## The Sacramento River Salmonid Stranding Reduction and Floodplain Habitat Restoration Project at the Willow Bend Preserve

## Initial Study and Proposed Mitigated Negative Declaration Public Draft



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## **Project Information**

1. Project Title:	The Sacramento River Salmonid Stranding Reduction and Floodplain Habitat Restoration Project at the Willow Bend Preserve
2. Lead Agency Name and Address	Colusa County Community Development Department 220 12th St. Colusa, CA 95932 (530) 458-0480
3. Contact Person and Phone Number	Kent Johanns, Associate Planner (530) 458-0480
4. Project Location	The project area encompasses 122.5 acres near the community of Princeton in northern Colusa County, California. It is on the east side of the Sacramento River between River Mile (RM) 158.4 and RM 159.2; and is located on the <i>Moulton Weir</i> , <i>California</i> 7.5-minute U.S. Geological Survey (USGS) quadrangle in Township 17N, Range 1W, Section 6 (North Field), and Township 17N, Range 2W, Section 12 (South Field), Mount Diablo Base and Meridian. The project area includes portions of multiple parcels owned by River Partners.
5. Project Sponsor's Name	River Partners
6. General Plan Designation	Designated Floodway (DF)
7. Zoning	Flood Management (F-M); River Frontage (R-F)

#### 8. Description of Project

River Partners is proposing to implement the Sacramento River Salmonid Stranding Reduction and Floodplain Habitat Restoration Project at the Willow Bend Preserve (Willow Bend Project). The Willow Bend Project will restore floodplain and fish habitat adjacent to the Sacramento River by planting native vegetation, manipulating the existing topography, re-contouring a swale, modifying existing rock revetment, and installing a surface water control structure.

#### 9. Surrounding Land Uses and Setting

Agriculture/Public Land (Sacramento River)/Rural Residential

# 10. Other Public Agencies Whose Approval May Be Required (e.g., permits, financing approval, or participation agreement.)

- California Department of Fish and Wildlife (Region 2)
- Regional Water Quality Control Board (Central Valley Region)
- Central Valley Flood Protection Board
- NOAA-Fisheries
- U.S. Army Corps of Engineers (Sacramento District)

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Contents

Pro	ject Inf	formation Project Infor	mation - i
Acr	onyms		iii
1.	Intro	oduction	1
	1.1	Introduction and Regulatory Guidance	1
	1.2	Lead Agency	1
	1.3	Supporting Technical Studies	1
	1.4	Document Organization	2
2.	Proje	ect Description	3
	2.1	Location	3
	2.2	Project Purpose and Need	3
	2.3	Project Background	5
	2.4	Project Description	
	2.5	Project Design Criteria and Best Management Practices	14
		2.5.1 Contractor Staging Areas/Construction Access Routes	14
		2.5.2 Conservation Measures	14
	2.6	Project Approvals	17
		2.6.1 Funding Sources	17
		2.6.2 Anticipated Permits and Regulatory Approvals	18
	2.7	Tentative Project Construction Schedule	
3.	Envi	ronmental Setting, Impacts, and Mitigation Measures	19
	3.1	Environmental Setting	20
		3.1.1 Regional Setting	
		3.1.2 Local Setting	
	3.2	Environmental Impacts and Mitigation Measures	24
4.	Dete	rmination	70
5	MI:4:	action Manitoning and Danasting Descure	71
э.		gation Monitoring and Reporting Program	
	5.1	Mitigation Measures	73 76
	5.2	5.2.1 Air Quality and Greenhouse Gas Emissions	70 76
		5.2.1 All Quality and Oreenhouse Gas Emissions	
		5.2.2 Biological Resources	
		5.2.3 Cultural Resources and Tribal Cultural Resources	
		5.2.4 Hazardous Materials	
		5.2.5 Hydrology and Water Quality	
6.	Repo	ort Preparation	83
	6.1	Colusa County, Development Services Department - CEQA Lead Agency	
	6.2	Stantec Consulting Services Inc. – Environmental Review	
7.	Refe	rences	

## Tables

Table 1.	Planting Densities and Design Features of the Four Proposed Plant Communities	13
Table 2.	Anticipated Permits or Approvals	18
Table 3.	Soil Map Units in the Project Area	22
Table 4.	Estimated Unmitigated Project Implementation Emissions	29

## Figures

Figure 1.	Project Area Location	4
Figure 2.	1938 Department of Water Resources Aerial Photograph of the Project Area	6
Figure 3.	1958 U.S. Department of Agriculture Aerial Photograph of the Project Area	7
Figure 4.	Proximity to State and Federal Managed Lands	9
Figure 5.	Site Grading and Water Control Structure	10
Figure 6.	Planting Plan	12
Figure 7.	Temporary Impacts on Potential Waters of the United States	36

## Appendices

Appendix A Hydraulic Analysis

Appendix B CalEEMod Emissions Model

## Acronyms and Abbreviations

AB 52	Assembly Bill 52
APCD	Air Pollution Control District
ASC	Anthropological Studies Center Sonoma State University
BA/EFHA	Biological Assessment/Essential Fish Habitat Assessment
BMPs	Best Management Practices
BRA	Biological Resources Assessment
CDFW	California Department of Fish and Wildlife
CESA	California Endangered Species Act
CEQA	California Environmental Quality Act
CNDDB	California Natural Diversity Database
Corps	U.S. Army Corps of Engineers
CRHR	California Register of Historical Resources
DPS	distinct population segment
DTSC	Department of Toxic Substances Control
DWR	California Department of Water Resources
ESA	federal Endangered Species Act
ESU	evolutionarily significant unit
°F	degrees Fahrenheit
FEMA	Federal Emergency Management Agency
GHG	greenhouse gas
GHGs	greenhouse gases
IS	Initial Study
MLD	Most Likely Descendent
MMRP	Mitigation Monitoring and Reporting Program
MND	Mitigated Negative Declaration
NAHC	Native American Heritage Commission
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NOAA-Fisheries	National Oceanic Atmospheric Administration – Fisheries
NRCS	Natural Resources Conservation Service
OHWM	ordinary high water mark
PM <sub>2.5</sub>	particulate matter 2.5 microns or less
PM <sub>10</sub>	particulate matter 10 microns or less
project	The Sacramento River Salmonid Stranding Reduction and
	Floodplain Habitat Restoration Project at the Willow Bend Preserve

RM	River Mile
RWQCB	Regional Water Quality Control Board
SHPO	State Historic Preservation Officer
Stantec	Stantec Consulting Services Inc.
SWPPP	Stormwater Pollution Prevention Plan
TCR	Tribal Cultural Resource
TCRs	Tribal Cultural Resources
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
Willow Bend Project	The Sacramento River Salmonid Stranding Reduction and Floodplain Habitat Restoration Project at the Willow Bend Preserve

## 1. Introduction

## 1.1 Introduction and Regulatory Guidance

This document is an Initial Study (IS) that summarizes the technical studies prepared for the proposed Sacramento River Salmonid Stranding Reduction and Floodplain Habitat Restoration Project at the Willow Bend Preserve (Willow Bend Project). It includes an evaluation of potential environmental impacts that could result from project implementation and provides justification for a Mitigated Negative Declaration (MND) for the project. This document was prepared in accordance with the current California Environmental Quality Act (CEQA), Public Resources Code Section 21000 et seq., and the State CEQA Guidelines. Mitigation measures are identified to reduce potentially significant impacts to a less-than-significant level.

## 1.2 Lead Agency

The CEQA Lead Agency is the public agency with primary responsibility for implementing a project. The CEQA Lead Agency for the Willow Bend Project is Colusa County. The project will be funded in part by the National Oceanic Atmospheric Administration - Fisheries (NOAA-Fisheries) Community Based Restoration Program. Additional project funding is being sought but has not been secured to date. The funding of the project by NOAA-Fisheries creates a federal nexus and it is anticipated NOAA-Fisheries will be the National Environmental Policy Act (NEPA) lead agency. It is anticipated that NEPA approval by NOAA-Fisheries will be in the form of a Categorical Exclusion or Environmental Assessment supported by technical studies.

## 1.3 Supporting Technical Studies

Completed technical studies are available for review at the following locations:

Colusa County Community Development Department 220 12th St. Colusa, CA 95932 (530) 458-0480

Technical studies completed for this project include:

- Biological Assessment/Essential Fish Habitat Assessment (BA/EFHA)
- Biological Resources Assessment (BRA) Report
- Cultural Resources Investigation (confidential; not available for public review)
- Wetland Delineation Report

## 1.4 Document Organization

The IS consists of the following chapters:

- Chapter 1.0 Introduction: describes the purpose and content of this document.
- **Chapter 2.0 Project Description:** provides a comprehensive description of the project, tentative schedule, required permit approvals, and project alternatives.
- Chapter 3.0 Environmental Setting, Impacts, and Mitigation Measures: describes the environmental impacts of the project using the CEQA Environmental Checklist. Where appropriate, mitigation measures are provided that will reduce potentially significant impacts to a less-than-significant level.
- **Chapter 4.0 Determination:** provides the environmental determination for the project.
- Chapter 5.0 Mitigation Monitoring and Reporting Program: identifies the mitigation responsibilities in implementing the project.
- **Chapter 6.0 Report Preparation:** identifies the individuals responsible for preparation of this document.
- Chapter 7.0 References: provides a list of references used to prepare this document.

## 2. Project Description

## 2.1 Location

The Willow Bend Project is located along the left (eastern) bank of the Sacramento River (RM 158.4– 159.2L) approximately 11 miles north of the city of Colusa and 3 miles south of the community of Princeton in Colusa County, California (Figure 1). The project area encompasses a total of approximately 122.5 acres of the 175-acre Willow Bend Preserve and includes the North Field (97.9 acres) and the South Field (24.6 acres). The project is located within the *Moulton Weir, California* 7.5-minute U.S. Geological Survey (USGS) quadrangle in Township 17N, Range 1W, Section 6 (North Field), and Township 17N, Range 2W, Section 12 (South Field). The approximate center of the North Field portion of the project area is located at latitude 39.350811°, longitude -122.012325° and the approximate center of the South Field portion of the project area is located at latitude 39.342559°, longitude -122.025643° (National American Datum 83).

## 2.2 Project Purpose and Need

The Willow Bend Project is located inside the levee system along the Sacramento River. Both the North Field and the South Field of the project area historically supported a dense growth of native riparian vegetation. By 1958, the native riparian vegetation in these areas had been removed to allow for agricultural uses. The North Field of the project area regularly floods during normal water years. Once inundated, it performs like a historic floodplain would; retaining shallow, turbid waters for weeks at a time, providing beneficial habitat for fish and wildlife. However, rock revetment placed along the river in the 1980s eliminated channel migration, elevated the top of the bank, and disconnects the North Field from the main river channel. As a result, fish stranding occurs when the floodwaters recede.

The purpose of the Willow Bend Project is to restore high quality wildlife habitat to the property through minor alterations of land and vegetation within the project area. The project will benefit resident and migratory birds, fish, mammals, and invertebrates. The alterations are intended to work synergistically with adjacent wildlife management actions (both upstream and downstream) as well as flood management actions within the entire flood management system. Specifically, the project is needed to:

- Increase riparian habitat connectivity within the primary floodplain of the Sacramento River.
- Improve habitat value within the project area for riparian-dependent species and specialstatus animals including:
  - o juvenile Chinook salmon;
  - valley elderberry longhorn beetle; and
  - yellow-billed cuckoo.
- Reduce fish stranding risk within the project area.



2. Project Description

## 2.3 Project Background

#### Land Use History

The project region was inhabited by a tribelet of Native American people called the Patwin at the time of Euro-American contact (Johnson 1978). Euro-Americans began settling within what is now Colusa County in the 1840s, and the town of Colusa was established in 1850 (Kelley 1989). The natural levees of the Sacramento River contained fertile soils and were farmed for field crops. While the surrounding lowlands contained fertile soils as well, seasonal flooding prohibited farming these "swampland" areas which at the time were thick with tule-rushes. The swamplands were purchased from the state for private ownership via the Green Act of 1868, which lent a financial incentive to farming within swampland areas.

Landowners soon joined forces to fund the construction of levees along the Sacramento River in the 1870s, thereby restricting river waters to the main channel and draining the adjacent swamplands for agriculture. Residents did not turn to the government for flood protection until the devastating floods of 1907 and 1909. The Flood Control Act of 1917 created the Sacramento River Flood Control Project.

By 1909, the current configuration of the levees with the project area were in place and the floodplain remained predominantly forested. Twenty-nine years later in 1938, the project area remained undeveloped and densely vegetated with riparian forest (Figure 2). However, large portions of the project area were cleared for agriculture between the years of 1938 and 1958 (Figure 3). In 1958 an orchard existed in the South Field. Row crops were probably farmed in the more frequently inundated North Field. Prior to River Partners acquisition of the property, the North Field was farmed primarily for beans for 35 years (Glenn Huffman, personal communication). Alternatively, safflower may have been farmed during drier years.

#### Land Ownership

In October 2009, River Partners acquired 150 acres of the Willow Bend Property for management as open space and wildlife habitat. Subsequent to this acquisition, the 150 acres were enrolled in a perpetual Floodplain Warranty Easement held by the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS). Weed control and native grass establishment within the property has been completed with funding provided by NRCS. In 2016, with funding from the California Wildlife Conservation Board, River Partners acquired an additional 25 acres of lands bordering the northern portion of the NRCS easement. The Willow Bend Preserve now totals 175 acres. Of the 175-acre property, approximately 122.5 acres will be subject to project activities as part of the Willow Bend Project.



Figure 2 1938 Department of Water Resources Aerial Photograph of the Project Area



Figure 3 1958 U.S. Department of Agriculture Aerial Photograph of the Project Area

#### **Current Land Use Designations and Management**

The Colusa County zoning designation for project area is DF – Designated Floodway. The entire project area is within the "Designated Floodway" of the Central Valley Flood Protection Board as well as within the mapped Federal Emergency Management Agency (FEMA) 100-year flood zone. The project area is located just upstream of the Moulton Weir, on the wetted side of a federal flood control levee that was constructed by the US Army Corps of Engineers (Corps) and is managed by the California Department of Water Resources (DWR). The project area is also located in proximity to numerous wildlife preserves managed by the California Department of Fish and Wildlife (CDFW) and the U.S. Fish and Wildlife Service (USFWS) (Figure 4).

## 2.4 Project Description

Project activities include site grading and preparation (including installation of a drainage structure, planting, seeding, irrigating, controlling weeds, and monitoring performance). Project activities are anticipated to occur over a three-year project period. Descriptions of project activities are provided below.

#### Site Grading, Structure Installation, and Ground Preparation

Site grading will be completed using belly scrapers and materials will remain on site (i.e., no hauling off site). Anticipated duration of grading activities is 2 weeks. All grading activities will be described and monitored through an approved Storm Water Pollution Prevention Plan (SWPPP). Proposed site grading is shown in Figure 5. Grading in the North Field is designed to create positive drainage away from the Corps levee and toward the river.

A water control structure (Figure 5) will be installed within the newly graded channel. This structure will help control the rate that the site drains following flood events. The water control structure was designed by the California Polytechnic State University Irrigation Training & Research Center, with technical guidance from NOAA-Fisheries staff (Irrigation Training and Research Center 2018).

The water control structure will be pre-fabricated off site and installed in a prepared location at the toe of the existing berm surrounding the North Field. Rock revetment along the river's edge and above the ordinary high water mark will be temporarily removed to facilitate installation of a drain pipe (currently anticipated to be 12-inch diameter), and then replaced in the same day. Existing riparian vegetation along the edges of the installation area will be trimmed under the guidance of a biological monitor and the installation site will be surveyed for wildlife prior to installation. Equipment used for the installation of the water control structure includes a truck and trailer for delivery and a long-reach excavator for rock removal and structure placement. A biological monitor will be on site during the entire installation to monitor biological resources and water quality during this work on the banks of the Sacramento River.





To prepare the ground for planting (Figure 6), disking and floating will be conducted as needed in the grading area in order to reduce soil compaction. Native grasses were installed previously in the project area. Where those grasses are well-established, no field disturbance will occur. Evaluation of native grass avoidance measures will be done on site in coordination with NRCS. No native vegetation clearing is anticipated. The current condition of fields within the grading footprint is weedy fallow agricultural fields.

A drip irrigation system will be installed through the existing grassland and grading area with drip emitters located at regular spacing ( $\approx$ 10 feet) to deliver 1.8 gallons per hour to planted trees and shrubs. An established well in the North Field will be used to irrigate the site. A main irrigation supply line will extend from the well, to the south and sub-main lines will extend into the fields to deliver well water to drip irrigation hoses. Trenching associated with the main line and sub-main lines will not exceed 24 inches in depth.

#### Planting

The project area will be planted with different communities designed based on the varying hydrological and biological conditions (Figure 6; Table 1). The plant communities are configured in a way to maximize their habitat value, while remaining consistent with all design considerations and limitations. Both the North Field and the South Field have deep, rich soils that can support high density riparian vegetation. The eastern portion of the North Field experiences relatively frequent and lengthy inundation, narrowing the appropriate plant species palette for this area. The long-term inundation area will be planted with a mix of native grasses and forbs.

The North Field will be planted with three plant communities. The north and western portion will contain a patchy mosaic of the Great Valley Mixed Riparian Forest community. This will also extend in a narrow band along the levee, and along the north side of the graded swale. The central portion of the North Field will be planted with the formerly abundant, but now rare Buttonbush Scrub community (Holland 1986) as well as Great Valley Grassland. Most of the field has been planted with native grasses, though the long-duration flooding has killed the grasses in the lower elevation portion of the field. This area will be re-planted with a native grass understory.

The South Field planting design favors flexible-stemmed woody plant species (shrubs) and low herbaceous species. Small patches of the Great Valley Mixed Riparian Forest community enrich the design. Blue elderberry is the dominant shrub in this Elderberry Scrub community. To better accommodate floodwater conveyance, the South Field will be planted in wide corridors. Woody vegetation will be planted as 200-foot-wide strips separated by 100-foot-wide bands of mixed native grasses. A 100-foot-wide band of Mixed Riparian vegetation will be planted along the eastern border of the field in order to act as a tree screen, reducing the potential for flood scour on the levee in the case of a high water event.

In total, the Willow Bend Project planting design incorporates approximately 14,756 plants. The diverse planting design represents six tree, eight shrub, two liana, and nine herbaceous species.



Figure 6

Habitat Type	Acres	Row	Plant	Plant	Tree	Design Features
		Spacing	Spacing	Density	Density	
		(teet)	(teet)	(plants/acre)	(trees/acre)^	
Buttonbush Scrub	17	20	10	217	39	Mostly smaller statured, flood tolerant species.
Elderberry Savannah	12	20	10	217	22	Planted in hedgerows to satisfy hydraulic concerns.
Great Valley Grassland	30	N/A	N/A	N/A	0	Native grasses with no woody species.
Great Valley Mixed Riparian Forest	37	20	10	217	56	A mix of slow and fast growing riparian plant species.
Great Valley Mixed Riparian Buffer	4	20	10	217	130	A mix of riparian tree and shrub species designed to help protect infrastructure from wave action and woody debris in high flows.

Table 1. Planting Densities and Design Features of the Four Proposed Plant Communities

Plant propagation material, seeds and cuttings, will be collected from vegetation as near as possible to the project area, whenever practicable. Special care will be taken to collect a diversity of genotypes: late blooming, early blooming, and different growth forms. Cuttings of cottonwood and willows will be collected in January or February when the trees are dormant. Seeds for the herbaceous understory will be collected or purchased from sources near the project area. Cuttings for Western Sycamore will come from trees identified along the Sacramento River to be pure, native stock.

Planting will begin as soon as site preparation has been completed and the irrigation system has been installed. Woody species (potted stock and cuttings) and herbaceous plugs will be planted on the planting berms in the spring (estimated 2019). Hand tools will be used to excavate planting holes. The remaining project understory (drilled native grasses and broadcasted forb species) will be planted during in fall/winter (estimated 2020) after seasonal rains have begun. Herbicide will be applied to the restoration fields prior to planting the understory in order to kill sprouting winter weeds. Project implementation will require the use of standard farm equipment such as pick-up trucks, all-terrain vehicles, tractors, disks, rollers, seed drills, sprayers, chain saws, and hand tools.

Field preparation will begin in the fall (estimated 2019) after all permits are secured. Woody species and herbaceous plugs will be planted in the spring (estimated 2020). The remaining herbaceous understory (drilled native grasses and broadcasted forbs) will be installed between planting berms in the fall (estimated 2021).

#### Maintenance

Plant species will be drip irrigated on a variable schedule to cultivate desirable root growth. Planted vegetation is expected to become self-sufficient after three growing seasons. All drip lines will be removed from the project area at that time. At the end of the project, main lines and sub-main lines will remain buried.

Various methods will be used to control invasive weed species during the proposed three-year establishment period. Following the planting of woody species, planting berms will be sprayed with a non-selective herbicide targeting all weeds. Glyphosate is the primary herbicide that will be used to control weeds in the restoration fields. The berms will be subject to weed control during the growing season throughout the three-year plant establishment period. A combination of mowing and herbicide application will be used between the rows during the first season following planting to control fast-growing annual grasses and forbs, and favor the establishment of the perennial understory.

## 2.5 Project Design Criteria and Best Management Practices

The project was designed to minimize potential impacts on sensitive biological resources. The following best management practices (BMPs) were incorporated into the project description.

## 2.5.1 Contractor Staging Areas/Construction Access Routes

Contractor staging will take place in existing disturbed areas on River Partners property. Construction access will make use of existing public roads (e.g., Gould Road), agricultural access roads, and levee access roads.

## 2.5.2 Conservation Measures

#### Conservation Measure #1—Air Pollution and Dust Control

Air pollution control will conform to all applicable air pollution control rules, regulations, ordinances, and statutes. Dust will be controlled during construction activities and subsequent operation of the project. Dust controls may include, but will not be limited to the following elements, as appropriate:

- Pursuant to California Vehicle Code (Section 23114) (California Legislative Information 2016), all trucks hauling soil and other loose material to and from the construction site shall be covered or shall maintain at least 6 inches of freeboard (i.e., minimum vertical distance between top of load and the trailer).
- Any soils that are removed during construction shall be stored onsite in piles not to exceed 4 feet in height. These spoil piles shall be clearly marked and flagged. Spoil piles that will not be immediately returned to use shall be revegetated with a nonpersistent erosion control mixture.
- Equipment and manual watering shall be conducted on all stockpiles, dirt/gravel roads, and exposed or disturbed soil surfaces, as necessary, to reduce airborne dust.
- River Partners or its contractor shall designate a person to monitor dust control and to
  order increased watering as necessary to prevent transport of dust offsite. This person
  shall also respond to any citizen complaints.
- Idling time shall be minimized by shutting off all equipment after five minutes when not in use.

#### **Conservation Measure #2—Increased Turbidity and Suspended Sediment**

The project has been designed to avoid impacts on Corps-jurisdictional features (i.e., waters of the United States), as well as waters of the State, to the extent practicable. The construction contractor will be required to prepare and implement a SWPPP, including measures to be implemented during construction that will minimize disturbance to fine-grained sediments in the Sacramento River and prevent the discharge of sediment into the river from upland activities. River Partners will be responsible for ensuring implementation of these measures and compliance with Basin Plan objectives. The SWPPP will include at a minimum, but is not limited to, the following measures:

- Fill material (quarry stone, riprap, and backfill) will be composed of washed materials from a local source. Stone materials will be washed to remove any silts, sand, clay, and organic matter and will be free of contaminants such as petroleum products. Gravel and stone materials will pass California cleanliness test #227 (or equivalent test) with a value of 85 or greater. Soil-filled quarry stone will only be placed above the average water surface elevation during construction.
- Suitable erosion and sediment control structures (e.g., silt fences, straw wattles, or catch basins) will be used to capture impeded erosion or sediment from upland and near-channel activities before it enters the Sacramento River. Sediment control structures will be placed near the edge of surface water features (i.e., along the bank of the river or along wetland features) to ensure sediment is sequestered before entering the water column. These structures will be installed prior to the start of any construction activities and will need to be cleaned or maintained on a regular basis to retain their effectiveness.
- Bare soil will be kept to the minimum required by designs. Erosion control devices or measures, such as those listed previously, will also be used in areas where vegetation has been removed to reduce short-term erosion prior to the start of the rainy season and before new vegetation becomes established.
- All imported fill material stockpiles will be stored in upland areas with erosion controls properly installed and maintained. All applicable erosion control standards will be required during stockpiling of materials.
- To the maximum extent practicable, activities that increase the potential for erosion in the project area will be restricted to the relatively dry summer and early fall periods to minimize the potential for rainfall events to transport sediment to the river. If these activities must take place during the late fall, winter, or spring, temporary erosion and sediment control structures will be in place and operational at the end of each construction day and maintained until permanent erosion control is in place.
- If on-site erosion control devices are found to be nonfunctional, they will be repaired or replaced immediately or by the end of the work day. In cases where repairs cannot be made immediately for safety reasons, the repairs should be completed as soon as the work can safely be performed.

#### **Conservation Measure #3—Potential Spill of Hazardous Materials**

The construction contractor will be responsible for implementing the construction measures listed below to prevent hazardous materials from entering the water column during all construction activities.

- To the extent practicable, equipment and materials will be stored a minimum of 200 feet away from wetland and surface water features.
- Vehicles and equipment used during construction will receive proper and timely maintenance to reduce the potential for mechanical breakdowns leading to a spill of hazardous materials.
- All construction equipment will be inspected daily for leaks prior to the start of any activities. Steam cleaning will be used to remove any oil, grease, or hydraulic fluid prior to making contact with the waters of the Sacramento River. Untreated wash and rinse water must be adequately treated prior to discharge into the river if that is the desired disposal option.
- Hazardous materials, including fuels, oils, and solvents, will not be stored or transferred within 150 feet of the active Sacramento River channel. Areas for fuel storage, refueling, and servicing will also be located at least 150 feet from the active river channel or within an adequate secondary fueling containment area. In addition, the construction contractor will be responsible for maintaining spill containment booms on-site at all times during construction operations and staging of equipment or fueling supplies. Fueling trucks will maintain a spill containment boom at all times.
- The contractor will develop and implement site-specific best management practices, a water
  pollution control plan, and emergency spill control plan and will be responsible for
  immediate containment and removal of any toxins released into the Sacramento River or
  project area.

#### **Conservation Measure #4—Herbicide Application**

The following BMPs have been incorporated into the project to avoid and minimize the potential for adverse direct and indirect effects from use of herbicide for project maintenance activities.

- A spill contingency plan shall be prepared in advance of treatment.
- All herbicide applications be directly supervised by a certified pesticide applicator. Mixing of herbicides and filling of tanks will occur in staging areas at least 100 feet away from sensitive biological resources. All applications will conform to label directions.
- To control drift during spray applications, spray applications will follow a site-specific prescription that accounts for terrain and identifies spray exclusion areas, buffer areas, formulation, equipment, droplet size, spray height, application pattern, flow rate, limiting factors of wind speed and direction, temperature, and relative humidity.
- An herbicide spill contingency plan will be developed and implemented for the use of any herbicides.

- The cleaning and disposal of herbicide containers will be completed in accordance with federal, state, and local laws, regulations, and guidance.
- All herbicides will be mixed and used according to their labeled specifications, and the
  mixing or storage of herbicides will take place more than 100 feet from the Sacramento
  River. Basal and foliar application of herbicides will also be prohibited within 100 feet
  of the Sacramento River. Removal of weeds within 100 feet of the Sacramento River
  will be restricted to mechanical methods, including disking, floating, mowing, and
  chopping prior to seed set.
- Prior to herbicide applications, all elderberry plants will be flagged within 100 feet of areas to be treated.
- No herbicide application will take place within 20 feet of existing elderberry shrubs.

#### Conservation Measure #5—Wildfire Potential

River Partners shall include the following measure in the construction bid documents to minimize project-related potential for wildfire ignition:

Per the requirements of Public Resources Code Section 4442, River Partners or their contractor shall include a note on all construction plans that internal combustion engines shall be equipped with an operational spark arrester, or the engine must be equipped for the prevention of fire.

## 2.6 Project Approvals

### 2.6.1 Funding Sources

In 2016, River Partners received a grant from the NOAA-Fisheries Community Based Restoration Program to restore 77 acres of riparian habitat, provide 30 acres of salmonid rearing habitat, and remove 19.4 acres of walnut orchard. Funding for project implementation in the South Field has not been secured.

## 2.6.2 Anticipated Permits and Regulatory Approvals

Applicable federal and state authorizations that are anticipated to be needed prior to project implementation are identified in Table 1.

Approving Agency	<b>Required Permit/Approval</b>	<b>Required For</b>
Federal Agencies		
NOAA-Fisheries	NEPA and ESA compliance	Federal funding requirements
U.S. Army Corps of Engineers	Nationwide permit, Section 404 of the Clean Water Act	Discharge of material into waters of the United States
	Section 408 authorization	Construction within a Corps regulated flood management system
State Agencies		
California Department of Fish and Wildlife	Streambed alteration agreement, Section 1602 of Fish and Game Code	Alteration of the bank of the Sacramento River and adjacent riparian habitat
	California Endangered Species Act compliance	Potential impacts on state-listed species
Central Valley Flood Protection Board	Encroachment Permit	Construction within a Designated Floodway
Regional Water Quality Control Board	Water quality certification, Section 401 of the Clean Water Act	Discharge of material into waters of the United States
	Coverage under the General Construction Activity Storm Water Permit, Section 402 of the Clean Water Act	Storm water discharges associated with construction activity for greater than 1 acre of land disturbance

Table 2. Anticipated Permits or Approvals

## 2.7 Tentative Project Construction Schedule

Construction of the project will begin upon receipt of all necessary preconstruction authorizations, including completion of CEQA documentation and receipt of any regulatory permits determined to be required. In addition, funding source requirements will need to be met before and during project construction, as applicable. The project is anticipated to begin in September 2019 with completion in Fall 2022.

## 3. Environmental Setting, Impacts, and Mitigation Measures

This chapter incorporates the Environmental Checklist contained in Appendix G of the CEQA Guidelines, including the CEQA Mandatory Findings of Significance. Each resource section provides a brief description of the setting, a determination of impact potential, and a discussion of the impacts. Where appropriate, mitigation measures are provided that will be implemented to reduce potential impacts to a less-than-significant level. A discussion of cumulative impacts is included at the end of this chapter.

Addressed in this section are the following 20 environmental categories and mandatory findings of significance:

- Aesthetics
- Agricultural and Forestry Resources
- Air Quality
- Biological Resources
- Cultural Resources
- Energy
- Geology and Soils
- Greenhouse Gas Emissions
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning

- Mineral Resources
- Noise
- Population and Housing
- Public Services
- Recreation
- Transportation
- Tribal Cultural Resources
- Utilities and Service Systems
- Wildfire
- Mandatory Findings of Significance

Each of these issue areas was fully evaluated and one of the following four impact determinations was made:

- **No Impact:** No impact to the environment will occur as a result of implementing the project.
- Less-than-Significant Impact: Implementation of the project will not result in a substantial and adverse change to the environment and no mitigation is required.
- Less-than-Significant with Mitigation Incorporated: A "significant" impact that can be reduced to a less-than-significant level with the incorporation of project-specific mitigation measures.
- **Potentially Significant Impact:** Implementation of the project could result in an impact that has a "substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project" (CEQA Guidelines Section 15382).

## 3.1 Environmental Setting

## 3.1.1 Regional Setting

The project area is in Colusa County in the central Sacramento Valley. The topography of Colusa County is varied and includes low elevation areas of the Sacramento Valley and rugged, steep terrain in the inner North Coast Ranges. Colusa County contains two incorporated cities and a total population of approximately 21,419.

Much of the region occupies the historic floodplain of the Sacramento River and contains extensive infrastructure (e.g., canals, flood bypasses, levees) important to the regional flood management and water conveyance systems. The region contains a diverse assemblage of vegetation communities due to the large elevational gradient. Developed agricultural lands are dominant in the Sacramento Valley and transition to grassland, woodland, and forest habitats as elevations increase in the mountainous regions. The Sacramento Valley in this region also contains extensive areas of land managed by public and private land managers for habitat conservation, recreation, and hunting.

## 3.1.2 Local Setting

The project is approximately 10 miles north of the city of Colusa in northeastern Colusa County, California. The project will occur on land purchased by River Partners in 2009. River Partners owns a total of 175 acres of land at the Willow Bend Preserve. The project will take place on approximately 122.5 acres of the Willow Bend Preserve (Figure 1).

#### Climate

The climate is typical of the Sacramento Valley in northern California with moderate winters and hot, dry summers. Approximately 16 inches of rainfall occurs annually, most of which occurs between November 1 and March 30. Air temperatures range between an average January high of 54 degrees Fahrenheit (°F) and an average July high of 95°F. The average annual high is approximately 75°F. The average minimum temperature is approximately 48°F (Western Regional Climate Center 2018).

#### **Existing Land Uses**

The project area includes undeveloped owned by River Partners with an NRCS Emergency Watersheds Protection Program Floodplain Warranty Easement. Surrounding land uses consist of agriculture, flood control infrastructure (e.g., levees, Moulton Weir), public waterways (Sacramento River), and rural residential.

### Topography

The project area occurs on the floodplain of the Sacramento River between the river and the Corps levee. The bank of the Sacramento River in the North Field portion of the project area is armored with rip-rap and is steeply sloping. The project area is generally flat, but it includes depressions that retain water following flood events. Elevation in the project area ranges from approximately 60 feet above mean sea level at the Sacramento River to 75 feet above mean sea level at the toe slope of the Corps levee.

#### Hydrological Setting

The project area is located along a meandering stretch of the Sacramento River known as the Colusa Subreach (Ayres Associates 2007). The Colusa Subreach is 22 river miles in length and is bracketed by the towns of Princeton at the north and Colusa at the south. Within the Colusa Subreach the Sacramento River is leveed along both banks. Levees within the Subreach were first constructed in the 1870s in order to convert swampland to farmland (Kelley 1989). Two overflow weirs, Moulton and Colusa, were constructed in the early 1930s to redirect floodwaters to the Butte Sink. The Willow Bend project is immediately upstream of the Moulton Weir which starts to spill when the flow in the Sacramento River water surface elevation reaches 73.95 ft (Ayres Associates 2011; Appendix A).

Existing in-channel water velocities within the Colusa Subreach range between 3 and 11 feet per second, with higher velocities occurring around sharp bends (Ayres Associates 2011; Appendix A). The entirety of the Willow Bend project area is inundated under modeled 100-year flood conditions, with water surface elevation reaching approximately 80–83 feet. Under modeled conditions during a 100-year flood, the North Field acts as a low velocity backwater area, with the majority of the field experiencing water velocities of around 0.5 feet per second. The South Field on the other hand is associated with velocities ranging from 0.25 to four feet per second (Ayres Associates 2011; Appendix A).

Historical aerial photographs of the project area (Figures 2 and 3) demonstrate that, over the last 100 years, the Sacramento River has migrated to the east along the North Field, and to the west along the South Field. Additional migration of the river channel into the North Field was prevented by the addition of rock on the eastern bank along the project area perimeter. The entire length of the North Field was rocked by the Corps in the 1980s (Adam Henderson of DWR, personal communication).

Hydrologic features in the project area include riparian wetlands, seasonal wetland, wetland swale, and perennial stream. All wetland features are tributary to the Sacramento River. Hydrology for these features is generally provided by sheet flow rain and inundation during high flows in the Sacramento River. Drainage in the project area is primarily from east to west.

#### **Geology and Soils**

The project area occurs on Quaternary alluvium and sedimentary stream channel deposits (Jennings et al. 1977). These deposits are unconsolidated and semiconsolidated non-marine sediments that comprise the majority of the Sacramento River floodplain and date from the Pliocene to the Holocene (Jennings et al. 1977). Soils within the project area are part of the Sycamore-Shanghai-Nueva-Columbia complex, a frequently flooded, silty loam soil that extends more than 80 inches below the surface before reaching bedrock. Five soil map units occur in the project area. They are described in the *Soil Survey of Colusa County, California* (Natural Resources Conservation Service 2006). These map units are summarized in Table 3.

Table 3.	Soil Map	o Units in	the Pro	ject Area
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Map Unit Name Taxonomy	Map Unit Reference Code	Drainage Class	Depth to Restrictive Layer	Hydric Soils
Moonbend silt loam, 0 to 2 percent slopes, occasionally flooded	124	Moderately well drained	More than 80 inches	Yes
Moonbend silt loam, 0 to 2 percent slopes	125	Moderately well drained	More than 80 inches	Yes
Moonbend silt loam, 0 to 2 percent slopes, frequently flooded	126	Moderately well drained	More than 80 inches	Yes
Vina loam, 0 to 2 percent slopes, frequently flooded	170	Well-drained	More than 80 inches	Yes
Tujunga loam, overwash, 0 to 2 percent slopes, frequently flooded	175	Somewhat excessively drained	More than 80 inches	Yes

#### **Vegetation Community Types**

Vegetation types in the project area were classified based the habitat descriptions provided in *A Guide to Wildlife Habitats of California* (Mayer and Laudenslayer 1988). Five habitat types occur in the project area: annual grassland, barren, riverine, seasonal wetland, and valley foothill riparian.

*Annual Grassland*. Annual grassland occurs on the historic floodplain of the Sacramento River and on the faces of the Corps levees in the project area. It is characterized by a dense herbaceous layer and is composed of native and introduced grass species. River Partners planted native grasses in both the North Field and South Field in 2010. The dominant native grass observed during the February 2018 survey was creeping wildrye (*Elymus triticoides*). Additional non-native species observed in the annual grassland include wild oat (*Avena fatua*), yellow starthistle (*Centaurea solstitialis*), and velvetleaf (*Abutilon theophrasti*). The walnut orchard in the northern portion of the North Field was removed in the fall of 2017 and was reverting to annual grassland at the time of the February 28, 2018 field survey.

*Barren*. Barren occurs as dirt roads and their associated road shoulders. Vegetation is usually not present, although sparse opportunistic grasses and forbs or weedy species may occur.

*Riverine*. Riverine habitat occurs in the Sacramento River in the western portion of the project area. It is dominated by run and riffle areas with boulder, cobble, gravel, and sand substrates. Vegetation is absent within the active river channel.

*Seasonal Wetland.* Seasonal wetland habitat occurs in portions of the North Field that remain inundated following high water events. The vegetation community is similar to the adjacent annual grassland but includes a greater abundance of hydrophytic herbaceous plants such as curly dock (*Rumex crispus*), rough cocklebur (*Xanthium strumarium*), and turkey tangle fogfruit (*Phyla nodiflora*).

*Valley Foothill Riparian.* Valley foothill riparian habitat occurs adjacent to the ordinary high water mark (OHWM) of the Sacramento River and in the riparian wetlands in the project area. Dominant tree species include Fremont cottonwood (*Populus fremontii*), western sycamore (*Platanus racemosa*), and valley oak (*Quercus lobata*). Remnant pecan (*Carya illinoinensis*) trees are present throughout the riparian habitat that borders the Sacramento River. Shrub species include narrow-leaved willow (*Salix exigua*), and box-elder (*Acer negundo*). Mugwort (*Artemisia douglasiana*), wild rose (*Rosa californica*), and curly dock (*Rumex crispus*) are common understory plants throughout all riparian habitat.

### 3.2 Environmental Impacts and Mitigation Measures

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

#### **Discussion of Impacts**

- a, b) No Impact. The project will restore floodplain and fish habitat adjacent to the Sacramento River by planting native vegetation, manipulating the existing topography, re-contouring a swale, modifying existing rock revetment, and installing a surface water control structure. This will not adversely affect a scenic vista. The project is not located within a state scenic highway.
- c) *Less-than-Significant Impact.* Potential impacts on the visual character of the project area will primarily be associated with project implementation. Site preparation, water control structure installation, and planting activities will be visible from the Corps levees near the North Field and South Field of the project area. Installation of portions of the water control structure on the bank of the Sacramento River will be visible by boaters on the river. These impacts will be temporary and will not substantially degrade the existing visual character or quality of the site and its surroundings. The water control structure will be a permanent addition to the landscape but will largely be screened by existing and planted vegetation. The water control structure outfall pipe will be a permanent addition to the landscape but is consistent with other flood control and water management infrastructure (e.g., rock revetment, pump stations, outfall pipes) on the Sacramento River in the project vicinity. The outfall pipe will have a less-thansignificant impact on the visual character of the site and its surroundings.

Planting of the project area with native plant communities characteristic of natural habitats in the region will result in a permanent beneficial impact on the visual character of the project area and vicinity. The project will have a less-than-significant impact on the visual character of the site and its surroundings.

d) *No Impact.* The project will not create any new source of lighting or glare.

#### **Mitigation Measures**

No project-specific mitigation is required.

#### II. AGRICULTURAL AND FOREST

- **RESOURCES** In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:
- a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?
- b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?
- c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined by Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?
- d) Result in loss of forest land or conversion of forest land to non-forest use?
- e) Involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use, or conversion of forest land to non-forest use?

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
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		$\boxtimes$	
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			$\boxtimes$
		$\boxtimes$	

#### **Discussion of Impacts**

- a) *Less-than-Significant Impact.* The project area includes land mapped as Farmland of Local Importance, Grazing Land, and Unique Farmland (California Department of Conservation 2018), but none of the project area is currently used for agriculture. Although the project area will be planted with riparian vegetation and not used for agriculture, the existing soil integrity and surface permeability will not be impacted. Apart from the proposed water control structure, the project area will retain its current, open character. The project will have less-than-significant impact on Prime Farmland, Unique Farmland, or Farmland of Statewide Importance.
- b) *Less-than-Significant Impact.* The project area is primarily zoned as River Frontage with a small area zoned as Flood Management (Colusa County 2018). These zoning designations allow for agricultural uses but are not considered to be ideal for agricultural production due to the consistent inundation from the Sacramento River during seasonal high water events. All River Partners owned parcels in the project area are under current Williamson Act contract (California Department of Conservation 2013). The project includes natural resources management activities that are consistent with current zoning classifications and Williamson Act contracts. The project will have a less-than-significant impact on agriculture.
- c, d,) *No Impact.* The project area does not contain any forest land (as defined by Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g)). The project will have no impact on forest land or timberland.
- e) *Less-than-Significant Impact.* The project will restore land previously used for agriculture to high quality wildlife habitat through minor alterations of land and vegetation. The land was sold to River Partners for use as wildlife habitat. The project will have a less-than-significant impact on changes to the existing environment.

#### **Mitigation Measures**

No project-specific mitigation is required.

- **III. AIR QUALITY** Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:
- a) Conflict with or obstruct implementation of the applicable air quality plan?
- b) Violate any air quality standard or contribute to an existing or projected air quality violation?
- c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?
- d) Expose sensitive receptors to substantial pollutant concentrations?
- e) Create objectionable odors affecting a substantial number of people?

oon to uld the	Potentially Significant Impact	Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
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				$\boxtimes$

Less than

#### **Discussion of Impacts**

- a) *Less-than-Significant Impact.* The project will result in minimal and temporary air emissions for the criteria pollutants regulated by the Colusa County Air Pollution Control District (APCD), as discussed under item b) below. It will be consistent with and will not obstruct implementation of any Colusa County APCD management plans, or other applicable air quality plans and regulations for the region such as the Northern Sacramento Valley Planning Area 2015 Triennial Air Quality Attainment Plan.
- b) Less than Significant with Mitigation Incorporated. Colusa County is a non-attainment area for the state particulate matter 10 microns or less (PM<sub>10</sub>) standards (California Air Resources Board 2018). Colusa County is in attainment for the state and federal standards for 8-hour ozone, and particulate matter 2.5 microns or less (PM<sub>2.5</sub>), in addition to the federal PM<sub>10</sub> standard (California Air Resources Board 2018). Colusa County is an unclassified area for the state and federal carbon monoxide standards.

Project activities (e.g., grading, installation of water control structure, planting) will result in short-term increases in emissions from the use of heavy equipment that generates dust, exhaust, and tire-wear emissions; soil disturbance; materials used in construction; and construction traffic. These activities will create short-term increases in fugitive dust (PM<sub>10</sub> and PM<sub>2.5</sub>) and will generate both reactive organic compounds and nitrogen oxides emissions from vehicle and equipment operation.

Project emissions for the implementation phase of the project (i.e., grading, installation of water control structure, planting) were estimated using the CalEEMod model which calculates emissions based on factors such as project duration, construction equipment to be used, acres of grading, and average weather patterns for the area (California Air Pollution Control Officers Association 2016). Emission calculations from the implementation phase of the project are included in Appendix B. Emissions from the maintenance and operational phases of the project will be less-than-significant due to the minor and infrequent nature of these emissions. Therefore, maintenance and operational activities were not included in the CalEEMod model.

Some air quality districts in the Northern Sacramento Valley Planning Area have developed thresholds of significance for key air pollutants to assess if a proposed project will have a significant impact on air quality. The Colusa County APCD has not yet established thresholds of significance for air pollutants but the Butte County Air Quality Management District—less than 10 miles east of the project area—has developed such thresholds (Butte County Air Quality Management District 2014). Table 4 shows the estimated maximum unmitigated daily and yearly emission from the implementation phase of the project in comparison to the Butte County Air Quality Management District air quality thresholds of significance for key air pollutants.

Emissions	ROG	NOx	со	<b>PM</b> 10	PM <sub>2.5</sub>
Project Emissions (pounds per day)					
Maximum pounds per day	4.5	21.9	30.4	20.0	11.6
Significance threshold	137	137	N/A	80	80
Threshold exceeded?	No	No	N/A	No	No
Project Emissions (tons per year)					
Maximum tons per year	0.03	0.32	0.20	0.10	0.06
Significance threshold	4.5	4.5	N/A	N/A	N/A
Threshold exceeded?	No	No	N/A	N/A	N/A

Table 4. Estimated Unmitigated Project Implementation Emissions.

As shown in Table 4, all emissions from project implementation are well below the Butte County Air Quality Management District thresholds of significance for key air pollutants and thus the project is considered to have a less-than-significant impact on air quality. *Conservation Measure* #1 - Air *Pollution and Dust Control* will be implemented to maintain air quality and further reduce potential construction-related impacts to a less-than-significant level. Long-term emissions from periodic maintenance trips will be minimal based on the infrequent nature of these emissions.

c) *Less than Significant with Mitigation Incorporated.* As discussed under item b) above, the project construction will result in short-term air quality impacts. However, it will not result in substantial long-term or cumulatively considerable increases in air quality pollutant emissions for which Colusa County is currently in nonattainment (i.e., state PM<sub>10</sub>). *Conservation*
*Measure* #I - Air Pollution and Dust Control will be implemented to maintain air quality and reduce any project construction-related impacts to a less-than-significant level.

- d) Less than Significant with Mitigation Incorporated. Sensitive receptors (e.g., residences) are uncommon within 0.5 mile of the project area. Conservation Measure #1 Air Pollution and Dust Control will be implemented to maintain air quality and reduce any project construction-related impacts to a less-than-significant level.
- e) No Impact. The project will not create any new or increased objectionable odors.

## **Mitigation Measures**

# Mitigation Measure #1—Air Quality

River Partners or their contractor shall implement the measures included in *Conservation Measure* #1 – *Air Pollution and Dust Control* (described in Section 2.5.2) to mitigate potential impacts on air quality in the project area to a less-than-significant level.

Timing: Implementation: Monitoring/Reporting: During construction River Partners or its contractor River Partners to report compliance to Colusa County

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

a) *Less than Significant with Mitigation Incorporated.* Stantec prepared a Biological Resources Assessment (BRA) report (Stantec 2018a) to describe the existing site conditions and identify potentially occurring special-status plant and animal species, waters of the United States, and other sensitive biological resources in the project area.

A list of potentially occurring special-status wildlife species was compiled based on review of pertinent literature, a USFWS species list, California Natural Diversity Database (CNDDB)

Potentially Significant Impact	Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
			$\boxtimes$
			$\boxtimes$

Less than

records, a query of the California Wildlife Habitats Relationship System, and field survey results. For each species, habitat requirements were assessed and compared to the habitats in the project area and immediate vicinity to determine if potential habitat occurs in the project area. Based on the BRA, one special-status plant species and fifteen special-status wildlife species were determined to potentially occur in the project area:

#### **Special-Status Plants**

 woolly rose-mallow (*Hibiscus lasiocarpos* var. *occidentalis*)—California Rare Plant Rank 1B.2

#### Special-Status Wildlife

- valley elderberry longhorn beetle (*Desmocerus californicus dimporphus*)—federally listed at threatened
- green sturgeon southern distinct population segment (DPS) (*Acipenser medirostris*)—
  federally listed as threatened, state species of special concern
- Chinook salmon Central Valley fall/late fall-run evolutionarily significant unit (ESU) (Oncorhynchus tshawytscha)—state species of special concern
- Chinook salmon Central Valley spring-run ESU (Oncorhynchus tshawytscha) federally and state listed as threatened
- Chinook salmon Sacramento River winter-run ESU (Oncorhynchus tshawytscha) federally and state listed as endangered
- steelhead- Central Valley DPS (Oncorhynchus mykiss irideus)—state listed as threatened
- Swainson's hawk (Buteo swainsoni)—state listed as threatened
- northern harrier (Circus cyaneus)—state species of special concern
- western yellow-billed cuckoo (*Coccyzus americanus*)—federally listed as threatened, state listed as endangered
- white-tailed kite (Elanus leucurus)—state fully protected species
- bald eagle (*Haliaeetus leucocephalus*)—state listed as endangered and fully protected species
- yellow-breasted chat (Icteria virens)-state species of special concern
- loggerhead shrike (Lanius ludovicianus)-state species of special concern
- yellow warbler (Setophaga petechia)—state species of special concern

- western red bat (Lasiurus blossevillii)-state species of special concern

Potential project-related impacts and recommended measures for avoidance and minimization of impacts on these species are provided below.

**Special-Status Plants.** Woolly rose-mallow was the only special-status plant species determined to have potential habitat in the project area. A botanical survey of the project area was conducted on February 27, 2018. No special-status plant species were observed during the botanical survey. The survey did not coincide with the blooming period of woolly rose-mallow, which generally blooms June–September. This species grows in freshwater wetlands and riparian areas. Project activities are not anticipated to occur in suitable woolly rose-mallow habitat in the project area (e.g., valley foothill riparian habitat). The seasonal wetland habitat in the project area is currently dominated by non-native grasses and forbs and is not suitable woolly rose-mallow habitat. The proposed planting of native vegetation communities in the project area may improve habitat suitability for woolly rose-mallow. The project will have no impacts on special-status plant species.

**Valley Elderberry Longhorn Beetle.** The project does not include the removal of valley elderberry longhorn beetle habitat (i.e., elderberry shrubs). The project includes the planting of elderberry savanna in the South Field (Figure 6). Once mature, these plantings will enhance the habitat suitability for valley elderberry longhorn beetle in the project area.

Ground-disturbing activities during site preparation, planting, and maintenance in the South Field may occur within 100 feet of existing elderberry shrubs in valley foothill riparian habitat. As such, impacts on valley elderberry longhorn beetle as a result of the project may occur. Indirect impacts on valley elderberry longhorn beetle would include items that could affect the long-term viability of its habitat (i.e., elderberry shrub) such as the introduction of invasive plant species, the accidental release of pollutants (e.g., fuel, oil, grease), and the generation of fugitive dust from construction vehicles and equipment. Direct impacts on valley elderberry longhorn beetle may occur if ground-disturbing activities take place within 20 feet of existing elderberry shrubs. In addition to *Conservation Measure #4 – Herbicide Application, Mitigation Measure #3 – Worker Environmental Awareness Training* and *Mitigation Measure #4 – Valley Elderberry Longhorn Beetle* will be implemented to reduce any potential impacts on valley elderberry longhorn beetle to a less-than-significant level.

Anadromous Fish. A Biological Assessment/Essential Fish Habitat Assessment (Stantec 2018b) determined that the project has the potential to impact winter-run Chinook salmon, spring-run Chinook salmon, steelhead, and green sturgeon. Based on the best scientific information available, it was determined that with the proposed conservation and mitigation measures and the work window (August 1–October 31), it will be possible to avoid significant impacts on these species because of their life history, habitat requirements, and the low flow conditions in the fall months. The operation of the water control structure could have the potential to impact listed fish species. However, the water control structure is designed to meet NOAA-Fisheries Fish Passage and Bypass criteria and includes both design modifications to eliminate pooling that could strand juvenile fishes and guidelines for minimizing increased predation. *Mitigation Measure \#5 - Anadromous Fish* will be implemented to reduce potential impacts on listed fish species to a less-than-significant level.

Indirect effects will be limited to a potential for temporary and localized increases in turbidity and suspended sediment within and downstream of the project area during the first rain and runoff events following completion of construction, resulting from ground disturbance and earth work associated with installation of water control structure. However, erosion and sediment controls implemented through *Conservation Measure* #2 – *Increased Turbidity and Suspended Sediment Prevention* (discussed in Section 2.5.2), and *Mitigation Measure* #5 – *Anadromous Fish* will be implemented to reduce potential impacts from turbidity to a less-thansignificant level.

**Resident and Migratory Birds and Raptors.** Most breeding birds that are likely to be found in the project area are protected under state and federal regulations. Potential nesting habitat for birds and raptors occurs in the trees and other natural vegetation in and adjacent to the project area. Adverse effects on birds and raptors could occur if they are actively nesting in or near the project area during construction. Construction disturbance during the nesting season could result in the loss of fertile eggs or nestlings, or otherwise lead to nest abandonment. Loss of fertile eggs or any activities resulting in nest abandonment, may adversely affect nesting birds. The project may also result in a small temporary reduction of nesting or foraging habitat for birds. However, due to the limited nature of the work and regional occurrence of similar habitats, temporary habitat loss is not expected to result in an adverse effect on resident and migratory birds and raptors. The riparian vegetation planted in the project will increase the area of suitable habitat for birds and raptors in the project vicinity. *Mitigation Measure #6 – Migratory Birds and Raptors* will be implemented to reduce any potential impacts on resident migratory birds and raptors to a less-than-significant level.

Western Red Bat. Potential roosting habitat for western red bat occurs in the riparian vegetation (i.e., large cottonwoods, sycamores, and valley oaks) in and adjacent to the project area. Due to the ability of individual bats to move away from disturbance, direct impacts on bats are not expected when the bats are not in a maternity colony. Bats may form maternity colonies in tree cavities in the project area, but no trees are anticipated to be removed as part of the project, thus the project will not impact roosting western red bats. Project noise disturbance will be short duration and similar to existing noise sources (e.g., farm equipment, levee maintenance, recreational use of the Sacramento River). Overall, the project is anticipated to create additional roosting habitat for western red bat through the reestablishment of native riparian plant communities in the project area. The project will have a less-than-significant impact on western red bat.

b) *Less-than-Significant Impact.* Riparian habitat (i.e., Fremont cottonwood forest) occurs in the project area and is considered a sensitive vegetation community. Project activities will primarily take place in annual grassland and seasonal wetland habitats that are currently dominated by non-native, herbaceous vegetation. No trees will be removed during the project, but limited trimming of existing riparian vegetation on the bank of the Sacramento River may be required to install the water control structure. River Partners will obtain all necessary permits (e.g., CDFW Lake and Streambed Alteration Agreement) and meet any permit conditions prior to any work in riparian habitats. Potential impacts on existing riparian vegetation will be temporary and less than significant. The project has been designed to increase the abundance and quality of riparian habitat in the project vicinity. The project

plantings will reestablish sensitive riparian habitats to the project area and will benefit resident and migratory birds, fish, mammals, and invertebrates. The project will have a less-thansignificant impact on riparian and other sensitive natural communities.

- c) Less than Significant with Mitigation Incorporated. A wetland delineation report (Stantec 2018c) was prepared to document and describe potential waters of the United States, including wetlands, in the project area. A total of 36.16 acres of potential waters of the United States were mapped within the project area and include riparian wetland (6.51 acres), seasonal wetland (25.71 acres), wetland swale (0.74 acre), and perennial stream (3.20 acres, 2,846 linear feet) (Figure 7). No permanent impacts on potential waters of the United States are anticipated as a result of project implementation. However, the project will result in temporary impacts on approximately 23.44 acres of seasonal wetland and 0.71 acre of wetland swale during site preparation and grading. Potential impacts on waters of the United States are shown in Figure 7. Mitigation Measure #7 Waters of the United States will be implemented to reduce any potential impacts on waters of the United States to a less-than-significant level.
- d) *Less-than-Significant Impact.* The project has been designed to increase the movement of fish and wildlife through the project area. Although project construction could temporarily discourage wildlife from passing in close proximity to active project activities, this impact will be temporary and less than significant. Alternative passage areas occur in the surrounding area. In the long-term, the project will benefit wildlife migration and or travel corridors through the reestablishment of native riparian vegetation and the connection of the floodplain in the North Field to the Sacramento River. The floodplain in the North Field currently provides fish habitat when it is inundated by high water events. However, as river levels recede, the floodplain becomes disconnected from the river and any fish become stranded. Through grading and the installation of a water control structure, the project will establish a connection between the floodplain in the North Field and the Sacramento River that will allow fish to return to the Sacramento River. The project will have a less-than-significant impact on wildlife nursery sites.
- e) *No Impact.* The project will not conflict with any local biological resource policies or ordinances. The project will have no impact on any local policies or ordinances.
- f) No Impact. There are no adopted Habitat Conservation Plans, Natural Community Conservation Plans, or other approved habitat conservation plans that cover the project area. The project will not conflict with any local, regional, or state conservation plans. The project will have no impact on any conservation plans.



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# **Mitigation Measures**

# Mitigation Measure #2—Herbicide Application and Water Quality Protection

River Partners or their contractor shall implement the measures included in *Conservation Measure* #2 – *Increased Turbidity and Suspended Sediment Prevention* and *Conservation Measure* #4 – *Herbicide Application* (discussed in Section 2.5.2) to mitigate potential impacts to a less-than-significant level.

Timing:	During construction
Implementation:	River Partners or its contractor
Monitoring/Reporting:	River Partners to report compliance to Colusa
	County

## Mitigation Measure #3—Worker Environmental Training

The following measure shall be implemented to avoid or minimize the potential for project-related impacts on sensitive biological resources:

• Worker Environmental Awareness Training will be provided to all work crews. The training will be administered by a qualified biologist and will provide the workers with information on their responsibilities in regard to the sensitive biological resources in the project area. The program will specifically address the status of the species listed under the federal Endangered Species Act (ESA) and the California Endangered Species Act (CESA), the species life history, how to identify the species and their habitat, the need to protect the species, and the project conservation and avoidance and minimization measures.

Timing:	Prior to construction
Implementation:	River Partners or its contractor
<b>Monitoring/Reporting:</b>	River Partners to report compliance to Colusa
	County

## Mitigation Measure #4—Valley Elderberry Longhorn Beetle

The following measure shall be implemented to avoid or minimize the potential for project-related impacts on valley elderberry longhorn beetle:

- To the extent practicable, project activities within 100 feet of elderberry shrubs will be timed to occur outside of the valley elderberry longhorn beetle active season (active season is mid-March through mid-May; U.S. Fish and Wildlife Service 1984).
- Prior to construction activities, an environmentally sensitive area will be designated around elderberry shrubs using exclusionary fencing, signs, and flagging under the supervision of a qualified biologist. Because some project activities may encroach within 100 feet of the shrubs, exclusionary fencing will be placed at a distance of 20 feet or more from the dripline of the shrubs. The signs will be placed in clearly visible locations and will be readable from a distance of 20 feet. Fencing and signs will be maintained throughout the entire duration of construction activities.

Timing: Implementation: Monitoring/Reporting:

Prior to construction River Partners or its contractor River Partners to report compliance to Colusa County

## Mitigation Measure #5—Anadromous Fish

The following measure shall be implemented to avoid or minimize the potential for project-related impacts on anadromous fishes:

- Due to the nearly year-round presence of at least one freshwater life stage of the listed fish species, use of seasonal work windows to entirely avoid injury or mortality of the listed anadromous salmonids and green sturgeon is not practicable. Therefore, to protect the most vulnerable life stages that occur within the action area, salmon fry, all work along the river bank will be restricted to the period between August 1 and October 31. This seasonal work window is a compromise between minimizing direct effects by conducting work preceding and during the beginning of the winter-run emigration period and when river stage is lowest in the action area minimizing the extent of river bank construction.
- The construction contractor retained by River Partners for installation of the water control structure and bank protection removal and excavation along the banks of the Sacramento River will avoid in-water activities and operate equipment slowly and deliberately to alert and scare adult and juvenile salmonids away from the work area.

Timing:	Prior to and during construction
Implementation:	River Partners or its contractor
Monitoring/Reporting:	River Partners to report compliance to Colusa
	County

# Mitigation Measure #6—Migratory Birds and Raptors

The following measures shall be implemented to avoid or minimize the potential for adverse impacts on nesting resident and migratory birds and raptors:

- To the extent practicable, project activities will be scheduled to avoid the nesting season. The typical nesting seasons in northern California extends from February 15 through September 15. If the nesting season cannot be completely avoided, the following measures shall be implemented.
- A qualified biologist shall conduct a minimum of one pre-construction survey for nesting resident and migratory birds and raptors within the project area and a buffer (250 feet for resident and migratory birds, 0.25 mile for Swainson's hawk, 500 feet for all other raptors). The survey shall be conducted no more than 14 days prior to the initiation of activities in any given area. If an active nest is found, a qualified biologist shall determine the extent of a construction-free buffer zone to be established around the nest. If it is anticipated that project activities will encroach on the buffer, a biological monitor shall be present to monitor the nesting birds for signs of disturbance.

Timing:
Implementation:
Monitoring/Reporting:

Prior to and during construction River Partners or its contractor River Partners to report compliance to Colusa County

#### Mitigation Measure #7—Waters of the United States

The following measures shall be implemented to avoid or minimize the potential for adverse impacts on potential waters of the United States:

- To the extent practicable, the discharge of dredged or fill material into potential waters of the United States, including wetlands, shall be avoided.
- Prior to initiating work involving the disturbance or placement of dredge or fill materials into potential waters of the United States, River Partners shall obtain all regulatory permits and authorizations required by regulatory agencies including, but not necessarily limited to, the Corps, Regional Water Quality Control Board (RWQCB), and CDFW.
- To the extent practicable, activities that increase the erosion potential in the project area shall be restricted to the relatively dry summer and early fall period to minimize the potential for rainfall events to transport sediment to surface water features. If these activities must take place during the late fall, winter, or spring, then temporary erosion and sediment control structures shall be in place and operational at the end of each construction day and maintained until permanent erosion control structures are in place.
- Any monitoring, maintenance, and reporting required by regulatory agencies (i.e., Corps, RWQCB, and CDFW) shall be implemented and completed. All measures contained in the permits or associated with agency approvals shall be implemented.
- Stockpiles that are to remain on site through the wet season shall be protected to prevent erosion (e.g., silt fence, straw bales).

Timing: Implementation: Monitoring/Reporting:

Prior to and during construction River Partners or its contractor River Partners to report compliance to Colusa County V. CULTURAL RESOURCES — Would the project:

- a) Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?
- b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?
- c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?
- d) Disturb any human remains, including those interred outside of formal cemeteries?
- e) Cause a substantial adverse change in the significance of a Tribal resource pursuant to AB 52?

ne	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
ned		$\boxtimes$		
		$\boxtimes$		
				$\boxtimes$
e		$\boxtimes$		
n			$\boxtimes$	

## **Discussion of Impacts**

- a, b) Less than Significant with Mitigation Incorporated. The Archaeological Resources Study (Anthropological Studies Center Sonoma State University [ASC] 2016) did not identify any recorded archaeological resources in the project area. Background research indicates a moderate sensitivity for small prehistoric archaeological resources on the surface and a low sensitivity for historic-era archaeological resources on the surface within the project area. The area's overall sensitivity for buried prehistoric archaeological resources is high; however, within the project area it is considered moderate to low. No information has been received from the Native American Heritage Commission (NAHC) or the people on the list of contacts provided by the NAHC that suggests the presence of cultural resources in the project area. The pedestrian archaeological survey located no archaeological resources in the project area. Although recorded historic and cultural sites occur near the project, no recorded sites will be impacted by the project. Although no impacts on known cultural resources are anticipated, currently undetected cultural resources could be exposed during project excavation activities. *Mitigation Measure* #8 – *Cultural Resources* will be implemented in the case of an unanticipated discovery of cultural resources; and will reduce potential impacts to a less-thansignificant level.
- c) *No Impact.* The project will not impact any unique paleontological resources or unique geologic features.
- d) *Less than Significant Impact with Mitigation Incorporated.* Although no impacts on known cultural resources are anticipated, currently undetected cultural resources or evidence of human remains could be exposed during project excavation activities. *Mitigation Measure #6* –

*Cultural Resources* and *Mitigation Measure #9 - Human Remains* will be implemented in the case of an unanticipated discovery of cultural resources or human remains; and will reduce potential impacts to a less-than-significant level.

- e) *Less-than-Significant Impact.* Assembly Bill 52 (AB 52), passed in 2014, amends sections of CEQA relating to Native Americans. AB 52 establishes a new category of cultural resources, named Tribal Cultural Resources (TCRs), and states that a project that may cause a substantial adverse change in the significance of a TCR may have a significant effect on the environment. Defined in Section 21074 (a, b, and c) of the Public Resources Code, TCRs are:
  - A.1) Sites, features, places, cultural landscapes, sacred places and objects with cultural value to a California Native American tribe that are either of the following:
    - a. Included or determined to be eligible for inclusion in the California Register of Historical Resources (CRHR); or
    - b. Included in a local register of historical resources as defined in subdivision (k) of Section 5020.1.
  - (A.2) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Section 5024.1. In applying the criteria set forth in subdivision (c) of Section 5024.1 for the purposes of this paragraph, the lead agency shall consider the significance of the resource to a California Native American tribe.
  - (B) A cultural landscape that meets the criteria of subdivision (a) is a TCR to the extent that the landscape is geographically defined in terms of the size and scope of the landscape; and
  - (C) A historical resource described in Section 21084.1, a unique archaeological resource as defined in subdivision (g) of Section 21083.2, or a "nonunique archaeological resource" as defined in subdivision (h) of Section 21083.2 may also be a tribal cultural resource if it conforms to the criteria of subdivision (a).

Mitigation measures for TCRs must be developed in consultation with the affected California Native American tribe pursuant to newly chaptered Section 21080.3.2, or according to Section 21084.3. Section 21084.3 identifies mitigation measures that include avoidance and preservation of TCRs and treating TCRs with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource.

On November 16, 2016, ASC requested a list of local Native American groups and individuals who might have an interest in or concerns with the project from the Native American Heritage Commission (NAHC). Concurrently, ASC requested that NAHC conduct a review of its Sacred Lands database for culturally significant properties. ASC used the contact list provided by NAHC to solicit input from Native American representatives and organizations. The Yocha Dehe Wintun Nation was the only organization contacted who expressed an interest in the project area due to their determination that the project area is within their aboriginal territories.

River Partners contacted Yoche Dehe Wintun Nation to discuss the project and it was determined that a project site visit would not be necessary. Yoche Dehe Wintun Nation did not have any further concerns regarding the project.

NAHC responded that no records of sacred lands were found as a result of its database search. Tribal outreach and archival research did not result in the identification of any historical or cultural resources, historical or cultural properties, or locations of Native American traditional use in the project area. As such, the project is not anticipated to impact any known traditional cultural properties. However, if such resources are inadvertently discovered during project construction, *Mitigation Measure* #6 - Cultural Resources and *Mitigation Measure* #7 - Human Remains will be implemented to reduce any potential impacts on cultural resources to a less-than-significant level.

## **Mitigation Measures**

# Mitigation Measure #8—Cultural Resources

River Partners shall include provisions in the construction bid documents to minimize project impacts on cultural resources. The following measure shall be implemented to avoid construction-related impacts on cultural resources:

• If previously unidentified cultural resources are unearthed during the project, all work that may disturb the cultural resources shall be halted until a qualified archaeologist can assess the significance of the find. If the discovered cultural resources are determined to be significant, appropriate avoidance measures or conservation measures (e.g., preserve in place, evaluation and data recovery) shall be implemented in coordination with Colusa County and a qualified archaeologist prior to resuming activities that may disturb the cultural resources.

Timing:	During construction
Implementation:	River Partners or its contractor
Monitoring/Reporting:	River Partners to report compliance to Colusa
	County

# Mitigation Measure #9—Human Remains

River Partners shall include provisions in the construction bid documents to minimize project impacts on cultural resources. The following measure shall be implemented to avoid construction-related impacts on inadvertently discovered human remains:

If human remains are found, the California Health and Safety Code requires that excavation be halted in the immediate area and the Colusa County coroner notified to determine the nature of the remains. The coroner is required to examine all discoveries of human remains within 48 hours of receiving notice of a discovery on private or State lands (California Health and Safety Code Section 7050.5[b]). If the coroner determines that the remains are those of a Native American, he or she must contact the NAHC by telephone within 24 hours of making that determination (California Health and Safety Code Section 7050.5[c]). As necessary, River Partners shall consult with a Most Likely

Descendent (MLD) determined by the NAHC regarding the removal or preservation and avoidance of the remains and determine if additional burials could be present in the vicinity. Project activities in the vicinity of the find shall not resume until the appropriate protective measures have been implemented.

Timing: Implementation: Monitoring/Reporting:

During construction River Partners or its contractor River Partners to report compliance to Colusa County

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
<ul> <li>VI. ENERGY — Would the project:</li> <li>a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of</li> </ul>				
energy resources, during project construction or operation?				$\boxtimes$
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?				$\boxtimes$

a, b) *No Impact.* The project will not result in wasteful, inefficient, or unnecessary consumption of energy resources or conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

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

a) i, ii, iii, iv) *No Impact.* The project area is not located within an Alquist-Priolo Earthquake Fault Zone or Seismic Hazard Zone (California Department of Conservation 2018) and there are no active faults mapped in the project area (U.S. Geological Survey 2018). The Willows Fault Zone, a deeply buried and poorly understood group of faults, is mapped less than a mile west of the project (California Geologic Society 2010), but overall the project vicinity is considered to have a low risk for damaging earthquakes (California Department of Conservation 2003). The project will not expose people or structures to potential substantial adverse effects from seismic ground shaking or seismic-related ground failure. Topography in the project area is nearly level except for the slopes of the Corps levee and the Sacramento River bank. None of the slopes in the project area are at risk of landslide. The project will have no impact.

- b) Less-than-Significant Impact. Project activities will result in soil disturbance on approximately 28.47 acres and will redistribute topsoil in portions of the North Field to create positive drainage away from the Corps levee and toward the Sacramento river. All graded material will stay on site. Overall soil loss will be minimal with implementation of standard construction practices for dust control and stormwater pollution prevention. Erosion and sediment control measures included in Conservation Measure #2 Increased Turbidity and Suspended Sediment (described in Section 2.5.2) will be implemented during construction to minimize the potential for erosion. River partners will revegetate the project area with native riparian vegetation shortly after site grading, thus reducing the potential for erosion during high water events that may inundate the floodplain. The potential for erosion along the Sacramento River near the water control structure drain pipe will be the same as current conditions once the pipe is installed and existing rock revetment is reinstalled in the same location. The project will result in less-than-significant impacts relating to soil erosion and loss of topsoil.
- c, d) *No Impact.* As discussed under items a-ii, iii, and iv) above, the project will not create a substantial risk as a result of geologic hazards in the project area. The project involves planting native riparian vegetation on land previously used for agriculture. Planting of riparian vegetation will decrease the potential for erosion and slope instability in the project area. The project area does not have any fine-grained clay soils that are prone to high expansion. The project will have no impact.
- e) No Impact. The project does not involve wastewater facilities.

## **Mitigation Measures**

	VIII. GREENHOUSE GAS EMISSIONS — Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a)	Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?				
b)	Conflict with any applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases?				$\boxtimes$

*Less than Significant with Mitigation Incorporated.* Greenhouse gases (GHGs) are recognized by wide consensus among the scientific community to contribute to global warming/climate change and associated environmental impacts because of their ability to trap heat in the atmosphere and affect climate. The major GHGs that are released from human activity include carbon dioxide, methane, and nitrous oxide (Governor's Office of Planning and Research 2008). The primary sources of GHGs are vehicles (including planes and trains), energy plants, and industrial and agricultural activities (such as dairies and hog farms). Emissions of GHGs from the project will be generated onsite from construction-related equipment. The project will not increase the generation of emissions after construction is complete. The long-term impact of the project may be reduction of GHG levels due to the capacity of the vegetation planted and maintained in the project to sequester atmospheric carbon dioxide into their biomass.

Emissions of GHGs resulting from off-road heavy-duty diesel engines during construction activities will be short-term and minor. Implementation of *Conservation Measure* #1—*Air Pollution and Dust Control* will reduce potential impacts to a less-than-significant level.

b) *No Impact.* The project will not conflict with any applicable plans, policies, or regulations adopted for the purpose of reducing the emission of GHGs. The project will have no impact.

## **Mitigation Measures**

#### Mitigation Measure #1—Air Quality

River Partners or their contractor shall implement the measures included in *Conservation Measure* #1 – *Air Pollution and Dust Control* (described in Section 2.5.2) to mitigate potential impacts on air quality in the project area to a less-than-significant level.

Timing: Implementation: Monitoring/Reporting: During construction River Partners or its contractor River Partners to report compliance to Colusa County

- IX. HAZARDS AND HAZARDOUS MATERIALS — Would the project:
- a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?
- b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?
- c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?
- d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?
- e) For a project located within an airport land use compatibility plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?
- f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?
- g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?
- h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires?

#### Less than Significant Potentially Less than with Significant Mitigation Significant Impact No Impact Incorporated Impact $\boxtimes$ $\boxtimes$ $\boxtimes$ $\boxtimes$ $\boxtimes$ $\boxtimes$

## **Discussion of Impacts**

a, b) *Less than Significant with Mitigation Incorporated.* The use of diesel or gasoline powered construction equipment (trucks, excavators, etc.), lubricants such as oil, hydraulic fluids, and herbicides could pose a hazard to the public and the environment; however, construction-related hazards will be temporary and use of these materials for project maintenance will be

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 $\boxtimes$ 

consistent with existing agricultural practices in the project vicinity. All equipment will be routinely maintained and inspected to avoid leaks. Best management practices described in *Conservation Measure* #3 – *Potential Spill of Hazardous Materials* and *Conservation Measure* #4 – *Herbicide Application* will be implemented to reduce potential impacts associated with accidental spills of pollutants in the project area to a less-than-significant level.

- c) *No Impact.* The project is not within 0.25 mile of any existing or proposed schools. The project will have no impact.
- d) No Impact. A search of the State Department of Toxic Substances Control (DTSC) EnviroStor database (California Department of Toxic Substances Control 2018) and the State Water Resources Control Board's GeoTracker database (State Water Resources Control Board 2018) found no record of any contaminated sites in the project area. The nearest recorded hazardous site to the project area is in Princeton, 3.25 miles north of the project area. The project will have no impact.
- e, f) *No Impact.* The Colusa County Airport is approximately 11.4 miles south of the project area. No portion of the project area is within the Colusa County Airport Influence Area as defined in the Colusa County Airport Land Use Compatibility Plan (Colusa County Airport Land Use Commission 2014). The project will have no impact on the airport.
- g) *No Impact.* The project will take place on privately owned parcels and will not involve work in public roads or rights-of-way. Access to the project area during implementation will be through public and private roads, including levee access roads. The project is not anticipated to impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan because vehicular access will be maintained through the project area during construction. The project will have no impact.
- h) Less than Significant with Mitigation Incorporated. The project area is not in a high fire hazard zone (California Department of Forestry and Fire Protection 2007) but the use of construction equipment in and around vegetated areas increases the potential for wildfire ignition. Conservation Measure #5 Wildfire Potential will be implemented to reduce the risk of wildfire associated with project construction to a less-than-significant level. Operation of the project will have no impact on wildfire potential.

# **Mitigation Measures**

# Mitigation Measure #10—Hazardous Materials and Wildfire

River Partners or their contractor shall implement the measures included in *Conservation Measure* #3 – *Potential Spill of Hazardous Materials*, *Conservation Measure* #4 – *Herbicide Application*, and *Conservation Measure* #5 – *Wildfire Potential* (described in Section 2.5.2) to mitigate potential impacts associated with accidental spills of pollutants and wildfire ignition in the project area to a less-than-significant level.

Timing: Implementation: Monitoring/Reporting: During construction River Partners or its contractor River Partners to report compliance to Colusa County

- a) Violate any water quality standards or waste discharge requirements?
- b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there should be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?
- c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?
- d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?
- e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?
- f) Otherwise substantially degrade water quality?
- g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?
- h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?
- i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?
- j) Inundation of seiche, tsunami, or mudflow?

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
	$\bowtie$		
		$\boxtimes$	
		$\boxtimes$	
	$\boxtimes$		
	$\boxtimes$		
			$\boxtimes$
		$\boxtimes$	
		$\boxtimes$	
			$\boxtimes$

- a) Less than Significant with Mitigation Incorporated. Construction, maintenance, and operation of the project will not violate any water quality standards or waste discharge requirements set forth by the RWQCB in its water quality control plan for the Central Valley region. Water pollution control measures were incorporated into the project design to avoid and/or minimize impacts on water quality. In addition, project activities will comply with the requirements set forth in a 401 Water Quality Certification, which is required by the RWQCB prior to project implementation. These measures, in conjunction with Conservation Measure #2 Increased Turbidity and Suspended Sediment, Conservation Measure #3 Potential Spill of Hazardous Materials, and Conservation Measure #4 Herbicide Application will reduce potential impacts to a less-than-significant level.
- b) *Less-than-Significant Impact.* Maintenance and establishment of the riparian plantings will require irrigation for approximately 3 years. The volume of water required for irrigation is not anticipated to have a significant impact on the local aquifer or groundwater table nor will irrigation interfere substantially with groundwater recharge. The project will have a less-than-significant impact.
- c, d) *Less-than-Significant Impact.* The project will involve grading activities that will modify the contours of the North Field. The overall drainage patterns will remain similar to current conditions with surface runoff traveling west through the existing swale to the Sacramento River. The planting of native riparian vegetation will stabilize the soil and reduce the water velocity in the project area during high water events and thus reduce the potential for erosion or siltation on- and off-site. The proposed water control structure will moderate the rate at which the North Field drains following flood events and will have no effect on potential flooding off-site. The impact will be less than significant.
- e) Less than Significant with Mitigation Incorporated. The project involves planting native riparian vegetation in the North Field and South Field which will likely increase the water holding capacity of the soil and reduce runoff from the project area. Conservation Measure #2 Increased Turbidity and Suspended Sediment, Conservation Measure #3 Potential Spill of Hazardous Materials, and Conservation Measure #4 Herbicide Application were incorporated into the project design to reduce potential impacts of runoff on water quality to a less-than-significant level.
- f) Less than Significant with Mitigation Incorporated. Construction and maintenance of the project will involve the use of hazardous materials (e.g., petroleum-based fuels and lubricants, herbicides). However, the project will not involve any activities that will substantially degrade water quality. The project includes measures to avoid adverse impacts on water quality. Conservation Measure #2 Increased Turbidity and Suspended Sediment, Conservation Measure #3 Potential Spill of Hazardous Materials, and Conservation Measure #4 Herbicide Application will reduce potential impacts on water quality to a less-than-significant level.
- g) *No Impact.* The project does not involve the construction of housing in a flood hazard area. The project will have no impact.
- h, i) *Less-than-Significant Impact.* The project involves the construction of a water control structure that will control the rate that the North Field drains following high water events.

Flood flows will not be redirected off-site and will remain within the existing Corps levee system. Portions of the North Field will be graded to facilitate controlled drainage of water to the Sacramento River. The area of the North Field inundated by the water control structure will occupy about the same area as the existing area that is subject to long duration inundation following high water events.

Hydraulic analyses (Ayers Associates 2011; Appendix A) have been used to develop proposed vegetation plantings that are consistent with existing water flow patterns and velocities, and floodway management goals. The riparian vegetation will be planted in rows parallel to the general flow direction and will not direct flows toward levees. Hydraulic analyses (Ayers Associates 2011; Appendix A) indicate that the South Field receives higher velocity flows than the North Field. To better accommodate floodwater conveyance, the South Field will be planted in wide corridors. Woody vegetation will be planted as 200-foot-wide strips separated by 100-foot-wide bands of mixed native grasses. A 100-foot-wide band of Great Valley Mixed Riparian Buffer vegetation will be planted along the eastern border of the field to act as a tree screen, reducing the potential for flood scour on the levee during high water events.

Based on a modeled a 100-year flood event (Ayers Associates 2011; Appendix A), the proposed project is anticipated to have a limited effect on the flow velocities and water surface elevations of the Sacramento River near the project area. The proposed project is anticipated to slightly reduce the flow, a decrease of approximately 308 cubic feet per second, passing over the Moulton Weir during a 100-year flood event (Ayers Associates 2011; Appendix A). Consequently, slightly more flow would remain in the downstream channel, resulting in a small (0.00–0.08 foot) rise in water surface elevation in and near the project area. A rise of 0.02 foot, tapering to 0.01 foot is anticipated to persist for 5.0 miles upstream of the project to RM 164. The net rise at the upstream boundary of the study reach near RM 166 is anticipated to be 0.00 foot (Ayers Associates 2011; Appendix A).

The project will have a less-than-significant impact on flood flows and will not expose people or structures to a significant risk of loss, injury, or death involving flooding.

j) *No Impact.* The project area is not in an area with potential for a seiche, tsunami, or mudflow. The project will have no impact.

## **Mitigation Measures**

# Mitigation Measure #2—Herbicide Application and Water Quality Protection

River Partners or their contractor shall implement the measures included in *Conservation Measure* #2 – *Increased Turbidity and Suspended Sediment Prevention* and *Conservation Measure* #4 – *Herbicide Application* (discussed in Section 2.5.2) to mitigate potential impacts to a less-than-significant level.

Timing: Implementation: Monitoring/Reporting: During construction River Partners or its contractor River Partners to report compliance to Colusa County

# Mitigation Measure #10—Hazardous Materials and Wildfire

River Partners or their contractor shall implement the measures included in *Conservation Measure* #3 – *Potential Spill of Hazardous Materials*, *Conservation Measure* #4 – *Herbicide Application*, and *Conservation Measure* #5 – *Wildfire Potential* (described in Section 2.5.2) to mitigate potential impacts associated with accidental spills of pollutants and wildfire ignition in the project area to a less-than-significant level.

Timing: Implementation: Monitoring/Reporting: During construction River Partners or its contractor River Partners to report compliance to Colusa County

- XI. LAND USE AND PLANNING Would the project:
- a) Physically divide an established community?
- b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?
- c) Conflict with any applicable habitat conservation plan or natural communities' conservation plan?

a) *No Impact.* The project will not divide an established community. The project will have no impact.

Less than Significant

with

Mitigation

Incorporated

Less than

Significant

Impact

No Impact

 $\boxtimes$ 

 $\boxtimes$ 

 $\boxtimes$ 

Potentially

Significant

Impact

b, c) *No Impact.* The project is consistent with applicable land use plans, policies, and regulations. The project will not conflict with any applicable conservation plans. The project will not involve a change in existing land use and will not conflict with any habitat conservation plans or natural communities' conservation plans. All necessary land use authorizations, if required, will be in place prior to the onset of construction. The project will have no impact on land use.

#### **Mitigation Measures**

XII.	MINERAL RESOURCES — Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impaci
a)	Result in the loss of availability of a known mineral resource classified MRZ-2 by the State Geologist that would be of value to the region and the residents of the state?				
b)	Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?				

- a) *No Impact.* The project area has not been mapped by the State Division of Mines and Geology (California Department of Conservation 2001). The project will have no impact on any known mineral resource zones.
- b) *No Impact.* No locally important mineral resource recovery sites are located within the project area. The project will have no impact.

#### **Mitigation Measures**

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

excessive noise levels?

- a) *No Impact.* Construction and maintenance activities will temporarily increase noise levels in the vicinity of the project area. Actual noise levels will vary throughout the period of construction, depending on the type of construction equipment involved, activities being implemented, and distance between the source of the noise and receptors. The project will not result in noise levels in excess of the Colusa County General Plan (Colusa County 2012) or other applicable standards. The project will have no impact.
- b) *No Impact.* Construction-related groundborne vibration resulting from the movement of heavy equipment within the construction area will be temporary and localized. There is no potential for persons outside of the immediate construction area to be impacted by excessive groundborne vibration.
- c) *No Impact.* Construction and maintenance related noise will be less than significant and temporary. The project will not result in a permanent (on-going) increase in ambient noise above existing noise levels in the project vicinity.

- d) *Less-than-Significant Impact.* Construction- and maintenance-related noise will be less than significant and temporary. Temporary project-related noise levels will be similar to those produced by agricultural land uses in the project vicinity. The project will have a less-than-significant impact on local ambient noise levels.
- e, f) *No Impact.* The project is not located in the vicinity of a private airport or landing strip and therefore will have no impact.

# **Mitigation Measures**

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

a, b, c) *No Impact.* The project will have no direct or indirect impact on population growth or housing.

#### **Mitigation Measures**

xv	<b>PUBLIC SERVICES</b> — Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a)	Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:				
	Fire protection?				$\square$
	Police protection?				$\boxtimes$
	Schools?				$\boxtimes$
	Parks?				$\boxtimes$
	Other public facilities?				$\square$

a) *No Impact.* The project will not create a need for additional public services and will have no impact on existing public services.

# **Mitigation Measures**

XV	I. RECREATION — Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a)	Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?				
b)	Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an				$\boxtimes$

a, b) *No Impact.* The project will not result in an increased demand for recreational facilities. The project will not require the construction or expansion of recreational facilities. The project will have no impact.

#### **Mitigation Measures**

No project-specific mitigation is required.

adverse physical effect on the environment?

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

- a, b) *No Impact.* Construction and maintenance traffic (e.g., equipment and materials transport, River Partners employee traffic) will temporarily increase traffic on local roads during the construction phase and temporarily increase the use of the main access roads into the project area. The volume and type of traffic associated with the project will not exceed the level of service for roads in the project vicinity and the project will be consistent with the goals and policies of the Colusa County General Plan (Colusa County 2012). The project will have no impact on applicable traffic management plans, ordinances, or standards.
- c) *No Impact.* The project will have no impact on air traffic patterns.

performance or safety of such facilities?

- *d) No Impact.* The project will not involve activities that could increase hazards due to a design feature or create incompatible uses in the project area. The project will not affect the operation of farm or levee maintenance equipment in the project vicinity. The project will have no impact.
- e) *No Impact.* The project will not impede the ingress or egress to any properties in the project vicinity. Construction and maintenance vehicles may temporarily increase traffic on roads near the project area but will not impact emergency vehicle access through the region. The project will have no impact.
- f) *No Impact.* The project does not conflict with any alternative transportation plan or policy. The project will have no impact.

# **Mitigation Measures**

#### XVIII. TRIBAL CULTURAL RESOURCES —

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

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

#### Less than Significant Potentially with Less than Significant Mitigation Significant Impact Incorporated Impact No Impact $\boxtimes$ $\square$

#### **Discussion of Impacts**

a, b) On November 16, 2016, ASC requested a list of local Native American groups and individuals who might have an interest in or concerns with the project from the NAHC. Concurrently, ASC requested that NAHC conduct a review of its Sacred Lands database for culturally significant properties. ASC used the contact list provided by NAHC to solicit input from Native American representatives and organizations. The Yocha Dehe Wintun Nation was the only organization contacted who expressed an interest in the project area due to their determination that the project area is within their aboriginal territories. River Partners contacted Yoche Dehe Wintun Nation to discuss the project and it was determined that a project site visit would not be necessary. Yoche Dehe Wintun Nation did not have any further concerns regarding the project.

NAHC responded that no records of sacred lands were found as a result of its database search. Tribal outreach and archival research did not result in the identification of any historical or cultural resources, historical or cultural properties, or locations of Native American traditional use in the project area. As such, the project is not anticipated to impact any known tribal cultural resources. However, if such resources are inadvertently discovered during project construction, *Mitigation Measure #8 – Cultural Resources* and *Mitigation Measure #9 - Human Remains* will be implemented to reduce any potential impacts to a less-than-significant level.

## **Mitigation Measures**

#### Mitigation Measure #8—Cultural Resources

River Partners shall include provisions in the construction bid documents to minimize project impacts on cultural resources. The following measure shall be implemented to avoid construction-related impacts on cultural resources:

• If previously unidentified cultural resources are unearthed during the project, all work that may disturb the cultural resources shall be halted until a qualified archaeologist can assess the significance of the find. If the discovered cultural resources are determined to be significant, appropriate avoidance measures or conservation measures (e.g., preserve in place, evaluation and data recovery) shall be implemented in coordination with the Colusa County and a qualified archaeologist prior to resuming activities that may disturb the cultural resources.

Timing:	During construction
Implementation:	River Partners or its contractor
Monitoring/Reporting:	River Partners to report compliance to Colusa
	County

#### Mitigation Measure #9—Human Remains

River Partners shall include provisions in the construction bid documents to minimize project impacts on cultural resources. The following measure shall be implemented to avoid construction-related impacts on inadvertently discovered human remains:

If human remains are found, the California Health and Safety Code requires that excavation be halted in the immediate area and that the Colusa County coroner be notified to determine the nature of the remains. The coroner is required to examine all discoveries of human remains within 48 hours of receiving notice of a discovery on private or State lands (California Health and Safety Code Section 7050.5[b]). If the coroner determines that the remains are those of a Native American, he or she must contact the NAHC by telephone within 24 hours of making that determination (California Health and Safety Code Section 7050.5[c]). As necessary, River Partners shall consult with a Most Likely Descendent (MLD) determined by the NAHC regarding the removal or preservation and avoidance of the remains and determine if additional burials could be present in the vicinity. Project activities in the vicinity of the find shall not resume until the appropriate protective measures have been implemented.

Timing:	During construction
Implementation:	River Partners or its contractor
Monitoring/Reporting:	River Partners to report compliance to Colusa
	County
- a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?
- b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?
- c) Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?
- d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?
- e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?
- f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?
- g) Comply with federal, state, and local statutes and regulations related to solid waste?

## **Discussion of Impacts**

a-g) *No Impact.* The project does not involve any actions that will require a water supply or generate wastewater. The project will not generate solid waste that will require off-site disposal. The project will have no impact.

#### **Mitigation Measures**

No project-specific mitigation is required.

MS —	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
ements of ty Control				$\boxtimes$
of new ies or gnificant				$\boxtimes$
of new ansion of which al effects?				
ble to ements ded				
tewater nay serve ncity to d in				
permitted t's solid				$\boxtimes$
statutes				$\boxtimes$

	Less than Significant			
Potentially Significant Impact	with Mitigation Incorporated	Less than Significant Impact	No Impact	
<b>F</b> If located in or near state responsibility areas or lands	classified as v	erv high fire l	hazard severity	

**XX. WILDFIRE** — If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:

a) Substantially impair an adopted emergency response plan or emergency evacuation plan?		$\boxtimes$
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?		
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?		
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?		

#### **Discussion of Impacts**

a–d) Less than Significant with Mitigation Incorporated. The project area is not in a high fire hazard zone (California Department of Forestry and Fire Protection 2007) but the use of construction equipment in and around vegetated areas increases the potential for wildfire ignition. Conservation Measure #5 – Wildfire Potential will be implemented to reduce the risk of wildfire associated with project construction to a less-than-significant level. Operation of the project will have no impact on wildfire potential.

- XXI. MANDATORY FINDINGS OF SIGNIFICANCE — (To be filled out by Lead Agency if required)
- a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?
- b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?
- c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
е		$\boxtimes$		
,				
Э				
			$\boxtimes$	
ct				
:				

### Discussion

- a) *Less-than-Significant with Mitigation Incorporated.* Construction-related activities could result in impacts on special-status species, nesting migratory birds and raptors, and previously undiscovered cultural resources. Mitigation measures described in Section 3.2 (Biological Resources) will be used to avoid or minimize potential impacts on fish and wildlife. Although no cultural resources or tribal cultural resources are anticipated to be impacted by project construction, mitigation measures described in Section 3.2 (Cultural Resources and Tribal Cultural Resources) will be implemented in the event of an inadvertent discovery of cultural resources or human remains. Conservation measures were included in the project design (as described in Section 2.5.2) and will implemented to further reduce potential project-related environmental effects. The project will have a less-than-significant impact with mitigation incorporated.
- b) *Less-than-Significant Impact.* The project will not result in cumulatively considerable impacts with implementation of standard construction measures and mitigation measures described in this Initial Study. The project will not introduce any new land uses or result in the need for any reasonably foreseeable future projects within Colusa County. All impacts resulting from project implementation can be fully mitigated for at the project level. As a result, cumulative impacts are considered to be less-than-significant.

c) *Less-than-Significant Impact with Mitigation Incorporated.* The project could result in temporary impacts on human beings. Potential adverse effects will be related to temporary increases in air pollutants, water quality impacts, and any accidental spills of hazardous materials. The implementation of the project conservation measures described in Section 2.5.2 and the mitigation measures described in Section 3.2 (Hazardous Materials) will reduce potential construction-related impacts on human beings to a less-than-significant level, and no long-term or operational-related impacts are anticipated.

# 4. Determination

On the basis of this initial evaluation:

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

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

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

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

I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Kent Johanns, Associate Planner Colusa County, Community Development Department Date

# 5. Mitigation Monitoring and Reporting Program

This chapter comprises the Mitigation Monitoring and Reporting Program (MMRP) for the Sacramento River Salmonid Stranding Reduction and Floodplain Habitat Restoration Project at the Willow Bend Preserve (Willow Bend Project). The purpose of this MMRP is to memorialize the mitigation responsibilities of River Partners in implementing the Willow Bend Project. The mitigation measures listed herein are required by law or regulation and will be adopted by Colusa County as part of the overall project approval. Mitigation is defined by the California Environmental Quality Act (CEQA) – Section 15370 as a measure that:

- avoids the impact altogether by not taking a certain action or parts of an action;
- minimizes impacts by limiting the degree or magnitude of the action and its implementation;
- rectifies the impact by repairing, rehabilitating, or restoring the impacted environment;
- reduces or eliminates the impact over time by preservation and maintenance operations during the life of the project; or
- compensates for the impacts by replacing or providing substitute resources or environments.

Mitigation measures provided in this MMRP have been identified in Chapter 3, Environmental Setting, Impacts, and Mitigation Measures of the Initial Study (IS)/Mitigated Negative Declaration (MND) and are considered feasible and effective in mitigating project-related environmental impacts.

This MMRP includes discussions of the following: legal requirements, intent of the MMRP; development and approval process for the MMRP; the authorities and responsibilities associated with implementation of the MMRP; a method of resolution of noncompliance complaints; and a summary of monitoring requirements.

**Legal Requirements:** The legal basis for the development and implementation of the MMRP lies within CEQA (including the California Public Resources Code). Sections 21002 and 21002.1 of the California Public Resources Code state:

- Public agencies are not to approve projects as proposed if there are feasible alternatives or feasible mitigation measures available that would substantially lessen the significant environmental effects of such projects.
- Each public agency shall mitigate or avoid the significant effects on the environment of projects that it carries out or approves whenever it is feasible to do so.

Section 21081.6 of the California Public Resources Code further requires that:

 The public agency shall adopt a reporting or monitoring program for the changes made to the project or conditions of project approval, adopted in order to mitigate or avoid significant effects on the environment. The reporting or monitoring program shall be designed to ensure compliance during project implementation. • The monitoring program must be adopted when a public agency makes its findings under CEQA so that the program can be made a condition of project approval in order to mitigate significant effects on the environment. The program must be designed to ensure compliance with mitigation measures during project implementation to mitigate or avoid significant environmental effects.

**Intent of the Mitigation Monitoring and Reporting Program:** The MMRP is intended to satisfy the requirements of CEQA as they relate to the project. It will be used by Colusa County and River Partners staff, participating agencies, project contractors, and mitigation monitoring personnel during implementation of the project. The primary objective of the MMRP is to ensure the effective implementation and enforcement of adopted mitigation measures and permit conditions. The MMRP will provide for monitoring of construction activities as needed, onsite identification and resolution of environmental problems, and proper reporting to lead agency staff.

Authorities and Responsibilities: Colusa County, functioning as the CEQA Lead Agency, will have the primary responsibility for ensuring implementation of the MMRP and maintenance of records demonstrating the status of all required mitigation measures.

River Partners, as project sponsor, is responsible for implementing the mitigation measures by incorporating them into the project specifications (contract documents) and enforcing the conditions of the contracts in the field during construction. Some pre- and post-construction activities may be implemented directly by River Partners.

**Resolution of Noncompliance Complaints:** Any person or agency may file a complaint that alleges noncompliance with the mitigation measure(s) adopted as part of the approval process for the project. The complaint shall be directed to Colusa County, Kent Johanns (220 12th Street, Colusa, CA 95932) in written form describing the purported violation in detail. Colusa County shall conduct an investigation and determine the validity of the complaint. If noncompliance with a mitigation measure is verified, Colusa County shall take the necessary action(s) to remedy the violation. Complaints shall be responded to in writing including descriptions of Colusa County's investigation findings and the corrective action(s) taken, if applicable.

**Summary of Monitoring Requirements:** Following this discussion are the mitigation measures and associated monitoring requirements for the project. The mitigation measures are organized by environmental issue area (i.e., Biological Resources, Cultural Resources, etc.) and consist of the following:

- Mitigation Measure(s): lists the mitigation measure(s) identified for each potentially significant impact discussed in the IS/MND. The same mitigation numbering system used in the IS/MND is carried forward in this MMRP.
- Timing: Indicates at what point in time or project phase the mitigation measure will need to be implemented.
- Implementation: Indicates which agency or entity is responsible for implementation of the mitigation measure.

- Monitoring/Reporting: Indicates which agency or entity is responsible for monitoring and reporting the results of each mitigation measure.
- Verification: Provides a space to be signed and dated by the individual responsible for verifying compliance with each mitigation measure.

# 5.1 Conservation Measures

River Partners is committed to implementing the following conservation measures during construction and maintenance of the Sacramento River Salmonid Stranding Reduction and Floodplain Habitat Restoration Project at the Willow Bend Preserve:

## Conservation Measure #1—Air Pollution and Dust Control

Air pollution control will conform to all applicable air pollution control rules, regulations, ordinances, and statutes. Dust will be controlled during construction activities and subsequent operation of the project. Dust controls may include, but will not be limited to the following elements, as appropriate:

- Pursuant to California Vehicle Code (Section 23114) (California Legislative Information 2016), all trucks hauling soil and other loose material to and from the construction site shall be covered or shall maintain at least 6 inches of freeboard (i.e., minimum vertical distance between top of load and the trailer).
- Any soils that are removed during construction shall be stored onsite in piles not to exceed 4 feet in height. These spoil piles shall be clearly marked and flagged. Spoil piles that will not be immediately returned to use shall be revegetated with a nonpersistent erosion control mixture.
- Equipment and manual watering shall be conducted on all stockpiles, dirt/gravel roads, and exposed or disturbed soil surfaces, as necessary, to reduce airborne dust.
- River Partners or its contractor shall designate a person to monitor dust control and to
  order increased watering as necessary to prevent transport of dust offsite. This person
  shall also respond to any citizen complaints.
- Idling time shall be minimized by shutting off all equipment after five minutes when not in use.

## Conservation Measure #2—Increased Turbidity and Suspended Sediment

The project has been designed to avoid impacts on Corps-jurisdictional features (i.e., waters of the United States), as well as waters of the State, to the extent practicable. The construction contractor will be required to prepare and implement a SWPPP, including measures to be implemented during construction that will minimize disturbance to fine-grained sediments in the Sacramento River and prevent the discharge of sediment into the river from upland activities. River Partners will be responsible for ensuring implementation of these measures and compliance with Basin Plan objectives. The SWPPP will include at a minimum, but is not limited to, the following measures:

- Fill material (quarry stone, riprap, and backfill) will be composed of washed materials from a local source. Stone materials will be washed to remove any silts, sand, clay, and organic matter and will be free of contaminants such as petroleum products. Gravel and stone materials will pass California cleanliness test #227 (or equivalent test) with a value of 85 or greater. Soil-filled quarry stone will only be placed above the average water surface elevation during construction.
- Suitable erosion and sediment control structures (e.g., silt fences, straw wattles, or catch basins) will be used to capture impeded erosion or sediment from upland and near-channel activities before it enters the Sacramento River. Sediment control structures will be placed near the edge of surface water features (i.e., along the bank of the river or along wetland features) to ensure sediment is sequestered before entering the water column. These structures will be installed prior to the start of any construction activities and will need to be cleaned or maintained on a regular basis to retain their effectiveness.
- Bare soil will be kept to the minimum required by designs. Erosion control devices or measures, such as those listed previously, will also be used in areas where vegetation has been removed to reduce short-term erosion prior to the start of the rainy season and before new vegetation becomes established.
- All imported fill material stockpiles will be stored in upland areas with erosion controls
  properly installed and maintained. All applicable erosion control standards will be required
  during stockpiling of materials.
- To the maximum extent practicable, activities that increase the potential for erosion in the project area will be restricted to the relatively dry summer and early fall periods to minimize the potential for rainfall events to transport sediment to the river. If these activities must take place during the late fall, winter, or spring, temporary erosion and sediment control structures will be in place and operational at the end of each construction day and maintained until permanent erosion control is in place.
- If on-site erosion control devices are found to be nonfunctional, they will be repaired or replaced immediately or by the end of the work day. In cases where repairs cannot be made immediately for safety reasons, the repairs should be completed as soon as the work can safely be performed.

## **Conservation Measure #3—Potential Spill of Hazardous Materials**

The construction contractor will be responsible for implementing the construction measures listed below to prevent hazardous materials from entering the water column during all construction activities.

- To the extent practicable, equipment and materials will be stored a minimum of 200 feet away from wetland and surface water features.
- Vehicles and equipment used during construction will receive proper and timely maintenance to reduce the potential for mechanical breakdowns leading to a spill of hazardous materials.

- All construction equipment will be inspected daily for leaks prior to the start of any activities. Steam cleaning will be used to remove any oil, grease, or hydraulic fluid prior to making contact with the waters of the Sacramento River. Untreated wash and rinse water must be adequately treated prior to discharge into the river if that is the desired disposal option.
- Hazardous materials, including fuels, oils, and solvents, will not be stored or transferred within 150 feet of the active Sacramento River channel. Areas for fuel storage, refueling, and servicing will also be located at least 150 feet from the active river channel or within an adequate secondary fueling containment area. In addition, the construction contractor will be responsible for maintaining spill containment booms on-site at all times during construction operations and staging of equipment or fueling supplies. Fueling trucks will maintain a spill containment boom at all times.
- The contractor will develop and implement site-specific best management practices, a water
  pollution control plan, and emergency spill control plan and will be responsible for
  immediate containment and removal of any toxins released into the Sacramento River or
  project area.

## **Conservation Measure #4—Herbicide Application**

The following BMPs have been incorporated into the project to avoid and minimize the potential for adverse direct and indirect effects from use of herbicide for project maintenance activities.

- A spill contingency plan shall be prepared in advance of treatment.
- All herbicide applications be directly supervised by a certified pesticide applicator. Mixing of herbicides and filling of tanks will occur in staging areas at least 100 feet away from sensitive biological resources. All applications will conform to label directions.
- To control drift during spray applications, spray applications will follow a site-specific prescription that accounts for terrain and identifies spray exclusion areas, buffer areas, formulation, equipment, droplet size, spray height, application pattern, flow rate, limiting factors of wind speed and direction, temperature, and relative humidity.
- An herbicide spill contingency plan will be developed and implemented for the use of any herbicides.
- The cleaning and disposal of herbicide containers will be completed in accordance with federal, state, and local laws, regulations, and guidance.
- All herbicides will be mixed and used according to their labeled specifications, and the
  mixing or storage of herbicides will take place more than 100 feet from the Sacramento
  River. Basal and foliar application of herbicides will also be prohibited within 100 feet
  of the Sacramento River. Removal of weeds within 100 feet of the Sacramento River
  will be restricted to mechanical methods, including disking, floating, mowing, and
  chopping prior to seed set.

- Prior to herbicide applications, all elderberry plants will be flagged within 100 feet of areas to be treated.
- No herbicide application will take place within 20 feet of existing elderberry shrubs.

## **Conservation Measure #5—Wildfire Potential**

River Partners shall include the following measure in the construction bid documents to minimize project-related potential for wildfire ignition:

• Per the requirements of Public Resources Code Section 4442, River Partners or their contractor shall include a note on all construction plans that internal combustion engines shall be equipped with an operational spark arrester, or the engine must be equipped for the prevention of fire.

## 5.2 Mitigation Measures

Colusa County and River Partners are committed to implementing the following mitigation measures during construction of the Sacramento River Salmonid Stranding Reduction and Floodplain Habitat Restoration Project at the Willow Bend Preserve:

# 5.2.1 Air Quality and Greenhouse Gas Emissions

## Mitigation Measure #1—Air Quality

River Partners or their contractor shall implement the measures included in *Conservation Measure* #1 – *Air Pollution and Dust Control* (described in Section 2.5.2) to mitigate potential impacts on air quality in the project area to a less-than-significant level.

Timing:	During construction
Implementation:	River Partners or its contractor
Monitoring/Reporting:	River Partners to report compliance to Colusa County
Verification (sign and dat	e):

## 5.2.2 Biological Resources

## Mitigation Measure #2—Herbicide Application and Water Quality Protection

River Partners or their contractor shall implement the measures included in *Conservation Measure* #2 – *Increased Turbidity and Suspended Sediment Prevention* and *Conservation Measure* #4 – *Herbicide Application* (discussed in Section 2.5.2) to mitigate potential impacts to a less-than-significant level.

Timing:	During construction	
Implementation:	River Partners or its contractor	
Monitoring/Reporting:	River Partners to report compliance to Colusa County	

Verification (sign and date): \_\_\_\_\_

### Mitigation Measure #3—Worker Environmental Training

The following measure shall be implemented to avoid or minimize the potential for project-related impacts on sensitive biological resources:

Worker Environmental Awareness Training will be provided to all work crews. The training will be administered by a qualified biologist and will provide the workers with information on their responsibilities in regard to the sensitive biological resources in the project area. The program will specifically address the status of the species listed under the ESA and the CESA, the species life history, how to identify the species and their habitat, the need to protect the species, and the project conservation and avoidance and minimization measures.

Timing:	Prior to construction
Implementation:	River Partners or its contractor
Monitoring/Reporting:	River Partners to report compliance to Colusa County

Verification (sign and date): \_\_\_\_\_

### Mitigation Measure #4—Valley Elderberry Longhorn Beetle

The following measure shall be implemented to avoid or minimize the potential for project-related impacts on valley elderberry longhorn beetle:

- To the extent practicable, project activities within 100 feet of elderberry shrubs will be timed to occur outside of the valley elderberry longhorn beetle active season (active season is mid-March through mid-May; U.S. Fish and Wildlife Service 1984).
- Prior to construction activities, an environmentally sensitive area will be designated around elderberry shrubs using exclusionary fencing, signs, and flagging under the supervision of a qualified biologist. Because some project activities may encroach within 100 feet of the shrubs, exclusionary fencing will be placed at a distance of 20 feet or more from the dripline

of the shrubs. The signs will be placed in clearly visible locations and will be readable from a distance of 20 feet. Fencing and signs will be maintained throughout the entire duration of construction activities.

Timing:	Prior to construction
Implementation:	River Partners or its contractor
Monitoring/Reporting:	River Partners to report compliance to Colusa County

Verification (sign and date): \_\_\_\_\_

#### Mitigation Measure #5—Anadromous Fish

The following measure shall be implemented to avoid or minimize the potential for project-related impacts on anadromous fishes:

- Due to the nearly year-round presence of at least one freshwater life stage of the listed fish species, use of seasonal work windows to entirely avoid injury or mortality of the listed anadromous salmonids and green sturgeon is not practicable. Therefore, to protect the most vulnerable life stages that occur within the action area, salmon fry, all work along the river bank will be restricted to the period between August 1 and October 31. This seasonal work window is a compromise between minimizing direct effects by conducting work preceding and during the beginning of the winter-run emigration period and when river stage is lowest in the action area minimizing the extent of river bank construction.
- The construction contractor retained by River Partners for installation of the water control structure and bank protection removal and excavation along the banks of the Sacramento River will avoid in-water activities and operate equipment slowly and deliberately to alert and scare adult and juvenile salmonids away from the work area.

Timing:	Prior to and during construction
Implementation:	River Partners or its contractor
Monitoring/Reporting:	River Partners to report compliance to Colusa County
	-

Verification (sign and date): \_\_\_\_\_

## Mitigation Measure #6—Migratory Birds and Raptors

The following measures shall be implemented to avoid or minimize the potential for adverse impacts on nesting resident and migratory birds and raptors:

- To the extent practicable, project activities will be scheduled to avoid the nesting season. The typical nesting seasons in northern California extends from February 15 through September 15. If the nesting season cannot be completely avoided, the following measures shall be implemented.
- A qualified biologist shall conduct a minimum of one pre-construction survey for nesting resident and migratory birds and raptors within the project area and a buffer (250 feet for resident and migratory birds, 0.25 mile for Swainson's hawk, 500 feet for all other raptors). The survey shall be conducted no more than 14 days prior to the initiation of activities in any given area. If an active nest is found, a qualified biologist shall determine the extent of a construction-free buffer zone to be established around the nest. If it is anticipated that project activities will encroach on the buffer, a biological monitor shall be present to monitor the nesting birds for signs of disturbance.

Timing: Implementation:	Prior to and during construction
Monitoring/Bonorting	River Partners to report compliance to Colusa
Womtoring/Keporting.	County
Verification (sign and date	2):

## Mitigation Measure #7—Waters of the United States

The following measures shall be implemented to avoid or minimize the potential for adverse impacts on potential waters of the United States:

- To the extent practicable, the discharge of dredged or fill material into potential waters of the United States, including wetlands, shall be avoided.
- Prior to initiating work involving the disturbance or placement of dredge or fill materials into waters of the United States, River Partners shall obtain all regulatory permits and authorizations required by regulatory agencies including, but not necessarily limited to, the Corps, RWQCB, and CDFW.
- To the extent practicable, activities that increase the erosion potential in the project area shall be restricted to the relatively dry summer and early fall period to minimize the potential for rainfall events to transport sediment to surface water features. If these activities must take place during the late fall, winter, or spring, then temporary erosion and sediment control structures shall be in place and operational at the end of each construction day and maintained until permanent erosion control structures are in place.
- Any monitoring, maintenance, and reporting required by regulatory agencies (i.e., Corps, RWQCB, and CDFW) shall be implemented and completed. All measures contained in the permits or associated with agency approvals shall be implemented.
- Stockpiles that are to remain on site through the wet season shall be protected to prevent erosion (e.g., silt fence, straw bales).

Timing:	Prior to and during construction
Implementation:	River Partners or its contractor
Monitoring/Reporting:	River Partners to report compliance to Colusa
	County

Verification (sign and date): \_\_\_\_\_

## 5.2.3 Cultural Resources and Tribal Cultural Resources

### Mitigation Measure #8—Cultural Resources

River Partners shall include provisions in the construction bid documents to minimize project impacts on cultural resources. The following measure shall be implemented to avoid construction-related impacts on cultural resources:

• If previously unidentified cultural resources are unearthed during the project, all work that may disturb the cultural resources shall be halted until a qualified archaeologist can assess the significance of the find. If the discovered cultural resources are determined to be significant, appropriate avoidance measures or conservation measures (e.g., preserve in place, evaluation and data recovery) shall be implemented in coordination with the Colusa County and a qualified archaeologist prior to resuming activities that may disturb the cultural resources.

Timing:	During construction
Implementation:	River Partners or its contractor
Monitoring/Reporting:	River Partners to report compliance to Colusa County
Verification (sign and dat	e):

## Mitigation Measure #9—Human Remains

River Partners shall include provisions in the construction bid documents to minimize project impacts on cultural resources. The following measure shall be implemented to avoid construction-related impacts on inadvertently discovered human remains:

If human remains are found, the California Health and Safety Code requires that excavation be halted in the immediate area and that the Colusa County coroner be notified to determine the nature of the remains. The coroner is required to examine all discoveries of human remains within 48 hours of receiving notice of a discovery on private or State lands (California Health and Safety Code Section 7050.5[b]). If the coroner determines that the remains are those of a Native American, he or she must contact the NAHC by telephone within 24 hours of making that determination (California Health and Safety Code Section 7050.5[c]). As necessary, River Partners shall consult with a Most Likely Descendent (MLD) determined by the NAHC regarding the removal or preservation and avoidance of the remains and determine if additional burials could be present in the vicinity. Project activities in the vicinity of the find shall not resume until the appropriate protective measures have been implemented.

Timing:	During construction	
Implementation:	River Partners or its contractor	
Monitoring/Reporting:	River Partners to report compliance to Colusa County	
Verification (sign and date)		

## 5.2.4 Hazardous Materials

### Mitigation Measure #10—Hazardous Materials and Wildfire

River Partners or their contractor shall implement the measures included in *Conservation Measure* #3 – *Potential Spill of Hazardous Materials, Conservation Measure* #4 – *Herbicide Application*, and *Conservation Measure* #5 – *Wildfire Potential* (described in Section 2.5.2) to mitigate potential impacts associated with accidental spills of pollutants and wildfire ignition in the project area to a less-than-significant level.

Timing:DurinImplementation:RivenMonitoring/Reporting:Riven

During construction River Partners or its contractor River Partners to report compliance to Colusa County

Verification (sign and date): \_\_\_\_\_

# 5.2.5 Hydrology and Water Quality

### Mitigation Measure #2—Herbicide Application and Water Quality Protection

River Partners or their contractor shall implement the measures included in *Conservation Measure #2* – *Increased Turbidity and Suspended Sediment Prevention* and *Conservation Measure #4* – *Herbicide Application* (discussed in Section 2.5.2) to mitigate potential impacts to a less-than-significant level.

Timing:	During construction
Implementation:	River Partners or its contractor
Monitoring/Reporting:	River Partners to report compliance to Colusa County
	County

Verification (sign and date): \_\_\_\_\_

### Mitigation Measure #10—Hazardous Materials and Wildfire

River Partners or their contractor shall implement the measures included in *Conservation Measure* #3 – *Potential Spill of Hazardous Materials, Conservation Measure* #4 – *Herbicide Application,* and *Conservation Measure* #5 – *Wildfire Potential* (described in Section 2.5.2) to mitigate potential impacts associated with accidental spills of pollutants and wildfire ignition in the project area to a less-than-significant level.

Timing: Implementation: Monitoring/Reporting:

During construction River Partners or its contractor River Partners to report compliance to Colusa County

Verification (sign and date): \_\_\_\_\_

# 6. Report Preparation

## 6.1 Colusa County, Community Development Department – CEQA Lead Agency

Kent Johanns

Associate Planner

## 6.2 Stantec Consulting Services Inc. – Environmental Review

Mark Wuestehube Tim Hanson Chariss Femino Michael Mercer Project Manager Environmental Analyst/Biologist Biologist/Wetland Delineator Fisheries Biologist

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# **APPENDIX A**

Hydraulic Analysis



DRAFT

To:	Helen	Swagerty,	River Partners
10.	1 ICICII	owagerty,	

From:	Lyle Zevenbergen, PE, PhD and Will deRosset, PE
-------	---

Date: March 23, 2011

Re: Hydraulic Analysis of Willow Bend Unit Habitat Restoration at Sacramento River Mile 159

#### Introduction

This memo summarizes the results for the hydraulic analysis for flood neutrality on the Willow Bend Unit located immediately upstream of the Moulton Weir on the Sacramento River at River Mile (RM) 159, see **Figure 1**. The hydraulic analysis was performed, at the request of River Partners using a previously developed 2-dimensional (2-D) model, which computes the areal distribution of velocity, flow depth and water surface elevation. The original model, developed for The Nature Conservancy in 2007, analyzed the effects of several property restorations on a reach of the Sacramento River from RM 143 to RM 166 (Ayres 2007).

The Willow Bend Unit, located on the left overbank, has two plots of land which will be restored to native riparian and elderberry habitat. The planting plan developed by River Partners can be seen in **Figure 2**.

The hydraulic modeling of the project features was performed for River Partners under a contract agreement by Ayres Associates', Sacramento and Fort Collins office. Helen Swagerty, Senior Restoration Biologist is the Project Manager for River Partners. Lyle Zevenbergen, PE, Senior Engineer, is the Project Manager for Ayres Associates.

#### Hydraulic Model Runs

The existing conditions model is based on the model created for TNC's proposed restoration of the Womble, Jensen, Stegman, and 1000 Acres sites (Ayres 2007). The river configuration is based on a combination of 2006 LIDAR data provided by TNC and the USACE 1997 Sacramento River Survey. The land use for the existing conditions runs for both the Design Flow and 100-year flow can be seen in **Figure 3**. This run will serve as a baseline for comparison with the with-project conditions.

The with-project conditions model incorporates land use changes for the Willow Bend unit, based on the planting plan developed by River Partners presented in Figure 2. **Figure 4** presents the proposed conditions model mesh. At the north end of the property the area shown as bare earth will be converted to shrub, while at the downstream end the grass area will be converted to savannah with rows of elderberry and a strip approximately 60 feet wide of great valley oak riparian along the east side levee.

#### Hydraulic Modeling

This hydraulic model, refined from the previous Princeton to Colusa 2D hydraulic model, was also updated with all the changes mentioned in Section 2. It had been previously calibrated to the flood event that occurred on the 10<sup>th</sup> and 11<sup>th</sup> of January 1995 (Ayres 1997).



Figure 1. Project Location and Hydraulic Modeling Limits.



Figure 2. Willow Bend Unit Restoration Plan.



#### Figure 3. Existing Conditions FEM.



Figure 4. Proposed conditions FEM.

The geometric definition of the project reach is given in the form of a finite element network of triangular and quadrilateral elements as shown in Figures 3 and 4. The corner nodes of each element represent points in space (X, Y, Z) defining the topography of the project reach. These nodes were laid out using topographic mapping and aerial photography as a reference for element size and orientation. Nodes were also added at spot locations to define breaklines, structures, or other significant changes in topography. Elevation values were assigned to the nodes using a digital terrain model of the river reach. The original model reflects the combination of two mapping projects. The initial mesh was developed using the 1997 bathymetric survey completed by Ayres Associates for the USACE. The mesh and channel alignment were updated with the 2006 LIDAR topography data provided by TNC. The model mesh coordinates are in NGVD-29, NAD-83, and US survey feet.

In the river reach, material types within each element were categorized based on land use and roughness characteristics (dense vegetation, grassland, sandbars, etc.). Material types were assigned to each of the elements in the finite element mesh using aerial photography from the 1995 mapping effort conducted by the USACE and the 2002 Aerial Atlas. A field visit was also made to confirm land usage. For each material type, a Manning's roughness coefficient (n value) was assigned to represent roughness. These values were determined primarily from the previous modeling effort, and originally were derived using standard engineering protocols and references. In the restoration area, roughness values were assigned based on tree planting density (high, medium and low) discussed and illustrated in Figures 13 and 14 of the Riparian Restoration Feasibility Study for the Riparian Sanctuary (River Partners 2005). After review of site conditions, the Manning's n values for heavy riparian vegetation and orchards were reduced to 0.12 and 0.10 from 0.16 and 0.15 in the previous study to better represent site conditions, though values in these ranges are reasonable for these land use conditions. The low density vegetation attribute is assigned where rock armor is removed in the proposed condition. Material types and corresponding Manning's n values used in the model are listed in **Table 1**.

Table 1. Manning's Roughness Coefficients ('n' Values).			
Description of Model Land Use Material	Manning's "n" Value		
Channel	0.028		
Riparian (High Density Vegetation)	0.090		
Orchard	0.075		
Oxbow	0.035		
Crops	0.035		
Sandbar	0.020		
Levee	0.030		
Grass	0.032		
Structure	0.200		
Light Riparian / Riparian Scrub	0.070		
Savannah (Low Density Vegetation)	0.045		
Rock-Riprap	0.045		
Cobble	0.040		
Scrub	0.050		
Sparse Trees (Medium Density Vegetation)	0.060		
Bare Earth	0.030		
Dirt / Gravel	0.030		



Figure 5. Existing Conditions 100-year velocity contours with velocity vectors.

The input parameters required for the two-dimensional hydraulic model include defining inflows into the model and water surface elevations at the downstream limits. The upstream discharge and downstream WSEL boundary conditions for the 100-year flow were taken from the USACE Sacramento River Comp Study (USACE 2008). The 100-year Moulton Weir flow was computed from the published rating curve and predicted energy grade line (EGL) at the weir. The values for the design flow were taken from the 1957 USACE design capacity for the flood control system for the upstream and downstream limit while the outflow from the Moulton weir was taken from a flow split analysis conducted by Ayres Associates (Ayres 2006). The hydraulic boundary conditions associated with these modeled flows are shown in **Tables 2** and **3**.

Table 2. Boundary Conditions for Existing Condition.			
Boundary	100-year Flow	Design Flow	
Condition	Boundary Value	Boundary Value	
Sacramento River Inflow @ RM 166.0	157,491 cfs	160,000 cfs	
Moulton Weir Outflow @ RM 159.0	26,733 cfs	35,700 cfs	
Downstream Limit @ RM 153	74.83 ft (NGVD)	76.58 ft (NGVD)	

Table 3. Boundary Conditions for With-Project Condition Runs.			
Boundary Condition	100-year Flow Boundary Value		
Sacramento River Inflow @ RM 166.0	157,491 cfs		
Moulton Weir Outflow @ RM 159.0	26,425 cfs		
Downstream Limit @ RM 153.0	74.86 ft (NGVD)		

This reach of the Sacramento River contains the Moulton overflow weir, which significantly reduces the flow down the main channel by diverting portions of the flow into the Butte Basin. This overflow weir, shown in Figure 1, starts to spill when the flow in the Sacramento River water surface elevation reaches 73.95 ft (NGVD-29).

The original model run for the 2007 TNC report (Ayres 2007) used the 1957 design capacities for the main river and the weir. However, upon further review of the historic data for the Sacramento River and Moulton Weir, an inconsistency in the flow split was discovered. It was found that, based on data from historic events and the rating table developed by the Department of Water Resources (DWR), the weir accommodated more overflow than the 1957 design flow capacities. Due to this inconsistency, it was decided that the historic data was more accurate than the design flow capacity for the Moulton weir. The 100-year event was used as the basis for determining project impacts.

#### Hydraulic Modeling Results

The 100-year hydraulic conditions were examined for the existing conditions run. The primary purpose for the Existing Conditions modeling was to establish a baseline for the comparison of velocity and water surface elevation changes for the proposed project. Figure 5 presents the model mesh with the existing land use conditions overlaid. Figure 5 presents velocity plots for the 100-year flow in the vicinity of the project. **Figure 6** is a plot of the water surface elevation for the 100-year flow in the vicinity of the project.

The land use designations for the with-project conditions are shown on and include both the upstream and downstream planting sites for the Willow Bend unit. **Figure 7** shows the velocity plots for the 100-year flow model run and **Figure 8** shows water surface elevations for the 100-year event. **Figure 9** presents a differential comparison plot for water surface elevation for the 100-year flow project conditions over existing design flow conditions.

Cross sections have also been cut at several locations immediately upstream and downstream and within the project site in order to provide water surface elevation comparisons. Each of the cross sections extends through the width of the model. The water surface comparisons are presented in **Table 4**. The locations of these cross sections can be seen in **Figure 10**. Cross Section A-A' is cut through Node 18813. Cross sections B-B' and C-C' are approximately 5500 feet upstream and 5100 feet downstream of Section A-A'. Three water surface elevations are provided at each cross section for Existing and Proposed conditions. These are at nodes located at the left and right (as viewed downstream) edges of the model and in the vicinity of the project.



Figure 6. 100-year Existing Conditions Water Surface Elevation Contours



Figure 7. 100-year Proposed Conditions Velocity Contours with Velocity Vectors



Figure 8. 100-year Proposed Conditions Water Surface Elevation Contours.



Figure 9. 100-year WSEL differential plot Proposed vs. Existing Conditions. Positive values indicate a rise with respect to Existing Conditions.

Table 4. 100-Year Event Water Surface Comparisons.					
			Water Surface Elevation, ft, NGVD 29		
Cross					Differential
Section,	Node	Node	Existing	Proposed	(Proposed -
River Mile		Location	Conditions	Conditions	Existing)
D/S	N/A	N/A	74.83	74.86	+0.03
boundary					
A-A'	18833	Left/	81.02	81.11	+0.08
		project			
	18945	Main	82.68	82.71	+0.03
		Channel			
	19114	Right	82.73	82.76	+0.03
B-B'	22399	Left/	84.04	84.06	+0.02
		project			
	21742	Main	83.99	84.01	+0.02
		Channel			
	21236	Right	83.42	83.45	+0.03
C-C'	14176	Left/	80.56	80.58	+0.02
		project			
	15074	Main	81.05	81.08	+0.03
		Channel			
	15365	Right	81.17	81.20	+0.03

The 100-year conditions for this reach are comparable to the design conditions. The design inflow is 2,509 cfs (1.5%) greater than the 100-year flow, and the reported design stage at the Moulton Weir is 81.55 ft-NGVD, approximately 1.91 ft higher than the predicted 100-year existing conditions WSEL. Based on the downstream rating curve, it is unlikely that the additional 2,509 cfs flow would cause more than a 0.2 ft rise at the site with respect to the 100-year existing conditions stage.

The proposed changes in the study area slightly reduce the flow passing over the Moulton Weir (See Table 2). Consequently, slightly more flow remains in the downstream channel, resulting in a small (0.03') rise with respect to existing conditions over a significant portion of the model domain. A rise of 0.02 to 903 ft occurs adjacent to the project and a rise of 0.02 tapering to 0.01 ft persists for 5.0 miles upstream of the project to RM 164. The net rise at the upstream boundary of the study reach is 0.00 ft. The change in WSEL is presented in Figure 9.

#### **References**

Ayres Associates, December 3, 2007, Two-Dimensional Hydraulic Modeling of Riparian Habitat Restoration from Colusa to Princeton, Prepared for The Nature Conservancy.

Ayres Associates, November 2006, Flow Split Analysis.

USACE, March 15, 1957, Levee and Channel Profiles, Sacramento River Flood Control Project, California.

USACE, 2002, Comprehensive Study of the Sacramento River.



Figure 10. Cross-Section Locations.
# **APPENDIX B**

**CalEEMod Emissions Model** 

Page 1 of 23

Willow Bend - Colusa County, Winter

#### Willow Bend

Colusa County, Winter

### **1.0 Project Characteristics**

#### 1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Recreational	0.00	User Defined Unit	28.47	0.00	0

#### **1.2 Other Project Characteristics**

Urbanization	Rural	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	56
Climate Zone	3			Operational Year	2019
Utility Company	Pacific Gas & Electric Com	pany			
CO2 Intensity (Ib/MWhr)	641.35	CH4 Intensity (Ib/MWhr)	0.029	N2O Intensity ( (Ib/MWhr)	0.006

#### 1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Lot Acreage = area of ground disturbance

Construction Phase - Grading and structure placement

Off-road Equipment -

Off-road Equipment - construction of water control structure

Off-road Equipment - Grading

Trips and VMT - Grading, water control structure placement. and planting

On-road Fugitive Dust - Grading non-paved surface

Grading - Grading in North Field

Page 2 of 23

#### Willow Bend - Colusa County, Winter

Architectural Coating -

Vehicle Trips -

Road Dust - Low mean vehicle speed on unpaved surfaces

Energy Use -

Land Use Change -

Sequestration -

Construction Off-road Equipment Mitigation -

Mobile Land Use Mitigation -

Area Mitigation -

Operational Off-Road Equipment - Grading, water control structure placement, planting

Off-road Equipment - Planting North and South fields.

Water And Wastewater -

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	0.5
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	10
tblConstructionPhase	NumDays	440.00	5.00
tblConstructionPhase	NumDays	45.00	10.00
tblConstructionPhase	NumDays	20.00	10.00
tblGrading	AcresOfGrading	25.00	28.47
tblLandUse	LotAcreage	0.00	28.47
tblOffRoadEquipment	HorsePower	158.00	231.00
tblOffRoadEquipment	LoadFactor	0.38	0.29
tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00

### Page 3 of 23

### Willow Bend - Colusa County, Winter

tblOperationalOffRoadEquipment	OperDaysPerYear	260.00	15.00
tblOperationalOffRoadEquipment	OperDaysPerYear	260.00	10.00
tblOperationalOffRoadEquipment	OperDaysPerYear	260.00	10.00
tblOperationalOffRoadEquipment	OperDaysPerYear	260.00	10.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	1.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	1.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	1.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	1.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblRoadDust	MeanVehicleSpeed	40	8
tblRoadDust	RoadPercentPave	100	95
tblSequestration	NumberOfNewTrees	0.00	2,856.00
tblTripsAndVMT	WorkerTripNumber	18.00	5.00
tblTripsAndVMT	WorkerTripNumber	0.00	5.00
tblTripsAndVMT	WorkerTripNumber	13.00	5.00

### 2.0 Emissions Summary

### 2.1 Overall Construction (Maximum Daily Emission)

**Unmitigated Construction** 

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year		lb/day										lb/c	lay			

Willow Bend	l - Colusa	County,	Winter
-------------	------------	---------	--------

2019	4.5117	51.8694	30.3593	0.0574	9.1052	2.2537	11.3589	3.6532	2.0734	5.7266	0.0000	5,687.2752	5,687.2752	1.7831	0.0000	5,731.8529
2020	3.5583	37.1916	16.2821	0.0313	18.1301	1.8445	19.9746	9.9476	1.6969	11.6445	0.0000	3,039.5102	3,039.5102	0.9666	0.0000	3,063.6762
Maximum	4.5117	51.8694	30.3593	0.0574	18.1301	2.2537	19.9746	9.9476	2.0734	11.6445	0.0000	5,687.2752	5,687.2752	1.7831	0.0000	5,731.8529

### Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year		-	-		lb/c	lay						-	lb/c	lay	-	-
2019	4.5117	51.8694	30.3593	0.0574	4.1325	2.2537	6.3862	1.6533	2.0734	3.7267	0.0000	5,687.2752	5,687.2752	1.7831	0.0000	5,731.8529
2020	3.5583	37.1916	16.2821	0.0313	8.1937	1.8445	10.0381	4.4858	1.6969	6.1826	0.0000	3,039.5102	3,039.5102	0.9666	0.0000	3,063.6762
Maximum	4.5117	51.8694	30.3593	0.0574	8.1937	2.2537	10.0381	4.4858	2.0734	6.1826	0.0000	5,687.2752	5,687.2752	1.7831	0.0000	5,731.8529

ROG	NOx	со	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e

Page 5 of 23

### Willow Bend - Colusa County, Winter

Percent	0.00	0.00	0.00	0.00	54.74	0.00	47.58	54.86	0.00	42.96	0.00	0.00	0.00	0.00	0.00	0.00
Reduction																

# 2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	-	-	-	-	lb/d	Jay	-		-	lb/c	lay	-	-			
Area	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Offroad	1.0648	12.7254	8.7941	0.0170		0.5482	0.5482		0.5043	0.5043		1,680.9073	1,680.9073	0.5318		1,694.2028
Total	1.0648	12.7254	8.7941	0.0170	0.0000	0.5482	0.5482	0.0000	0.5043	0.5043		1,680.9073	1,680.9073	0.5318	0.0000	1,694.2028

Page 6 of 23

### Willow Bend - Colusa County, Winter

### Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	-				lb/d	lay							lb/c	lay		
Area	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Offroad	1.0648	12.7254	8.7941	0.0170		0.5482	0.5482		0.5043	0.5043		1,680.9073	1,680.9073	0.5318		1,694.2028
Total	1.0648	12.7254	8.7941	0.0170	0.0000	0.5482	0.5482	0.0000	0.5043	0.5043		1,680.9073	1,680.9073	0.5318	0.0000	1,694.2028

Page 7 of 23

Willow Bend - Colusa County, Winter

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

### **3.0 Construction Detail**

#### **Construction Phase**

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	9/2/2019	9/13/2019	5	10	grading
2	Building Construction	Building Construction	9/16/2019	9/20/2019	5	5	structure placement
3	Planting	Site Preparation	3/2/2020	3/13/2020	5	10	planting

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 28.47

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

#### **OffRoad Equipment**

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Excavators	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Planting	Skid Steer Loaders	1	8.00	65	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20

### Willow Bend - Colusa County, Winter

Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Excavators	1	8.00	231	0.29
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Planting	Rubber Tired Dozers	3	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Planting	Tractors/Loaders/Backhoes	1	8.00	97	0.37

### Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Grading	7	5.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	10	5.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Planting	5	5.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

### **3.1 Mitigation Measures Construction**

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Grading - 2019

Unmitigated Construction On-Site

### Willow Bend - Colusa County, Winter

	ROG	NOx	СО	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category		-	_		lb/c	lay	_	_	_	_		_	lb/c	day	-	_
Fugitive Dust					9.0413	0.0000	9.0413	3.6362	0.0000	3.6362			0.0000			0.0000
Off-Road	4.4782	51.8383	30.1136	0.0568		2.2533	2.2533		2.0731	2.0731		5,628.8939	5,628.8939	1.7809		5,673.4170
Total	4.4782	51.8383	30.1136	0.0568	9.0413	2.2533	11.2946	3.6362	2.0731	5.7093		5,628.8939	5,628.8939	1.7809		5,673.4170

#### Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	-				lb/d	lay						_	lb/c	lay		
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0335	0.0311	0.2458	5.9000e- 004	0.0639	4.2000e- 004	0.0643	0.0169	3.9000e- 004	0.0173		58.3813	58.3813	2.1900e- 003		58.4359
Total	0.0335	0.0311	0.2458	5.9000e- 004	0.0639	4.2000e- 004	0.0643	0.0169	3.9000e- 004	0.0173		58.3813	58.3813	2.1900e- 003		58.4359

Page 10 of 23

### Willow Bend - Colusa County, Winter

### Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					lb/d	lay							lb/d	lay		
Fugitive Dust					4.0686	0.0000	4.0686	1.6363	0.0000	1.6363			0.0000			0.0000
Off-Road	4.4782	51.8383	30.1136	0.0568		2.2533	2.2533		2.0731	2.0731	0.0000	5,628.8939	5,628.8939	1.7809		5,673.4170
Total	4.4782	51.8383	30.1136	0.0568	4.0686	2.2533	6.3219	1.6363	2.0731	3.7094	0.0000	5,628.8939	5,628.8939	1.7809		5,673.4170

#### Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	-	-	_	_	lb/d	lay				_		-	lb/d	lay		
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0335	0.0311	0.2458	5.9000e- 004	0.0639	4.2000e- 004	0.0643	0.0169	3.9000e- 004	0.0173		58.3813	58.3813	2.1900e- 003		58.4359
Total	0.0335	0.0311	0.2458	5.9000e- 004	0.0639	4.2000e- 004	0.0643	0.0169	3.9000e- 004	0.0173		58.3813	58.3813	2.1900e- 003		58.4359

Page 11 of 23

### Willow Bend - Colusa County, Winter

### 3.3 Building Construction - 2019 Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	-	_			lb/c	ay							lb/c	ay		
Off-Road	2.5805	23.7276	18.4950	0.0327		1.3702	1.3702		1.2866	1.2866		3,161.3596	3,161.3596	0.8116		3,181.6497
Total	2.5805	23.7276	18.4950	0.0327		1.3702	1.3702		1.2866	1.2866		3,161.3596	3,161.3596	0.8116		3,181.6497

### Unmitigated Construction Off-Site

	ROG	NOx	СО	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	_	_	_	_	lb/d	lay							lb/c	day		
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0335	0.0311	0.2458	5.9000e- 004	0.0639	4.2000e- 004	0.0643	0.0169	3.9000e- 004	0.0173		58.3813	58.3813	2.1900e- 003		58.4359
Total	0.0335	0.0311	0.2458	5.9000e- 004	0.0639	4.2000e- 004	0.0643	0.0169	3.9000e- 004	0.0173		58.3813	58.3813	2.1900e- 003		58.4359

Page 12 of 23

### Willow Bend - Colusa County, Winter

### Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category		_	_		lb/d	lay							lb/c	lay		
Off-Road	2.5805	23.7276	18.4950	0.0327		1.3702	1.3702		1.2866	1.2866	0.0000	3,161.3596	3,161.3596	0.8116		3,181.6497
Total	2.5805	23.7276	18.4950	0.0327		1.3702	1.3702		1.2866	1.2866	0.0000	3,161.3596	3,161.3596	0.8116		3,181.6497

### Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	-	_		_	lb/d	lay						_	lb/d	day		
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0335	0.0311	0.2458	5.9000e- 004	0.0639	4.2000e- 004	0.0643	0.0169	3.9000e- 004	0.0173		58.3813	58.3813	2.1900e- 003		58.4359
Total	0.0335	0.0311	0.2458	5.9000e- 004	0.0639	4.2000e- 004	0.0643	0.0169	3.9000e- 004	0.0173		58.3813	58.3813	2.1900e- 003		58.4359

Page 13 of 23

### Willow Bend - Colusa County, Winter

### 3.4 Planting - 2020 Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	_				lb/d	lay							lb/c	ay		
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.5279	37.1643	16.0646	0.0308		1.8440	1.8440		1.6965	1.6965		2,982.9648	2,982.9648	0.9648		3,007.0835
Total	3.5279	37.1643	16.0646	0.0308	18.0663	1.8440	19.9103	9.9307	1.6965	11.6272		2,982.9648	2,982.9648	0.9648		3,007.0835

### Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	-	-	_	_	lb/d	lay						_	lb/d	lay		
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0304	0.0273	0.2175	5.7000e- 004	0.0639	4.1000e- 004	0.0643	0.0169	3.8000e- 004	0.0173		56.5454	56.5454	1.8900e- 003		56.5927
Total	0.0304	0.0273	0.2175	5.7000e- 004	0.0639	4.1000e- 004	0.0643	0.0169	3.8000e- 004	0.0173		56.5454	56.5454	1.8900e- 003		56.5927

Page 14 of 23

### Willow Bend - Colusa County, Winter

### Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					lb/d	ay							lb/d	lay		
Fugitive Dust					8.1298	0.0000	8.1298	4.4688	0.0000	4.4688			0.0000			0.0000
Off-Road	3.5279	37.1643	16.0646	0.0308		1.8440	1.8440		1.6965	1.6965	0.0000	2,982.9648	2,982.9648	0.9648		3,007.0835
Total	3.5279	37.1643	16.0646	0.0308	8.1298	1.8440	9.9739	4.4688	1.6965	6.1653	0.0000	2,982.9648	2,982.9648	0.9648		3,007.0835

#### Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category		-	-	-	lb/d	Jay		-	-	-		-	lb/d	lay		
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0304	0.0273	0.2175	5.7000e- 004	0.0639	4.1000e- 004	0.0643	0.0169	3.8000e- 004	0.0173		56.5454	56.5454	1.8900e- 003		56.5927
Total	0.0304	0.0273	0.2175	5.7000e- 004	0.0639	4.1000e- 004	0.0643	0.0169	3.8000e- 004	0.0173		56.5454	56.5454	1.8900e- 003		56.5927

Page 15 of 23

Willow Bend - Colusa County, Winter

### 4.0 Operational Detail - Mobile

### 4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	_		_		lb/c	lay							lb/c	lay		
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

### 4.2 Trip Summary Information

	Aver	age Daily Trip Ra	te	Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Recreational	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

### 4.3 Trip Type Information

		Miles			Trip %			Trip Purpos	e %
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by

Page 16 of 23

### Willow Bend - Colusa County, Winter

User Defined Recreational	14 70	6 60	6 60	0.00	0.00	0.00	0	0	0
Oser Denned Reercational	14.70	0.00	0.00	0.00	0.00	0.00	Ū	v	Ű

#### 4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Recreational	0.521064	0.037554	0.182203	0.139323	0.031591	0.007389	0.008554	0.063166	0.000942	0.001683	0.004985	0.000559	0.000987

### 5.0 Energy Detail

Historical Energy Use: N

### 5.1 Mitigation Measures Energy

Page 17 of 23

Willow	Bend	- Colusa	County,	Winter
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	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					lb/c	lay							lb/c	day		
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

# 5.2 Energy by Land Use - NaturalGas

<u>Unmitigated</u>

	NaturalGas Use	ROG	NOx	СО	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr					lb/c	lay							lb/d	ay		
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

### Willow Bend - Colusa County, Winter

### **Mitigated**

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr					lb/c	lay							lb/d	lay		
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

Page 19 of 23

### Willow Bend - Colusa County, Winter

### 6.0 Area Detail

# 6.1 Mitigation Measures Area

	ROG	NOx	СО	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	-			-	lb/d	lay		-					lb/c	lay		
Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Page 20 of 23

### Willow Bend - Colusa County, Winter

## 6.2 Area by SubCategory

<u>Unmitigated</u>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	_				lb/c	lay							lb/c	lay		
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

#### **Mitigated**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory					lb/d	day							lb/d	lay		
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Page 21 of 23

Willow Bend - Colusa County, Winter

Total	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

### 7.0 Water Detail

7.1 Mitigation Measures Water

### 8.0 Waste Detail

8.1 Mitigation Measures Waste

### 9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
Excavators	1	8.00	15	158	0.38	Diesel
Graders	1	8.00	10	187	0.41	Diesel

Page 22 of 23

### Willow Bend - Colusa County, Winter

Tractors/Loaders/Backhoes	1	8.00	10	97	0.37	Diesel
Skid Steer Loaders	1	8.00	10	65	0.37	Diesel

#### UnMitigated/Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Equipment Type		lb/day											lb/d	ay		
Excavators	0.2607	2.6819	3.2632	5.1600e- 003		0.1293	0.1293		0.1190	0.1190		511.1256	511.1256	0.1617		515.1684
Graders	0.4867	6.5796	1.8380	6.6400e- 003		0.2112	0.2112		0.1943	0.1943		657.6271	657.6271	0.2081		662.8288
Skid Steer Loaders	0.0846	1.1265	1.3902	2.0700e- 003		0.0516	0.0516		0.0475	0.0475		204.6127	204.6127	0.0647		206.2311
Tractors/Loaders/Backhoes	0.2328	2.3374	2.3027	3.1100e- 003		0.1560	0.1560		0.1436	0.1436		307.5419	307.5419	0.0973		309.9744
Total	1.0648	12.7254	8.7941	0.0170		0.5482	0.5482		0.5043	0.5043		1,680.9073	1,680.9073	0.5318		1,694.2028

# 10.0 Stationary Equipment

### Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

#### **Boilers**

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

### User Defined Equipment

Page 23 of 23

Willow Bend - Colusa County, Winter

Equipment Type Number

11.0 Vegetation

Page 1 of 27

Willow Bend - Colusa County, Annual

### Willow Bend

Colusa County, Annual

### **1.0 Project Characteristics**

### 1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Recreational	0.00	User Defined Unit	28.47	0.00	0

### **1.2 Other Project Characteristics**

Urbanization	Rural	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	56
Climate Zone	3			Operational Year	2019
Utility Company	Pacific Gas & Electric Com	pany			
CO2 Intensity (Ib/MWhr)	641.35	CH4 Intensity (Ib/MWhr)	0.029	N2O Intensity ( (Ib/MWhr)	0.006

#### 1.3 User Entered Comments & Non-Default Data

CalEEMod Version: CalEEMod.2016.3.2

Page 2 of 27

#### Willow Bend - Colusa County, Annual

Project Characteristics -

Land Use - Lot Acreage = area of ground disturbance Construction Phase - Grading and structure placement Off-road Equipment -Off-road Equipment - construction of water control structure Off-road Equipment - Grading Off-road Equipment - Planting North and South fields. Trips and VMT - Grading, water control structure placement. and planting On-road Fugitive Dust - Grading non-paved surface Grading - Grading in North Field Architectural Coating -Vehicle Trips -Road Dust - Low mean vehicle speed on unpaved surfaces Energy Use -Water And Wastewater -Land Use Change -Sequestration -Construction Off-road Equipment Mitigation -Mobile Land Use Mitigation -Area Mitigation -

Operational Off-Road Equipment - Grading, water control structure placement, planting

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	0.5
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	10
tblConstructionPhase	NumDays	440.00	5.00
tblConstructionPhase	NumDays	45.00	10.00
tblConstructionPhase	NumDays	20.00	10.00
tblGrading	AcresOfGrading	25.00	28.47
tblLandUse	LotAcreage	0.00	28.47
tblOffRoadEquipment	HorsePower	158.00	231.00
tblOffRoadEquipment	LoadFactor	0.38	0.29
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOperationalOffRoadEquipment	OperDaysPerYear	260.00	15.00
tblOperationalOffRoadEquipment	OperDaysPerYear	260.00	10.00
tblOperationalOffRoadEquipment	OperDaysPerYear	260.00	10.00
tblOperationalOffRoadEquipment	OperDaysPerYear	260.00	10.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	1.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	1.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	1.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	1.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblRoadDust	MeanVehicleSpeed	40	8
tblRoadDust	RoadPercentPave	100	95
tblSequestration	NumberOfNewTrees	0.00	2,856.00
tblTripsAndVMT	WorkerTripNumber	18.00	5.00
tblTripsAndVMT	WorkerTripNumber	13.00	5.00

### 2.0 Emissions Summary

### 2.1 Overall Construction

### **Unmitigated Construction**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year					ton	s/yr							MT	ī/yr		
2019	0.0290	0.3187	0.1980	3.7000e- 004	0.0455	0.0147	0.0602	0.0183	0.0136	0.0319	0.0000	32.9758	32.9758	9.9300e- 003	0.0000	33.2241
2020	0.0178	0.1859	0.0814	1.6000e- 004	0.0906	9.2200e- 003	0.0999	0.0497	8.4800e- 003	0.0582	0.0000	13.7957	13.7957	4.3800e- 003	0.0000	13.9053
Maximum	0.0290	0.3187	0.1980	3.7000e- 004	0.0906	0.0147	0.0999	0.0497	0.0136	0.0582	0.0000	32.9758	32.9758	9.9300e- 003	0.0000	33.2241

#### Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year					ton	is/yr							МТ	/yr		
2019	0.0290	0.3187	0.1980	3.7000e- 004	0.0207	0.0147	0.0354	8.2600e- 003	0.0136	0.0219	0.0000	32.9758	32.9758	9.9300e- 003	0.0000	33.2240
2020	0.0178	0.1859	0.0814	1.6000e- 004	0.0410	9.2200e- 003	0.0502	0.0224	8.4800e- 003	0.0309	0.0000	13.7957	13.7957	4.3800e- 003	0.0000	13.9053
Maximum	0.0290	0.3187	0.1980	3.7000e- 004	0.0410	0.0147	0.0502	0.0224	0.0136	0.0309	0.0000	32.9758	32.9758	9.9300e- 003	0.0000	33.2240

### Page 5 of 27

### Willow Bend - Colusa County, Annual

	ROG	NOx	со	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	54.75	0.00	46.57	54.87	0.00	41.42	0.00	0.00	0.00	0.00	0.00	0.00

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	9-2-2019	12-1-2019	0.2886	0.2886
3	3-2-2020	6-1-2020	0.1746	0.1746
		Highest	0.2886	0.2886

### 2.2 Overall Operational

### Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							MT	ī/yr		
Area	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Offroad	5.9800e- 003	0.0703	0.0521	1.0000e- 004		3.0600e- 003	3.0600e- 003		2.8200e- 003	2.8200e- 003	0.0000	8.7837	8.7837	2.7800e- 003	0.0000	8.8532
Waste	n 11 11 11 11					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water	n					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	5.9800e- 003	0.0703	0.0521	1.0000e- 004	0.0000	3.0600e- 003	3.0600e- 003	0.0000	2.8200e- 003	2.8200e- 003	0.0000	8.7837	8.7837	2.7800e- 003	0.0000	8.8532

### 2.2 Overall Operational

### Mitigated Operational

	ROG	NO	ix C	00	SO2	Fugi PM	tive 10	Exhaust PM10	PM10 Total	Fugi PM	itive E I2.5	Exhaust PM2.5	PM2.5 Tota	I Bio-	CO2 N	Bio- CO2	Total (	CO2 C	H4	N2O	CO2e
Category							tons	s/yr										MT/yr			
Area	0.0000	0.00	00 0.0	0000	0.0000			0.0000	0.0000			0.0000	0.0000	0.0	0000	0.0000	0.00	00 0.(	0000	0.0000	0.0000
Energy	0.0000	0.00	00 0.0	0000	0.0000			0.0000	0.0000			0.0000	0.0000	0.0	0000	0.0000	0.00	00 0.(	0000	0.0000	0.0000
Mobile	0.0000	0.00	00 0.0	0000	0.0000	0.00	000	0.0000	0.0000	0.0	000	0.0000	0.0000	0.0	0000	0.0000	0.00	00 0.(	0000	0.0000	0.0000
Offroad	5.9800e- 003	0.07	03 0.0	)521	1.0000e- 004			3.0600e- 003	3.0600e- 003		2	2.8200e- 003	2.8200e- 003	0.0	0000	8.7837	8.78	37 2.7 (	800e- )03	0.0000	8.8532
Waste	F;							0.0000	0.0000			0.0000	0.0000	0.0	0000	0.0000	0.00	00 0.(	0000	0.0000	0.0000
Water	,							0.0000	0.0000			0.0000	0.0000	0.0	0000	0.0000	0.00	00 0.(	0000	0.0000	0.0000
Total	5.9800e- 003	0.07	03 0.0	0521	1.0000e- 004	0.00	000	3.0600e- 003	3.0600e- 003	0.0	000 2	2.8200e- 003	2.8200e- 003	0.0	0000	8.7837	8.78	37 2.7	800e- 103	0.0000	8.8532
	ROG		NOx	C	0 5	602	Fugi PM	tive Exh 10 Pl	naust P M10	M10 fotal	Fugitiv PM2.	ve Exh 5 PN	aust PN 12.5 To	l2.5 otal	Bio- CC	2 NBio-	-CO2 1	otal CO2	CH4	N	20 CO2e
Percent Reduction	0.00		0.00	0.0	00 (	0.00	0.0	0 00	.00	0.00	0.00	0	.00 0	.00	0.00	0.0	00	0.00	0.00	0.0	0.00

Page 7 of 27

#### Willow Bend - Colusa County, Annual

#### 2.3 Vegetation

**Vegetation** 

	CO2e
Category	MT
New Trees	2,022.048 0
Vegetation Land Change	0.0000
Total	2,022.048 0

### **3.0 Construction Detail**

#### **Construction Phase**

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	9/2/2019	9/13/2019	5	10	grading
2	Building Construction	Building Construction	9/16/2019	9/20/2019	5	5	structure placement
3	Planting	Site Preparation	3/2/2020	3/13/2020	5	10	planting

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 28.47

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

#### OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Excavators	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Building Construction	Excavators	1	8.00	231	0.29
Planting	Rubber Tired Dozers	3	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Planting	Skid Steer Loaders	1	8.00	65	0.37
Planting	Tractors/Loaders/Backhoes	1	8.00	97	0.37

#### Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Grading	7	5.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	10	0.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Planting	5	5.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

### **3.1 Mitigation Measures Construction**

Page 9 of 27

### Willow Bend - Colusa County, Annual

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

### 3.2 Grading - 2019

### Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e				
Category	tons/yr												MT/yr							
Fugitive Dust		1 1 1			0.0452	0.0000	0.0452	0.0182	0.0000	0.0182	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
Off-Road	0.0224	0.2592	0.1506	2.8000e- 004		0.0113	0.0113		0.0104	0.0104	0.0000	25.5322	25.5322	8.0800e- 003	0.0000	25.7342				
Total	0.0224	0.2592	0.1506	2.8000e- 004	0.0452	0.0113	0.0565	0.0182	0.0104	0.0286	0.0000	25.5322	25.5322	8.0800e- 003	0.0000	25.7342				

### 3.2 Grading - 2019

### Unmitigated Construction Off-Site

	ROG	NOx	со	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	MT/yr										
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.6000e- 004	1.4000e- 004	1.2400e- 003	0.0000	3.1000e- 004	0.0000	3.1000e- 004	8.0000e- 005	0.0000	8.0000e- 005	0.0000	0.2738	0.2738	1.0000e- 005	0.0000	0.2740
Total	1.6000e- 004	1.4000e- 004	1.2400e- 003	0.0000	3.1000e- 004	0.0000	3.1000e- 004	8.0000e- 005	0.0000	8.0000e- 005	0.0000	0.2738	0.2738	1.0000e- 005	0.0000	0.2740

### Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e				
Category	tons/yr												MT/yr							
Fugitive Dust					0.0203	0.0000	0.0203	8.1800e- 003	0.0000	8.1800e- 003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
Off-Road	0.0224	0.2592	0.1506	2.8000e- 004		0.0113	0.0113		0.0104	0.0104	0.0000	25.5322	25.5322	8.0800e- 003	0.0000	25.7342				
Total	0.0224	0.2592	0.1506	2.8000e- 004	0.0203	0.0113	0.0316	8.1800e- 003	0.0104	0.0186	0.0000	25.5322	25.5322	8.0800e- 003	0.0000	25.7342				

# 3.2 Grading - 2019

#### Mitigated Construction Off-Site

	ROG	NOx	со	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	MT/yr										
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.6000e- 004	1.4000e- 004	1.2400e- 003	0.0000	3.1000e- 004	0.0000	3.1000e- 004	8.0000e- 005	0.0000	8.0000e- 005	0.0000	0.2738	0.2738	1.0000e- 005	0.0000	0.2740
Total	1.6000e- 004	1.4000e- 004	1.2400e- 003	0.0000	3.1000e- 004	0.0000	3.1000e- 004	8.0000e- 005	0.0000	8.0000e- 005	0.0000	0.2738	0.2738	1.0000e- 005	0.0000	0.2740

3.3 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	СО	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e			
Category	tons/yr											MT/yr							
Off-Road	6.4500e- 003	0.0593	0.0462	8.0000e- 005		3.4300e- 003	3.4300e- 003		3.2200e- 003	3.2200e- 003	0.0000	7.1698	7.1698	1.8400e- 003	0.0000	7.2159			
Total	6.4500e- 003	0.0593	0.0462	8.0000e- 005		3.4300e- 003	3.4300e- 003		3.2200e- 003	3.2200e- 003	0.0000	7.1698	7.1698	1.8400e- 003	0.0000	7.2159			

### 3.3 Building Construction - 2019

### Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	MT/yr										
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

### Mitigated Construction On-Site

	ROG	NOx	СО	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e		
Category	tons/yr											MT/yr						
Off-Road	6.4500e- 003	0.0593	0.0462	8.0000e- 005		3.4300e- 003	3.4300e- 003		3.2200e- 003	3.2200e- 003	0.0000	7.1698	7.1698	1.8400e- 003	0.0000	7.2159		
Total	6.4500e- 003	0.0593	0.0462	8.0000e- 005		3.4300e- 003	3.4300e- 003		3.2200e- 003	3.2200e- 003	0.0000	7.1698	7.1698	1.8400e- 003	0.0000	7.2159		
## 3.3 Building Construction - 2019

## Mitigated Construction Off-Site

	ROG	NOx	со	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							МТ	'/yr		
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

3.4 Planting - 2020

Unmitigated Construction On-Site

	ROG	NOx	СО	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							МТ	/yr		
Fugitive Dust					0.0903	0.0000	0.0903	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0176	0.1858	0.0803	1.5000e- 004		9.2200e- 003	9.2200e- 003		8.4800e- 003	8.4800e- 003	0.0000	13.5305	13.5305	4.3800e- 003	0.0000	13.6399
Total	0.0176	0.1858	0.0803	1.5000e- 004	0.0903	9.2200e- 003	0.0996	0.0497	8.4800e- 003	0.0581	0.0000	13.5305	13.5305	4.3800e- 003	0.0000	13.6399

# 3.4 Planting - 2020

## Unmitigated Construction Off-Site

	ROG	NOx	со	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							МТ	/yr		
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4000e- 004	1.2000e- 004	1.1000e- 003	0.0000	3.1000e- 004	0.0000	3.1000e- 004	8.0000e- 005	0.0000	8.0000e- 005	0.0000	0.2652	0.2652	1.0000e- 005	0.0000	0.2654
Total	1.4000e- 004	1.2000e- 004	1.1000e- 003	0.0000	3.1000e- 004	0.0000	3.1000e- 004	8.0000e- 005	0.0000	8.0000e- 005	0.0000	0.2652	0.2652	1.0000e- 005	0.0000	0.2654

## Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							МТ	/yr		
Fugitive Dust			1		0.0407	0.0000	0.0407	0.0223	0.0000	0.0223	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0176	0.1858	0.0803	1.5000e- 004		9.2200e- 003	9.2200e- 003		8.4800e- 003	8.4800e- 003	0.0000	13.5305	13.5305	4.3800e- 003	0.0000	13.6399
Total	0.0176	0.1858	0.0803	1.5000e- 004	0.0407	9.2200e- 003	0.0499	0.0223	8.4800e- 003	0.0308	0.0000	13.5305	13.5305	4.3800e- 003	0.0000	13.6399

# 3.4 Planting - 2020

#### Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							МТ	/yr		
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4000e- 004	1.2000e- 004	1.1000e- 003	0.0000	3.1000e- 004	0.0000	3.1000e- 004	8.0000e- 005	0.0000	8.0000e- 005	0.0000	0.2652	0.2652	1.0000e- 005	0.0000	0.2654
Total	1.4000e- 004	1.2000e- 004	1.1000e- 003	0.0000	3.1000e- 004	0.0000	3.1000e- 004	8.0000e- 005	0.0000	8.0000e- 005	0.0000	0.2652	0.2652	1.0000e- 005	0.0000	0.2654

# 4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							MT	/yr		
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

## 4.2 Trip Summary Information

	Avei	rage Daily Trip Ra	ate	Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Recreational	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

## **4.3 Trip Type Information**

		Miles			Trip %			Trip Purpos	e %
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Recreational	14.70	6.60	6.60	0.00	0.00	0.00	0	0	0

# 4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Recreational	0.521064	0.037554	0.182203	0.139323	0.031591	0.007389	0.008554	0.063166	0.000942	0.001683	0.004985	0.000559	0.000987

# 5.0 Energy Detail

Historical Energy Use: N

Page 17 of 27

# Willow Bend - Colusa County, Annual

# 5.1 Mitigation Measures Energy

	ROG	NOx	СО	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							MT	/yr		
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated	,,	,	,			0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	 , , ,	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

# 5.2 Energy by Land Use - NaturalGas

## <u>Unmitigated</u>

	NaturalGa s Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr					ton	s/yr							MT	/yr		
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Page 18 of 27

# Willow Bend - Colusa County, Annual

# 5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGa s Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr					ton	s/yr							MT	/yr		
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	- - - -	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

# 5.3 Energy by Land Use - Electricity

<u>Unmitigated</u>

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr		МТ	/yr	
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

CalEEMod Version: CalEEMod.2016.3.2

Page 19 of 27

# Willow Bend - Colusa County, Annual

# 5.3 Energy by Land Use - Electricity <u>Mitigated</u>

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr		MT	/yr	
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

# 6.0 Area Detail

# 6.1 Mitigation Measures Area

	ROG	NOx	со	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr								МТ	/yr						
Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

## 6.2 Area by SubCategory

# <u>Unmitigated</u>

	ROG	NOx	СО	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory		tons/yr						MT/yr								
Architectural Coating	0.0000					0.0000	0.0000	1 1 1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

#### Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr					MT/yr										
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

7.0 Water Detail

# 7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category		MT	ī/yr	
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

# 7.2 Water by Land Use

# <u>Unmitigated</u>

	Indoor/Out door Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal		МТ	/yr	
User Defined Recreational	0/0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

Page 22 of 27

# Willow Bend - Colusa County, Annual

## 7.2 Water by Land Use

Mitigated

	Indoor/Out door Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal		МТ	/yr	
User Defined Recreational	0/0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

# 8.0 Waste Detail

# 8.1 Mitigation Measures Waste

# Category/Year

	Total CO2	CH4	N2O	CO2e
		МТ	/yr	
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

Page 23 of 27

# Willow Bend - Colusa County, Annual

## 8.2 Waste by Land Use

<u>Unmitigated</u>

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons		МТ	/yr	
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

#### Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons		МТ	/yr	
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

# 9.0 Operational Offroad

#### CalEEMod Version: CalEEMod.2016.3.2

#### Page 24 of 27

## Willow Bend - Colusa County, Annual

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
Excavators	1	8.00	15	158	0.38	Diesel
Graders	1	8.00	10	187	0.41	Diesel
Skid Steer Loaders	1	8.00	10	65	0.37	Diesel
Tractors/Loaders/Backhoes	1	8.00	10	97	0.37	Diesel

#### UnMitigated/Mitigated

	ROG	NOx	СО	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Equipment Type tons/yr				MT/yr												
Excavators	1.9600e- 003	0.0201	0.0245	4.0000e- 005		9.7000e- 004	9.7000e- 004		8.9000e- 004	8.9000e- 004	0.0000	3.4776	3.4776	1.1000e- 003	0.0000	3.5052
Graders	2.4300e- 003	0.0329	9.1900e- 003	3.0000e- 005		1.0600e- 003	1.0600e- 003		9.7000e- 004	9.7000e- 004	0.0000	2.9830	2.9830	9.4000e- 004	0.0000	3.0065
Skid Steer Loaders	4.2000e- 004	5.6300e- 003	6.9500e- 003	1.0000e- 005		2.6000e- 004	2.6000e- 004		2.4000e- 004	2.4000e- 004	0.0000	0.9281	0.9281	2.9000e- 004	0.0000	0.9355
Tractors/Loaders/ Backhoes	1.1600e- 003	0.0117	0.0115	2.0000e- 005		7.8000e- 004	7.8000e- 004		7.2000e- 004	7.2000e- 004	0.0000	1.3950	1.3950	4.4000e- 004	0.0000	1.4060
Total	5.9700e- 003	0.0703	0.0521	1.0000e- 004		3.0700e- 003	3.0700e- 003		2.8200e- 003	2.8200e- 003	0.0000	8.7837	8.7837	2.7700e- 003	0.0000	8.8532

# 10.0 Stationary Equipment

## Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

#### **Boilers**

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

Page 25 of 27

# Willow Bend - Colusa County, Annual

## User Defined Equipment

# 11.0 Vegetation

	Total CO2	CH4	N2O	CO2e
Category		M	IT	
Unmitigated	2,022.048 0	0.0000	0.0000	2,022.048 0

# 11.1 Vegetation Land Change

Vegetation Type

	Initial/Fina I	Total CO2	CH4	N2O	CO2e	
	Acres	МТ				
Grassland	28.47 / 28.47	0.0000	0.0000	0.0000	0.0000	
Total		0.0000	0.0000	0.0000	0.0000	

Page 26 of 27

# Willow Bend - Colusa County, Annual

# 11.2 Net New Trees

Species Class

	Number of Trees	Total CO2	CH4	N2O	CO2e	
		МТ				
Miscellaneous	2856	2,022.048 0	0.0000	0.0000	2,022.048 0	
Total		2,022.048 0	0.0000	0.0000	2,022.048 0	