departments, California Environmental Protection Agency (CAL-EPA) Department of Toxic Substances Control (DTSC); State Regional Water Resources Control Board (SRWCB); California Regional Water Quality Control Board (RWQCB); State Division of Oil and Gas (DOG); Environmental Protection Agency (Region IX), and others. Maps of the geologic, hydrologic and topographic characteristics of the site also were reviewed. The site also was observed for visible signs of contamination and owners and occupants were interviewed.

The ESA noted that the property was reclaimed from the Salt River Delta in the 1880's and subsequently used for cattle grazing and dairy operations. At the time of the Phase I ESA inspection, the site included a dairy building, shop, mobile home, RV trailer, adjacent storage yard, and foundations from a former dairy barn. The site also included numerous drainage features such as levees, ditches, sloughs, and tide gates.

County, state and federal records and databases were checked to see if there were any National Priority List (NPL) sites, Resource Conservation and Recovery Act (RCRA) treatment/storage/disposal facilities, or state NPL/CERCLIS equivalent sites within one mile of the property. The ESA found that no potential or confirmed state or federal Superfund sites are located on or within one mile of the Riverside Ranch property, and concluded that no agency-listed sites are

known to have impacted the subject property from a hazardous materials perspective (SHN, Inc. 2007).

SHN also evaluated the potential for any contamination from neighboring properties to have migrated on the surface onto the site and found no such evidence. However, the Phase I ESA did find that there was evidence indicating the likely presence, use, or release of petroleum products and/or hazardous substances on the site. Additionally, during the silting in of the Salt River, and from previous floods, it is possible that hazardous materials could have migrated onto the subject site; however none were observed during the site visit (SHN, Inc. 2007). The Phase I ESA recommended that a limited Phase II investigation be performed for three Recognized Environmental Condition (REC) sites: Site 1, a former above-ground storage tank location (where diesel-contaminated soil was recommended for removal); Site 2, two septic tanks (recommended for decommissioning per County guidelines); and Site 3, an area recommended for removal of vehicles, debris, and equipment, including two trailers and a mobile home.

SHN subsequently prepared a Remedial Action Work Plan for the three identified REC sites. Pursuant to that Work Plan, 54 cubic yards of soil with possible hydrocarbon contamination was removed from REC Site 1. Subsequent laboratory testing indicated that the removal of impacts soil was successful. Additional sampling indicated that no additional areas of this site were contaminated. The contaminated soil was disposed of at an approved facility and the pit was backfilled with gravel.

At REC Site 2, both septic tanks were pumped out and then filled with pea gravel, as permitted and approved by the Humboldt County Department of Environmental Health.

At REC Site 3, the mobile home was destroyed by a fire on August 2, 2008. SHN requested that burned debris be scraped up, placed on plastic sheeting, and covered prior to the rains. SHN proposed to conduct sampling and assess soil conditions at the burn area (referred to as area B-1). On August 23, 2008, the scraped-up and stockpiled debris caught fire, creating a second burn area requiring evaluation (referred to as area B-2). The Remedial Action Work Plan recommended collecting soil samples from REC Site 1, properly disposing of debris from areas B-1 and B-2, and collecting and verifying soil samples from areas B-1 and B-2 to determine if residual soil contamination existed.

On February 5, 2009, SHN prepared a Phase II ESA Report of Findings on behalf of the Western Rivers Conservancy (SHN Inc. 2009). That report summarized the previous studies and presented the findings of follow –up investigations of REC Site 1 and areas B-1 and B-2. The Phase II ESA Report concluded that, in SHN's opinion, site mitigation efforts were successful and that no further action is necessary, except to verify that the above-ground storage tanks and shop materials have been appropriately removed (SHN Inc. 2009).

SALT RIVER CHANNEL

Soils from three exploration trenches within the proposed Salt River Channel restoration area were analyzed by Freshwater Environmental Services in April 2008 (Freshwater 2008). Freshwater evaluated the sediments to screen for potential contamination and to determine physical

characteristics for potential sediment reuse. A total of 32 sites extending from the mouth of the Salt River to east of the Kenyon Road/SR211 intersection (See Figure 3.14-1) were sampled for some or all of the constituents of concern. These included organic compounds, herbicides/pesticides, polychlorinated biphenyls, metals, and dioxins/furans.

Samples were analyzed for CA Title 22 (CAM 17) Metals (antimony, arsenic, barium, beryllium, cadmum, chromium, cobalt, copper, lead, mercury, molybdenum, nickel, selenium, silver, thallium, vanadium and zinc) semi-volatile organic compounds (SVOCs) and polynuclear aromatic hydrocarbons (PAHs); chlorinated herbicides; ammonia (as nitrogen) and chloride; and total petroleum hydrocarbons (motor oil range).

Organic Compounds

Sediment samples were analyzed for organic compounds including Total Petroleum Hydrocarbons (TPH) as diesel, TPH as motor oil, TPH as gasoline, and volatile organic compounds (VOCs). TPH as diesel was detected in the sediment sample from location SR-6B at a concentration of 1.2 ppm. TPH as motor oil was detected from location SR-10 at a concentration of 11 ppm. Toluene was detected in 11 of 29 sediment samples in relatively low concentrations ranging from 0.0051 to 0.030 ppm. One sediment sample, FC-1, was found to contain 4-isopropyltoluene at a concentration of 0.04 ppm. No other VOCs were detected above the method detection limits. None of the organic compounds that were detected exceed the associated PRGs or CHHSLs.

Herbicides/Pesticides

Sediment samples were analyzed for chlorinated herbicides, organochlorine pesticides, and organophos-phorous pesticides. Sediment samples collected from 16 sample locations were analyzed for herbicides/pesticides and none were detected above the laboratory detection limit.

Polychlorinated Biphenyls

Sediment samples were analyzed for Polychlorinated Biphenyls (PCBs). Sediment samples collected from 17 sample locations were analyzed for PCBs as described above, and none were detected above the laboratory detection limit.

Metals

Sediment samples were analyzed for 13 metals. The only metal that exceeded the residential PRGs or CHHSLs is arsenic. The issue of naturally occurring arsenic concentrations exceeding the CHHSLs is addressed in the Cal EPA, 2005, CHHSLs guidance document. Natural background concentrations of arsenic in California are often well above the health-based direct-exposure goals for residential land.

Dioxins/Furans

Common sources of dioxins/furans include combustion associated with power plants, vehicles, waste burning; application of combustion ash; pulp mills that use chlorine bleach; and wood

treatment operations that use certain chemicals. Dioxins/furans can enter the atmosphere during combustion and move considerable distances before eventually depositing on the ground.

Dioxins and furans were analyzed in 17 sediment samples. Polychlorinated dibenzo-p-dioxins (dioxins) and dibenzofurans (furans) are a family of 210 compounds with a similar chemical structure, which involves chlorine atoms attached to aromatic rings. Within this family, 17 compounds (7 dioxins and 10 furans) pose the greatest risk to receptor organisms. In order to account for the differing toxicities of the dioxin/furan compounds, it is conventional to apply a toxic equivalency factor (TEF) to each compound and calculate a single toxic equivalent concentration (TEQ). The TEQ is the concentration of 2,3,7,8-TCDD, the most toxic form of dioxins/furans, which has the equivalent toxicity to the particular mixture of compounds present in a sample.

TEFs were established by the 2005 World Health Organization (WHO) Re-Evaluation of Human and Mammalian Toxic Equivalency Factors for Dioxin and Dioxin-like Compounds. Using the WHO 2005 methodology, the TEF for 2,3,7,8-TCDD is set at 1.0, and TEFs for other compounds range from 0.0003 to 1.0 based on toxicity level. The concentration of each compound is multiplied by its TEF and the products are summed to develop a TEQ.

It is conventional to calculate TEQs using two approaches for handling the concentration of compounds that were not detected by the laboratory below the detection limit. One approach is to assume that the concentration of non-detected compounds is zero, and calculate the TEQ based solely on detected compounds. A more conservative approach is to assume that the concentration of non-detected compounds is one-half the detection limit, and calculate the TEQ based on all 17 detected and non-detected compounds.

Dioxin/furan compounds were detected in 12 of the 17 sediment samples. The three detected compounds were OCDD (TEF = 0.0003); 1,2,3,4,6,7,8-HpCDD (TEF = 0.01); and 2,3,7,8-TCDF (TEF = 0.1). The two most toxic compounds, 2,3,7,8-TCDD (TEF = 1.0) and 1,2,3,7,8-PeCDD (TEF = 1.0), were not detected in any samples. TEQ calculations were developed using both approaches for handling non-detected compounds. Using the first approach, TEQ ranged from 0.003 to 0.193 parts per trillion (ppt). Using the second approach, TEQ ranged from 0.42 to 1.6 ppt. The TEQs using both approaches are below the screening standards.

Of all the chemicals tested, dioxins/furans have the lowest detection limits. None of the dioxins/furans that were detected exceed the associated limits. The detected levels in the samples collected for this project appear to be consistent with background levels (Freshwater 2008).

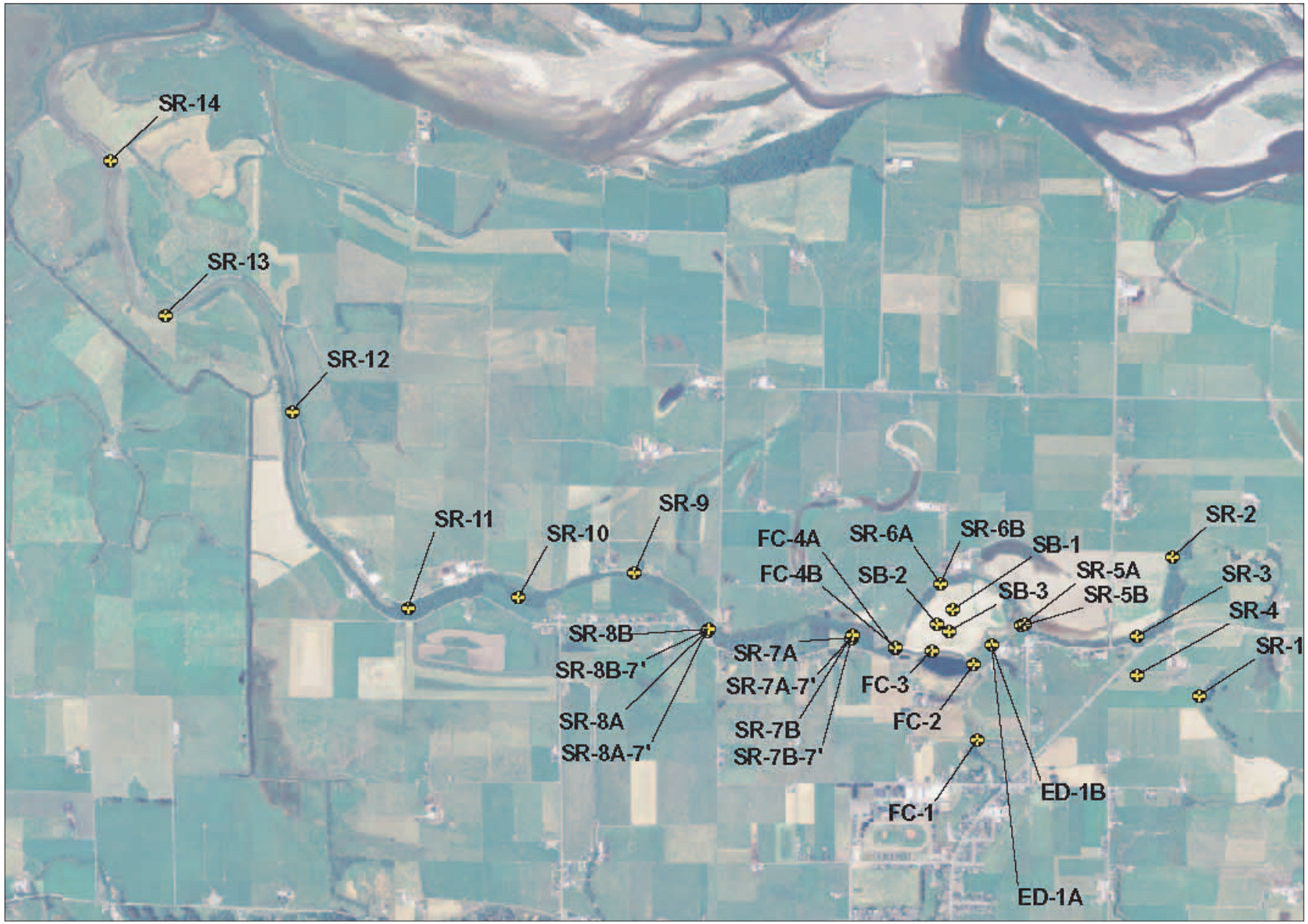


Figure 3.14-1

Sediment Sampling Sites

Source: Freshwater Environmental Services, 2008

As reported by FES (2008), the identified dioxin and furan concentrations in soils are below regulatory thresholds for human health. However, the NCRWQCB has the authority to require special permits or additional studies to support proposed excavation and reuse activities. Runoff associated with dewatering and moisture conditioning of soils within the reaches defined by samples SR-4, SR-5, SR-7, SR-8, SR-10, SR-12 and ED-1 could be required to be captured and tested for dioxins prior to discharge. Typical methods for testing for dioxin and furans include EPA method 8290, isotope dilution, or high-resolution gas chromatography/mass spectrometry (HRGC/HRMS). Periodic field-testing of soil and/or groundwater during excavation can provide additional characterization and delineation of contaminated soils. The results of the field tests could be used to direct segregation that may necessary to support permitting requirements and/or reuse opportunities.

UPLAND TREATMENT AREAS

No evaluations of hazardous materials have been conducted in the upland treatment areas. Small, localized oil and grease deposits may occur along the project roadways. However, because of the generally undeveloped, forested conditions of this area, it is unlikely that substantial concentrations of contaminants would be found at any of the upland sites.

VECTORS

Mosquitoes are both pests and vectors of disease to humans and animals. Mosquito populations can increase rapidly, especially during the warmer summer months. Several species have the potential to breed and to reproduce as a result of the construction and operation of project components (e.g., ponds and wetlands). The California Health and Safety Code provides authority for mosquito abatement districts to advise and control mosquito production on private and public lands and to assess the landowner for the cost of that control. The districts also have the authority to hold hearings and assess civil penalties to abate nuisance and potential health threats to the general public (California Health and Safety Code, Sections 2270-2294). The Vector Biology and Control Branch of the California Department of Health Services are responsible for overseeing the mosquito prevention program within the project area, as Humboldt County has not established a Mosquito Abatement District.

Mosquitoes are a natural component of wetland ecosystems. Both adult and larval forms are a food source for a variety of wildlife, such as birds, mammals, fish, and other invertebrates. Mosquitoes are also associated with being a nuisance species and vectors of disease-causing microorganisms, such as West Nile Virus (WNV). Five species of mosquitoes are known to inhabit the Humboldt Bay NWR and surrounding areas (*Culex tarsalis*, *Culesita particeps*, *Aedes increpitus*, *Aedes dorsalis*, and *Aedes vexan*). These mosquitoes can breed in and inhabit salt and freshwater marshes, riparian areas, and any objects that retain open water. Adult mosquitoes appear as early as April and persist until late summer, depending on the species. Although adults of individual species are relatively short lived, there are certain years when they experience natural periodic population explosions. In Humboldt County, Culex tarsalis transmits WNV, but is not the most numerous species found around the county. The virus responsible for WNV entered California from the eastern U.S. in 2003

and was first reported in Humboldt County in 2004. WNV is found locally in corvids (crows and ravens), and raptors such as hawks and owls. To date, no human cases of WNV have been reported in Humboldt County (US Fish and Wildlife Service January 2009). The young, old, and those with compromised immune systems are the most susceptible to being affected by WNV. Not all who contract the disease die from it, but fatalities from WNV have been recorded across the country. In 2003 the county began implementing the Humboldt County West Nile Virus Monitoring and Response Plan. This plan was most recently updated in December 2007 (Humboldt County Department of Public Health 2007). This program involved public education, media outreach, breeding source abatement, disease surveillance, and identification of mosquito species. Currently the County is not an abatement district, but is set up to become one if voted on by the County Supervisors. The California Department of Public Health released Best Management Practices for mosquito control on California State properties, the Service's Draft Mosquito Abatement Policy and Humboldt County's Mosquito Abatement Policy have similar methods and approach this issue in similar ways. The key to maintaining seasonal and estuarine wetlands with a minimum of mosquito production is to avoid conditions where pockets of water become isolated. If wetlands are connected to larger water bodies then most mosquito larvae are consumed by predators.

Depending on seasonal and environmental conditions and the particular mosquito species involved, it generally takes from three to twelve days for a mosquito to complete its life from developed egg to early adult stage. In general, as temperature increases, the number of days required from hatching to emergence as an adult decreases. The potentially rapid life cycle of mosquitoes can result in rapid, eruptive mosquito populations related to relatively short-term variations in marsh flooding and emergence, or seasonal tidal cycles.

3.14.2 IMPACTS AND MITIGATION

SIGNIFICANCE CRITERIA

Criteria for determining significant impacts are based upon the CEQA Guidelines (Appendix G) and professional judgment. These guidelines state that a project would have a significant impact on to public health and safety if it:

- Creates a significant health or safety hazard to workers associated with the construction of the proposed park and wetlands.
- Creates a significant health hazard to the public or sensitive sub-populations (e.g., children) through the routine use or transport of hazardous materials.
- Creates a significant hazard to workers or the public through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.

Criteria for significance of mosquito vector impacts include:

- Changes in the demand for vector control activities within the project area that would consistently exceed normal (long-term average) costs for managing the Salt River channel

and Riverside Ranch wetlands, adjusted for residential population (receptor) increases beyond the control of the project.

- Substantial changes in the type or frequency of vector control activities (monitoring or treatment) or equipment needed to maintain existing levels of mosquito production.
- Epidemiologically substantial changes in the frequency of mosquito-born illnesses that correspond with proximity of residence to the project site, or frequency of visits to the site.

Alternative 1 (Proposed Project): Modified Channel/Riverside Ranch Restoration/ Upland Restoration

Impact 3.14.1-1: Effects of soil contamination

As described in the setting discussion above, all identified contamination on the Riverside Ranch has been successfully remediated. In addition, soils sampling at various locations along the proposed Salt River Channel found no contaminants exceeding health risk limits. Any soil contamination in upland areas is likely to be minimal and located along the roadways. It would either be avoided or remediate per BMPs incorporated as part of the uplands projects. Therefore this impact would be *less than significant* and no mitigation measures would be required.

Impact 3.14.1-2: Accidental releases of hazardous materials during project construction

The primary chemical hazard would be the use of ordinary equipment fuels and fluids during construction. In the unlikely event of a spill, fuels would be controlled and cleaned up in accordance with County and State regulations, with minimal environmental impact. Hazardous materials would not be routinely transported, stored, or disposed of on site. Therefore, the project would have a *less than significant impact* with regards to the above referenced hazards and hazardous materials.

Impact 3.14.1-3: Health effects from mosquitoes

The specific design or habitat features of wetland restoration alternatives, including specific design options, that are most relevant to human health relate to (a) mosquito production (frequency, type, abundance and location of mosquitoes produced), and (b) human exposure to mosquitoes by either dispersal of mosquitoes from source areas, or entry of source areas (marshes, sloughs) by humans.

Specific marsh habitat features that are most likely to be risks for excessive production of mosquitoes include:

(a) Poorly drained, flat to gently sloping sheltered marsh areas with gradually fluctuating water levels, low turbulence, and rich organic matter from decomposition. Marsh plains edged by artificial berms that obstruct sheetflow drainage across marshes are likely to be associated with this mosquito subhabitat.

(b) Areas of dense marsh vegetation with minimal access to fish predators, strong surface currents, or exposure to wind-generated waves.

(c) Areas of gradual seasonal fluctuation in water levels, alternating between wetted and desiccated ground.

Conversely, marsh habitat features that are inherently likely to constrain mosquito production are associated with strong daily tidal fluctuation and currents, exposure to surface turbulence (wind-waves, currents) of open water surfaces, and exposure to fish predators that are widespread in tidal sloughs. Unlike managed marshes with artificial engineering designs, the basic purpose of tidal restoration is to replicate as much of the ecological structure, composition, and patterns of natural or historic tidal marshes to the greatest extent feasible. This may limit the range of compatible marsh design features (or BMPs) for mosquito management and that are traditionally applied to managed marshes.

Generally, deep (over 2 ft) open water areas are likely to be unproductive of mosquitoes. Low intertidal marshes (marshes with bed elevations near Mean Low Water) with full tidal range are also unlikely to produce mosquitoes. Marsh types or options that have variably higher risk of mosquito production would include: (a) interior areas of mid-intertidal or high intertidal marsh, remote from tidal channels; (b) zones of wrack (tidal debris) accumulation within the marsh plain or marsh edge, particularly at downwind ends (corners) marshes or near topographic high areas; (c) channel reaches that develop obstructed circulation (e.g., blockage by debris jams); (d) marsh areas that are exposed to flood deposits of sediment leaving variable topography, drainage, and debris; (e) any constructed seasonal wetlands or isolated ponds.

In the proposed Riverside Ranch wetlands, some mosquito production would occur along gently sloped margins of tidal marsh (essential to restoration of native species diversity in restored tidal marsh), and marsh plains edged by berms. Some mosquito production (possibly above existing conditions) may be caused by non-tidal open water management options. The proposed project would increase exposure of humans to mosquito production compared with existing conditions by increasing public access and exposure time to wetland habitats. The exposure would vary with time of day, temperature, humidity, and wind conditions (generally greatest around dusk in summer).

The Salt River Channel would create a narrow, slender tidal marsh/freshwater unit that would tend to trap flood debris and sediment, and has a high perimeter to area ratio compared with the main Riverside Ranch area. This unit would have a substantially higher potential for mosquito production overall and per unit area compared with the main units.

The Salt River Channel and uplands sediment reduction portions of the project would help to alleviate existing annual flooding and long-term ponding of agricultural lands associated with poor drainage along the Salt River channel. In addition, the project would better connect the upstream channel to a larger water body, allowing increased predation of mosquito larvae. This would reduce vector generation associated with that standing water compared with existing conditions, resulting in beneficial conditions.

Mitigation 3.14.1-2.1: Adapt and apply regional best management practices for managed marshes

BMPs are habitat-based strategies that can be implemented when needed for mosquito control in managed wetlands. These strategies represent a range of practices that wetland managers can

incorporate into existing habitat management plans or in the design of new wetland restoration or enhancement projects. Ideally, BMPs can be used to decrease the production of mosquitoes and reduce the need for chemical treatment without significantly disrupting the ecological character, habitat function, or wildlife use in managed wetlands. Not all BMPs would be appropriate for a given wetland location or set of circumstances.

Timing of Managed Marsh Flooding and Drawdown (Nontidal Managed Open Water Options)

Timing of flooding and drawdown shall be coordinated with County Department of Public Health, adapted to current-year temperature, rainfall patterns, and mosquito vector risks, to minimize mosquito production and vector risks.

Rapid Flooding and Drawdown of Managed Marsh

Marshes shall be flooded and drawn down (emerged bed) as quickly as operational controls allow.

Water Control

Once wetlands have been flooded, water surface elevations shall minimally fluctuate prior to drawdown, except during winter periods of low mosquito production. Minimal fluctuation is based on the need to circulate water (maximize turnover). In managed wetland areas, marsh submergence depths shall be managed to maximize areas with minimal initial flooding depths of two feet.

Wetland Design Features to Reduce Mosquito Production

Managed wetland edges shall be constructed to enable efficient access by vector control field crews for monitoring and treatment. Edge slopes of managed nontidal marsh areas shall be steeper than to 4:1 (horizontal to vertical). Open water areas with sufficient fetch and wind-wave turbulence to minimize mosquito production shall be interspersed within managed marsh, at least 20 percent of total area. Floating aquatic vegetation shall be actively suppressed in open water areas within managed marsh.

Impact Significance after Mitigation

Less than significant.

Alternative 2: Modified Channel/Upland Restoration Only

Impact 3.14.2-1: Effects of soil contamination

This impact would be similar to that of Alternative 1 except there would be no impacts on Riverside Ranch. This impact would be *less than significant*.

Impact 3.14.2-2: Accidental releases of hazardous materials during project construction

Same as Alternative 1, but somewhat reduced work due to elimination of Riverside ranch project component.

Impact 3.14.2-3: Health effects from mosquitoes

This alternative would eliminate any potential increase in vector generation from the Riverside Ranch wetlands. Other vector impacts would be the same as the proposed project.

Mitigation 3.14.2-3: Health effects from mosquitoes

Same as for Alternative 1.

Impact Significance after Mitigation

Less than significant.

Alternative 3: Riverside Ranch Restoration/Upland Restoration Only

Impact 3.14.3-1: Effects of soil contamination

This impact would be similar to that of Alternative 1. This impact would be less than significant.

Impact 3.14.3-2: Accidental releases of hazardous materials during project construction

Same as for Alternative 1, but with reduced construction use of hazardous materials associated with the elimination of the Salt River Channel excavation.

Impact 3.14.3-3: Health effects from mosquitoes

This alternative would eliminate any potential increase in vector generation from the proposed Salt River Channel. However it also would not provide the beneficial reduction in standing water in agricultural lands adjacent to the Salt River. Other vector impacts would be the same as the proposed project.

Mitigation 3.14.3-4: Health effects from mosquitoes

Same as Alternative 1.

Impact Significance after Mitigation

Less than significant.

Alternative 4: No Project

Impact 3.14.4-1: Effects of existing contaminated soils

Soils contamination would remain as present, and may continue to be transported into the groundwater. No exposure to construction workers or site users is likely because no excavation of materials or public use of the site is proposed. Therefore this impact would be *less than significant*, and no mitigations would be required.

Impact 3.14.4-2: Accidental releases of hazardous materials during project construction

There would be no construction under this alternative; therefore there would be no potential for accidental release of hazardous materials.

Impact 3.14.4-3: Health effects from mosquitoes

There would be no change in mosquito production and associated health risks compared with existing conditions. There would be no adverse or beneficial effects associated with the project.

3.15 MINOR ISSUES

This section briefly describes minor environmental issues, on which the Salt River Ecosystem Restoration Project would have negligible or no impact. These issues consist of: Population and Housing, and Mineral Resources.

3.15.1 POPULATION AND HOUSING

EXISTING SETTING

The City of Ferndale has an estimated population of 3,206 (Census 2000) occupying 1,302 households. The closest population areas to the project site are the City of Ferndale where there are combinations of industrial, commercial, and residential uses. Rural residences exist along all the county roads adjacent to the project site.

SIGNIFICANCE CRITERIA

An impact is considered to be significant if the project would result in any of the following effects:

- Induce substantial population growth in the area, either directly (by proposing new homes and businesses) or indirectly (through the extension of roads or other infrastructure);
- Displace substantial numbers of existing housing; or
- Displace substantial numbers of people.

IMPACTS ON POPULATION AND HOUSING

The proposed project would not add either new homes or businesses, nor extend or alter any roads. The project would add a levee system around Riverside Ranch; this change would not alter growth potential in the surrounding areas. No other infrastructure improvements would be made that would induce growth.

No housing exists on the site and no new housing is proposed. The project would not displace any housing or people, on or adjacent to the site. The project is located in an area zoned for agriculture, timber, and natural resources related land uses. The site is considered to be almost entirely a wetland due to annual flooding, the existence of wetland plants, and wetland soils and therefore would not be eligible for housing development.

The project would not induce population growth, either directly or indirectly.

Impact Significance

Less than significant impact, no mitigation required.

ALTERNATIVES

Alternative 2: Modified Channel/Upland Restoration Only

Similar to Alternative 1, this alternative would have no impacts on population growth, displacement of housing, or displacement of people.

Alternative 3: Riverside Ranch Restoration/Upland Restoration Only

Similar to Alternative 1, this alternative would have no impacts on population growth, displacement of housing, or displacement of people.

Alternative 4: No Project

This alternative would not affect population growth, or displace any housing or people.

3.15.2 MINERAL RESOURCES

EXISTING SETTING

Sand and gravel extraction constitute the major portion of the County's mining activity, both in terms of quantity of material produced and value of extracted resource. The majority of in-stream gravel and sand extraction in 2000 took place along the Mad River (22 percent) and the Eel River-Van Duzen River complex (76 percent). Mines and quarries in Humboldt County primarily produce shale, stone (base and subbase), and clay.[1]

Mineral extraction sites in the project vicinity consist of numerous sites along the Eel River and two sites south of the City of Ferndale.

SIGNIFICANCE CRITERIA

An impact is considered to be significant if the project would result in any of the following effects:

- 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; or
- 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.

IMPACTS ON MINERAL RESOURCES

The proposed project would not result in the loss of availability of any known mineral resources, including locally identified mineral resource recovery sites.

[1] Humboldt County, Natural Resources and Hazards, Chapter 7: Mineral & Energy Resources September 2002, available on the Internet at: http://co.humboldt.ca.us/gpu/documentsBackground.aspx.

Impact Significance

Less than significant impact, no mitigation required.

ALTERNATIVES

Alternative 2: Modified Channel/Upland Restoration Only

Similar to Alternative 1, this alternative would have no impacts on mineral resources.

Alternative 3: Riverside Ranch Restoration/Upland Restoration Only

Similar to Alternative 1, this alternative would have no impacts on mineral resources.

Alternative 4: No Project

This alternative would not affect mineral resources.

Chapter 4 Alternatives

4.1 COMPARISON OF SALT RIVER RESTORATION PROJECT ALTERNATIVES

The Salt River Ecosystem Restoration Project is expected to provide many ecological, erosion control, drainage, water quality, and flood protection benefits. There are, however, both long-term and short-term environmental consequences of implementing this Project. This section presents a comparison of the alternatives to allow the reader and the decision-makers to understand the balance between the impacts and benefits of the alternatives.

The main differences among the alternatives are the project components that they include.

The alternatives are:

- **Alternative 1:** Includes maximum restoration of Salt River Channel and Riverside Ranch, as well as upland erosion control projects (Full Ecosystem Restoration Alternative)
- **Alternative 2:** Includes maximum restoration of the Salt River Channel and the upland erosion control projects, but does not include Riverside Ranch Restoration (Partial Ecosystem Restoration - No Riverside Ranch)
- **Alternative 3**: Includes Riverside Ranch restoration and restoration of the Salt River Channel to Reas Creek, as well as upland erosion control projects (Partial Ecosystem Restoration - Riverside Ranch and Minimum Channel Restoration Alternative)
- **Alternative 4:** No Project Alternative: leaving the site in current conditions.

As described in Chapter 2, Project Description, the restored Salt River Channel is designed to provide the following benefits:

1) Provide fish passage consistent with the criteria of the National Marine Fisheries Service and California Department of Fish and Game;
2) Restore and enhance a variety of historic natural communities (e.g. riparian forest, salt marsh, and riparian scrub);
3) Convey flows up to and including the two-year flood magnitude;
4) Maximize flow velocities and sediment transport in order to minimize fine sediment deposition in the newly constructed channel; and
5) Incorporate design elements that are constructable and that provide for minimally intrusive channel maintenance activities in the future.

6) Improve the functioning of the Ferndale Wastewater Treatment Plant with respect to both flood protection and discharge water quality.

The proposed Riverside Ranch restoration is designed to provide the following benefits:

1) Convert approximately 444 acres of diked pasture to a combination of salt marsh habitat, freshwater marsh habitat, and uplands areas suitable for both livestock grazing and Aleutian cackling goose habitat.

The proposed upland erosion control projects would reduce the sediment levels entering the Salt River and its major tributaries, thereby contributing to both localized and system-wide improvements.

Alternatives 1, 2, and 3 involve different trade-offs in long-term benefits and short-term impacts. These are summarized by resource area, below:

Hydrology, Water Quality, and Geomorphology

Alternatives 1-3 would have potentially significant but mitigable impacts to water quality associated with construction. Alternatives 1-3 also could degrade water quality in the Eel River delta if tidal and wetland circulation does not function as planned; this also would be mitigable to a less than significant level. Potentially significant impacts to groundwater quality and channel erosion also may occur under Alternatives 1-3. Alternative 3 would have less of a beneficial effect on Salt River flooding upstream of Reas Creek than Alternatives 1 and 2 as well as increased (but still less than significant) scour in the lower part of the channel, adjacent to Riverside Ranch. Under Alternative 4, existing flooding and water quality problems would continue to worsen.

Geology and Soils

Alternatives 1 and 2 would involve bridge reconstruction or retrofitting, which would be required to conform to current seismic design standards and therefore have a less than significant impact. Similarly Alternatives 1-3 would involve construction of levees and berms designed to current seismic standards. Alternatives 1-3 also would have some erosion potential, however this impact would be reduced to less than significant levels by incorporation of Water Quality section mitigations. Upland projects in Alternatives 1-3 would reduce erosion and landslide hazards compared to existing conditions and Alternative 4.

Biological Resources: Terrestrial/Upland/Riparian

Alternatives 1-3 would all result in the conversion of mesic grasslands and seasonal wetlands, which provide habitat to some species, to tidal marsh, riparian forest and scrub, open water, and/or freshwater marsh. The land cover types that would be lost are common in the area, while the restored habitats are rare. All three alternatives would have short-term impacts to waters of the U.S. from upslope sediment reduction work, but this work would provide significant benefits in reduced fine sediment inputs to the Salt River and its tributaries.

Alternative 1 would provide the greatest level of benefits for plant and wildlife habitat because of the significant restoration of tidal marsh and the increase in riparian forest and scrub, aquatic, and

freshwater marsh habitats. Alternative 1 could result in short-term and medium term loss of wetland function due to construction disturbance and the length of time needed for restored wetlands to develop. An important benefit of Alternative 1 is that it would reverse the ongoing gradual loss of aquatic and wetland habitat associated with the Salt River, which will continue to fill in with sediment if no action is taken.

Alternative 2 would convert mesic grassland and seasonal wetlands to aquatic and freshwater marsh. While the acreage of riparian forest and scrub in the project area would remain approximately the same, there would be a medium term loss in the quality of the riparian forest habitat while newly restored areas are maturing.

Alternative 3 would convert mesic grassland and seasonal wetlands to tidal marsh and riparian forest and scrub. This alternative would not result in a medium term loss in the quality of riparian forest and scrub habitat, but it would not restore aquatic habitat and freshwater marsh in the Salt River channel upstream of Riverside Ranch.

Biological Resources: Aquatic

Implementation of Alternative 1 could negatively impact aquatic ecosystems and fish through the following mechanisms:

- Changes in water quality
- Entrapment of fish in areas disconnected from the estuary.
- Disturbance of substrate/benthic habitat
- Creation of habitat that will benefit non-native invasive species at the expense of native species

However, Alternative 1 also provides the most significant and far-reaching benefits of any of the proposed alternatives. By combining a significant increase in tidal prism, restoring five miles of freshwater channel habitat along the main Salt River Channel, and by restoring hydraulic connectivity with tributary streams, the project thereby also provides a net benefit to fish and the aquatic ecosystem.

Alternative 2 possesses nearly all of the potentially adverse impacts of Alternative 1, with two notable exceptions: a) There would be no risk of entrainment in newly restored tidal marsh absent newly created tidal marsh, and; b) The continued low level tidal prism would diminish tidal scouring of the channel, thereby increasing the need for and rate of channel maintenance over time. The construction of a channel in combination with upland restoration can only be considered a palliative treatment for this geologically unstable and ecologically degraded system. Furthermore, repetitive and more frequent disruption of the newly modified channel would more frequently disrupt any benefits associated with improving aquatic habitat conditions in the Salt River channel.

Alternative 3, primarily limited to the restoration of Riverside Ranch, possesses most of the project benefits to aquatic habitat, and relatively few of the adverse effects associated with channel modification and long-term maintenance of the channel.

However, fewer improvements to drainage and main-channel habitat quality would preclude full hydrologic connectivity with and fish passage to Salt River tributary streams.

Alternative 4 (No Action) would avoid all adverse impacts associated with the proposed project, and assures the ongoing sediment deposition, aggradation of the main channel, continued flooding, and none of the benefits associated with conducting the project. In the short term, within 15 years, aquatic habitat would diminish as the channel further closes.

In the longer term, the trend towards reduction in aquatic habitat would be at least partially offset by increases in sea level, but the rate of that relationship has not been calculated relative to this project. Current projections suggest a possible rise in sea level of one meter by the year 2100. Most of the project area, indeed much of the historic Eel River estuary, would be underwater at that level of increase.

Air Quality

Alternatives 1-3 would result in the emissions of significant levels of PM10 emissions. However, the implementation of mitigation measures to reduce fugitive dust would reduce these emissions to less than significant levels. Alternatives 1-3 would also result in short-term construction related emissions of greenhouse gases, notably CO2. Alternatives 1 and 3 would also result in the restoration of approximately 247 acres of salt marsh, which is expected to be a significant long-term carbon sink and would make the project's impact on greenhouse gas emissions less than significant. Alternative 2 does not include tidal salt marsh restoration. If Alternative 2 were implemented, carbon offsets would be purchased to reduce the greenhouse gas emissions impact to a less than significant level. Alternatives 1-3 would also result in less than significant short-term emissions of other pollutants associated with construction. Levels of emissions for Alternatives 1 and 3 are approximately half the emissions expected under Alternative 2. Alternative 4 would not generate any new pollutant emissions.

Noise

Alternative 1 would result in substantial levels of excavation and haul-truck noise at nearby residences. Alternative 2 would reduce some of the haul truck noise, but would maintain the excavation and most of the haul truck noise, which would be associated with channel excavation and associated material reuse. Alternative 3 would involve substantial earthmoving activities, but they would be mostly balanced on, and limited to, the Riverside ranch and adjacent Salt River channel sites, which are distant from sensitive noise receptors. Alternatives 1 and 2 would also result in intermittent noise associated with channel maintenance activities. Alternative 4 would not generate any noise.

Aesthetics

Temporary adverse aesthetic impacts associated with the removal of the existing riparian strip along portions of the old Salt River channel would result from implementation of Alternatives 1 and 2; Alternative 3 would only affect this visual resource at the channel's lower reach, adjacent to Riverside Ranch, while Alternative 1 would affect both the channel and Riverside Ranch. However,

in the long term, Alternatives 1 and 2 would install new aesthetically pleasing vegetation along the Salt River channel; Alternative 3's restoration would be limited to the Riverside ranch area.

Land Use

None of the alternatives would have significant impacts associated with land use plan compliance, compatibility with surrounding land uses, or substantial alteration of present or planned land uses.

Agricultural Resources

Alternatives 1 and 2 would provide 1- to 2-year flood protection of agricultural areas near the Salt River channel, as well as enhanced drainage to surrounding agricultural lands in all flood events, thereby enhancing agricultural land uses. This would be partially or fully offset by the loss of some agricultural lands to the new channel. Alternatives 1 and 3 would result in the loss of agricultural lands at Riverside Ranch that would be converted to wetlands. Overall, loss of agricultural lands would be offset by drainage improvements for Alternatives 1 and 2, but not for Alternative 3. Alternative 4 would result in a gradual increase in the duration and frequency of flooding in the project area, with associated losses in agricultural productivity.

Recreation

None of the alternatives would have a substantial adverse affect to recreation.

Cultural Resources

None of the alternatives would have a substantial adverse affect to known cultural resources.

Transportation

Alternatives 1 and 2 would result in substantial increases in traffic associated with reuse of excavated materials. These impacts would be mitigable to a less than significant level. Alternative 3 would generate less than significant traffic, while Alternative 4 would not generate any new traffic.

Public Services and Utilities

None of the alternatives would have a substantial adverse impact to services or utilities. Alternatives 1 and 2 would ultimately improve operations at the Ferndale WWTP. Alternatives 3 and 4 would have minimal and no impacts on services or utilities, respectively.

Hazards and Hazardous Materials

Materials to be excavated have been sampled and no likely contaminants have been observed. Therefore none of the alternatives would be likely to significantly adversely affect this resource.

Based on the above analysis, overall, Alternative 1 achieves the most advantageous and reliable long-term balance of environmental restoration and drainage benefits and risks.

4.1.1 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

CEQA Guidelines (Section 15126.6(a) and (e)(2)) require that an EIR's analysis of alternatives identify the "environmentally superior alternative" among all of those considered. In addition, if the No Project Alternative is identified as environmentally superior, then the EIR also must identify the environmentally superior alternative among the other alternatives. As described above, because the Salt River Ecosystem Restoration Project is an environmental restoration and drainage improvement project, and its primary adverse impacts are related to hydrology, water quality, noise, and biological resources. A number of these impacts are short-term conditions that would result from construction. The No Project Alternative would eliminate these potential impacts, and, because it would have the fewest impacts overall, would nominally be the Environmentally Superior Alternative. However, this alternative would also forego the longer-term environmental benefits of the project on fisheries, and marsh and special-status wetland species habitat.

As required by CEQA, the Salt River Ecosystem Restoration Project alternatives were analyzed to determine which would be the Environmentally Superior Alternative. Alternative 1 could have somewhat greater short-term environmental impacts to existing environmental resources than Alternatives 2 and 3, considered without reference to long-term environmental benefits. Alternative 2 would provide substantial flood control, channel ecosystem, and fish passage benefits but may require more maintenance than Alternatives 1 and 2 due to reduced tidal prism. Alternative 3 provides substantial wetland enhancement benefits but limited channel improvements, fish passage, and flood control benefits, but with substantially reduced implementation impacts on biological resources and construction noise that would be associated with the channel excavation. Therefore this EIR considers the Salt River Ecosystem Restoration Project's CEQA Environmentally Superior Alternative to be Alternative 3. It should be noted, however, that even this alternative and mitigation, would result in some significant adverse impacts, as with Alternatives 1 and 2.

Chapter 5 CEQA Topical Analyses

5.1 GROWTH INDUCEMENT

CEQA requirements for evaluation of growth-inducing impacts are set forth in Section 15126.2 (d) of the CEQA Guidelines (California Code of Regulations, Title 14, Division 6, Chapter 3, Sections 15000-15387). CEQA requires that both direct and indirect impacts of all phases of a proposed project be considered. Growth-inducement is typically considered to be a direct or indirect effect of an action that either directly fosters growth or removes an obstacle to economic or population growth, or the construction of new housing. The CEQA Guidelines also require evaluation of new infrastructure and service facilities needed to serve growth induced by a project. The Guidelines note that "it must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment". Therefore, the nature of the effects of any induced growth also must be considered to determine if the impacts of that growth are potentially significant.

Some projects may be considered growth inducing while others may be growth accommodating (i.e. they are intended to accommodate planned growth, but do not induce that growth). The distinction here is primarily whether or not a project removes an obstacle to growth. It is sometimes argued that, if growth is already planned for in a jurisdiction's General Plan, then infrastructure supporting that development is growth accommodating rather than growth inducing. However, CEQA is concerned with on-the-ground impacts to the environment. Therefore, if planned development cannot move forward absent a particular infrastructure project, or the development is substantially encouraged by that infrastructure, that project is generally considered growth inducing.

The CEQA Guidelines also state (Section 16064 (d)(3) that an indirect physical change is to be considered only if that change is "a reasonably foreseeable impact which may be caused by the project. A change which is speculative or unlikely to occur is not reasonably foreseeable."

The Salt River Ecosystem Restoration Project would not have any affect on growth, as they would not provide any new housing, infrastructure, or economic activity. Although it would reduce flooding of nearby agricultural lands, the project would not remove any obstacles to growth, expand infrastructure, or develop housing or economic activity.

The Related Projects also would not be growth inducing. Both the Ferndale Wastewater Treatment Plant and Connick Ranch projects would permanently remove land from any future development potential. Neither is expected to substantially induce demand for new residences or businesses in the Ferndale or unincorporated Humboldt County, although the Connick Ranch may provide a new public access not currently in existence.

Therefore this impact would be less than significant with respect to the Salt River Ecosystem Restoration Project and the Related Projects.

5.2 UNAVOIDABLE SIGNIFICANT ADVERSE IMPACTS

Under each resource topic, any unavoidable significant adverse impacts identified are analyzed in detail. No ~~S~~significant unavoidable impacts were identified under the Salt River Ecosystem Restoration Project Alternatives 1, 2, or 3 ~~are limited to providing habitat for non-native fish~~. All ~~other~~ potentially significant impacts are mitigable to a less-than-significant level with the implementation of mitigation measures identified in this EIR.

5.3 SUMMARY OF CUMULATIVE IMPACTS/MITIGATION

The Salt River Ecosystem Restoration Project and Related Projects would be located on the outskirts of Ferndale in unincorporated agricultural areas. See Figure 5.1 for the relevant cumulative projects in the project area. A cumulative impact refers to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts. The individual effects may be changes resulting from a single project or a number of separate projects. The cumulative impact from several projects is the change in the environment that results from incremental impacts of the project when added to other closely related past, present, and reasonably foreseeable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period.

5.3.1 UNINCORPORATED COUNTY PROJECTS

CONNICK RANCH

The Wildlands Conservancy purchased a 1,087-acre parcel known as the Connick Ranch in 2008. Located west of Riverside Ranch, between the Salt River and Pacific Ocean (see Figure 5.1), this property, now used for dairy cattle grazing, consists of reclaimed wetland and coastal dune. The property is largely separated from tidal exchange with the Eel River estuary and Salt River by levees and tidegates. The Wildlands Conservancy seeks to create a wildlands preserve at the site to promote outdoor education and recreation while also providing opportunities for continued livestock grazing, habitat restoration and scientific research. Proposed Connick Ranch project elements include access road improvements, caretaker housing, visitor parking and use facilities and modifications to tidegates and culverts to improve drainage and provide fish passage.

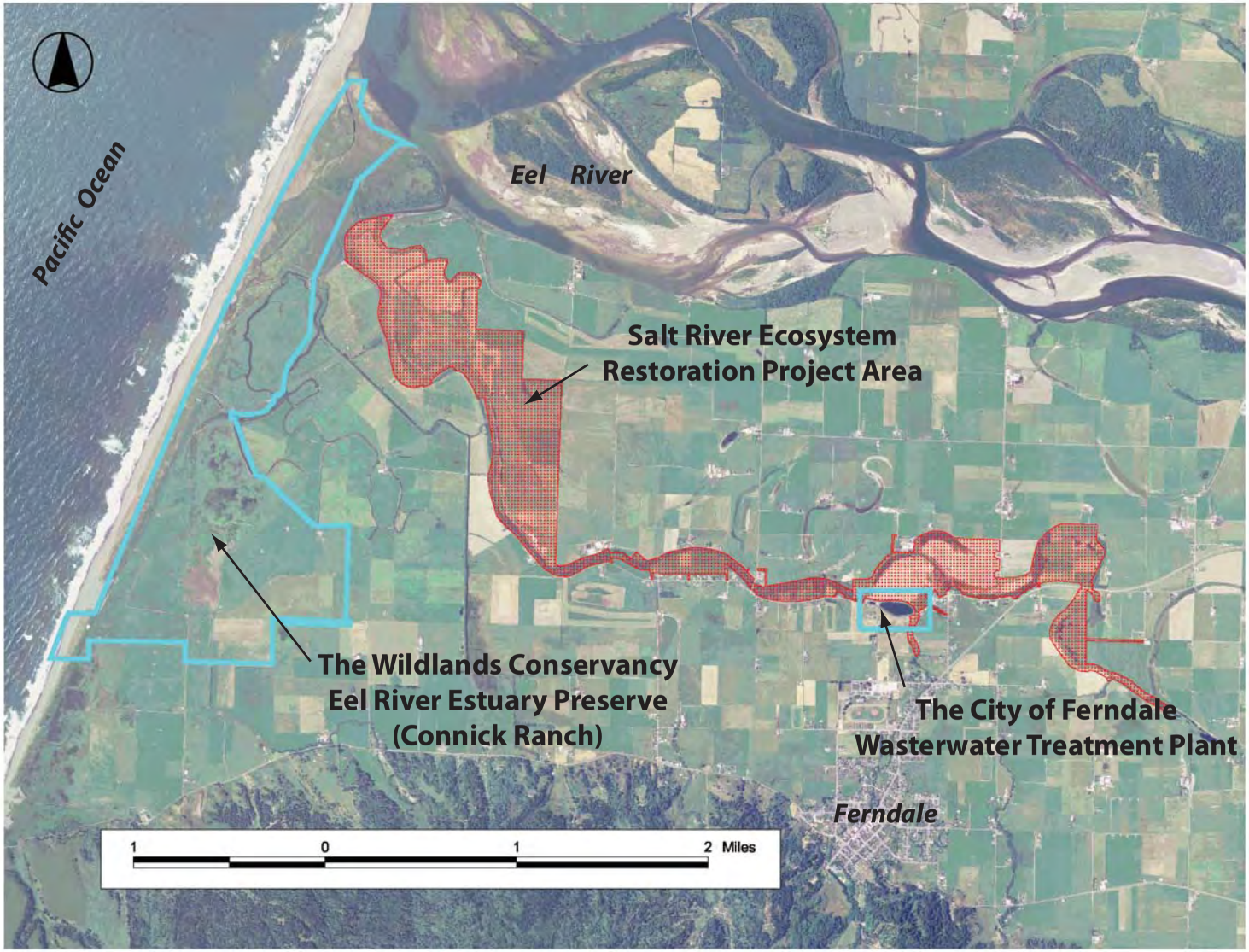


Figure 5-1

Map of Cumulative Projects

Source: KHE, 2011

5.3.2 CITY OF FERNDALE PROJECTS

FERNDALE WASTEWATER TREATMENT PLANT

The City of Ferndale is upgrading its Wastewater Treatment Facility (WWTF) to meet water quality and wastewater discharge standards. The design of the proposed wastewater treatment facility has gone through several revisions over the three year period of 2005 - 2008. During that time several environmental documents have been prepared. An Initial Study / Draft Mitigated Negative Declaration, released in 2009, described and analyzed that project. The proposed WWTF consists of the following components:

- Replacement of the existing Influent Pump Station
- Expansion of the existing headworks facility
- Conversion of existing aerated lagoon to a stormwater basin
- Extended aeration treatment process - Sequox as provided by aeromod, located south of Port Kenyon Road
- Disinfection/ control building, 4,275 square feet in size, with two disc filters and ultraviolet disinfection, located south of Port Kenyon Road
- Conversion of existing chlorine contact basin to a wet well for new effluent pump station
- Spray irrigation fields and point of discharge

The existing headworks building is located in a fenced area, on the south side of Port Kenyon Road. This site is partially developed with the remainder being covered with vegetation (grass). The project proposes to increase the site elevation by three to four feet prior to construction and partially pave it. The project will develop a majority of this site with a new, expanded headworks building, new treatment basin, and a new disinfection/ control building.

All influent will be treated on this site and then pumped to the converted chlorine contact basin on the north side of Port Kenyon Road; then the effluent will be discharged, either to irrigation or to Francis Creek. The existing aeration pond located off the north side of Port Kenyon Road will be utilized as a stormwater basin. The proposed stormwater basin will cover the same footprint as the existing aeration pond.

5.3.3 OTHER LOCAL PROJECTS

No other local projects have been identified in consultation with the County and City of Ferndale at the time this document was prepared.

5.3.4 CUMULATIVE IMPACTS

Each resource topic analyzed in this EIR includes an analysis of the cumulative impacts and identifies mitigation measures. The cumulative impacts identified in this EIR include issues

regarding: hydrology and geomorphology, water quality, geology and soils, air quality, noise, aesthetics, land use, recreation, transportation/traffic, public services, utilities and service systems, and hazardous materials.

HYDROLOGY

The combined effect of the Salt River and WWTF projects would significantly improve low flow and flood flow drainage and conveyance in the Salt River channel, Francis Creek channel and adjacent dairy lands. The combined effect of the Salt River and Connick ranch project would be significant enhancements to flood water storage and conveyance.

WATER QUALITY

During construction of each project, there could be increased sediment, but this should be mitigated through BMPs and SWPPP. The combined effect of the Salt River and WWTF projects would significantly improve water quality within the Salt River channel, Francis Creek channel and adjacent dairy lands. Specific changes include improved dilution and dissipation of treated effluent associated with the improved circulation and drainage provided by the channel excavation component. The combined effect of the Salt River and Connick Ranch project would be significant enhancements to water quality due to the filtering of floodwaters and high tides by associated floodplains and wetlands.

GEOLOGY AND SOILS

The various cumulative projects would not have overlapping soils or geologic impacts.

BIOLOGICAL RESOURCES – TERRESTRIAL/UPLAND/RIPARIAN

Construction of each project could result in short-term impacts to sensitive biological resources, such as special status species, wetlands, and riparian habitat. However, these impacts would be mitigated through surveys and avoidance measures, and BMPs. Implementation of the WWTF project would enhance the value of riparian habitats restored as part of the Salt River Enhancement Project by improving water quality. Implementation of the Connick Ranch project would enhance the habitat value of the Salt River Enhancement Project Area by creating a larger contiguous area of habitats managed for plants and wildlife. This larger area would support larger populations of plants and wildlife, and such populations would be more resilient to disturbances.

Implementation of the Connick Ranch Project could potentially reduce impacts to sensitive biological resources due to channel maintenance: If tidegate and culvert improvements are completed at Connick Ranch, these would incrementally increase the tidal prism of the Salt River, thereby increasing its ability to transport sediment, and reducing the need for future excavation designed to maintain channel conveyance capacity.

BIOLOGICAL RESOURCES – AQUATIC

Construction at both Riverside Ranch and Connick Ranch could result in short-term impacts to sensitive biological resources, such as special status species. However, these impacts would be mitigated through avoidance measures, and BMPs. Implementation of the WWTF project would enhance the value of aquatic habitats restored as part of the Salt River Enhancement Project by improving water quality. Implementation of the Connick Ranch project would enhance the habitat value of the Salt River Enhancement Project Area by creating a larger contiguous area of habitats managed for aquatic species. This larger area would support larger populations of aquatic species, and such populations would enjoy high growth rates, and be more resilient to disturbances.

Implementation of the Connick Ranch Project could potentially reduce impacts to sensitive biological resources due to channel maintenance: If tidegate and culvert improvements are completed at Connick Ranch, these would incrementally increase the tidal prism of the Salt River, thereby increasing its ability to transport sediment, and reducing the need for future excavation designed to maintain channel conveyance capacity.

AIR QUALITY

Depending on construction timing of the two projects, there could be additive vehicular and construction dust emissions associated with work on the Connick Ranch project and the Salt River project. The proposed air quality mitigations would reduce the project's contribution to cumulative air pollutant emissions impacts to less than significant.

AESTHETICS

The proposed project would not add to any cumulative impacts to visual resources because it would recreate a natural-looking aesthetic character in the project area.

LAND USE

The contribution of the Proposed Project to land use impacts, when combined with other projects in the vicinity, would be less than cumulatively considerable because the project would comply with applicable land use plans and policies, and would not conflict with adjacent land uses.

AGRICULTURAL RESOURCES

Construction of Connick Ranch Project could result in the conversion of additional agricultural lands to wetlands and riparian areas. The cumulative impact of the Connick Ranch and Salt River Enhancement Projects on agricultural land could be significant. However, this impact is mitigated by two factors. First, The Wildlands Conservancy would likely place any fill on high areas currently being used for livestock. Therefore, the impact to agricultural use would be minimized to the extent feasible. Second, the Connick Ranch Project would further increase the Salt River's tidal prism, increasing the sediment transport ability of the Salt River. Doing so increases the Salt River's flow conveyance capacity, sediment deposition level, and thereby reduces the frequency and duration of

inundation. Frequent and prolonged inundation of agricultural lands in the vicinity in recent decades has resulted in a loss of agricultural productivity.

RECREATION

The contribution of the Proposed Project to impacts on recreation, when combined with other projects in the vicinity, would be less than cumulatively considerable because the project would have a beneficial impact to recreational resources.

CULTURAL RESOURCES

It is possible that unknown cultural resources could be affected at the Connick ranch project, however the proposed Salt River project would mitigate any impacts to cultural resources and, therefore, would not add to any cumulative impacts to these resources.

TRANSPORTATION/TRAFFIC

Depending on construction timing of the two projects, there could be additive truck trips associated with work on the Connick Ranch project and the Salt River project. It also is possible that some excavated soils from the Salt River project are trucked to Connick Ranch for use on that project. The proposed traffic management plan would reduce the project's contribution to cumulative truck traffic impacts to less than significant.

PUBLIC SERVICES, UTILITIES AND SERVICE SYSTEMS

The proposed project would mitigate for any potential significant impacts and therefore would not contribute to cumulative infrastructure/utility/services impacts. The project has been designed to reduce flooding and increase channel capacity, which would improve discharge conditions associated with the City of Ferndale WWTP improvements.

HAZARDOUS MATERIALS

The proposed project would mitigate for any potential significant impacts. Such impacts would be localized in extent, and therefore would not contribute to hazardous materials impacts.

5.4 IRREVERSIBLE/IRRETRIEVABLE IMPACTS

As described above, the Salt River Ecosystem Restoration Project would permanently convert land to wetland and public access uses. The Salt River Ecosystem Restoration Project also would irreversibly convert upland and permanent and seasonal freshwater wetland habitat to aquatic and tidal wetland habitat. The Salt River Ecosystem Restoration Project, in combination with the proposed Connick Ranch project, would result in the loss of a locally unique historic agricultural landscape, including historic houses and dairy structures, and other agricultural lands. Construction

of the Salt River Ecosystem Restoration Project would result in the irretrievable use of natural resources including fuels.

Chapter 6 Report Preparers and Contributors

REPORT PREPARERS

Humboldt County Resource Conservation District

Donna Chambers
Executive Director

Amber Shows
Project Coordinator

Curtis Ihle
Program Manager

California State Coastal Conservancy

Michael Bowen
Project Development Specialist

Joel Gerwein
Project Manager

Grassetti Environmental Consulting

Richard Grassetti
Project Manager

Michael Kent
Technical Associate

Kamman Hydrology and Engineering, Inc.

Greg Kamman, PG, CHG
Principal Hydrologist

Shawn Higgins
Associate Geomorphologist

OTHER PROJECT CONTRIBUTORS

Humboldt County Board of Supervisors

Jimmy Smith
1st District Supervisor

Humboldt County Department of Public Works

Hank Seemann
Environmental Services Manager

Winzler and Kelly

Misha Schwarz, CPSS, CAC, REA II
Senior Scientist

Karla Knapek
Scientist

Gary Davidson
GIS Analyst

Steve Allen, P.E.
Principal Engineer

Tony Williams, P.E.
Principal Engineer

Jeremy Svehla, P.E.
Project Engineer

H.T. Harvey and Associates

Sharon Kramer, Ph.D.
Senior Fisheries Ecologist

Daniel Stephens, B.S.
Senior Restoration Ecologist

John Bourgeois, M.S.
Senior Restoration Ecologist

Scott Terrill, Ph.D.
Senior Wildlife Ecologist

Donna Ball, M.S.
Senior Restoration Ecologist

Mark Lagarde, B.S.
GIS Specialist

Samatha Moturi, M.S.
GIS Specialist

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Chapter 8. Comments and Responses on the Draft EIR

8.1 INTRODUCTION

This document contains a Revised Project Design discussion, Summary of Impacts and Mitigation Measures, written comments received on the Draft EIR (DEIR) and the Lead Agency's responses to those comments, an errata and staff-initiated text change section containing technical and editorial corrections and updates initiated by the Lead Agency.

The DEIR was circulated for a 45-day public review period (granted by the State Clearinghouse upon consultation with responsible and trustee agencies) beginning April 12, 2010 and ending on May 28, 2010. Copies of the DEIR were distributed to state, regional, and local agencies, as well as to any requesting individuals and organizations, for their review and comment. This document, together with a revised version of the DEIR that incorporates changes resulting from comments, constitutes the Final Environmental Impact Report (FEIR) for the project.

Pursuant to the requirements of the California Environmental Quality Act (CEQA), and Section 15088 of the CEQA Guidelines, the Humboldt County Resource Conservation District (HCRCD), as the Lead Agency, has evaluated the comments received on the DEIR and has prepared written responses to the comments received. Section III contains all of the comments made on the DEIR. Responses are provided for significant environmental points raised in the review and consultation process (as required in the State CEQA Guidelines Section 15132).

Text revisions to the DEIR made in response to comments on the DEIR are called out in this document. Additional text revisions made to reflect refinements in the project description are not shown in this volume, but are shown in the revised Project Description text included in the FEIR. Because of the substantial text revisions resulting from these comments, the DEIR has been revised and republished as part of the FEIR. Revisions are shown in ~~strike through~~ (deleted text) and <u>underline</u> (new text).

The FEIR will be certified by the HCRCD prior to consideration of project approval. The HCRCD may require the mitigation measures identified in this FEIR as conditions of project approval. In order to approve any discretionary applications for the proposed project, the HCRCD must adopt a separate document, prepared pursuant to State CEQA Guidelines Section 15091 and 15093, containing a set of required CEQA "Findings" with respect to each significant environmental effect, and a "Statement of Overriding Considerations" for any effects that are unavoidable or infeasible to mitigate. Also included in the Findings document is a Mitigation Monitoring Program that must be adopted in accordance with Public Resources Code Section 21081.6.

8.2 PROJECT DESIGN REVISIONS

Since the publication of the Draft EIR, the project had undergone substantial refinement to better achieve its goals and further reduce its environmental effects. In addition, a number of new or revised technical studies have been completed.

Project refinements are described in detail in the revised project description, which is included in the FEIR. The most significant revisions to project design have occurred under the proposed channel modifications. Specifically:

- The project reach has been extended to facilitate future connection of Coffee Creek to the Salt River
- The channel footprint has been revised to include "active channel" and "active bench" features.
- Multi-function habitat elements are integrated into the channel corridor design with the intent to provide habitat and morphologic benefit consistent with the project goals and objectives.
- Sediment management areas (active and passive) have been added to the project adjacent to the proposed new channel.
- The Adaptive Management Plan has been refined to include specific revegetation and long-term monitoring and management activities.

Acreages of habitats have been revised; these revised acreages are shown on Table 3.3-2, and incorporated into the revised project habitat map, Figure 2-8 in this document.

New studies completed since publication of the DEIR include:

- The Adaptive Management Plan (H.T. Harvey & Associates, Winzler & Kelly Kamman Hydrology and Engineering, January 28, 2011)
- The Rare Plant Mitigation and Monitoring Plan (H.T. Harvey & Associates and Winzler & Kelly, January 27, 2011)
- The Habitat Mitigation Monitoring Plan (HMMP) including updated Habitat Impact Analysis (H.T. Harvey & Associates and Winzler & Kelly, currently in development)
- The Tidewater Goby Biological Assessment (H.T. Harvey & Associates and Winzler & Kelly, January 20, 2011)
- The Geotechnical Report (LACO Associates, February 2011)
- Updated 50% and 75% plans for Riverside Ranch and the Salt River Channel
- Updated Cultural Resources Report (Roscoe & Associates, January 2011)
- Revised Wetland Delineations and Supplemental Data for the Rocha Sediment Reuse Plan, (Winzler & Kelly, August 2010)

- Revised Wetland Delineation and Supplemental Data for the Alexandre Sediment Reuse Plan, (Winzler & Kelly, November 2010)
- Uplands Delineation for Various Agricultural Fields – Salt River Sediment Reuse Plan (Winzler & Kelly, Humboldt County Resource Conservation District, Army Corps of Engineers, November 2010)

These studies are available for review at the HCRCD offices in Eureka, or electronically from the RCD upon request.

8.3 WRITTEN COMMENTS AND LEAD AGENCY RESPONSES TO COMMENTS

This section includes all written comments received by the Lead Agency regarding the Draft EIR (DEIR). Pursuant to CEQA requirements, each relevant comment is responded to following the letter. Comments and responses are organized by letter, and each relevant comment is numbered within each letter. Identically numbered responses follow each comment letter. Comments received at the DEIR public hearing are addressed following the written comments.

The following written comments were received on the DEIR:

A. California Coastal Commission June 3, 2010 Letter

B. Native American Heritage Commission, May 3, 2010 Letter

C. California Regional Water Resources Control Board, North Coast Region, May 20, 2010 Letter

D. California State Lands Commission, May 28, 2010 Letter

E. State Water Resources Control Board, Division of Financial Assistance, May 27, 2010 Letter

F. Humboldt County Farm Bureau, May 25, 2010 Letter

G. Redwood Region Audubon Society, Undated Letter

H. Denver Nelson, Undated Letter

I. Leland Mora, May 28, 2010 Comment Form

J. Renel Nordeman, April 16, 2010 Email

K. Bruce Slocum, May 21, 2010 Letter

L. California Department of Fish and Game, July 16, 2010 Letter

A

STATE OF CALIFORNIA – NATURAL RESOURCES AGENCY ARNOLD SCHWARZENEGGER, *GOVERNOR*

CALIFORNIA COASTAL COMMISSION
NORTH COAST DISTRICT OFFICE
710 E STREET • SUITE 200
EUREKA, CA 95501-1865
VOICE (707) 445-7833
FACSIMILE (707) 445-7877

June 3, 2010

Ms. Donna Chambers
Humboldt County Resource Conservation District
5630 South Broadway
Eureka, CA 95503

SUBJECT: Draft Environmental Impact Report for the "Salt River Ecosystem Restoration Project," Ferndale area, Humboldt County (SCH No. 2007062030).

Dear Ms. Chambers:

Thank you for granting a time extension to our office for the transmittal of comments on the draft environmental impact report (DEIR) for the above-referenced project. We received the DEIR in our Eureka office on April 13, 2010. The District proposes to implement "Alternative 1" as described in the DEIR, which involves four main components: (1) channel restoration; (2) Riverside Ranch restoration; (3) upslope sediment reduction; and (4) channel maintenance and adaptive management.

The majority of the project site (except for the proposed upslope sediment reduction areas and portions of Francis Creek within the city limits of Ferndale) is located within the California Coastal Zone as defined in Chapter 2.5 of the California Coastal Act (Public Resources Code §30150 *et seq.*). As noted in the DEIR, portions of the proposed project area fall under the coastal development permit (CDP) jurisdiction of the Commission, and portions fall under the CDP jurisdiction of Humboldt County. The Commission's jurisdiction includes Riverside Ranch, the Salt River channel, portions of the Francis Creek channel (downstream of the city limits of Ferndale) and other channels, the lower two proposed "channel confinement fill areas," and potentially parts of the upper channel confinement fill areas and some of the agricultural areas proposed for sediment reuse. The remainder of the project area, including most of the agricultural areas proposed for sediment reuse, is within the CDP jurisdiction of Humboldt County (except for, as noted above, the proposed upslope sediment reduction areas and portions of Francis Creek within the city limits of Ferndale, which are outside of the coastal zone though still within the permitting jurisdiction of Humboldt County and/or the City). Accordingly, the Commission will function as both a trustee and responsible agency. The role of trustee agency is based upon the Commission's explicit jurisdiction by law over natural resources held in trust for the people of the State of California that could be affected by the project. The function of responsible agency derives from the role of the Commission in: (a) certifying local coastal programs (LCPs) for areas within the coastal zone under local governments' jurisdiction; (b) issuing CDPs within areas of Commission jurisdiction; or (c) hearing appeals on CDPs issued by local governments for certain classes of development in specified areas.

Under Sections 15251(c) and (f) of the CEQA Guidelines, the Secretary of Resources has certified the Commission's regulatory program as a "functionally equivalent process" to CEQA. Accordingly, the adopted final EIR will be used as a technical background document in assessing the project's environmental effects and conformance with applicable policies and standards of County's LCP and/or the Coastal Act.

As noted above, portions of the proposed project area fall under the CDP jurisdiction of the Commission, and portions fall under the CDP jurisdiction of Humboldt County. If requested by the applicant and Humboldt County and agreed to by the Commission's Executive Director, the Commission has the authority (pursuant to Section 30601.3 of the Coastal Act and Humboldt County Resolution No. 07-24) to process a single consolidated CDP application for the project (except for the upslope sediment reduction component and any proposed work within the city limits of Ferndale, which is outside the coastal zone and does not require a CDP), using the Coastal Act as the standard of review. If the applicant, Humboldt County, and the Commission's Executive Director do not agree to the CDP consolidation process, as noted in the DEIR the project would require two separate CDPs. The County's approval of the CDP would be appealable to the Coastal Commission pursuant to Section 30603(a) of the Coastal Act and Section 312-13.12 of the Humboldt County Coastal Zoning Regulations (CZR) because the project is (1) located between the sea and the "first public road paralleling the sea" [as defined by CCR Section 13577(i)]; (2) located within 300 feet of the mean high tide line and/or within 100 feet of a stream, wetland, and/or estuary; (3) is not designated as the principal permitted use under the CZR; and (possibly) (4) constitutes a major public works project.

The following are comments of the Coastal Commission staff; the Commission itself has not reviewed the documents. Staff's comments on the DEIR relate to various issues, as discussed below (organized, where possible, consistent with applicable categories of environmental effects as laid out in chapter 3 of the DEIR), and are provided for lead and responsible agency consideration for reviewing the DEIR. These comments also may be used as guidance on some of the issues to address as the District prepares to submit a complete CDP application to the Commission for review.

(1) General Comments on "Restoration"

The DEIR labels the proposed action (Alternative 1): "Salt River Ecosystem Restoration Project," described as a "watershed-based, ecosystem-scale project with multiple objectives and benefits including habitat restoration and enhancement, water quality improvement, flood alleviation, and carbon sequestration…" (page 2-10).

The term "restoration" is not defined in either the Coastal Act or the Commission's administrative regulations. However, varying definitions of the term can be found in other sources (e.g., [1] [2] [3] to cite a few). Implicit all of these varying definitions and distinctions is the understanding that the restoration entails returning something to a prior state. In contrast to "enhancement," "restoration" encompasses not only reestablishing certain prior conditions but also reestablishing the processes that create those conditions. In addition, "restoration" implies that the reestablished conditions will persist to some degree and will not promptly return to the pre-restored state.

1

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[1] Merriam-Webster's Collegiate® Dictionary, Eleventh Edition

[2] "Definitions," *Society of Ecological Restoration News*, Society for Ecological Restoration, Fall 1994.

[3] *Position Paper on the Definition of Wetland Restoration*, Society of Wetland Scientists, August 6, 2000.

The description of, for example, the proposed activities at Riverside Ranch or the proposed dredging of the Salt River channel and placement of fill within floodplain wetlands as "restoration" must be based, in part, on evidence that these proposed project components will be successful in restoring habitat values. Should the project be unsuccessful at increasing and/or enhancing habitat values, or worse, if the proposed diking, filling, and dredging impacts of the project actually result in long term degradation of the habitat(s), the proposed project would not accurately be described as being for "restoration purposes."

1

Under Coastal Act and LCP policies (specifically Section 30233 of the Coastal Act and Section 3.41-B of the Humboldt County Eel River Area Plan), in order for the project to be recognized as being for "restoration purposes" (and therefore a permissible use within coastal wetlands and waters), the project must demonstrate that: (1) it either entails (a) a return to, or re-establishment of, former habitat conditions, or (b) entails actions taken in a converted or degraded natural wetland that will result in the reestablishment of landscape-integrated ecological processes, and/or abiotic/biotic linkages associated with wetland habitats; (2) there is a reasonable likelihood that the identified improvements in habitat value and diversity will result; and (3) once re-established, it has been designed to provide the desired habitat characteristics in a self-sustaining, persistent fashion independent of the need for repeated maintenance or manipulation to uphold the habitat function.

(cont.)

During the coastal development permitting process, it may be determined that certain components of the proposed project, such as the Riverside Ranch tidal marsh restoration component, can be categorized as being for "restoration purposes," whereas other aspects of the project may be more accurately described as being for the primary purpose of flood control. This is particularly true for those project components, such as "channel restoration," that rely heavily on the assumption that future maintenance and adaptive management techniques will be integral to sustaining the target conditions and habitats. Those project components that involve substantial alteration of the Salt River and tributary streams and which have the primary purpose of flood control would be reviewed under Section 30236 of the Coastal Act. Under this policy, it must be demonstrated that no other method for protecting existing structures in the flood plain is feasible, and such protection is necessary for public safety or to protect existing development. The project also must incorporate the "best mitigation measures feasible."

(2) Hydrology & Water Quality / Geology & Soils

Summary of Applicable Coastal Act Policies & Standards

Section 30230 of the Coastal Act states as follows:

> *Marine resources shall be maintained, enhanced, and where feasible, restored. Special protection shall be given to areas and species of special biological or economic significance. Uses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.*

2

Section 30231 of the Coastal Act states as follows:

> *The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff,*

preventing depletion of ground water supplies and substantial interference with surface water flow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.

Section 30236 of the Coastal Act states as follows (emphasis added):

Channelizations, dams, or other substantial alterations of rivers and streams shall incorporate the best mitigation measures feasible, and be limited to (1) necessary water supply projects, (2) flood control projects where no other method for protecting existing structures in the flood plain is feasible and where such protection is necessary for public safety or to protect existing development, or (3) developments where the primary function is the improvement of fish and wildlife habitat.

2 (cont.)

Section 30253 of the Coastal Act states, in applicable part, as follows (emphasis added):

New development shall do all of the following:

(a) Minimize risks to life and property in areas of high geologic, flood, and fire hazard.

(b) Assure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area or in any way require the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs...

Comments

As noted in the DEIR, nearly the entire project area is within the FEMA-mapped 100-year flood zone. However, the DEIR does not appear to report how much of the project area is within the FEMA-mapped floodway. Proposed new development that falls within a floodway presents the risk of flooding of adjacent lands by displacing the capacity of the existing floodway to convey flood waters. The DEIR should analyze whether or not any proposed development would occur within a mapped floodway (e.g., placement of fill within "channel confinement fill areas"), and if so, what effect new development within the floodway may have has on displacing the capacity of the existing floodway to convey flood waters and cause flood waters to spread. The project must demonstrate that any reduction of floodway capacity resulting from proposed project activities would be adequately compensated by expanding the floodway capacity in another (appropriate) location.

The DEIR briefly addresses the project's long-term impacts on water quality, including impacts to aquatic ecology, existing wetlands, and Eel River estuary water quality. To reduce potential water quality impacts to less than significant levels, Mitigation 3.1.1-1 (among others) is proposed, which would implement a (to-be-developed) long-term erosion monitoring plan to routinely screen the project for areas experiencing excessive erosion leading to degraded water quality, with maintenance and adaptive management strategies to be used to stabilize areas experiencing excessive erosion. Additionally, Mitigation 3.1.1-3 would implement a (to-be-developed) water quality monitoring and maintenance plan, which would "routinely screen project water quality and source areas leading to degraded water quality" and design and implement maintenance and adaptive management strategies "to modify the morphology of poor water quality source areas." The DEIR further proposes to develop a "Riverside Ranch Wetland Restoration Design "in a responsible manner by experienced wetland restoration design experts" to ensure "...adequate water quality conditions for desired wetland habitat types."

3

The DEIR should identify the maintenance and adaptive management strategies that potentially would be designed and implemented under the proposed plans to substantiate the feasibility, efficacy, and environmental effects of the intended mitigation efforts. This is particularly important during the coastal development permitting process if the project proposes to include certain future maintenance activities within the CDP authorization. 3 (cont.)

The DEIR briefly addresses the effects of flows in the reconstructed channel on channel erosion, and recommends Mitigation 3.1.1-7 to implement a (to-be-developed) erosion monitoring and maintenance plan, which "would monitor for excessive erosion and sediment accumulation and prescribe remedies in the form of channel adjustments and sediment excavation on an 'as-needed' basis. Specific criteria will be developed and stipulated in the plan that will trigger the need for adaptive management and/or maintenance activities. If erosion is so great that it causes water quality impairments, improvement such as channel armoring shall be implemented to manage and reduce erosion" (page 3.1-64). The erosion monitoring plan also would evaluate erosion problems in response to wind-waves (Mitigation 3.1.1-9.2), including wind-wave criteria and thresholds that, if exceeded, would trigger maintenance and/or adaptive management measures to repair and eliminate erosional problems. 4

As commented above, the DEIR should identify the maintenance and adaptive management strategies that potentially would be designed and implemented under the proposed plan to substantiate the feasibility, efficacy, and environmental effects of the intended mitigation efforts. Mitigation 3.1.1-9.1 briefly mentions bioengineering methods that may be employed including the planting of specific vegetation species that thrive in the anticipated environments, installation of large-wood structures such as bank revetments, and/or hard-bank stabilization measures (e.g., rock and/or rip-rap). However, to find the project consistent with Section 30253 of the Coastal Act, the proposed project, and its supporting hydrologic and geotechnical analyses, must demonstrate that the channel redesign, new setback levee design, floodplain recontouring, and other project components will adequately protect again erosion and geologic instability.

(3) Biological Resources (Terrestrial & Aquatic)

Applicable Coastal Act Policies & Standards

Section 30121 of the Coastal Act defines "wetland" as follows:

> *"Wetland" means lands within the coastal zone which may be covered periodically or permanently with shallow water and include saltwater marshes, freshwater marshes, open or closed brackish water marshes, swamps, mudflats, and fens.*

Section 13577 of the Commission's administrative regulations (14 CCR 13001 *et seq.*), in applicable part, further defines "wetland" as follows (emphasis added):

> *(1) ...Land where the water table is at, near, or above the land surface long enough to promote the formation of hydric soils or to support the growth of hydrophytes, and shall also include those types of wetlands where vegetation is lacking and soil is poorly developed or absent as a result of frequent and drastic fluctuations of surface water levels, wave action, water flow, turbidity or high concentrations of salts or other substances in the substrate. Such wetlands can be recognized by the presence of surface water or saturated substrate at some time during each year and their location within, or adjacent to, vegetated wetlands or deep-water habitats. For purposes of this section, the upland limit of a wetland shall be defined as:*
>
> > *(A) the boundary between land with predominantly hydrophytic cover and land with predominantly mesophytic or xerophytic cover;*

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(B) the boundary between soil that is predominantly hydric and soil that is predominantly nonhydric; ***or***

(C) in the case of wetlands without vegetation or soils, the boundary between land that is flooded or saturated at some time during years of normal precipitation, and land that is not.

(2) For the purposes of this section, the term "wetland" shall not include wetland habitat created by the presence of and associated with agricultural ponds and reservoirs where:

(A) the pond or reservoir was in fact constructed by a farmer or rancher for agricultural purposes; ***and***

(B) there is no evidence (e.g., aerial photographs, historical survey, etc.) showing that wetland habitat pre-dated the existence of the pond or reservoir. Areas with drained hydric soils that are no longer capable of supporting hydrophytes shall not be considered wetlands.

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(cont.)

With respect to diking, filling, or dredging of wetlands, Section 30233 of the Coastal Act states, in applicable part, as follows (emphasis added):

(a) ***The diking, filling, or dredging of open coastal waters, wetlands, estuaries, and lakes shall be permitted*** *in accordance with other applicable provisions of this division,* ***where there is no feasible less environmentally damaging alternative, and where feasible mitigation measures have been provided to minimize adverse environmental effects, and shall be limited to the following****:*

(1) New or expanded port, energy, and coastal-dependent industrial facilities, including commercial fishing facilities.

(2) Maintaining existing, or restoring previously dredged, depths in existing navigational channels, turning basins, vessel berthing and mooring areas, and boat launching ramps.

(3) In open coastal waters, other than wetlands, including streams, estuaries, and lakes, new or expanded boating facilities and the placement of structural pilings for public recreational piers that provide public access and recreational opportunities.

(4) Incidental public service purposes, including but not limited to, burying cables and pipes or inspection of piers and maintenance of existing intake and outfall lines.

(5) Mineral extraction, including sand for restoring beaches, except in environmentally sensitive areas.

(6) ***Restoration purposes****.*

(7) Nature study, aquaculture, or similar resource dependent activities...

(c) In addition to the other provisions of this section, ***diking, filling, or dredging in existing estuaries and wetlands shall maintain or enhance the functional capacity of the wetland or estuary****...*

With respect to environmental sensitive habitat areas (ESHA), Section 30240 of the Coastal Act directs as follows:

(a) Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas.

(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 those areas, and shall be compatible with the continuance of those habitat and recreation areas.

Finally, Section 30107.5 of the Coastal Act defines 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.*"

Comments

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(cont.)

The proposed project would involve substantial diking, dredging, and filling in various types of coastal wetlands and substantial alteration of river and stream channels and adjacent floodplain areas. As commented above under item #1, if the proposed project is truly for "restoration purposes," all of the following findings must be made to find the project consistent with Coastal Act policies:

a) The project must demonstrate that: (1) it either entails (a) a return to, or re-establishment of, former habitat conditions, or (b) actions taken in a converted or degraded natural wetland that will result in the reestablishment of landscape-integrated ecological processes, and/or abiotic/biotic linkages associated with wetland habitats; (2) there is a reasonable likelihood that the identified improvements in habitat value and diversity will result; and (3) once re-established, it has been designed to provide the desired habitat characteristics in a self-sustaining, persistent fashion independent of the need for repeated maintenance or manipulation to uphold the habitat function.

b) It must be demonstrated that the project has no feasible less environmentally damaging alternative.

c) It must be demonstrated that feasible mitigation measures have been provided to minimize adverse environmental effects.

d) It must be demonstrated that the biological productivity and functional capacity of the habitat shall be maintained and enhanced where feasible.

In addition, for each project component that involves impacts to coastal wetlands (e.g., construction of the new 10:1-sloped setback levee within coastal wetlands for Riverside Ranch, recontouring of and placement of fill within floodplain areas for channel confinement purposes, channel dredging and proposed bank stabilization measures, etc.), it must be demonstrated that (1) the proposed action is the least environmentally damaging feasible alternative, and (2) the best mitigation measures feasible will be implemented. Therefore, aside from the various project alternatives analyzed in the DEIR, the CDP application process will require examination of alternatives to elements of the proposed project that involve diking, dredging, and filling in coastal wetlands and substantial alteration of channels and adjacent floodplain areas to demonstrate that the proposed action is the least environmentally damaging feasible alternative and that the best mitigation measures feasible will be implemented.

Table 3.3-1 in the DEIR lists the biological surveys that have been conducted in the project area since 2001. One of the listed surveys is a "Planning-level wetlands delineation" by Ericsson et al. (2008). This document was reviewed by the Commission's ecologist John Dixon in 2008, who offered the following comments (in part) in a memorandum dated June 4, 2008, which was provided to the District at that time. These comments are provided again here since they pertain to studies used in the DEIR biological resources analysis (emphasis added):

...As part of the planning process, it is important to have some understanding of the existing resources, including wetlands, that may be affected by this effort. To this end, the Corps classified and mapped vegetation communities and delineated and mapped important fluvial surfaces (bankful & active terrace and abandoned flood plain terrace) within significant riparian corridors. Using these data in combination with field verifications, each area of interest was assigned a probability that it would meet the criteria for being regulated as wetlands or other waters of the U. S. under federal law and regulations. The probabilities would be different under the Coastal Act. For example, willows were found both in areas with and without evidence of surface hydrology. Perhaps half those areas would be jurisdictional under the Clean Water Act but a larger proportion would fall under the jurisdiction of the California Coastal Commission, either as wetlands or as environmentally sensitive riparian habitat areas. This is an interesting and useful study that was conducted to develop a fact base for use in restoration planning purposes. The authors include the following caveat:

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(cont.)

> Although the delineation is highly accurate at the planning level, it is not specific to any one site. Thus, a planning-level wetland delineation does not replace the need for a jurisdictional wetland delineation from the Corps of Engineers (COE) permitting program, or the CDFG Section 1600 requirements. It also does not replace the need for a site-specific evaluation under Section 404(b)1 of the Clean Water Act of potential impacts from proposed Corps civil works projects on resources associated with Waters of the United States (WoUS). As such, this report describes the baseline occurrence of aquatic resources that were observed in these watersheds at the time of the study during the period for September 2007.

A similar cautionary note applies to state law and particularly to the requirements of the Coastal Act. The maps in the Corps report provide good estimates of the location of wetlands and other aquatic resources. However, they do not provide the information at a resolution that would be necessary to calculate the impacts to such resources from the development activities that will be associated with the planned flood control and habitat restoration activities. The development of such information will require on the ground, site-specific delineations...

Dr. Dixon also prepared a second memorandum dated February 13, 2009 (which was provided to the District at that time) in response to his review of the aforementioned Ericsson et al. study as well as two reports completed by Winzler & Kelley in 2008 pertaining to wetlands and sediment reuse on the Rocha property (APNs 106-021-02, -03, -07 & -62). The Rocha property is an estimated 134-acre agricultural property north of Arlynda Corners that is one of the areas proposed for "sediment reuse" as shown on Figure 2-4 of the DEIR. The memo states, in applicable part (emphasis added):

> ...Portions of some 1,200 acres within the Salt River watershed are proposed for restoration activities intended to improve fish habitat and water quality, and to alleviate flooding. An estimated 600,000 cubic yards of clean, natural sediments will be dredged. These sediments are viewed as an important agricultural resource by the Resource Conservation District. Dredge spoils will be used to improve agricultural lands, for example by applying them as a top dressing to pastures, by applying them to agricultural roads and cattle lanes, and by creating loafing areas for cows...In order to avoid the fill of wetlands, areas that are clearly upland must be identified as potential recipients of

> these dredge spoils. The ACOE is cooperating with local agencies in identifying such areas…
>
> Dairy farms are problem areas for vegetation analysis… As a result of management as pasture, there is no consistent difference in the vegetation between uplands and most seasonal wetlands.
>
> Hydrological analysis is also problematic at this time. The 2008/2009 rain year has been exceptionally dry, which makes the absence of field indicators of wetland hydrology difficult to interpret. Since the field indicators of both wetland vegetation and wetland hydrology are problematic, soils analysis is the principal means of distinguishing upland areas from wetlands…
>
> …Fields that are characterized by the Corps as uniformly uplands would also be characterized as uplands following the definitions in the Coastal Act and the Commission's Regulations. Fields that contain wetland patches may require additional field work in order to determine the wetland/upland boundary based on Coastal Commission definitions.
>
> An example of such an area is the Rocha property. This property was actually the subject of a technical wetland delineation by Winzler & Kelly…The Corps issued a jurisdictional determination using the boundaries from the Winzler & Kelly delineation on December 11, 2008. Only those areas that met the 3-parameter definition of the Corps were identified as "wetlands."…

5 (cont.)

It is unclear from the DEIR whether the planning-level and site-specific wetland delineations completed for the project adequately identified coastal wetlands (as defined above) within the project area in addition to federal jurisdictional wetlands. Figures 2-7 and 2-8 and Table 3.3-2 identify existing and proposed "land cover types" in the project area. These cover types include "agricultural grassland" and "seasonal wetland," among others. These figures and table should be modified to (1) include the proposed "sediment reuse" areas, which are proposed to receive an estimated 177,700 cubic yards of channel dredging material and therefore are an integral part of the proposed project area, and (2) identify whether the proposed sediment reuse areas and channel confinement fill areas consist of upland agricultural grassland, (coastal) wetland agricultural grassland, or some other land cover type. As commented above by Dr. Dixon, the wetland delineation completed for the Rocha property, which has been identified as a "sediment reuse area" proposed to receive dredged material (i.e., fill), identified 3-parameter wetlands but did not adequately identify coastal wetlands. It is unclear from the DEIR whether delineations of coastal wetlands have occurred across the other areas proposed for sediment reuse and on the areas proposed for channel confinement fill and whether impacts to coastal wetlands have been adequately tabulated in Table 3.3-2 and mitigated by the proposed project. As Commission staff has previously commented in meetings with the District and its consultants, any planning-level, large-scale wetland delineation that is done to identify upland areas suitable for the placement of agronomically suitable sediment on agricultural land must err on the conservative side with respect to methods used to identify the upper end of the soil moisture gradient across the landscape so that the Commission, in considering the CDP application, will have confidence that adding dredge spoils to these areas will have little likelihood of filling wetlands (since such filling would not be for one of the uses permissible under Section 30233 of the Coastal Act).

Pages 3.3-28-29 of the DEIR cite language from *Procedural Guidance for Evaluating Wetland Mitigation Projects in California's Coastal Zone*. It's important to note that this document was

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produced in 1995 as a reference document for use by Commission staff, and it was never adopted by the Commission. The DEIR appears to cite the document to justify the proposed approximately 1-to-1 mitigation ratio for overall wetland impacts ("...it is not necessary to consider project location and mitigation ratios in designing a restoration project, since habitat compensation is not an issue"). The DEIR states (page 3.3-29) that "The 305 acres of wetland and waters restored...would fully compensate for the 29 acres of wetlands and waters and 247 acres of mesic grasslands impacted by the project." First, it is unclear where these numbers come from since they do not appear to coincide with the wetland habitat totals derived from Table 3.3-2, notably with respect to the 72.8 acres of riparian habitat that would be impacted by the proposed project according to the table and Figures 2-7 and 2-8. Second, as previously discussed in this letter, the "channel restoration" component of the project may be more accurately described as being for "flood control" rather than "restoration purposes." Therefore, during the CDP application process, it will be necessary to consider mitigation ratios, especially for the riparian habitat impacts caused by the flood control elements of the proposed project. 6 (cont.)

The proposed project must not only ensure that it will not result in a net loss of wetland area, but it must also ensure that there will be no net loss of wetland function. Although the DEIR addresses the wetland functions that would be gained as a result of the proposed Riverside Ranch tidal marsh restoration component of the project, it does not propose adequate mitigation for the wetland function that would be lost as a result of project impacts on riparian habitat (particularly as a result of the flood control elements of the project such as channel excavation and floodplain recontouring). According to Table 3.3-2 of the DEIR and Figures 2-7 and 2-8, the proposed project will impact approximately 72.8 acres of riparian habitat, and the project proposes to restore approximately 79.2 acres of riparian habitat. As discussed above, Coastal Act policies require not only that the project be the least environmentally damaging feasible alternative, but also that the best mitigation measures feasible be implemented. The Commission typically requires a minimum ratio of 4-to-1 (area restored: area impacted) for impacts to wetland and riparian habitat statewide when the proposed mitigation is on-site. Higher ratios often are required for off-site mitigation proposals. The high ratio required reflects not only the importance of the habitat type to the ecosystem, but also the temporal loss of the habitat and all the functions it serves, since it may take several years or even decades for the mitigation riparian vegetation to fully mature and amply provide its many and varied functions and values in the environment equivalent to those lost as a result of project activities. In addition, mitigation wetlands, including new riparian areas and other wetland types, must be restored in-kind and fully protected from future uses and activities. Therefore, the DEIR should be revised to exclude the "Reduced Planting Areas," which it admits "would have lower habitat values than most existing riparian forest and scrub in the project area" (page 3.3-33) in the tabulation of "restored" riparian habitat, since the areas will have lower canopy and understory density to allow for grazing and will not likely achieve the same level of function as the existing riparian habitat that would be impacted by the proposed project. 7

(4) Agricultural Resources

As described in the DEIR, the proposed project would convert 359 acres of agricultural land, 294 acres of which is classified as "prime," to non-agricultural uses. Coastal Act Sections 30241 and 30242 require the protection of "prime agricultural lands" and set limits on the conversion of both prime and non-prime agricultural lands to non-agricultural uses. 8

Impact 3.9.2-1 of the DEIR discusses the impact that project implementation would have on agricultural land in the project area and surrounding vicinity. The discussion concludes that "it is reasonable to expect that the project would not result in a loss in livestock capacity for the project vicinity," and the impact is deemed "less than significant (self-mitigating due to increases in agricultural productivity associated with reduced frequency and duration of inundation, floodplain recontouring, and placement of dredged materials on adjacent agricultural land)." The evidence given to support this conclusion includes three main contentions: (1) a report from 1989 that between 600 and 1,000 acres of irrigated and dry pasture along the Salt River were affected each year by annual overbank flow caused by flooding and poor drainage; (2) information from five ranchers in and around the project area estimating an overall herd reduction of 80 animal units and an extra $160,000 in expenses and/or crop loss incurred annually due to "increases in inundation in recent decades;" and (3) the assertion that "placement of [up to 177,700 cubic yards of] excavated materials [in the estimated 631 acres of 'sediment reuse areas'] would further enhance the productivity of the agricultural lands to which they are applied by reducing inundation."

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(cont.)

This impact should be addressed in more detail in terms of the amount of agricultural productivity (e.g., animal units) that would be gained (i.e., protected from flooding and therefore available for agricultural use for longer periods of time than currently) and lost (converted or otherwise removed from agricultural use) as a result of the proposed project to better understand the significance of the impact. As commented above under item #3, the placement of dredge spoils on agricultural wetlands is not permissible under Section 30233 of the Coastal Act and therefore should not be considered a agricultural benefit that the proposed project would provide in the Impact 3.9.2-1 analysis. During the CDP application process, the District may need to investigate the possibility of locating agricultural lands that currently are fallow or slated for other (non-agricultural) purposes that could be restored to productive agricultural use as mitigation for the project's proposed conversion of 359 acres of agricultural land.

Thank you again for the opportunity to comment on the DEIR. As always, Commission staff is available to discuss our comments in greater detail as well as any questions you may have about the CDP process. To arrange for discussion, please contact me at 707/445-7833.

Sincerely,

Melissa B. Kraemer
Coastal Planner

Cc: State Clearinghouse, P.O. Box 3044, Sacramento, 95812-3044

Ec:
Mr. Curtis Ihle & Ms. Amber Shows, Humboldt County Resource Conservation District, cihcrcd@yahoo.com; amberhcrcd@yahoo.com
Mr. Hank Seemann, Humboldt Count Public Works Dept., hseemann@co.humboldt.ca.us
Mr. Steve Werner, Humboldt County Planning Division, swerner@co.humboldt.ca.us
Messrs. William Condon, Michael van Hattem, Gordon Leppig & Scott Bauer, California Department of Fish & Game, wcondon@dfg.ca.gov; mvanhattem@dfg.ca.gov; gleppig@dfg.ca.gov; sbauer@dfg.ca.gov
Mr. Dean Prat, North Coast Water Quality Control Board, dprat@waterboards.ca.gov
Mr. David Ammerman, U.S. Army Corps of Engineers, David.A.Ammerman@spd02.usace.army.mil
Mr. Michael Bowen, State Coastal Conservancy, mbowen@scc.ca.gov

8.4.1 RESPONSES TO CALIFORNIA COASTAL COMMISSION JUNE 3, 2010 LETTER

Response to Comment 1: As stated in the comment, "…implicit in all of these varying (restoration) definitions is the understanding that the restoration entails returning something to a prior state." Additionally, the restoration"… implies that the reestablished conditions will persist to some degree and will not promptly return to the pre-restored state."

The threshold questions for meeting the restoration standard are set forth in the Coastal Act and LCP policies (specifically Coastal Act Section 30233 and Section 3.41-B of the Humboldt County Eel River Area Plan). These are (paraphrased):

- Does the project entail either a return to, or re-establishment of former habitat conditions, or does it entail actions taken in a converted or degraded natural wetland that will result in the re-establishment of landscape-integrated ecological processes?
- Is there a reasonable likelihood that that the identified improvements in habitat value and diversity will result?
- Has the restored habitat been designed such that, once re-established, it will provide the desired habitat characteristics in a self-sustaining, persistent fashion independent of the need for repeated maintenance or manipulation to uphold the habitat function?

The answers to these questions are provided, below:

1. The project combines a partial return to historic habitat conditions, with the reestablishment of landscape-integrated ecological processes in a converted and degraded natural wetland.

Watershed restoration necessitates a "ridge-top to river-bottom" approach. Therefore, the project includes erosion control measures in the upper watershed, restoration of hydraulic connectivity along the historic Salt River channel, and restoration of a significant portion of tidal prism within the project footprint. Last, the project includes an adaptive management program that is designed to enhance restored habitat features by improving habitat function as conditions within the project footprint evolve. As the revised Table 3.3-2 demonstrates, the proposed project would provide substantial increases in habitat types lost through reclamation and ensuing habitat degradation. The foremost habitat types proposed for restoration include, in order of size, tidal marsh (247.3 acres), aquatic habitat (49.2 acres), and riparian scrub/forest (6.4 acres). This revised table 3.3-2 replaces the DEIR's Table 3.3-2.

There is a high probability that the identified actions would result in substantial habitat value improvements, and significant increases in habitat and species type diversity. Table 3.3-2 summarizes the increase in terrestrial habitat value resulting from the project, as well as the significant increases in habitat and species type diversity anticipated as a result of the proposed project. It is particularly notable that for the project footprint, aquatic habitat would increase substantially, from 11 acres to 33 acres, as summarized in Table 3.3-2.

Table 3.3-2. Existing and Projected Land Cover Types for Salt River Enhancement Project (all units in acres)[1]

Habitat Type	Riverside Ranch[2]				Salt River[2]				Overall		
	Existing	Removed	Replanted	Projected	Existing	Removed	Replanted	Projected	Total Existing	Total Projected	Projected Change
Tidal Salt & Brackish Marsh	36	14	~15[7]	330	0	-	4	4	36	334	+298
High Marsh Ecotone	0	-	7	7	0	-	-	0	0	7	+7
Aquatic / Mudflat[5]	8	4	-	19	3	-	-	14	11	33	+22
Riparian Forest/Scrub*	39	30	31	40.5	66	32	51	85	105	125.5	+20.5
Freshwater Wetland Habitats:											
a) Tidal Freshwater Marsh	0	-	-	0	0	-	14	14	0	14	+14
b) Seasonal Wetlands	4	>3	-	<1	21	11	-	10	25	10	-15
c) Freshwater Channel Wetland	0	-	-	0	0	-	8	8	0	8	+8
Agricultural/Grassland/ Levees	347	273	18[4]	76	240	52	-	188	587	264	-323
Scrub-Shrub	10	10	-	0	1	1	-	0	11	0	-11
Ruderal	20	20	-	0	3	3	-	0	23	0	-23
Developed	8	8	-	<1	1	<1	1	<1	9	<1	-8
Sediment Management Areas[6]	0	-	-	0	0	1	1	13[3]	0	13	+13
Approximate Total	472			472	336			336	808	808	0

[1] Totals are approximate due to rounding of individual acreage amounts.

[2] The confluence of Reas Creek divides the Riverside Ranch and Salt River Restoration areas.

[3] 13 acres have been depicted on the projected vegetation maps. However, an additional 7 acres are tentatively proposed within the project area on existing agricultural grasslands.

[4] Levee will be seeded with native and erosion control grass species.

[5] Existing habitat type includes impacted areas to existing Eel grass beds (1.2 acres). Projected habitat area includes an estimated 8.7 acres of Eel grass beds created. Reference: Salt River Ecosystem Restoration Project Rare Plant Mitigation and Monitoring Plan (H.T. Harvey & Associates and Winzler & Kelly, January 27, 2011).

[6] The location of proposed Sediment Management Areas currently comprise approximately 85% Agricultural Grasslands and 15% Riparian Forest and have been accounted for in the respective Removed columns

[7] Only about 15 acres of salt and brackish marsh will be actively planted, but approximately 294 acres of this habitat will be restored by restoring tidal influence on Riverside Ranch, resulting in the 330 projected acres indicated in the "Projected" column.

* Project ratio of total acres Replanted (82 acres) to Removed (62 acres) is 1.3:1

Although the proposed project outlines an adaptive management program, that project element is included to ***enhance*** a restored habitat condition over time, not to simply maintain habitat conditions in their restored state.

All project elements are proposed to be integrated to achieve full restoration potential, as well as increasing habitat value, protection, and enhancement over time. Removal of individual components such as the channel restoration would adversely affect the longevity, durability, and long-term restoration success of the project as a whole. As the DEIR biological and hydrological analyses convey, piecemeal restoration of habitat value in the project area would be unlikely to achieve habitat restoration to the extent currently proposed. Similarly, durability of the restoration would be compromised due to the absence of project features necessary to maintain hydraulic connectivity and hence habitat value, such as water velocity, sediment transport capability, and erosion control. Simply put, channel restoration is a vital restoration component of the Salt River project, and not a stand-alone flood control project. Without the channel restoration, the project would not provide a comprehensive hydrologic solution to the longstanding and persistent degradation of the project area. Therefore, the project as a whole is appropriately reviewed under Section 30233 (a)(7) of the Coastal Act.

Commission staff raises the question of whether the channel restoration should be characterized, and presumably reviewed, under Section 30236 of the Coastal Act (flood control), as opposed to 30233 (a)(7) (restoration). The channel restoration would, in fact, provide significant improvements to drainage, as the historic but now non-existent channel of the Salt River once provided far better drainage than exists today. It would reduce flooding of existing development, including public and private roads, dairies, a sewage treatment plant, and various other public infrastructure installations, similar to conditions prior the complete aggradation of the historic Salt River channel.

However, the restoration of the hydraulic connectivity that once existed between the Williams Creek confluence and the lower Eel River delta does not constitute a new "flood control" project as Commission staff suggests. Instead, the channel restoration is precisely that: the partial restoration of an historic channel that provided hydraulic connectivity –and important aquatic and terrestrial habitat benefits—within the project footprint. The project has been carefully engineered to provide aquatic and terrestrial habitat values in an area where aquatic habitat has been completely lost, and terrestrial habitat is vegetatively homogenized and degraded relative to historic conditions.

The goal of the project is to restore a self-sustaining system that maintains hydrologic connectivity and ecological function for the foreseeable future. The proposed channel has been designed to optimize sediment transport and fish passage opportunities, thereby minimizing the need for future channel maintenance. However, the level of sediment deposition in the project area resulting from naturally erosive soils and steep slopes in the Wildcat Hills, loss of tidal prism, channel manipulation, and other factors suggest that periodic maintenance of sediment and vegetation within the proposed low flow channel and inset floodplain would be necessary. The frequency and extent of sediment maintenance would vary by water year types and sediment deposition levels. Active Sediment Management Areas and potentially some portions of the channel or floodplain would need to be periodically re-excavated to maintain optimum hydrological and ecological function. In order to achieve appropriate levels of hydrologic function while meeting targets for habitat quality and

quantity, future adaptive management activities consistent with the project design are described in the Adaptive Management Plan (available for review in hard or electronic format from the HCRCD). To minimize disturbance, channel maintenance would occur during summer or early fall months when the inset annual floodplain is dry. \

Annual monitoring of the revegetated Salt River/Riverside Ranch restoration area would determine whether the site is progressing along a trajectory that would meet the revegetation/enhancement goal of creating native forested riparian/wetland habitats along the Salt River corridor and riparian, wetland and salt marsh habitat within Riverside Ranch. The revegetation monitoring plan describes performance and success criteria and methods for measuring these criteria to assess the degree to which the revegetation goals are being met. The wetland habitats would be monitored for a minimum of 5 years (growing seasons) after installation of the plantings and the riparian forest areas would be monitored for 10 years after installation. The performance criteria and metrics are identified in the Revegetation and Land Use Plan. Management recommendations would be included in each monitoring report. Recommendations would identify any items inhibiting the progress toward successful restoration and would propose solutions to any identified problems as appropriate. If the project has successfully met the expected success criteria, a copy of the final report and a letter would be sent to permitting agencies acknowledging the site conditions at the project and requesting their concurrence.

As described above, the project has been designed to achieve consistency with and to meet the goals of Section 30236(3) of the Coastal Act, which highlights development "…where the primary function is the improvement of fish and wildlife habitat." The channel restoration is first and foremost a habitat restoration project. Table 3.3-2 has been modified to reflect improvements in habitat quality and quantity.

It is noteworthy that the channel restoration proposed is hardly an ideal flood control project. In fact, the RCD analyzed a variety of alternatives including a simple, broad, trapezoidal flood control channel. It was determined to be an adequate flood control alternative but one that would require extensive maintenance, provide little habitat benefit, and would not provide a return to anything remotely resembling historic habitat conditions on the Salt River.

The Hydrology and Water Quality Section of the DEIR has been amended to include Section 30233 of the LCP. (3.1-43).

Response to Comment 2: The following text is added after the second sentence of the first paragraph on p. 3.1-11 to clarify the project's location with respect to FEMA Floodways:

> <u>In addition, FEMA has completed recent floodplain mapping showing that the Salt River channel and project area (including agricultural sediment reuse sites) upstream of Reas Creek is almost entirely in the Eel River floodway.</u>

Based on extensive hydraulic modeling of the project active channel corridor and project design, it is determined that the project would not alter the Eel River floodway capacity for the following reasons.

a) All excavation materials derived from the floodplain zone will not be relocated into the Eel River floodway. All excavation material derived from the Riverside Ranch

and lower tidal reach channel excavation will be reused within the mapped floodplain of the Riverside Ranch project area.

b) The Salt River corridor has been redesigned between the 30% and 75% engineering designs so that there will be no fill placement within the previously identified, "channel confinement fill areas".

c) The project will not place any new development in the mainstem Salt River corridor that will displace the capacity of existing floodway to convey flood waters nor cause floodwaters to spread;

d) All material placed in the agricultural sediment reuse areas located within the floodway will be derived locally from excavation in the floodway, essentially balancing any impacts on floodway flow conveyance.

e) Extensive hydraulic modeling of the 75% project design indicates that the project will significantly increase the floodwater flow conveyance over existing conditions along the Salt River corridor and within the Eel River Floodway. The SRERP will accelerate the drainage of Eel River floodway lands that currently remain ponded throughout much of the winter season.

Response to Comment 3: Project maintenance and adaptive management strategies that address a water quality monitoring and maintenance plan and water quality impact mitigations is presented in the project Adaptive Management Plan (AMP) prepared by H.T. Harvey & Associates, Inc., and is summarized in the revised EIR Project Description. That Plan is available for review in printed form or electronically from the HCRCD in Eureka.

Response to Comment 4: Project maintenance and adaptive management strategies that address a water quality monitoring and maintenance plan and water quality impact mitigations is presented in the AMP (see response 3, above). In addition, the Basis of Design Report, that accompanies the project engineered drawings and specifications would demonstrate that the channel, setback levee and floodplain designs, and other project components, are adequately designed to protect against practical erosion and geologic hazards.

Response to Comment 5: As discussed in detail in the response to Comment 1 above, the proposed project, including the Salt River Channel Restoration component, is truly for "restoration purposes." The Coastal Commission notes that, as part of the CDP application process, it will be necessary to demonstrate that the proposed actions are the least environmentally damaging feasible alternatives and that the best mitigation measures feasible will be implemented. The Coastal Commission further notes that a site-specific wetlands delineation identifying federal and state jurisdictional wetlands would be necessary to obtain a Section 404 permit from the US Army Corps of Engineers and a CDP from the Coastal Commission. We concur with these comments.

A site-specific wetland delineation was conducted of the portion of the project area to be impacted by ground disturbance and/or fill placement in September and October 2010. The wetland delineation is on file at the HCRCD offices in Eureka.

The Coastal Commission suggests that Table 3.3-2, which gives the extent of existing and projected land cover types in the project area include the sediment reuse areas. The Commission states that the sediment reuse areas may contain federal and/or state jurisdictional wetland. However, the sediment reuse areas have been or will be carefully delineated to avoid federal and state jurisdictional wetlands (Wetland Delineation of Sediment Reuse Areas are on file at the HCRCD offices in Eureka). The project description has been revised to clarify this point with the addition of new text in the Project Description, as follows:

> "4) Placement of agronomically suitable sediment on agricultural land for use as a soil supplement, consistent with all existing laws and regulations, <u>avoiding federal and/or state jurisdictional wetlands</u> (177,700 cy)." (Page 2-22 of DEIR)

The precise footprint for agricultural reuse of sediment has not been determined at this time. Many landowners have indicated their willingness to utilize sediment from the project for this purpose. While a site-specific wetland delineation has been completed for a portion of the agricultural sediment reuse areas (on file at the HCRCD offices in Eureka), some potential reuse areas have not yet been delineated. Site specific delineations and land cover mapping for all potential sediment reuse areas is not appropriate at the current level of design. However, agricultural sediment reuse will avoid wetlands, and because it will not result in land cover type conversion, it is not necessary to map the agricultural sediment reuse areas in order to determine that it would have a less than significant environmental impact.

The revised project description and site-specific wetland delineation provide sufficient detail to support the conclusion under CEQA that impacts to wetlands and riparian habitats will be less than significant after proposed mitigation.

Response to Comments 6 and 7: The Coastal Commission asks for a clarification of the wetland habitat figures cited in the following statement in the DEIR (Page 3.3-29) "The 305 acres of wetlands and waters restored…would fully compensate for the 29 acres of wetlands and waters and 247 acres of mesic grasslands impacted by the project." The Coastal Commission expresses a concern that this statement does not acknowledge any impact to riparian forest and scrub, and that the figures do not appear to be consistent with the figures presented in Table 3.3-2 of the DEIR. The Commission states that, according to Table 3.3-2, the project would impact 72.8 acres of riparian vegetation. This statement is a misinterpretation of Table 3.3-2, which summarizes the habitat acreages before and after the project but does not clearly state the precise impacts (i.e. the table does not clearly communicate where new habitat would be restored and where existing habitat would be retained and enhanced. A more detailed table is provided below to clarify the acreage of impacts, which have changed somewhat since the DEIR was released due to changes in project design. This new table replaces Table 3.3-2 in the FEIR. As shown in this table, 62 acres of riparian forest and scrub would be impacted by the project. The 125.5 acres of riparian habitat that would be present after the project consists of 9 acres of existing riparian forest and scrub on Riverside Ranch, 34 acres of existing riparian forest and scrub in the Salt River Channel Restoration area that would avoided by the project, 23 acres of riparian forest and scrub to be restored on Riverside Ranch, and 51 acres of riparian forest and scrub to be restored adjacent to the restored Salt River

channel. In summary, the correct statement regarding riparian forest and scrub impacts and restoration due to the project is as follows:

> "The project would result in the removal of 62 acres of riparian forest and scrub, and the restoration of approximately 82 acres of riparian forest and scrub."

The mitigation ratio for riparian forest and scrub would therefore be approximately 1.3:1. The following revisions to DEIR text will make it consistent with the revised project design in terms of removal and restoration of riparian forest and scrub.

The first sentence of Impact 3.3.1-2 is revised as follows:

> **Impacts of Salt River Channel Restoration.** Some medium-term loss of wetland functions are anticipated due to the removal of ~~46~~62 acres of riparian forest and scrub in the current channel and the conversion of 52~~4~~ acres of agricultural grassland with wetlands characteristics and 11~~6~~ acres of seasonal wetlands to open water, tidal freshwater marsh, freshwater channel wetlands~~riparian herbaceous~~, and riparian forest and scrub.

Impact 3.3.1-4 is revised as follows:

> *"Impact 3.3.1-4. Impacts to riparian forest and scrub*
>
> Although the restored Salt River channel and riparian corridor would be wider and provide enhanced fish and wildlife habitat and flood control, the channel restoration component of Alternative 1 would result in extensive medium-term loss of mature riparian forest and scrub (Table 3.3-2). ~~In addition, approximately six acres of riparian forest and scrub to be planted in the restored channel would consist of Reduced Planting Areas, with lower canopy and/or understory density to allow for grazing. These Reduced Planting Areas would have lower habitat value than most exisitng riparian forest and scrub in the project area.~~ Because the Riverside Ranch restoration involves planting an additional 31~~14~~ acres of riparian forest and scrub and because the Salt River Channel Restoration component involves restoring approximately 51~~25~~ acres of riparian forest and scrub ~~on the Vevoda Ranch adjacent to the channel~~, Alternative 1 would ~~not~~ result in a long-term ~~loss~~increase of this habitat type from 105 acres of existing riparian to 125.5 acres of projected riparian habitat post-project. Construction activities associated with the channel restoration component could result in a medium-term loss of 62~~46~~ acres of mature riparian forest and scrub habitat along the Salt River Channel between the time when restoration takes place and new riparian vegetation is established. Short-term impacts to riparian forest and scrub could also result from construction activities associated with restoration implementation. These would involve disturbance of riparian forest and scrub through vegetation clearing activities, grading and installation of restoration features and construction and use of access/bypass roads and staging areas for construction equipment, materials and fill. Vegetation clearing activities may occur in advance of other restoration actions, increasing the duration of the site disturbance.
>
> Medium-term loss of riparian habitat would be mitigated by introduction of new riparian habitat, which would not have the same value as mature riparian habitat during the medium-

term. Approximately ~~nine~~51 acres of new riparian ~~herbaceous~~forest and scrub habitat would be planted ~~on the annual floodplain of the Salt River channel, while approximately 65 acres of riparian forest and scrub would be planted above the level of the annual flood~~ in and adjacent to the Salt River channel ~~(including approximately six acres of Reduced Planting Areas)~~. In addition, ~~14~~ 31 acres of new riparian forest and scrub would be planted on Riverside Ranch."

The Coastal Commission correctly notes that restored riparian forest and scrub would take some time to mature and provide a high level of habitat value and ecosystem functions, and that a higher level of mitigation may therefore be required to reduce the impact to riparian habitats to less than significant. While we acknowledge the temporal loss of riparian habitat function, we have concluded that significant increases from the baseline in the habitat and ecosystem functions that would be provided by restored riparian forest justify the conclusion that the impact is less than significant in light of the mitigation presented in the DEIR. Existing riparian forest and scrub in the project area provides significant habitat value, particularly to riparian bird species, as noted in the DEIR. However, existing riparian habitat is lacking in certain respects. Most importantly, existing riparian areas in much of the project area are not associated with an adjacent channel or other aquatic habitat. In addition, existing riparian areas are dominated by willows, with occasional red alder and black cottonwood. Historically, riparian forest and scrub in the Salt River watershed are thought to have been dominated by Sitka spruce, cottonwood, grand fir, redwood and alder. Restored riparian areas would not suffer from these constraints, and, once they mature, they would therefore provide a higher level of function than existing riparian forest and scrub in the project area.

Restored riparian forest and scrub would be dominated by Sitka spruce, with black cottonwood, grand fir, and redwoods as co-dominants. Restored riparian areas would be located along a restored Salt River channel and/or adjacent to restored tidal marsh, which would enhance their habitat value and ecosystem functioning relative to existing riparian areas. Restored riparian forest and scrub will therefore provide a suite of habitat values and ecosystem functions that are lacking in existing riparian forest and scrub. For example, restored riparian areas would provide shade, food, and nutrients to enhance in-stream habitat quality. Many species that utilize riparian areas also require adjacent aquatic habitat. For example, bank swallows (historical breeders in the Humboldt Bay area) require exposed banks for nesting, a feature that is of necessity lacking when no channel is present. Tree swallows, present in the project area, prefer to nest in open areas near water. Adjacent land use is also an important factor in determining the habitat value of riparian areas to wildlife. For example, grazing reduces nest quality for yellow warblers (RHJV 2004). Riparian areas consisting of narrow bands surrounded by agricultural areas suffer from abundant brown-headed cowbirds and other nest predators and nest parasites, diminishing the value of riparian habitat (Tewksbury et al. 1999). Species that are present in the Salt River project area and commonly suffer from cowbird nest parasitism (RHJV 2004) include Wilson's warbler, yellow warbler, and willow flycatcher. Protocol-level surveys for willow flycatcher and western yellow-billed cuckoo conducted in the project area in June and July 2010 recorded cowbirds at over half (n=74) of the 130 Willow Flycatcher listening stations. Because the Willow Flycatcher is frequently parasitized by the cowbird, dramatic declines in Willow Flycatcher numbers in California are directly attributed to cowbird nest parasitism (Gaines, 2005).

Tree swallows provide another example of adverse effects of adjacent agricultural land use. Tree swallow nests near livestock can be subject to intense nest site competition from House Sparrows, sometimes resulting in the death of the defending swallows (RHJV 2004). Restored and retained riparian areas in Riverside Ranch, totaling 40.5 acres, would have enhanced habitat values because they would be adjacent to tidal marsh rather than agricultural areas.

The Costal Commission states that the 6 acres of Reduced Planting Areas, riparian forest and scrub areas that would have lower canopy and understory density to allow for grazing, should be excluded from the tabulation of restored riparian habitat due to the lower habitat values that they would provide. Reduced Planting Areas (RPAs) may still be a component of the project in the future, but no specific areas have been identified for RPAs and therefore RPAs are not considered as mitigating for impacts to riparian forest and scrub in the FEIR. All areas that are designated for riparian forest and scrub restoration in the FEIR will include an understory and will not be RPAs.

Two key factors support the conclusion that the impact to riparian forest and scrub would be less than significant after mitigation. First, short-term impacts to riparian forest and scrub would be reduced through avoidance of existing stands where feasible. Approximately 43 of 105 acres of existing riparian forest and scrub would be retained after the project. Secondly, restored riparian forest and scrub would provide much greater levels of habitat and ecosystem function than existing areas. This is due to the presence of the restored channel, adjacent tidal marsh, and the restoration of the Sitka spruce-dominated riparian forest community.

In addition to the clarification of riparian impacts above, there is a need to clarify wetlands impacts and acres of wetlands restored as well. The DEIR states that 305 acres of wetlands would be restored by the project. Implementation of the revised project design will result in the restoration of 441.5 acres of wetlands and waters, not 305 acres as stated in DEIR. The 441.5 acres are tabulated in the revised Table 3.3-2 of the FEIR as follows: 319 acres of salt and brackish marsh, 74.5 acres of riparian scrub/forest, 26 acres of aquatic/mudflat habitat (Salt River, tributary, and marsh/slough channels), and 22 acres of freshwater wetlands.

The statement regarding wetland and mesic grasslands impacted by the project also reflects a slight miscalculation. Implementation of the revised project design would result in the removal of 15 acres of seasonal wetlands, not 29 acres of wetlands, as indicated in the revised Table 3.3-2. Therefore, the corrected statement on page 3.3-29 of the DEIR is as follows:

> Project implementation would result in the filling of approximately 25.4 acres of wetlands, and the creation of approximately 37.6 acres of wetlands. In addition, approximately 340 acres of wetlands and waters would be converted from one wetland type to another. This acreage is currently comprised of 325 acres of mesic grasslands and 15 acres of seasonal wetlands. After project implementation, it would consist of 298 acres of salt marsh, 7 acres of high marsh ecotone, 14 acres of tidal freshwater marsh, 8 acres of freshwater channel wetland, and 13 acres of aquatic/mudflat habitat. This conversion represents a restoration of historic habitat types and of important ecosystem processes and attributes, such as sediment transport and floodplain connectivity. ~~The 305 acres of wetland and waters restored through excavation, new and enhanced channel configurations, and the re-~~

~~introduction of a natural tidal regime would fully compensate for the 29 acres of wetlands and waters and 247 acres of mesic grasslands impacted by the project."~~

The following text on page 3.3.-29 and 3.3-30 of the DEIR is revised as follows:

Impacts of Salt River Channel Restoration: Channel excavation activities that are part of the channel restoration would convert ~~6~~11 acres of seasonal wetlands into open water, tidal freshwater marsh, freshwater channel wetlands, and riparian habitat (herbaceous and riparian forest and scrub), and would restore an additional 11 acres of freshwater wetlands. Channel excavation also would result in the removal of 32 ~~convert approximately 4~~ acres of riparian forest and scrub and the restoration of 51 acres of riparian forest and scrub.~~,~~ ~~s~~Some of ~~which~~ this riparian forest and scrub area meets the criteria for jurisdictional wetlands~~, to open water and riparian herbaceous/freshwater marsh habitat. In addition, approximately 6 acres of riparian forest and scrub habitat in the new channel may have reduced habitat value due to wide spacing of overstory trees and lower density or absence of understory to allow for grazing in these areas. The floodplain recontouring activities that are part of the channel restoration would convert 85acres of seasonal wetland and agricultural grassland with wetland characteristics to agricultural grassland without wetland characteristics. Floodplain recontouring activities will avoid areas that are currently riparian forest and scrub.~~ Channel maintenance activities would not result in long-term impacts to wetlands and waters. The channel restoration component would also include conversion of 52~~4~~ acres of agricultural grassland to open water, riparian herbaceous habitat, and riparian forest and scrub, reducing the net impact of this component to wetlands and waters. While much of the agricultural grassland to be converted to other habitat types is a jurisdictional wetland, the restored wetland habitats would provide a higher level of ecosystem services and fish and wildlife habitat.~~ The channel restoration component would also include the restoration of approximately 25 acres of riparian forest and scrub on what is currently agricultural grassland with wetlands characteristics on the Vevoda Ranch.~~

Impacts of Riverside Ranch Component: Seasonal wetlands in agricultural grasslands would be filled for the construction of berms on Riverside Ranch to protect agricultural land in the project area and neighboring properties from flooding. Approximately 19~~5~~ acres of berms on Riverside Ranch would be constructed in mesic agricultural grassland ~~dominated by perennial ryegrass, in an area rated by the Corps as having 33-66 percent probability of meeting the criteria for a federally jurisdictional wetland (Ericsson et al. 2008). Approximately an additional 4 acres of berms on Riverside Ranch would be constructed in more mesic agricultural grassland, dominated by creeping bentgrass. This area is rated by the Corps delineation as having a >66 percent probability of meeting the criteria for a federally jurisdictional wetland.~~ In addition, excavation of an outboard drainage ditch associated with the berms would occur in less than 0.5 acre of seasonal wetlands. Approximately two acres of ditches in Riverside Ranch would be filled in order to prevent tidal energy from being drawn away from the historic channel system. Filling agricultural drainage ditches would concentrate tidal energy in pilot channels to facilitate scour of historic tidal channels and restoration of a natural channel system. Implementation of Riverside Ranch restoration would result in the conversion of 3-4 acres of seasonal wetlands to tidal marsh or to riparian

forest and scrub. Conversion of agricultural grasslands and seasonal wetlands to riparian forest and scrub would involve placement of fill on approximately 15 acres of Riverside Ranch to raise the elevation of these areas to approximately 2 feet above Mean Higher High Water. These 15 acres of riparian forest and scrub would meet the criteria for California Coastal Commission wetlands because they will be dominated by hydrophytic vegetation, but may not be inundated with sufficient frequency to meet the criteria for Corps wetlands.

A strict calculation of acres created to acres filled based on these figures yields a ratio of 1.5:1. The Coastal Commission notes that this mitigation ratio is low, and that mitigation ratios of 4:1 are not uncommon for wetlands impacts. However, the wetland habitat and functions provided by the 298 acres of tidal marsh, 14 acres of tidal freshwater marsh, and 8 acres of freshwater channel wetland are far greater than those provided by mesic pasturelands dominated by creeping bentgrass and perennial ryegrass, and associated seasonal wetlands.

Restored tidal marsh would support greater native plant diversity than existing agricultural grassland. The restored tidal marsh would be dominated by pickleweed (*Sarcocornia virginica*) and saltgrass (*Distichlis spicata*), and would include slough sedge (*Carex obnupta*), jaumea (*Jaumea carnosa*), arrowgrass (*Triglochin maritima*), gumplant (*Grindelia stricta* var. *stricta*), spearscale (*Atriplex triangularis*), and sand spurry (*Spergularia macrotheca*), as well as the rare Humboldt Bay owl's clover (*Castilleja ambigua* ssp. *humboldtiensis*) and Lyngbye's sedge (*Carex lyngbyei*) (see below in Staff-initiated Text Changes). While some of the agricultural grasslands in the area are dominated by native grasses such as creeping bentgrass and soft rush (*Juncus patens*), much of this habitat type is dominated by non-natives such as velvet grass (*Holcus lanatus*) and perennial ryegrass (*Lolium perenne*). In addition, livestock grazing in mesic grasslands typically results in less structural diversity than will be present in the restored tidal marsh.

The restored tidal marsh, like existing tidal marsh in the Eel River estuary, would provide more valuable wildlife habitat than existing agricultural grassland. Tidal marsh habitat would be utilized by a diverse wildlife community, including invertebrates, fish, and birds. Invertebrates found in the tidal marsh are expected to include benthic invertebrates, such as the native gastropod *Assiminea californica*, and the native polychaetes *Eteone califonica* and *Capitella capitata*. Dungeness crabs (*Cancer magister*) and yellow shore crabs (*Hemigrapsus oregonensis*) are expected to utilize the restored tidal marsh and estuarine habitat for foraging and nursery areas.

Numerous anadromous and estuarine fish species that have been documented in the Salt River estuary (Downie and Lucey 2005) would benefit from the project's restoration of tidal marsh and estuarine habitat, which would provide essential nursery and feeding grounds. Fish species expected to utilize restored tidal marsh and marsh channels include coho and chinook salmon (*Oncorhyncus kisutch* and *O. tshawytscha*), tidewater goby (*Eucyclogobius newberryi*), coastal cutthroat trout (*O. clarkia clarkii*), threespine stickleback (*Gasterosteus aculeatus*), Pacific herring (*Clupea harengus*), topsmelt (*Atherinops affinis*), prickly sculpin (*Cottus asper*), coastrange sculpin (*C. aleuticus*), Pacific staghorn sculpin (*Leptocottus armatus*), and English sole (*Parophrys vetulis*).

Restored tidal marsh also would provide valuable habitat for shorebirds, waterfowl, and raptors. Numerous species of birds use intertidal coastal marshes in the Eel River estuary as a place to roost at high tide and/or as a place to forage. Bird species include herons and egrets, ducks, hawks,

Virginia Rail (*Rallus limicola*), American Coot (*Fulica americana*), gulls, swallows, Marsh Wren (*Cistothorus palustris*), Savannah Sparrow (*Passerculus sandwichensis*) and Song Sparrow (*Melospiza melodia*), and shorebirds such as the Black-bellied Plover, Willet, Least Sandpiper, Dunlin, Short-billed Dowitcher and Long-billed Dowitcher, Western Sandpiper, and Marbled Godwit. Raptors such as the Red-tailed Hawk (*Buteo jamaicensis*), Red-shouldered Hawk (*Buteo lineatus*) and Northern Harrier are commonly observed foraging in local salt marshes. While agricultural grassland also provides habitat for birds, this habitat type would remain abundant in the project vicinity, and the value of both habitat types would be augmented by richer habitat mosaic created through the increase in tidal marsh acreage.

In addition to plant and wildlife habitat, restored tidal marshes would provide other valuable ecosystem services to the estuarine ecosystem that are not provided by agricultural grassland. These services include:

- Significant primary production which supports the estuarine food web,
- Nutrient and contaminant filtration which enhances water quality,
- Absorption of wave and current energy that reduces erosion and infrastructure damage elsewhere in the watershed.
- Nutrient regeneration, recycling, and export
- Carbon storage to reduce the extent of climate change

In contrast to tidal marsh, agricultural grassland can be a source of excessive nutrient inputs and can be a net carbon emitter due to livestock use. The greater level of habitat and function provided by the restored tidal marshes relative to agricultural grassland justifies the conclusion that the impacts to wetlands are less than significant with a mitigation ratio of 1.5:1.

Response to Comment 8: The Coastal Commission requests more detail regarding the amount of agricultural productivity that would be gained due to project implementation. In order to provide more detail, RCD staff gathered additional data from landowners regarding agricultural productivity losses due to flooding. The RCD's updated estimate of agricultural land in the greater Ferndale Bottoms that routinely experiences a significant production loss due to Salt River flooding is 782 acres. Of these 782 acres, 35.5 acres would be converted to other land cover types by project implementation. Thus, 746.5 acres currently experiencing flooding-related losses in agricultural productivity may benefit from project implementation. This acreage represents the areas historically drained by the Salt River and its tributaries where producers have reported to the RCD that they experience new and/or increased damages due to flooding. There are additional areas across the Ferndale Bottoms, which may also experience flooding damage, but were not included in the RCD's estimate because the RCD has not interviewed the producer.

The United States Department of Agriculture (USDA), Natural Resource Conservation Service (NRCS) uses two systems to determine a soil's agricultural productivity: the Soil Capability Classification and the Storie Index Rating System. The Farmland Mapping and Monitoring Program (part of the California Department of Conservation, Division of Land Resource Protection) uses the information from the USDA and the NRCS soils maps to type the farmland in the area based on

agricultural productivity. The 782-acre affected area meets the County's and the Coastal Commission's definition of prime agricultural land, because of its ability to produce hay or haylage valued at greater than $200 per acre per year. The affected area includes the prime agricultural land on the Vevoda Holstein Ranch described in the detailed account of flooding losses submitted to the State Water Resources Control Board (Vevoda 2006).

In considering the impacts of the project to existing agricultural lands, it is appropriate to consider the increase in productivity associated with the reduced flooding from the Riverside Ranch and channel restoration elements of the project. These issues are discussed below.

Flood-related agricultural losses in the 782-acre area occurred for a number of reasons. For most of the land in question, losses occurred because the land was underwater or waterlogged due to Salt River flooding during a period when it would otherwise have been grazed. Some losses occurred because flooding cut off access to areas that would otherwise have been farmed. As discussed for specific landowners in the DEIR, flooding of pasture resulted in economic losses for producers. Producers were forced to import feed for their livestock because the pasture that they would typically graze is underwater, or wet enough to jeopardize the livestock and/or the land if grazing were to occur. Some producers are forced to spend money mechanically pumping the water off their pastures and then reseeding and fertilizing them for summer production. If importing feed or pumping off water are not feasible, the producer is forced to reduce herd size. If pasture is inaccessible or waterlogged when forage would normally be ready to graze, livestock grazing must be delayed. In some cases, this may result in forage becoming overly mature. Forage plants decline in nutritional value as they advance in maturity (George and Bell 2001). Therefore, when such pasture is grazed, the forage may be less nutritious and forage may be lost to trampling as the livestock move through the pasture (G. Markegard, pers. comm.).

Some losses occurred because flooding cuts off access to areas that would otherwise have been farmed. Other substantial losses have occurred because inundation of pasture delays germination, which ultimately reduces the productivity of pasture. In other cases, significant sediment deposition has eliminated pasture availability.

Current (circa 2010) observations indicate that overbank flows occur in the lower reach at Port Kenyon Road at flows less than the annual flood level. Similarly, the 1993 Implementation Plan indicates that channel capacities on lower Williams Creek were reduced to convey a flood having only a 5-year recurrence. Current observations indicate that overland flows in the Williams Creek area occur at less than the 1-year flows. The 1993 Salt River Implementation Plan indicates that channel flood capacity along lower Francis Creek was reduced to the 2-year storm. There currently is no positive drainage below the confluence with Francis Creek, thus all flood waters (and sediment to some extent) pond and disseminate across the vicinity causing long-standing ponding and inhibit productive land use.

The revised EIR Project Description states that Alternative 1 would result in the conversion of 367 acres of prime farmland to salt marsh, open water, or riparian habitat (See Revised Figure 3.9-2 Project Impacts to Agricultural Land). Of this acreage, 323 acres is currently in agricultural use, while the remaining area consists of other land cover types, such as ruderal vegetation. It should be noted that some portion of these agricultural lands are public trust lands. These lands were once

tidal lands that were part of the Salt River channel and floodplain, but are now farmed due to aggradation of the channel. The California State Lands Commission is currently determining the boundaries of public trust lands within the project area, but preliminary information suggests that approximately 40 acres of public trust lands are present on Riverside Ranch and additional public trust acreage is present upstream, at least as far as Port Kenyon.

The project is expected to substantially reduce the duration of flooding in the project vicinity. Although the currently designed Salt River corridor restoration is not designed to convey a specific design flood magnitude, modeling analyses indicate that it would be able to contain and drain the annual peak flow without any overbank flooding, as long as annual maintenance and management activities preclude instream deposition of sediment. As long as the project channel is maintained, it would provide the opportunity for drainage of surrounding lands, assuming local drainage ditches are maintained to direct runoff to the river. The improved channel also would relieve backwater effects on lower tributary channels, allowing improved drainage of tributaries to the mainstem Salt River and providing a mechanism to alleviate long-standing ponding on vicinity lands. The duration of time required to drain flooded lands via the project channel would depend primarily on the magnitude and extent of regional flooding.

Reconnecting the upper watershed to the mainstem Salt River corridor at Williams Creek would act to relieve upstream flood pressures for the same reasons just described. The added flow magnitude associated with reconnecting the upper watershed may also assist in sustaining a clear and high flow capacity channel in the mainstem Salt River corridor.

Therefore, the proposed project is expected to significantly reduce losses of agricultural productivity due to flooding on approximately 746.5 acres that are currently affected almost every year by high frequency, long duration flooding. The reduced flooding duration would compensate for the loss of Animal Unit Months (AUM's) due to the conversion of 323 acres on Riverside Ranch and portions of the project area along the Salt River from agricultural use to other land cover types. For example, if there is a loss of 323 acres of grazing land with project implementation, and assuming the associated sustainable carrying capacity of this land is 1 AUM/acre and the animals grazed for 8 months out of the year, then the total AUM loss equals 2,584 AUMs. Continuing with the example, if (post project) the "previously flooded" affected area of 746.5 acres is all able to be grazed for an additional 3.5 months, then there would be a potential for a compensatory increase of approximately 2,613 AUM's on the affected lands. Please note there are a variety of factors that may affect carrying capacity across the landscape, such as soil type, vegetation type and production, slope, and aspect (Alan Bower, pers. comm.). The example above is not based on precise productivity calculations. However, given the existing significant productivity losses due to flooding and reasonably anticipated productivity gains due to project implementation, it is reasonable to conclude that the adverse impact would be less than significant.

The Coastal Commission comments that the placement of dredge spoils on agricultural wetlands is not permissible under Section 30233 of the Coastal Act and therefore should not be considered an agricultural benefit. In fact, dredge spoils would be placed only on uplands in agricultural use. Surveys will be conducted of potential agricultural sediment reuse areas to ensure that dredged materials would be applied as a soil supplement only to uplands as defined by the USACE and the

Coastal Commission. The EIR project description has been revised to clarify this point (see Response to Comment 5, above).

To incorporate the above information into the EIR, the first paragraph on page 3.9-7 of the DEIR is revised as follows:

> Prime farmland was mapped in the project area using the definition in the 1983 Humboldt County General Plan (HCGP) (1983). The California Coastal Act defines prime agricultural land in essentially the same way, although it is slightly more restrictive, including only land that meets one of criteria a-d in the definition below (Public Resources Code Division 20, Section 30113).

The third paragraph (after the bullet items) on p. 3.9-7 is revised as follows:

> While soils in Riverside Ranch do not qualify as prime agricultural land according to criteria A, B or C (Table 3.9-1), they do qualify due to their ability to produce hay or haylage valued at greater than $200 per acre per year (Criteria D and E; Table 3.9-2) (G. Markegard, pers. comm.). With the exception of tidal marsh, riparian, seasonal wetlands, aquatic, and developed areas (58 acres), Riverside Ranch Soils qualify as prime farmland according to the Humboldt County General Plan and the California Coastal Commission because of their ability to produce an annual hay or haylage crop valued at greater than $200 per acre. 15 acres in the Salt River Channel Restoration Area qualify as prime agricultural land according to criteria A and/or B. Agricultural grasslands in the remainder of the project area also meet the economic productivity criteria for prime agricultural soils (Table 3.9-2). ~~high livestock carrying capacity (criterion C) and may also qualify due to criteria E or F. While Riverside Ranch Restoration area soils are generally unable to accommodate year-round livestock or agricultural production, a combination of livestock grazing in the dry season and feeding haylage grown in the Riverside Ranch Restoration area allows the site to support approximately one animal unit per acre per year (R. Ambrosini, pers. comm.)~~.

The text on page 3.9-10 is revised as follows:

Impact 3.9.2-1 conversion of prime farmland and other agricultural land

> Project implementation would convert 353 ~~294~~ acres of prime farmland to salt marsh, open water, or riparian habitat or to setback berms (Figure 3.9-2 Project Impacts to Ag Land). Of this acreage, 323~~279~~ acres is currently in agricultural use, while the remaining area consists of other land cover types, such as ruderal vegetation. ~~In addition to the 294 acres of prime farmland impacted by the project, an additional 49 acres of non-prime agricultural land would be converted to salt marsh, open water, or riparian habitat.~~ It should be noted that some portion of these agricultural lands are public trust lands. These lands were once tidal lands that were part of the Salt River channel and floodplain, but are now farmed due to aggradation of the channel. The California State Lands Commission is currently determining the boundaries of public trust lands within the project area, but preliminary information suggests that approximately 40 acres of public trust lands are present on Riverside Ranch and additional public trust acreage is present upstream, at least as far as Port Kenyon. Public

trust land should not be considered prime agricultural land. The presence of public trust lands in the project area reduces the extent of the project's actual impact on agriculture.

While the project would preclude continued grazing on approximately 323~~0~~ acres of the project area, it could nonetheless result in a net increase in agricultural productivity for agricultural lands in the vicinity. Agricultural land in the project area and in the vicinity suffers from prolonged inundation during the winter months. For example, in 1989 it was reported that between 600 and 1,000 acres of irrigated and dry pasture along the Salt River were affected each year by annual overbank flow caused by flooding and poor drainage; overbank flows were reported to reduce the value and productivity of the inundated land and damage fences and equipment (USDA-SCS 1993). Since the 1989 report, sedimentation has continued and a significantly larger area is now inundated for long periods each year. These periods of inundation preclude use of the land for grazing during the winter. Humboldt County Resource Conservation District staff conducted interviews in September 2009 with four ranchers adjacent to the project area to collect more information regarding the nature and magnitude of agricultural impacts from increases in inundation in recent decades (M. Bertelson, pers. comm.; J. Davis, Nelson, and Drew, pers. comm.; R. Jackson and Christiansen, pers. comm., J. Regli, pers. comm.). In addition, the operators of Vevoda Holsteins Ranch, which is also located in and adjacent to the project area, submitted a detailed account of losses due to flooding to the State Water Resources Control Board in 2006 (Vevoda 2006). These ranchers report losing significant acreage to production (approximately 180 acres that are unusable due to flooding from October through May, and approximately 10 acres that are flooded year round). Due to the resulting loss of forage and cropland, these ranchers report reducing their herd size and/or buying supplemental feed. The overall herd reduction reported by these ranchers is approximately 80 animal units. Additional expenses incurred by these five ranches for supplemental feed, farming and reseeding flooded areas, pumping out floodwater, and crop loss total more than $160,000 annually. ~~A comprehensive assessment of losses incurred by all ranches adjacent to the project area would doubtless put the lost livestock capacity and farm income much higher.~~

RCD staff gathered additional data from other landowners regarding agricultural productivity losses due to flooding. The RCD's overall estimate of agricultural land in the greater Ferndale Bottoms that routinely experiences a significant production loss due to Salt River flooding is 782 acres. Of these 782 acres, 35.5 acres will be converted to other land cover types by project implementation. Thus, 746.5 acres currently experiencing flooding-related losses in agricultural productivity may benefit from project implementation. This acreage represents the areas historically drained by the Salt River and its tributaries where producers have reported to the RCD that they experience new and/or increased damages due to flooding. There are additional areas across the Ferndale Bottoms, which may also experience flooding damage, but were not included in the RCD's estimate because the RCD has not interviewed the producer. The 782 acre affected area all meets the County's and the Coastal Commission's definition of prime agricultural land, because of its ability to produce hay or haylage valued at greater than $200 per acre per year. Flood-related agricultural losses in the 782-acre area occurred for a number of reasons. For most of the land in question,

losses occurred because the land was underwater or waterlogged due to Salt River flooding during a period when it would otherwise have been grazed. Some losses occurred because flooding cut off access to areas that would otherwise have been farmed. Flooding of pasture resulted in economic losses for producers, as in the cases discussed above. If pasture is inaccessible or waterlogged when forage would normally be ready to graze, livestock grazing must be delayed. In some cases, this may result in forage becoming overly mature. Forage plants decline in nutritional value as they advance in maturity (George and Bell 2001). Therefore, when such pasture is grazed, the forage may be less nutritious and forage may be lost to trampling as the livestock move through the pasture (G. Markegard, pers. comm.).

Flooding losses were reported by landowners to have occurred since approximately the 1980s, at which time substantial portions of the Salt River had been largely filled by sediment and flooding conditions in the project area began to significantly worsen.

Project implementation would substantially reduce the frequency and duration of flooding on land adjacent to the project area, enhancing its capacity to support livestock. The 1993 Salt River Implementation Plan indicates that channel flood capacity along lower Francis Creek was reduced to the 2-year storm. Current (circa 2010) observations indicate that overbank flows occur in the lower reach at Port Kenyon Road at flows less than the annual flood level. Similarly, the 1993 Implementation Plan indicates that channel capacities on lower Williams Creek were reduced to convey a flood having only a 5-year recurrence. Current observations indicate that overland flows in the Williams Creek area occur at less than the 1-year flows.

Although the Salt River corridor restoration is not designed to convey a specific design flood magnitude, modeling analyses indicate that it would be able to contain and drain the annual peak flow without any overbank flooding, as long as annual maintenance and management activities preclude instream deposition of sediment. There currently is no positive drainage below the confluence with Francis Creek, thus all flood waters (and sediment to some extent) pond and disseminate across the vicinity causing long-standing ponding and inhibit productive land use. As long as the project channel is maintained, it would provide the opportunity for drainage of surrounding lands, assuming local drainage ditches are maintained to direct runoff to the river. The improved channel also would relieve backwater effects on lower tributary channels, allowing improved drainage of tributaries to the mainstem Salt River and providing a mechanism to alleviate long-standing ponding on vicinity lands. The duration of time required to drain flooded lands via the project channel would depend primarily on the magnitude and extent of regional flooding.

Although not quantified through modeling, reconnecting the upper watershed to the mainstem Salt River corridor at Williams Creek would act to relieve upstream flood pressures for the same reasons just described. The added flow magnitude associated with reconnecting the upper watershed may also assist in sustaining a clear and high flow capacity channel in the mainstem Salt River corridor.

While sufficient data are not available to calculate the livestock capacity for the project area and surrounding lands before and after project implementation, it is reasonable to expect

that the project would not result in a significant loss in livestock capacity for the project vicinity. Therefore, although the project would convert prime farmland and other agricultural land to other land cover types, it would likely have a neutral or beneficial impact on agricultural productivity of the project vicinity overall. Conversion of agricultural land associated with each of the project components is discussed below.

Impacts of Upslope Sediment Reduction: Upslope sediment reduction activities would be limited in extent and focused on roads and stream crossings. These activities would not result in the conversion of agricultural land to other land cover types.

Impacts of Salt River Channel Restoration: Channel excavation activities that are part of the channel restoration would convert 52 acres of prime farmland ~~and 24 acres of non-prime farmland~~ that is currently utilized for agricultural grassland into open water, ~~and~~ riparian habitat (herbaceous and riparian forest and scrub), active and passive sediment management areas (SMAs), tidal salt and freshwater marsh, and freshwater wetland. It should be noted that active SMAs would be designed to support some continued agricultural use during the dry season, which reduces the extent of this impact. See the Project Description for a complete discussion of Active SMAs and their agricultural use. In addition, there would be a temporary impact to an undetermined acreage of agricultural grassland due to the construction of temporary construction access and sediment hauling roads. An undetermined area of agricultural grassland within a construction buffer area of variable width will be temporarily closed to grazing. However, there will be only minimal ground disturbance in the construction buffer area. The duration of the impact from temporary access road construction would be minimized by stripping the top sod layer before placement of berms or access roads. Reusing the sod after road removal would reduce the loss of agricultural productivity due to construction. ~~The floodplain recontouring activities that are part of the channel restoration would enhance the productivity of 13 acres of prime farmland and 13 acres of non-prime agricultural grassland by reducing the frequency and duration of inundation in those areas.~~ In addition, the channel restoration component would involve application of up to several hundred thousand cubic yards of excavated materials from the channel footprint to up to 631 acres of agricultural grasslands and crop fields in the vicinity. Samples of materials from the Salt River channel have been characterized and evaluated for their agronomic suitability (LACO 2008). The soils report concludes as follows:

> Based on textural classification and results of the agronomic analysis, a majority of the excavated sediments (with the removal of large organic matter and potentially sieved as described in Section 5.0) would be useable in the sediment reuse plan on existing farm fields or upland vegetation area. Laboratory analytical results from agronomic testing of samples… indicat[e] salinity of soil from these areas should not adversely affect plant growth.

California Certified Organic Farmers has also confirmed that these materials are suitable for use on organic farms (Chambers, pers. comm.).

Placement of excavated materials would further enhance the productivity of the agricultural lands to which they are applied by reducing inundation and adding organic matter and nutrients. Dredged materials from portions of the channel located closer to the confluence of the Salt and Eel Rivers had salinity levels that would prevent their agronomic use; these soils would be used in constructing setback berms on Riverside Ranch and for other purposes.

Impacts of Riverside Ranch Component:

Riverside Ranch Restoration would convert 301 acres of prime farmland to salt marsh, riparian habitat, and aquatic/mudflat habitat~~setback berms~~. Of the 301 ~~292~~ acres of prime farmland to be converted, 271 acres are currently agricultural grassland. The remaining 30 ~~13~~ acres consist of ruderal and scrub-shrub vegetation. Agricultural activities such as grazing and haying would be retained on 76 acres of prime farmland on Riverside Ranch.

Prolonged inundation and market factors have reduced the economic viability of the property for agriculture. These same factors limit the significance of the conversion of agricultural land on Riverside Ranch to other uses. As a result, and for many years, various parties attempted to transfer the property for the overall benefit of a Salt River enhancement project that would alleviate flooding in the project area. From the earliest stages of the original negotiations, it was recognized that transfer and conversion of the property would significantly reduce flooding in other areas of the Salt River project area. The Riverside Ranch Restoration area was ultimately acquired by the Western Rivers Conservancy from a willing seller for the express purpose of achieving the goals and objectives of a broad Salt River enhancement project. Sale of the property was therefore based partly on support of the enhancement project goals, and partly on economic motivations dictated by the condition of the site (M. Bowen, pers. comm.).

Impact Significance

Less than significant (self-mitigating due to increases in agricultural productivity associated with reduced frequency and duration of inundation, ~~floodplain recontouring,~~ and placement of dredged materials on adjacent agricultural land).

B

STATE OF CALIFORNIA Arnold Schwarzenegger, Governor
NATIVE AMERICAN HERITAGE COMMISSION
915 CAPITOL MALL, ROOM 364
SACRAMENTO, CA 95814
(916) 653-4082
(916) 657-5390 - Fax

May 3, 2010

Donna Chambers
Humboldt County Resource Conservation District
5630 South Broadway
Eureka, CA 95503

RE: SCH#2007062030 Salt River Ecosystem Restoration Project; Humboldt County.

Dear Ms. Chambers:

The Native American Heritage Commission (NAHC) has reviewed the Notice of Completion (NOC) regarding the above project. To adequately assess and mitigate project-related impacts on archaeological resources, the Commission recommends the following actions be required:

- Contact the appropriate Information Center for a record search to determine:
  - If a part or all of the area of project effect (APE) has been previously surveyed for cultural resources.
  - If any known cultural resources have already been recorded on or adjacent to the APE.
  - If the probability is low, moderate, or high that cultural resources are located in the APE.
  - If a survey is required to determine whether previously unrecorded cultural resources are present.

✓ If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
  - The final report containing site forms, site significance, and mitigation measurers should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for pubic disclosure.
  - The final written report should be submitted within 3 months after work has been completed to the appropriate regional archaeological Information Center.

✓ Contact the NAHC for a Sacred Lands File Check.
  - **Check Completed with negative results, 05/03/10**
    The absence of specific site information in the Sacred Lands File does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites (see below).

✓ Contact the NAHC for a list of appropriate Native American Contacts for consultation concerning the project site and to assist in the mitigation measures.
  - **Native American Contacts List attached**
    The NAHC makes no recommendation or preference of a single individual, or group over another. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated, if they cannot supply information, they might recommend other with specific knowledge. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call to ensure that the project information has been received. If you receive notification of change of addresses and phone numbers from any these individuals or groups, please notify me. With your assistance we are able to assure that our lists contain current information.

✓ Lack of surface evidence of archeological resources does not preclude their subsurface existence.
  - Lead agencies should include in their mitigation plan provisions for the identification and evaluation of accidentally discovered archeological resources, per California Environmental Quality Act (CEQA) §15064.5 (f). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American, with knowledge in cultural resources, should monitor all ground-disturbing activities.

1

- Lead agencies should include in their mitigation plan provisions for the disposition of recovered artifacts, in consultation with culturally affiliated Native Americans.
- Lead agencies should include provisions for discovery of Native American human remains in their mitigation plan. Health and Safety Code §7050.5, CEQA §15064.5 (e), and Public Resources Code §5097.98 mandates the process to be followed in the event of an accidental discovery of any human remains in a location other than a dedicated cemetery.

Sincerely,

Katy Sanchez

Katy Sanchez
Program Analyst
(916) 653-4040

CC: State Clearinghouse

Native American Contact List
Humboldt County
April 26, 2010

Blue Lake Rancheria
Claudia Brundin, Chairperson
P.O. Box 428 Wiyot
Blue Lake , CA 95525 Yurok
blrt@tidepool.com Tolowa
(707) 668-5101
(707) 668-4272 Fax

Bear River Band of Rohnerville Rancheria
Nick Angeloff, THPO
27 Bear River Drive Wiyot
Loleta , CA 95551 Mattole
(707) 733-1900
(707) 733-1972 (FAX)

Bear River Band of Rohnerville Rancheria
Len Bowman, Jr., Chairperson
27 Bear River Drive Wiyot
Loleta , CA 95551 Mattole
lbowman@bearriver.com
(707) 733-1900
(707) 733-1972 Fax

Wiyot Tribe
Andrea Davis, Environmental Coordinator
1000 Wiyot Drive Wiyot
Loleta , CA 95551
(707) 733-5055
(707) 733-5601 Fax

Wiyot Tribe
Gail Green, Chairperson
1000 Wiyot Drive Wiyot
Loleta , CA 95551
wiyotone@yahoo.com
(707) 733-5055
(707) 733-5601 Fax

Bear River Band of Rohnerville Rancheria
Edwin Smith, Environmental Coordinator/Cultural
27 Bear River Drive Wiyot
Loleta , CA 95551 Mattole
(707) 733-1900
(707) 733-1972 (FAX)

Wiyot Tribe THPO
Helene Rouvier, Tribal Historic Preservation Officer
1000 Wiyot Drive Wiyot
Loleta , CA 95551
cultural@wiyot.us
(707) 733-5055
(707) 733-5601 Fax

Blue Lake Rancheria
Arla Ramsey, Tribal Administrator
P.O. Box 428 Wiyot
Blue Lake , CA 95525 Yurok
blrt@tidepool.com Tolowa
(707) 668-5101
(707) 668-4272 Fax

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources forthe proposed SCH# 2007062030 Salt River Ecosystem Restoration Project; Humboldt County.

Native American Contact List
Humboldt County
April 26, 2010

Blue Lake Rancheria THPO
Janet Eidsness, Historic Preservation Officer
P.O. Box 428 Wiyot
Blue Lake , CA 95525
jeidsness@bluelakerancheria-nsn.
(707) 668-5101 ext 329
707-668-4272

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources forthe proposed SCH# 2007062030 Salt River Ecosystem Restoration Project; Humboldt County.

8.5.1 REPONSES TO NATIVE AMERICAN HERITAGE COMMISSION, MAY 3, 2010 LETTER

Response to Comment 1: A detailed cultural resources report addressing the area of potential excavation has been summarized in Section 3.11 of the DEIR. That report was updated in January 2010; (available for review at the Humboldt County Resource Conservation District's Eureka Office) includes a literature review, archaeological resources survey, NAHC Sacred Lands File Check, and consultation with Native American tribal contacts. The tribal contacts' responses are available for review at the HCRCD offices in Eureka, and in electronic format from the HCRCD.

The cultural resources report did not include the soils disposal areas. In August 2010, Winzler & Kelly (W&K) contacted Richard Stradford, USACE cultural resource specialist, to discuss the Salt River Ecosystem Restoration Project. Mr. Stradford indicated that although these sediment reuse areas are an element of the project, they would not be modified from the current use as farmers traditionally take material and apply it to their fields. As such, these areas could be eliminated from being included in the proposed area of potential effect for the Salt River Ecosystem Restoration undertaking according to Corps guidance.

C

California Regional Water Quality Control Board
North Coast Region
Geoffrey M. Hales, Chairman

Linda S. Adams
Secretary for Environmental Protection

www.waterboards.ca.gov/northcoast
5550 Skylane Boulevard, Suite A, Santa Rosa, California 95403
Phone: (877) 721-9203 (toll free) • Office: (707) 576-2220 • FAX: (707) 523-0135

Arnold Schwarzenegger
Governor

May 20, 2010

Ms. Donna Chambers
Humboldt County Resource Conservation District
5630 South Broadway
Eureka, CA 95503

Dear Ms. Chambers:

Subject: Comments on the Proposed Environmental Impact Report (draft) for the Salt River Ecosystem Restoration Project, Humboldt County, SCH NO. 2007062030.

Thank you for the opportunity to comment on the Proposed Environmental Impact Report (draft) for the Salt River Ecosystem Restoration Project. The North Coast Regional Water Quality Control Board (Regional Water Board) is a responsible agency for this project, with jurisdiction over the quality of ground and surface waters (including wetlands) and the protection of the beneficial uses of such waters.

The proposed project entails the creation of a new or expanded Salt River channel, wetland and upland restoration of the 444 acre Riverside Ranch property, and upland restoration and erosion control in the Wildcat Hills.

The Regional Water Board concurs with the Salt River Ecosystem Projects decision to include both the National Pollution Discharge Elimination System Permit and the 401 Water Quality Certification Permit in the project. Both permits will contribute to an improvement in water quality for the Salt River and its tributaries during the restoration.

Although the Regional Water Board supports the Salt River Ecosystem Restoration Project, there are some concerns regarding the Francis Creeks relocation surrounding Ferndale Waste Water Treatment Facility (WWTF). It is recommended that the Humboldt Resource Conservation District consider the following comments in completing the final Environmental Impact Report (EIR).

In the draft EIR, Section 1.1 indicates the proposed project will alleviate risk of flooding at Ferndale's existing WWTF by addressing the buildup of sediment near the confluence of the existing Francis Creek channel and the Salt River. Section 2.2 of the draft EIR states that the proposed project would increase the volume of receiving water 1

and improve water quality conditions below the WWTF. On the Regional Water Board's review of the relocation and rehabilitation of the Francis Creek tributary, it appears that discharges from the WWTF will enter a portion of the channel proposed for abandonment.

1 (cont.)

In order to achieve the stated goals contained in the draft EIR, it is important for the proposed project to incorporate a mechanism for connectivity and routine maintenance in perpetuity for the existing Francis Creek channel between the WWTF discharge and the overall system.

If you have any questions or comments, please contact me at (707) 576-2677 or lbernard@Waterboards.ca.gov.

Sincerely,

Lisa Bernard
Sanitary Engineering Associate

100520_TMC_SaltRiverRestoration_DEIR

8.6.1 RESPONSES TO CALIFORNIA REGIONAL WATER RESOURCES CONTROL BOARD, NORTH COAST REGION, MAY 20, 2010 LETTER

Response to Comment 1: The project design team is working closely with the Ferndale City engineers to properly incorporate the WWTP effluent outfall into the restored project reach. It is undetermined if the outfall would be directed to Francis Creek or the Salt River (if the design realigns Francis Creek significantly). Regardless, the Salt River Ecosystem Restoration project will work closely with the City and RWQCB to ensure the WWTP discharge satisfies RWQCB discharge requirements, maintains connectivity to the Salt River channel and is routinely observed and maintained.

D

STATE OF CALIFORNIA ARNOLD SCHWARZENEGGER, *Governor*

CALIFORNIA STATE LANDS COMMISSION
100 Howe Avenue, Suite 100-South
Sacramento, CA 95825-8202

PAUL D. THAYER, *Executive Officer*
(916) 574-1800 FAX (916) 574-1810
California Relay Service From TDD Phone 1-800-735-2929
from Voice Phone 1-800-735-2922

Contact Phone: **(916) 574-1900**
Contact FAX: **(916) 574-1885**

May 28, 2010

File Ref: SCH 2007062030

RECEIVED
MAY 28 2010
STATE CLEARING HOUSE

Clear 5-24-10 Late e

Humboldt County Resource Conservation District
Attn: Donna Chambers
5630 South Broadway
Eureka, CA 95503

Subject: Salt River Ecosystem Restoration Project Draft Environmental Impact Report

Dear Ms. Chambers:

Staff of the California State Lands Commission (CSLC) has reviewed the Draft Environmental Impact Report (EIR) for the above referenced proposed project and offer the following comments. The Humboldt County Resource Conservation District is the lead agency under the California Environmental Quality Act (CEQA). For this project, the CSLC is both a Responsible and a Trustee agency. We are submitting these comments within the review period ending on May 28, 2010, as provided in Humboldt County Resource Conservation District Notice of Availability.

By way of background, the State of California acquired sovereign ownership of all tidelands and submerged lands and beds of navigable waterways upon its admission to the United States in 1850. The State holds these lands for the benefit of all people of the State for statewide Public Trust purposes, which include waterborne commerce, navigation, fisheries, water-related recreation, habitat preservation and open space. The boundaries of these State-owned lands generally are based upon the last naturally occurring location of the ordinary high or low water marks prior to artificial influences which may have altered or modified the river or shoreline characteristics. On tidal waterways, the State's sovereign fee ownership extends landward to the ordinary high water mark as it last naturally existed. On navigable non-tidal waterways, the State holds fee ownership of the bed landward to the ordinary low water mark and a Public Trust easement landward to the ordinary high water mark, as they last naturally existed. Such boundaries may not be readily apparent from present day site inspections. The State's sovereign interests are under the leasing jurisdiction of the CSLC.

After review of the information contained in the Draft EIR, a portion of the Salt River, over which the proposed project will extend, includes State-owned sovereign land. A lease and formal authorization for the use of sovereign land will be required

1

from the CSLC for the portion of the project encroaching on State-owned lands. CSLC will rely on the EIR in order to make a CEQA determination and approve the lease. 1 (cont.)

The following provides specific comments on the Draft EIR:

Effects of Sea Level Rise. The EIR should consider the effects of sea level rise to any relevant resource categories of the proposed project. Please note that when applying for a surface lease from the CSLC, staff has been directed to request information concerning the potential effects of sea level rise on the proposed project; and, if applicable, require applicants to indicate how they plan to address sea level rise and what adaptation strategies are planned during the projected life of the project. For further information, please see "A Report on Sea Level Rise Preparedness," which was approved by the CSLC at its December 17, 2009, meeting (the Report and accompanying Staff Report can be found on CSLC's website: http://www.slc.ca.gov/). One of the recommendations from the report is to direct CSLC staff to consider the effects of sea level rise to hydrology, soils, geology, transportation, recreation, and other resource categories in all environmental determinations. 2

Page 2-22 and Table 2-2 provides specific areas for sediment reuse and is reflected in Figures 2-4 and 2-18; however, these areas should be labeled on the map figures to show the areas in relation to each other. 3

Page 3.1-8, Sea Level Rise - As noted above, there is no impact analysis of sea level rise on the proposed project hydrology in Section 3.1.3. For example, could sea level rise have any effect to the stability of the proposed setback levee system, e.g., increased erosion? 4

Page 3.3-1, Table 3.3-1 - Surveys were conducted in 2004, 2007, and 2008. Have there been any more recent surveys of the project area? Surveys should be more than "reconnaissance-" or "planning-level" particularly surveys for special status species that can occur within the project limits. Also, the most recent botanical surveys were conducted in April and May 2008. In addition to spring plant surveys, surveys also need to be conducted in the summer for later flowering species, e.g., *Cordylanthus maritimus* ssp. *palustris* (Jun-Oct), *Puccinellia pumila* (Jul), etc. 5

Page 3.3-3, Table 3.3-2 – The table provides that the project is going to have a net increase (16.8 acres) of ruderal land cover. Ruderal vegetation is mostly made up of invasive, non-native species as described on Page 3.3-6. The restoration project should not increase non-native, ruderal vegetation particularly noxious weeds that are present in this land cover, such as bull thistle (*Cirsium vulgare*). The project should revegetate upland areas that could become ruderal with a mixture of native grasses and wildflowers. A recommendation would be to include a new row to the table for upland revegetation with native grasses and forbs since on Page 2-25 all disturbed area would be revegetated with "native grasses, forbs and shrubs." The Maintenance, Monitoring and Adaptive Management Plan described on Page 2-60 needs to incorporate mitigation measures provided on Page 3.3-34 (Mitigation Measures 3.3.1-5.1 and 6

3.3.1-5.2) to control any noxious weeds that may become established within the restoration and upland areas. 6 (cont.)

Page 3.3-12, Table 3.3-3 - This table needs to add a column of the listing/regulatory status for each species similar to Table 3.3-4. 7

Page 3.3-14, Table 3.3-4 - This table needs to have a footnote that defines the regulatory status abbreviations (FP and SSC). 8

Page 3.3-13, Table 3.3-3, *Carex lyngbyei* and *Cordylanthus maritimus* - Mapping of these species needs to be included in the EIR and an impact assessment be conducted for any plants that are found within the project limits. 9

Page 3.3-19, Federal Laws Section - The Bald and Golden Eagle Protection Act needs to be added to this section. Since bald eagles may occur in the project area (Page 3.3-11), this species needs to be included in Table 3.3-4. 10

Page 3.3-35, Impact 3.3.1-6 - It states that implementation of Mitigation Measure 3.3.1-6 would lessen the impact to special status plants to less than significant levels. The mitigation measure provides that if impacts to special status plants are unavoidable, then a compensatory mitigation plan will be prepared. Surveys for special status plants and an impact assessment need to be included in the EIR to determine the significant level if any impacts to special status plants are unavoidable. 11

Page 3.4-5, Table 3.4-1 - This table needs to have a footnote that defines the abbreviations in the "Status" column. 12

Page 3.4-25, Sea level rise - There is inconsistency of hyphenating sea level (sea-level) or not. IPCC 2001 and CCCC 2006 are not included in Section 3.4 reference section and the CALFED reference needs a citation. The Draft EIR is not consistent with the estimated projected sea level rise by year 2100. This section documents estimated sea level rise projections from several sources, the IPCC (2001), CCCC (2006), and CALFED (no citation given); whereas Section 3.1 (Page 3.1-8) provides projections from the Pacific Institute (2009), IPCC (2007), and the Corps (2009). All of these citations give a varying range of sea level rise anywhere from as low as 0.4 ft (IPCC 2001) to as much as 78 inches (CALFED). There should be a better synthesis of the sea level rise projection data between Sections 3.1 and 3.4. As provided above, CSLC's "A Report on Sea Level Rise Preparedness" (December 2009) cites sea level rise projections at 16 inches by 2050 and 55 inches by 2100. 13

Page 3.4-29, Alternative 4 - This section provides that the current sea level rise is projected to be one meter (39 inches) by year 2100; however, in earlier sections the projections could be as high as 59-inches (Corps 2009) or 78-inches (CALFED). 14

Thank you for the opportunity to review and provide comments on the above mentioned document. If you have any questions concerning the CSLC's leasing

jurisdiction please feel free to contact Grace Kato, Public Land Manager, at (916) 574-1227. If you have any questions concerning the environmental review, please contact Eric Gillies at (916) 574-1897 or by e-mail at gillee@slc.ca.gov.

Sincerely,

Cy R. Oggins, Chief
Division of Environmental Planning
and Management

cc: Office of Planning and Research
G. Kato, CSLC
E. Gillies, CSLC

8.7.1 RESPONSES TO CALIFORNIA STATE LANDS COMMISSION, MAY 28, 2010 LETTER

Response to Comment 1: The EIR authors acknowledge that the State Lands Commission, as a CEQA Responsible Agency, will rely on this EIR for any lease and/or land use authorization approvals.

Response to Comment 2: Impacts of sea level rise to the project are addressed in a new Impact 3.1.1-19, following Impact 3.1.1-18 on p. 3.1-69 of the EIR. The extent of this impact, which would be less than significant, is as follows:

Impact 3.1.1-19 Sea-Level Rise Considerations

The anticipated life of the Salt River Ecosystem Restoration Project is 50 years. Based on sea-level rise estimates presented the CSLC 2009 sea level rise report, sea level is predicted to rise up to 0.60 meters (2.0-feet) by the year 2060. This equates to a sea level rise rate of 1.2 centimeters per year. Impacts to the project include:

- Inundation of wetlands;
- Increased frequency of flooding; and
- Increased flooding of access routes.

Protections afforded by project include:

- Creation of new wetlands;
- Increased buffer (wetlands) between ocean and urban development;
- Improved flood drainage;
- Increased riparian forest and erosion protection along the main stem of the Salt River; and
- Watershed sediment management strategy to reduce or control aggradation.

Direct impacts of sea level rise include increased inundation of wetlands, riparian corridor and pasture lands. The Project would not amplify or increase impacts to non-project areas. The restored Riverside Ranch wetlands would be relatively high in elevation, thus sea-level rise over the next 50-years would alter habitats, in general, from high to lower marsh. Upland areas also would convert to wetland. For example, the estimated high-, mid- and low-marsh areas within the Riverside Ranch wetland restoration footprint under as-built and future sea level rise (i.e., 50-years after construction) conditions are tabulated in Table 3.1-8. The tidal datum elevations used to approximate these three wetland habitat zones are indicated on Table 3.1-8 with the future datums reflecting 2-feet of sea level rise. Comparison of these estimates indicate that after with 2-feet of sea level rise, the low marsh habitat area will increase almost three times in area (from 67- to 180-acres), while mid- and

high-marsh zones decrease from 146 to 17 and 43- to 21-acres, decreases of almost 900-percent and 200-percent, respectively.

Table 3.1-8 Estimated Changes in Riverside Ranch Wetland Habitat Areas subject to 2-feet of Sea Level Rise

	Elevation Range (ft NAVD88)	As-Built Conditions (acre)
Low Marsh	3.76 to 5.81	67
Mid Marsh	5.81 to 6.99	146
High Marsh	6.99 to 8.50	43

	Elevation Range (ft NAVD88)	Post 2-ft Sea Level Rise (acre)
Low Marsh	5.76 to 7.81	180
Mid Marsh	7.81 to 8.99	17
High Marsh	8.99 to 10.5	21

In terms of the main project structure, the proposed eco-berm for the Riverside Ranch Wetland component is designed to accommodate the added effects of sea level rise, by increasing the berm height from its current level of 10.0 to 12.0-feet in elevation, to a project height of 14.75-feet. The berm would be protected from wave erosion during extreme tides and low to moderate flood events by vegetation that will be promoted on the berm. Cattle would be precluded from accessing the berm, which would retain a healthy and protective vegetation cover as well as eliminate the potential for physical erosion.

The adverse impacts associated with sea level rise would be most prominent in secondary effects, such as erosion, sediment deposition and inundation. The project AMP addresses a monitoring program to identify and address such impacts, if they should occur.

The Project area is located in a highly active tectonic area and experiences episodic land subsidence in response to earthquakes. Li and Carver (1992)[1] report that the Eel River delta region has undergone net subsidence in the late Holocene at an average rate of about 1-3 millimeter per year (mm/yr). However, most of the subsidence occurs during tectonic events that result in 1-3 meters of net permanent subsidence. Their study indicates five rapid subsidence events over the past 200 years, occurring about 300, 800, 1200, 1500 and 2000 years before the present. Their study also revealed:

[1] Li, W.H. and Carver, G.A., 1992, The Late Holocene Stratigraphy of Eel River delta. Prepared for: U.S. Soil Conservation Service, February, 12p (w/9 figures).

- Net subsidence across the Eel River delta is non-uniform, with more net subsidence occurring on the south side of the river than the north side.
- Slow rates of sediment accumulation associated with tidal wetland and river flooding occurs across the delta during relatively stable periods following the sudden subsidence events.
- Sedimentation patterns over the last 2000 years indicate that fine-grained sediment and the development of stable vegetated surfaces followed the four oldest subsidence events. These sediments contrast with the much coarser sands that deposited as thick flood deposits during the most recent decades.

The impacts of sea-level rise would not be significantly different from the natural episodic tectonically induced subsidence, but will occur at a much lower rate.

The high sedimentation rates on the Eel River delta have effectively kept pace with historic sea-level rise and tectonic subsidence. High sedimentation rates will continue and, over time, would ameliorate the effects of sea level rise to some degree. A conceptual model of the project area in terms of delta plain base levels versus sea levels can be described as episodic tectonic events of rapid land subsidence followed by both gradual and rapid sediment accumulation associated with natural deltaic building processes from the Eel River and its tributaries (tidal wetland and flood deposits, respectively). These cycles of delta building have lead to the accumulation of up to 10,000-feet of alluvium on and below the Eel River delta plain syncline, which would continue. In geologic terms, the impacts of sea-level rise may impart gradual changes, but would not likely significantly alter this large-scale landform-generating process in such a tectonically active area. Therefore tbhis impact would be less than significant.

Response to Comment 3: Acreages of sediment reuse areas have been added on revised Figures 2-4 and 2-18 in the FEIR.

Response to Comment 4: Please see response to Comment 2, above.

Response to Comment 5: Special status plant surveys have been conducted of the channel restoration area and Riverside Ranch area. These surveys documented the presence of Lyngbye's sedge, Humboldt Bay owl's clover, and eelgrass, as noted below. The FEIR and Table 3.3-3 (pages 3.3-12 to 3.3-14) have been updated to reflect the results of those surveys, as indicated below.

Table 3.3-3 Special Status Plant Species Requiring Additional Surveys to Determine Presence or Absence in the ~~Project~~ Upslope Sediment Reduction Area.

Species Name (Scientific, Common)	Regulatory Status* (Federal/ State/CNPS)	Potential Habitat in Project Area	Blooming Period	~~Portion of Project Area to Survey~~
~~Species with potential to occur in Riverside Ranch, Channel Restoration Area and Upslope Sediment Reduction Area~~				
Lilium occidentale Western lily	E/E/List 1B.1	Marshes and swamps (freshwater), North Coast coniferous forest (openings)	Jun-Jul	~~Riverside Ranch. Recommend repeating Channel Restoration Area survey. Upslope sediment reduction areas.~~
Lycopodium clavatum Running pine	-/-/List 4.1	Lower montane coniferous forest (mesic), Freshwater marshes and swamps, North Coast coniferous forest (mesic)/often edges, openings, and roadsides	Jun-Aug	~~Riverside Ranch. Recommend repeating Channel Restoration Area survey. Upslope sediment reduction areas.~~
Sidalcea malachroides Maple-leaved checkerbloom	-/-/List 4.2	Broadleafed upland forest, Coastal prairie, Coastal scrub, North Coast coniferous forest, Riparian woodland/often in disturbed areas	Apr-Aug	~~Riverside Ranch. Recommend repeating Channel Restoration Area survey. Upslope sediment reduction areas.~~
Stellaria obtusa Obtuse starwort	-/-/List 4.3	Riparian woodland	May-Sep (Oct)	~~Riverside Ranch. Recommend repeating Channel Restoration Area survey. Upslope sediment reduction areas.~~
~~Species with potential to occur in Riverside Ranch and Channel Restoration Area~~				
~~*Angelica lucida*~~ ~~Sea watch~~	~~-/-/List 4.2~~	~~Marshes and swamps (coastal salt)~~	~~May-Sept~~	~~Riverside Ranch. Recommend repeating Channel Restoration Area survey.~~
~~*Astragalus pycnostachyus var. pycnostachyus*~~ ~~Coastal marsh milk-vetch~~	~~-/-/List 1B.2~~	~~Marshes and swamps (coastal salt, streamsides)~~	~~Apr-Oct~~	~~Riverside Ranch. Recommend repeating Channel Restoration Area survey.~~

Species Name (Scientific, Common)	Regulatory Status* (Federal/ State/CNPS)	Potential Habitat in Project Area	Blooming Period	~~Portion of Project Area to Survey~~
~~*Carex buxbaumii*~~ ~~Buxbaum's sedge~~	~~-/-/List 4.2~~	~~Marshes and swamps~~	~~Mar-Aug~~	~~Riverside Ranch. Recommend repeating Channel Restoration Area survey.~~
~~*Carex leptalea*~~ ~~Bristle-stalked sedge~~	~~-/-/List 2.2~~	~~Marshes and swamps~~	~~Mar-Jul~~	~~Riverside Ranch. Recommend repeating Channel Restoration Area survey.~~
~~*Carex lyngbyeii*~~ ~~Lyngbye's sedge~~	~~-/-/List 2.2~~	~~Marshes and swamps (brackish or freshwater)~~	~~May-Aug~~	~~Present in Riverside Ranch brackish areas. Needs to be mapped. Recommend repeating Channel Restoration Area Survey.~~
~~*Castilleja ambigua* ssp. *humboldtiensis*~~ ~~Humboldt Bay owl's-clover~~	~~-/-/List 1B.2~~	~~Marshes and swamps (coastal salt)~~	~~Apr-Aug~~	~~Riverside Ranch. Recommend repeating Channel Restoration Area survey.~~
~~*Cordylanthus maritimus* ssp. *palustris*~~ ~~Point Reyes bird's-beak~~	~~-/-/List 1B.2~~	~~Marshes and swamps (coastal salt)~~	~~Jun-Oct~~	~~Present adjacent to project area. Needs to be mapped. Riverside Ranch. Recommend repeating Channel Restoration Area survey.~~
~~*Eleocharis parvula*~~ ~~Small spikerush~~	~~-/-/List 4.3~~	~~Marshes and swamps~~	~~(Apr) Jun-Aug (Sep)~~	~~Riverside Ranch. Recommend repeating Channel Restoration Area survey.~~
~~*Gilia capitata* ssp. *pacifica*~~ ~~Pacific gilia~~	~~-/-/List 1B.2~~	~~Valley and foothill grassland~~	~~Apr-Aug~~	~~Riverside Ranch. Recommend repeating Channel Restoration Area survey.~~
~~*Leptosiphon acicularis*~~ ~~Bristly leptosiphon~~	~~-/-/List 4.2~~	~~Valley and foothill grassland~~	~~Apr-Jul~~	~~Riverside Ranch. Recommend repeating Channel Restoration Area survey.~~
~~*Lycopus uniflorus*~~ ~~Northern bugleweed~~	~~-/-/List 4.3~~	~~Marshes and swamps~~	~~Jul-Sep~~	~~Riverside Ranch. Recommend repeating Channel Restoration Area survey.~~

Species Name (Scientific, Common)	Regulatory Status* (Federal/ State/CNPS)	Potential Habitat in Project Area	Blooming Period	~~Portion of Project Area to Survey~~
~~*Pleuropogon refractus*~~ ~~Nodding semaphore grass~~	~~-/-/List 4.2~~	~~North Coast coniferous forest, Riparian forest/mesic~~	~~Apr-Aug~~	~~Riverside Ranch. Recommend repeating Channel Restoration Area survey. Upslope sediment reduction areas.~~
~~*Puccinellia pumila*~~ ~~Dwarf alkali grass~~	~~-/-/List 2.2~~	~~Marshes and swamps (coastal salt)~~	~~Jul~~	~~Riverside Ranch. Recommend repeating Channel Restoration Area survey. Upslope sediment reduction areas.~~
~~*Sisyrinchium hitchcockii*~~ ~~Hitchcock's blue-eyed grass~~	~~-/-/List 1B.1~~	~~Valley and foothill grassland~~	~~Jun~~	~~Riverside Ranch. Recommend repeating Channel Restoration Area survey.~~
~~*Spergularia canadensis var. occidentalis*~~ ~~Western sand-spurrey~~	~~-/-/List 2.1~~	~~Marshes and swamps (coastal salt)~~	~~Jun-Aug~~	~~Riverside Ranch. Recommend repeating Channel Restoration Area survey.~~
~~*Stellaria littoralis*~~ ~~Beach starwort~~	~~-/-/List 4.2~~	~~Marshes and swamps~~	~~Mar-Jul~~	~~Riverside Ranch. Recommend repeating Channel Restoration Area survey.~~
~~Species with Potential to Occur in Upslope Sediment Reduction Areas~~				
Anomobryum julaceum Slender silver moss	-/-/List 2.2	Broadleafed upland forest, Lower montane coniferous forest, North Coast coniferous forest/damp rock and soil on outcrops, usually on roadcuts	No flowering season	~~Upslope sediment reduction areas.~~
Astragalus rattanii var. rattanii Rattan's milk vetch	-/-/List 4.3	Lower montane coniferous forest/gravelly streambanks	Apr-Jul	~~Upslope sediment reduction areas.~~
Erigeron biolettii Streamside daisy	-/-/List 3	North Coast coniferous forest/rocky, mesic	Jun-Oct	~~Upslope sediment reduction areas~~
Erythronium revolutum Coast fawn lily	-/-/List 2.2	North Coast coniferous forest/mesic, streambanks	Mar-Jul (Aug)	~~Upslope sediment reduction areas~~

Species Name (Scientific, Common)	Regulatory Status* (Federal/ State/CNPS)	Potential Habitat in Project Area	Blooming Period	~~Portion of Project Area to Survey~~
Montia howellii Howell's montia	-/-/List 2.2	North Coast coniferous forest, Vernal pools/vernally mesic, sometimes roadsides	Mar-May	~~Upslope sediment reduction areas~~
Packera bolanderi var. *bolanderi* Seacoast ragwort	-/-/List 2.2	North Coast coniferous forest/sometimes roadsides	(Feb-Apr) May-Jul	~~Upslope sediment reduction areas~~
Ribes laxiflorum Trailing black currant	-/-/List 4.3	North Coast coniferous forest/sometimes roadside	Mar-Jul (Aug)	~~Upslope sediment reduction areas.~~
Thermopsis gracilis var. gracilis Slender false lupine	-/-/List 4.3	North Coast coniferous forest/sometimes roadsides	Mar-Jul	~~Upslope sediment reduction areas.~~
Usnea longissima Long beard lichen	-/-/List 4	Humid, foggy coniferous forests	NA	~~Upslope sediment reduction areas.~~

*Regulatory status abbreviations are as follows:

CNPS= California Native Plant Society

E= Endangered

List 1B:2. Fairly endangered in California and elsewhere.

List 2:2. Fairly endangered in California, but more common elsewhere.

List 3: Needs more information (Review List).

List 4. Limited distribution (Watch List)

List 4:2. Limited distribution (Watch List), fairly endangered in California.

List 4:3. Limited distribution (Watch List), not very endangered in California.

There are an additional 12 special status plants that may be present in upslope sediment reduction areas that require additional surveys to determine presence or absence. The surveys that were conducted between May and August 2010 are adequate to determine which special status plant species are present in the channel restoration and Riverside Ranch areas. The additional surveys called for in the revised Table 3.3-3 for the upslope sediment reduction area would be adequate to determine whether special status plant species are present in the project area. The following text changes are made to reflect the new surveys:

The Chapter 3.3 Special Status Plants existing conditions discussion, first paragraph, is revised as follows:

> Of ~~T~~the remaining 29 species ~~have~~ with the potential to occur in the project area, 27 species were not found during surveys of the channel restoration area and the Riverside Ranch area conducted from May to August 2010. Twelve of these 27 species have potential to occur in habitats in or adjacent to upslope sediment reduction areas. Plant surveys would be required

to determine whether these species are present (Table 3.3-3). ~~and t~~Two ~~of these~~ species, (Lyngbye's sedge [*Carex lyngbyei*]) and ~~Point Reyes bird's beak (*Cordylanthus maritimus* ssp. *palustris*)~~ Humboldt Bay owl's clover (*Castilleja ambigua* var. *humboldtiensis*), have been confirmed as occurring in salt and brackish marsh in~~or adjacent to~~ the Riverside Ranch Area. In addition, eelgrass (*Zostera marina*) was observed in the Salt River channel from the confluence of Cut-Off Slough to the confluence of Smith Creek.

Eighteen of the special status species potentially occur in habitats present in the Channel Restoration Area and would have been flowering or otherwise readily identifiable at that time. These species are therefore unlikely to be present in the Channel Restoration Area. However, because five years has passed since that survey was conducted, botanical surveys will be repeated to provide more data regarding the presence or absence of special status plant species (DFG 2000). One special status plant species, Hitchcock's blue-eyed grass (*Sisyrinchium hitchcockii*), has a low probability of occurrence in grassland in the Channel Restoration Area and/or on Riverside Ranch. A late spring (June) survey of the Salt River Channel Restoration Area will be necessary to determine if it is present. The remaining portions of the project area (Riverside Ranch, Upland Sediment Reduction Areas) have not been surveyed for special status plant species. Late spring and summer surveys (e.g. May and July) will be necessary in these areas to determine if special status species are present (See Table 3.3-3 for specific species and survey times).

Species accounts follow for the ~~two~~ special status plant species that are known to occur in or adjacent to the project area.

~~*Point Reyes Bird's Beak (Cordylanthus maritimus ssp. palustris)*~~

~~This species is a Federal Species of Concern and has no State listing. It is on the CNPS List 1B.2.~~

~~This annual hemi-parasitic herb occurs in coastal salt marsh, specifically in high marsh above 7.0 ft Mean Lower Low Water (Eicher 1987). Seeds germinate in mid-February, and the plant forms haustoria (parasitizing organs) within days of emergence (Bergvall 1991). The blooming period extends from June to October. The range of this species includes 5 counties in California, extending north into southwestern Oregon. Point Reyes bird's beak has been found in the salt marshes adjacent to project area.~~

Lyngbye's Sedge (Carex lyngbyei)

This species has no state or Federal listing status and is on CNPS List 2.2. This rhizomatous herb occurs in coastal brackish or freshwater marsh, where it can form dense monotypic stands. The blooming period extends from May to August. The range of this species includes four counties in California, extending north from Marin County into Oregon. Lyngbye's sedge has been found in marshes on Riverside Ranch, and was mapped in 2010. Lyngbye's sedge grows in a near continuous band on both banks of the Lower Salt River channel in tidal marsh habitat from the lowest reach to just above the end of Port Kenyon Road (The population grows in the closest proximity to the tidal waters and is approximately 15 feet wide to 3 feet wide, depending on competition from dense-flowered cord grass

(*Spartina densiflora*) and canopy closure of riparian forest. Scattered individuals were also observed well away from the tidal channel but often subjected to severe competition from the dense-flowered cord grass.

Humboldt Bay owl's clover (Castilleja ambigua var. humboldtiensis)

This species has no state or federal listing status and is on CNPS List 1B.2. Like Point Reyes Bird's Beak, this annual hemi-parasitic herb occurs in high-elevation salt marshes (Eicher 1987). Also similar to Point Reyes bird's beak, Owl's clover germinates in mid February and forms haustoria within days of emergence. Owl's clover grows more rapidly than Point Reyes bird's beak, and peak flowering in this species occurs mid-May through mid-June. Humboldt Bay owl's clover has a limited distribution, occurring only from Humboldt Bay south to Tomales Bay, California (Grewell et al. 2007). This species was found in the salt marsh on Riverside Ranch in surveys conducted between May and August 2010. Three populations of Humboldt Bay owl's clover were found in tidal marsh habitat from the confluence of Cut-Off Slough to approximately 700 meters above the confluence of Smith Creek. The three populations consisted of approximately 58 individuals. The Humboldt Bay owl's clover apparently was growing in small openings in the tidal marsh habitat that was dominated by thick growing cover of denseflowered cord grass.

Eelgrass (Zostera marina)

Eelgrass is a flowering plant that grows submerged in the shallow subtidal and lower intertidal zones of protected bays and estuaries in temperate regions. Eelgrass is found from Alaska to Baja California, from Quebec to North Carolina, in Hudson Bay, Newfoundland and Nova Scotia, and from the Baltic Sea to Spain. The leaves are ribbon-like, typically less than 0.5 inch wide and may be up to 7 feet long. Eelgrass reproduces both sexually through pollination of seeds and asexually by growth of roots and rhizomes. It provides important structure, habitat, and food for a broad range of birds, fish and invertebrates (Phillips 1984). Eelgrass habitat is protected by federal and state law (Clean Water Act, 1977 protects vegetated wetlands and California Coastal Act, 1976 protects marine resources) and the DFG has a no-net-loss policy for eelgrass habitat in state waters. In the Eel River estuary, eelgrass occurs in the saline to brackish portions of the estuary. Eelgrass is prominent in tributaries near the mouth of the Eel River, including the Salt River adjacent to the project area (Downie and Lucey 2005). Eel River populations of eelgrass generally die back during winter, presumably due to freshwater influences. New growth appears in April and forms locally dense stands during summer (Bruce Slocum, personal communication 2009). During surveys conducted between May and August 2010, eelgrass was observed in the Salt River channel from the confluence of Cut-Off Slough to the confluence of Smith Creek. Although shown as a continuous band of eelgrass on either side of the channel, the eelgrass beds varied in width and varied in plant density. The estimated width of the eelgrass beds varied from approximately 3 feet to 4 feet wide on either side of the channel. Density of individual plants varied from 3 to 5 per square meter. Eelgrass was absent in some sections as well.

Response to Comment 6: The EIR biologists concur that upland areas along the setback berm should not be allowed to become dominated by ruderal species, but should be planted with native species. In fact, the project's revegetation plan calls for planting this area with native species. The projection of 26.5 acres of ruderal habitat in Table 3.3-2 in the DEIR is an error. The project's revegetation plan calls for the use of a native forb and grassland seed mixture (see below) for all disturbed areas not seeded with agricultural grassland seed or floodplain seed mix. These areas are included in the revised Table 3.3-2 in the row labeled "Agricultural/Grassland Levees.." The Maintenance, Monitoring and Adaptive Management Plan incorporates Mitigation Measures 3.3.1-5.1 and 5.2.

COMMON NAME	SCIENTIFIC NAME	PURE LIVE SEED/HECTARE (lbs.)
White yarrow	*Achillea millefolium*	1.0
Maritime California brome	*Bromus maritimus*	16.0
Blue wildrye	*Elymus glaucus*	14.0
Idaho fescue	*Festuca idahoensis*	12.0
Tidy tips	*Layia platyglossa*	2.0
Chinese houses	*Collinsia heterophylla*	1.0
Miniature lupine	*Lupinus bicolor*	7.0
Tomcat clover	*Trifolium wildenovii*	8.0
Small fescue	*Vulpia macrostachys*	8.0

Response to Comment 7 and 8: In response to these comments, Table 3.3-3 has been revised to add a column for regulatory status, and footnotes have been added to explain the "FP" and "SSC" abbreviations in Table 3.3-4. The updated table 3.3-4 is presented below:

Table 3.3-4 Special Status Wildlife Species with Moderate or Higher Probability of Occurrence in Project Area

Species	Regulatory Status* (Federal/State)	Habitat	Probability of Occurrence in Project Area
Birds			
Athene cunicularia Burrowing owl	BCC/SSC	Level, open, dry, heavily grazed or low stature grassland or desert vegetation with available rodent burrows	Moderate. Most grassland in project area is unsuitable because it is seasonally flooded, but areas of suitable habitat may be present. Species is known from South Jetty in project vicinity.
Chaetura vauxi Vaux's swift	None/SSC	Nests in large cavities in trees, including redwoods and sycamores, and sometimes in artificial structures such as chimneys. Prefers redwood and Douglas fir forests.	High. Common summer resident and breeder in vicinity. Documented in 2010 surveys. Optimal nesting habitat absent in project area.
Charadrius alexandrinus nivosus Western snowy plover	T/SSC	Breed and winter along ocean beaches and the gravel bars of the Eel River. Nesting occurs above the high tide line in sandy substrate, and occasionally on driftwood. May nest in salt pans. May winter in estuarine sand and mudflats and forage on edges of salt marsh and in salt pans.	Moderate. Documented nearby on Centerville Beach, but not expected to use the lower Salt River for breeding habitat as it does not exhibit the broad expanses of river cobble that plovers are known to prefer where they nest along the Eel River. Could nest in salt pans as these develop in project area. May forage on edges of salt marsh and winter in estuarine sand and mud flats in project area.
Circus cyaneus Northern harrier	None/SSC	(Nesting) Coastal salt marsh and freshwater marsh; nests and forages in grasslands; nests on ground in shrubby vegetation, usually at marsh edge.	High. Documented in project area in 2010.
Dendroicha petechia Yellow warbler	None/SSC	Riparian habitat often dominated by willows, near water in streams and wet meadows	High. Common in riparian habitat in Humboldt County. Documented in 2010 surveys.
Elanus caeruleus White-tailed kite	None/FP	(Nesting) Open grassland and agricultural areas throughout Central California.	High. Common in project area.

Species	Regulatory Status* (Federal/State)	Habitat	Probability of Occurrence in Project Area
Empidonax trailii brewsteri Little willow flycatcher	None/E	Breeding and foraging habitat for the species includes lowland riparian woodlands dominated by willows, primarily in tree form or in the form of contiguous thickets, and cottonwoods.	Spring and fall migrant and casual summer resident and breeder in northwestern California (Hunter et al. 2005). Signing male documented in 2010 surveys in riparian area on Riverside Ranch.
Haliaeetus leucocephalus Bald eagle	Delisted/E,FP	(Nesting and Wintering) Ocean shore, lake margins, and rivers for both nesting and wintering. Most nests within 1 mile of water.	High probability of infrequent occurrence. Rare but consistent winter visitor to project vicinity.
Icteria virens Yellow breasted chat	None/SSC	(Breeding) Dense, brushy thickets near water and in the thick understory of riparian woodlands. Forage patterns usually involve gleaning insects, spiders, and berries from the foliage of shrubs and low trees. Nests are often low to the ground in dense shrubs along streams.	Moderate. More common further inland, but documented in lower Eel River. No records from2010 surveys.
Passerculus sandwichensis alaudinus Bryant's savannah sparrow	None/SSC	Breed and winter in low tidally influenced habitats, adjacent ruderal areas, moist grasslands within and just above the fog belt, and, infrequently, drier grasslands. Commonly uses salt marshes for breeding and foraging in much of its range, but not in Humboldt Bay region (Hunter et al. 2005). Around Humboldt Bay, it breeds in extensive dairy pastures, especially in the taller grasses and rushes along roads and fences, and water conveyance canals.	High. Documented breeding in the immediate project vicinity (Hunter et al. 2005).
Poecile atricapillus Black-capped chickadee	None/SSC	Occurs locally in riparian habitat from coast into mountainous areas inland.	High. Documented in project area in 2010 surveys.
Progne subis Purple martin	None/SSC	Uses valley foothill and montane hardwood, valley foothill and montane hardwood-conifer, and riparian habitats. Uncommon local breeder on the northern California coast.	High. Possible in riparian habitat. No records from 2010 surveys.
Amphibians			
Rana aurora Northern red-legged frog	None/SSC	Humid forests, woodlands, grasslands, and streamsides in northwestern California, usually near	High. Documented in 2010 in project area.

Species	Regulatory Status* (Federal/State)	Habitat	Probability of Occurrence in Project Area
		dense riparian cover. Generally near permanent water, but can be found far from water, in damp woods and meadows, during nonbreeding season.	
Mammals			
Antrozous pallidus Pallid bat	None/SSC	Most common in open, dry habitats with rocky areas for roosting. Roost in rock crevices, trees, buildings, and bridges in arid regions.	Moderate. May forage in project area. No records from 2010 surveys.
Corynorhinus townsendii Townsend's big-eared bat	None/SSC	Most abundant in moist habitats. Roosts primarily in mines and caves, but also in buildings and other human structures.	Moderate. May forage in area. No records from 2010 surveys.
Lasiurus cinereus Hoary bat	None/SSC	May be found in any location in CA. Roosts in trees	Moderate. Potential habitat in project area. No records from 2010 surveys
Myotis yumanensis Yuma myotis	None/SSC	Found in open forests and woodlands usually feeding over water. Forms large maternity colonies of several thousand in buildings, caves and bridge structures.	Moderate. May forage in area. No records from 2010 surveys.

*Regulatory status abbreviations are as follows: BCC= Bird of Conservation Concern, SSC=Species of Special Concern, FP= Fully Protected, T= Threatened, E=Endangered, Candidate= Candidate for endangered species listing

Response to Comment 9: The State Lands Commission states that these two special status plant species should be mapped and an analysis of impacts to them included in the EIR. Special status plant surveys of the Channel Restoration area and the Riverside Ranch restoration area were conducted between May and August 2010. Point Reyes bird's beak was not found in the project area during these surveys, but Humboldt Bay owl's clover and Lyngbye's sedge and eelgrass were found and mapped. In addition, the Rare Plant Mitigation Plan will be attached to the FEIR. The FEIR includes information on the location and extent of these three populations. Mitigation Measure 3.3.1-6 has been revised as follows to include specific measures to minimize and mitigate for impact to these two species. Specifically, the impact and mitigation text has been replaced with the following text:

Impact 3.3.1-6. Impacts to special status plants

Alternative 1 may result in impacts to special status plant species associated with aquatic, tidal marsh, ~~riparian, grassland,~~ and North Coast coniferous forest habitats. These special status plant species could be directly impacted by short-term increases in turbidity in the channel, vegetation removal, fill, excavation, and movement of construction machinery associated with Riverside Ranch Restoration, Salt River Channel Restoration, and upslope

sediment reduction. ~~In addition, special status species associated with riparian forest and scrub may be adversely affected by decreases in the extent of suitable habitat present in the project area (See Impact 3.3.1-4. Impacts to Riparian Habitat). Impacts to special status plant species associated with grassland habitat from conversion of grassland to other habitats would be less than significant due to the abundance of grassland in the project vicinity.~~

The only special status species known to be present in the project area are eelgrass, Humboldt Bay owl's clover, ~~Point Reyes bird's beak~~ and Lyngbye's sedge.~~, which are~~Eelgrass is associated with aquatic habitat in the lower Salt River channel, while Humboldt Bay owl's clover is associated with salt marsh and Lyngbye's sedge is associated with brackish marsh in and adjacent to the Riverside Ranch Restoration Area. If Alternative 1 were implemented, these species, together with other salt marsh and brackish marsh species that may be present in the project area, would benefit from a significant expansion of habitat that is likely to result in increased population sizes. Eelgrass may suffer the loss of approximately 3 acres of existing habitat in the Salt River channel from channel deepening and widening. However, the internal slough network which would be restored on Riverside Ranch would create between 9 to 12 acres of suitable eelgrass habitat, which would be expected to be rapidly colonized. Humboldt Bay owl's clover and Lyngbye's sedge are found in areas where channel excavation is proposed, and may therefore be directly impacted by the project. Details are provided in the Rare Plant Mitigation and Monitoring Plan, available for review or in electronic form from the HCRCD in Eureka. Implementation of Mitigation Measure 3.3.1-3 above, and Mitigation Measure 3.3.1-6, below would reduce this impact to a less than significant level.

Mitigation 3.3.1-6: Minimize, avoid, and compensate for impacts to sensitive plants

Mitigation for special status plant species is addressed collectively for all species, with modifications noted for individual species. Significant impacts to special-status plant species present or likely to be present onsite shall be minimized, avoided, and contingently compensated by complying with the following:

- Pre-construction surveys: Potential habitat for special-status plant species shall be surveyed in appropriate seasons for optimal species-specific detection prior to project excavation/dredging, fill, drainage, or flooding activities associated with project construction. Survey methods shall comply with CNPS/CDFG rare plant survey protocols, and shall be performed by qualified field botanists. Surveys shall be modified to include detection of juvenile (pre-flowering) colonies of perennial species when necessary. Any populations of special status plant species that are detected shall be mapped. Populations shall be flagged if avoidance is feasible and population is located adjacent to construction areas. Special Status plant surveys were conducted between May and August 2010 in the project area for channel restoration and Riverside Ranch restoration. These surveys documented populations of Lyngbye's sedge and Humboldt Bay owl's clover described above. Special status plant surveys would be conducted in the project area for upslope sediment reduction components of the project where work would be conducted in suitable habitat. For example, maple-leaved checkerbloom

(*Sidalcea malachroides*) may occur in broadleafed upland forest or North Coast coniferous forest, often in disturbed areas, and Howell's montia (*Montia howellii*) has been documented on roadsides in North Coast coniferous forest in the Wildcat Mountains and may occur in upslope sediment reduction areas. Surveys for these and other special status plant surveys with potential to occur in the upslope sediment reduction areas listed in Table 3.3-3 shall be conducted prior to upslope sediment reduction project implementation.

- The locations of any special status plant populations to be avoided shall be clearly identified in the contract documents (plans and specifications).
- If special-status plant populations are detected where construction would have unavoidable impacts, a compensatory mitigation plan shall be prepared and implemented in coordination with USFWS or DFG. Such plans may include salvage, propagation, on-site reintroduction in restored habitats, and monitoring. Plans have been developed for Lyngbye's sedge, Humboldt Bay owl's clover, and eelgrass. These plans are available from the HCRCD, and will be further revised in consultation with regulatory agencies. The plans include the following measures:
  - Impacts to these species shall be avoided or minimized to the extent feasible. If feasible, impacts to these species will be minimized by restricting channel excavation in the portions of the lower Salt River where they are found to a single bank of the channel (e.g. only the east bank). It should be noted that populations of owl's clover can fluctuate dramatically between years (Pickart 2001), making the number of individuals impacted difficult to predict.
  - Humboldt Bay owl's clover: A qualified botanist shall collect and conserve seed from local populations of Humboldt Bay owl's clover. These seeds shall be used to replant a population of this species to mitigate for the population lost to construction impacts. The project area shall be monitored for five years and compared with a reference population to determine whether replanting and natural recruitment have resulted in population numbers equal to or greater than those present before project implementation. If the population does not appear to have reestablished during the five year period, seed shall be collected from elsewhere and additional attempts shall be made to reestablish the population.
  - Lyngbye's sedge: Seed shall be collected from Lyngbye's sedge in the project area to be used for replanting in the event that natural recruitment does not result in a post-project population size equal to or greater than the pre-project population size. Monitoring and adaptive management will be conducted for a ten year period to determine whether the area and approximate number of Lyngbye's sedge in the project area is similar to the area of sedge before the project. Additional planting efforts (from seed or from rootstock of mature plants) shall be undertaken if the population size is declining below pre-project size during the monitoring period.

- Eelgrass: The extent and density of eelgrass cover within areas of project impact shall be mapped prior to construction. Natural recruitment shall be monitored for 3 years to determine whether eelgrass is naturally recruiting in newly created channels adequately to replace the area of eelgrass lost due to project impacts. If eelgrass does not establish in an area equal to or greater than that lost due to project impacts in the first 3 years, eelgrass shall be actively planted using the most current scientific methods.

- If USFWS or DFG require propagation or transplantation, scientifically sound genetic management guidelines and protocols for rare plants shall be applied to propagation and transplant plans, possibly including the following:
  - maintain some reserve clonal stock of perennial special-status plant populations during the monitoring period to offset the risk of failure in establishing populations in the wild,
  - set aside surplus reserve seed of annual special-status plants from impacted populations
  - conduct long-term monitoring to determine the fate of managed special-status plant populations.

No special-status plant species shall be introduced to the site beyond their known historic geographic range unless such introduction is recommended in a final recovery plan or conservation plan prepared and adopted by the USFWS or the CDFG, in formal consultation with the USFWS.

Impact Significance

Less than significant with mitigation.

Response to Comment 10: The EIR biologists concur with this comment and have added a description of the Bald Eagle Protection Act to the Federal Laws section as follows:

> The Bald and Golden Eagle Protection Act, as amended (BGEPA)[2], provides protection for the bald eagle (*Haliaeetus leucocephalus*) and golden eagle (*Aquila chrysaetos*) by prohibiting the taking, possession, and commerce of such birds, their nests, eggs, or feathers unless expressly authorized by permit pursuant to federal regulations. The bald eagle is the only species subject to the provisions of the BGEPA with habitat in the project area. To fulfill the requirements of the BGEPA, the project will be designed to avoid "take," as defined by the BGEPA. Bald eagles are consistent, if somewhat rare, winter visitors to the project vicinity and will benefit from improved foraging habitat due to project implementation, as discussed above.

[2] 16 U.S.C. 668-668c

The species has been added to Table 3.3-4. Text in the first and second full paragraphs on page 3.3-11 of the DEIR also is revised as follows:

> Special-status wildlife species with potential to occur in the vicinity of the project area are listed in Appendix D – Special Status Species Lists. Special status wildlife species with moderate or high probability of occurrence in the project area are listed in Table 3.3-4. The special-status animal species that are likely to occur in the vicinity of the project area are described below. Expanded descriptions are included only for those species for which suitable habitat exists in the project area. There are several special-status species known to occur in habitats that are present on the site or that may forage in the project area, including the ferruginous hawk (*Buteo regalis*) (fall/winter), Cooper's hawk (*Accipiter cooperii*), sharp-shinned hawk (*Accipiter striatus*) (fall/winter), merlin (*Falco columbarius*), short-eared owl (*Asio flammeus*) (fall/winter), burrowing owl (*Atene cunicularia*), Vaux's swift (*Chaetura vauxi*), purple martin (*Progne subis*), black-capped chickadee (*Parus atricapillus*), western snowy plover (*Charadrius alexandrinus nivosus*), Bryant's savannah sparrow (*Passerculus sandwichensis alaudinus*), and yellow warbler (*Dendroica petechia*). Some special-status species are known to occur in the general local area but are thought to be absent from the project site due to lack of habitat, or occur only rarely as stray migrants or transients. These include golden eagle (*Aquila chrysaetos*)~~, burrowing owl (*Athene cunicularia*),~~ and bank swallow (*Riparia riparia*).
>
> Bald eagles (*Haliaeetus leucocephalus*) are consistent, if somewhat rare, winter visitors to the project vicinity. They may occasionally perch on the project site while foraging within the project site and in adjacent water during the winter; however there is no breeding habitat for bald eagles on the site. They have been seen adjacent to the project area, their presence in the vicinity is described in the Eel River Wildlife Area Management Plan (Monroe 1990) and 4-8 individuals were documented in the Christmas Bird Count circle encompassing the project area in 2005-2008. Bald eagles would benefit from improved foraging in the restored estuarine habitat and a greater abundance of prey.

Response to Comment 11: See Response to Comment 9 above for the results of special status plant surveys in the project area, and for a discussion of mitigation for potential project impacts to special status plants identified in those surveys. Additional special status plant surveys may be required for upslope sediment reduction work if such work occurs in potential habitat for one of the special status plant species identified in the revised Table 3.3-3. Information regarding the results of special status plant surveys and additional surveys that may be needed is incorporated in the revised Impact and Mitigation 3.3.1-6 text in Response to Comment 9, above.

Response to Comment 12: Footnote 1 on table 3.4-1 on p. 3.4-7 of the DEIR is modified for clarity to read as follows:

> FT – Federally threatened
>
> FE – Federally endangered
>
> ST – State threatened
>
> SE – State endangered

CSCS – California special concern species

Response to Comments 13 and Comment 14: A complete discussion of sea-level rise predictions is presented on p. 3.1-8 of the DEIR. For consistency, the second sentence of the second paragraph on p. 3.4-25 of the DEIR is revised to read:

> Current projections suggest a possible rise in sea level of ~~one meter~~ 20 to 59 inches by the year 2100 (USACE 2009).

E

State Water Resources Control Board

Linda S. Adams
Secretary for
Environmental Protection

Division of Financial Assistance
1001 I Street • Sacramento, California 95814 • (916) 341-5700 FAX (916) 341-5707
Mailing Address: P.O. Box 944212 • Sacramento, California • 94244-2120
Internet Address: http://www.waterboards.ca.gov

Arnold Schwarzenegger
Governor

MAY 27 2010

Ms. Donna Chamber
Humboldt County Resource Conservation District
5630 South Broadway
Eureka, CA 95503

Dear Ms. Chamber:

DRAFT ENVIRONMENTAL IMPACT REPORT (EIR) FOR HUMBOLDT COUNTY RESOURCE CONSERVATION DISTRICT (RCD); SALT RIVER ECOSYSTEM RESTORATION PROJECT (PROJECT); HUMBOLDT COUNTY; STATE CLEARINGHOUSE NO. 2007062030

Thank you for the opportunity to review the above document. The RCD is receiving grant funds through the 2005-2006 Consolidated Grants Program (Grant Agreement No. 07-539-550), as well as a subgrant through the North Coast Integrated Regional Water Management (IRWM) Implementation Grant Program (Grant Agreement No. 07-541-550) to implement the Project. As a funding agency and a state agency with jurisdiction by law to preserve, enhance, and restore the quality of California's water resources, the State Water Resources Control Board (State Water Board) is providing comments on the California Environmental Quality Act (CEQA) document prepared for the Project.

Following the RCD's CEQA process, please send us a copy of: 1) the final EIR; 2) a Resolution certifying the EIR, adopting the Mitigation Monitoring and Reporting Program (MMRP) and a Statement of Overriding Consideration (SOC), and making CEQA findings; 3) all comments received during the review period and the RCD's responses to those comments; 4) the adopted MMRP and SOC; and 5) the Notice of Determination filed with the Governor's Office of Planning and Research applicable to the Project.

Following are my specific comments on the draft EIR:

1. Page 2-48 states that "Structures to be removed and installed are indicated on Figure 2-8." Note that Figure 2-8 indicates Project vegetation habitat types, and does not identify the structures to be removed. Identify the correct figure(s) that demarcates the structures to be removed as part of the Project. 1

2. Page 3.1-64, Mitigation 3.1.1-7 states that "To ensure no long-term adverse impacts, the project includes a long-term monitoring and maintenance plan that would monitor for excessive erosion and sediment accumulation and prescribe remedies in the form of channel adjustments and sediment excavation on an as-needed basis. Monitoring shall be conducted pursuant to the long-term monitoring and maintenance plan. Specific criteria will be developed and stipulated in the plan that will trigger the need for adaptive management and/or maintenance activities. If erosion is so great that it causes water quality impairments, improvements such as channel armoring shall be implemented to manage and reduce erosion." 2

MAY 2 7 2010

Identify the measures and the remedies that will be implemented to reduce excessive erosion, sediment accumulation, and water quality impairments, and provide a discussion substantiating the effectiveness of each of those measures and remedies in achieving erosion and sediment targets and improving water quality. Include the complete monitoring and maintenance plan in the final EIR. 2 (cont.)

3. Page 3.4-25, Mitigation 3.4.1-4 states that "The RCD shall conduct annual monitoring to assess pikeminnow population levels, habitat preferences, dietary preferences, movement patterns, and other factors. In the event that pikeminnow [*Ptychochelis grandis*] become dominant in the project area, the RCD shall conduct a pilot pikeminnow control program, most likely using periodic seining of the main channel in order to trap and euthanize non-native species, such as pikeminnow. Native species shall be documented and returned unharmed to the channel, and non-natives shall be euthanized. The program shall be conducted in coordination with the DFG [California Department of Fish and Game] and the Redwood Sciences Lab over a three-year period, culminating in a survey report of the Salt River fish assemblage." Additionally, the RCD determined that potential significant and unavoidable impacts will occur as a result of pikeminnow invasion into the Project area following habitat restoration activities. 3

   Provide further information on the pilot control program, including information on the objectives of the program, the processes and methods to be implemented (including how often seining will be completed), and the identification of the other non-native species that will be euthanized. Discuss the effectiveness of the pilot control program in controlling pikeminnow in the area. Identify measures that will be followed while conducting in-stream activities to ensure no water quality impacts will occur.

   Note that under CEQA Guidelines, Section 15093 the RCD will need to balance the economic, legal, social, technological or other benefits of the Project against the significant unavoidable impact, substantiate its decision to approve the Project despite the significant and unavoidable impact, and adopt an SOC. Please forward a copy of the SOC, along with the other requested environmental documentation above so that the State Water Board can review and consider these documents and make its own CEQA findings. 4

The State Water Board has no further comments on the draft EIR at this time and look forward to reviewing the final EIR. Thank you once again for the opportunity to review the District's environmental document. If you have any questions or concerns, please feel free to contact me at (916) 327-9401, or email me at Ldlee@waterboards.ca.gov.

Sincerely,

Shut Kashoto for Lisa Lee

Lisa Lee
Environmental Scientist

cc: See next page

MAY 2 7 2010

cc: State Clearinghouse
(Re: SCH# 2007062030)
P.O. Box 3044
Sacramento, CA 95812-3044

8.8.1 RESPONSES TO STATE WATER RESOURCES CONTROL BOARD, DIVISION OF FINANCIAL ASSISTANCE, MAY 27, 2010 LETTER

Response to Comment 1: The references to Figure 2-8 on pp. 2-47 and 2-48 of the DEIR are in error and are hereby revised to refer to Figure 2-4. In addition, the last sentence on p. 2-48 is deleted.

Response to Comment 2: Project maintenance and adaptive management strategies that address a water quality monitoring and maintenance plan and water quality impact mitigations is presented in the project Adaptive Management Plan (AMP) prepared by H.T. Harvey & Associates, Inc. That Plan is available for review in printed form or electronically from the HCRCD in Eureka. See also response to comment A-4, above.

Response to Comment 3: In order to address comments raised by the SWRCB staff, the EIR authors have revisited the potential impacts of pikeminnow and determined that the formerly significant unmitigable impact is, in fact, less than significant. Therefore Impact 3.4.1-4 been revised to read as follows:

Impact 3.4.1-4: Creation of habitat that benefits non-native fish species

One biological goal of the Salt River Ecosystem Restoration Project is to expand tidal, freshwater and wetland habitat favorable to native fishes, particularly estuarine dependent species such as Pacific salmon, tidewater goby, and green sturgeon. While the project would restore such habitat, and benefit those species, there is also a chance that the habitats created could favor undesirable non-native species that prey on native species, thus causing a further decline of some special status species. Of particular concern is the Sacramento pikeminnow (*Ptychocheilus grandis*), a large piscivorous (fish-eating) cyprinid, native to the Sacramento-San Joaquin river drainages and several smaller coastal drainages in California (Taft 1950).

Introduction of non-native predators can adversely affect native species. The ability of introduced species to thrive in a new environment sometimes reflects altered habitat conditions. For example, high predation levels of salmonids by pikeminnow in the Columbia River occur in and around large dams. The high rate of predation results from conditions present at the dams, and the predation is a secondary effect (Fresh 1997). In such instances, the adverse affects of predation and competition magnify but do now serve as the proximate causes of habitat degradation and subsequent population declines. The Salt River is one of the most altered areas within the Eel River watershed, so predation and competition are likely to be disproportionately high. For example, areas once influenced by brackish, slough-like conditions are now hydrologically disconnected or non-existent. Pikeminnow appear to be thriving in such areas, such as the mid to upper Salt River tributaries (Cannata pers. comm.).

In about 1979, the Sacramento pikeminnow species was introduced into the Eel River drainage of northwestern California, where it has become widespread (Brown and Moyle 1997). Juvenile pikeminnow are abundant in the Salt River (DFG 2005). The life history

and ecological interactions of the Sacramento pikeminnow in the Eel River are of considerable interest because the Eel River contains depleted populations of salmonid species that once provided the basis for large commercial fisheries. Sacramento pikeminnow may compete with or prey on salmonids under some conditions (Brown and Moyle 1981).

The extent to which juvenile pikeminnow in the Salt River area compete with native species is not fully understood. A recent study indicates that pikeminnow are more common in the turbid, tidal freshwater habitats of the Sacramento Delta than was previously recognized, and stream flows may play an important role in moving juvenile Sacramento pikeminnow into the Sacramento Delta from upstream areas (Nobriga 2006). This same scenario appears to be true of the Eel River estuary, since there is little evidence of local recruitment.

Pikeminnow are highly mobile. ~~Highly mobile,~~ Adult pikeminnow at the upstream limit of their range in one Eel River tributary moved downstream up to 14.5 miles during the winter, possibly as a result of high flows, but tended to return to their original position the following spring, where they remained through the summer, congregating in deep pools during the summer months (Harvey 1999). This suggests that piscivory by pikeminnow may be concentrated in the deep pools where they are congregating, rather than in the Eel estuary.

Incidence of piscivory rises significantly as individual size increases, but two separate studies failed to detect salmonids in foregut contents (Nobriga 2006, Dugas, unpb.). Similarly, DFG surveys of the project area found few Pikeminnow exceeding 6" in size, and their stomach contents contained a "green goo." No evidence of fish was found in their foregut (Cannata, pers. comm.). In any event, pikeminnow are piscivorous and highly mobile, both daily and seasonally. Furthermore, Sacramento pikeminnow are successful predators in high turbidity environments, though they emphasize benthic (bottom-dwelling) prey under turbid conditions (Harvey pers. comm.). ~~However,~~ Most importantly, pikeminnow have a low tolerance to saline conditions, and do not thrive in estuarine conditions, such as those expected to be restored in much of the proposed project area.

~~Introduction of non-native predators can adversely affect native species. The ability of introduced species to thrive in a new environment sometimes reflects altered habitat conditions. For example, high predation levels of salmonids by pikeminnow in the Columbia River occur in and around large dams. The high rate of predation results from conditions present at the dams, and the predation is a secondary effect (Fresh 1997). In such instances, the adverse affects of predation and competition magnify but do not serve as the proximate causes of habitat degradation and subsequent population declines. The Salt River is one of the most altered areas within the Eel River watershed, so predation and competition are likely to be disproportionately high. For example, areas influenced by brackish, slough-like conditions are now hydrologically disconnected or non-existent. Pikeminnow appear to be thriving in such areas, such as the mid to upper Salt River tributaries (Canata, pers. comm.).~~

Restoring historic conditions to the Eel estuary is the single-most important step possible for enhancing conditions for native species. The project would include levee breaches,

enhancements of tidal exchange, channel excavation, and other measures to promote habitat favorable to native, estuarine dependent species, and less favorable to the pikeminnow.

In addition, as part of the project, The RCD would conduct annual monitoring for at least five years to assess pikeminnow population levels, habitat preferences, dietary preferences, movement patterns, and other factors. Pikeminnow would be euthanized with non-toxic methods such as pithing, and stomach contents would be examined to assess piscivory. Standard population monitoring methods would be used for both assessment and control to ensure the avoidance of take of listed species, and the protection of water quality during the sampling period.

The goal of this effort is to determine if adult pikeminnow capable of piscivory are present and/or dominant in the project area, if their presence is harmful to native species, and if so whether practicable measures can be taken to control their numbers while native species are recolonizing newly created habitat. Documentation of both pikeminnow and native species would help characterize population dynamics within the project area. Presence and abundance of both pikeminnow and native species would be documented and reported in order to help assess trends and population response to the project. Monitoring would follow standard protocol to avoid take of state or federally listed species.

In the event that adult, picivorous pikeminnow (adults greater than 10" with evidence of piscivory, such as stomach contents) become dominant in the project area, to the exclusion of native species, the RCD would conduct a three-year, pilot, pikeminnow-control-program subsequent to the five year monitoring program. The anticipated approach would be annual seining or netting of the main channel with a suitable mesh size in order to trap, document and euthanize pikeminnow. Native species would be documented and returned unharmed to the channel.

The program would be conducted in coordination with the DFG and the Redwood Sciences Lab over a three-year period, culminating in a survey report of the Salt River fish assemblage no later than twelve years after project implementation. The reports would be posted online at Calfish.org, and made available to the DFG and the Redwood Sciences Lab for interpretation. Eradication of the introduced Sacramento pikeminnow is considered infeasible, so no extension of the pilot program is proposed. However, the pilot program would serve as an intermediate measure to promote the occupation of newly created habitat by native species. Moreover, the information generated in the pilot program would help resource managers determine the effectiveness of the proposed pikeminnow control approach for future projects.

Because of the lack of evidence of salmonid piscivory by pikeminnow in the project area, the estuarine conditions that are likely to occur in much of the restored waters, and proposed design conditions intended to discourage pikeminnow, the significance of the project's impact is considered *less than significant.*

> ~~However, because of the omnipresence of pikeminnow in the Eel watershed, and the lack of knowledge concerning their rate of predation on species of concern, the significance of this impact cannot be determined and it is considered *potentially significant.*~~

Response to Comment 4: It is noted that the RCD would need to balance the project's benefits against any significant adverse environmental impacts in the Statement of Overriding Considerations (SOC) for project approval, as mandated by CEQA. The SOC, along with other requested environmental documentation, will be forwarded to the State Water Resources Control Board upon project approval.

F

Humboldt County Farm Bureau

5601 So. Broadway, Eureka, CA 95503
Serving Agriculture Since 1913

May 25, 2010

Humboldt County Resource Conservation District
Attention: Ms. Donna Chambers
5630 South Broadway
Eureka, CA 95503

Re: Salt River Ecosystem Restoration Project
Draft Environmental Impact Report (DEIR)

Dear Ms. Chambers,

This letter is being sent in response to your agency's request for comment on the DEIR prepared for the Salt River Project.

We see the majority of the project proposal to be totally appropriate and a long time in coming. However, we do not agree with the proposal to convert the Riverside Ranch as proposed.

We believe that the environmental document is not adequate and seriously flawed for the reasons expressed below.

Consistency (or inconsistency) with the adopted County Land Use Plan and Zoning

The DEIR makes reference to the County General Plan (1983 sic) and cites various sections of it. This is not the appropriate document for review.

The majority of the project area is located within the Coastal Zone. So the appropriate Plan and zoning for environmental review is the County adopted Eel River Area Plan and associated zoning. 1

In our review of the adopted plan and regulations, the project as it concerns the Riverside Ranch conversion is clearly inconsistent with the adopted plan and zoning.

Phone (707) 443-4844 • Fax (707) 443-0926 • email: humboldtfb@sbcglobal.net

The environmental document needs to address the appropriate County regulatory scheme (as certified by the California Coastal Commission). 1 (cont.)

'Self Mitigation' for the acknowledged Agricultural Land Conversion

We do not agree with the assertion that the project provides for self-mitigation. There will be a direct loss of highly productive agricultural lands for which no direct mitigation is identified. While there will probably be an incremental benefit to the lands adjacent to the river owing to reductions in flooding, it certainly would not equate to the loss of the lands through the conversion proposed. 2

The County policy is that there should be 'no net loss' of agricultural lands. This policy must be addressed with mitigation provided.

Cumulative Impact Analysis

This analysis is inadequate and incomplete. The entirety of the Eel River basin within the Coastal Zone needs to be included. This would include the acquisition by or transfers to the public (especially Department of Fish & Game). Examples are: Cock Robin Island, lands adjacent to Cannibal Island Road, and lands south of Table Bluff. 3

Thank you for the opportunity to provide our comments on this very important project.

Jay Russ
President

Cc: California Coastal Commission
Humboldt County Community Development Services Department
California Farm Bureau Federation

8.9.1 RESPONSES TO HUMBOLDT COUNTY FARM BUREAU, MAY 25, 2010 LETTER

Response to Comment 1: As discussed in the DEIR, the Eel River Area Plan is the Local Coastal Plan (LCP) applicable to the project site. The Eel River Area Plan contains policies related to coastal land use, as required by the California Coastal Act of 1976. In addition, policies in the 1983 Humboldt County General Plan that are not related to coastal land use (and that are not superseded by the policies of the Eel River Area Plan) also apply to the project site. Thus, policies from both the Eel River Area Plan and the 1983 Humboldt County General Plan are applicable to proposed project.

The DEIR, pages 3.8-3 to 3.8-4, discusses the land use designations and zoning of both the Eel River Area Plan and the 1983 Humboldt County General Plan that apply to the project site.

For clarification, the following text is added to page 3.8-3 of the DEIR, under the heading "*APPLICABLE LAND USE PLANS, ZONING, AND ORDINANCES*" (additions underlined, deletions shown in ~~strikethrough~~):

> The Eel River Area Plan, which was adopted by the Humboldt County Board of Supervisors on March 9, 1982 and certified by the State Coastal Commission on April 8, 1982, is the Local Coastal Plan (LCP) applicable to the project site. The Eel River Area Plan contains policies related to coastal land use, as required by the California Coastal Act of 1976. In addition, policies in the Humboldt County General Plan that are not related to coastal land use (and that are not superseded by the policies of the Eel River Area Plan) also apply to the project site. The 1983 County General Plan is currently being updated. An updated Housing Element was adopted by the Humboldt County Board of Supervisors on August 28, 2009, and revisions to the Housing Element were adopted on April 27, 2010. All other elements of the 1983 General Plan elements remain in force until a new County General Plan is adopted.

The following text is added to page 3.8-4 of the DEIR, after the first paragraph (additions underlined, deletions shown in ~~strikethrough~~):

> Humboldt County General Plan policies applicable to the proposed project include:
>
> **3330 WATER QUALITY**
>
> **3360 GOAL**
>
> > 1. To maintain or enhance the quality of the County's water resources and the fish and wildlife habitat utilizing those resources.
>
> **3361 POLICIES**
>
> > 1. Ensure that land use decisions are consistent with the long term value of water resources in Humboldt County.
> >
> > 2. Regulate development that would pollute watershed areas.

8. Continue participation in all state, regional or local water resource planning efforts effecting surface run-off or groundwater supplies.

12. Support the development of fisheries enhancement projects on small Humboldt County streams.

3400 BIOLOGICAL RESOURCES

3430 GOAL

To maximize where feasible, the long-term public and economic benefits from the biological resources within the County by maintaining and restoring fish and wildlife habitats.

3431 POLICIES

1. Maintain values of significantly important habitat areas by assuring compatible adjacent land uses, where feasible.

2. Habitats for "critical species" shall be protected under provisions of NEPA and CEQA.

3. Development within stream channels shall be permitted when there is no less environmentally damaging feasible alternative, where the best feasible mitigation measures have been provided to minimize adverse environmental effects, and shall be limited to essential, nondisruptive projects as listed in Standard 6.

4. To protect sensitive fish and wildlife habitats and to minimize erosion, runoff and interference with surface water flows, the County shall maintain Streamside Management Areas (SMA), along its blue line streams as identified on the largest scale U.S.G.S. topographic maps most recently published, and any significant drainage courses identified through the CEQA process.

5. Development within the Streamside Management Areas shall be permitted where mitigation measures (Standard 8) have been provided to minimize any adverse environmental effects, and shall be limited to uses as described in Standard 7.

Project Review

6. The Biological Resource Maps shall be incorporated into the project review process in order to identify sensitive habitat concerns. These maps shall be kept up to date with the most recent information obtainable. Accommodation of new resource information on the Biological Resource Maps may require an amendment to the adopted General Plan.

7. The County should request the Department of Fish and Game, as well as other appropriate agencies and organizations to review plans for development within sensitive habitat areas or Streamside Management Areas. Recommended mitigation measures shall be considered prior to project approval.

3432 STANDARDS

Stream Channels

6. Development within stream channels is limited to the following projects.

A. Fishery, wildlife, and aquaculture enhancement and restoration projects.

B. Road crossings consistent with Standard 9 of this section.

C. Flood control and drainage channels, levees, dikes and floodgates.

D. Mineral extraction consistent with other County regulations.

E. Small scale hydroelectric power plants in compliance with applicable County regulations and those of other agencies.

F. Agricultural diversions and wells.

G. New fencing, so long as it would not impede the natural drainage or would not adversely effect the stream environment or wildlife.

H. Bank protection, provided it is the least environmentally damaging alternative.

I. Other essential projects, including municipal groundwater pumping stations, provided they are the least environmentally damaging alternative, or necessary for the protection of the public's health and safety.

Streamside Management Areas

7. Development within Streamside Management Areas shall be limited to the following uses:

A. Development permitted within stream channels.

B. Timber management and harvests not otherwise excluded by Applicability Section as well as noncommercial cutting of firewood and clearing for pasturage, provided:

1) Cottonwoods are retained.

2) Remaining willows and alders, as well as other unmerchantable hardwoods or shrubs should be protected from unreasonable damage.

C. Road and bridge replacement or construction, when it can be demonstrated that it would not degrade fish and wildlife resources or water quality, and that vegetative clearing is kept to a minimum.

D. Removal of vegetation for disease control or public safety purposes.

8. Mitigation measures for development within Streamside Management Areas shall, at a minimum, include:

A. Retaining snags unless felling is required by CAL-OSHA, or by California Department of Forestry forest and fire protection regulations, or for public health and safety reasons, approved by the appropriate County department. Felled snags shall be left on the ground if consistent with fire protection regulations as long as they have no economic value.

B. Retain live trees with visible evidence of use as nesting sites by hawks, owls, eagles, osprey, herons, or egrets.

C. Replanting of disturbed areas with riparian vegetation (including such species as alders, cottonwoods, willows, sitka spruce, etc.) shall not be required unless natural regeneration does not occur within two years of the completion of the development project.

D. Erosion control measures (Standard 9).

9. Erosion control measures for development within Streamside Management Areas shall include the following:

A. During construction, land clearing and vegetation removal will be minimized.

B. Construction sites will be planted with native or naturalized vegetation and mulched with natural or chemical stabilizers to aid in erosion control and insure revegetation.

C. Long slopes will be minimized to increase infiltration and reduce water velocities down cut slopes by such techniques as soil roughing, serrated cuts, selective grading, shaping, benching, and berm construction.

D. Concentrated runoff will be controlled by the construction and continued maintenance of culverts, conduits, nonerodible channels, diversion dikes, interceptor ditches, slope drains or appropriate mechanisms. Concentrated runoff will be carried to the nearest drainage course. Energy dissipaters may be installed to prevent erosion at the point of discharge where discharge is to natural ground or channels.

E. Runoff shall be controlled to prevent erosion by on-site or off- site methods. On-site methods include, but are not limited to, the use of infiltration basins, percolation pits, or trenches. On-site methods are not suitable where high groundwater or slope stability problems would inhibit or be aggravated by on-site retention or where retention will provide no benefits for groundwater recharge or erosion control. Off-site methods include detention or dispersal of runoff over non-erodible vegetated surfaces where it would not contribute to downstream erosion or flooding.

F. Disposal of silt, organic, and earthen material from sediment basins and excess material from construction will be disposed of out of the Streamside Management Area to comply with California Fish and Game and Regional Water Quality Control Board.

Winter operations (generally October 15 thru April 15) shall employ the following special considerations:

G. Slopes will be temporarily stabilized by stage seeding and/or planting of fast germinating seeds such as barley or rye grass; and mulched with protective coverings such as natural or chemical stabilizations.

H. Runoff from the site will be temporarily detained or filtered by berms, vegetated filter strips, and/or catch basins to prevent the escape of sediment from the site.

Drainage controls are to be maintained as long as necessary to prevent erosion throughout construction.

3510 HISTORICAL AND ARCHAEOLOGICAL RESOURCES

3530 GOAL

To provide for the protection and enhancement of cultural resources for the historic, scientific, educational, and social contributions they render to the present generation and to generations that follow.

3531 POLICIES

1. Cultural resources (including but not limited to archaeological, paleontological and architectural sites, grave sites and cemeteries) shall be identified where feasible, assessed as to significance, and if found to be significant, protected from loss or destruction.

2. Concerned citizens, historical organizations and applicable agencies shall be consulted during project review for the identification and protection of cultural resources.

3. Projects located in areas found to have cultural resources shall be conditioned and designed to avoid loss or degradation of these resources.

4. Expert opinions and field reconnaissance at the applicant's expense may be required during environmental assessment to determine the presence, extent, and condition of cultural resources and the likely impact upon such resources.

5. Archaeological and paleontological resources shall not be knowingly destroyed or lost through a discretionary action unless:

A. The site or resource has been found to be of insignificant value by relevant experts and representatives of the cultural resources community, or;

B. There is an overriding public benefit from the project, and compensating mitigation to offset the loss is made part of the project.

6. Mitigation measures shall be required where new development would adversely impact archaeological or paleontological resources.

Eel River Area Plan policies applicable to the proposed project include:

3.34 AGRICULTURE

30241. The maximum amount of prime agricultural land shall be maintained in agricultural production to assure the protection of the areas' agricultural economy and conflicts shall be minimized between agricultural and urban land uses through all of the following:

(a) By establishing stable boundaries separating urban and rural areas, including, where necessary, clearly defined buffer areas to minimize conflicts between agricultural and urban land uses.

(b) By limiting conversions of agricultural lands around the periphery of urban areas to the lands where the viability of existing agricultural use is already severely limited by conflicts with urban uses and where the conversion of the lands would complete a logical and viable neighborhood and contribute to the establishment of a stable limit to urban development.

(c) By developing available lands not suited for agriculture prior to the conversion of agricultural lands.

(d) By assuring that public service and facility expansions and nonagricultural development do not impair agricultural viability, either through increased assessment costs or degraded air and water quality.

(e) By assuring that all divisions of prime agricultural lands, except those conversions approved pursuant to subdivision (b) of this section, and all development adjacent to prime agricultural lands shall not diminish the productivity of such prime agricultural lands.

30242. All other lands suitable for agricultural use shall not be converted to nonagricultural uses unless (1) continued or renewed agricultural use is not feasible, or (2) such conversion would preserve prime agricultural land or concentrate development consistent with Section 30250. Any such permitted conversion shall be compatible with continued agricultural use on surrounding lands.

A. IDENTIFICATION OF AGRICULTURAL LANDS - PRIME/NON PRIME

1. Lands outside Urban Limit Lines that are prime agricultural lands based on the adopted definition of prime lands of the State of California shall be planned for continued agricultural use, and no division or development of such lands shall be approved which would lower the economic viability of continued agricultural operations on them.

2. Lands outside Urban Limit Lines that are not prime agricultural land, but are in agricultural use, have present or future potential for significant agricultural production, and/or are contiguous or intermixed smaller parcels on which non-compatible uses could jeopardize the agricultural use of adjacent agricultural lands shall be planned or continued agriculture.

3. Non-prime agricultural land may be converted to other types of land use only when the long-term economic infeasibility of continued agricultural operation is shown to exist; and no division of or development of such lands shall be permitted which would lower the viability of continued agricultural operations on adjacent agricultural lands.

3.34 B. COMPATIBLE USES

1. The zoning of all agricultural lands shall not permit any use that would impair the economic viability of agricultural operations on such lands; and a conditional use permit shall be required of any proposed use not directly a part of agricultural production of food

or fiber on the parcel; except that on parcels of 60 acres or larger, a second house for parents or children of the owner-operator shall be considered a direct part of agricultural production.

Other uses considered compatible with agricultural operations include:

a. Management for watershed

b. Management for fish and wildlife habitat

c. Recreational uses not requiring non-agricultural development under the control of the owner.

d. The erection, construction, alteration, or maintenance of gas, electric, water or communications transmission facilities. (Radio or television transmitting antennae shall require a conditional use permit; but such a development shall not in concept be considered incompatible with agricultural use per se.)

e. Farm labor housing and temporary labor camps of less than one year duration shall require a conditional use permit.

2. Where land zoned for agricultural use is adjacent to land in residential use, the establishment of hog production involving more than three adult animals (over 6 months old) shall require a conditional use permit.

3. No greenhouse shall be approved for use on prime agricultural land, where the greenhouse has a slab foundation that would cover the underlying soil.

3.34 D. GRAZING LANDS - CENTERVILLE BEACH TO GUTHRIE CREEK

1. Non-prime grazing lands located between Centerville Beach and Guthrie Creek, within the Eel River Planning Area, shall be designated for agricultural use to insure the continuation of large acreage grazing operations. Division of these lands may be permitted into parcels of less than 600 acres only when consistent with this plan's agriculture policies and other policies of Chapter 3 and when approved pursuant to rezoning and parcel map procedures provided:

a. The total number of building sites shall not exceed a density of 1 unit for each 160 acres of the original parcel.

b. New lots or parcels shall be no less than 1 acre and no larger than 5 acres, and shall be clustered adjacent to existing developed areas of the ranch or on portions of the site least suited for agricultural use and with least adverse effects on coastal resources, consistent with the policies of this plan.

c. The surplus land area resulting from the division shall be committed to agricultural use through two or more of the following devices:

(1) Execution of an agricultural preserve contract with the County.

(2) Acknowledgment either on the parcel map or in a covenant within the chain of title that the new parcel is of a size considered a viable or economic

agricultural unit, its creation was approved for a specific agricultural purpose, and no further division or other conversion from agricultural use will be allowed in the future even if agricultural use of such separate parcel does not provide adequate economic return.

(3) Conveyance of an open space easement to the County of Humboldt or other public entity or private non-profit corporation having as its chief goal the preservation of agricultural or open space lands.

(4) Conveyance of development rights.

d. Rezonings conforming to this section of the land use plan shall be reviewed and considered as minor amendments to the certified local coastal program.

3.35 TIMBERLANDS

B. COMPATIBLE USES

1. No use shall be permitted for Coastal Commercial Timberlands that detracts from or inhibits the growing and harvesting of timber; and compatible uses other than the direct growing and harvesting of timber shall be restricted to:

a. Management for watershed.

b. Management for fish and wildlife habitat.

c. Any use integrally related to the growing, harvesting and processing of forest products, including but not limited to roads, log landings and log storage areas, portable chippers and portable sawmills.

d. The erection, construction, alteration or maintenance of gas, electric, water, or communication transmission facilities.

e. Grazing and other agricultural uses.

f. No more than two single-family dwelling units and normal accessory uses and structure for owner and caretaker. The second dwelling unit shall require a use permit and shall be conditioned so as to not constitute a subdivision of the parcel. Minor conversion of timberland for residential use is limited to an area of 5% of the total parcel, to a maximum area of two acres for a homesite and appurtenant uses. The total area need not be a contiguous unit.

g. Temporary labor camps of less than one-year duration, accessory to timber harvesting or processing operations.

h. Recreational uses of the land by the public, with or without charge, for any of the following: walking, hiking, equestrian, picnicking, boating, fishing, hunting, and skiing.

i. Reforestation activities including site preparation under the authority of the California Department of Forestry and Fire Protection1 (CDF) and other State Agencies having regulatory jurisdiction.

3.40 RESOURCE PROTECTION POLICIES AND STANDARDS

The policies and standards contained in this chapter, apply, where relevant, to all development within the County coastal areas unless specifically stated otherwise. The contents of this chapter are supplementary in nature to the policies and standards contained in Section 3.20 and 3.30, and are designed to protect natural and cultural resources and to assure public safety. As in the previous two chapters, inset headings under each section are from Chapter 3 of the California Coastal Act and are also enacted as County policy.

3.41 ENVIRONMENTALLY SENSITIVE HABITATS

30240.(a) Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on such resources shall be allowed within such areas.

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.

A. IDENTIFICATION OF ENVIRONMENTALLY SENSITIVE HABITATS

1. Environmentally sensitive habitats within the Eel River Planning Area include:

a. Rivers, creeks, and associated riparian habitats;

b. Estuaries, sloughs, and wetlands;

c. Rookeries for herons and egrets;

d. Harbor seal pupping areas;

e. Critical habitats for rare or endangered species listed on State or Federal lists.

2. Proposed development occurring within areas containing these sensitive habitats shall be subject to conditions and requirements of this chapter. Should an area proposed for development appear, upon examination of the maps to be within or contain the indicated habitat, but upon field inspection is found not to contain the indicated habitat, then the development is exempt from requirements of this section. As an interim measure for habitat areas not currently identified on the maps, information obtained during the CEQA review process will be used by the County in reviewing applications for coastal development permits. The review of these habitat areas and the identification of appropriate land uses and/or mitigation measures shall be in cooperation with the Department of Fish and Game. The County shall review requests to amend the Environmentally Sensitive Habitat maps in terms of the entire plan proposal and supporting policies. Accommodation of new resource information on the maps may also require amendments to the certified land use plan and zoning.

3.41 B. WETLANDS IDENTIFICATION AND DEVELOPMENT POLICIES

30233.(a) The diking, filling, or dredging of open coastal waters, wetlands, estuaries, and lakes shall be permitted in accordance with other applicable provisions of this division,

where there is no feasible less environmentally damaging alternative, and where feasible mitigation measures have been provided to minimize adverse environmental effects, and shall be limited to the following:

(1) New or expanded port, energy, and coastal-dependent industrial facilities, including commercial fishing facilities.

(2) Maintaining existing, or restoring previously dredged, depths in existing navigational channels, turning basins, vessel berthing and mooring areas, and boat launching ramps.

(3) In wetland areas only, entrance channels for new or expanded boating facilities; and in a degraded wetland, identified by the Department of Fish and Game pursuant to subdivision (b) of Section 30411, for boating facilities if, in conjunction with such boating facilities, a substantial portion of the degraded wetland is restored and maintained as a biologically productive wetland; provided, however, that in no event shall the size of the wetland area used for such boating facility, including berthing space, turning basins, necessary navigation channels, and any necessary support service facilities, be greater than 25 percent of the total wetland area to be restored.

(4) In open coastal waters, other than wetlands, including streams, estuaries, and lakes, new or expanded boating facilities.

(5) Incidental public service purposes, including, but not limited to, burying cables and pipes or inspection of piers and maintenance of existing intake outfall lines.

(6) Mineral extraction, including sand for restoring beaches, except in environmentally sensitive areas.

(7) Restoration purposes.

(8) Nature study, aquaculture, or similar resource-dependent activities.

30607.1 Where any dike and fill development is permitted in wetlands in conformity with this division, mitigation measures shall include, at a minimum, either acquisition of equivalent areas of equal or greater biological productivity or opening up equivalent areas to tidal action; provided, however, that if no appropriate restoration site is available, an in-lieu fee sufficient to provide an area of equivalent productive value or surface areas shall be dedicated to an appropriate public agency, or such replacement site shall be purchased before the dike or fill development may proceed. Such mitigation measures shall not be required for temporary or short-term fill or diking; provided that a bond or other evidence of financial responsibility is provided to assure that restoration will be accomplished in the shortest feasible time.

1. Wetlands shall be identified according to the Coastal Act's definition of wetlands (See Chapter 6: Definitions; also see Chapter 6 for the definition of "boundary of a wetland.")

2. Estuarine areas, salt marshes and mudflats, and freshwater marshes and swamps are designated Natural Resources. New development in Natural Resource areas shall be limited to:

a. Fish and wildlife management.

b. Nature study

c. Wetland restoration

d. Hunting and fishing, including development of duck blinds and similar minor facilities.

e. In estuaries, maintenance and improvement of boating facilities consistent with Section 4.71 or minor alterations to existing facilities.

f. On private lands, removal of trees for firewood, disease control, and public safety purposes, provided that the removal is consistent with the forest practices rules for stream protection zones in Coastal Commission special treatment areas. Snags shall be retained unless felling is required by CAL-OSHA regulations and live trees with visible evidence of current use as nesting sites by hawks, owls, eagles, osprey, or egrets shall be retained. Heavy equipment shall be excluded from the natural resource area.

g. Incidental public service purposes.

h. Aquaculture.

3.41G. OTHER COASTAL STREAMS

30236. Channelizations, dams, or other substantial alterations of rivers and streams shall incorporate the best mitigation measures feasible, and be limited to (1) necessary water supply projects, (2) flood control projects where no other method for protecting existing structures in the flood plain is feasible and where such protection is necessary for public safety or to protect existing development, or (3) developments where the primary function is the improvement of fish and wildlife habitat.

1. Timber management and timber harvesting activities regulated by the California Department of Forestry and the Board of Forestry, and forest improvement activities under jurisdiction of the Department of Forestry shall be exempt from requirements of this section (3.41G).

2. Within the Eel River Planning Area the following coastal streams (as mapped on USGS 7.5' Quads) have been identified:

Centerville Slough	Barber Creek
Cutoff Slough	Coffee Creek
Hawk Slough	Perry Creek
Hogpen Slough	Reas Creek

Morgan Slough	Russ Creek
Quill Slough	Williams Creek
Seven Mile Slough	Unnamed stream north of Loleta
Smith Slough	Intermittent streams on Table Bluff
Salt River	

3.41 G. 3. New development within stream channels shall be permitted when there is no less environmentally damaging feasible alternative, where the best feasible mitigation measures have been provided to minimize adverse environmental effects, and shall be limited to:

a. Wetlands, fishery, and wildlife enhancement and restoration projects.

b. Road crossings, consistent with the provisions of Section 3.41G6e.

c. Maintenance dredging for flood control and drainage purposes consistent with the Transitional Agricultural Lands Policies and within areas planned for agriculture.

d. Maintenance of levees, roads, fences, dikes, drainage channels, flood gates and tide-gates including replacement.

e. Development consistent with 3.41G 6, below.

f. New fences, so long as it would not impede the natural drainage or would adversely affect the stream environment or wildlife. (Typically, 2-3 strands of barbed wire with fence posts set outside of the stream channel would be consistent with this policy.)

4. The riparian corridor along the Salt River shall be limited to the bankfull channel.

5. Riparian corridors on all other perennial and intermittent streams shall be, at a minimum, the larger of the following:

a. 100 feet, measured as the horizontal distance from the stream transition line on both sides.

b. 50 feet plus four times the average percent of slope, measured as a slope distance from the stream transition line on both sides of intermittent and perennial streams.

c. Where necessary, the width of riparian corridors shall be expanded to include significant areas of riparian vegetation adjacent to the corridor, slides, and areas with visible evidence of slope instability, not to exceed 200 feet measured as a horizontal distance.

The width of the riparian corridor may be reduced where such a reduction would not result in the removal of woody vegetation, and the County determines, based on specific factual findings, that a reduction of the corridor will not result in a significant adverse impact to the habitat. New structures, including houses, barns, sheds, etc., shall be placed a minimum of 50 feet from the stream transition line.

6. New development within the riparian corridors shall be permitted when there is no less environmentally damaging feasible alternative, where the best mitigation measures feasible have been provided to minimize adverse environmental effects, and shall be limited to the following uses:

a. Timber management activities, provided:

(1) In precommercial thinning and release activities that at least 50 percent of the treecrown canopy and 50 percent of other vegetation present before management operations shall be left standing. If either the County or the landowner requests, they may agree, after an on the ground inspection, to increase these percentages to protect special habitat values.

(2) Follow-up treatments or other timber management activities which affect the tree canopy shall be permitted only when the canopy has been sufficiently re- established to prevent substantial adverse effects on soil erosion, wildlife, aquatic life, or the beneficial uses of water, these activities shall maintain a tree canopy similar to that which existed upon the completion of the initial thinning or release.

(3) In all timber management activities, including precommercial thinning, release activities, and site preparation, that heavy equipment shall be excluded from any area within 50 feet, measured as a slope distance, from the stream transition line and shall not be permitted in other portions of the riparian corridor except where explained and justified as the least environmentally damaging feasible alternative.

(4) All activities shall be consistent with timber harvest rules of the Board of Forestry applicable to the protection of aquatic life and water quality.

b. Timber harvests smaller than three acres of merchantable timber 18 inches DBH or greater provided that timber harvest practices shall be consistent with those permitted under the forest practices rules for stream protection zones in Coastal Commission special treatment areas. Unmerchantable hardwoods or shrubs shall be protected from unreasonable damage.

c. Maintenance and replacement of flood control and drainage channels, fences, levees, dikes, flood gate, and tide-gates.

d. Wells in rural areas.

e. Road and bridge replacement or construction, provided that the length of the road within the riparian corridor shall be minimized where feasible, by rights of way which cross streams at right angles and do not parallel streams within the riparian corridor.

f. Removal of trees for disease control or public safety purposes.

g. Removal of firewood for personal use on property consistent with the applicable forest practice rules for stream protection zones in Coastal Commission special treatment areas.

3.41 G. 7. Mitigation measures for development with riparian corridors shall, at a minimum, include retaining snags within the riparian corridor unless felling is required by CALOSHA or permitted by California Department of Forestry forest and fire protection regulations, and retaining live trees with visible evidence of current use as nesting sites by hawks, owls, eagles, osprey, herons, or egrets. Replanting of disturbed areas with riparian vegetation (including such species as alders, cottonwoods, willows, Sitka spruce, etc.) has not been required unless natural regeneration does not occur within two years of completion of the development project.

8. The County shall request the Department of Fish and Game to review plans for development within riparian corridors, the Department may recommend measures to mitigate disruptions to habitats.

9. Natural drainage courses, including ephemeral streams, shall be retained and protected from development, which would impede the natural drainage pattern or have a significant adverse affect on water quality or wildlife habitat. Stormwater outfalls, culverts, gutters, and the like, shall be dissipated, and, where feasible, screened. Natural vegetation within and immediately adjacent to the bankfull channel shall be maintained except for removal consistent with the provisions of this section.

3.42 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 landforms, 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.

30253. New development shall:

(5) Where appropriate, protect special communities and neighborhoods, which, because of their unique characteristics, are popular visitor destination points for recreational uses.

3.42 C. PROTECTION OF HISTORICAL BUILDINGS

1. Historic buildings shall be considered a scenic and visual resource of public importance.

2. Historic buildings shall be defined as those sites on County, State or Federal Historic Registers.

3. The restoration and preservation of historic buildings shall be encouraged consistent with the other requirements of this Plan.

3.52 ACCESSWAY IMPROVEMENTS AND FUNDING

A. Public agencies or other entities having or accepting responsibility for accessways shall provide support facilities compatible with the character of the land and adequate for the number of people using them prior to opening the access to public use.

1. Minimal improvements should be scheduled for unimproved access points in character with the rural nature of the communities they serve, and accessways accepted by the responsible entity or agency should include but shall not be limited to, the following as they are found consistent with the identified uses, modes of access and limitations as identified in the Access Inventory.

a. parking

b. roads

c. trails, stairs and ramps

d. sanitary facilities (including trash collection)

e. facilities for the handicapped

f. fencing and barriers to inappropriate uses

g. signing of access points, trails and hazard areas

h. maintenance and operation of the accessway and support facilities

2. In reviewing improvements to accessways, the approving authority shall consider:

a. The common use(s) of the shoreline;

b. The proposed mode of access (pedestrian, equestrian, or vehicular) and adverse impacts on adjacent owners' use of their property, and the size of the development;

c. The likelihood of trespass and vandalism on adjacent private property;

d. The need to provide for public health and safety, including the need for:

(1) parking

(2) road capacity and traffic patterns

(3) conflicts in uses (i.e. pedestrian, equestrian, vehicular)

(4) use by the handicapped

(5) capacity of sanitary facilities, including trash disposal

(6) topography of trail

(7) beach hazards (tides, currents, undertows)

e. Conflicts with agriculture including:

(1) vandalism

(2) theft of livestock, agricultural supplies and tools

(3) damage to crops and livestock

(4) trespass on areas not part of accessway

(5) damage to fencing and gates

(6) dogs killing, maiming or harassing livestock

(7) litter

(8) interference with agricultural operations (by access corridor)

Improvement of accessways shall be permitted where the level of development is adequate to support common uses of the shoreline and the mode(s) of access proposed in the Plan, and where the improvements are sited and designed to prevent significant hazards to public health and safety or to agriculture and minimize the likelihood of trespass and vandalism on adjacent private property.

3. When the approving authority finds adverse impacts associated with improving access in conjunction with the criteria within this section appropriate mitigation measures must be provided.

4. Signs at access points are to be supplemented by an atlas of County coastal access points for use by both residents and visitors.

5. Funding for acquisition, improvement, maintenance and operations and coverage for associated liability on new accessways required as part of the Coastal Plan mandated by the State shall be from resources other than Humboldt County.

The first two paragraphs of page 3.8-7 of the DEIR are revised as follows (additions underlined, deletions shown in ~~strikethrough~~):

The proposed project would convert 359 acres of agricultural land on Riverside Ranch to non-agricultural uses (marsh, wetlands, and berms), which may conflict with policies of the Eel River Area Plan and the 1983 Humboldt County General Plan stipulating preservation of agricultural land, and is considered a potentially adverse impact.

However, the project would result in a net increase in agricultural productivity for agricultural lands in the project vicinity by improving drainage. For this reason, the project would not be inconsistent with policies relating to agricultural land preservation. ~~These~~The impacts of the project on agricultural productivity are addressed in more in Section 3.9 – Agricultural Resources, of this Chapter.

The following text is added to page 3.8-7 of the DEIR, after the second paragraph (additions underlined, deletions shown in ~~strikethrough~~):

> The proposed project would be consistent with the other applicable goals and policies of the Eel River Area Plan and the 1983 Humboldt County General Plan identified in Applicable Land Use Plans, Zoning, and Ordinances, above.

The last paragraph of page 3.8-8 of the DEIR is revised as follows (additions underlined, deletions shown in ~~strikethrough~~):

> Unlike Alternative 1, this option would not convert any agricultural land on Riverside Ranch to non-agricultural uses (marsh and wetlands), and therefore would have no impact on the agricultural land on Riverside Ranch or policies stipulating preservation of agricultural land. As with Alternative 1, this alternative would increase productivity on existing

The first paragraph of page 3.8-10 of the DEIR is revised as follows (additions underlined, deletions shown in ~~strikethrough~~):

> Conversion of agricultural land on Riverside Ranch to non-agricultural uses (marsh and wetlands) is considered a potentially adverse impact. ~~However,~~Although the proposed habitat restoration is considered an allowable use of agricultural land, there would be a loss of agricultural land that would conflict with policies stipulating preservation of agricultural land. With implementation of Mitigation Measure 3.9.3-1, impacts from conversion of agricultural land would be reduced to a less-than-significant level. ~~and t~~Therefore, this alternative does not conflict with land use policy in the Eel River Area Plan and Humboldt County General Plan, including policies regarding preservation of agricultural land. ~~These i~~Impacts on agricultural land are addressed in more detail in Section 3.9 – Agricultural Resources~~, of this Chapter~~. All agency consultations, technical assistance, and permits would be completed prior to project implementation. In addition this alternative is consistent with the land use designations and zoning for the site, and with the natural resource protection requirements of the California Coastal Act and has been designed to mitigate any potential impacts related to land use. In conclusion, this alternative would result in no impacts from conflicts with an applicable land use plan, policy, or regulation of an agency with jurisdiction over the project.

Response to Comment 2: The Farm Bureau asserts that the project would not be self-mitigating in terms of agricultural impacts. The Farm Bureau states that the direct loss of productive agricultural land on Riverside Ranch would not be adequately mitigated by any incremental benefits to agricultural productivity on nearby lands currently suffering from flooding problems. As discussed above in Response to Comment A-8, above, RCD staff estimates that approximately 762 acres, not including the land on Riverside Ranch, is currently suffering from severe productivity losses due to prolonged and frequent flooding. It would be necessary to collect detailed topographic data on all these lands to precisely model the reduction in flooding that would result from project implementation. Collection of such data is not feasible at this time. However, the project is expected to substantially reduce the duration of flooding in the project vicinity. The 1993 Salt River Implementation Plan indicates that channel flood capacity along lower Francis Creek was reduced to the 2-year storm. Current (circa 2010) observations indicate that overbank flows occur in the lower reach at Port Kenyon Road at flows less than the annual flood level. Similarly, the 1993 Implementation Plan indicates that channel capacities on lower Williams Creek were reduced to

convey a flood having only a 5-year recurrence. Current observations indicate that overland flows in the Williams Creek area occur at less than the annual flood level.

Although the Salt River corridor restoration is not designed to convey a specific design flood magnitude, modeling analyses indicate that it would contain and drain the annual peak flow without any overbank flooding, as long as annual maintenance and management activities preclude instream deposition of sediment. There currently is no positive drainage below the confluence with Francis Creek, thus all flood waters (and sediment to some extent) pond and disseminate across the vicinity causing long-standing ponding and inhibit productive land use. As long as the project channel is maintained, it would provide the opportunity for drainage of surrounding lands, pending local drainage ditches are maintained to direct runoff to the river. The improved channel also would relieve backwater effects on lower tributary channels, allowing improved drainage of tributaries to the mainstem Salt River and providing a mechanism to alleviate long-standing ponding on vicinity lands. The duration of time required to drain flooded lands via the project channel will mostly depend on the magnitude and extent of regional flooding.

Although not quantified through modeling, reconnecting the upper watershed to the mainstem Salt River corridor at Williams Creek would act to relieve upstream flood pressures for the same reasons just described. The added flow magnitude associated with reconnecting the upper watershed may also assist in sustaining a clear and high flow capacity channel in the mainstem Salt River corridor.

Therefore, the proposed project is expected to significantly reduce losses of agricultural productivity due to flooding on the approximately 746.5 acres that are currently affected almost every year by high frequency, long duration flooding; this area consists of prime agricultural lands where flooding losses would be alleviated. The RCD concludes that the anticipated productivity improvement would provide adequate mitigation for the loss of prime and other agricultural land to render that loss less than significant.

Response to Comment 3: It is noted that Riverside Ranch would become part of the California Department of Fish and Game's (DFG) Eel River Wildlife Area, which is currently approximately 1,435 acres. The Eel River Wildlife Area includes Ocean Ranch (Table Bluff South, which was included in 1985), Cannibal Island (added in 1988) and Cock Robin Island (added in 1994). Those properties are considered part of the existing conditions to which the project and other likely future development are compared. It should be noted that agricultural activities have continued on those properties, albeit in a more limited way than prior to DFG acquisition.

G

Redwood Region Audubon Society
P O Box 1054
Eureka, CA 95502

Humboldt County Conservation District
5630 South Broadway
Eureka, CA 95503

On behalf or Redwood Region Audubon Society I have reviewed portions of the Salt River DEIS and would like to make some comments.

In section 3.3 several species that should be included are missing. Shuford and Pardali . 2008

1

Western Snowy Plover nests on gravel bars on Eel River below the confluence with Van Duzen River. Snowy Plover were found just outside the project area during the Humboldt County breeding bird atlas survey period between 1996 and 2000 (Hunter et al 2005) on Centerville Beach, they have been found in the project area on the Centerville- King Salmon Christmas Bird Count (CBC). This CBC has been conducted every year since 1965- 45 years of bird records. Foraging area for Snowy Plover occurs in the project area, nesting areas may be created as the project matures.

Burrowing Owl may occur on the project area as wintering species. They occupy areas on South Jetty, public land where access is not limited. They should be found on the adjacent Wildlands Land Trust property.

Short-eared Owl winter on unmanaged grasslands around Humboldt Bay such as Mad River Wildlife Area and Fay Slough Wildlife Area. My records for 20 + years longevity of records for the Fay Slough Wildlife Area on the Arcata CBC show that when California Department of Fish and Game flooded areas on Fay Slough WA several years ago, the Short-eared Owls ceased to occur. Terrain within the Salt River DEIS are similar to Fay Slough WA. Historic breeding range for Short-eared Owls occurs around Humboldt Bay (Roberson, 2008 In Shuford and Pardali).

Yellow-breasted Chats were confirmed breeders in survey blocks immediately north of this project during the Humboldt County breeding bird atlas project.

Bryant's Savannah Sparrow, a grassland species, are indicated in the Humboldt County Breeding Bird Atlas as occurring in the project area. Since this species is listed as a CBSSC, it should be addressed in all management alternatives.

Tricolored Blackbirds were found during the Humboldt County Breeding Bird Atlas survey in a few areas adjacent to the project area (Hunter et al 2005). They are found in small numbers during the Centerville Christmas Bird Count. Tricolored blackbirds typically nest in dense reeds, grasses, or blackberry patches. As colonial nesters they will move their colony when disturbed as happened to the colony near Drake's Hill Road. If habitat becomes appropriate within the project area, they may be found.

The following bird species are candidate species for listing and by erring on the side of caution should be considered:

Willow Flycatcher: On page 3.3-8 the DEIR states that "this habitat is appropriate for willow flycatcher, a species listed by the state of California as endangered ." Further Willow Flycatcher has been characterized as a migrant in this area. Point count and mist net surveys on gravel bars on the Eel and Van Duzen rivers have found willow flycatchers with brood patches indicating they have been sitting on eggs (Rob Hewitt- Pers. comm.).

Yellow-billed Cuckoo a riparian nesting and foraging species, are candidate species for listing, and should be considered in this document. Yellow-billed cuckoos have recently been found around Cock Robin Island, a riparian island in Eel River less than 3 miles from this project (Gary Falxa, USFWS Arcata). There has been controversy surrounding the federal listing of the Yellow-billed Cuckoo, because the status of the western population as a subspecies is in question, and this precludes listing. As this project matures, riparian areas will be created, creating cuckoo habitat.

1

(cont.)

On 3.3-2 the DEIR only lists two species of shorebirds using pastures. A thesis written at Humboldt State lists at least 9 shorebird species using agricultural pastures. (Long et al 2001 Dynamics of habitat use by shorebirds in estuarine and agricultural habitats in Northwestern California..Wilson Bulletin. 113(1) 41-52). Mark Colwell, a professor at HSU, shows additional use of agricultural habitats by shorebirds. See. Colwell, M. A. and S. L. Dodd. 1995. Waterbird communities and habitat relationships in coastal pastures of northern California. Cons. Biol 9:827–834. See Colwell, M. A. and S. L. Dodd. 1997. Environmental and habitat correlates of pasture use by nonbreeding shorebirds in northern California. Condor 99:337–344.

Please contact me if your office would like a copy of Hunter et al. 2005. Atlas of Breeding Birds of Humboldt County, California. Redwood Region Audubon Society, Eureka, CA. It is a great reference.

Shuford and Pardali 2008 California bird species of special concern. Studies of Western Birds No.1. Western Field Ornithologists and CDFG.

Chet Ogan
Conservation Chair

Redwood Region Audubon Society

8.10.1 RESPONSES TO REDWOOD REGION AUDUBON SOCIETY, UNDATED LETTER

Response to Comment 1: The comment notes that several bird species that should be included in the DEIR are missing or have incomplete information regarding documented occurrences or suitable habitat. RRAS provides information in its comment letter on the following species: western snowy plover, burrowing owl, short-eared owl, yellow-breasted chat, Bryant's savannah sparrow, tricolored blackbird, willow flycatcher, yellow-billed cuckoo, and shorebirds using agricultural pastures. The DEIR has been revised to add species accounts and additional information regarding these species, as follows:

Text is added to page 3.3-5 to incorporate information in the RRAS comment letter regarding shorebird use of agricultural pastures, as follows:

> Shorebirds that occur in pasturelands in coastal Humboldt County include the long-billed curlew (*Numenius americanus*), Marbled Godwit (*Limosa fedoa*), common snipe (*Gallinago gallinago*), dunlin (*Calidris alpina*),whimbrels (*Numenius phaeopus*), least and western sandpipers (*Calidris minutilla* and *C. mauri*), greater yellowlegs (*Tringa melanoleuca*), Black-bellied Plover (*Pluvialis squatarola*)and killdeer (*Charadrius vociferous*).

The FEIR text includes additional species in Table 3.3-4, as shown below:

Species (Scientific/common name)	Status (Federal/State)	Habitat	Probability of Occurrence
Charadrius alexandrinus nivosus Western snowy plover	T/SSC	Breed and winter along ocean beaches and the gravel bars of the Eel River. Nesting occurs above the high tide line in sandy substrate, and occasionally on driftwood. May nest in salt pans. May winter in estuarine sand and mudflats and forage on edges of salt marsh and in salt pans.	Moderate. Documented nearby on Centerville Beach, but not expected to use the lower Salt River for breeding habitat as it does not exhibit the broad expanses of river cobble that plovers are known to prefer where they nest along the Eel River. Could nest in salt pans as these develop in project area. May forage on edges of salt marsh and winter in estuarine sand and mud flats in project area.
Empidonax trailii brewsteri Little willow flycatcher	-/E	Breeding and foraging habitat for the species includes lowland riparian woodlands dominated by willows, primarily in tree form or in the form of contiguous thickets, and cottonwoods.	Spring and fall migrant and casual summer resident and breeder in northwestern California (Hunter et al. 2005). Signing male documented in 2010 surveys in riparian area on Riverside Ranch.

Species (Scientific/common name)	Status (Federal/State)	Habitat	Probability of Occurrence
Passerculus sandwichensis alaudinus Bryant's savannah sparrow	-/SSC	Breed and winter in low tidally influenced habitats, adjacent ruderal areas, moist grasslands within and just above the fog belt, and, infrequently, drier grasslands. Commonly uses salt marshes for breeding and foraging in much of its range, but not in Humboldt Bay region (Hunter et al. 2005). Around Humboldt Bay, it breeds in extensive dairy pastures, especially in the taller grasses and rushes along roads and fences, and water conveyance canals.	High. Documented breeding in the immediate project vicinity (Hunter et al. 2005).

In addition, DEIR text from Section 3.3 is revised to incorporate information on species addressed in the RRAS comment letter as well as information from the protocol willow flycatcher and western yellow-billed cuckoo surveys conducted in June-July 2010, as follows:

Page 3.3-11:

Special status wildlife species with moderate or high probability of occurrence in the project area are listed in Table 3.3-4. The special-status animal species that are likely to occur in the vicinity of the project area are described below. Expanded descriptions are included only for those species for which suitable habitat exists in the project area. There are several special-status species known to occur in habitats that are present on the site or that may forage in the project area, including the ferruginous hawk (*Buteo regalis*) (fall/winter), Cooper's hawk (*Accipiter cooperii*), sharp-shinned hawk (*Accipiter striatus*) (fall/winter), merlin (*Falco columbarius*), short-eared owl (*Asio flammeus*) (fall/winter), burrowing owl (*Atene cunicularia*), Vaux's swift *(Chaetura vauxi*), purple martin (*Progne subis*), black-capped chickadee (*Parus atricapillus*), western snowy plover (*Charadrius alexandrinus nivosus*), Bryant's savannah sparrow (*Passerculus sandwichensis alaudinus*), and yellow warbler (*Dendroica petechia*). Some special-status species are known to occur in the general local area but are thought to be absent from the project site due to lack of habitat, or occur only rarely as stray migrants or transients. These include golden eagle (*Aquila chrysaetos*)~~, burrowing owl (*Athene cunicularia*)~~, and bank swallow (*Riparia riparia*).

Other species expected to breed or forage on the site infrequently include the double-crested cormorant *(Phalacrocorax auritus*), osprey (*Pandion haliaetus*), and American peregrine falcon (*Falco peregrinus anatum*). Bald eagles (*Haliaeetus leucocephalus*) may occasionally perch on the project site while foraging within the project site and in adjacent water during the winter; however, there is no breeding habitat for bald eagles on the site. The following species are

likely to be found on portions of the project site that may be affected by the proposed restoration:

Western snowy plover (Charadrius alexandrinus nivosus)

This species is federally listed as threatened, with designated critical habitat located just downstream of the project area, and is a state species of special concern. The areas designated as Critical Habitat do not include any portion of the Salt River, but do include five to ten miles of gravel bars within the Eel River (beginning at the Salt River/Eel River confluence), as well as the coastal spits and beach north and south of the mouth of the Eel River. The Pacific coast population of western snowy plover nests on beaches from the central Washington coast to the Baja peninsula. They prefer to nest on sand spits, unvegetated sand dune beaches and open areas near river mouths and estuaries, where vegetation and driftwood are sparse or absent. No suitable nesting habitat currently occurs in the project area. Nesting habitat may be present in the Salt River estuary after project implementation. Wintering areas are usually similar to those used for nesting. Pacific coast plovers commonly forage amongst piles of beached kelp and in the wet sand of the intertidal zone. Above the high tide line, they feed in dry sandy areas, saltpans, spoil sites, and along the edges of salt marshes and ponds (USFWS, 2007). Foraging habitat is present in the project area. Western snowy plover are known to breed and nest approximately one mile downstream of the project site in the lower Eel River gravel bars as well as on Centerville Beach, less than one mile southwest of the project area. Plover foraging activities may extend into the project area. Plovers may experience in-stream increases in turbidity levels due to the extensive earthwork and construction activities in Riverside Ranch and the Salt River channel. However, nesting and foraging typically occurs in sand/gravel bars and should not be adversely affected by the construction and earthwork activities. Plovers would be likely to avoid the project area during construction.

Text on page 3.3.17 and following pages is revised as follows:

Yellow-breasted Chat (Icteria virens)

This bird species has no federal status and is a State Species of Special Concern. It is a neotropical migrant that occurs throughout California. Yellow-breasted chats are found in dense, brushy thickets near water and in the thick understory of riparian woodlands. Foraging patterns usually involve gleaning insects, spiders, and berries from the foliage of shrubs and low trees. Nests are often low to the ground in dense shrubs along streams. Yellow-breasted chats typically occur further inland than the project site (Ricketts and Kus 2000). However, singing chats have been recorded in survey of gravel bars on the lower Eel River (Comrack 2008) and breeding was confirmed on the lower Eel River between 1995 and 1998 (Hunter et al. 2005). The riparian habitat of the lower Salt River represents potentially suitable habitat for the species, and there is a moderate probability that it occurs in the project area. However, surveys in June-July 2010 have resulted in no records of the Yellow-breasted chat in the project area.

Little Willow flycatcher (Empidonax traillii brewsteri)

This bird species has no federal status and is state listed as endangered. The Little willow flycatcher subspecies occurs annually as both a spring and fall migrant and casual summer resident and breeder in northwestern California (Hunter et al. 2005). Breeding habitat for the species includes lowland riparian woodlands dominated by willows, primarily in tree form or in the form of contiguous thickets, and cottonwoods (Craig and Williams 1998). Foraging patterns usually involve gleaning insects, spiders, and occasional berries from the foliage of shrubs and low trees (ibid.). It is an uncommon migrant through Humboldt County in the spring and can be fairly common in the early fall. Summering in Humboldt County by this species appears to be rare (Hunter et al. 2005). Possible breeding by willow flycatcher along the lower Salt River and near the confluence of the Eel and Van Duzen Rivers was documented in 1998 (ibid). The riparian habitat of the lower Salt River represents potentially suitable habitat for the species, and there is a low probability that it occurs in the project area. One singing male Willow Flycatcher was heard and seen in the riparian habitat adjacent to the Riverside Ranch barn. This individual was detected first on June 30, 2010, and also detected July 1, July 10 and last observed July 22, 2010 (Winzler & Kelly, 2010). There was no evidence of a female but the presence of a territorial male suggests suitable breeding habitat is present (Bombay et. al., 2003).

Western yellow-billed cuckoo (Coccyzus americanus occidentalis)

This bird species is a candidate for federal endangered species listing and is state listed as endangered. Western cuckoos breed in large blocks of riparian habitat, particularly woodlands with cottonwoods and willows (USFWS 2009). Dense understory foliage appears to be an important factor in nest site selection, while cottonwood trees are an important foraging habitat in areas where the species has been studied in California (ibid). Western yellow-billed cuckoo have repeatedly been observed in riparian areas of Cock Robin Island in the Eel River, within three miles to the north of the project site. However, cuckoos are not known to enter the project area. Relative to the riparian habitat on Cock Robin Island, riparian habitat in the project area is narrow, with adjacent livestock grazing. While such habitat could be used for foraging and possibly for nesting by cuckoos, it is not considered preferred nesting or foraging habitat and the probability of its use by cuckoos is low. Surveys performed for this project during the spring and summer 2010 have resulted in no observations of the cuckoo (G. Lester, Personal Communication, Winzler & Kelly, July 2010). The cuckoo would be likely to avoid the project area during construction.

Western Burrowing Owl (Athene cunicularia)

This bird species has no federal status and is a State Species of Special Concern. It is a grassland species that is broadly distributed in western North America (Shurford and Gardali 2008). Burrowing owls utilize burrows dug by other species, or in some cases by the owls themselves, for roosting and nesting, and forage in the burrow's vicinity in relatively short vegetation with only sparse shrubs and taller vegetation (Shuford and Gardali 2008). Burrowing owls do not breed in Northwestern California, but are known to winter in the

region. They are documented from the South Jetty in the project vicinity, and may winter in grassland in the project area.

Bryant's Savannah Sparrow (Passerculus sandwichensis alaudinus)

This bird species has no federal status and is a State Species of Special Concern. It is a California endemic whose range extends from Humboldt Bay south to Point Concepcion (Shuford and Gardali 2008). It winters and breeds in low tidally influenced habitats, adjacent ruderal areas, moist grasslands within and just above the fog belt, and, infrequently, drier grasslands (Shuford and Gardali 2008). While the species commonly utilizes salt marsh in much of its range, it is very uncommon in salt marsh in the Humboldt Bay region, where it utilizes moist grasslands preferentially (Hunter et al. 2005). The species is a confirmed breeder from the immediate project vicinity (Hunter et al. 2005) with suitable habitat present in the project area.

The following text is added to Page 3.3-37:

Impact 3.3.1-9. Impacts to special status birds associated with grassland habitat

Four special status bird species associated with grassland habitat have been documented as occurring in the project vicinity. The project area contains both nesting and foraging habitat for the Northern Harrier and Bryant's savannah sparrow and foraging habitat for the Vaux's swift and White-tailed kite. While short-eared owls (*Asio flammeus*) and burrowing owls (*Athene cunicularia*), state species of special concern, have not been documented in the project area, these species have been documented in the Humboldt Bay region and the project area does contain suitable foraging habitat for wintering individuals (Shuford and Gardali 2008). Alternatives 1-3 would result in a long-term loss of grassland habitat utilized by these ~~three~~ six species. Grassland acreage lost for Alternative 1 would be 287 acres. The loss of grassland habitat would be less than significant for all ~~three~~ six species of concern because there is an abundance of this type of habitat adjacent to the project area, and because ~~all three~~ four of the six species can utilize marsh as well as grassland habitat for foraging[3]. In addition, spruce, cottonwood, and other tree species planted in the two-year floodplain as part of the channel restoration component would provide important raptor habitat lost over the previous 150 years when trees were removed from the area for pasture expansion.

Heavy equipment operations and vegetation disturbance on the site could result in short-term impacts to these ~~three~~ six bird species foraging within the project area, although these impacts would be minor for short-eared owl and burrowing owls, which are only expected to use the

[3] Burrowing owl do not commonly utilize marshes for foraging, although they may utilize high marsh and wetland-upland transition zones, which will both be present in portions of the project area after implementation. Bryant's savannah sparrows utilize salt marsh in much of their range, but do not appear to utilize salt marsh in the Humboldt Bay region, possibly due to widespread dominance by invasive denseflowered cordgrass (*Spartina densiflora*) (Hunter et al. 2005). The cordgrass control efforts to be implemented by the project may provide suitable habitat in salt marsh for savannah sparrows in the project area.

project area in the winter when construction would not be underway. In addition, there may be the potential to significantly impact nesting Northern harrier. Implementation of Mitigation Measure 3.3.1-7 above would minimize adverse impacts to nesting Northern harriers.

Impact Significance

Less than significant after mitigation.

IMPACT 3.3.1-10. IMPACTS TO SPECIAL STATUS BIRDS ASSOCIATED WITH RIPARIAN HABITAT

Three special status bird species associated with riparian habitat are common or have high potential to occur in riparian habitat in the project area. Riparian forest and scrub in the project area provides potential nesting and foraging habitat for yellow warblers, black-capped chickadees, and purple martins. Yellow warblers and black-capped chickadees have been documented in the project area. A territorial male little willow flycatchers was documented in the project area, and there is a low probability that western yellow-billed cuckoos may forage in the project area, as well.

As discussed above, Alternative 1 would result in a medium-term significant decrease in mature riparian forest and scrub because of removal of mature riparian forest and scrub vegetation associated with Salt River Channel Restoration. There would be no long term impact to special status riparian birds, due to the restoration of riparian forest and scrub habitat in and adjacent to the channel and on Riverside Ranch. Mitigation measure 3.3.1-2, which involves installation of nesting boxes, would reduce the medium-term impact on cavity-nesting species. Heavy equipment operations and vegetation disturbance on the site could result in short-term impacts to ~~these three~~ riparian bird species foraging within the project area. In addition, construction could significantly disturb nesting individuals of these species. Impacts to nesting individuals would be minimized by implementation of Mitigation Measure 3.3.1-7 above.

Impact Significance

Less than significant after mitigation.

The following text is added to the Special Status Wildlife table in Appendix D to incorporate information provided in the comment letter regarding tricolored blackbird:

Agelaius tricolor Tricolored blackbird	-/-/SSC	Colonial nester near fresh water, in emergent wetland plants but also thickets of willow, blackberry, and wild rose. Feeds in grassland and cropland habitats.	Low. Suitable habitat is present, but species is uncommon in the area. Small colony (up to 70 birds) documented near Alton, about 10 miles to the east.

H

SALT RIVER EIR COMMENTS

Denver Nelson

The Salt River EIR is well-written and those who have been involved with this long project should be complemented.

It would be helpful to include a longitudinal profile of the Salt River showing the current elevations and the proposed excavations. 1

The project would provide increased estuary in the Eel River delta. I would estimate several square miles; the actual figures should be researched and included in the final EIR. 2

The amount of increased spawning habitat due to the project would be helpful. I would estimate it to be 10 to 20 miles; the actual figures should be researched and included in the final EIR. 3

The amount of agricultural land that is no longer in production because of flooding should be included into this report. I would estimate it to be 500 to 1000 acres. At $10,000 per acre this amounts to $5-$10 million of lost value. At $300 rental per acre per year this amounts to a loss of $150,000-$300,000 per year; the actual figures should be researched and included in the final EIR. 4

Because of the 20 foot elevation increase of the Salt River bed due to settlement in the last 10 years, the city of Ferndale has to pump its treated wastewater 20 feet uphill in order to comply with water standards. The new Ferndale wastewater treatment plant costing $2 million will not be possible without the completion of the Salt River Project; the actual figures should be researched and included in the final EIR. 5

The upper Salt River restoration above Williams Creek should be included as part of the proposed future project.

8.11.1 RESPONSES TO DENVER NELSON, UNDATED LETTER

Response to Comment 1: Longitudinal profiles of the existing, historic and project grades along the Salt River alignment will be provided in the Basis for Design Report, which will be on file at the RCD offices in Eureka.

Response to Comment 2: The increased acreage of tidal wetlands in the Salt/Eel River estuary system will be between 300 and 310 acres. This area would consist of the Riverside Ranch tidal wetland area and the increased tidally influenced area up the mainstem channel. The total area would likely be less than one square mile, which is equivalent to 640 acres.

Response to Comment 3: In light of the historically tidal nature of the Salt River, it is unlikely that the main channel ever served as spawning habitat, except perhaps in its upper reaches during very wet years. However, the historic spawning habitat available to anadromous salmonids in Salt River tributaries was probably significant. There is little reason to doubt that, prior to significant alteration of the landscape, each tributary hosted extensive spawning and rearing habitat, particularly for Coho salmon, steelhead and cutthroat trout.

If one assumes that optimum spawning habitat began one mile above the confluences of four major streams (Russ, Francis, Reas and Williams creeks) and terminated where gradient increased significantly as the creeks flow out of the Wildcat Hills, then historic length of spawning habitat for anadromous salmonids certainly could have reached or exceeded ten miles.

Response to Comment 4: The comment notes that a large amount of agricultural land has been taken out of production due to flooding, and suggests that the acreage and economic loss be quantified in the FEIR. We concur. Please see the response to comment A-8 above for a revised agricultural impacts analysis for the project that addresses this comment.

Response to Comment 5: The location, proper function and long-term maintenance of the Ferndale WWTP outfall are important considerations in the design of the Salt River Project. The design team has worked closely with City of Ferndale and RWQCB staff to insure that the WWTP discharge requirements are satisfied as part of the Salt River Project. Design details of the outfall location, elevation and relationship to project channel grades will be provided in the 75% design.

I

DRAFT ENVIRONMENTAL IMPACT REPORT COMMENTS

Salt River Ecosystem Restoration Project

Written comments can be submitted at the scoping meeting, mailed to Humboldt County Resource Conservation District *(mailing address is included on this sheet)*, or emailed to hcrcd@yahoo.com (Subject line: Salt River DEIR) by close of business on May 28, 2010. Thank you.

(Please print clearly)

Name: Leland Mora **Organization:** Land manager adjacent property

Address: PO Box 313 Fortuna, CA

All comments become part of the public record.

Comment here: 5-28-10
Date

I don't an adequate analysis of Alt #2 has been done. The loss of production from the Riverside Ranch for perpetuity can't be measured only by reclaiming productive loss on upland pastures. 1

As a society we need to do both. The loss of production on this type of property ~~effects~~ has a much bigger economic effect on such as secondary industries as the creamery feed companies, suppliers of goods & services required from the production of ag products.

A much less intrusive project of dredging Salt River from the confluence with the Eel and improved tidal ~~dike~~ dike tidal flow would achieve both sustained production from Riverside Ranch and improved drainage of Salt River 2

Attach additional pages as necessary.

DRAFT ENVIRONMENTAL IMPACT REPORT COMMENTS

Salt River Ecosystem Restoration Project

Written comments can be submitted at the scoping meeting, mailed to Humboldt County Resource Conservation District *(mailing address is included on this sheet)*, or emailed to hcrcd@yahoo.com (Subject line: Salt River DEIR) by close of business on May 28, 2010. Thank you.

(Please print clearly)

Name: L MORA **Organization:**

Address:

All comments become part of the public record.

2nd Page

Comment here: ***Date***

I do not agree with the proposal to stop the SALT RIVER dredging up stream from the confluence. My experience with dredging and water flow is that "pulling" or "sucking" water is much easier than pushing water. Thus stopping the dredging project upstream from the confluence seems counter productive.

Additional technical comments @ the 30% ~~completion~~ design to be made

Attach additional pages as necessary.

3

8.12.1 RESPONSES TO LELAND MORA, MAY 28, 2010 COMMENT FORM

Response to Comment 1: A more comprehensive evaluation of the project's potential effects to agricultural land productivity is provided in response to Comment A-8, above. The commenter states that the analysis of agricultural impacts due to Alternative 2 is inadequate and the conclusion that Alternative 2's agricultural impact is similar to the impact of Alternative 1 is unwarranted. The comment reasons that Alternative 2's agricultural impact should be much less than the impact from Alternative 1, because of the severity of the impact from the conversion of a portion of Riverside Ranch from grazing land to natural areas (Riverside Ranch conversion is part of Alternative 1 and not part of Alternative 2). The comment states that Riverside Ranch conversion would have a significant effect on the local agricultural economy both directly and through its indirect impacts on the sustainability of secondary agricultural industries, such as the Humboldt Creamery and feed stores. The EIR authors concur that the conversion of agricultural land on Riverside Ranch will be significant. However, the analysis presented in the DEIR and revised and augmented in the FEIR (see response to comment A-8 above) demonstrates that Alternative 1 would be self-mitigating in terms of agricultural impacts. Significant acreage has been taken out of agricultural production in the area due to prolonged flooding, which has resulted in direct economic losses and impacts to secondary industries (e.g. fewer livestock, resulting in less milk going to the creamery). The project would significantly reduce the duration of flooding on much of this acreage, reducing this impact to less than significant. The benefit from reduced flooding duration would be much less significant if Alternative 2 were implemented, because the beneficial effects of increased tidal prism and restored sediment transport would not be realized. Thus, the increased gains in productivity in Alternative 1 balance out the losses due to conversion of a portion of Riverside Ranch.

Please note that CEQA requires that the EIR include a range of reasonable and feasible alternatives that meet most of the project objectives. The alternatives assessed in the EIR are intended to fulfill that CEQA requirement. Additionally, the channel redesign included in this FEIR further expands that range of alternatives.

Response to Comment 2: The commenter's opinion is noted. The project described in the DEIR has been designed to maximize tidal prism and therefore enhance tidal flows in the channel. This is intended to maximize scour and minimize maintenance needs. The revised project, as described in this FEIR, would be a less intrusive excavation project compared with the project evaluated in the DEIR.

Response to Comment 3: The commenter's concerns with, and opposition to, Alternative 2 are noted.

J

From: kubanka@aol.com (kubanka@aol.com)
To: hcrcd@yahoo.com;
Date: Fri, April 16, 2010 6:31:29 AM
Cc:
Subject: Salt River Restoration Project

To Whom it May Concern:

I would like to request equestrian access to this project by means of a trail for horses. This would be a great addition to the project and would satisfy the homeowners effected by the project. Thank yoyu,

1

Renel Nordeman
Nordy Arabians
(707) 768-2003

8.13.1 RESPONSES TO RENEL NORDEMAN, APRIL 16, 2010 EMAIL

Response to Comment 1: The only publicly owned portion of the project would be owned and managed by the California Department of Fish and Game (CDFG). By implementing this project a substantial portion of the publicly owned area would be converted to tidal marsh. Setback berms to be constructed around the perimeter of the marsh area would provide the only terrestrial access to the property. The extent of public access to the project area is currently unknown, but project partners plan to provide organized educational programs at the site for the interested public. It is expected that once project implementation activities are completed CDFG would review and consider public access, including passive recreation, such as walking and wildlife viewing from the setback berms and the possibility of allowing hunting ducks and other waterfowl. Equestrian access may be also considered by CDFG in the future, depending on design, engineering, maintenance and public safety considerations. The full extent of future public access at the estuary is currently unknown and would be in the purview of the CDFG and is therefore not part of the proposed project evaluated in the EIR.

K

Bruce Slocum May 21, 2010

ES-1:
Does not mention impact of Eel River on the Salt River problem. I.e. flooding from and sediment load in the Eel probably has contributed more to sedimentation in the Salt than the small tribs. 5-6ft of sediment left in the channel by 1964 flood, for example. 1

ES-2:
Agricultural land is taken out of production for up to 8 months of the year, not almost. 2

ES-3:
Change beginning of excavation to Cutoff Slough rather than from Riverside Ranch. 3

ES-9:
Impacts to recreation: It will have an impact because it will allow more duck hunting opportunities. Positive impact. 4

ES-9:
Water pipes from Riverside Community Services District, significant. Both across the Salt Channel and under Riverside Ranch. 5

ES-19:
There would be significant impact to stormwater drainage and waste water treatment with the no project alternative. 6

1-1:
Agricultural land is taken out of production for up to 8 months of the year, not almost. 7

1-6:
Add Russ and Smith Creek as tributaries. 8

2-1:
2.1.1. – Description of Salt River as an estuary, mention that it is undoubtedly an old Eel River channel that is aggrading. 9

2-1:
2.1.2. – Salt influence above Fulmor, so Fulmor Rd. rather than Arlynda Corners. Anecdotal Bruce Slocum. 10

2-2:
2.1.2. – No one built levees purposely to reduce tidal volume and the 60% reduction is also due to aggradation. 11

2-9:
Include red-tailed perch in fish that use the estuary. Sport fishing fish. 12

Figure 2-4:
No built levees along south side of Salt River across from Riverside Ranch, downstream of Zana. And no built levees along Morgan Slough. These are all natural riparian berms that have formed by river processes. 13

Figure 2-5:
Do we have a more current topo map, if not use aerial imagery. 14

2-21:
Methods for controlling planted trees from invading channel. And add Shore Pine to list of planted trees, look at Smith River estuary to see how far inland it grows. 15

Figure 2-7:
No levees again on Morgan Slough or the south side of Riverside Ranch along Salt River. Between Centerville Slough and Zana's there should be no dikes. The map shows both constructed dikes and riparian berms, and side casting of spoils that function like dikes. 16

2-26:
Grand Fir and Big Leaf Maple may not have been there historically. ??? 17

2-26:
Most of the blackberry down there is native California blackberry, not Himalayan. 18

Figure 2-10:
Add Wild Currant to list of Riparian Shrubs and Ferns. 19

2-45:
Clarify that we're talking about a specific low gradient tributary salt water wedge transition zone, otherwise the whole Eel River estuary could be referred to here. 20

2-46:
Under bullet point describing protecting existing infrastructure on Riverside Ranch, note specifically water lines. 21

2-48:
Filling ditches and water control structures refer to a figure 2-8 to show their location. Need a more detailed map of Riverside Ranch construction/restoration design activities. 22

Figure 2-16:
Reveg plan for Riverside Ranch, Humboldt Bay gumplant (*Grindella blakei*), and include Humboldt Bay owl's clover (*Orthocarpus castillejoides var. Humboldtiensis*) and add coyote brush in high marsh because it's already all over the salt marsh down there. 23

2-55:
Additional projects in Francis Creek by ERWIG? 24

3.1-3:
Table 3.1-2 – Is Unnamed Slough supposed to be Jack Slough? And Smith Creek is a tributary to Mill Slough. 25

3.1-8:
Tidal influence currently extends to downstream of Port Kenyon, across from Becker's place, and the end of Toste's lower field. Also mentioned other places in the document. There's a sediment plug at Reas Creek as well, so some water gets above it but only at the highest tides. 26

Figure 3.1-1:
Replace with another hillshade map? Because it shows the mouth of Salt River in the wrong spot. 27

Figure 3.1-3:
Again out of date topo map. 28

3.1-38:
Some inconsistencies in NCRWQCB table. 29

3.1-19:
A well was put in on Lucchini Ranch (on Crab Island) next to Morgan Slough, at 300ft they hit pure seawater. 30

3.2-2:
Subsidence occurred during mega subduction earthquakes (last one was in 1700) 31

3.3-2:
Include shorebirds as a separate (than waterfowl) category of biological resources. And is a major wintering ground for shorebirds on the pacific flyway. Top paragraph of page. 32

3.3-4:
We have Humboldt Bay owl's clover and gumplant, some on riverside ranch. Mallards nest in that area, only common waterfowl that nest. River otters down there. Junior rails, soar rails, yellow rails. Aquatic vegetation (Zostera, Grassilaria, Ulva, etc.). 33

3.3-5:
Soft shell clams will be affected by excavation activities, exist year round down there. 34

3.3-6:
White tail kite in agricultural grasslands. 35

3.3-6:
Coyotes visit Riverside Ranch year round. Under ruderal. 36

3.4-1:
Change Connick Slough to Cutoff Slough | 37

3.4-23:
Change "entrainment" to "entrapment" | 38

3.4.1-3:
Include impacts to vegetation (zostera) and soft shelled clam (Maya arenia?) | 39

3.6-1:
500-ft distance from construction activities is not much, might be impacting residences beyond 500 ft. | 40

3.7-1:
3.7.1: Salt River enters the Eel further downstream than where it says (tip of Riverside Ranch), "enters at north end of seaside island" | 41

3.8.1:
Make background imagery black and white to avoid confusion with colors in legend.

*Night heron rookery/nesting site on Boynton's across Salt River from Meridian Rd, mostly alder. | 42

3.10-1:
Public access for waterfowling? | 43

3.11-8:
Vertical logs should be called pilings and the "bracing" is actually a riverwall to deflect and protect from tidal erosion on that bank. There is also a riverwall at Toste's lower field near the concrete footing. | 44

3.13-2:
Electricity and natural gas: people have propane tanks not natural gas through a pipeline. No natural gas on Ferndale side of Eel River. | 45

3.13-5:
Impact 3.13.1-3: Include Reas Creek Road Crossing. | 46

8.14.1 RESPONSES TO BRUCE SLOCUM, MAY 21, 2010 LETTER

Response to Comment 1: The following text and figures are revised/added after the first paragraph under Flood Hazards (DEIR p. 3.1-11) to add detail to the discussion of project area flooding.

> Floodwaters from both the Salt and Eel Rivers periodically overtop the channel banks and spill over the gently sloping lands of the delta. Both sources carry large volumes of sediment contributing to delta building and maintaining delta elevations in the face of sea level rise and tectonic subsidence. Overbank flooding from the Eel River begins at a stage of 19-feet at Fernbridge, with overbank floods occurring on the average of every six years (SCS, 19934). The flood magnitudes of 1861/62, 1955 and 1964 events were all in excess of a 100-year recurrence flood, inundating the entire Salt River project area and deposited significant volumes of sediment, particularly in the lower River adjacent to Riverside Ranch (5- to 6-feet of sediment, personal communication Bruce Slocum, 2010), at the confluence with Francis Creek and immediately upstream of the confluence with Coffee Creek (SCS, 1963)
>
> Analysis of available topography and the local FEMA Flood Information Study (FEMA 1999), indicate the Eel River delta plain starts to flood during Eel River floods having a 12-year recurrence level or greater[5]. Overbank flow enters a network of abandoned meander channels at the eastern side of the delta, inundates the floodplain and adjacent land areas, and eventually drains off of the delta via the Salt River or the Old River/Perry Slough system. Extreme events inundate the entire Salt River portion of the Eel River delta and cause extensive flood damage to the local community. ~~An earthen levee, locally known as the Leonardo Levee, was constructed in 1967 to provide protection from flood events that recur at an annual return frequency of ten years or less.~~
>
> Historically, overbank flood waters from the Eel River were directed into the far upstream reach of the Salt River and directed back to the Eel River via flow through the Salt River. The 1916 USGS topographic quadrangle shows a clear upstream connection between the Eel and Salt Rivers. Historically, floodwater drainage through the Salt River is attributed with scouring and transporting accumulated sediment out of the Salt River channel. However, in addition to areal diking and draining of pasture lands, the Leonardo Levee was constructed at the far upstream end of the Salt River in 1967 to reduce the frequency and extent of floodwater introduction to the Salt River. The Leonardo Levee provides protection up to approximately the 10-year frequency flood event and was repaired at least

[4] U.S. Department of Agriculture, Soil Conservation Service (SCS), 1993, Salt River Local Implementation Plan, Humboldt County, California. Prepared in cooperation with: California State Coastal Conservancy, Humboldt State University, Oscar Larson & Associates, and Questa Engineering Corporation, March, 82p.

[5] The 12-year recurrence interval (or 12-year flood) is the flood even that has an approximately 8 percent chance of occurring in any given year. It does not necessarily occur every 12 years. Similarly, a one-year recurrence interval event is based on a long-term average, and may not occur every year (or, conversely, may occur more than once in a given year).

twice by the Army Corps of Engineers, most recently in 1986 (SCS, 1993). The reduction in Eel River floodwater drainage and sediment scour/transport through the Salt River is attributed with excessive accumulation over the past century. However, as discussed under the Sea Level Rise section of this chapter, tectonic subsidence and sea level rise both work to counter-act the impacts of sediment accumulation in the Salt River, but at a much slower or less frequent rate than overbank flooding and associated sediment deposition.

Flooding due to overbank flow from the Salt River and its tributaries has increased in recent decades due to geomorphic changes that have reduced the capacity of the Salt River channel to convey runoff. A combination of factors that increased the volume of sediment entering the Salt River system and factors that decreased the energy available to transport sediment out of the system triggered rapid sedimentation across the Salt River portion of the Eel River Delta. The mainstem Salt River at Port Kenyon, once 200-feet wide and 15-feet deep, has filled in leaving a channel approximately 3 feet wide and 2 feet deep. Most areas of the channel upstream of the Reas Creek confluence have filled in completely. Annual flooding of lowland areas is now commonly triggered by relatively minor precipitation events and areas along the Salt River that formerly drained relatively quickly now remain ponded well into the summer. Tauzer (2009) estimates that flooding along the Salt River occurs well under a one-year recurrence interval.

Flooding along Francis Creek is described well in the Ferndale Drainage Master Plan (Spencer Engineering, 2004), including the following passage.

> Ferndale and the surrounding areas have historically had problems with storm water and drainage. Storm runoff associated with heavy winter rains has caused chronic flooding and sedimentation problems in the relatively flat terrain in the City, and in the rural areas north of the City near the Salt River. The City of Ferndale has recognized that continued growth can only take place in or adjacent to those portions of the city experiencing chronic flooding, and that management of storm water runoff is in the public interest.

The following passage from the Salt River Local Implementation Plan (SCS, 1993) also provides further description of the local problem.

> Sediment erosion in the upland areas south of Ferndale contributes to the flooding problem by filling local streams and the Salt River with silt, reducing their capacity to carry peak storm runoff. While flooding and sedimentation are natural processes, the frequency and rate of sediment deposition have increased because of land use activities in the Wildcat Hills (Salt River Watershed Local Implementation Plan, 1993).

There currently is no positive drainage below the confluence with Francis Creek, thus all flood waters (and sediment to some extent) pond and disseminate across the vicinity causing long-standing ponding and inhibit productive land use. Williams Creek is similar to Francis Creek in that it floods during most large storm events. However, over the last two to three decades, the point of overbank flooding appears to have moved progressively upstream,

away from the Salt River confluence. Currently, overbank flooding appears to occur at or upstream of the 90-degree bend where the Creek transitions from northward flow to easterly flow into the former Salt River channel. The flood waters then inundate the surrounding properties creating what is locally referred to as "Frog Alley." Sediments are decanted out of the sheet flow and flood waters migrate northward to the Salt River channel, bypassing the 211 loop.

Response to Comment 2: The text on p. ES-2 has been changed and clarified as recommended.

Response to Comment 3: The downstream end of channel excavation would begin at confluence between Cutoff Slough and Salt River.

Response to Comment 4: The only publicly owned portion of the project would be owned and managed by the California Department of Fish and Game (CDFG). By implementing this project a substantial portion of the publicly owned area would be converted to tidal marsh. Setback berms to be constructed around the perimeter of the marsh area would provide the only terrestrial access to the property. The extent of public access to the project area is currently unknown, but project partners plan to provide organized educational programs at the site for the interested public. It is expected that once project implementation activities are completed CDFG would review and consider public access, including passive recreation, such as walking and wildlife viewing from the setback berms and the possibility of allowing hunting ducks and other waterfowl. Equestrian access may be also considered by CDFG in the future, depending on design, engineering, maintenance and public safety considerations. The full extent of future public access at the estuary is currently unknown and would be in the purview of the CDFG and is therefore not part of the proposed project evaluated in the EIR.

Response to Comment 5: Riverside Community Service District (Riverside CSD) provides potable drinking water to users in the greater Port Kenyon area on both the north and south side of the Salt River. Based on available as-built drawings, there are Riverside CSD waterlines that would be re-aligned to accommodate the proposed restoration improvements. The Riverside Community Service District maintains a water pipeline to and across portions of Riverside Ranch, that service property(s) to the north of the Ranch. Within the project construction zone, the central section of this waterline would be realigned outside of the construction zone (as indicated on project plans) along the eastern property boundary. The new pipeline would patch into the existing pipeline to maintain the existing service. The project plans and specifications would include provisions to realign, reconnect and disinfect all waterlines in conflict with the project and subject to review and approval by Riverside CSD. Water service would be temporary disrupted for a limited duration of time to accommodate the realignment and therefore in advance of the modifications, Riverside CSD would notify all users who may be impacted.

Response to Comment 6: Comment noted. Drainage conditions along the Salt River would continue to worsen if the project is not implemented, with potential effects to wastewater treatment and discharge.

Response to Comment 7: See response to Comment 2, above.

Response to Comment 8: The last complete sentence on p. 1-6 of the DEIR is revised to read as follows:

> "Council members are landowners who represent the ~~four~~ six tributaries, (Russ, Smith, Francis, Reas, Williams, and Coffee creeks),…"

Response to Comment 9: For clarity, the following sentence has been added after the first sentence of the third paragraph on p. 2-1 of the DEIR:

> "It quite likely has been an overflow channel of the Eel River, possibly even a main channel, though reduced flows are now contributing to aggradation."

Response to Comment 10: The final sentence on p, 2-1 of the DEIR has been revised as follows:

> "The Salt River appears to have been tidally influenced to Arlynda corners approximately five miles upstream from the confluence with the Eel, and possibly as high as Fulmor Road (Bruce Slocum pers. comm.)."

Response to Comment 11: Levees, tidegates and other features have been constructed and installed specifically to diminish the effects of salt-water intrusion. This development has promoted reclamation of former salt marsh, and the reduction of saltwater intrusion on agricultural fields, thereby improving forage production.

Response to Comment 12: Comment noted. The following sentence is added after the third sentence of the third paragraph on p. 2-9 of the DEIR:

> "The estuary also provide important habitat for a myriad of estuarine species, including red-tailed perch."

Response to Comment 13: Figure 2-4 has been revised to correct the location of built levees.

Response to Comment 14: The project engineers do not have a more current topography map of the project vicinity represented in Figure 2-5. The intent of this figure is to simply indicate the amount of sediment deposition along the Salt River corridor between 1967 and 2006. Therefore, there is no need to provide the current surface topography. Contour lines would also be problematic to label and portray. The background topographic map was selected in lieu of an aerial photographic because it provides the names of geographic features, making it easier for the reader to locate specific features.

Response to Comment 15: Shore pine has been added to the Riverside Ranch planting plan.

Response to Comment 16: The line patterns on Figure 2-7 are confusing and have been rectified (See revised Figure 2-7). The comments stem from this confusion. In the DEIR, both the "Project Footprint" and "Existing Levees" lines are represented by black dashed lines, making them very difficult to differentiate.

Response to Comment 17: Big leaved maple was added at the specific request of the HCRCD and grand fir was added in small numbers as it is a documented tree species typical of these habitat associations (Sawyer and Keeler-Wolf 2009).

Response to Comment 18: It is agreed that most of the blackberry is California and not Himalayan. The text in the FEIR will be revised to make sure this is accurately portrayed.

Response to Comment 19: Current (*Ribes sanguineum*) has been added to the plant list.

Response to Comment 20: It is unclear to what section of the report this comment refers to on page 2-45 of the DEIR. All narrative and "component goals" are referenced to the Riverside Ranch project area in section headers and introductory sentences.

Response to Comment 21: The Project Description text has been substantially revised and the section referred to by the commenter has been eliminated.

Response to Comment 22: The proposed Riverside Ranch construction/restoration design activities discussed on pages 2-46 through 2-48 should reference Figure 2-4 not Figure 2-8. Figure 2-4 has been slightly modified to include symbols and labels for filling ditches, marshplain enhancement excavations and control structures, in addition to all other restoration components.

Response to Comment 23: *Grindelia blakei* was not located within the project footprint. In addition, there is some difficulty discerning the difference between *Grindelia blakei* and *Grindelia stricta* and they are often cited as the same species. Local genetic stock of *Grindelia stricta* will be utilized.

Humboldt Bay owl's clover was located within the project footprint during pre-construction surveys. The FEIR contains a discussion of avoidance of Humboldt Bay owl's clover, and mitigation for any unavoidable impacts to this species. See response to comment D-9 above for a full discussion and the text of the revised mitigation measure. Mitigation would include planting of this species if natural recruitment is not adequate to achieve success criteria in the Rare Plant Mitigation Plan, which is available for review at the HCRCD offices in Eureka, or electronically upon request.

Coyote brush is quite prevalent as the commenter has indicated. Therefore, the project team felt that it will likely naturally recruit on the site, and that the revegetation effort should focus on species that may need more of a "jump start" in becoming established.

Response to Comment 24: Sediment reduction/erosion control actions are an important component of the project as described in the DEIR and proposed to occur in the Williams Creek, Francis Creek and Reas Creek sub-watersheds. However implementation of these activities is expected to take place over several years in cooperation with a number of willing landowners and funded by a variety of sources. The full extent of individual projects and their specific locations have yet to be decided, therefore these activities are treated at a program level in the EIR - and will undergo site-specific environmental review separately from this EIR. In the Francis Creek watershed, erosion control and sediment reduction work has already begun, funded through grants from the State Water Quality Resources Control Board and the California Department of Fish and Game/Fisheries Restoration Grant Program (CDFG/FRGP). CDFG has undertaken environmental review of those projects.

Over the past few years, one of the primary landowners in the Francis Creek watershed has worked in cooperation with the Eel River Watershed Improvement Group (ERWIG) as well as the Humboldt County Resource Conservation District (HCRCD) to develop and submit funding proposals to implement upslope sediment reduction activities on private lands. These proposed

activities are identified in the Francis Creek Watershed Sediment Source and Erosion Hazard Assessment, which was commissioned by HCRCD and completed in adherence to CDFG protocols. HCRCD makes every effort to be aware of and coordinate with other upslope sediment reduction projects taking place in the upper watersheds of the project area. Upslope work in the Francis Creek watershed is currently underway, funded through a 2009-2010 CDFG/FRGP grant to ERWIG.

Response to Comment 25: Table 3.1-2 was taken directly out of the 2004 CDFG Watershed Assessment Report. Based on analyses completed by CDFG and KHE, Smith Creek is considered a tributary to the Salt River not Mill Slough. Smith Creek is separated from Mill Slough by a large earthen fill, directing all flow into the Salt River. The table has been modified as follows:

- Source: Modified from Downie and Lucey, 2004.
- A new row has been inserted between Morgan Slough and Cutoff Slough and title, "Jack Slough"; Salt River Mile = 0.75; Permanent Stream Length = 0.90 miles.

Response to Comment 26: In order to clarify this issue, the first two sentences of "Sea Level Rise" section on p. 3.1-8 of the DEIR have been rewritten as follows:

> Tidal influence presently extends ~~upstream to~~ downstream of Port Kenyon (USDA 1993), a short distance upstream of the Reas Creek confluence. Historically, tides extended further upstream, but channel infilling and a sediment plug at the confluence of Reas Creek have reduced the channel conveyance capacity and essentially eliminated upstream tidal exchange except for extreme spring tide events ~~the channel's ability to transmit tidal waters upstream of the Reas Creek confluence~~ (see Figure 3.1-2).

Response to Comment 27: In lieu of creating an entirely new figure from scratch, a shaded/filled pattern zone at the mouth of the Eel River has been added to Figure 3.1-1 to depict the extent of the estuary and channel, so the mouth of the Salt River is positioned correctly relative to Eel River and estuary.

Response to Comment 28: Figures 3.1-3, 3.1-4 and 3.1-5 are all portrayed on most recent topographic map. The reviewer indicates that the position of the Eel and Salt River confluence is dated and thus inaccurate based on current conditions. However, the intent of each graphic is to depict regional conditions relative to the project area and the content is not influenced by the current position of the Eel River. Therefore, we recommend retaining the current topographic background map in lieu of more current aerial imagery as the topographic maps include place names and make it much easier for the reader to identify the position of the subject matter relative to regional surroundings.

Response to Comment 29: Inconsistencies between Table 3.1-6 on page 3.1-38 of DEIR and NCRWQCB table have been corrected.

Response to Comment 30: The description of groundwater conditions is based on review of available information. Drilling and well logs for private landowner wells are considered proprietary information in the State of California and are not made available to the public. The information

provided by the reviewer has been included in the end of the first paragraph on page 3.1-19 of the DEIR, to read,

> "…. in the vicinity of Ferndale. For example, anecdotal information from a local resident indicates that a deep well installed on the north side of the Eel River, opposite Morgan Slough, encountered water of marine salinity at a depth of 300-feet below ground surface. "

Response to Comment 31: Episodic land subsidence due to tectonic activity over the past 2000 years is addressed above under the response to California State Lands Commission Comment 2.

Response to Comment 32: The text on page 3.3-2 of the DEIR is revised as follows to incorporate this comment:

> It is considered one of the most significant estuaries along the entire California coast, and its mosaic of tidal flats, sloughs, marshes and seasonal wetlands supports hundreds of thousands of resident and migratory waterfowl and shorebirds.

In addition, shorebirds are discussed in the context of specific natural communities in the project area on 3.3-5, 3.3-6. In response to a comment from the Redwood Region Audubon Society, text is added to page 3.3-5 to incorporate information regarding shorebird use of agricultural pastures, as follows:

> Shorebirds that occur in pasturelands in coastal Humboldt County include the long-billed curlew (*Numenius americanus*), Marbled Godwit (*Limosa fedoa*), common snipe (*Gallinago gallinago*), dunlin (*Calidris alpina*),whimbrels (*Numenius phaeopus*), least and western sandpipers (*Calidris minutilla* and *C. mauri*), greater yellowlegs (*Tringa melanoleuca*), Black-bellied Plover (*Pluvialis squatarola*) and killdeer (*Charadrius vociferous*).

Response to Comments 33 and 34: The text on page 3.3-4 and 3.3-5 of the DEIR is revised as follows to incorporate these comments. No information was added regarding junior rails, because it was not clear what bird species was being referred to. Soft-shelled clams are an introduced species in this area, and would be expected to repopulate the channel after project implementation. Therefore, no significant impact is expected due to temporary decreases in the soft-shelled clam population.

> ## Tidal Marsh
>
> Tidal marsh in the project area is found along the Salt River in the lower Salt River Delta. Approximately 30 acres of tidal marsh (5 percent of the total area) is found in the project area.
>
> ### *Vegetation*
>
> Some tidal influence occurs in the Salt River in the lower reach of the project area, resulting in brackish to saline conditions. The tidal marsh habitat is dominated by dense-flowered cordgrass (*Spartina densiflora*), pickleweed (*Sarcocornia pacifica*), saltgrass (*Distichlis spicata*), and slender arrowgrass (*Triglochin concinna*). Other common species in the tidal marsh include spearscale (*Atriplex patula*), sand spurry (*Spergularia macrotheca*), and Lyngbye's sedge (*Carex*

lyngbyei), which occurs in less saline environments. Humboldt Bay owl's clover (*Castilleja ambigua* ssp. *humboldtiensis*) and gumplant (*Grindelia stricta*) are also present in the tidal marsh. Dense-flowered cordgrass is an invasive species, and a control plan is currently being prepared by the California Coastal Conservancy and its partners for populations of the species in Humboldt Bay, the Eel River Delta, and the Mad River Estuary.

Wildlife

Vegetated tidal marsh provides habitat for a number of avian species, including species found in other habitats in the project area (i.e., the song sparrow [*Melospiza melodia*]) and species that occur primarily in tidal marsh vegetation (i.e., the marsh wren, *Cistothorus palustris*). However, the tidal marsh currently associated with the site is relatively narrow and linear, which reduces the number of birds it can support, especially during the breeding season. For example, herons and rails may forage in these belts of vegetation, but it is not extensive enough to support breeding for most of these larger species. Soras (*Porzana carolina*) and yellow rails (*Coturnicops noveboracensis*) forage in this habitat in the project area. Passerines, such as marsh wrens and song sparrows, may find this habitat extensive enough to nest in it on site. A number of other species occur as transient foragers or roosters in this habitat. These species include blackbirds, migrant warblers such as yellow and yellow-rumped (*Dendroica coronata*), and nonbreeding sparrows including Lincoln's (*Melospiza lincolnii*), white-crowned and golden-crowned. Tidal marsh also provides foraging and loafing habitat for some dabbling ducks such as the mallard (*Anas platyrhynchos*), American green-winged teal (*Anas crecca carolinensis*), and gadwall (*A. strepera*), as well as nesting habitat for mallards. The vegetation along these channels also provides habitat for Pacific tree frogs. This habitat supports few mammals in the Humboldt Bay region. These species include the California vole and white-footed mouse (*Peromyscus maniculatus*), both native species, as well as Old World introduced murids (rats and house mouse).

Aquatic

The Salt River and its tributaries provide approximately 9 acres of aquatic habitat in the project area. At low tides, a small amount of mudflat habitat is exposed, especially in areas closer to the confluence with the Eel River, where the Salt River is wider. At high tides, these mudflat areas convert to shallow open water or aquatic habitat. Additional areas of aquatic habitat occur as small drainage channels, primarily located behind water control structures or in constructed drainage ditches.

Vegetation

Portions of the lower Salt River channel support eelgrass beds (*Zostera marina*), as well as growth of macroalgae, including *Gracilaria sp.* and *Ulva sp.* Salt River populations of eelgrass generally die back during winter, presumably due to freshwater influences.

Wildlife

Birds, such as herons and egrets, forage in this habitat, especially during retreating and low tides when water is relatively shallow and mudflat is exposed, enabling shorebirds to probe the moist substrate for invertebrates and to easily detect prey in the shallow water. Other species, such as waterfowl and kingfishers, are more likely to use this habitat during incoming or high tides. Birds observed and expected in this habitat include: great blue (*Ardea herodias*) and black-crowned night (*Nycticorax nycticorax*) herons, great (*Camerodius albus*) and snowy (*Egretta thula*) egrets, green-winged teal, mallard, lesser scaup (*Aythya affnis*), northern harrier, greater (*Tringa melanoleuca*) and lesser (*T. flavipes*), yellowlegs and black-bellied plover (*Pluvialis squatarola*). River otter (*Lontra canadensis*) has been observed in this habitat. The non-native soft shelled clam (*Mya arenaria*) is among the benthic invertebrates present in this habitat.

Response to Comment 35: The text on the bottom of page 3.3-5 and top of p. 3.3-6 of the DEIR is revised as follows to incorporate this comment.

These fields also provide foraging habitat for a number of raptor species including the white tailed kite (*Elanus caeruleus*), the northern harrier (*Circus cyaneus*), peregrine falcon (*Falco peregrinus*), red-tailed hawk (*Buteo jamaciensis*), barn owl (*Tyto alba*), and the turkey vulture (*Cathartes aura*).

During periods of substantial precipitation, large areas of the pastureland become inundated. During these periods, many species are likely to use these inundated areas, including herons and egrets, waterfowl and shorebirds. Shorebirds that occur in pasturelands in coastal Humboldt County include the long-billed curlew (*Numenius americanus*), Marbled Godwit (*Limosa fedoa*), common snipe (*Gallinago gallinago*), dunlin (*Calidris alpina*),whimbrels (*Numenius phaeopus*), least and western sandpipers (*Calidris minutilla* and *C. mauri*), greater yellowlegs (*Tringa melanoleuca*), Black-bellied Plover (*Pluvialis squatarola*)and killdeer (*Charadrius vociferous*).

Response to Comment 36: The second sentence under "Wildlife" on page 3.3-6 of the DEIR is revised as follows to incorporate this comment.

Examples of mammals that are found in this habitat in the Humboldt Bay region include coyotes (*Canis latrans*), house mice (*Mus musculus*), black rats (*Rattus rattus*), deer mice (*Peromyscus maniculatus*), striped skunks (*Mephitis mephitis*), raccoons (*Procyon lotor*), opossums (*Didelphis virginiana*), and feral cats (*Felis catus*).

Response to Comment 37: The third sentence of the second paragraph on p. 3.4-1 of the DEIR is corrected as follows:

"In 1901, following reclamation of tidal marsh west of ~~Connick~~ Cutoff Slough and at Riverside Ranch…."

Response to Comment 38: In response to this comment, the headings of Impacts 3.4.1-2, 3.4.2-2. and 3.4.3-2 of the DEIR have been revised as follows:

Impact 3.4.1-2: ~~Entrainment~~ Entrapment of fish in areas disconnected from the estuary

Response to Comment 39: For clarity, the following sentence is added after the third sentence on the last paragraph on p. 3.4-23 of the DEIR (Impact 3.4.1-3):

> Short term adverse effects to Zostera and soft-shelled clams (Mya arenaria) are anticipated.

Response to Comment 40: Comment noted. The discussion of Impact 3.6.6-1 concludes (DEIR, p. 3.6-15) that project activities could result in a significant impact requiring implementation of the identified mitigation.

Response to Comment 41: The second sentence of the first paragraph of Section 3.7.1 (DEIR p. 3.7-1) has been corrected to read:

> The Salt River, with its numerous sloughs and drainage features, enters the Eel River ~~at the northern tip of the Riverside Ranch property~~ at the north end of Seaside Island.

Response to Comment 42: Shading color or background image color of Figure 3.8-1 has been adjusted to eliminate conflicts between zoning type and background imagery.

Response to Comment 43: The only publicly-owned portion of the project would be owned and managed by the California Department of Fish and Game (CDFG). By implementing this project a substantial portion of the publicly owned area would be converted to tidal marsh. Setback berms to be constructed around the perimeter of the marsh area would provide the only terrestrial access to the property. The extent of public access to this area is currently unknown, but project partners plan to provide organized educational programs at the site for the interested public.

It is expected that once project implementation activities are completed CDFG would consider public access, including passive recreation, such as walking and wildlife viewing from the setback berms. It is also expected that CDFG will consider the possibility of allowing duck hunting and other waterfowl activity access. The full extent of future public access at the estuary is currently unknown and will be in the purview of the CDFG and are therefore not part of the proposed project evaluated in the EIR.

Response to Comment 44: The sixth sentence of the fourth full paragraph on p. 3.11-8 of the DEIR is revised to read as follows:

> The River Improvement Features are a series of vertical logs (pilings) imbedded into the bank of the Salt River with horizontal wooden cross bracing, forming a riverwall intended to protect the bank from erosion.

Response to Comment 45: Comment noted. Page 3.13-2, fourth full paragraph, notes: "No natural gas pipeline system exists in the project area…"

Response to Comment 46: Like many Salt River tributaries, excessive aggradation and channel alignment manipulation has resulted in a loss of stream function and habitat diversity in the lower reach of Reas Creek. It is recognized that applying restoration measures to Reas Creek that are currently proposed for the Salt River channel such as sediment removal, riparian planting, and long-term adaptive management could greatly benefit the Reas Creek channel corridor, however the

necessary planning and engineering studies to support such restoration activities have not been fully developed nor have resource agency objectives. As a result, the channel restoration component of the Salt River Ecosystem Restoration Project does not include restoration activities on Reas Creek. Acknowledging the potential that future restoration activities could include re-alignment of Reas Creek and potential relocation of its confluence with the Salt River, the proposed Salt River channel restoration design currently assumes the existing Reas Creek crossing under Port Kenyon Road would remain in place for near-term. The proposed excavation of the Salt River channel at the confluence with Reas Creek (outfall of Port Kenyon Road crossing) would result in an elevation difference of approximately 5-feet. To prevent local erosion and the potential of triggering a headward migration cut, rock slope protection (RSP) is proposed to be placed between the Port Kenyon Road crossing outlet to the excavated Salt River channel. The RSP would be sized (designed) based on the maximum anticipated channel velocity in the restored Salt River channel. If future restoration activities on Reas Creek include the removal and replacement of the existing Port Kenyon Road crossing, the RSP could be removed to accommodate the improvements, or left in place if the confluence is relocated.

8.15 RESPONSES TO ORAL COMMENTS PRESENTED AT THE MAY 5, 2010 DEIR PUBLIC HEARING

Comment: Are the spoils that are proposed for land application/soil amendment organic approved?

Response: Yes. California Certified Organic Farmer (CCOF) was contacted by the County Public Works Department in 2008 inquiring whether organic producers could use sediment excavated from the Salt River Project as a soil amendment and still meet their organic requirements. CCOF reviewed soil analysis reports provided to them and concluded that the spoils from the project would be appropriate for use as a soil amendment. CCOF did not issue a blanket approval but rather, would require each landowner to submit an individual proposal.

Comment: Is the culvert sizing proposed for upland projects and Port Kenyon Road undercrossing adequately sized? Will they pass the 100-year flood?

Response: Road and culvert upgrades are one of the many types of upslope erosion reduction activities that are part of the Salt River Ecosystem Restoration Project. All road/stream crossings in the upslope areas that are replaced and paid for through this project would be required to accommodate the 100-yr flood event pursuant to CDFG and NOAA Fisheries Fish Passage Guidelines.

The proposed channel design for the Salt River Ecosystem Restoration Project is not intended to provide a specified level of flood relief. Although the channel/corridor would be constructed to a flow capacity somewhere between a one- to two year recurrence interval, the main design objective is to provide positive drainage of surrounding lands as floodwaters recede. New crossings constructed over the proposed channel such as Port Kenyon Road over Francis Creek would be designed to pass a flow event equal to or greater than the channel design capacity. The entire Eel River Delta plain, including Salt River corridor, is inundated during a 100-year storm. There is no practical way to provide passage for such a large flood along the Salt River corridor.

Road/stream crossings in the valley or delta area would not necessarily be sized for the 100-yr flood event because the Eel River would likely be flooding across the entire delta at that point. The valley or delta culverts would be designed to pass flows larger than the adjacent stream capacity, so as to not inhibit the flow of water under the road.

Comment: Who will do ongoing maintenance of culverts (on Port Kenyon Road, County Roads)? Who would monitor private roads?

Response: Water crossings on County roads would be maintained by the County.

Comment: What types of culverts will be constructed as part of the Salt River project?

Response: Each water crossing is unique and appropriate culvert types will be implemented to accommodate each individual crossing. Some crossings may require corrugated galvanized or plastic culverts, where other crossings may be better suited by open bottom culverts or bridges. These

specific details would be part of the 75% or 100% design plans and included in the Project permits. In the case of upslope erosion reduction activities, details will be part of each individual permit application.

Comment: Does the EIR cover a no-project alternative?

Response: Alternative 4 in the EIR address the no-project scenario.

Comment: Does the EIR address social and economic aspects of loss of agricultural lands?

Response: Please see response to comment A-8, above, with respect to impacts to agricultural lands and productivity. The project has been designed with the dual purposes of improving drainage from agricultural lands and enhancing natural habitat through restoration activities. The improved drainage would generally benefit the local agricultural economy, as well as promote the historic and ongoing agricultural uses of the area. It also would improve local fisheries. In so doing it is designed to have generally positive social and economic effects to the local area. It is acknowledged that this overall local benefit may not apply equally to all landowners within or adjacent to the project. Please note that CEQA does not require analysis of social or economic activities unless they could have a secondary impact to the physical environment.

Comment: The reliance of the DEIR on the non-adopted General Plan creates a problem (uses a hypothetical situation rather than an actual one).

Response: Pages 3.8-3 to 3.8-4 of the DEIR, as revised by Response to Comment 1 of the Humboldt County Farm Bureau, May 25, 2010 Letter, state that the Humboldt County General Plan is currently being updated, but has not yet been adopted except for the Housing Element. Until a new County General Plan is adopted, the 1983 General Plan will remain in force. The evaluation in the DEIR is based on the two existing plans that are applicable to the proposed project: the 1983 Humboldt County General Plan and the Eel River Area Plan. Thus, the DEIR did not rely upon an unadopted General Plan.

Comment: Who accepts (certifies) the EIR?

Response: The CEQA Lead Agency, which for this project is the Humboldt County Resource Conservation District, is responsible for certifying the EIR and assuring its legal adequacy. Subsequent permitting and approving agencies also will use the EIR in their approvals. Those agencies may or may not supplement the EIR for their use.

Comment: The ecosystem aspect of the project makes it all-inclusive.

Response: Comment noted.

Comment: Current flows of water and post-project flows are of concern. This is particularly problematic with respect to the proposed berms on the back of Riverside Ranch, which could aggravate flooding of lands to the north when the Eel floods.

Response: As occurs under existing conditions, flooding from the Eel River would cause waters to rise at equal rates and to equal levels on both sides of the Riverside Ranch berms. The presence of the berms would not alter the way or extent Eel River floodwaters impact surrounding project areas from current or historic conditions. The project has also incorporated a large drainage channel

outboard of the new berm to accommodate drainage and receding floodwaters from adjacent properties. All Riverside Ranch berms and drainage features are designed to provide a comparable, if not improved, drainage of surrounding properties.

Comment: Placement of spoils on upland areas near Riverside Ranch also could induce additional flooding/standing water on adjacent low-lying parcels. This should be reviewed in the EIR.

Response: No soil reuse is proposed in close proximity to Riverside Ranch. Within the distant soil reuse areas, soil would be placed in very thin (no greater than 6-inch) lifts in soil reuse areas. The site specific and cumulative effect of this type of soil placement is not intended to alter the extent, magnitude or duration of flooding from existing conditions. Soil will be spread or disked into the existing pastures in a manner that will not adversely alter existing overland drainage patterns and will only be placed in mapped uplands.

Comment: Failure of floodgates on Riverside Ranch has affected adjacent properties; placement of spoils may worsen this. Will there be no "bathtub effect" on unfilled parcels?

Response: No soil reuse is proposed in close proximity to Riverside Ranch, which could impact proposed gated culverts. Drainage from the north of Riverside Ranch would continue to drain to the existing 48-inch culvert as per current conditions. Drainage from the parcels east of Riverside Ranch would flow southward and flow through a new culvert equipped with tide gate. There are also redundant manually operated radial gated culverts being installed through the Riverside Ranch berm along the north and eastern property boundaries to provide adjacent land-owners with the opportunity to enhance flood drainage from adjacent parcels. There is also a high flow bypass proposed at the south end of the outboard drainage ditch that would return floodwaters above an elevation of 10-feet directly to the Salt River without having to pass through a gated culvert.

Comment: Will east/west ditches be maintained? If not, blockage will cause flooding to adjacent properties. Properties to the east of RR are below sea level. How long will they take to drain?

Response: East/west ditches that are not within the project footprint would not be maintained by this project. Regular ditch maintenance will remain the landowners' responsibility.

Comment: Can emergency work be done soon at Port Kenyon Road undercrossing?

Response: The need for flood conveyance in the Salt River watershed is undeniable and imperative. The Salt River watershed restoration project is designed to provide improved flood conveyance and drainage while creating and protecting riparian and aquatic habitat and improving ecological and geomorphic processes. An emergency flood alleviation project may be implemented by the County between now and when the larger project is completed. This work would target those most affected by flooding on Port Kenyon Road, upstream and downstream of the Francis Creek crossing.

Comment: Are 5-year old profile surveys still accurate?

Response: The rate of sedimentation in the delta reach of the tributaries and along the Salt River channel is high, and can significantly change the local topography in a single season. Construction specifications, based on the hydraulic analysis, will dictate the elevation of the excavated channel (of the thalweg of the channel and the elevation of the floodplain terraces) relative to the NGVD. The

design elevations remain the same even though the overlying sediment elevations may have changed somewhat since 2006. These design elevations are based on hydraulic analysis that provides a downward gradient and flow toward the estuary. Any additional sedimentation that has occurred since the original survey would be excavated to reach the design elevations.

California Natural Resources Agency
DEPARTMENT OF FISH AND GAME
Northern Region
601 Locust Street, Redding, CA 96001
http://www.dfg.ca.gov

ARNOLD SCHWARZENEGGER, Governor
JOHN McCAMMAN, Director

July 16, 2010

Ms. Donna Chambers
Humboldt County Resource Conservation District
5630 South Broadway
Eureka, California 95503

RE: Draft Environmental Impact Report for the Salt River Ecosystem Restoration Project (SCH #2007062030), Humboldt County, California

Dear Ms. Chambers:

On April 8, 2010, the Department of Fish and Game (DFG) received from Humboldt County Resource Conservation District (Lead Agency) a Draft Environmental Impact Report (DEIR) for the Salt River Ecosystem Restoration Project (Project). While this response will not meet the deadline for DEIR comments, we ask that you consider our recommendations during preparation of the Final Environmental Impact Report (FEIR). Furthermore, DFG staff will continue to meet with the Lead Agency/Project team as needed to assist in further Project design, permitting, and implementation.

1

As a trustee for the State's fish and wildlife resources, DFG has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants and their habitat. As a responsible agency, DFG administers the California Endangered Species Act (CESA) and other provisions of the Fish and Game Code (FGC) that conserve the State's fish and wildlife public trust resources. DFG offers the following comments and recommendations on this Project in our role as a trustee and responsible agency pursuant to the California Environmental Quality Act (CEQA), California Public Resource Code §21000 *et seq.*).

DFG's most substantial environmental concerns relate to the loss of riparian habitat and associated temporal and long-term impacts to avian and bat species, and how the Project will effectively avoid, minimize, and mitigate these impacts. DFG's most substantial logistical concern is the lack of a defined entity or organization that will be responsible for post-Project channel maintenance and adaptive management, protection, and compliance.

Project Overview and Description

The Project consists of four major elements: 1) wetland and upland restoration on the 444-acre Riverside Ranch property with future fee title transfer to DFG, 2) erosion-reduction projects in the Wildcat Hills; 3) excavation of a new Salt River channel, and 4)

long-term maintenance. Project implementation is expected to occur in 2011 and 2012 and is proposed to start as early as June of each year and last at least 120 days. Project construction would be phased into two field seasons. Phase One includes restoration activities on Riverside Ranch and clearing and grubbing of riparian habitat for the length of the proposed channel excavation area. Phase Two consists of channel excavation/sediment removal and reestablishing channel connectivity. The Salt River Ecosystem Restoration Project area extends from 425 feet upstream of the confluence of Williams Creek with the Salt River, downstream 7.4 miles to the confluence of Cutoff Slough. To date, consultants have completed special status plant surveys, reconnaissance-level botanical and wildlife surveys, and a planning-level wetland delineation.

Importance of Wetland and Riparian Habitats

Wetland and riparian habitats are essential for the majority of wildlife species (Naiman et al. 1993, Semlitsch and Jensen 2001, Riparian Habitat Joint Venture [RHJV] 2004, Batzer et al. 2006, DFG 2001, 2007). Because of their seasonal or year-round water supply, cool microclimate, productivity, nutrient cycling, and food availability, wetlands and riparian habitats are vital not only to aquatic and semi-aquatic species but also to a majority of the region's terrestrial species. Wetlands and riparian corridors also serve as important wildlife migration and dispersal routes for both aquatic and terrestrial wildlife.

2

More than 225 species of birds, mammals, reptiles, and amphibians depend on California's riparian habitats (RHJV 2004). Of the 63 bird taxa designated as Species of Special Concern (SSC), 27 taxa (43%) primarily utilize wetland habitats and 11 taxa (17%) are riparian forest denizens (Shuford and Gardali 2008). SSC are designated by DFG for species with declining population levels, limited ranges, and/or continuing threats that make them vulnerable to extinction. Though not listed pursuant to the federal Endangered Species Act or CESA, the goal of designating taxa as SSC is to halt or reverse their decline by calling attention to their plight and addressing habitat conservation issues early enough to secure their long-term viability. Approximately 60% of the State's avian SSC are dependant upon wetland and riparian habitats, which demonstrates both the ecological importance and the threat to these habitats.

According to a U.S. Army Corps of Engineers (ACOE) technical note (Fischer 2000), "If avian habitat is a management objective, managers should consider managing for riparian zones that are at least 328 feet (100 meters) wide." This recommendation applies to either side of the channel in larger river systems and to total width for lower-order streams and rivers (Fischer 2000). According to the Natural Resources Conservation Service, "...a minimum buffer (riparian habitat) of 100 feet (30 meters) on

both sides of the stream is recommended for sufficient stream protection. This usually amounts to a buffer that is 3-5 mature trees wide on each side of the stream" (NRCS 2004).

Regional Riparian and Wetland Loss

Riparian habitat performs a disproportionate number of biological and physical functions on a unit area basis and the restoration of riparian function along America's waterbodies should be a national goal (RHJV 2004). Such a goal is clearly mandated within the Humboldt County General Plan (Streamside Management Area Ordinance) and Local Coastal Plans. Besides the maintenance of fish and wildlife communities, numerous studies have shown riparian habitat and their associated wetland systems also provide flood attenuation, groundwater recharge and discharge, surface water supply and replenishment, sediment transport and storage, nutrient and organic matter cycling, pollutant filtration, and temperature and microclimate control.

2 *(cont.)*

Loss of California's wetlands and riparian habitat has resulted in many water quality impairments. For example, according to the California Water Resources Control Board, riparian habitat loss or disturbance is believed to be a contributing factor to impairment in 76% of North Coast Region watersheds proposed as impaired pursuant to the Clean Water Act Section 303(d). This includes 86% of all temperature impairments and 75% of all sediment impairments in the North Coast Region. According to the State and Regional Water Boards over 50 waterbodies in northern California, including reaches of almost all major river systems, are listed pursuant to the Clean Water Act Section 303(d) list as impaired for any of the following reasons: temperature, sedimentation/siltation, nutrients, or bacteria.

Despite the importance of wetlands and riparian habitat for abiotic and biotic ecosystem function, California and the North Coast have experienced a substantial loss of wetland and riparian habitat in the past 160 years. An estimated 93 to 98% of California's and 75% of the North Coast's riparian habitat has been converted (Katibah 1984, Dawdy 1989). Along the lower Eel River, less than 5% of an estimated 10,000 acres of rich bottomland riparian habitat still exists (Kelly 1987).

Given the high biological diversity in riparian habitat and the significant loss and degradation, retaining and conserving riparian areas is critical for the conservation of neotropical migrants and resident birds in the West (RHJV 2004). The loss of riparian habitats may be the most important cause of population decline among landbird species in western North America (DeSante and George 1994). Loss of riparian habitat has been implicated in the decline and subsequent listing of the willow flycatcher (*Empidonax traillii*) as endangered pursuant to CESA. DFG recognizes all subspecies

of the willow flycatcher as endangered, and the little willow flycatcher (*E. t. brewsteri*) is known to occur in northwestern California as a late spring migrant, rare breeder, and can be the most common flycatcher in coastal willow patches and suitable inland habitat during fall migration (Harris 2005, Hunter et al. 2005).

Proposed Riparian Habitat and Corridor

As proposed and illustrated in the DEIR figures 2-10, 2-11, 2-12, 2-13, and 2-14, the Project is unlikely to improve the riparian habitat corridor along the excavated Salt River channel. The Project will likely reduce habitat function and value for avian, amphibian, and bat species when compared to current habitat value. Table 3.3-2 states 72.8 acres of riparian scrub/forest currently exists and will be impacted, and 79.2 acres will be recruited after 10 years (gain of 6.4 acres), or approximately a 1.1:1 (area restored: area impacted) ratio. Figures 2-10 through 2-14 show the riparian corridor confined below the top of bank (i.e. only within the two-year floodplain) and Salt River riparian habitat reestablished on one bank, not both. In addition, "reduced planting areas" are proposed where pasture intersects with the channel excavation footprint. The "reduced planting plan" would essentially establish only a riparian overstory and allow full grazing access. Also, the Project's *Revegetation and Land Use Plan* states, "Once plants are established, which may take 1-2 years; flash grazing can occur on the 1-year and 2-year floodplain. No grazing will occur in the low flow channel."

2

(cont.)

Impact 3.1.1-11 states, "A primary objective and anticipated result of the channel excavation component is to improve the drainage from surrounding parcels." Parcels adjacent to the Project are almost exclusively used for dairy or grazing or have some level of development. Agricultural practices can affect aquatic and riparian areas through non-point source pollution, since these areas often receive sediment, fertilizers, and animal waste from associated agricultural lands (DFG 2004).

The Project appears to propose a "stringer" of riparian vegetation on one river bank situated below the top-of-bank, subject to constant or periodic flash grazing. The resulting riparian strip appears to be about the width of one mature riparian tree crown. As proposed, the Project would likely cause a significant temporal loss of riparian habitat and what would eventually become established would not effectively function as habitat for riparian-dependent avian species and bats. Nesting attempts in the proposed narrow riparian strip would likely fail due to easy detection and access by predators (i.e. edge effects). The narrow band of vegetation would provide limited shade and stream cover. It would not likely effectively capture and prevent sediment and other pollutants carried by run-off from discharging into the Salt River.

The Salt River Ecosystem Restoration Project is described in the Executive Summary as a "watershed-based, ecosystem-scale project with multiple objectives and benefits including habitat restoration and enhancement, water quality improvements, flood alleviation, and carbon sequestration." Yet, the Project as proposed will have significant temporal impacts on riparian habitat, and may accommodate land use practices that as proposed could cumulatively lead to the degradation of the Salt River's habitat function and value for fish and wildlife.

2 *(cont.)*

Since 1994, DFG has provided local lead agencies with guidance for the protection and conservation of riparian resources. Consistent with these guidelines, and to reduce riparian habitat impacts to less than significant and satisfy the intent of "ecosystem restoration" the Project should include a minimum 150-foot-wide riparian corridor on both sides of the Salt River that extends out from the 2-year floodplain for the entire length of the Project. In locations where structures or infrastructure are within 150-feet of the 2-year floodplain the riparian corridor can be reduced (variable width) and increased in other less constrained locations (averaged). A typical mitigation ratio for the loss of riparian habitat is at least 3:1 (area restored: area impacted). Cattle exclusion fencing that is "wildlife friendly" should be included for the entire length of the riparian corridor. Wildlife friendly fencing typically is four strands, and 1) top and bottom strands are smooth, 2) middle strands are barbed, 3) bottom wire is at least 18 inches above the ground, and 4) the top strand is more than 40 inches above the ground. Flash grazing below the top-of-bank appears unlikely to allow recruitment of functional riparian habitat and should be removed from the *Revegetation and Land Use Plan*. DFG recommends cattle watering systems be included, as necessary, outside of the riparian habitat corridor.

Wetlands

3

DFG understands that wetland delineations are ongoing for the Project and that initial effort has been conducted to delineate wetlands based on ACOE three-parameter wetland criteria. DFG as well as the California Coastal Commission and U.S. Fish and Wildlife Service recognize one-parameter wetlands. The DEIR does not provide detailed information on the extent of one-parameter wetlands that may be impacted by the Project. It is the Fish and Game Commission's policy to ensure that proposed projects result in no net loss of wetland or riparian habitat values or acreage. The DEIR should include a detailed analysis of potential impacts to wetland habitats including, direct, indirect, and cumulative impacts to these resources. If this Project will result in the loss of wetland area or value, the DEIR should identify mitigation for its loss. A typical mitigation ratio for the loss of wetland habitat is at least 3:1 (area restored: area impacted).

CESA Listed Species

Pursuant to FGC §86, "take" is defined as: hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill. DFG recognizes all subspecies of the willow flycatcher as endangered pursuant to CESA. The DEIR states that the habitat in the Project area is appropriate for willow flycatchers and, "although perhaps somewhat unlikely, this species could appear as a breeder on the site." DFG is in agreement and recommends protocol level surveys in advance of the Project, and those results should be analyzed in the DEIR. Additional protocol level willow flycatcher surveys may be necessary in advance of Phase One and Two activities. DFG is available for consultation and fine-tuning surveys to fit the Project as it is further developed.

4

The western yellow-billed cuckoo (*Coccyzus americanus occidentalis*) is listed as endangered pursuant to CESA. The western yellow-billed cuckoo is considered by Harris (2005) to be a casual summer visitor with seventeen seasonal reports. Casual is defined as "species expected in very small numbers, less often than annually, but which are reasonably expected again" (Harris 2005). In addition, Hunter et al. (2005) reported suitable habitat exists along the lower Eel River, birds have been observed in Ferndale and the North Spit of Humboldt Bay and a bird in breeding condition (i.e. brood patch) was mist netted on Lanphere Dunes. Recent survey efforts (2005-2009) on Cock Robin Island (lower Eel River) have detected western yellow-billed cuckoo annually, and in 2008, evidence of probable breeding was detected there (Mad River Biologists 2009). DFG recommends protocol-level surveys for the western yellow-billed cuckoo in advance of the Project, and those results should be analyzed in the DEIR. Additional protocol-level yellow-billed cuckoo surveys may be necessary in advance of Phase One and Two activities. DFG is available for consultation and fine-tuning surveys to fit the Project as it is further developed.

The Project has the potential to "take" two State-listed fish species, the State-threatened longfin smelt (*Spirinchus thaleichthys*) and coho salmon (*Onchorhyncus kisutch*). While coho salmon still occur in Salt River tributaries, the current status and distribution of longfin smelt in the Project area appears unknown. The DEIR notes longfin smelt were observed in the Salt River channel during winter months in the 1970's. Local records of longfin smelt presence come from studies meant to generally characterize fish assemblages in estuaries or from studies of juvenile salmonid outmigration and use of lower stream systems (DFG Anadromous Fish Resource and Monitoring Program pers comm. J. Garwood). Juvenile and adult longfin smelt are typically found in the open water of bays and estuaries. However, mature adults migrate into freshwater streams to spawn (generally from November through May). The eggs adhere to sand, gravel, rocks, and vegetation and take approximately one month to hatch (Moyle 2002). Newly

hatched larvae are buoyant and are swept into more brackish parts of the estuary (Moyle 2002). Larvae and/or small juveniles have been collected in near shore trawls in the ocean off San Francisco and Humboldt bays (CDFG 2009).

4 (cont.)

Consultation with DFG pursuant to FGC §2081(b) to authorize any incidental take of willow flycatcher, western yellow-billed cuckoo, coho salmon and longfin smelt, must be completed before the Lead Agency permits the Project. Measures identified during consultation that fully mitigate the effects of any authorized incidental take of these species and financial assurances to implement and monitor these mitigations must be included as enforceable Project conditions before Project approval. Alternatively, the Project-related construction schedule and future undefined maintenance activities could be adjusted to avoid the potential for take of State-listed species.

Nesting bird protection

DFG has jurisdiction over actions that may result in the disturbance or destruction of active nest sites or the unauthorized take of birds. Sections of the FGC that protect birds, their eggs and nests include §3503 (regarding unlawful take, possession or needless destruction of the nest or eggs of any bird), §3503.5 (regarding the take, possession or destruction of any raptor or their nests or eggs), and §3513 (regarding unlawful take of any migratory nongame bird).

5

The Project (in Mitigation Measure 3.3.1-7) proposes construction activities during the breeding season of birds (generally March 1- August 15) following pre-construction site-specific surveys by a qualified biologist. According to the mitigation measure, if nesting birds are encountered during these focused surveys, then 100-foot exclusion zone buffers would be delineated for common migratory bird species. If special status nesting birds are encountered, a no-activity exclusion zone would be delineated and the radius and duration would be determined in consultation with DFG. For special status species, DFG recommends an interim 300-foot buffer, and similar to as proposed, subject to modification in consultation with DFG. In general, this mitigation measure as modified may prevent the unlawful take of some nesting birds, especially in habitat that is open or sparse (e.g., in Riverside Ranch).

DFG finds even a qualified biologist employing focused surveys would not likely locate many nesting birds in dense riparian scrub/forest habitat. As such, DFG recommends that clearing and grubbing of the Salt River where the highest concentration of resident and neotropical birds are likely to nest should not occur until the end of the breeding season (August 15). DFG also recommends a 500-foot buffer be established for nesting raptors until nestlings are fledged and fully-independent of the nest. For

5 (cont.)

example the white-tailed kite (*Elanus leucurus*), a State fully protected species, is likely to occur in or adjacent to the Project and may be impacted by Project-related activities unless adequate buffers are provided.

Instream Habitat Restoration and Large Woody Debris

6

The Project, as proposed, does not include any instream structure or habitat enhancement component. The importance of large woody debris (LWD) to juvenile coho salmon can not be overstated. LWD is an essential habitat component with several ecological functions. According to the *Recovery Strategy for California Coho Salmon* (DFG 2004), estuarine LWD stabilizes substrate, provides cover from predators, and provides shelter. In the freshwater environment, LWD promotes pool establishment and maintenance, spawning bed integrity, habitat for aquatic invertebrate prey, and instream productivity (DFG 2004). Young coho salmon are very susceptible to predation once they reach the lower river system and estuary, where water quality and habitat complexity are crucial factors in their ability to survive. Substrate complexity and adequate woody debris are valuable for shelter and hiding, while a sufficient invertebrate food source is important for continued growth and physiological development of coho smolts before leaving the estuary (DFG 2004). According to the DEIR, the Sacramento pikeminnow (*Ptychocheilus grandis*), a non-native predator of juvenile salmonids, is abundant in the Salt River. Without added instream complexity and cover, young coho salmon may be subject to increased levels of predation by and competition with pikeminnow.

DFG recommends LWD structures such as complex engineered log jams and log/rootwad/boulder structures. Project engineers should consult the *California Salmonid Stream Habitat Restoration Manual* (DFG 1998, 2002) and DFG staff (Senior Fisheries Biologist Scott Downie and Environmental Scientist Scott Bauer) for specific LWD design elements, and the distribution of structures within the excavated channel.

Lake or Streambed Alteration Agreement Notification

7

The Project will result in substantial modifications to the streambed, bank, or channel and/or substantial water diversion. As such, the Project proponent is required to notify DFG pursuant to FGC §1602 before undertaking any of these activities. The lake or streambed alteration agreement (LSAA) will include conditions to protect fish and wildlife resources, habitat, and water quality that are mutually agreed to by DFG and the Project proponent.

7 (cont.)

In issuing an LSAA, DFG will be acting as a Responsible Agency pursuant to CEQA. CEQA Guidelines §15096 require DFG to review the CEQA document certified by a lead agency approving a project and, from that review, to make certain findings concerning its potential to cause significant, adverse environmental effects. Therefore, for the purpose of issuance of an LSAA, it's important that the DEIR address all of the potential impacts related to streambed alteration and water diversion and include feasible mitigations. Doing so would reduce the need for DFG to require additional environmental studies and review for preparation of the LSAA. The preparation of an LSAA will be administered through the DFG Office in Eureka. Further information can be obtained by contacting DFG at (707) 441-2075 or from the DFG website at http://www.dfg.ca.gov/habcon/1600.

Maintenance and Adaptive Management

8

The DEIR proposes long-term maintenance in accordance with the *Salt River Enhancement Project Maintenance Plan Standard Operating Procedures*; however, plan details are not included in the DEIR. How maintenance would be conducted and by what entity/individuals is not described. If maintenance activities have the potential to "take" listed species, modify habitat, or require subsequent discretionary actions by DFG (e.g. LSAA and/or incidental take permit), then the *Salt River Enhancement Project Maintenance Plan Standard Operating Procedures* should be referred to DFG for review and concurrence before Project approval.

CNDDB Reporting

9

Any special status species detected during surveys should be reported to the California Natural Diversity Database (CNDDB). The CNNDB field survey form can be found at the following link: http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/CNDDB_FieldSurveyForm.pdf. The completed form can be mailed electronically to the CNDDB at the following address: cnddb@dfg.ca.gov. Species that warrant reporting to the CNDDB include Species of Special Concern, rare species as defined by the California Native Plant Society, species proposed for listing or candidate species, and species listed as threatened or endangered by either the State or federal endangered species acts.

Recommendations

10

1. Establish and maintain a 150-foot variable width riparian corridor on both sides of the Salt River Restoration Project treatment reach. Riparian habitat should be replaced at a 3:1 (area restored: area impacted) ratio.

2. "Wildlife friendly" cattle exclusion fencing should be included along the entire length of the Salt River Restoration Project treatment reach, cattle should be watered away from and outside the river and riparian habitat, and "flash grazing" should be eliminated as a management option within the overall riparian habitat.

3. One-parameter wetlands should be delineated. Wetlands should be replaced at a 3:1 (area restored: area impacted) ratio.

4. Protocol-level surveys must be completed in and adjacent to the Project area in suitable habitat for both the willow flycatcher and yellow-billed cuckoo to detect presence or absence and to asses the potential for take and other impacts to these species. Any impacts must be analyzed in the DEIR. Additional surveys may be warranted for future phases of the Project.

5. Consultation with DFG pursuant to FGC §2081(b) to permit any Project-related incidental take of coho salmon, longfin smelt, willow flycatcher, and western yellow-billed cuckoo must be completed before the Lead Agency permits the Project. Maintenance and adaptive management strategies for the Project should be included in the consultation.

10 (cont.)

6. Major vegetation clearing and grubbing (i.e. existing riparian habitat) shall not occur between March 1 and August 15th to ensure avian nesting is complete.

7. Establish an interim 300-foot buffer for nesting avian special status species and a 500-foot buffer for nesting raptors until nestlings are fledged and fully-independent of the nest.

8. Include LWD structures such as complex engineered log jams and log/rootwad/boulder structures. Project engineers should consult DFG staff (e.g., Senior Fisheries Biologist Scott Downie and Environmental Scientist Scott Bauer) for specific LWD design elements, and distribution of structures within the excavated channel.

9. The Project shall notify DFG pursuant to §1602 to apply for an LSAA.

10. Please send to DFG the *Salt River Enhancement Project Maintenance Plan Standard Operating Procedures* for review and concurrence before Project approval. The plan should be specific on who, when, and what activities are to occur regarding access, long-term maintenance, and/or adaptive management.

11. Any special status species detected during surveys should be reported to the CNDDB.

10 (cont.)

As stated above, DFG anticipates continued involvement and interaction with the Lead Agency/Project team as needed to assist in further Project design, permitting, and implementation and to help meet the Project objectives. If you have questions or comments regarding this matter, please contact Environmental Scientist Michael van Hattem at (707) 445-5368 at 619 Second Street, Eureka, California 95501.

Sincerely,

MARK C. STOPHER
Acting Regional Manager

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cc: Ms. Laurie Harnsberger
Department of Fish and Game
619 Second Street
Eureka, California 95501

ec: Ms. Melissa Kraemer
California Coastal Commission
mkraemer@coastal.ca.gov

Mr. Kelley Reid
Army Corps of Engineers
Kelley.E.Reid@usace.army.mil

Ms. Paula Golightly
U.S. Fish and Wildlife Service
Paula_Golightly@fws.gov

Mr. Dan Free
National Marine Fisheries Service
Dan.Free@noaa.gov

Messrs. John Short and Dean Prat
North Coast Regional Water Quality Control Board
jshort@waterboards.ca.gov, dprat@waterboards.ca.gov

ec: Messrs. Curt Babcock, William Condon, Gordon Leppig, Scott Bauer, Mark Wheetley, Scott Downie, and Michael van Hattem
Mss. Laurie Hamsberger and Dr. Gayle Garman
Department of Fish and Game
cbabcock@dfg.ca.gov, wcondon@dfg.ca.gov, gleppig@dfg.ca.gov, sbauer@dfg.ca.gov, mwheetley@dfg.ca.gov, sdownie@dfg.ca.gov, mvanhattem@dfg.ca.gov, lharnsberger@dfg.ca.gov, ggarman@dfg.ca.gov

8.16.1 RESPONSES TO CALIFORNIA DEPARTMENT OF FISH AND GAME, JULY 16, 2010 LETTER

Response to Comment 1. The EIR authors concur with DFG's jurisdiction over the project, and look forward to continued partnership with the DFG in project design and implementation. Please see Response to Comment 2, below, for a detailed discussion of the project's adverse and beneficial effects on wetlands and riparian habitat.

Response to Comment 2. DFG comments on the importance of riparian habitat to many wildlife species, particularly birds and bats, and the significant historic losses of this habitat type. DFG comments that a wide riparian corridor is optimal for wildlife habitat. DFG comments that riparian habitat in the project area may be important to the little willow flycatcher (*Empidonax traillii brewsteri*) and to western yellow-billed cuckoo (*Coccyzus americanus occidentalis*).

We concur with these comments. The project is designed to restore as much functional riparian habitat as possible, given the constraints of the project area and the context of an overall watershed restoration, which includes channel restoration and connectivity with the floodplain as an important element. See below for additional detail on the revised project description with enhanced riparian habitat. The DEIR has been revised to include additional detail regarding little willow flycatcher, western yellow-billed cuckoo, and yellow breasted chat, as well as additional information regarding impacts to riparian bird species. Protocol-level surveys were conducted for willow flycatcher and yellow-billed cuckoo in June and July 2010, 2010, and other bird species were documented during these surveys as well. The results of the surveys are included in the FEIR. See staff-initiated text changes and response to comment G, Redwood Region Audubon Society letter, above for these revisions.

DFG further comments that the project is likely to reduce habitat function and value of the riparian corridor along the excavated Salt River channel. DFG refers to Figures 2-10, 2-11, 2-12, 2-13, and 2-14, and characterizes the proposed riparian corridor as being present on only one bank and limited in width to one mature riparian tree. DFG comments that the project proposes to remove 72.8 acres of riparian habitat, and restore only 79.2 acres, for a mitigation ratio of 1.1:1. DFG further characterizes the proposed riparian corridor as being degraded because it is adjacent to livestock grazing and without livestock fencing, and because some of the riparian corridor could consist of Reduced Planting Areas with no understory, subject to flash grazing. DFG comments that the narrow riparian corridor would expose breeding riparian birds to nest predation, and would fail to provide shade and stream cover or sediment and pollutant filtration. DFG recommends a riparian corridor width of at least 150 feet on both sides of the Salt River (averaged) with wildlife-friendly fencing to exclude livestock, and without flash grazing. DFG comments that a typical riparian mitigation ratio is 3:1.

The FEIR reflects significant revisions to project design to increase the amount of riparian habitat and the width of the riparian corridor. It is also important to clarify that the project will not remove all existing mature riparian habitat in the project area, but will avoid impacts to as much existing riparian habitat as possible. It is also important to note that restored riparian habitat will have

increased habitat functions and values relative to existing riparian habitat in at least three important respects:

1. Restored riparian habitat would be adjacent to a restored channel. There is no defined channel adjacent to much of the existing riparian habitat in the project area.
2. Overstory species in restored riparian habitat would consist of sitka spruce, cottonwoods, redwoods, and red alder, while existing riparian habitat consists of willows with a small number of alders and cottonwoods. Proposed riparian habitat will be more diverse and resemble the natural riparian community reported in the Salt River Estuary prior to widespread development.
3. The restored and avoided riparian habitat on Riverside Ranch would have enhanced habitat functions and values because it would not be located adjacent to livestock grazing. Existing riparian habitat in the project area is located adjacent to livestock grazing, which degrades the value of riparian habitat, as noted in DFG comments. For example, cowbirds were recorded during 2010 surveys at more than half (74 of 130) of the willow flycatcher calling stations in riparian forest. Cowbirds are associated with grazing land and are nest parasites on willow flycatcher and other riparian bird species.

See response to Coastal Commission comments 6 and 7 above for detailed discussion of the actual extent of riparian impacts and restoration, mitigation ratios, and riparian habitat functions and values. We concur with the recommendation to construct a wildlife friendly fence along as much of the riparian corridor as is feasible where adjacent livestock grazing is expected. The project description has been revised as follows to include the recommended fencing.

> <u>Cattle exclusion fencing will be constructed along the riparian corridor in all locations where livestock grazing is anticipated. Gates will be included in the fence to allow access to the riparian corridor and channel where necessary for maintenance activities or access to other infrastructure. Cattle exclusion fencing will incorporate wildlife friendly features wherever feasible, such as the following: 1) Fencing will have four wire strands, 2) top and bottom strands will be smooth, while middle strands will be barbed, 3) bottom wire will be at least 18 inches above the ground, and 4) the top strand will be at least forty inches above the ground. In some situations, it will be necessary to have more robust fencing, such as in areas where cattle must be excluded from a roadway. In these cases, other fencing features may be necessary, such as electric wire or a bottom wire that is closer to the ground. In areas where fencing will likely need to be moved, such as areas where extensive sedimentation that could bury or damage fencing is anticipated, temporary cattle exclusion fencing may be used.</u>

Response to Comment 3. A site-specific jurisdictional delineation has been completed for the project area, with significant fieldwork and analysis conducted by Dan Martel of the USACE. The results are presented in the FEIR. The acreages of existing wetlands, mitigation ratios, and the projected impacts to those wetlands, are discussed above in response to comments 6 and 7 above. The project would have a beneficial effect on wetlands in the project area, resulting in a significant increase in wetland functions and values through restoration of extensive tidal marsh and aquatic habitat that would be part of a greatly enhanced Salt River ecosystem incorporating estuarine subtidal aquatic and mudflat habitat and intertidal marsh habitat, and hydrologically connected riparian floodplain forest and scrub.

Response to Comment 4. See response to comment 2, above.

Response to Comment 5. DFG recommends additional measures to avoid potential impacts to nesting special status and riparian birds. We concur with this comment; these additional measures are incorporated into the EIR as follows.

Text on page 3.3-36 is revised as follows:

Mitigation 3.3.1-7. Minimize and avoid impact to nesting special status or migratory birds

Construction activities would occur during the breeding and nesting season (March 1-August 15) only following pre-construction site-specific surveys by a qualified biologist. Nesting surveys shall be conducted no more than one week prior to the initiation of site preparation. If surveys identify active nests belonging to common migratory bird species, a 100-foot exclusion zone shall be established around each nest to minimize disturbance-related impacts on nesting birds. If surveys identify active nests belonging to special status birds, a<u>n interim</u> no-activity zone<u> of 300 feet</u> shall be established around the nest. <u>If surveys identify active nests belonging to raptors, an interim no-activity zone of 500 feet shall be established around the nest.</u> The radius of the no-activity zone <u>may be modified after consultation with DFG,</u> and the duration of the exclusion shall be determined in consultation with DFG. <u>In order to avoid take of willow flycatchers and western yellow-billed cuckoos during Project activities, in areas where the vegetation is dense and unfeasible to adequately survey, riparian vegetation removal will occur between August 15 and November 30 to avoid the nesting season for these species. For areas with less dense riparian vegetation that can be adequately surveyed, which will be determined in consultation with CDFG, riparian vegetation removal may occur between 1 July and 15 August after surveys for nesting willow flycatchers and presence/absence surveys for other nesting birds are conducted by a qualified biologist prior to the start of vegetation removal. Surveys for willow flycatchers would occur in June and presence/absence surveys for other birds and would occur no more than one week prior to the initiation of site preparation. If active nests belonging to willow flycatchers or western yellow-billed cuckoos are detected during surveys, a 300-foot exclusion zone will be established around each nest in which no construction activities will occur until nesting is completed. The duration of the no-activity exclusion area(s) will be determined in consultation with CDFG.</u>

Impact Significance

Less than significant after mitigation.

Response to Comment 6. The 70%-designs for Riverside Ranch and the Salt River channel have been revised to include significantly more habitat complexity than the 30%-design reviewed in the DEIR, including large woody debris.

Response to Comment 7. Lake and Streambed Alteration Agreement (LSAA) and CEQA nexus-

We concur with this comment and have made every effort to provide as much of the necessary information for the LSAA as possible in the FEIR.

Response to Comment 8. The Adaptive Management Plan (AMP) has been finalized and is available for review at the HCRCD offices in Eureka and electronically upon request from the RCD.

The revised (final) AMP also has been reviewed by CDFG. Maintenance activities specified in the AMP have been designed to avoid take of listed species.

Response to Comment 9. CNDDB Reporting- CNDDB reports have been or will be filed for all special status species documented in the surveys for this project.

Response to Comment 10. Summary of Recommendations. DFG summarizes its comments above with a list of 11 recommendations for the project. All of these recommendations are addressed in the responses to DFG comments 1-9 above.

8.17 ERRATA AND STAFF-INITIATED TEXT CHANGES

8.17.1 SECTION 3.3: BIOLOGICAL RESOURCES

Text on page 3.3-15 is revised as follows:

Northern harrier (Circus cyaneus)

This bird species has no federal status and is a State Species of Special Concern. Northern Harriers are found in open grasslands, agricultural fields, and marshes throughout much of North America. They perch and fly low, hunting for a variety of prey such as mice, birds, frogs, reptiles, and insects. This species was observed foraging over salt marsh and grassland on the site during the reconnaissance survey and again during surveys conducted May-August 2010, and may nest on the site.

Text on page 3.3-16 is revised as follows:

White-tailed kite (Elanus caeruleus)

This bird species has no federal status and is a State Protected Species. The White-tailed Kite is found in brushy grasslands and agricultural areas with low ground cover, as well as grassy foothills, marsh, riparian, woodland, and savanna. This species requires tall alders, willows, or other broad-leaved deciduous trees for nesting. Nesting habitats are best described as oak woodlands or trees along marsh edges. White-tailed kites have been reported to nest in any suitable tree that is of moderate height, such as eucalyptus, cottonwood, and even coyote bush, with the nests placed near the tops of these shrubs or trees. Nest trees range from single isolated trees to being within large stands (Dunk 1995). Locally, they are also known to nest in conifers. Prey items comprise primarily rodents and insects, although they will also take reptiles, amphibians, and small birds. White-tailed Kites were seen foraging for the entire length of the project area during surveys conducted between May and August 2010, but no nests were located. Suitable nesting sites were suspected in large Monterey cypress (*Cupressus macrocarpa*) just outside of the project area between Cut-Off Slough and Smith Creek. Local nesting was evident, as a recent fledgling was observed near the Ferndale Water Treatment Plant. ~~There are foraging areas adjacent to the project site, and it is likely that kites use this area primarily for foraging.~~

Text on page 3.3-16 is revised as follows:

Vaux's swift (Chaetura vauxi)

This bird species has no federal status and is a State Species of Special Concern. The Vaux's swift is a common summer resident and breeder in the project vicinity. During 2010 surveys, Vaux's Swift were seen foraging over open fields from Cut-Off Slough to the Ferndale Water Treatment Plant but no evidence of breeding in adjacent project area structures was observed.

Text on page 3.3-17 is revised as follows:

California Yellow Warbler (Dendroica petechia brewsteri)

This bird species has no federal status and is a State Species of Special Concern. The California yellow warbler occurs as a summer resident in northern California and is usually found in dense riparian deciduous habitats with cottonwoods, willows, alders, and other small trees and shrubs typical of open-canopy riparian woodlands. Foraging patterns typically involve gleaning and hovering for insects and spiders. Current threats to California yellow warbler include degradation and loss of alder-cottonwood-willow and riparian habitats as well as nest parasitism by brown-headed cowbirds (*Molothrus ater*). The willow-dominated riparian habitat of the lower Salt River provides potential nesting habitat for California yellow warbler, which is a fairly common breeder in riparian habitats in Humboldt County (Heath 2008). Yellow Warbler was documented in 2010 surveys in Salt River riparian habitat from approximately the end of Riverside Road to the Highway 211 crossing. Although no nesting was documented, territorial, singing males provided evidence that Yellow Warblers are breeding in the riparian habitat they occupy on the Salt River.

Townsend's Big-eared Bat (Corynorhinus Plecotus townsendii)

This bat species has no federal status and is a State Species of Special Concern. The Townsend's big-eared bat was once common in California, but now is considered uncommon to rare. This species frequents rural buildings and woodlands, but is extremely sensitive to human disturbance and will quickly abandon roosting sites if disturbed. ~~There are no abandoned buildings or other potential roost sites in the project area.~~ A recently abandoned barn on Riverside Ranch provides a potential roost site in the project area. However, no evidence of bat roosting was observed in several search attempts inside and outside the barn. The Dillon Road and Fulmor road bridges were also searched for bat roosting evidence and adjacent dawn foraging but no bats were observed. This species may forage on the project site.

By night this species roosts and feeds on small moths and other insects. Townsend's big-eared bat is considered sedentary; it is not known to migrate more than 15 km over a lifetime of up to 16 years. The bats mate in the late fall and early winter. These bats are thought to eat mainly moths. Townsend's big-eared bats hibernate when wintering in cold areas, and may share hibernation locations with other bat species. This species is found throughout western North America, especially at upper elevations. The wide environmental tolerance of Townsend's big-eared bat is reflected in its wide geographic range. Townsend's big-eared bat prefers mesic habitats, in particular coniferous and deciduous forests. Townsend's big-eared bat is a cave roosting species but will inhabit human-built caves such as mines, tunnels, bridges, and buildings. The bat is sensitive to human intrusion. This sensitivity to human disturbance is possibly the cause of the species' population decline.

The text of impacts 3.3.1-4 and 3.3.1-6 are revised as follows:

Impact 3.3.1-4. Impacts to riparian forest and scrub

Although the restored Salt River channel and riparian corridor would be wider and provide enhanced fish and wildlife habitat and flood control, the channel restoration component of Alternative 1 would result in extensive medium-term loss of mature riparian forest and scrub (Table 3.3-2). ~~In addition, approximately six acres of riparian forest and scrub to be planted in the restored channel would consist of Reduced Planting Areas, with lower canopy and/or understory density to allow for grazing. These Reduced Planting Areas would have lower habitat value than most exisitng riparian forest and scrub in the project area.~~ Because the Riverside Ranch restoration involves planting an additional 31~~14~~ acres of riparian forest and scrub and because the Salt River Channel Restoration component involves restoring approximately 51~~25~~ acres of riparian forest and scrub ~~on the Vevoda Ranch adjacent to the channel~~, Alternative 1 would ~~not~~ result in a long-term ~~loss~~increase of this habitat type from 105 acres of existing riparian to 125.5 acres of projected riparian habitat post-project. Construction activities associated with the channel restoration component could result in a medium-term loss of 62~~6~~ acres of mature riparian forest and scrub habitat along the Salt River Channel between the time when restoration takes place and new riparian vegetation is established. Short-term impacts to riparian forest and scrub could also result from construction activities associated with restoration implementation. These would involve disturbance of riparian forest and scrub through vegetation clearing activities, grading and installation of restoration features and construction and use of access/bypass roads and staging areas for construction equipment, materials and fill. Vegetation clearing activities may occur in advance of other restoration actions, increasing the duration of the site disturbance.

Medium-term loss of riparian habitat would be mitigated by introduction of new riparian habitat, which would not have the same value as mature riparian habitat during the medium-term. Approximately ~~nine~~51 acres of new riparian ~~herbaceous~~forest and scrub habitat would be planted ~~on the annual floodplain of the Salt River channel, while approximately 65 acres of riparian forest and scrub would be planted above the level of the annual flood~~ in and adjacent to the Salt River channel ~~(including approximately six acres of Reduced Planting Areas)~~. In addition, ~~14~~ 31 acres of new riparian forest and scrub would be planted on Riverside Ranch.

Because of the active revegetation program, establishment of a new riparian corridor would begin almost immediately following the completion of channel restoration, but benefits of mature riparian vegetation (i.e., established vegetative structure, older trees with cavities) would not be realized in the short-term. Impacts to riparian birds from loss of riparian forest and scrub are discussed below in Impact 3.3.1-10.

Impact Significance

Less than significant, potentially beneficial.

The text on page 3.3-40 is revised as shown below, because the magnitude of the project impacts to Northern red-legged frog were determined to still be less than significant with this revised mitigation measure.

Mitigation Measure 3.3.1-12: Limit construction access routes and equipment staging areas and minimize excavation in existing aquatic habitat when eggs and tadpoles are expected to be present ~~and conduct preconstruction surveys for RLF in all suitable habitat that would be disturbed by construction~~

Construction access routes and equipment staging areas shall be limited within the study area to the extent feasible. ~~These access routes and all other areas to be disturbed by restoration activities shall be surveyed for the presence of RLF prior to the beginning of construction activities. These preconstruction surveys shall be conducted within 48 hours of the beginning of ground disturbance and shall be planned with a "one step ahead" approach relative to construction activities. All rodent burrows, leaf litter deeper than 2 inches, or other obvious refugia shall be surveyed for the presence of the species. Once it is determined that no individuals are present, exclusion fencing shall be erected and maintained around the construction areas to prevent RLF from entering into the active construction area. The exclusion fence shall be about 3.5 feet high and keyed into the subsurface about 6 inches deep. Exclusion fences used around existing frog habitat shall be fitted with intermittent one-way entry devices to allow frogs to enter, but not exit, the protected area. These fences shall be walked every morning to ensure that no frogs have become "stuck" or entangled during nighttime movements and all amphibians observed during these morning checks shall be relocated to the nearest suitable aquatic habitat outside of the construction area. Any RLF discovered shall be relocated at least 1000 feet from the area of disturbance and released into suitable aquatic habitat. Excavation in existing aquatic habitat shall be avoided until May 1 and shall be minimized only occur when egg masses and tadpoles are expected (Beginning of breeding season until August 15) for further protection of frogs~~. Excavation in existing aquatic habitat shall only occur when egg masses and tadpoles are not expected (August 15–October 31) for further protection of frogs. If disturbance in aquatic habitats is necessary prior to August 15, the area shall be cleared of and any tadpoles relocated to suitable habitat.

Impact Significance

Less than significant after mitigation.

8.17.2 SECTION 3.4: AQUATIC BIOLOGY

The following changes have been made to incorporate revised information on the Tidewater Goby:

The setting dicsussion of the species has been modified as shown below:

- **Tidewater Goby *(Eucyclobius newberryi)*.** The Tidewater goby is a State Species of Special Concern and is Federally listed as Endangered. Tidewater goby was federally listed as endangered in 1994 (59 FR 5494). Critical habitat was designated in 2000 (65 FR 69693), and this designation was revised in 2008 (73 FR 5920). The Salt River, including the action area, is not within tidewater goby critical habitat; however, critical habitat occurs in the adjacent Eel River estuary less than 4 km from the action area. The tidewater goby is a small, annual fish that inhabits coastal brackish water within California ranging from the Smith River to northern San Diego County. A recovery plan was completed in 2005 (USFWS 2005), and a five-year status review was completed in 2007 (USFWS 2007). Threats to the species include loss and modification of coastal wetlands, water diversions, predation and competition by introduced species, channelization of rivers, and degraded water quality from agricultural and sewage effluents, increased sedimentation from cattle grazing, and increased water temperatures from riparian vegetation removal (USFWS 2005).

  Tidewater gobies occur in coastal lagoons and brackish marshes and estuaries that are seasonally disconnected from tidal action when sand bars form at the ocean (Moyle 2002). They rarely occur in freshwater habitats but occasionally enter marine environments when flushed out of lagoons, estuaries, and river mouths by normal breaching of sandbars following storm events.

  Tidewater gobies were not previously known to occur in the Salt River, but were known to exist in other locations in the adjacent Eel River Estuary (USFWS 2005). However, in May 2010, tidewater gobies were observed by USFWS at 4 of 6 sites surveyed in Riverside Ranch; gobies were found in small quiet pools (i.e., 4-5 m diameter) downstream of tide gates adjacent to the Salt River channel (USFWS 2010, Appendix A; Figure 4). In contrast, surveys conducted in adjacent Humboldt Bay tended to find tidewater gobies upstream of tide gates (USFWS 2006, Wallace and Allen 2007, Wallace and Allen 2009). Other fish species observed at Riverside Ranch sites included numerous threespine stickleback (*Gasterosteus aculeatus*) at all 4 sites, and 6 Sacramento pikeminnow (*Ptychocheilus grandis*), 1 staghorn sculpin (*Leptocottus armatus*), 1 prickly sculpin (*Cottus asper*), and 1 young-of-the-year coho salmon (*Oncorhynchus kisutch*) each found at 1 of the 4 sites. Emergent vegetation included widgeongrass (*Ruppia maritima*) (Sites 2 and 5), and eelgrass (*Zostera marina*) (Site 5); Site 5 may represent the first site where tidewater gobies were found in association with eelgrass. Tidewater gobies were not detected from multiple seine net hauls and dip net samples taken from both sides of a levee and tide gate at Site 1. This site is adjacent to the Salt River at around river mile 2.0, the most upstream site sampled, and had very low dissolved oxygen levels (<2 mg/L), potentially indicating poor water quality at that site (Table 2). Tidewater gobies were also not detected at Site 4, which was described as a 2 m by 3 m pool surrounded by woody vegetation, where only threespine stickleback were observed.

Surveys following USFWS Protocol were repeated by CDFG at Sites 1, 2, 4, and 5 on 8 September 2010 (CDFG 2010, Appendix B), and by USFWS on 13-14 October 2010 at Sites 1-6 (C. Chamberlain, USFWS, pers comm. 21 October 2010), and no tidewater gobies were detected during either surveys. These survey results suggest that tidewater gobies may only occur seasonally or infrequently in the project area. HCRCD conducted water quality surveys on 21 October 2010 at the sites where surveys were conducted by USFWS on 13-14 October 2010 (A. Shows, HCRCD, pers comm. 27 October 2010). Salinity increased at Sites 2, 3, 5, and 6 between May (ranging 2.0-11.54 ppt) and October (ranging 27.1-31.6 ppt; Table 2).

Numerous tidewater gobies were found in tidal channels within Connick Ranch directly west of Riverside Ranch in August and October (Figure 5), when none were detected on Riverside Ranch (USFWS, unpubl. data). Tidewater gobies were also reported from an unnamed slough in the northern portion of the Eel River estuary, which is north of Riverside Ranch (USFWS 2005). This suggests that Connick Ranch and/or other locations occupied by tidewater gobies in the Eel River Estuary, may function as a "population source" of tidewater gobies to Riverside Ranch. Both the Salt River and Eel River estuaries have been reduced in size through construction of levees, tide gates, berms, and drainage channels; these actions also eliminated some of the natural sandbars between the ocean and the estuaries. However, some of these tide gates and culverts provide habitat conditions similar to those created by a seasonal sandbar, and most tidewater goby have been found in the Eel River and Salt River estuaries above tide gates.

Adult tidewater gobies are not anticipated to be present in the mainstem Salt River because of unsuitable habitat associated with the constant tidal exchange and high-velocities. Therefore, surveys were not conducted in the mainstem reach by USFWS in May 2010 and during subsequent surveys in August, and October 2010.

- ~~Critical habitat was designated in November 2000 and revised in 2008 to include portions of the Eel River estuary, but not the Salt River project area. The Tidewater goby is a small fish that inhabits coastal brackish water habitats entirely within California ranging from the Smith River to northern San Diego County. Tidewater gobies are uniquely adapted to coastal lagoons and the uppermost brackish zone of larger estuaries, rarely invading marine or freshwater habitats. The species is typically found in water less than one meter deep and salinities of less than 12 ppt. Surveys suggest a preference for spatial stability (low energy tidal exchange), and for low salinities in the range of 3 ppt. Principal threats include loss and modification of habitat, water diversions, predatory and competitive introduced species, habitat channelization, and degraded water quality (Chamberlain, C.D. 2006, CBGD 2009).~~

  ~~Despite habitat loss, tidewater gobies have been reported from an unnamed slough in the Eel River estuary (Goldsmith pers. comm.). No intensive systematic surveys have been conducted in the Eel River estuary and sloughs. The recent recovery of tidewater gobies during a limited sampling effort elsewhere in the estuary may indicate that elevated brackish water sloughs throughout the estuary provide suitable habitat for the tidewater goby, and that distribution is more widespread in the Eel River estuary than previously reported.~~

~~Tidewater goby have not been documented in seinings of the Salt River, do not occur in areas upstream of Riverside Ranch, and are not known to occur in the project area, but should be assumed to be present in the tidally influenced areas downstream of proposed excavation. By providing at least 1.80 additional miles of elevated brackish habitat within the Salt River main channel, as well as 3.75 miles of marsh tidal slough channels within the Riverside Ranch property, the project makes available 5.55 total miles of additional slough habitat suitable for Tidewater Goby, and other brackish-dependent species. This equates to approximately 253 additional acres of elevated brackish and tidal marsh habitat within the Salt River main channel and the Riverside Ranch property.~~

On page 3.4-18, under the Alternative One section. The following corrections are made:

> …the project makes available 5.55 total miles of additional slough habitat suitable for ~~Coastal~~ Tidewater Goby…Coastal Cutthroat T~~t~~rout, and other brackish- dependent species."

Impact 3.4.1-1 and its accompanying mitigation measures have been revised as shown below:

Impact 3.4.1-1: Impacts to aquatic resources from decreased water quality due to construction/dredging activities

Implementation of this alternative would require: 1) excavating 7.~~2~~7 miles of channel (3' deep, 50-100' wide) in the now-aggraded bed of the historic Salt River channel; 2) re-grading, lowering, and potentially disking the existing levees surrounding Riverside Ranch, while ensuring that channel excavation adjacent to Riverside Ranch is sufficient to promote tidal exchange within the Riverside Ranch property boundaries; and, 3) creating the final levee breaches to allow full tidal exchange between Riverside Ranch and the lower Salt River channel. Significant channel excavation ~~and land recontouring~~ would occur at Riverside Ranch to allow full tidal drainage to sloughs and other features on Riverside Ranch. The RCD would continue its habitat enhancement and erosion control efforts in the upland areas.

The construction activities, as well as some of the future management and maintenance activities have the potential to dewater existing habitat, and to increase suspended sediments and turbidity, and introduce contaminants (fuel oils, grease) in the vicinity. This impact would apply to all portions of the Salt River within the project area. Since this disturbance could be highest and continuous throughout the excavation/levee construction/maintenance period, and could therefore impact special status species in the immediate vicinity, the impact is considered potentially significant.

Few, if any, adverse impacts are expected from upland habitat enhancement and erosion control activities, which would immediately reduce Salt River sediment load emanating from the Wildcat Mountain tributary streams.

Tidewater gobies and individuals of other aquatic species could be killed or injured during in-channel construction activities as a result of dewatering the Salt River channel and channel excavation. This is most likely to occur during Riverside Ranch restoration (Phase 1) where tidewater gobies and other species were detected in May 2010. A significant number of avoidance and mitigation measures are summarized below and discussed in detail in the Draft Biological

Assessment for Tidewater Goby soon to be submitted to the United States Fish and Wildlife Service for consultation.

Potential water quality changes due to the Salt River Ecosystem Restoration Project that could impact fish and macroinvertebrates include changes in suspended sediments, dissolved oxygen (DO), and various contaminants. No adverse impacts are anticipated as a result of changing salinity levels throughout the project area due to the prior acclimation of native fish species to a dynamic estuarine environment. The significance of project-related water quality impacts is based on compliance with standards set forth by the RWQCB North Coast Region Water Quality Control Plan (Basin Plan) (2007) and other supporting documents. Additional information on these standards and how the project would affect water quality is presented in Section 3.1, Hydrology, Water Quality, and Geomorphology.

The most profound project impact anticipated as a result of construction activities is the potential mobilization of high quantities of suspended sediment. Periods of high suspended sediment concentrations can reduce respiratory efficiency in fish due to clogging and abrasion of gill filaments, thus leading to increased stress levels (Waters 1995, Kemp 1949). Increased turbidity due to suspended sediments can lead to reduced feeding efficiency for visual predators like salmon (Hadden et al. 2004). Sediment can also smother eggs, causing increased mortality thus affecting future fish stocks (Hobbs 1937). The Basin Plan states that water in the Eel River estuary shall not contain suspended material in concentrations that cause nuisance or adversely affect beneficial uses (such as supporting fisheries). Further, the Basin Plan states that turbidity shall not be increased more than 20 percent above naturally occurring background levels, although allowable zones of dilution within which higher percentages can be tolerated may be defined for specific discharges upon the issuance of discharge permits or waiver thereof. Based upon existing data collection, background levels within Salt River tributaries appear to be exceedingly high. Francis Creek measurements during modest storm events revealed Total Suspended Sediment (TSS) levels of more than 4,000 ppm.

Low DO concentrations can be common in shallow, isolated bodies of water experiencing limited hydraulic exchange with surrounding areas. Temporary reductions in DO concentrations below an organism's tolerance level can cause undue stress, impede movement, and lead to death if conditions persist long enough. The Basin Plan appears to state that DO levels within the estuary should be maintained at 7.0 mg/l, the level set for designated spawning areas. However, the project area is currently dominated by the marine environment, where the minimum DO level is set at 5.0 mg/l.

Any shallow, isolated water bodies can also experience elevated temperatures. As with DO, temporary periods of water temperatures outside an organism's tolerance range can cause undue stress, can impede movement, and can lead to death if conditions persist long enough. The Basin Plan states that the temperature of intrastate waters such as the Eel estuary shall not be increased more than 5°F above their ambient temperature by outside input.

Most fish are capable of leaving areas where detectable water quality conditions become adverse. However, less mobile organisms such as macroinvertebrates may not be able to avoid such conditions. A decrease in macroinvertebrates could indirectly but significantly affect fish by reducing prey availability.

Contaminants such as petroleum products (fuels, oil, grease) used in conjunction with construction activities can be accidentally introduced into the water. These substances are known to be toxic to fish and prolonged exposure can cause morphological, behavioral, physiological, and biochemical abnormalities (Sindermann et al. 1982). The Basin Plan states that water shall not contain oils, greases, waxes or other materials in concentrations that cause a nuisance, or that otherwise adversely affect beneficial uses.

Recent soil toxicity tests on the Salt River channel and Riverside Ranch indicate little to no contamination of soils, and thus no likely introduction of toxic contaminants to water bodies if channel excavation and sediment mobilization occurs. No elevated concentrations were recorded for a suite of potential harmful contaminants (Freshwater Environmental Solutions 2008). The results of the soil investigation also indicated that the spatial variation in contaminants was low enough that no further sampling is necessary before soils are excavated and reused.

There is no history of activity in the upper watershed that suggests possible contributions of contaminants from the proposed upslope work. Limited project size of upslope activities further ensures that no significant contributions of sediment or contaminants would impact aquatic resources as a result of upslope activities.

Sediment reuse practices ~~for re-contouring specific areas of the floodplain do~~ have the potential to introduce fine sediment into the newly excavated channel and thereby into the Eel River estuary. Therefore, numerous measures have been included in the project's Excavation Materials Management Plan (EMMP; Winzler and Kelley December 2009) ~~to~~ <u>and into more recent project design elements to eliminate or</u> minimize the potential introduction of sediment into the estuary. These measures would be detailed in the Stormwater Pollution Prevention Plan (SWPPP) to be prepared and implemented in accordance with NPDES requirements and Title III of the County of Humboldt Land Use and Development Division 3 Building Regulations Section 331-12 for Grading, Excavation, Erosion, and Sedimentation Control. Common Best Management Practices for erosion and sediment control that would be applicable to the project include measures such as seeding, straw mulching, and geotextiles; silt fencing, fiber rolls, sediment basins, and check dams.

There are other water quality constituents prevalent in the project area that may be harmful to aquatic life either directly or indirectly. These include excessive nutrients and pathogens from agriculture operations and municipal wastewater. These pollutants could cause harm to fish and macroinvertebrates if they are found in high enough concentrations. In light of the intensive dairy industry of the area, it is likely that nutrient and pathogen levels from surrounding agricultural operations are high. However, the proposed project would not increase existing levels beyond the present level, and the development of revegetation zones and reduced flooding along the riparian area would help buffer the input of nutrients and pathogens to the streams and Salt River channel.

The upland project component, primarily erosion control measures such as culvert replacement, road treatment, and other BMPs, may result in the short-term and insignificant introduction of sediment into the Salt River tributaries, but would result in a mid- to long-term reduction in overall sediment levels

Mitigation 3.4.1-1.1: Develop a Storm Water Pollution Prevention Plan (SWPPP)

Mitigation 3.1.1-2.1 would also apply to this impact.

Mitigation 3.4.1-1.2: Limit initial construction to an extended dry weather season (~~April~~ June 1 – October 1)

Initial project construction activities involving earth moving on any of the sites in an area where material may enter or be transferred to a slough shall be limited to ~~the April 1-November 30 dry season~~ June 1-October 1, or to October 31 in the absence of rain. This dry-season construction would reduce the amount of sediment and contaminants washed into the Salt River and Eel Estuary from the Salt River Ecosystem Restoration Project and related project site by rains. Maintenance activities involving earth moving on any of the sites in an area where material may enter or be transferred to a slough shall be limited to ~~the April 15-1-November 1 dry season~~ the same or a similar dry-season schedule. This would reduce the amount of sediment and contaminants washed into the Salt River and Eel Estuary from Salt River Ecosystem Restoration Project maintenance activities.

Mitigation 3.4.1-1.3: Adhere to site-specific construction plans

Conduct construction work in accordance with site-specific construction plans that minimize the potential for increased delivery of sediment to surface waters.

Mitigation 3.4.1-1.4: Divert concentrated runoff and discharge away from channel banks

Mitigation 3.1.1-2.1 also would apply to this impact.

Mitigation 3.4.1-1.5: Minimize removal of and damage to native vegetation

During excavation of the main channel, a significant amount of native vegetation must be removed. Where possible, the contractor will use heavy equipment to excavate plants and shrubs with root-wads, and replant these at areas designated by the re-vegetation plan. Native vegetation that is removed or damaged at access ways and within the construction areas shall be replaced under the re-vegetation plan at a 3:1 ratio.

Mitigation 3.4.1-1.6: Install temporary construction fencing to identify work areas

The project contractors shall install temporary construction fencing to identify areas that require clearing, grading, revegetation, or recontouring, and minimize the extent of areas of areas to be cleared, graded, recontoured, or otherwise disturbed.

Mitigation 3.4.1-1.7: Grade and stabilize spoils sites

Mitigation 3.1.1-2.1 also would apply to this impact.

Mitigation 3.4.1-1.8: Avoid operating equipment in flowing water

Mitigation 3.1.1-2.1 also would apply to this impact.

Mitigation 3.4.1-1.9: Fish relocation

Before any potential de-watering activities begin in any creeks or channels within the project area, the RCD shall ensure that native aquatic vertebrates and larger invertebrates are relocated out of the construction area into a flowing channel segment by a qualified fisheries biologist. In deeper or larger areas, water levels shall first be lowered to manageable levels using methods to ensure no impacts to fisheries and other special status aquatic species. A qualified fisheries biologist or aquatic ecologist shall then perform appropriate seining or other trapping procedures to a point at which the biologist is assured that almost all individuals within the construction area have been caught. These individuals shall be kept in buckets with aerators to ensure survival. They shall then be relocated to an appropriate flowing channel segment or other appropriate habitat as identified by the RCD in consultation with the NMFS and the DFG. Construction activities shall be prohibited from unnecessarily disturbing aquatic habitat. Federally threatened or endangered aquatic species that occur within the project area either as residents or non-residents are Coho salmon, steelhead, Chinook salmon, green sturgeon, and tidewater goby. Introduced species, particularly Sacramento pikeminnow shall be documented and euthanized, as discussed under Impact 3.4.1-4, below.

Mitigation 3.4.1-1.10: Tidewater Goby Measures

Specific measures designed to avoid or mitigate for impacts to tidewater goby include the following stepwise approach, described in detail in the Draft Biological Assessment for Tidewater Goby under preparation for submittal to the United States Fish and Wildlife Service for consultation. These measures are:

1. Prior to commencement of construction, tidewater goby surveys shall be conducted in May at all previously identified tidewater goby survey sites. Tissue samples will be collected for genetic analysis;
2. Construction plans shall ensure avoidance of disturbance to existing tidewater goby habitat at "Site #6" (see Biological Assessment) a possible relocation site for tidewater gobies found prior to dewatering of the Salt River channel;
3. Immediately prior to construction season, a tidewater goby survey shall be conducted in May at all sites and Connick to collect tissue samples for genetic analysis;
4. For any necessary relocation of tidewater goby, or other aquatic species, seining shall be conducted prior to dewatering of the Salt River channel;
5. Captured goby, or other listed species, shall be appropriately relocated as follows:

    a. Relocation of tidewater goby to Connick Ranch, providing genetic analysis so directs;
    b. Relocation of tidewater goby to "Site #6" (as identified in the Draft Biological Assessment) providing genetic analysis so directs and landowner permission is provided;
    c. Retention of existing Riverside Ranch habitat at two suitable sites (see Biological Assessment) and relocate tidewater goby to those sites

6. Most importantly, many acres of habitat suitable for tidewater goby shall be restored at Riverside Ranch as part of the project description;

8.17.3 CHAPTER 7: REFERENCES

The following referenced have been added to Chapter 7, References:

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Chapter 3.3

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Personal Communications

Chapter 3.9

Bower, Alan. Rangeland Management Specialist, USDA Natural Resources Conservation Service. Telephone call and e-mail. February 4, 2011.

Markegard, Gary. Former director of the University of California Cooperative Extension for Humboldt and Del Norte counties. Telephone call and e-mail. January 31, 2011.

Appendix A

Notice of Preparation

NOTICE OF PREPARATION
ENVIRONMENTAL IMPACT REPORT
SALT RIVER ECOSYSTEM RESTORATION PROJECT
APRIL 27, 2007

The Humboldt County Resource Conservation District is the lead agency in the preparation of an Environmental Impact Report (EIR) for the Salt River Ecosystem Restoration Project in accordance with the California Environmental Quality Act (CEQA). Preparation of the EIR will be a cooperative effort between the Humboldt County Resource Conservation District and the County of Humboldt. The County of Humboldt will serve the principal role in developing the document.

This notice is being issued to inform the public and governmental agencies that an EIR will be prepared for the project, and to invite comments on the scope and content of the document. Pursuant to CEQA Section 21080.4(a) and Section 15082 of the State CEQA Guidelines, responsible and trustee agencies are asked to provide in writing the scope and content of the environmental information that is germane to their statutory responsibilities, as these agencies may need to use the EIR when considering permits or other approvals for the project. Responsible and trustee agencies are also requested to provide a list of the permits and/or other approvals that must be obtained in order to implement the project.

For additional information about the project or the scoping process, please contact:

Hank Seemann
Humboldt County Public Works Department
1106 Second Street
Eureka, CA 95501
Tel: (707) 445-7741
Fax: (707) 445-7409
hseemann@co.humboldt.ca.us

Curtis Ihle
Humboldt County Resource Conservation District
5630 S Broadway
Eureka, CA 95503
Tel: (707) 442-6058 X116
Fax: (707) 442-7514
cihcrcd@yahoo.com

Written comments on the scope and content of the EIR should be directed to the Humboldt County Public Works Department and must be received at the above address no later than June 15, 2007. A public scoping meeting will be held before the end of the comment period, likely in mid- to late May 2007.

This Notice of Preparation was sent to the following entities:

Bear River Band of the Rohnerville Rancheria
Bertha Russ Lytle Foundation
California Department of Fish and Game
California Department of Transportation
California Regional Water Quality Control Board
California State Clearinghouse
California State Coastal Commission
California State Coastal Conservancy
California State Lands Commission
California State Parks
City of Ferndale
Del Oro Water Company
Ferndale Chamber of Commerce
Humboldt County Community Development Services Department
Humboldt County Farm Bureau
Riverside Water District
NOAA's National Marine Fisheries Service
Pacific Gas and Electric Company
Reclamation District
Redwood Regional Audubon Society
Sea Grant Program
U.S. Army Corps of Engineers
U.S. Bureau of Reclamation
U.S. Department of Agriculture-Natural Resources Conservation Service
U.S. Environmental Protection Agency
U.S. Fish and Wildlife Service
Wiyot Tribe

NOTICE OF PREPARATION
ENVIRONMENTAL IMPACT REPORT
SALT RIVER ECOSYSTEM RESTORATION PROJECT

PROJECT LOCATION

The Salt River watershed is located in Humboldt County, 15 miles south of Eureka. The Salt River flows near the City of Ferndale and is one of the main channels discharging into the Eel River estuary. The project area includes the mainstem portion of the Salt River, four Salt River tributaries (Williams Creek, Francis Creek, Reas Creek, and Smith Creek), and Riverside Ranch which is contiguous to the Salt River estuary. The project area includes various waterways and adjacent wetlands and uplands in private or public ownership.

INTRODUCTION

The purpose of the Salt River Ecosystem Restoration Project is to restore fish habitat, improve water quality, and alleviate flooding impacts to private property and public infrastructure. The project is being developed through collaboration between private landowners and multiple public agencies including the Humboldt County Resource Conservation District (HCRCD), the County of Humboldt, the City of Ferndale, California Department of Fish & Game, State Coastal Conservancy, U.S. Army Corps of Engineers, NOAA's National Marine Fisheries Service (NMFS), U.S. Department of Agriculture-Natural Resource Conservation Service, and other partners. The private landowners participating in this project are members of the Salt River Advisory Group, an HCRCD subcommittee working to address Salt River watershed issues and maintain agricultural resources in the Ferndale area. Project implementation is expected to occur in 2008 and 2009.

The project is subject to the California Environmental Quality Act (CEQA), a state law intended to ensure that adverse environmental impacts associated with a project are identified and mitigated to the maximum extent feasible. CEQA is broadly applicable to projects involving physical changes to the environment, including environmental restoration projects. CEQA contains requirements intended to promote interagency coordination, encourage public participation, prevent avoidable significant impacts, and disclose actions by public agencies.

The HCRCD and the County of Humboldt have determined that an Environmental Impact Report (EIR) should be prepared for the project in compliance with CEQA and the CEQA Guidelines, as amended. The EIR will describe the project, analyze the individual and cumulative impacts of specified alternatives (including the no-project alternative), and identify possible ways to avoid or minimize significant adverse environmental effects. CEQA requires that the EIR provide a full and fair discussion of the proposed actions' significant environmental impacts and inform the decision-makers and the public of reasonable alternatives. A Mitigation Monitoring and Reporting Plan will be developed to ensure that the mitigation measures outlined in the EIR for avoiding or minimizing significant impacts are implemented.

This notice is part of the EIR scoping process, which is designed to:

- Ensure agency and public involvement in the environmental review process.
- Determine which specific impacts must be evaluated in the EIR.
- Establish a reasonable range of alternatives.
- Identify the scope of issues that must be discussed in order to adequately and accurately address the potential impacts of the project as they relate to permitting and approval authority.

The County of Humboldt and the HCRCD will review the comments received during the scoping process and incorporate the comments as appropriate into the EIR development process. A Draft EIR will be made available for a 45-day public review period, during which time both written and verbal comments will be solicited on the adequacy of the document. The Final EIR will include written responses to address the comments received on the Draft EIR during public review.

The HCRCD will serve as the lead agency for the project under CEQA because it is the public agency with the principle responsibility for carrying out the project. Following the completion of the Final EIR, the HCRCD will take the Final EIR under consideration for certification and will evaluate the need for adopting a Statement of Findings and/or Statement of Overriding Considerations, as applicable, in accordance with CEQA. As lead agency, the HCRCD will adopt the Mitigation Monitoring and Reporting Plan and will file a Notice of Determination upon deciding to carry out the project.

BACKGROUND

The Salt River watershed has been significantly impacted since land use changes accelerated in the late 19th century. Currently, only a small fraction of the original Salt River estuary complex is subject to tidal influence, due to historical land reclamation activities, levee and tide gate construction, and channel aggradation (filling in with sediment). The tributaries to the Salt River are contributing large amounts of sediment, associated with unstable geology, historical land use, and ongoing channel constraints. The upper portion of the Salt River above Williams Creek has been diverted, resulting in a 42% reduction in the size of the Salt River basin (currently the lower Salt River only receives flows from Francis Creek, Reas Creek, and Smith Creek). The main channel of the Salt River and the lower reaches of its tributaries have become choked with sediment and willows and have lost nearly all normal hydraulic function.

Historically, the Salt River functioned as a migration corridor for adult salmonids reaching spawning habitat in tributaries within the Wildcat Mountains and provided rearing habitat for juveniles migrating downstream to the Eel River estuary. However, the current poor fish passage conditions have resulted in drastic population declines of all species of salmonids that formerly used the Salt River and its tributaries. In addition, there has been a substantial loss of wetlands and habitat diversity. These conditions are described further in the Salt River Watershed Assessment developed by the California Department of Fish & Game in May 2005.

The hydraulic dysfunction of the Salt River causes significant problems related to flooding, discharge of wastewater treatment plant effluent, and overall water quality. During the wet season, even small rain events cause the Salt River and the lower reaches of its tributaries to overflow their banks, resulting in almost perpetual flood conditions. Hundreds of acres of dairy and grazing land have been impacted by flooding, and entire parcels have been taken out of agricultural production. In the summer, surface water disappears in several channel reaches as water flows subsurface through the accumulated sediment. Road culverts have become severely plugged by sediment, with complete blockage in some cases.

Historically, water flows within the Salt River were sufficient to provide the required dilution for discharge from the City of Ferndale wastewater treatment plant; however, sedimentation has reduced the receiving water flows to the point that the effluent violates water quality standards, for which the North Coast Regional Water Quality Control Board has issued a Cease and Desist Order. Treated effluent often flows undiluted into residential areas and agricultural lands, and sediment deposition near the confluence of Francis Creek and the Salt River puts the entire wastewater treatment plant at increasing risk of being flooded. Impaired channel conditions contribute to other water quality problems by limiting drainage of adjacent agricultural lands. Overall, there have been broad changes to in-stream biological and ecological communities as the Salt River is functioning more like a marsh than a river. Conditions in the Salt River and its tributaries continue to worsen with each storm event and the associated delivery and buildup of sediment.

PROJECT DESCRIPTION

The Salt River Ecosystem Restoration Project is a watershed-based, ecosystem-scale project with multiple objectives including habitat restoration and enhancement, water quality improvement, and flood alleviation. The project is intended to provide immediate and substantial improvements to the watershed, and to restore natural processes to the extent that conditions within the project area are self-sustaining or can be feasibly maintained. However, due to the scale and magnitude of the alterations that have occurred within the watershed, additional restoration projects will likely be required in the future.

The three primary components of the project include:

1) **River Restoration** – Restoration of hydraulic capacity, in-stream fish habitat, and water quality in the lower Salt River, and lower Francis and Reas creeks. (The extent of the upstream restoration will depend on the alternative chosen.)

2) **Estuary Restoration** - Restoration of Riverside Ranch, an approximately 400-acre property with over one mile of frontage adjacent to the lower Salt River. The property is being acquired by the California Department of Fish & Game, and portions of the property will be restored to open water, salt marsh, and other wetland types while other portions will remain in agricultural use.

3) **Upslope Sediment Reduction** - Sediment reduction actions in the Williams Creek, Francis Creek, and Reas Creek sub-watersheds, including sediment retention basins, upslope channel restoration, riparian planting, bank stabilization, livestock fencing, and road drainage upgrades.

Anticipated project activities include: channel dredging, construction of sediment basins, vegetation removal, re-vegetation, tide gate modification and/or removal, channel realignment, wetland restoration, construction of set-back levees, re-grading of existing levees, spoils transport and placement, and channel maintenance.

The longevity of the project will depend to a large extent on successfully restoring the functioning of natural ecological processes. The main Salt River channel will be designed to maximize sediment transport capacity while restoring a more functional channel morphology. The geometry of the restored channel will be designed with a low-flow channel that will allow for fish passage and an inset floodplain that can accommodate flows with a recurrence interval of one to two years (depending on the selected alternative). The two-year floodplain in all alternatives will be re-established as riverine wetland habitat populated by sedges, grasses, and forbs. Disturbed areas above the two-year floodplain will be planted with native species including conifers and cottonwoods. The objective is to minimize sediment deposition in the low-flow channel by promoting higher water velocities, while allowing the inset floodplain to function as a sediment deposition zone. In addition, expansion of tidal flows and salt water effects within the lower Salt River channel will help maintain the desired plant communities and channel configuration by increasing scour effects (reducing sediment accumulation) and inhibiting willow growth.

The project will include some unavoidable impacts, such as disturbance of existing stream channels and riparian vegetation (currently composed primarily of a monoculture of willows). However, the net effect of the project will be beneficial by achieving significant improvements in the diversity and quality of habitat. The project design has been developed in close coordination with the National Marine Fisheries Service, California Department of Fish & Game, U.S. Army Corps of Engineers, and other regulatory agencies.

Actions Common to All Alternatives
The following actions are common to all alternatives and are described in more detail below:

- Estuary restoration on Riverside Ranch.
- Sediment and erosion reduction actions in the Williams Creek, Francis Creek, and Reas Creek sub-watersheds.
- Reconnection of the Eastside Drainage Ditch to Francis Creek.
- Relocation and restoration of lower Francis Creek.
- Tidal wetland restoration and fish passage improvements on Smith Creek and Reas Creek.
- Ongoing maintenance of the lower Salt River channel.

Estuary Restoration on Riverside Ranch

All alternatives include restoring tidal action to a portion of Riverside Ranch. The primary restoration goals and benefits include the following:

- Restore tidal connectivity to historic wetlands to increase acreage of wetland and shallow water habitat, improve estuary productivity, and improve water quality in the lower Salt River and Eel/Salt River estuary.
- Enhance rearing and migration conditions for estuarine-dependent species including coho salmon, chinook salmon, steelhead trout, coastal cutthroat trout, and tidewater goby by increasing the amount and quality of transition (salt/freshwater) habitat.
- Provide wintering habitat for migratory waterfowl and shorebirds.
- Restore riparian habitat to benefit fish and wildlife species.
- Increase the acreage of salt- and brackish-marsh habitat.

Anticipated restoration activities include removal or modification of existing flood gates, floodplain and vegetation improvements, modification of existing levees, and/or construction of set-back levees. In order to prevent tidal flooding of adjacent properties, up to 13,000-feet of low (one- to four-foot high) set-back levees may be constructed with material obtained from the Salt River channel excavation. Other options include construction of wide, flat-topped berms along strategic lengths that can be seasonally managed as Aleutian goose habitat. Existing infrastructure located on Riverside Ranch that provides drainage for adjacent land will be maintained.

Sediment and Erosion Reduction Actions

All alternatives include sediment and erosion reduction actions within the upper watersheds of Williams Creek, Francis Creek, and Reas Creek, which are tributaries of the Salt River. Sediment sources will be prioritized based on previous and ongoing assessments. Options for sediment and erosion reduction measures include road improvements, drainage improvements, crossing upgrades, bank stabilization, livestock fencing, and off-channel watering site development. In addition, community education efforts will be implemented to encourage voluntary best management practices related to sediment and erosion reduction.

Reconnection of the Eastside Drainage Ditch

All of the EIR alternatives include re-connecting the Eastside Drainage Ditch with Francis Creek near the City of Ferndale wastewater treatment plant with an approximately 500-foot-long channel. This connection existed historically, but has been lost due to sediment deposition. The Eastside Drainage Ditch collects seasonal runoff from the east side of the City of Ferndale. This action will alleviate flooding in adjacent pastures, dairy barns, and residential areas and increase flows into Francis Creek, thereby increasing dilution of wastewater treatment plant discharge and improving water quality.

Restoration and Relocation of Lower Francis Creek

All of the EIR alternatives include restoration and relocation of lower Francis Creek. The channel was previously relocated in order to maximize grazing lands and put the channel

closer to the outfall of the wastewater treatment plant. However, winter flows regularly exceed the channel capacity and top over the adjacent berms, flooding adjacent pastures. A new channel that more closely approximates the historical alignment will be excavated north of the existing channel to eliminate a 90-degree turn, allow room for the creation of an inset depositional floodplain and sediment retention basin, and create a more stable channel location.

Tidal Wetland Restoration and Fish Passage Improvements on Smith Creek and Reas Creek

All of the EIR alternatives include removal of a set of gated culverts on Smith Creek, located a short distance upstream of the Salt River confluence. Removal of these tide gates will reintroduce unrestricted tidal exchange to Smith Creek and associated low-lying areas and allow unrestricted movement of fish into the upper Smith Creek watershed. This project component includes realignment of Reas Creek to merge with Smith Creek upstream of the Smith Creek confluence with the Salt River. Reas Creek will be redirected west of its current channel alignment at some point north of the intersection of Meridian Road and Damon Lane. The new alignment will direct Reas Creek through low-lying terrain, allowing for controlled sediment deposition off of the Salt River channel. The combined flow of Smith and Reas Creeks will pass down the current alignment of Smith Creek to the existing confluence with the Salt River.

Disposal and Reuse of Excavated Sediment

Accreted sediment will be excavated from the mainstem Salt River channel and lower Francis Creek in all EIR action alternatives. The amount and extent of excavation varies with each alternative (Table 1). Reuse of excavated sediment is planned and will depend on the results of geotechnical investigations and soil contaminant testing. Potential reuses include building up existing berms around the City of Ferndale's wastewater treatment plant, constructing set-back levees around Riverside Ranch to protect adjacent properties from inundation due to estuary restoration, and reuse in association with other local restoration projects (including two local projects planned by the U.S. Fish and Wildlife Service for Salmon Creek and White Slough). Surplus sediment may be hauled by dump trucks to off-site locations and spread on agricultural land as a soil supplement. Potential landspreading sites located inside and outside of the coastal zone will be evaluated.

Ongoing Maintenance of the Lower Salt River Channel

Although the ultimate goal is for a self-sustaining system, it is anticipated that periodic maintenance of sediment and vegetation will be required. Due to the high sediment loading from the Wildcat tributaries, it is expected that for all project alternatives, the new low-flow channel and/or inset floodplain will need periodic re-excavation. The frequency and extent of sediment maintenance will vary by alternative, and will be described in detail in the EIR. Alternatives 3, 4, and 5 (described below) are specifically designed to minimize the need for excavation through incorporation of a depositional floodplain and restoration of tidal flushing. However, it is expected that portions of the channel will need to be re-excavated periodically using the same design as the initial project. In the future, equipment will be able to access the river corridor through the

open inset floodplain and will be able to maneuver along the length of the channel on the floodplain, without having to remove shrubs or trees and without disturbing the low-flow channel. Channel maintenance would occur during summer or early fall months when the inset floodplain is dry to minimize disturbance.

Options for vegetation maintenance include intermittent cattle or goat grazing, manual removal, and mechanical removal. If grazing is used, fencing would be installed to protect the low-flow channel. Portions of the floodplain corridor could also be managed to optimize Aleutian goose habitat, providing them with desired foraging conditions during their seasonal migration, to relieve impacts on adjacent dairy/cattle pasture.

ALTERNATIVES FOR CHANNEL RESTORATION

The EIR will consider a range of alternatives for the restoration work to be performed within the lower Salt River and lower Francis Creek corridors. Differences in the channel design and longitudinal extent of the work result in different areas of impact, quantities of sediment, and areas of restored habitat. The preliminary list of anticipated alternatives includes the following:

- No Action Alternative.
- Alternative 1: Minimal Channel Disturbance, Francis Creek-Salt River Confluence to Smith Creek.
- Alternative 2: Two-Year Storm Flow Channel, Francis Creek-Salt River Confluence to Cutoff Slough.
- Alternative 3: Maximum Floodplain, Francis Creek-Salt River Confluence to Smith Creek.
- Alternative 4: Two-Year Storm Flow Channel With Reconnection of Upper Salt River, Williams Creek-Salt River Confluence to Cutoff Slough.
- Alternative 5: Historic Channel, Francis Creek-Salt River Confluence to Smith Creek.

The anticipated EIR alternatives are described briefly below and summarized in Table 1. The dimensions, area, and volume estimates presented below are preliminary; more exact quantities and estimates will be generated through the technical studies and assessments that will be completed in support of environmental permit applications and the EIR. Based on effectiveness in meeting the project objectives, Alternative 4 is expected to be the preferred project.

Alternative 1: Minimal Channel Disturbance, Francis Creek-Salt River Confluence to Smith Creek. This alternative represents the least amount of disturbance to the existing stream and riparian corridor. The channel design for this option is based on existing flow conditions (diversion of the upper portion of the Salt River), and it is assumed that additional excavation may be needed if and when Williams Creek is reconnected to the Salt River.

Channel excavation would occur along 2.6 miles of the lower Salt River between the Francis Creek confluence (near the City of Ferndale wastewater treatment plant) to just

upstream of the Salt River's confluence with Smith Creek. The channel would have an average depth of five feet and width of 20 feet. A total of approximately 51,500 cubic yards of sediment would be removed. A 12- to 15-foot-wide band of vegetation would be removed on one side of the channel to allow small mechanized equipment to access the channel. Approximately 16 acres of riparian habitat would be disturbed. Six acres of existing low-quality riparian vegetation would be converted to a mix of open water, permanent fresh and brackish wetland, and forested riparian habitat.

Alternative 2: Two-Year Storm Flow Channel, Francis Creek-Salt River Confluence to Cutoff Slough. This alternative is designed to maximize fish passage and sediment transport under low flow conditions, based on modeling performed by the National Marine Fisheries Service. The channel design for this option is based on existing flow conditions (diversion of the upper portion of the Salt River), and it is assumed that additional excavation may be needed if and when Williams Creek is reconnected to the Salt River.

Channel excavation would occur along 4.2 miles of the lower Salt River, starting 1,300 feet upstream of Port Kenyon Road and extending downstream to Cutoff Slough. The channel would include a low-flow channel within an inset floodplain. The low-flow channel would have an average depth of three feet, which would contain a two-year storm flow event. The inset floodplain would be 60- to 100-feet-wide and would receive flows under moderate and high-flow conditions. A total of approximately 260,000 cubic yards of sediment would be removed to create the channel and floodplain. Approximately 40 acres of existing low-quality riparian habitat would be converted to a mix of open water, permanent fresh and brackish wetland, and forested riparian habitat.

Alternative 3: Maximum Floodplain, Francis Creek-Salt River Confluence to Smith Creek. This alternative represents the design developed by the HCRCD in 2005. Like Alternative 1, current flow conditions are assumed, and channel excavation would occur along 2.6 miles of the lower Salt River between the Francis Creek confluence (near the City of Ferndale wastewater treatment plant) to just upstream of the Salt River's confluence with Smith Creek. The channel design for Alternative 3 provides for maximum excavation of the inset floodplain in addition to the low-flow channel. The low-flow channel would have a trapezoidal configuration with an upper width of ten feet, lower width of five feet, and average depth of three to five feet. The width of the excavated floodplain would range from 100 to 200 feet. A total of approximately 282,000 cubic yards of sediment would be removed. Approximately 26 acres of existing low-quality riparian habitat would be converted to a mix of open water, permanent fresh and brackish wetland, and forested riparian habitat.

Alternative 4: Two-Year Storm Flow Channel With Reconnection of Upper Salt River, Williams Creek-Salt River Confluence to Cutoff Slough. This alternative expands on Alternative 2 using a channel design based on modeling performed by the National Marine Fisheries Service, and assuming reconnection of the upper Salt River and the inclusion of Williams and Coffee Creek flows.

Channel excavation would occur along 5.5 miles of the Salt River, from the confluence of Williams Creek to Cutoff Slough. The channel would include a low-flow channel within an inset floodplain. The low-flow channel would have an average depth of three feet, which would contain a two-year storm flow event. The inset floodplain would be 60- to 100-feet-wide and would receive flows under moderate and high-flow conditions. A total of approximately 321,000 cubic yards of sediment would be removed to create the channel and floodplain. Approximately 56 acres of existing low-quality riparian habitat would be converted to a mix of open water, permanent fresh and brackish wetland, and forested riparian habitat.

Alternative 5: Historic Channel, Francis Creek-Salt River Confluence to Smith Creek. This alternative represents the most amount of disturbance to the existing stream and riparian corridor. The channel design for this option is based on historic channel conditions, and aims to recreate a slough-type channel in the lower Salt River extending up to the wastewater treatment plant.

Channel excavation would occur along 3.0 miles of the lower Salt River, from the Francis Creek-Salt River confluence to Smith Creek. The channel would have an average width of 300 feet and an average depth of 15 feet. A total of approximately 2.6 million cubic yards of sediment would be removed to create the channel. Riparian areas and pastures adjacent to the existing channel would be converted to approximate historic vegetation conditions. Approximately 109 acres of existing low-quality riparian habitat would be converted to a mix of open water, permanent fresh and brackish wetland, and forested riparian habitat.

Table 1. Summary of Anticipated EIR Alternatives

Alternative	Channel Dimensions	Miles Restored	Sediment Removed (cubic yards)	Existing Riparian Habitat Converted (acres)
1	5’ deep by 20’ wide	2.6	51,500	6
2	3’ deep by 10’ wide, low-flow channel for two-year storm flow, 60’ to 100’ wide inset floodplain	4.2	260,000	40
3	5’ deep by 10’ wide trapezoidal channel with 100’-200’ wide floodplain	2.5	282,000	26
4	3’ deep by 10’ wide, low-flow channel for two-year storm flow, 80’ to 100’ wide inset floodplain	5.5	321,000	56
5	15’ deep by 500’ wide slough-type channel	3.0	2,600,000	109

POTENTIAL DISCRETIONARY ACTIONS AND APPROVALS

The following actions and approvals are anticipated to be required:

Agency	Permit/Approval
U. S. Army Corps of Engineers	Clean Water Act Section 404 Permit, River and Harbor Act Section 10 Permit
National Marine Fisheries Service	Biological Opinion
U.S. Fish and Wildlife Service	Biological Opinion
California State Coastal Commission	Coastal Development Permit
California Department of Fish & Game	Streambed Alteration Agreement
North Coast Regional Water Quality Control Board	Clean Water Act Section 401 Permit
Humboldt County Community Development Services Department	Grading Permit

ISSUE ANALYSIS (ENVIRONMENTAL CONSEQUENCES)

The EIR will analyze the environmental impacts of the project in accordance with CEQA. The analysis will identify the potential impacts and determine whether any of the identified impacts would have significant adverse effects. The EIR will consider both individual and cumulative impacts, and will evaluate construction activities as well as post-project conditions. For impacts that are potentially significant, feasible mitigation measures will be identified and the effectiveness of these measures will be discussed.

Based on a preliminary assessment of the project, the following list of issues was identified. This list is preliminary, and additional issues may be identified during the scoping process.

Aesthetics Issues: *Certain project components, such as removal and conversion of riparian vegetation, would change the aesthetic character of the project area. This change could be viewed either positively or negatively.*
The EIR will:

- Describe and present photographs of the existing scenic and visual resources.
- Compare the existing scenic and visual resources with short-term conditions during implementation, and long-term conditions during predicted stages of restoration.

Agricultural Resources. *Channel restoration in the lower Salt River would occur on lands not currently usable for agricultural operations, and minimally on lands that are seasonally used. Estuary restoration on Riverside Ranch would reduce existing agricultural operations on that site due to modification or removal of tide gates and restoration of salt marsh and wetland habitat. A portion of the Riverside Ranch would be maintained for livestock grazing and Aleutian goose foraging. Loss of prime agricultural soils on that site, if any, could be a significant impact. Construction of sediment*

retention basins and realignment of Reas Creek could occur on property that is zoned for agricultural use but has diminished in value and productivity due to flooding.

The EIR will:

- Analyze project effects on loss of agricultural resources including any prime agricultural soils and Williamson Act issues.
- Evaluate benefits to surrounding agricultural lands resulting from reduced flooding associated with improved hydraulic capacity within the Salt River and its tributaries.

Air Quality Issues: *The proposed project components could have short-term air quality impacts due to fugitive dust generated during earthmoving, dredging, and other operations.*
The EIR will:

- Identify and discuss short-term construction dust impacts and potential mitigation measures.
- Assess the project's operational (traffic) air quality impacts, including contribution to cumulative air quality impacts, based on the anticipated level of activity.
- Address the project's conformity with applicable air quality plans, exposure of sensitive receptors to criteria air pollutants and odors, as well as federal Clean Air Act conformity.

Aquatic Biological Resources. *Benefits to native fish are a major objective of the Salt River Restoration Project. Historically, the Salt River provided migration and rearing habitat for Chinook salmon, coho salmon, steelhead and cutthroat trout. Currently, adults and juveniles may only migrate during peak flood flows due to sedimentation in the channel that forms a complete barrier under moderate and low flows. All of the proposed alternatives would improve or restore fish passage and rearing habitat.*
The EIR will:

- Describe existing fish habitat and ecological conditions in the project area.
- Analyze short-term impacts associated with construction, long-term impacts associated with future maintenance actions, and long-term benefits of restoration including enhancement of rearing habitat and fish passage.
- Address the main uncertainties of the project and underlying assumptions about the benefits of restoration for native fish, such as the potential benefits of restoring migration access to Wildcat Tributaries, channel function and design with respect to fish passage, and conversion of riparian vegetation.
- Consider effects on recreational and commercial fisheries as well as non-game fish resources.

Cultural Resources. *The project area includes potentially historic structures, sites, and landscapes, some of which could be substantially altered or removed by the project. The site may also contain prehistoric cultural resources that may be affected by project development.*
The EIR will:

- Review available information to determine if cultural resources have been previously identified in the project area.
- Prepare an architectural history analysis of potential historic structures.
- Evaluate the project area as a potential historic landscape in accordance with the evaluation criteria contained in National Register Bulletin 30 Guidelines for Evaluating and Documenting Rural Historic Landscapes.
- Document potential historic structures and landscape features (on California Department of Park and Recreation 523 forms).
- Identify appropriate mitigation measures to address the possibility of encountering previously unknown cultural resources
- Identify appropriate mitigation measures, if needed, to address potential effects associated with moving, altering, or demolishing historic structures or altering potentially significant landscape features.

Geology and Soils. *Geologic issues include potential erosion during and after construction due to proposed grading, dredging, channel reconfiguration, levee reconfiguration, and armoring.*
The EIR will:

- Describe the site's geologic conditions and hazards based on existing information and technical reports for the project area and vicinity.
- Determine whether the project would expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving the rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure including liquefaction and landslides.
- Evaluate existing levee stability and stability of any newly constructed levees on Riverside Ranch.
- Summarize the implications of these conditions with respect to project outcomes, and identify appropriate mitigation measures.

Hazards and Hazardous Materials. *Portions of the project area may be contaminated from being in proximity to a wastewater treatment plant. Change in health risks associated with standing water and mosquitoes also could occur.*
The EIR will:

- Discuss and summarize the existing Environmental Site Assessments' findings on soil contamination and other potential hazards at the site, and contact the Regional Water Quality Control Board and the Humboldt County Health Services Department Hazardous Materials Programs, if appropriate.
- Identify appropriate spill prevention measures as well as emergency contacts.
- Review and summarize the City of Ferndale data on potential soil contamination of areas near the wastewater treatment plant.
- Identify potential impacts to project workers and recreation users due to potential soil contamination and other potential hazards at the project site, and describe necessary mitigation measures.
- Include information obtained from the Humboldt County Division of Environmental Health Vector Control Officer regarding potential mosquito health risks associated with existing and proposed wetlands, and potential mitigation

measures.

Hydrology and Water Quality. *The project could affect water quality through release of contaminants and sediment from construction activities. The project could alter hydrodynamic processes, which control local salinity levels. The project could increase turbidity during and after construction, adversely affecting water quality. In addition, flows in the lower Salt River and into Riverside Ranch are likely to change with the increased tidal prism following restoration; these increased flows could affect water quality, erosion along these waterways, and fisheries use of these waterways. The project could result in groundwater seepage affecting off-site properties after levees are breeched on Riverside Ranch. Potential flood hazards issues exist.*
The EIR will:

- Describe existing water quality conditions including those associated with the dysfunction of the wastewater treatment plant.
- Review available project data to evaluate potential effects on salinity levels and identify mitigation measures as appropriate.
- Develop hydrodynamic studies and, based on those studies, evaluate the ability of the restored tidal wetlands to achieve the degree of tidal circulation and exchange along with the appropriate geomorphology necessary to provide the habitats of interest on the project site.
- Evaluate the potential water quality effects of excavating a new channel versus retaining the lower Salt River in its current configuration, based upon available studies, modeling results, design documents, and related information from other wetland restoration projects, and develop conceptual mitigations as necessary.
- Review and summarize existing water quality and hydrology studies and identify any potential impacts based on that information.
- Describe levee seepage and groundwater elevation issues (based on existing studies) and summarize potential flood hazards associated with the project.

Land Use/Planning. *The project may conflict with the City of Ferndale and County of Humboldt land use plans and policies or with adjacent land uses.*
The EIR will:

- Describe nearby land uses in the project area, assess project impacts on nearby existing and planned land uses, and identify any potential land use conflicts.
- Review and summarize applicable goals and policies in the County's General Plan, and assess the project's consistency with General Plan goals and policies, land use designations, and Zoning Ordinances including conformity with height and density limits and parking requirements.

Noise. *The project will result in temporary noise impacts from construction.*
The EIR will:

- Review the existing applicable noise standards to determine the appropriate noise descriptors.
- Describe existing onsite noise levels.
- Evaluate the potential for temporary noise impacts from construction, including any construction noise impacts to noise-sensitive biotic species.

- Compare future noise levels with existing noise levels to determine if the project would cause a significant increase.

Public Services. *The project will not increase demand on local police and fire protection services. It is not anticipated to generate significant impacts on other public facilities.*
The EIR will:
- Include information obtained from the City of Ferndale Fire Department and Police Department regarding any concerns or constraints associated with provision of fire and police protection.

Recreation. *The project will result in benefits to local tourism and recreation due to increased aquatic and riparian habitat function, which is expected to increase fish and wildlife species, which in turn may increase tourism to the area. Public access for wildlife viewing is available on nearby County roads. The Project may increase public access.*
The EIR will:
- Analyze potential recreation benefits to the public as a result of the project and identify mitigation measures if significant impacts are identified.

Terrestrial Biological Resources. *Existing upland biological resources could be adversely affected by the project. The restoration alternatives would restore terrestrial habitats historically present on the site, including terrestrial habitats that would persist after riverine and riparian wetlands are restored, and artificially reclaimed "uplands" (diked, drained historic agricultural lands) that currently support some terrestrial (and wetland) biological resources.*
The EIR will:
- Describe existing upland terrestrial biological habitats and sensitive species.
- Evaluate the loss of terrestrial habitats from project development.
- Evaluate potential future interactions between restored wetlands and persistent, managed terrestrial habitats, and the effects of restoration alternatives on reclaimed terrestrial habitat.

Transportation/Traffic. *The project will result in increased traffic during construction, potentially affecting levels of service on local streets.*
The EIR will:
- Review and organize the existing documentation available regarding the existing and future transportation conditions and summarize existing transportation conditions and trends.
- Describe existing roadway facilities and discuss the existing traffic volumes and level of service in the project study area. Potential traffic impacts will be described.
- Address potential traffic and parking impacts from the restoration project, including construction traffic impacts.

- If appropriate, develop a series of potential mitigation measures for analysis. These mitigations may range from roadway improvements to bicycle/pedestrian facilities.

Utilities/Service Systems. *Construction and operation of the project may affect water, wastewater, and other utility services.*
The EIR will:

- Include information obtained from the City of Ferndale and applicable utility providers regarding potential constraints and any significant impacts and required mitigation measures. Impacts on storm water drainage will be summarized.
- Discuss the need for sufficient access to PG&E's overhead transmission lines.
- Identify the project and alternatives' effects on operations of the City of Ferndale's wastewater treatment plant.

Wetland Biological Resources. *The project would convert existing riverine, willow scrub, and seasonal wetlands/pastures to open water, tidal slough and salt marsh as well as riverine wetlands, permanent wetlands, and forested riparian. This change in habitat could be significant.*
The EIR will:

- Identify and describe existing wetland and upland habitats on the site.
- Evaluate how project alternatives are likely to differ in producing different amounts and configurations of wetland and aquatic habitats over time, and how they vary in the way they relate to adjacent habitats.
- Identify and quantify areas of wetland fill and associated impacts.
- Consider potential differences in restored marsh form, function, and biological diversity among alternatives over time. The discussion will emphasize key biological resources with special public and agency interest, such as rare or endangered species, dominant species and communities, and pest species (e.g., invasive, non-native wetland plants and non-native predators).
- Address potential project effects on existing non-tidal wetlands on site, and tidal wetland and other aquatic habitats in the site vicinity.

Appendix B

Responses to NOP

MAY. 22 2007

Wiyot Tribe

Cultural Department

May 19, 2007

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

Re: Salt River Ecosystem Restoration Project

He'ba'lo (Greetings) Mr. Seeman:

This letter is in response to the above referenced project and request for comments dated April 27, 2007. The Salt River is within Wiyot ancestral territory and has high potential for cultural use and resources. In the discussion of the Issue Analysis in the EIR, the potential for these resources is identified; recommended measures include "Review available information to determine if cultural resources have been previously identified in the project area," and "Identify appropriate mitigation measures to address the possibility of encountering previously unknown cultural resources."

Identification of cultural resources (including those not recorded) early in the planning process is key to smooth project implementation. Even with mitigation measures in place, inadvertent discoveries result in varying degrees of project revision and delay. Therefore, the Tribe requests that the EIR include a professional cultural resources survey of the area of potential effect. This survey should include both intensive pedestrian survey and subsurface testing if indicated.

Additionally, the watershed may have cultural significance as a traditional cultural property, particularly for traditional subsistence and gathering. The Cultural Resources discussion should include this component in its analysis.

The Wiyot support the health and restoration of waterways in Humboldt County. The Tribe looks forward to working with the County on this important project.

If you have any questions please do not hesitate to contact me at (707) 733-5055.

Čawókš,

Hélène Rouvier
Cultural Director

1000 Wiyot Drive • Loleta, California 95551 • (707) 733-5055 • (800) 388-7633 • FAX (707) 733-5601

JUN 07 2007

STATE OF CALIFORNIA

ARNOLD SCHWARZENEGGER, *Governor*

CALIFORNIA STATE LANDS COMMISSION
100 Howe Avenue, Suite 100-South
Sacramento, CA 95825-8202

PAUL D. THAYER, *Executive Officer*
(916) 574-1800 FAX (916) 574-1810
Relay Service From TDD Phone **1-800-735-2929**
from Voice Phone **1-800-735-2922**

Contact Phone: **(916) 574-1814**
Contact FAX: **(916) 574-1885**

June 4, 2007

File Ref: SCH# SD2007-05-15-6

Humboldt County Public Works Department
Attention: Hank Seemann
1106 Second Street
Eureka, CA 95501

Subject: Salt River Ecosystem Restoration Project

Dear Mr. Seemann:

Staff of the California State Lands Commission (CSLC) has reviewed the Notice of Preparation (NOP) of an Environmental Impact Report for the above referenced proposed project. Based on this review, we offer the following comments.

By way of background, the State of California acquired sovereign ownership of all tidelands and submerged lands and beds of navigable waterways upon its admission to the United States in 1850. The State holds these lands for the benefit of all people of the State for statewide Public Trust purposes, which include waterborne commerce, navigation, fisheries, water-related recreation, habitat preservation and open space. The boundaries of these State-owned lands generally are based upon the last naturally occurring location of the ordinary high or low water marks prior to artificial influences which may have altered or modified the river or shoreline characteristics. On tidal waterways, the State's sovereign fee ownership extends landward to the ordinary high water mark as it last naturally existed. On navigable non-tidal waterways, the State holds fee ownership of the bed landward to the ordinary low water mark and a Public Trust easement landward to the ordinary high water mark, as they last naturally existed. Such boundaries may not be readily apparent from present day site inspections. The State's sovereign interests are under the leasing jurisdiction of the CSLC.

After review of the information contained in the NOP, a portion of the Salt River, over which the proposed project will extend, includes State-owned sovereign land. A lease and formal authorization for the use of sovereign land will be required from the CSLC for the portion of the project encroaching on State-owned lands.

Thank you for the opportunity to review and make comments on the above-mentioned document.

If you have any questions concerning the CSLC's leasing jurisdiction, please feel free to contact Ninette Lee, Public Land Management Specialist, at (916) 574-1869.

Sincerely,

Marina R. Brand

Marina R. Brand, Assistant Chief
Division of Environmental Planning
and Management

cc: Office of Planning and Research
State Clearinghouse
P.O. Box 3044
Sacramento, CA 95812-3044

Ninette Lee, CSLC

Will Drew
1100 Kelly Lane
Ferndale, Ca 95536
707-942-4524 & 707-786-9493

Hank Seemann
Humboldt County Public Works Department
1106 Second Street
Eureka, Ca 95501

Subject: Environmental Impact Report, EIR scoping meeting, June 21, 2007
Project: Salt River Ecosystem Restoration Project.

Dear Mr. Seemann:

Please include this letter into the minutes of the scooping meeting of June 21, 2007.

Potentially Significant Impacts exist with this project and should be studied and mitigated.

The diversion of Williams Creek, natural or man made, has caused the formation of a lagoon-lake from the mouth of the Williams Creek to Waddington Road (approximately two and one half to two miles in length). This lake must fill 3 to 4 feet higher than normal in order to flow up stream over Perry Slough and into the Eel River via Old River.

Please refer to The Publication SALT RIVER WATERSHED, Local Implementation Plan, Appendix A- Water Quality Report, printed March 1993.

This document identifies dairy ranches located between Salt River and Grizzly Bluff. This report was completed prior to the Williams Creek diversion and the development of the Lagoon-lake. Acceptable dairy waste practices resulted in diluted surface water run off to Eel River and the sea. With the formation of the Salt River dairy lagoon, accumulations of Nitrates (NO3-N) do not have a path to dilute and exit to the sea and the "Lagoon" process allows this surface concentration to enter the ground water.

Refer to page 13 of this report regarding Nitrogen and Nitrates. Note the 10ppm limit for drinking water and the reference for ground water pollution.

Thomas Harter, Ph.D, Groundwater Hydrology Specialist, University of California Cooperative Extension (503) 752-2709 E-mail: thharter@ucdavis.edu lectured a group of Salt River Dairy owners. We recently had wells tested. His two-hour presentation covered numerous facts. Two subjects were dominant. 1.) The ground water flows from Southeast (Rio Dell) to the ocean. 2.) Activities taking place at ground level cause things to happen in the ground water.

Some of the wells tested showed NO3-N problems that could only have happened as a result of dairy practices on the surface.

Therefore: The diversion of Williams Creek and the resulting collection Lagoon at the ground level presents a POTENTIALLY SIGNIFICANT IMPACT. With the lagoon in place, nitrates can only become more concentrated and they have no place to go other than into the ground water. This increase in N03-N into the ground water will travel northwest under the greater Ferndale areas.

Other Potentially Significant Impacts:

II. Agricultural Resources

c) The lagoon lake converts farmland into non-agriculture use

VII Hazards and hazardous Materials

b) Hazard to public via increased NO3-N levels above 10ppm in drinking water. High levels dangerous to pregnant mothers and unborn children.

VIII Hydrology & Water Quality

a) Would violate water quality by allowing increased levels of nitrates.
b) Would interfere with quality ground water supplies in the greater Ferndale area.

IV Biological Resources

a) This false lake Lagoon is undesirable for fish and game all requiring uncontaminated water (Humans too).

Mr. Seemann, and now a brighter note---

ALTERNATIVE 4: Reconnection of Upper Salt River, Williams Creek-Salt River confluence would remove the 3-mile lagoon and allow diluted surface water to leave the area and thus help prevent nitrates form leeching into the ground water.

Selecting Alternative #4 would mitigate and or prevent a list of Potentially Significant Impacts from happening.

Selecting Alternative #4 removes my objections to this project.

Sincerely,

Will Drew

STATE OF CALIFORNIA
NATIVE AMERICAN HERITAGE COMMISSION
915 CAPITOL MALL, ROOM 364
SACRAMENTO, CA 95814
(916) 653-4082
(916) 657-5390 - Fax

Arnold Schwarzenegger, Governor

June 12, 2007

Curtis Ihle
Humboldt County Resource Conservation District
5630 South Broadway
Eureka, CA 95501

RE: SCH# 2007062030, Salt River Ecosystem Restoration Project: Humboldt County.

Dear Mr. Ihle:

The Native American Heritage Commission (NAHC) has reviewed the Notice of Preparation (NOP) regarding the above project. To adequately assess and mitigate project-related impacts on archaeological resources, the Commission recommends the following actions be required:

- Contact the appropriate Information Center for a record search to determine:
  - If a part or all of the area of project effect (APE) has been previously surveyed for cultural resources.
  - If any known cultural resources have already been recorded on or adjacent to the APE.
  - If the probability is low, moderate, or high that cultural resources are located in the APE.
  - If a survey is required to determine whether previously unrecorded cultural resources are present.

✓ If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
  - The final report containing site forms, site significance, and mitigation measurers should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for pubic disclosure.
  - The final written report should be submitted within 3 months after work has been completed to the appropriate regional archaeological Information Center.

✓ Contact the NAHC for a Sacred Lands File Check.
  - **Check Completed with negative results, 06/12/07**
    The absence of specific site information in the Sacred Lands File does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites (see below).

✓ Contact the NAHC for a list of appropriate Native American Contacts for consultation concerning the project site and to assist in the mitigation measures.
  - **Native American Contacts List attached**
    The NAHC makes no recommendation or preference of a single individual, or group over another. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated, if they cannot supply information, they might recommend other with specific knowledge. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call to ensure that the project information has been received. If you receive notification of change of addresses and phone numbers from any these individuals or groups, please notify me. With your assistance we are able to assure that our lists contain current information.

✓ Lack of surface evidence of archeological resources does not preclude their subsurface existence.
  - Lead agencies should include in their mitigation plan provisions for the identification and evaluation of accidentally discovered archeological resources, per California Environmental Quality Act (CEQA) §15064.5 (f). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American, with knowledge in cultural resources, should monitor all ground-disturbing activities.

- Lead agencies should include in their mitigation plan provisions for the disposition of recovered artifacts, in consultation with culturally affiliated Native Americans.
- Lead agencies should include provisions for discovery of Native American human remains in their mitigation plan. Health and Safety Code §7050.5, CEQA §15064.5 (e), and Public Resources Code §5097.98 mandates the process to be followed in the event of an accidental discovery of any human remains in a location other than a dedicated cemetery.

Sincerely,

Katy Sanchez

Katy Sanchez
Program Analyst
(916) 653-4040

CC: State Clearinghouse

Native American Contacts
Humboldt County
June 12, 2007

Blue Lake Rancheria
Claudia Brundin, Chairperson
P.O. Box 428 Wiyot
Blue Lake , CA 95525 Yurok
blrt@tidepool.com Tolowa
(707) 668-5101
(707) 668-4272 Fax

Bear River Band of Rohnerville Rancheria
Bruce Merson, Tribal Administrator
32 Bear River Drive Wiyot
Loleta , CA 95551 Mattole
(707) 733-1900
(707) 733-1972 (FAX)

Bear River Band of Rohnerville Rancheria
Len Bowman, Jr., Chairperson
32 Bear River Drive Wiyot
Loleta , CA 95551 Mattole
lbowman@bearriver.com
(707) 733-1900
(707) 733-1972 Fax

Wiyot Tribe
Andrea Davis, Environmental Coordinator
1000 Wiyot Drive Wiyot
Loleta , CA 95551
andrea@wiyot.com
(707) 733-5055
(707) 733-5601 Fax

Wiyot Tribe
Cheryl Seidner, Chairperson
1000 Wiyot Drive Wiyot
Loleta , CA 95551
wiyotone@yahoo.com
(707) 733-5055
(707) 733-5601 Fax

Bear River Band of Rohnerville Rancheria
Edwin Smith, Environmental Coordinator/Cultural
32 Bear River Drive Wiyot
Loleta , CA 95551 Mattole
(707) 733-1900
(707) 733-1972 (FAX)

Wiyot Tribe THPO
Helene Rouvier, Tribal Historic Preservation Officer
1000 Wiyot Drive Wiyot
Loleta , CA 95551
cultural@wiyot.us
(707) 733-5055
(707) 733-5601 Fax

Blue Lake Rancheria
Arla Ramsey, Tribal Administrator
P.O. Box 428 Wiyot
Blue Lake , CA 95525 Yurok
blrt@tidepool.com Tolowa
(707) 668-5101
(707) 668-4272 Fax

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed SCH# 2007062030, Salt River Ecosystem Restoration Project; Humboldt County.

Native American Contacts
Humboldt County
June 12, 2007

Blue Lake Rancheria
Paul Angell, Cultural Resources Coordinator
P.O. Box 428 Wiyot
Blue Lake , CA 95525 Yurok
pangell@bluelakerancheria-nsn.gov Tolowa
(707) 668-5101
(707) 668-4272 Fax

Blue Lake Rancheria
Tall Chief Comet
P.O. Box 428 Wiyot
Blue Lake , CA 95525 Yurok
blrt@tidepool.com Tolowa
(707) 668-5101
(707) 668-4272 Fax

Blue Lake Rancheria THPO
Paul Angell, Historic Preservation Officer
P.O. Box 428 Wiyot
Blue Lake , CA 95525
pangell@bluelakerancheria-nsn.gov
(707) 668-5101

This list is current only as of the date of this document.

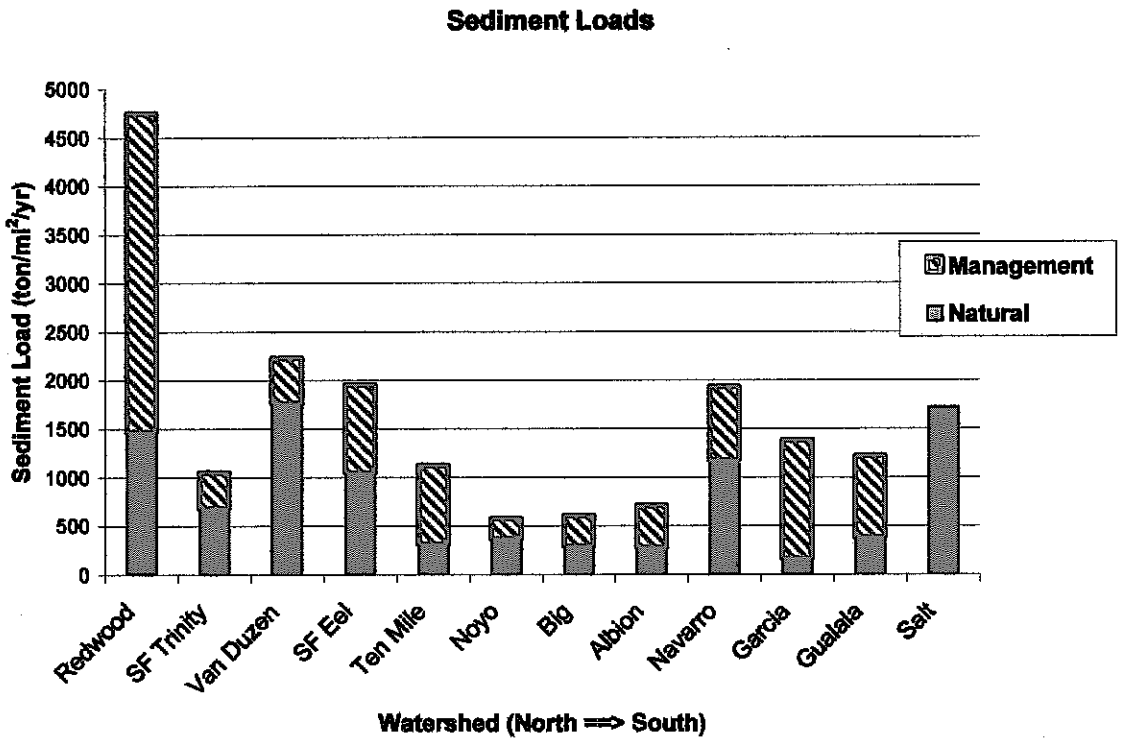
Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed SCH# 2007062030, Salt River Ecosystem Restoration Project; Humboldt County.

SALT RIVER RESTORATION EIR SCOPING COMMENTS
DENVER NELSON
JUNE 13, 2007

A sediment source analysis for the Salt River should be included in the EIR.

The Salt River is one of many Northcoast streams that are sediment impaired. Most of them have had a sediment TMDL completed or have one pending. I have added the Salt River sediment load (SCS 1993) to the sediment loads from TMDL's completed by the EPA or the NCRWQCB to the following graph. All the other streams have a significant management component which can be improved.



The Lee Brenda/Alice Berg report states that the dominant sediment source is landslides and is uncontrollable and suggests increasing the sediment retention function of the valley floors.

Either the Salt River is different from all other Northcoast streams and none of the sediment control measures that are being mandated in these other watersheds would be effective or the Salt River does have a management component that could be improved.

The EIR should address the sediment source of the Salt River.

Appendix C

List of Recipients (Distribution List)

Appendix C – Distribution List

Agencies and Organizations

Salt River Watershed Council
- John Vevoda, Chairman
- David Carr, Secretary/Treasurer
- Jim Becker
- Denver Nelson
- Don HIndley
- Joe Russ
- City of Ferndale Representative to Council
- Jay Parrish, City Manager

Bear River Band of the Rohnerville Rancheria
Bertha Russ Lytle Foundation
California Department of Fish and Game
California Department of Transportation
California Regional Water Quality Control Board
California State Clearinghouse
California State Coastal Commission
California State Coastal Conservancy
California State Lands Commission
California State Parks
City of Ferndale
Del Oro Water Company
Ferndale Chamber of Commerce
Humboldt County Community Development Services Department
Humboldt County Farm Bureau
Riverside Water District
NOAA's National Marien Fisheries Service
Pacific Gas and Electric Company
Reclamation District
Redwood Regional Audobon Society
UCCE Sea Grant Program
U.S. Army Corps of Engineers
U.S. Bureau of Reclamation
U.S. Department of Agriculture - Natural Resources Conservation Service
U.S. Environmental Protection Agency
Wiyot Tribe

Other Interested Parties

Bruce Slocum
Will Drew
Charlie Zana
Lee Mora

Appendix D

Special Status Species Lists

Scientific Name	Common Name	Life Form	Status (Fed/State/CNPS)	Habitat	Blooming Period	Documented Elevation Range (m)	Probability of Occurring in Project Area	NOTES
Species with habitat in project area								
Angelica lucida	Sea watch	perennial herb	-/-/List 4.2	Coastal bluff scrub, coastal dunes, coastal scrub, marshes and swamps (coastal salt)	May-Sept	0-150	Not identified in 7/04 survey of Channel Restoration Area. Could occur in Riverside Ranch Area.	
Anomobryum julaceum	slender silver moss	moss	-/-/List 2.2	Broadleafed upland forest, Lower montane coniferous forest, North Coast coniferous forest/damp rock and soil on outcrops, usually on roadcuts		100-1000	Could occur in upslope sediment reduction areas.	Infrequent in CA but abundant in much of its range.
Astragalus pycnostachyus var. *pycnostachyus*	coastal marsh milk-vetch	perennial herb	-/-/List 1B.2	Coastal dunes(mesic), Coastal scrub, Marshes and swamps(coastal salt, streamsides)	Apr-Oct	0-30	Not identified in 7/04 survey of Channel Restoration Area. Could occur in Riverside Ranch Area.	Possibly threatened by cattle trampling, erosion, and competition.
Astragalus rattanii var. rattanii	Rattan's milk vetch	perennnial herb	-/-/List 4.3	Chaparral, Cismontane woodland, Lower montane coniferous forest/gravelly streambanks	Apr-Jul	30-825	Habitat absent from Channel Restoration and Riverside Ranch Area. Could occur in upslope sediment reduction areas.	
Carex buxbaumii	Buxbaum's sedge	perennial rhizon	-/-/List 4.2	Bogs and fens, Meadows and seeps(mesic), Marshes and swamps	Mar-Aug	3-3300	Not identified in 7/04 survey of Channel Restoration Area. Could occur in Riverside Ranch Area.	Threatened by foot traffic.

Carex leptalea	bristle-stalked sedge	perennial rhizomatous herb	-/-/List 2.2	Bogs and fens, Meadows and seeps(mesic), Marshes and swamps	Mar-Jul	0-700	Not identified in 7/04 survey of Channel Restoration Area. Could occur in Riverside Ranch Area.	
Carex lyngbyei	Lyngbye's sedge	perennial rhizomatous herb	-/-/List 2.2	Marshes and swamps(brackish or freshwater)	May-Aug	0-10	Present in Riverside Ranch Area. Not identified in 7/04 survey of Channel Restoration Area.	
Castilleja ambigua ssp. *humboldtiensis*	Humboldt Bay owl's-clover	annual herb hemiparasitic	-/-/List 1B.2	Marshes and swamps(coastal salt)	Apr-Aug	0-3	Not identified in 7/04 survey of Channel Restoration Area. Likely to occur in Riverside Ranch Area.	Threatened by coastal development and non-native plants.
Cordylanthus maritimus ssp. *palustris*	Point Reyes bird's-beak	annual herb hemiparasitic	-/-/List 1B.2	Marshes and swamps(coastal salt)	Jun-Oct	0-10	Known from salt marsh adjacent to project area. Not identified in 7/04 survey of Channel Restoration Area. Likely to occur in Riverside Ranch Area.	Once rather common in proper habitat; now greatly reduced by development. Also threatened by foot traffic, non-native plants, hydrological alterations, cattle grazing and trampling. State listed as Endangered in OR.
Eleocharis parvulc	small spikerush	perennial herb	-/-/List 4.3	Marshes and swamps	(Apr)Jun-Aug(Sep)	1-3020	Not identified in 7/04 survey of Channel Restoration Area. Could occur in Riverside Ranch Area.	
Erigeron biolettii	streamside daisy	perennial herb	-/-/List 3	Broadleafed upland forest, Cismontane woodland, North Coast coniferous forest/rocky, mesic	Jun-Oct	30-1100	Could occur in upslope sediment reduction areas.	

Erythronium revolutum	coast fawn lily	perennial bulbiferous herb	-/-/List 2.2	Bogs and fens, Broadleafed upland forest, North Coast coniferous forest/mesic, streambanks	Mar-Jul(Aug)	0-1350	Could occur in upslope sediment reduction areas. Not identified in 7/04 survey of Channel Restoration Area.	Threatened by logging, non-native plants, and road maintenance. Possibly threatened by grazing. On watch list in OR, and state-listed as Sensitive in WA.
Gilia capitata ssp. *pacifica*	Pacific gilia	annual herb	-/-/List 1B.2	Coastal bluff scrub, Chaparral(openings), Coastal prairie, Valley and foothill grassland	Apr-Aug	5-869	Low probability of occurrence in grassland in Riverside Ranch Area.	Threatened by development and recreational activities. See Aliso 2(3):305 (1950) for original description.
Lathyrus palustris	marsh pea	perennial herb	-/-/List 2.2	Bogs and fens, Coastal prairie, Coastal scrub, Lower montane coniferous forest, Freshwater marshes and swamps, North Coast coniferous forest/mesic	Mar-Aug	1-100	Could occur in freshwater marsh in Channel Restoration Area and Riverside Ranch Restoration area, and in mesic forest in upslope sediment reduction areas. Not identified in 7/04 survey of Channel Restoration Area.	
Leptosiphon acicu	bristly leptosiphon	annual herb	-/-/List 4.2	Chaparral, Cismontane woodland, Coastal prairie, Valley and foothill grassland	Apr-Jul	55-1500	Low probability of occurrence in grassland in Riverside Ranch Area.	

Lilium occidentale	western lily	perennial bulbiferous herb	E/E/List 1B.1	Bogs and fens, Coastal bluff scrub, Coastal prairie, Coastal scrub, Marshes and swamps(freshwater), North Coast coniferous forest(openings)	Jun-Jul	2-185	Not identified in 7/04 survey of Channel Restoration Area. Low probability of occurrence in freshwater marsh in Riverside Ranch Area or in upslope sediment reduction area.	Most CA occurrences under DFG management or voluntarily protected by landowners. Threatened by development, herbivory, inappropriate grazing, vegetation succession, and horticultural collecting. State-listed as Endangered in OR.
Lycopodium clava	Running pine	rhizomatous her	-/-/List 4.1	Lower montane coniferous forest (mesic), Freshwater marshes and swamps, North Coast coniferous forest(mesic)/often edges, openings, and roadsides	Jun-Aug	45-1225	Could occur in freshwater marsh in Channel Restoration Area and Riverside Ranch Restoration area, and on roadsides in forest in upslope sediment reduction areas.	
Lycopus uniflorus	northern bugleweed	perennial herb	-/-/List 4.3	Bogs and fens, Marshes and swamps	Jul-Sep	5-2000	Not identified in 7/04 survey of Channel Restoration Area. Low probability of occurrence in freshwater marsh in Riverside Ranch Area or in upslope sediment reduction area.	

Montia howellii	Howell's montia	annual herb	-/-/List 2.2	Meadows and seeps, North Coast coniferous forest, Vernal pools/vernally mesic, sometimes roadsides	Mar-May	0-730	High probability of occurrence in upslope sediment reduction areas. Documented in Wildcat Mountains in Francis Creek headwaters area.	Rediscovered in CA in 1999 by Clare Golec. Threatened by logging, road construction, road maintenance, vehicles, and competition. Possibly threatened by non-native plants. Candidate for state listing in OR.
Packera bolanderi var. *bolanderi*	seacoast ragwort	perennial rhizomatous herb	-/-/List 2.2	Coastal scrub, North Coast coniferous forest/sometimes roadsides	(Feb-Apr)May-Jul	30-650	Could occur in upslope sediment reduction areas.	Possibly threatened by erosion.
Pleuropogon refra	nodding semaphore gra	perennial rhizon	-/-/List 4.2	Lower montane coniferous forest, Meadows and seeps, North Coast coniferous forest, Riparian forest/mesic	Apr-Aug	0-1600	Not identified in 7/04 survey of Channel Restoration Area. Could occur in riparian scrub in Riverside Ranch Area or in upslope sediment reduction area.	Threatened by roadside mowing, logging and associated road usage.
Puccinellia pumila	dwarf alkali grass	perennial herb	-/-/List 2.2	Marshes and swamps(coastal salt)	Jul	1-10	Not identified in 7/04 survey of Channel Restoration Area. Could occur in Riverside Ranch Area.	Known in CA from only two occurrences. Need current information on distribution and endangerment. On review list in OR.
Ribes laxiflorum	trailing black currant	perennial decid	-/-/List 4.3	North Coast coniferous forest/sometimes roadside	Mar-Jul(Aug)	5-1395	Could occur in upslope sediment reduction areas.	Threatened by logging. Possibly threatened by road construction and widening.
Sidalcea malachro	maple-leaved checkerbl	perennial herb	-/-/List 4.2	Broadleafed upland forest, Coastal prairie, Coastal scrub, North Coast coniferous forest, Riparian woodland/often in disturbed areas	Apr-Aug	2-730	Could occur in riparian habitat througout project area and in forest in upslope sediment reduction areas.	

Sisyrinchium hitchcockii canadensis var. *occidentalis*	Hitchcock's blue-eyed grass western sand-spurrey	perennial rhizomatous herb annual herb	-/-/List 1B.1 -/-/List 2.1	Cismontane woodland(openings), Valley and foothill grassland Marshes and swamps(coastal salt)	Jun Jun-Aug	Around 300 m 0-3	Low probability of occurrence, as only documented occurrence was at Cape Ridge at 300 m. Could occur in grassland in Channel Restoration Area and/or Riverside Ranch. occurrence on Riverside Ranch.	Known in CA from only one occurrence near Cape Ridge. Needs field surveys. Threatened in OR. Known in CA only from Humboldt Bay.
Stellaria littoralis	beach starwort	perennial rhizon	-/-/List 4.2	Bogs and fens, Coastal bluff scrub, Coastal dunes, Coastal scrub, Marshes and swamps	Mar-Jul	5-40	Could occur in marsh on Riverside Ranch. Not identified in 7/04 survey of Channel Restoration Area.	Threatened by grazing, trampling, and non-native plants.
Stellaria obtusa	obtuse starwort	perennial rhizon	-/-/List 4.3	Lower montane coniferous forest, Riparian woodland, Upper montane coniferous forest/mesic, streambanks	May-Sep(Oct)	150-2135	Could occur in Riverside Ranch riparian areas, or on streambanks in upslope sediment reduction areas.	Potentially threatened by logging, development, fire, trampling, grazing, and hydrological alteration.
Thermopsis gracil	slender false lupine	perennial rhizon	-/-/List 4.3	Chaparral, Cismontane woodland, Lower montane coniferous forest, Meadows and seeps, North Coast coniferous forest/sometimes roadsides	Mar-Jul	100-1615	Could occur in upslope sediment reduction areas.	Threatened by logging, and road maintenance.
Usnea longissima	Long beard lichen	lichen	-/-/List 4	Humid coniferous forests, usually where fog is frequent	NA		Could occur in upslope sediment reduction areas.	
Species whose habitat is not present in project area								
Abronia umbellata ssp. *breviflora*	pink sand-verbena	perennial herb	-/-/List 1B.1	Coastal dunes	Jun-Oct	0-10	None. No coastal dunes in project area.	Most occurrences have few plants. Threatened by vehicles, non-native plants, and foot traffic. State-listed as Endangered in OR.

Calamagrostis foliosa	leafy reed grass	perennial herb	-/Rare/List 4.2	Coastal bluff scrub, North Coast coniferous forest/rocky	May-Sep	0-1220		
Castilleja affinis ssp. *litoralis*	Oregon coast paintbrush	perennial herb	-/-/List 2.2	Coastal bluff scrub, Coastal dunes, Coastal scrub/sandy	Jun	15-100	None. No coastal dunes or scrub in project area.	Threatened by development and recreational activities.
Clarkia amoena ssp. *whitneyi*	Whitney's farewell-to-spring	annual herb	-/-/List 1B.1	Coastal bluff scrub, Coastal scrub	Jun-Aug	10-100	None. No coastal scrub in project area.	
Cypripedium californicum	California lady's-slipper	perennial rhizomatous herb	-/-/List 4.2	Bogs and fens, Lower montane coniferous forest/seeps and streambanks, usually serpentinite	Apr-Aug	30-2750	None. No serpentinite streambanks in lower montane coniferous forest in project area.	Threatened by horticultural collecting and logging. Many protected populations on USFS land not reproducing. On watch list in OR.
Cypripedium fasciculatum	clustered lady's-slipper	perennial rhizomatous herb	-/-/List 4.2	Lower montane coniferous forest, North Coast coniferous forest/usually serpentinite seeps and streambanks	Mar-Aug	100-2435	None. No serpentinite streambanks in coniferous forest in project area.	Widely scattered, but most occurrences small. Threatened by logging and horticultural collecting. Monitoring needed for protected populations on USFS lands to assess reproduction, which may be inadequate. Threatened in ID, candidate for state listing in OR, and state-listed as Threatened in WA.

Erysimum menziesii ssp. *eurekense*	Humboldt Bay wallflower	perennial herb	E/E/List 1B.1	Coastal dunes	Mar-Apr	0-10	None. No coastal dunes in project area.	Known fewer than 10 occurrences in the Humboldt Bay area. Threatened by development, vehicles, and non-native plants. Included in state-listed Endangered E. menziesii. Protected in part at Manila Dunes ACEC (BLM).
Erythronium oregonum	giant fawn lily	perennial herb	-/-/List 2.2	Cismontane woodland, Meadows and seeps/sometimes serpentinite, rocky, openings	Mar-May	100-500	None, habitat not present in project area.	Threatened by horticultural collecting, road maintenance. California populations are geographically separate; may be a white form of E. revolutum.
Hemizonia congesta ssp. tracyi	Tracy's tarplant	annual herb	-/-/List 4.3	Coastal prairie, Lower montane coniferous forest, North Coast coniferous forest/openings, sometimes serpentinite	May-Oct	120-1200		
Hesperevax sparsiflora var. *brevifolia*	short-leaved evax	annual herb	-/-/List 1B.2	Coastal bluff scrub(sandy), Coastal dunes	Mar-Jun	0-215	None, habitat not present in project area.	Threatened by development, competition with non-native plants, foot traffic, and recreational activities. Potentially threatened by trail construction. May intergrade with var. sparsiflora in the San Francisco Bay area. On review list in OR.
Hesperolinon adenophyllum	glandular western flax	annual herb	-/-/List 1B.2	Chaparral, Cismontane woodland, Valley and foothill grassland/usually serpentinite	May-Aug	150-1315	None, habitat absent from project area.	Threatened by geothermal development, recreation, and grazing.

Layia carnosa	beach layia	annual herb	E/E/List 1B.1	Coastal dunes, Coastal scrub(sandy)	Mar-Jul	0-60	None, habitat not present in project area.	Threatened by coastal development, foot traffic, vehicles, and non-native plants.
Lilium pardalinum ssp. vollmeri	Vollmer's lily	perennial bulbiferous herb	-/-/List 4.3	Bogs and fens, Meadows and seeps(mesic)	Jul-Aug	30-1680	None, habitat not present in project area.	
Oenothera wolfii	Wolf's evening-primrose	perennial herb	-/-/List 1B.1	Coastal bluff scrub, Coastal dunes, Coastal prairie, Lower montane coniferous forest/sandy, usually mesic	May-Oct	3-800	None, habitat not present in project area.	Known from approximately twenty occurrences. Threatened by road maintenance, development, foot traffic, invasive plant control, non-native plants, and hybridization with non-native Oenothera spp. State-listed as Threatened in OR.
Piperia candida	white-flowered rein orchid	perennial herb	-/-/List 1B.2	Broadleafed upland forest, Lower montane coniferous forest, North Coast coniferous forest/sometimes serpentinite	May-Sep	30-1310	None, habitat not present in project area.	Difficult to determine rarity as some populations rarely flower. Populations often have small numbers. Threatened by logging.
Platanthera stricta	slender bog-orchid	perennial herb	-/-/List 4.2	Lower montane coniferous forest, Meadows and seeps/mesic	May-Aug	1000-2300		Threatened by logging.
Polemonium carneum	Oregon polemonium	perennial herb	-/-/List 2.2	Coastal prairie, Coastal scrub, Lower montane coniferous forest	Apr-Sep	0-1830	None, habitat not present in project area.	Threatened by logging.
Sidalcea malviflora ssp. *patula*	Siskiyou checkerbloom	perennial rhizomatous herb	-/-/List 1B.2	Coastal bluff scrub, Coastal prairie, North Coast coniferous forest/often roadcuts	May-Aug	15-878	None, habitat not present in project area.	Threatened by road widening and non-native plants.

Sidalcea oregana ssp. *eximia*	coast checkerbloom	perennial herb	-/-/List 1B.2	Lower montane coniferous forest, Meadows and seeps, North Coast coniferous forest	Jun-Aug	5-1340	None, habitat not present in project area.	Known from approximately ten occurrences. Intergrades with sspp. oregana and spicata.
Tauschia glauca	glaucous tauschia	perennial herb	-/-/List 4.3	Lower montane coniferous forest(gravelly, serpentinite)	Apr-Jun	80-1700		
Trifolium howellii	Howell's clover	perennial herb	-/-/List 4.3	Lower montane coniferous forest, Meadows and seeps, Upper montane coniferous forest/mesic	Jun-Aug	800-1800	None. Habitat is not present in project area.	

4012443, Hydesville (654D) 4012451, Mcwhinney Creek (654A) 4012461, Fields Landing (654B) 4012462

SCINAME	COMNAME	FEDSTATUS	CALSTATUS	DFGSTATUS	Habitat	Probability of occurrence in Project Area	QUADNAME
Bird Species							
Accipiter cooperii	Cooper's hawk	None	None	WL	(Nesting) Nests primarily in deciduous riparian forests; forages in open woodlands.	Possible. Suitable habitat is present. Uncommon winter re:	Taylor Peak, Hydesville
Accipiter striatus	sharp-shinned hawk	None	None	WL	(Nesting) Breeds in ponderosa pine, black oak, riparian deciduous, mixed conifer, and Jeffrey pine habitats. Prefers, but not restricted to, riparian habitats. North-facing slopes, with plucking perches are critical requirements. All habitats except alpine, open prairie, and bare desert used in winter.	Possible. Suitable habitat is present. Uncommon winter re:	Scotia, Hydesville, Fields Landing
Agelaius tricolor	tricolored blackbird	None	None	SSC	Colonial nester near fresh water, in emergent wetland plants but also thickets of willow, blackberry, and wild rose. Feeds in grassland and cropland habitats.	Possible. Suitable habitat is present.	Fortuna
Aquila chrysaetos	golden eagle	None	None	FP | WL	Rolling foothills, mountain areas, sage-juniper flats, desert.	Low. May occur rarely as a transient or migrant.	Taylor Peak
Ardea alba	great egret	None	None		(Rookery) Colonial nester in large trees. Rookery sites located near marshes, tide-flats, irrigated pastures, and margins of rivers and lakes.	Moderate. Suitable habitat present in project area.	Fields Landing
Ardea herodias	great blue heron	None	None		(Rookery) Colonial nester in tall trees, cliffsides, and sequestered spots on marshes. Rookery sites in close proximity to foraging areas: marshes, lake margins, tide-flats, rivers and streams, wet meadows.	Moderate. Suitable habitat present in project area.	Fortuna, Hydesville, Fields Landing
Asio flammeus	short eared owl	None	None	SSC	Usually found in open areas with few trees such as grasslands, prairies, dunes, meadows, irrigated lands, and wetlands. Needs dense tules or tall grass for nesting.	Low. Suitable habitat present in project area, but species does not regularly breed in the region. May be present as transient or migrant, especially in wet years.	
Brachyrampus marmora	Marbled murrelet	Threatened	Endangered		Nests in old growth forest. Non-nesting time and hunting at sea and resting on shore.	None. Habitat absent from project area.	
Buteo regalis	ferruginous hawk	None	None	SSC	Grasslands and riparian corridors.	Project area may provide habitat for wintering and migrant individuals.	
Chaetura vauxi	Vaux's swift	None	None	SSC	Nests in large cavities in trees, including redwoods and sycamores, and sometimes in artificial structures such as chimneys. Prefers redwood and Douglas fir forests.	High. Common summer resident and breeder in vicinity. Optimal nesting habitat absent in project area.	
Charadrius alexandrinu	western snowy plover	Threatened	None	SSC	Breed and winter along ocean beaches and the gravel bars of the Eel River. Nesting occurs above the high tide line in sandy substrate, and occasionally on driftwood.	Low. Not expected to use the lower Salt River for breeding	Fields Landing, Cannibal Island
Circus cyaneus	Northern harrier	None	None	SSC	(Nesting) Coastal salt marsh and freshwater marsh; nests and forages in grasslands; nests on ground in shrubby vegetation, usually at marsh edge.	High. Habitat present in project area and species is known from vicinity.	
Coccyzus americanus c	western yellow-billed cuckoo	Candidate	Endangered		Willow-cottonwood riparian forest, but other species such as alder and box elder may be important in some areas. Nests are primarily in willow trees; however, other species are occasionally used, including cottonwood and alder. Along the Sacramento River, English walnut trees and more rarely prune, plum, and almond trees in adjacent orchards have also been reportedly used for nesting.	Low. Breeding reported on Cock Robin Island. Possible fo	Ferndale, Cannibal Island
Dendroicha petechia	Yellow warbler	None	None	SSC	Riparian habitat often dominated by willows, near water in streams and wet meadows	High. Common in riparian habitat in Humboldt County.	
Egretta thula	snowy egret	None	None		(Rookery) Colonial nester, with nest sites situated in protected beds of dense tules. Rookery sites situated close to foraging areas: marshes, tidal-flats, streams, wet meadows, and borders of lakes.	Low. Rookery habitat not found in project area.	Fields Landing
Elanus caeruleus	white tailed kite	None	None	FP	(Nesting) Open grassland and agricultural areas throughout Central California.	High. Common in project area. Nest in log pond adjacent to project area.	
Empidonax traillii	Willow flycatcher	Sensitive	Threatened		Riparian habitat often dominated by willows and/or alder, and permanent water, often in the form of low gradient watercourses, ponds, lakes, wet meadows, marshes, and seeps within and adjacent to forested landscapes.	Low. Uncommon in region. Suitable habitat present in project area.	
Falco columbarius	Merlin	None	None	SSC	(Wintering) Breeds in Canada, winters in a variety of California habitats, including grasslands, savannahs, wetlands, etc.	Wintering habitat is present. Uncommon winter resident in region.	
Falco peregrinus	Peregrine falcon	Delisted	CE	FP	Nests in woodland, forest and coastal habitats, on cliffs or banks, and usually near wetlands, lakes, rivers, sometimes on human-made structure. In non-breeding seasons found in riparian areas and coastal and inland wetlands.	Low. Infrequent visitor to project area.	
Fratercula cirrhata	tufted puffin	None	None	SSC	Puffins breed on offshore rocks and islands or, rarely, steep mainland cliffs that are largely free of mamma-lian predators and human disturbance. They nest either in earthen burrows or rock crevices, usually on steep slopes, cliffs, or cliff tops	None. No habitat in project area.	Cape Mendocino
Haliaeetus leucocephal	bald eagle	Delisted	Endangered	FP	(Nesting and Wintering) Ocean shore, lake margins, and rivers for both nesting and wintering. Most nests within 1 mile of water. Nests in large, old growth, or dominant live tree with open branches, especially ponderosa pine. Roosts communally in winter.	No breeding habitat. May occur rarely as transient.	Fields Landing
Icteria virens	Yellow breasted chat	None	None	SSC	(Breeding) Dense, brushy thickets near water and in the thick understo	Moderate. More common further inland, but documented in lower Eel River.	
Nycticorax nycticorax	black-crowned night heron	None	None		(Rookery) Colonial nester, usually in trees, occasionally in tule patches. Rookery sites located adjacent to foraging areas: lake margins, mud-bordered bays, marshy spots.	Moderate. Suitable habitat present in project area.	Fields Landing
Pandion haliaetus	osprey	None	None	WL	(Nesting) Ocean shore, bays, freshwater lakes, and larger streams. Large nests built in treetops, primarily in Ponderosa pine through mixed conifer habitats, within 15 miles of good fishproducing body of water. Associated strictly with large, fishbearing waters.	Moderate. Uncommon in project area.	Scotia, Hydesville, McWhinney Creek, Fields Landing
Phalacrocorax auritus	double-crested cormorant	None	None	WL	(Rookery) Colonial nester on coastal cliffs, offshore islands, and along lake margins in the interior of the state. Nests along coast on sequestered islets, usually on ground with sloping surface, or in tall trees along lake margins.	Moderate. No known nesting colonies in project area.	Cape Mendocino
Phoebastris albatru	short-tailed albatross	Endangered			Primarily an ocean-going bird, nests exclusively on volcanic islands near Japan	None. No habitat in project area.	
Poecile atricapillus	Black-capped chickadee	None	None	SSC	Occurs locally in montane riparian habitat from coast into mountainous areas inland.	High. Documented in project area.	
Progne subis	Purple martin	None	None	SSC	Uses valley foothill and montane hardwood, valley foothill and montane hardwood-conifer, and riparian habitats. Uncommon local breeder on the northern California coast.	High. Possible in riparian habitat.	
Strix occidentalis ca	Northern spotted owl	Threatened			Northcoast coniferous forest generally found in older stands.	None. No habitat in project area.	

Synthliboramphus hypoleucus	Xantus's murrelet	Candidate	Threatened		Nest on the steep slopes and cliffs of rocky offshore islands, with sufficient vegetation for cover (breeding). Non-breeding season habitat consists of the deep waters beyond the continental shelf.	None. No habitat in project area.	
Amphibians							
Ascaphus truei	Pacific tailed frog	None	None	SSC	Occurs in montane hardwood-conifer, redwood, Douglas fir and Ponderosa pine habitats. Restricted to perennial montane streams. Tadpoles require water below 15° C.	Low. Possible in streams in upslope sediment reduction ar	Ferndale, Capetown, Scotia
Rana aurora	northern red-legged frog	None	None	SSC	Humid forests, woodlands, grasslands, and streamsides in northwestern California, usually near dense riparian cover. Generally near permanent water, but can be found far from water, in damp woods and meadows, during nonbreeding season.	High. Known to be present in project area.	Ferndale, Fortuna, Scotia, Hydesville, McWhinney Creek, Fields Landing
Rana boylii	foothill yellow-legged frog	None	None	SSC	Shallow, shaded perennial streams and ponds with rocky substrate.	Low. Possible in streams in upslope sediment reduction ar	Fortuna, Scotia, Hydesville
Rhyacotriton variegatus	southern torrent salamander	None	None	SSC	Coastal redwood, Douglas fir, mixed conifer, montane riparian, montane hardwood-conifer habitats, old growth forest. Cold, well-shaped, permanent streams and seepages, or within splash zone or on moss-covered rock within trickling water.	None. Habitat absent from project area.	McWhinney Creek
Mammals							
Antrozous pallidus	pallid bat	None	None	SSC	Most common in open, dry habitats with rocky areas for roosting. Roost in rock crevices, trees, buildings, and bridges in arid regions.	Moderate. May forage in project area.	Ferndale, Fortuna
Arborimus pomo	Sonoma tree vole	None	None	SSC	North Coast fog belt from Oregon border to Sonoma County in Douglas fir, redwood, and montane hardwood-conifer forests. Feeds almost exclusively on Douglas fir needles. Will occasionally take needles of grand fir, hemlock or spruce.	None. Habitat absent from project area.	Ferndale, Fortuna, Cape Mendocino, Capetown, Taylor Peak, Scotia, Hydesville, McWhinney Creek, Fields Landing
Balaenoptera borealis	sei whale	Endangered	None		Deep water habitats, including along the edge of the continental shelf, over the continental slope, and in the open ocean.	None. Habitat absent from project area.	
Balaenoptera musculus	blue whale	Endangered	None		Waters associated with the continental shelf break and deeper offshore waters associated with temperature and productivity fronts.	None. Habitat absent from project area.	
Balaenoptera physalus	fin whale	Endangered	None		Most abundant along boundary currents and mixing zones in offshore waters where prey is concentrated	None. Habitat absent from project area.	
Corynorhinus townsend	Townsend's big-eared bat	None	None	SSC	Most abundant in moist habitats. Roosts primarily in mines and caves, but also in buildings and other human structures.	Moderate. May forage in area. Roosting sites are absent f	Scotia
Eumetopias jubatus	Steller (=northern) sea-lion	Threatened	None		Forage in nearshore and pelagic waters. Haul outs and rookeries usually consist of beaches (gravel, rocky or sand), ledges, rocky reefs.	None. Habitat absent from project area.	
Lasiurus cinereus	hoary bat	None	None		May be found in any location in CA. Roosts in trees	Moderate. Potential habitat in project area.	Ferndale, Fortuna
Martes americana humt	Humboldt marten	None	None	SSC	Occurs only in the coastal redwood zone from the Oregon border south to Sonoma County. Associated with late-successional coniferous forests, prefers forests with low, overhead cover.	None. Habitat absent from project area.	Hydesville, McWhinney Creek
Megaptera novaengliae	humpback whale	Endangered	None		Coastal and continental shelf waters. Also known to feed around offshore islands.	None. Habitat absent from project area.	
Myotis yumanensis	Yuma myotis	None	None		Found in open forests and woodlands usually feeding over water. Forms large maternity colonies of several thousand in buildings, caves and bridge structures.	Moderate. May forage in area. Roosting sites are absent f	Scotia
Physeter macrocephalus	sperm whale	Endangered	None		Deep water (1968 feet [600 m] or more). Uncommon in waters less than 984 feet (300 m) deep.	None. Habitat absent from project area.	
Fish							
Acipenser medirostris	green sturgeon	Threatened	None	SSC	Spawn in freshwater between February and July during periods of high	None. Habitat absent from project area.	Fields Landing
Acipenser transmontanu	white sturgeon	None	None	SSC	Spawn in large rivers in the spring and summer months and remain in f	Low. Confined to deep pools and large, fast flowing channels of the Eel Rive Estuary in the project vicinity.	
Eucyclogobius newberr	tidewater goby	Endangered	None	SSC	Brackish water habitats along the Calif. Coast from Agua Hedionda Lagoon, San Diego Co. to the mouth of the Smith River. Found in shallow lagoons and lower stream reaches, they need fairly still but not stagnant water and high oxygen levels.	Low. Present in the Eel River Delta, but no suitable habitat	Cannibal Island
Oncorhynchus clarkii cl	coast cutthroat trout	None	None	SSC	Small coastal streams from the Eel River to the Oregon border. Small, low gradient coastal streams and estuaries Well-oxygenated streams with riffles; loose, silt-free gravel substrate.	High. Documented in project area.	Ferndale, Fortuna, Fields Landing, Hydesville, McWhinney Creek, Cannibal Island
Oncorhynchus kisutch	Coho Salmon – Southern (	Threatened	Threatened		Well-oxygenated streams with riffles; loose, siltfree gravel substrate. Federal listing refers to populations between Cape Blanco, Oregon, and Punta Gorda, Humboldt County, CA. State listing refers to populations between the Oregon border and Punta Gorda, CA.	High. Documented in project area.	
Oncorhyncus mykiss	Northern Steelhead	Threatened			Well-oxygenated streams with riffles; loose, siltfree gravel substrate.	High. Documented in project area.	
Oncorhynchus tsha	Chinook Salmon – Califor	Threatened	Threatened		Well-oxygenated streams with riffles; loose, siltfree gravel substrate. Federal listing refers to populations from Redwood Creek in Humboldt County to the Russian River in Sonoma County.	Low. Present in the Eel River downstream of the project area, but barriers prevent this species from reaching the prioject area.	
Spirinchus thaleichthys	Longfin smelt	None	None	SSC	Primary habitat is open estuary waters, typically in the middle or deepe	High. Documented as occassional winter visitors to the lower Salt River.	
Thaleichthys pacificus	Eulachon (Southern DPS)	Proposed Thre	None		Spawn in rivers that are glacier-fed and/or have peak spring freshets	Low. Occur rarely in Humboldt Bay.	
Invertebrates							
Haliotis cracherodii	black abalone	Endangered	None		Rocky intertidal and shallow subtidal habitats on exposed outer coasts, where they occur primarily in crevice microhabitats and feed preferentially on large drifting fragments of marine algae such as kelps	None. No habitat present in project area.	
Reptiles							
Actinemys marmorata	western pond turtle	None	None	SSC	Associated with permanent or nearly permanent water in a wide variety of habitats. Requires basking sites. Nest sites may be found up to 0.5 km from water.	Low. Sparsely distributed in North Coast, mainly in ponds i	Fortuna, Hydesville, McWhinney Creek, Fields Landing
Caretta caretta	loggerhead turtle	Threatene d	None		Pelagic, living in the open ocean and rarely coming onto land. Enters coastal bays, lagoons, salt marshes, estuaries, creeks, and the mouths of large rivers.	None. No suitable habitat in porject area.	

Chelonia mydas (incl. agassizi)	green turtle	Threatened	None	Inhabits the shallow waters of lagoons, bays, estuaries, mangroves, eelgrass and seaweed beds. Prefers areas with abundant aquatic vegetation, such as pastures of sea grasses and algae, in shallow, protected water.	None. No suitable habitat in porject area.
Dermochelys coriacea	leatherback turtle	Endangered	None	Pelagic, living in the open ocean and occasionally entering the shallower water of bays and estuaries.	None. No suitable habitat in porject area.
Lepidochelys olivacea	olive (=Pacific) ridley sea turtle	Threatened	None	Marine. Found well out to sea and in protected, relatively shallow bays and lagoons and the shallow water between reefs and the shore.	

CNDDB Search on 11/17/2009

Quads Searched: Ferndale, Fortuna, Hydesville,Cannibal Island, McWhinney Creek, Scotia, Cape Mendocino, Capetown, Taylor Peak, Fields Landing

Searched Ferndale, Fortuna and adjacent quads

Appendix E

Air Quality Modeling

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Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: \\Coast1\share\North_Coast\SaltRiver\CEQA\Air Quality\Urbemis Model Run\SaltR_NoAqueous_NoDPF_131days.urb924

Project Name: Salt River Restoration Project

Project Location: California State-wide

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

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Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2011 TOTALS (tons/year unmitigated)	3.46	30.62	15.87	0.00	95.10	1.35	96.45	19.86	1.24	21.10	3,292.00
2011 TOTALS (tons/year mitigated)	3.46	30.62	15.87	0.00	6.64	1.35	7.99	1.39	1.24	2.63	3,292.00
Percent Reduction	0.00	0.00	0.00	0.00	93.02	0.00	91.72	93.01	0.00	87.54	0.00
2012 TOTALS (tons/year unmitigated)	3.34	29.57	15.40	0.00	98.22	1.29	99.51	20.51	1.19	21.70	3,455.67
2012 TOTALS (tons/year mitigated)	3.34	29.57	15.40	0.00	6.86	1.29	8.15	1.43	1.19	2.62	3,455.67
Percent Reduction	0.00	0.00	0.00	0.00	93.02	0.00	91.81	93.01	0.00	87.92	0.00

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)							

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)							

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2

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2011	3.46	30.62	15.87	0.00	95.10	1.35	96.45	19.86	1.24	21.10	3,292.00
Mass Grading 05/02/2011-10/15/2011	3.46	30.62	15.87	0.00	95.10	1.35	96.45	19.86	1.24	21.10	3,292.00
Mass Grading Dust	0.00	0.00	0.00	0.00	95.09	0.00	95.09	19.86	0.00	19.86	0.00
Mass Grading Off Road Diesel	3.34	29.43	14.31	0.00	0.00	1.30	1.30	0.00	1.20	1.20	3,000.30
Mass Grading On Road Diesel	0.08	1.13	0.39	0.00	0.01	0.04	0.05	0.00	0.04	0.04	173.67
Mass Grading Worker Trips	0.04	0.06	1.18	0.00	0.01	0.00	0.01	0.00	0.00	0.00	118.03
2012	3.34	29.57	15.40	0.00	98.22	1.29	99.51	20.51	1.19	21.70	3,455.67
Mass Grading 05/01/2012-10/15/2012	3.34	29.57	15.40	0.00	98.22	1.29	99.51	20.51	1.19	21.70	3,455.67
Mass Grading Dust	0.00	0.00	0.00	0.00	98.20	0.00	98.20	20.51	0.00	20.51	0.00
Mass Grading Off Road Diesel	3.17	27.55	13.63	0.00	0.00	1.21	1.21	0.00	1.12	1.12	3,000.30
Mass Grading On Road Diesel	0.14	1.96	0.68	0.00	0.01	0.07	0.09	0.00	0.07	0.07	337.30
Mass Grading Worker Trips	0.03	0.06	1.09	0.00	0.01	0.00	0.01	0.00	0.00	0.00	118.07

Phase Assumptions

Phase: Mass Grading 5/2/2011 - 10/15/2011 - Phase I- Riverside Ranch

Total Acres Disturbed: 300

Maximum Daily Acreage Disturbed: 50

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 5815 cubic yards/day; Offsite Cut/Fill: 906 cubic yards/day

On Road Truck Travel (VMT): 718.94

Off-Road Equipment:

20 Dumpers/Tenders (16 hp) operating at a 0.38 load factor for 8 hours per day

10 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

2 Graders (174 hp) operating at a 0.61 load factor for 8 hours per day

10 Other Equipment (190 hp) operating at a 0.62 load factor for 8 hours per day

10 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 8 hours per day

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5 Rubber Tired Loaders (164 hp) operating at a 0.54 load factor for 8 hours per day

10 Scrapers (313 hp) operating at a 0.72 load factor for 8 hours per day

5 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

5 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 5/1/2012 - 10/15/2012 - Phase II- Salt River Channel Restoration

Total Acres Disturbed: 609

Maximum Daily Acreage Disturbed: 50

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 6661 cubic yards/day; Offsite Cut/Fill: 797 cubic yards/day

On Road Truck Travel (VMT): 1396.34

Off-Road Equipment:

20 Dumpers/Tenders (16 hp) operating at a 0.38 load factor for 8 hours per day

10 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

2 Graders (174 hp) operating at a 0.61 load factor for 8 hours per day

10 Other Equipment (190 hp) operating at a 0.62 load factor for 8 hours per day

10 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 8 hours per day

5 Rubber Tired Loaders (164 hp) operating at a 0.54 load factor for 8 hours per day

10 Scrapers (313 hp) operating at a 0.72 load factor for 8 hours per day

5 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

5 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Mitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2

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2011	3.46	30.62	15.87	0.00	6.64	1.35	7.99	1.39	1.24	2.63	3,292.00
Mass Grading 05/02/2011-10/15/2011	3.46	30.62	15.87	0.00	6.64	1.35	7.99	1.39	1.24	2.63	3,292.00
Mass Grading Dust	0.00	0.00	0.00	0.00	6.62	0.00	6.62	1.38	0.00	1.38	0.00
Mass Grading Off Road Diesel	3.34	29.43	14.31	0.00	0.00	1.30	1.30	0.00	1.20	1.20	3,000.30
Mass Grading On Road Diesel	0.08	1.13	0.39	0.00	0.01	0.04	0.05	0.00	0.04	0.04	173.67
Mass Grading Worker Trips	0.04	0.06	1.18	0.00	0.01	0.00	0.01	0.00	0.00	0.00	118.03
2012	3.34	29.57	15.40	0.00	6.86	1.29	8.15	1.43	1.19	2.62	3,455.67
Mass Grading 05/01/2012-10/15/2012	3.34	29.57	15.40	0.00	6.86	1.29	8.15	1.43	1.19	2.62	3,455.67
Mass Grading Dust	0.00	0.00	0.00	0.00	6.84	0.00	6.84	1.43	0.00	1.43	0.00
Mass Grading Off Road Diesel	3.17	27.55	13.63	0.00	0.00	1.21	1.21	0.00	1.12	1.12	3,000.30
Mass Grading On Road Diesel	0.14	1.96	0.68	0.00	0.01	0.07	0.09	0.00	0.07	0.07	337.30
Mass Grading Worker Trips	0.03	0.06	1.09	0.00	0.01	0.00	0.01	0.00	0.00	0.00	118.07

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Mass Grading 5/2/2011 - 10/15/2011 - Phase I- Riverside Ranch

For Soil Stablizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by:

PM10: 84% PM25: 84%

For Soil Stablizing Measures, the Replace ground cover in disturbed areas quickly mitigation reduces emissions by:

PM10: 5% PM25: 5%

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Soil Stablizing Measures, the Equipment loading/unloading mitigation reduces emissions by:

PM10: 69% PM25: 69%

For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:

PM10: 44% PM25: 44%

For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:

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PM10: 55% PM25: 55%

The following mitigation measures apply to Phase: Mass Grading 5/1/2012 - 10/15/2012 - Phase II- Salt River Channel Restoration

For Soil Stablizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by:

PM10: 84% PM25: 84%

For Soil Stablizing Measures, the Replace ground cover in disturbed areas quickly mitigation reduces emissions by:

PM10: 5% PM25: 5%

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Soil Stablizing Measures, the Equipment loading/unloading mitigation reduces emissions by:

PM10: 69% PM25: 69%

For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:

PM10: 44% PM25: 44%

For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

Appendix F

Mitigation Monitoring and Reporting Program

Mitigation Monitoring and Reporting Program

for the Salt River Ecosystem Restoration Project EIR

Mitigation	*Implementing Responsibility*	*Monitoring Responsibility*	*Mitigation Timing*
3.1 Hydrology and Water Quality			
Mitigation 3.1.1-2.1: Prepare and implement SWPPP Prior to construction of the Salt River Ecosystem Restoration Project, the Humboldt County Resource Conservation District shall obtain authorization from the North Coast RWQCB. As part of this application process, the applicant shall develop a SWPPP and identify Best Management Practices (BMPs) for controlling soil erosion and the discharge of construction-related contaminants. BMPs shall be monitored as specified in the SWPPP for successful implementation. This mitigation measure shall apply to all portions of the Salt River Ecosystem Restoration Project and related projects that involve construction activities. The SWPPP shall be prepared prior to any construction on any portion of the project, and implemented during construction. Individual SWPPPs may be prepared for various construction components or phases (e.g., demolition of existing site structures, grading of one parcel, dredging channels, etc.). The SWPPP would also specifically address: ▪ Erosion control and maintenance of material stockpiles that remain during the duration of project construction as well as sediment reuse (possibly lasting multiple years). ▪ Erosion and sediment control measures to eliminate or minimize input to surface waters and generation of fugitive dust. ▪ Specify silt fencing or fiber rolls to trap sediments and erosion control blankets on graded slopes and channel banks. ▪ Avoid operating equipment in flowing water by using temporary cofferdams, sheet-piles and/or turbidity curtain and/or other suitable structures to divert flow around the channel and bank construction. The SWPPP(s) shall be prepared according to requirements of the State's construction Activities Storm Water Permit (Construction Permit; State Board Order No. 99-08-DWQ, NPDES Permit CAS000002), following guidance contained in Section A of that permit, and it shall include all appropriate best management practices for minimizing stormwater runoff and the potential pollution it may cause. The SWPPP should also address protecting stockpiles left over winter wet seasons from erosion associated with rainfall and/or flooding. Coverage shall be obtained under the Construction Permit by filing a Notice of Intent and fee prior to construction of any project component.	Construction Contractor	HCRCD Project Manager	Prior to initiation of Construc-tion

Mitigation	Implementing Responsibility	Monitoring Responsibility	Mitigation Timing
Mitigation 3.1.1-2.2: Implement dewatering restrictions Ponded storm or groundwater in construction areas shall not be dewatered by project contractors directly into adjacent surface waters or to areas where they may flow to surface waters unless authorized by a permit from the North Coast RWQCB. In the absence of a discharge permit, ponded water (or other water removed for construction purposes), shall be pumped into baker tanks or other receptacles, characterized by water quality analysis, and remediated (e.g., filtered) and/or disposed of appropriately based on results of analysis. If determined to be of suitable quality, some of this water may be used on-site for dust control purposes.	Construction contractor will conduct monitoring.	HCRCD Project Manager	Ongoing from stat of constructio n until completion of constructio n
Mitigation 3.1.1-2.3: Implement contractor training for protection of water quality All contractors that would be performing demolition, construction, grading, or other work that could cause increased water pollution conditions at the site (e.g., dispersal of soils) shall receive training regarding the environmental sensitivity of the site and need to minimize impacts. Contractors also shall be trained in implementation of stormwater BMPs for protection of water quality.	Construction contractor will conduct training.	HCRCD Project Manager	Prior to start of constructio n
Mitigation 3.1.1-2.4: Minimize potential pollution caused by inundation Sites shall not be inundated (connected to tidal water or upstream freshwater sources) until surface soil conditions have been stabilized, all construction debris removed, and all surface soils have been removed from the site.	Construction contractor	HCRCD Project Manager	Prior to inundation of any sites

Mitigation	Implementing Responsibility	Monitoring Responsibility	Mitigation Timing
Mitigation 3.1.1-2.5: In-stream erosion and water quality control measures during channel dredging In instances where excavation and/or dredging occurs in an effort to widen/deepen the existing Salt River Channel, in-stream erosion and turbidity control measures shall be implemented. These measures include installation and maintenance of in-stream turbidity curtains and silt-fence along channel banks as specified in project designs, specifications and erosion control plans.	Construction contractor	HCRCD Project Manager	Prior to any excavation
Mitigation 3.1.1-3: Implement water quality monitoring and maintenance plan The long-term monitoring plan shall routinely screen project water quality and source areas leading to degraded water quality. Maintenance and adaptive management strategies shall be designed and implemented under the plan to modify the morphology of poor water quality source areas.	HCRCD Project Manager	HCRCD Project Manager	Ongoing as specified in Water Quality Monitoring Plan
Mitigation 3.1.1-7: Implement erosion monitoring and maintenance plan To ensure no long-term adverse impacts, the project includes a long-term monitoring and maintenance plan that would monitor for excessive erosion and sediment accumulation and prescribe remedies in the form of channel adjustments and sediment excavation on an "as-needed" basis. Monitoring shall be conducted pursuant to the long-term monitoring and maintenance plan. Specific criteria will be developed and stipulated in the plan that will trigger the need for adaptive management and/or maintenance activities. If erosion is so great that it causes water quality impairments, improvements such as channel armoring shall be implemented to manage and reduce erosion.	HCRCD Project Manager	HCRCD Project Manager	Ongoing and post-construc-tion as specified in Water Quality Monitoring Plan
Mitigation 3.1.1-9.1: Armor berms and wetland fringe Restoration design shall account for wind-wave erosion control measures in project design that shall include bioengineering and/or hard-bank stabilization measures. Bioengineering methods may include the planting of specific vegetation species that thrive in anticipated environments (accounting for inundation depth-duration-frequency) such as tules or willows and/or installation of large-wood structures such as bank revetments. Hard-bank stabilization measures pertain to the placement of rock and or rip-rap (or other suitable materials) to effectively protect shoreline banks from erosion.	Project design engineers	HCRCD Project Manager	Prior to approval of final design

Mitigation	Implementing Responsibility	Monitoring Responsibility	Mitigation Timing
Mitigation 3.1.1-9.2: Implement erosion monitoring and maintenance plan The Monitoring and Mitigation Plan shall include measures to identify and evaluate erosion problems that evolve in response to wind-waves. Similar to the other erosion monitoring and mitigation components, the Plan shall include wind-wave erosion criteria and thresholds that, if exceeded, will trigger maintenance and/or adaptive management measures to repair and eliminate erosional problems.	Project construction contractor and HCRCD Project Manager	HCRCD Project Manager	Ongoing during construct-ion and post-construc-tion
3.3 Biological Resources: Terrestrial/Upland/ Riparian			
Mitigation Measure 3.3.1-2: Preconstruction surveys and possible installation of nest boxes Before riparian areas are cleared, a count of mature trees with available cavities shall be taken to roughly estimate the number of cavities being lost. If the survey and an analysis by a qualified individual demonstrates that the project would result in inadequate habitat remaining for cavity nesters, nest boxes shall be erected to match, as closely as possible, the lost value. Should the findings of the surveys result in the conclusion that nest boxes are not necessary, this mitigation measure would not be required.	Qualified biologist	HCRCD Project Manager	Prior to clearing of any riparian areas
Mitigation Measure 3.3.1-3: Minimizing construction-related disturbance to sensitive habitats ▪ The locations of any sensitive habitats to be avoided shall be clearly identified in the contract documents (plans and specifications). ▪ Before clearing and grubbing commences; construction and staging areas shall be flagged to clearly define the limits of the work area. These areas shall be clearly identified on the contract documents (plans and specifications). ▪ Contractors awarded contract packages shall sign a document stating that they have read, agree to, and understand the required resource avoidance measures, and shall have construction crews participate in a training session on sensitive area resources. ▪ A qualified biologist shall be on-site to observe construction activities as appropriate when construction in or adjacent to sensitive habitat such as wetlands or special status species locations occurs. ▪ Site disturbance shall be minimized to the greatest extent possible by using existing disturbed areas for access roads and staging areas, and concentrating the area of disturbance associated with restoration actions to the minimum necessary to complete the project. Where feasible, temporary measures for access or construction, such as the use of temporary tracks or pads, shall be used to minimize impacts.	Contracting officer or Construction Manager and qualified biologist, as specified in the mitigation measures	HCRCD Project Manager	Contract specifica-tion shall be developed prior to signing of contract; biological monitoring as specified in the measure (prior to clearing and during construct-ion)

Mitigation	Implementing Responsibility	Monitoring Responsibility	Mitigation Timing
▪ Restoration activities to restore ecological function and integrity to disturbed habitats, such as revegetation, shall take place as rapidly as possible following habitat disturbance.			
Mitigation Measure 3.3.1-5.1: Pre-construction removal of dense-flowered cordgrass In order to reduce the likelihood of dense-flowered cordgrass colonizing restored tidal marsh at Riverside Ranch, existing populations in and adjacent to the project area shall be controlled prior to construction using manual, mechanical, and/or approved chemical methods.	HCRCD Project Manager and designees	HCRCD Project Manager	Prior to start of construc-tion
Mitigation Measure 3.3.1-5.2: Monitoring and removal of noxious weeds in restored habitats in the project area Levels of noxious weeds in restored riparian and tidal marsh habitats shall be monitored after project implementation. Noxious weed removal shall be conducted as part of project maintenance over the lifetime of the project. Noxious weed removal techniques shall be described in the management plans for the Salt River and Riverside Ranch, which shall be prepared in consultation with DFG, FWS, and NMFS.	Project biologist	HCRCD Project Manager	Ongoing post-construc-tion as specified in manage-ment plans
Mitigation 3.3.1-6: Minimize, avoid, and compensate for impacts to sensitive plants Mitigation for special status plant species is addressed collectively for all species, with modifications noted for individual species. Significant impacts to special-status plant species present or likely to be present onsite shall be minimized, avoided, and contingently compensated by complying with the following: ▪ Pre-construction surveys: Potential habitat for special-status plant species shall be surveyed in appropriate seasons for optimal species-specific detection prior to project excavation/dredging, fill, drainage, or flooding activities associated with project construction. Survey methods shall comply with CNPS/CDFG rare plant survey protocols, and shall be performed by qualified field botanists. Surveys shall be modified to include detection of juvenile (pre-flowering) colonies of perennial species when necessary. Any populations of special status plant species that are detected shall be mapped. Populations shall be flagged if avoidance is feasible and population is located adjacent to construction areas. Special Status plant surveys were conducted between May and August 2010 in the project area for channel restoration and Riverside Ranch restoration. These surveys documented populations of Lyngbye's sedge and Humboldt Bay owl's clover described above. Special status	Qualified biologist to conduct surveys; HCRCD contracting officer or Construction Manager to incorporate avoidance information and language into construction contracts	HCRCD Project Manager	Surveys and contract language prior to contracting; avoidance to be implemen-ted throughout construct-ion

Mitigation	Implementing Responsibility	Monitoring Responsibility	Mitigation Timing
plant surveys would be conducted in the project area for upslope sediment reduction components of the project where work would be conducted in suitable habitat. For example, maple-leaved checkerbloom (Sidalcea malachroides) may occur in broadleafed upland forest or North Coast coniferous forest, often in disturbed areas, and Howell's montia (Montia howellii) has been documented on roadsides in North Coast coniferous forest in the Wildcat Mountains and may occur in upslope sediment reduction areas. Surveys for these and other special status plant surveys with potential to occur in the upslope sediment reduction areas listed in Table 3.3-3 shall be conducted prior to upslope sediment reduction project implementation.			
▪ The locations of any special status plant populations to be avoided shall be clearly identified in the contract documents (plans and specifications).			
▪ If special-status plant populations are detected where construction would have unavoidable impacts, a compensatory mitigation plan shall be prepared and implemented in coordination with USFWS or DFG. Such plans may include salvage, propagation, on-site reintroduction in restored habitats, and monitoring. Plans have been developed for Lyngbye's sedge, Humboldt Bay owl's clover, and eelgrass. These plans are available from the HCRCD, and will be further revised in consultation with regulatory agencies. The plans include the following measures:			
▫ Impacts to these species shall be avoided or minimized to the extent feasible. If feasible, impacts to these species will be minimized by restricting channel excavation in the portions of the lower Salt River where they are found to a single bank of the channel (e.g. only the east bank). It should be noted that populations of owl's clover can fluctuate dramatically between years (Pickart 2001), making the number of individuals impacted difficult to predict.			
▫ Humboldt Bay owl's clover: A qualified botanist shall collect and conserve seed from local populations of Humboldt Bay owl's clover. These seeds shall be used to replant a population of this species to mitigate for the population lost to construction impacts. The project area shall be monitored for five years and compared with a reference population to determine whether replanting and natural recruitment have resulted in population numbers equal to or greater than those present before project implementation. If the population does not appear to have reestablished during the five year period, seed shall be collected from elsewhere and additional attempts shall be made to reestablish the population.			
▫ Lyngbye's sedge: Seed shall be collected from Lyngbye's sedge in the project area to be used for replanting in the event that natural recruitment does not result in a post-project population size equal to or greater than the pre-project population size. Monitoring and adaptive management will be conducted for a ten year period to determine whether the area and approximate number of Lyngbye's sedge in the project area is similar to the area of sedge before the project. Additional planting efforts (from seed or from rootstock of mature plants) shall be undertaken if the population size is declining below pre-project size during the monitoring period.			
▫ Eelgrass: The extent and density of eelgrass cover within areas of project impact shall be mapped prior to construction. Natural recruitment shall be monitored for 3 years to determine whether eelgrass is naturally recruiting in newly created channels adequately to replace the area of eelgrass lost due to project impacts. If eelgrass does not establish in an area equal to or greater than that lost due to project impacts in the first 3 years, eelgrass shall be actively planted using the most current scientific methods.			

Mitigation	Implementing Responsibility	Monitoring Responsibility	Mitigation Timing
▪ If USFWS or DFG require propagation or transplantation, scientifically sound genetic management guidelines and protocols for rare plants shall be applied to propagation and transplant plans, possibly including the following: ▫ maintain some reserve clonal stock of perennial special-status plant populations during the monitoring period to offset the risk of failure in establishing populations in the wild, ▫ set aside surplus reserve seed of annual special-status plants from impacted populations ▫ conduct long-term monitoring to determine the fate of managed special-status plant populations. No special-status plant species shall be introduced to the site beyond their known historic geographic range unless such introduction is recommended in a final recovery plan or conservation plan prepared and adopted by the USFWS or the CDFG, in formal consultation with the USFWS.			
Mitigation 3.3.1-7: Minimize and avoid impact to nesting special status or migratory birds Construction activities would occur during the breeding and nesting season (March 1-August 15) only following pre-construction site-specific surveys by a qualified biologist. Nesting surveys shall be conducted no more than one week prior to the initiation of site preparation. If surveys identify active nests belonging to common migratory bird species, a 100-foot exclusion zone shall be established around each nest to minimize disturbance-related impacts on nesting birds. If surveys identify active nests belonging to special status birds, an interim no-activity zone of 300 feet shall be established around the nest. If surveys identify active nests belonging to raptors, an interim no-activity zone of 500 feet shall be established around the nest. The radius of the no-activity zone may be modified after consultation with DFG, and the duration of the exclusion shall be determined in consultation with DFG. In order to avoid take of willow flycatchers and western yellow-billed cuckoos during Project activities, in areas where the vegetation is dense and unfeasible to adequately survey, riparian vegetation removal will occur between August 15 and November 30 to avoid the nesting season for these species. For areas with less dense riparian vegetation that can be adequately surveyed, which will be determined in consultation with CDFG, riparian vegetation removal may occur between 1 July and 15 August after surveys for nesting willow flycatchers and presence/absence surveys for other nesting birds are conducted by a qualified biologist prior to the start of vegetation removal. Surveys for willow flycatchers would occur in June and presence/absence surveys for other birds and would occur no more than one week prior to the initiation of site preparation. If active nests belonging to willow flycatchers or western yellow-billed cuckoos are detected during surveys, a 300-foot exclusion zone will be established around each nest in which no construction activities will occur until nesting is completed. The duration of the no-activity exclusion area(s) will be determined in consultation with CDFG.	Project biologist in consultation with CDFG	HCRCD Project Manager	Surveys to be conducted No more than one week prior to initiation of site preparation Develop-ment of exclusion zones prior to site disturbance
Mitigation Measure 3.3.1-12: Limit construction access routes and equipment staging areas and	Project construction	HCRCD Project Manager	Ongoing during

Mitigation	Implementing Responsibility	Monitoring Responsibility	Mitigation Timing
minimize excavation in existing aquatic habitat when eggs and tadpoles are expected to be present and conduct preconstruction surveys for RLF in all suitable habitat that would be disturbed by construction. Construction access routes and equipment staging areas shall be limited within the study area to the extent feasible. Excavation in existing aquatic habitat shall only occur when egg masses and tadpoles are not expected (August 15–October 31) for further protection of frogs. If disturbance in aquatic habitats is necessary prior to August 15, the area shall be cleared of and any tadpoles relocated to suitable habitat.	contractor under direction of project biologist		construc-tion
3.4 Biological Resources: Aquatic			
Mitigation 3.4.1-1.2: Limit initial construction to an extended dry weather season (April – November) Initial project construction activities involving earth moving on any of the sites in an area where material may enter or be transferred to a slough shall be limited to the April 1-November 30 dry season. This would reduce the amount of sediment and contaminants washed into the Salt River and Eel Estuary from the Salt River Ecosystem Restoration Project and related project site by rains. Maintenance activities involving earth moving on any of the sites in an area where material may enter or be transferred to a slough shall be limited to the April 15 1-November 1 dry season. This would reduce the amount of sediment and contaminants washed into the Salt River and Eel Estuary from Salt River Ecosystem Restoration Project maintenance activities.	HCRCD to include as contract provision; contractor to implement	HCRCD Project Manager	Upon initiation of project construc-tion
Mitigation 3.4.1-1.3: Adhere to site-specific construction plans Conduct construction work in accordance with site-specific construction plans that minimize the potential for increased delivery of sediment to surface waters.	Construction contractor	HCRCD Project Manager	Ongoing during project construc-tion
Mitigation 3.4.1-1.5: Minimize removal of and damage to native vegetation During excavation of the main channel, a significant amount of native vegetation must be removed. Where possible, the contractor will use heavy equipment to excavate plants and shrubs with root-wads, and replant these at areas designated by the re-vegetation plan. Native vegetation that is removed or damaged at access ways and within the construction areas shall be replaced under the re-vegetation plan at a 3:1 ratio.	Construction contractor	HCRCD Project Manager	During excavation of main Salt River channel

Mitigation	Implementing Responsibility	Monitoring Responsibility	Mitigation Timing
Mitigation 3.4.1-1.6: Install temporary construction fencing to identify work areas The project contractors shall install temporary construction fencing to identify areas that require clearing, grading, revegetation, or recontouring, and minimize the extent of areas of areas to be cleared, graded, recontoured, or otherwise disturbed.	Construction contractor	HCRCD Project Manager	Prior to start of grading or clearing
Mitigation 3.4.1-1.9: Fish relocation Before any potential de-watering activities begin in any creeks or channels within the project area, the RCD shall ensure that native aquatic vertebrates and larger invertebrates are relocated out of the construction area into a flowing channel segment by a qualified fisheries biologist. In deeper or larger areas, water levels shall first be lowered to manageable levels using methods to ensure no impacts to fisheries and other special status aquatic species. A qualified fisheries biologist or aquatic ecologist shall then perform appropriate seining or other trapping procedures to a point at which the biologist is assured that almost all individuals within the construction area have been caught. These individuals shall be kept in buckets with aerators to ensure survival. They shall then be relocated to an appropriate flowing channel segment or other appropriate habitat as identified by the RCD in consultation with the NMFS and the DFG. Construction activities shall be prohibited from unnecessarily disturbing aquatic habitat. Federally threatened or endangered aquatic species that occur within the project area either as residents or non-residents are Coho salmon, steelhead, Chinook salmon, green sturgeon, and tidewater goby. Introduced species, particularly Sacramento pikeminnow shall be documented and euthanized, as discussed under Mitigation 3.4.1-4, below.	Project biologist	HCRCD Project Manager	Prior to any dewatering activities
Mitigation 3.4.1-1.10: Tidewater Goby Measures Specific measures designed to avoid or mitigate for impacts to tidewater goby include the following stepwise approach, described in detail in the Draft Biological Assessment for Tidewater Goby under preparation for submittal to the United States Fish and Wildlife Service for consultation. These measures are: 1. Prior to commencement of construction, tidewater goby surveys shall be conducted in May at all previously identified tidewater goby survey sites. Tissue samples will be collected for genetic analysis; 2. Construction plans shall ensure avoidance of disturbance to existing tidewater goby habitat at “Site #6” (see Biological Assessment) a possible relocation site for tidewater gobies found prior to dewatering of the Salt River channel;	Project biologist	HCRCD Project Manager	

Mitigation	Implementing Responsibility	Monitoring Responsibility	Mitigation Timing
3. Immediately prior to construction season, a tidewater goby survey shall be conducted in May at all sites and Connick to collect tissue samples for genetic analysis; 4. For any necessary relocation of tidewater goby, or other aquatic species, seining shall be conducted prior to dewatering of the Salt River channel; 5. Captured goby, or other listed species, shall be appropriately relocated as follows: a. Relocation of tidewater goby to Connick Ranch, providing genetic analysis so directs; b. Relocation of tidewater goby to "Site #6" (as identified in the Draft Biological Assessment) providing genetic analysis so directs and landowner permission is provided; c. Retention of existing Riverside Ranch habitat at two suitable sites (see Biological Assessment) and relocate tidewater goby to those sites 6. Most importantly, many acres of habitat suitable for tidewater goby shall be restored at Riverside Ranch as part of the project description;			
Mitigation 3.4.1-2: Biological monitoring program and adaptive management The RCD shall conduct reviews of the Riverside Ranch property on three occasions to determine the functionality of the newly constructed breach points and tidal habitat. These reviews shall take place at the time of breaching, three months following breaching, and one year following breaching. If at any time entrainment of fish is occurring, the RCD shall retain a hydrologist to review the performance of the project, and to recommend corrective measures.	Project biologist	HCRCD Project Manager	At the time of breaching, three months following breaching, and one year following breaching.
3.5 Air Quality			
Mitigation Measure 3.5.1-1.1: Utilize Best Management Practices to minimize fugitive dust generation and assure compliance with North Coast Air Quality Management District rules for particulates	Construction contractor	HCRCD Project Manager	Ongoing during-construc-tion

Mitigation	Implementing Responsibility	Monitoring Responsibility	Mitigation Timing
In order to minimize the generation of fugitive dust, the following best management practices shall be implemented during project construction. ▪ All active construction areas shall be watered at a rate sufficient to keep soil moist and prevent formation of wind-blown dust. ▪ All trucks hauling soil, sand, and other loose materials shall be covered, or all trucks shall be required to maintain at least 2 feet of freeboard. ▪ All unpaved access roads, parking areas, and construction staging areas shall be paved, watered daily, or treated with non-toxic soil stabilizers during construction. ▪ All paved access roads, parking areas, and construction staging areas shall be cleaned daily with water sweepers during construction. ▪ If visible soil is carried out onto adjacent streets, the area shall be washed with water or by a water sweeper truck. ▪ Hydroseeding or non-toxic soil stabilizers shall be applied to inactive construction areas (previously graded areas inactive for ten days or more). ▪ Exposed stockpiles of dirt, sand, and similar material shall be enclosed, covered, watered daily, or treated with non-toxic soil binders. ▪ Traffic speeds on unpaved roads shall be limited to 10 miles per hour. ▪ Sandbags, hay bales, or other erosion control measures shall be installed to prevent silt runoff to public roadways. ▪ Vegetation in disturbed areas shall be replanted as quickly as possible. ▪ Outdoor dust-producing activities shall be suspended when high winds (>15 mph) create visible dust plumes in spite of control measures. ▪ Reasonable precautions shall be taken to prevent the entry of unauthorized vehicles onto the site during non-work hours. Construction activities associated with the Project shall comply with AQMD Rule 420 (Particulate Matter) and Rule 430 (Fugitive Dust Emissions), or succeeding AQMD rules that carry out the AQMD's management program for particulate matter. Many of the Best Management Practices listed above are also cited in Rule 430.			
Mitigation Measure 3.5.1-1.2: Minimize construction machinery emissions Contractors shall be required to: 1) minimize idling time to 5 minutes for all trucks; and 2) maintain properly tuned equipment.	Construction contractor to implement; HCRCD to include in contract specifications	HCRCD Project Manager	Ongoing during construc-tion
3.6 Noise			
Mitigation 3.6.1-1: Noise from earthmoving and hauling of soils a) Hours of construction for outdoor activities exceeding 50 dBA shall be limited to Monday through Friday 7:00 a.m.	Construction contractor to implement; HCRCD to	HCRCD Project Manager	During construct-ion

Mitigation	Implementing Responsibility	Monitoring Responsibility	Mitigation Timing
to 7:00 p.m. and weekends and holidays from 9:00 a.m. to 6:00 p.m. Movement and hauling of material, and associated activities such as re-fueling or maintenance, shall be limited to normal working hours for the area, as specified above. b) All equipment shall operate with factory-equipped mufflers, and staging areas shall be located as far from residential uses as is practical. These conditions shall be incorporated into project contract specifications. c) To the degree feasible, haul trucks shall use haul routes along the existing channel excavation path, or along roadways distant from sensitive receptors. The contractor shall determine the feasibility of developing haul roads along the channel excavation path. Design considerations shall include a minimum of three separate work sites (to minimize travel on County roads). Haul road construction shall be designed to minimize impacts; haul road designs shall include, but not be limited to the placement of geotextile fabric under the haul road for facilitated re-excavation and removal of bedload materials following project completion. d) A haul-truck route plan shall be developed. Hauling shall minimize passing any substantial collection of noise-sensitive land uses (i.e. occupied houses, schools, hospitals), and shall be limited to less than 200 loads per day on any given road. e) Larger capacity belly and end-dump trucks as well as double-trailers shall be utilized whenever feasible.	include in contract specifications		
3.11 Cultural Resources			
Mitigation Measure 3.11.1-1: Cease work and conduct assessment Inadvertent Discovery of Cultural Resources If cultural resources, 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, per the requirements of CEQA (January 1999 Revised Guidelines, Title 14 CCR 15064.5 (f)) and 36 CFR § 800.13 (a-b). 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. Prehistoric materials that could be encountered include: obsidian and chert flakes or chipped stone tools, grinding implements, (e.g., pestles, handstones, mortars, slabs), bedrock outcrops and boulders with mortar cups, locally darkened midden, deposits of shell, dietary bone, and human burials. Historic materials that could be encountered include: ceramics/pottery, glass, metal, can and bottle dumps, cut bone, barbed wire fences, building pads, structures, trails/roads, railroad rails and ties, trestles, etc. Inadvertent Discovery of Human Remains If human remains are discovered during project construction, work will stop at the discovery location, within 20 meters (66 feet), and any nearby area reasonably suspected to overlie adjacent to human remains (Public Resources Code, Section 7050.5). The Humboldt County coroner will be contacted to determine if the cause of death must be investigated. If the coroner determines that the remains are of Native American origin, it is necessary to comply with	Construction contractor to report finds; HCRCD construction supervisor to contact archaeologist; qualified archaeologist to conduct evaluations/ recommenda-tions	HCRCD Project Manager	Ongoing During construc-tion

Mitigation	Implementing Responsibility	Monitoring Responsibility	Mitigation Timing
state laws relating to the disposition of Native American burials, which fall within the jurisdiction of the NAHC (Public Resources Code, Section 5097). The coroner will contact the NAHC. The descendants or most likely descendants of the deceased will be contacted, and work will not resume until they have made a recommendation to the landowner or the person responsible for the excavation work for means of treatment and disposition, with appropriate dignity, of the human remains and any associated grave goods, as provided in Public Resources Code, Section 5097.98. Work may resume if NAHC is unable to identify a descendant or the descendant failed to make a recommendation. The following text details procedures for treatment of an inadvertent discovery of Human Remains: ▪ Immediately following discovery of known or potential human remains all ground-disturbing activities at the point of discovery shall be halted, ▪ No material remains shall be removed from the discovery site, a reasonable exclusion zone shall be cordoned off, ▪ The Project Manager shall be notified and the Project Manager shall contact the county coroner. ▪ It is highly recommended the services of a professional archaeologist be retained to immediately examine the find and assist the process. ▪ All ground-disturbing construction activities in the discovery site exclusion area shall be suspended. ▪ The discovery site shall be secured to protect the remains from desecration or disturbance, with 24-hour surveillance, if prudent. ▪ Discovery of Native American remains is a very sensitive issue, and all project personnel shall hold any information about such a discovery in confidence and divulge it only on a need-to-know basis. ▪ The Coroner has two working days to examine the remains after being notified. If the remains are Native American, the Coroner has 24 hours to notify the Native American Heritage Council (NAHC) in Sacramento (telephone (916) 653-4082). The NAHC is responsible for identifying and immediately notifying the Most Likely Descendant (MLD) of the deceased Native American. ▪ Within 24 hours of their notification by the NAHC, the MLD shall be granted permission by the landowner's authorized representative to inspect the discovery site, if they so choose. ▪ Within 24 hours of their notification by the NAHC, the MLD shall recommend to the landowner and Project Manager means for treating or disposing, with appropriate dignity, the human remains and any associated grave goods. The Recommendation may include the scientific removal and nondestructive or destructive analysis of human remains and items associated with Native American burials. ▪ Whenever the NAHC is unable to identify a MLD, or the MLD identified fails to make a recommendation, or the landowner or his/her authorized representative rejects the recommendation of the MLD and mediation between the parties by the NAHC fails to provide measures acceptable to the landowner, the landowner or his/her authorized representatives shall re-inter the human remains and associated grave offerings with appropriate dignity on the property in a location not subject to further subsurface disturbance. ▪ Following final treatment measures, the Project Manager or professional archaeologist shall ensure that a report is prepared that describes the circumstances, nature and location of the discovery, its treatment, including results of analysis (if permitted), and final disposition, including a confidential map showing the reburial location. Appended to the report shall be a formal record about the discovery site prepared to current California standards on DPR 523 form(s). Report copies will be distributed to the NCIC, NAHC and MLD.			

Mitigation	Implementing Responsibility	Monitoring Responsibility	Mitigation Timing
Port Kenyon Culturally Sensitive Area It is recommended that pre-project archeological testing be conducted at this location to determine presence or absence of cultural materials within the proposed area of potential effects for this project. It appears that this location contains substantial overburden of flood soils, capping the historic ground surface. Deep auger boring or backhoe trenching is recommended to determine presence or absence of cultural materials within this sensitive area prior to any project related excavations.			
3.12 Transportation			
Mitigation 3.12.1.1: Traffic Control Plan As part of the final construction documents, the contractor shall be required to submit a Traffic Control Plan corresponding to a Work Sequencing Schedule for review and approval by the construction manager prior to commencement of work. The Traffic Control Plan shall provide a narrative supported with figures depicting the haul routes anticipated to be utilized throughout the construction period and shall be developed in accordance to the California Manual on Uniform Traffic Control Devices (MUTCD) and applicable County of Humboldt encroachment permit conditions. The Traffic Control Plan shall detail the desired haul routes, public notification, required signage/flagging, potential lane/road closers, detour routes, provisions for providing temporary pedestrian access (if applicable) and provisions for maintaining access to all parcels. The use of Port Kenyon Road would be important for the transport of material and therefore the crossing replacement shall be scheduled for a time period when haul trucks would be using that portion of the road less frequently. The Traffic Control Plan shall be periodically updated throughout the course of the project.	Construction contractor	HCRCD Project Manager / Construction Manager	To be included in final construc-tion documents
3.14 Hazards and Hazardous Materials			
Mitigation 3.14.1-2.1: Adapt and apply regional best management practices for managed marshes BMPs are habitat-based strategies that can be implemented when needed for mosquito control in managed wetlands. These strategies represent a range of practices that wetland managers can incorporate into existing habitat management plans or in the design of new wetland restoration or enhancement projects. Ideally, BMPs can be used to decrease the production of mosquitoes and reduce the need for chemical treatment without significantly disrupting the ecological character, habitat function, or wildlife use in managed wetlands. Not all BMPs would be appropriate for a given wetland location or set of circumstances. Timing of Managed Marsh Flooding and Drawdown (Nontidal Managed Open Water Options) Timing of flooding and drawdown shall be coordinated with County Department of Public Health, adapted to current-	Project engineers to develop BMP's; construction contractor to implement.	HCRCD Project Manager	During design and constructio n phases, and post-construct-ion

Mitigation	Implementing Responsibility	Monitoring Responsibility	Mitigation Timing
year temperature, rainfall patterns, and mosquito vector risks, to minimize mosquito production and vector risks. Rapid Flooding and Drawdown of Managed Marsh Marshes shall be flooded and drawn down (emerged bed) as quickly as operational controls allow. Water Control Once wetlands have been flooded, water surface elevations shall minimally fluctuate prior to drawdown, except during winter periods of low mosquito production. Minimal fluctuation is based on the need to circulate water (maximize turnover). In managed wetland areas, marsh submergence depths shall be managed to maximize areas with minimal initial flooding depths of two feet. Wetland Design Features to Reduce Mosquito Production Managed wetland edges shall be constructed to enable efficient access by vector control field crews for monitoring and treatment. Edge slopes of managed nontidal marsh areas shall be steeper than to 4:1 (horizontal to vertical). Open water areas with sufficient fetch and wind-wave turbulence to minimize mosquito production shall be interspersed within managed marsh, at least 20 percent of total area. Floating aquatic vegetation shall be actively suppressed in open water areas within managed marsh.			