Initial Study/Proposed Mitigated Negative Declaration

Phase II–RD 17 100-Year Levee Seepage Project

Prepared by:

EDAW
2022 J Street
Sacramento, CA 95811

June 2009

EDAW | AECOM

Initial Study/Proposed Mitigated Negative Declaration

Phase II–RD 17 100-Year Levee Seepage Project

Prepared for:

Reclamation District (RD) No. 17
c/o Nomellini, Grilli & McDaniel
235 E. Weber Avenue
Stockton, CA 95202

Attn: Dante John Nomellini
Secretary and Counsel for RD 17
(209) 465-5883

Prepared by:

EDAW
2022 J Street
Sacramento, CA 95811

Contact:

Sean Bechta
Project Manager
(916) 414-5800

June 2009

EDAW | AECOM

P 08110058.01
6.4.09

RECLAMATION DISTRICT NO. 17
235 East Weber Avenue (95202)
P. O. Box 1461
Stockton, California 95201

Telephone: (209) 465-5883
Facsimile: (209) 465-3956

TRUSTEES

Henry Long, President
Michael Robinson
Donald W. Widmer

SECRETARY AND COUNSEL
Dante John Nomellini

ENGINEER
Christopher H. Neudeck
Kjeldsen, Sinnock & Neudeck, Inc.

Date: June 4, 2009

To: Interested Parties

From: Christopher H. Neudeck, District Engineer, Civil Engineering Consultant to Reclamation District No. 17 (RD 17)

Subject: Notice of Intent to Consider Adoption of a Proposed Mitigated Negative Declaration for the Phase II – RD 17 100-Year Levee Seepage Project

Enclosed for your review is an Initial Study/Proposed Mitigated Negative Declaration (IS/MND) evaluating the potential environmental effects of the proposed Phase II – RD 17 100-Year Levee Seepage Project (Phase II Project). RD 17 has prepared this IS/MND in accordance with the requirements of the California Environmental Quality Act (CEQA) and the State CEQA Guidelines.

The Phase II Project addresses work needed at nine levee reaches along the east side of the San Joaquin River, starting near the southern boundary of the city of Stockton, through the city of Lathrop, and to the western boundary of the city of Manteca. At eight of the nine reaches, project activities would consist of construction of seepage berms along the landside levee toe. At one site, RD 17 would acquire an easement on land along the levee toe and perform various maintenance and site cleanup activities. Construction of seepage berms is needed to increase the RD 17 levee system's resistance to underseepage.

The IS/MND identifies potentially significant impacts related to: air quality, biological resources, cultural resources, soil erosion, water quality, hazardous materials handling, and noise. All impacts are reduced to less-than-significant levels with implementation of recommended mitigation measures.

The IS/MND is being circulated for public review and comment for a 30-day period beginning on June 4 and ending on July 6, 2009. The IS/MND is available for review during normal business hours at the offices of RD 17's legal counsel, Nomellini, Grilli & McDaniel, at 235 East Weber Avenue, Stockton, CA 95202. The IS/MND may also be reviewed at the Stockton–San Joaquin County Public Library's (SSJCPL's) Weston Ranch Branch Library, 1453 West French Camp Road, Stockton; the SSJCPL Lathrop Branch Library, 15461 7th Street, Lathrop; and electronically at http://www.ksninc.com/is-mnd. For questions regarding the IS/MND and documents referenced in the IS/MND, contact Sean Bechta at (916) 414-5800 or sean.bechta@edaw.com.

Please send written comments on the IS/MND to Christopher H. Neudeck, District Engineer, Civil Engineering Consultant to RD 17, Kjeldsen, Sinnock, and Neudeck Civil Engineers, 711 North Pershing Avenue, Stockton, CA 95203, fax (209) 946-0296. Comments may also be sent via e-mail to cneudeck@ksninc.com. For e-mailed comments, please include the project title in the subject line, attach comments in MS Word format, and include the commenter's U.S. Postal Service mailing address.

RD 17 intends to consider adoption of the MND at a meeting of its Board of Trustees at 9:00 a.m. on Friday, July 10 at 235 East Weber Avenue, Stockton. This meeting is open to the public.

PROPOSED MITIGATED NEGATIVE DECLARATION

PROJECT: Phase II – RD 17 100-Year Levee Seepage Project (Phase II Project)

LEAD AGENCY: Reclamation District No. 17 (RD 17)

AVAILABILITY OF DOCUMENTS: The initial study/proposed mitigated declaration (IS/MND) is available for review during normal business hours at the offices of RD 17's legal counsel, Nomellini, Grilli & McDaniel, at 235 East Weber Avenue, Stockton, CA 95202. The IS/MND may also be reviewed at the Stockton–San Joaquin County Public Library's (SSJCPL's) Weston Ranch Branch Library, 1453 West French Camp Road, Stockton; the SSJCPL Lathrop Branch Library, 15461 7th Street, Lathrop; and electronically at http://www.ksninc.com/is-mnd. For questions regarding the IS/MND and documents referenced in the IS/MND, contact Sean Bechta at (916) 414-5800 or sean.bechta@edaw.com.

PROJECT DESCRIPTION: The Phase II Project addresses work needed at nine levee reaches along the east side of the San Joaquin River, starting near the southern boundary of the city of Stockton, through the city of Lathrop, and to the western boundary of the city of Manteca. At eight of the nine reaches, project activities would consist of construction of seepage berms along the landside levee toe. At one site, RD 17 would acquire an easement on land along the levee toe and perform various maintenance and site cleanup activities. Construction of seepage berms is needed to increase the RD 17 levee system's resistance to underseepage.

FINDINGS: An initial study (IS) has been prepared to assess the proposed project's potential effects on the environment and the significance of those effects. Using the results of the IS, the proposed project would not have any significant effects on the environment once mitigation measures are implemented. This conclusion is supported by the following proposed findings:

- The project would result in no impacts to land use and planning, and population and housing.
- The project would result in no impacts and less-than-significant impacts related to aesthetics, agricultural resources, public services, utilities and service systems, and recreation.
- The project would result in less-than-significant impacts to mineral resources, and transportation and traffic.
- Mitigation would be implemented to reduce potentially significant impacts to less-than-significant levels for air quality (potential impacts related to short-term construction emissions), biological resources (potential impacts on special-status species and tree-nesting raptors), cultural resources (potential to disturb or damage undiscovered subsurface cultural resources or human remains during construction), geology and soils (potential soil erosion during construction), hazards and hazardous materials (potential spills of hazardous substances during construction), hydrology and water quality (potential soil erosion and spills of hazardous substances during construction), and noise (short-term noise impacts during construction).
- Although there are no known cultural resources that might be disturbed, mitigation is included to address the potential for discovering archaeological and/or human remains during the construction phase of the project.
- The project would not substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, reduce the number or restrict the range of a special-status species, or eliminate important examples of California history or prehistory.
- The project would not achieve short-term environmental goals to the disadvantage of long-term environmental goals.

- The project would not have environmental effects that are individually limited but cumulatively considerable.
- The project would not have environmental effects that would cause substantial adverse effects on human beings, either directly or indirectly.
- No substantial evidence exists that the project would have a significant negative or adverse effect on the environment.
- The project incorporates all applicable mitigation measures, as listed below and described in the IS.

The following mitigation measures will be implemented as part of the project to avoid or minimize potential environmental impacts. Implementation of these mitigation measures would reduce the potential environmental impacts of the proposed project to a less-than-significant level.

- Mitigation Measure AQ-1: Implement SJVAPCD's Recommended Emissions Reduction Measures.
- Mitigation Measure Bio-1: Maintain a Minimum 20-Foot Buffer Around Elderberry Shrubs.
- Mitigation Measure Bio-2: Conduct Preconstruction Surveys for Tree-Nesting Raptors.
- Mitigation Measure Bio-3: Minimize Potential Disturbance to Riparian Brush Rabbit.
- Mitigation Measure Cul-1: Immediately Halt Construction Activities if Any Cultural Materials Are Discovered.
- Mitigation Measure Cul-2: Immediately Halt Construction Activities if Any Human Remains Are Discovered.
- Mitigation Measure Haz-1: Prepare a Storm Water Pollution Prevention Plan and Comply with Other Applicable Regulations.
- Mitigation Measure Haz-2: Ensure that All Employees Handling Hazardous Materials are Trained in the Safe Handling and Storage of Hazardous Materials.
- Mitigation Measure Noise-1: Conduct Construction at Times Consistent with Local Noise Regulations.
- Mitigation Measure Noise-2: Maintain and Equip Construction Equipment with Noise Control Devices.
- Mitigation Measure Noise-3: Arrange Construction Equipment Travel to Minimize Disturbance to Occupied Residences and Limit Idling Times.
- Mitigation Measure Noise-4: Designate a Disturbance Coordinator to Receive All Public Complaints.

A copy of the IS/MND is attached. Comments regarding this IS/MND may be addressed to:

Christopher H. Neudeck
District Engineer, Civil Engineering Consultant to RD 17
Kjeldsen, Sinnock, and Neudeck Civil Engineers
711 N. Pershing Avenue, Stockton, CA 95203
fax (209) 946-0296
cneudeck@ksninc.com

TABLE OF CONTENTS

TABLE OF CONTENTS

Section **Page**

Exhibits

Tables

ACRONYMS AND ABBREVIATIONS

AB	Assembly Bill
ACE	Altamont Commuter Express
ADT	average daily traffic
APCO	air pollution control officer
AQAP	air quality attainment plans
ARB	California Air Resources Board
Basin Plan	Water Quality Control Plan for the Sacramento–San Joaquin River Basins
BMP	best management practices
Cal/EPA	California Environmental Protection Agency
Caltrans	California Department of Transportation
CCAA	California Clean Air Act
Central Valley RWQCB	Central Valley Regional Water Quality Control Board
CEQA	California Environmental Quality Act
cfs	cubic feet per second
CGS	California Geological Survey
CNDDB	California Natural Diversity Database
CNEL	Community Noise Equivalent Levels
CNPS	California Native Plant Society
CO	carbon monoxide
CO_2	carbon dioxide
County General Plan	San Joaquin County General Plan 2010
CRHR	California Register of Historical Resources
CWA	federal Clean Water Act
cy	cubic yard
dBA	A-weighted decibels
Delta	Sacramento–San Joaquin Delta
DFG	California Department of Fish and Game
DOC	California Department of Conservation
DTSC	California Department of Toxic Substance Control
DWR	California Department Of Water Resources
EC	electrical conductivity
EPA	U.S. Environmental Protection Agency
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Map
FMMP	Farmland Mapping and Monitoring Program
FTA	Federal Transit Administration
g	percentage of gravity
GHG	greenhouse gas
HRA	health risk assessments

I-5	Interstate 5
in/sec	inches per second
Ksat	Saturated hydraulic conductivity
Lathrop General Plan	Comprehensive General Plan for the City of Lathrop, California
L_{eq}	hourly average noise level
M	Richter Magnitude
MLD	Most Likely Descendant
MPN	Most Probable Number
MRZ	Mineral Resource Zones
msl	mean sea level
NAHC	Native American Heritage Commission
NO_2	nitrogen dioxide
NO_X	oxides of nitrogen
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
P-C	Production-Consumption
PCC	Portland cement concrete
Phase II Project	Reclamation District No. 17 Phase II 100-Year Levee Seepage Project
PM_{10}	respirable particulate matter with a diameter of 10 micrometers or less
$PM_{2.5}$	fine particulate matter
PPV	peak particle velocity
PRC	California Public Resources Code
RD 17	Reclamation District No. 17
ROG	reactive organic gases
SB	Senate Bill
SJMSCP	San Joaquin County Multi-Species Habitat Conservation and Open Space Plan
SJRTD	San Joaquin Regional Transit District
SJVAPCD	San Joaquin Valley Air Pollution Control District
SMARA	California Surface Mining and Reclamation Act
SO_2	sulfur dioxide
SOI	sphere-of-influence
SR	State Route
SWPPP	storm water pollution prevention plan
TAC	toxic air contaminants
TDS	total dissolved solids
TMDL	total maximum daily load
TPY	tons per year
UPRR	Union Pacific Railroad
USACE	U.S. Army Corps Of Engineers
USGS	U.S. Geological Survey
VdB	velocity level in decibels
VDE	visible dust emissions

1 INTRODUCTION

Reclamation District No. 17 (RD 17) has prepared this initial study/proposed mitigated negative declaration (IS/MND) in compliance with the California Environmental Quality Act (CEQA) to address the environmental consequences of the proposed Phase II – RD 17 100-Year Levee Seepage Project (proposed project) in San Joaquin County, California. RD 17 is the lead agency under CEQA and maintains the levees in the project area.

The Phase II – RD 17 100-Year Levee Seepage Project (Phase II Project) address work needed at nine levee reaches (or segments) along the east side of the San Joaquin River, starting near the southern boundary of the city of Stockton, through the city of Lathrop, and to the western boundary of the city of Manteca. At eight of the nine reaches, project activities would involve constructing seepage berms along the landside levee toe. At one site, RD 17 would acquire an easement on land along the levee toe and perform various maintenance and site cleanup activities. Proposed activities are described in detail in Chapter 2, "Project Description."

Construction of seepage berms is desired to increase the RD 17 levee system's resistance to underseepage. The levee segments in question (other than the section only requiring maintenance and site cleanup) currently do not provide seepage exit gradients less than 0.5 at the water surface elevation associated with the 100-year flood event. "Seepage exit gradient" is an expression in numeric form of the potential for underseepage to exit on the landside of a levee as seepage or a boil. The lower the number used to express seepage exit gradient, the more resistant the system is to seepage or boils; the higher the number, the more likely seepage or boils may occur during a high water event. In seepage exit gradient formulas, the numerator (top number in a fraction) typically addresses forces that cause or enhance seepage (e.g., water pressure), and the denominator typically addresses forces that resist seepage (e.g., soil resistance to water pressure, depth, and weight of soil over the potential seepage area, distance from the levee toe). A lower exit seepage gradient (i.e., more resistance to seepage) is achieved when the numerator (positive seepage forces) is reduced and/or the denominator (resistance to seepage) is increased.

Underseepage, resulting in underground erosion through levee foundation soils, or "piping," can lead to levee failure if not corrected. Although multiple projects, including those designed and constructed by the U.S. Army Corps of Engineers (USACE), have been completed over several decades to improve flood protection provided by RD 17 levees, and though for such projects the seepage exit gradients greater than 0.5 were deemed satisfactory by all agencies, the current preference of the California Department of Water Resources and the USACE is seepage exit gradients of less than 0.5. Construction of the proposed seepage berms is intended to provide seepage exit gradients of less than 0.5.

This document includes:

- an IS to satisfy CEQA requirements,
- an MND to satisfy CEQA requirements, and
- a notice of availability and intent to adopt an IS/MND for the proposed project.

After completion of the required public review of this document, RD 17 will consider adopting the MND and the mitigation monitoring and reporting program, and will decide whether to proceed with the proposed project.

1.1 PURPOSE OF THE INITIAL STUDY

This document is an IS/MND prepared in accordance with CEQA (Public Resources Code Section 21000 et seq.) and the State CEQA Guidelines (Title 14, Section 15000 et seq. of the California Code of Regulations). The purpose of this IS/MND is (1) to determine whether project implementation would result in potentially significant or significant effects on the environment, and (2) to incorporate mitigation measures into the project design, as necessary, to eliminate the project's potentially significant or significant project effects or reduce them to a less-

than-significant level. An IS/MND presents environmental analysis and substantial evidence in support of its conclusions regarding the significance of environmental impacts. Substantial evidence may include expert opinion based on facts, technical studies, or reasonable assumptions based on facts. An IS/MND is neither intended nor required to include the level of detail provided in an environmental impact report (EIR).

CEQA requires that all state and local government agencies consider the environmental consequences of projects they propose to carry out or over which they have discretionary authority, before implementing or approving those projects. As specified in Section 15367 of the State CEQA Guidelines, the public agency that has the principal responsibility for carrying out or approving a project is the lead agency for CEQA compliance. RD 17 has principal responsibility for carrying out the proposed project and is therefore the CEQA lead agency for this IS/MND.

As specified in Section 15064(a) of the State CEQA Guidelines, if there is substantial evidence (such as the findings of an IS) that a project, either individually or cumulatively, may have a significant effect on the environment, the lead agency must prepare an EIR. If the IS concludes that impacts would be less-than-significant, or that mitigation measures committed to by the applicant would clearly reduce impacts to a less-than-significant level, a negative declaration or mitigated negative declaration can be prepared.

RD 17 has prepared this IS to evaluate the potential environmental effects of the proposed project and has incorporated mitigation measures to reduce or eliminate any potentially significant project-related impacts. Therefore, an MND has been prepared for this project.

1.2 SUMMARY OF FINDINGS

Chapter 3 of this document contains the analysis and discussion of potential environmental impacts of the proposed project. Based on the issues evaluated in that chapter, it was determined that the proposed project would have no impact related to the following issue areas:

- land use and planning
- population and housing

The proposed project would result in less-than-significant impacts on the following issue areas:

- aesthetics
- agricultural resources
- mineral resources
- public services
- transportation and traffic
- utilities and service systems
- recreation

The proposed project would result in less-than-significant impacts *after* mitigation on the following issue areas:

- air quality
- biological resources
- cultural resources
- geology and soils
- hazards and hazardous materials
- hydrology and water quality
- noise

1.3 DOCUMENT ORGANIZATION

This document is divided into the following sections:

Notice of Availability and Intent to Consider Adoption of an IS/MND. The notice of availability and intent to consider adoption of an IS/MND provides notice to responsible and trustee agencies, interested parties, and organizations of the availability of this IS, as well as RD 17's intent to consider adopting an IS/MND for the proposed project.

MND. The MND, which precedes the IS analysis, summarizes the environmental conclusions and identifies mitigation measures that would be implemented in conjunction with the proposed project.

Chapter 1, "Introduction." This chapter provides a brief summary of the proposed project and describes the purpose of the IS/MND, provides a summary of findings, and describes the organization of this IS/MND.

Chapter 2, "Project Description." This chapter describes the purpose of and need for the proposed project, general background, and project elements.

Chapter 3, "Environmental Checklist." This chapter presents an analysis of environmental issues identified in the CEQA environmental checklist, and determines whether project implementation would result in no impact, a less-than-significant impact, a less-than-significant impact with mitigation incorporated, or a potentially significant impact on the environment in each of the issue areas. If any impacts are determined to be potentially significant, an EIR would be required. For this project, however, mitigation measures have been incorporated where needed, to reduce all potentially significant impacts to a less-than-significant level.

Chapter 4, "References." This chapter lists the references used in preparation of this IS/MND.

Chapter 5, "Preparers of the Environmental Document." This chapter identifies report preparers.

2 PROJECT DESCRIPTION

2.1 PROJECT LOCATION

The Reclamation District No. 17 (RD 17) Phase II 100-Year Levee Seepage Project (Phase II – RD 17 100-Year Levee Seepage Project) is located along the landside toe of the San Joaquin River east levee in San Joaquin County, California (Exhibit 2-1). Project activities are proposed along nine levee reaches (or segments) labeled Ic, Id, IVb, VIa2, VIa.3, VIa.4, VIIc, VIId, and VIIf (Exhibit 2-2). The northernmost reaches (Ic and Id) are located just south of the city of Stockton and the southernmost reaches (VIIc, VIId, and VIIf) are located in an area adjacent to the southwest edge of the Manteca city limit. These reaches are located in unincorporated San Joaquin County, with the remaining four reaches (IVb, VIa.2, VIa.3, and VIa.4) located in the city of Lathrop.

2.2 BACKGROUND AND PURPOSE

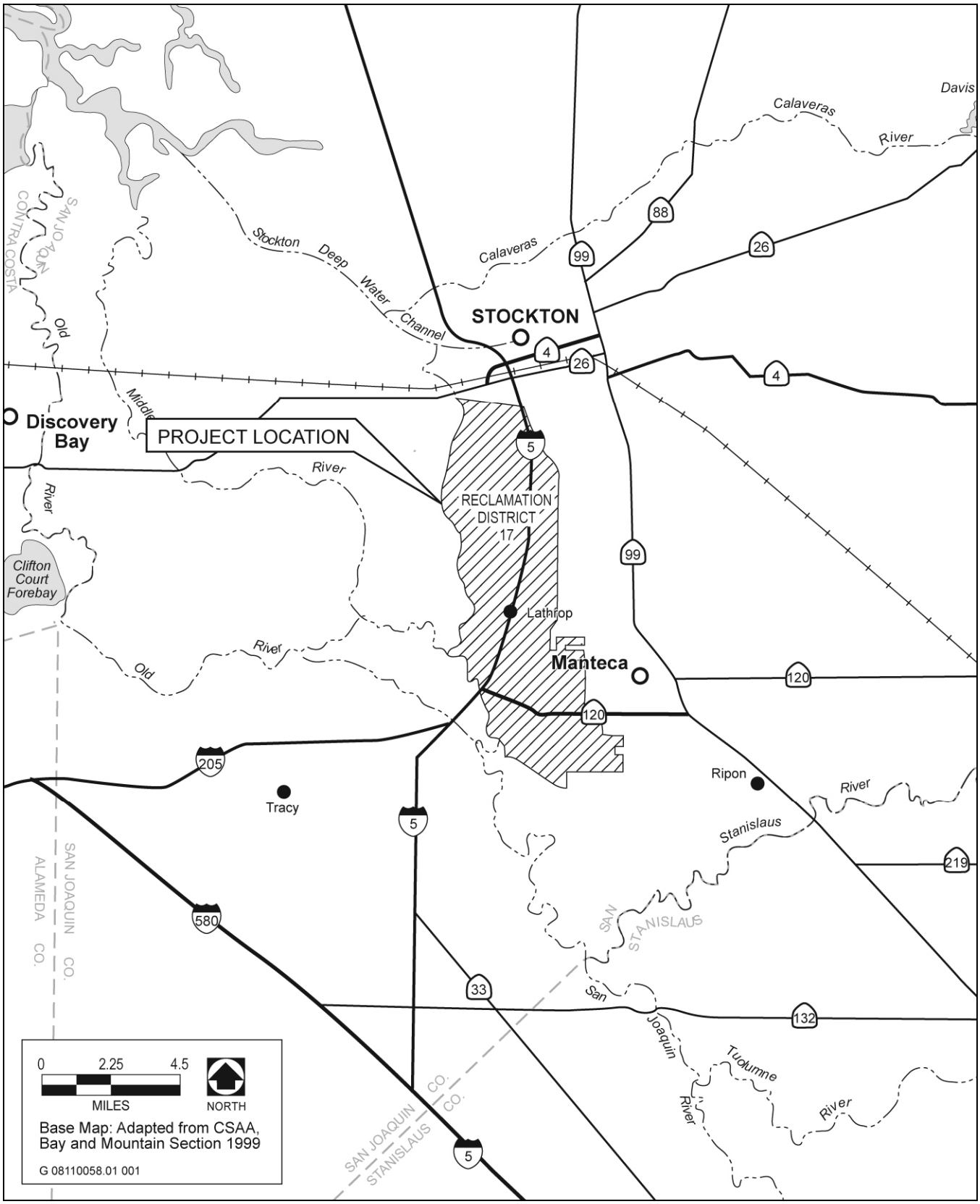
Some of the levees within the Sacramento–San Joaquin Delta are considered "federal project levees." These levees were constructed or reconstructed by the U.S. Army Corps of Engineers (USACE) and are intended to meet federal standards. Construction of the federal levee system that encompasses the current RD 17 levees was initiated in 1944 and was completed in 1963. Since that time, the levee system has been substantially upgraded to meet Federal Emergency Management Agency (FEMA) requirements for flood protection during a 100-year flood event. In 1990, the RD 17 levees were, after extensive analysis, accredited by FEMA as meeting the 100-year requirements for Urban Development. Such analysis included seepage exit gradients shown to be greater than 0.5. As stated in Chapter 1, "Introduction," seepage exit gradient is an expression in numeric form of the potential for underseepage to exit on the landside of a levee as seepage or a boil. The lower the number used to express seepage exit gradient, the more resistant the system is to seepage or boils; the higher the number, the more likely seepage or boils may occur during a high water event. In seepage exit gradient formulas, the numerator (top number in a fraction) typically addresses forces that cause or enhance seepage (e.g., water pressure), and the denominator typically addresses forces that resist seepage (e.g., soil resistance to water pressure, depth and weight of soil over the potential seepage area, distance from the levee toe). A lower exit seepage gradient (i.e., more resistance to seepage) is achieved when the numerator (positive seepage forces) is reduced and/or the denominator (resistance to seepage) is increased.

Underseepage in RD 17 only occurs during high-water events when increased water pressure forces water through relatively porous soils under the levee. The water may then surface on the landside of the levee in the form of "boils." If water passes under a levee at a high enough rate, it can carry levee foundation soils to the landside surface. As a result, underground erosion through levee foundation soils or "piping" may occur, which can lead to levee failure if not corrected.

During a high-water event on the San Joaquin River in January of 1997, seepage and boils occurred at a number of locations along the RD 17 levees. The USACE, the California Department of Water Resources (DWR), and RD 17 actively and successfully contained the seepage and boils and no levee failures occurred. After the 1997 event, USACE, the Reclamation Board (now the Central Valley Flood Protection Board), and RD 17 funded a project to repair the seepage and boil areas. The project was constructed by USACE, with work completed in 2003.

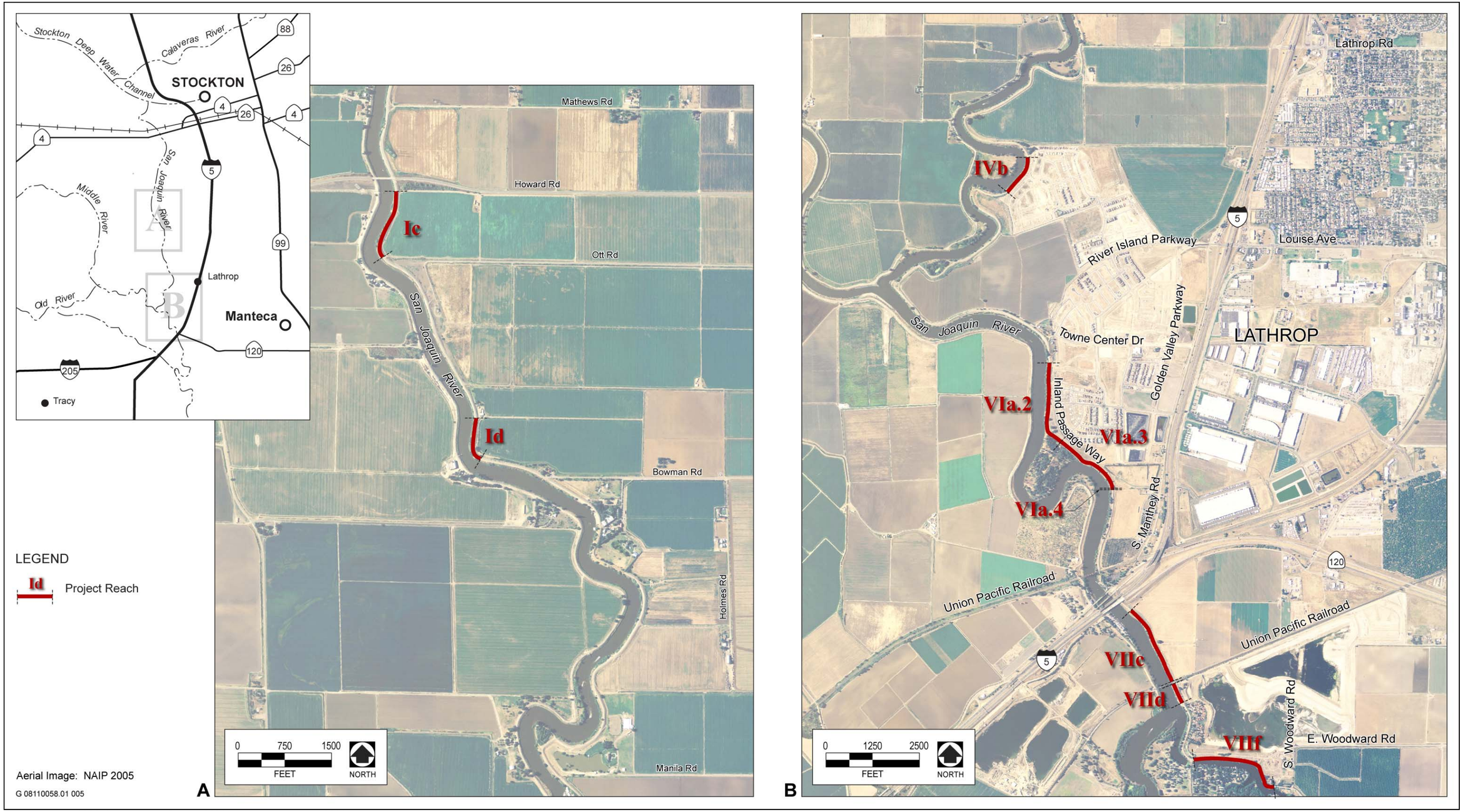
In 2006, FEMA began a comprehensive Flood Insurance Rate Map (FIRM) update, referred to as the Map Modernization Program. The new FIRMs are to be digitized and will replace existing paper maps. They will provide updated flood insurance rate zones and more reliable and accurate flood hazard information.

The Map Modernization process has been described by FEMA to RD 17 not as constituting a re-evaluation process but instead as a digitizing effort with simple recognition of "fatal flaws." After review of the data supporting the 1990 accreditation and subsequent information, FEMA stated its intention to RD 17 to confirm full



Source: Adapted by EDAW 2008

Reclamation District 17 Vicinity Map **Exhibit 2-1**



Source: Engeo 2008, MacKay and Somps 2009, Adapted by EDAW 2009

Project Levee Reaches

Exhibit 2-2

accreditation of the RD 17 levees as meeting the 100-year FEMA requirements. On June 19, 2007, DWR wrote the City of Lathrop with copy to FEMA, stating that it could not support re-certification of the RD 17 levees or the granting of provisional accreditation. A provisionally accredited levee, or PAL, is a levee that FEMA has previously credited with providing 100-year flood protection; however, FEMA is awaiting data or documentation that will show the levee's compliance with applicable standards and regulations. The basis of the DWR concern was analysis showing seepage exit gradients greater than 0.5. As a result, FEMA denied full accreditation and instead granted provisional accreditation until August 23, 2009.

The purpose of the proposed project is to construct seepage berms at eight of the nine reaches along the San Joaquin River east levee, to increase the levee's resistance to underseepage in these locations and provide seepage exit gradients of less than 0.5 at the water surface elevation associated with the 100-year flood event. One levee segment, Reach VIId, does not require a seepage berm, but is included for various maintenance and "clean-up" activities, as described below.

2.3 PROJECT DESCRIPTION

The following discussion first describes activities proposed at each of the nine project reaches, as well as the characteristics and function of a seepage berm. This is followed by a description of construction methods and other elements that apply consistently across multiple project reaches or to the project as a whole.

2.3.1 PROPOSED ACTIVITIES AT EACH PROJECT REACH

Of the nine project reaches, eight are proposed for installation of a seepage berm to control underseepage potential and one is proposed for various cleanup and maintenance activities. In the simplest terms, a seepage berm is a layer of compacted soil used to retain water below the ground surface that may seep under a levee during a high-water event. As described above in Section 2.2, "Background and Purpose," during a high-water event, water pressure may be sufficient to force water through porous soils under a levee, and that water may emerge on the land side of the levee as seepage or boils. If boils carry levee foundation soils to the ground surface, this underground erosion or "piping" may eventually remove sufficient soil under the levee to cause the levee to be unstable and fail. The compacted nature of seepage berm soils allows the berm to act as a cap, retaining water below the ground surface and preventing boils and piping. Even without compaction of the berm soil, the weight and added soil depth of a seepage berm contribute to retaining seepage water below the berm and preventing boils and piping. The width of a seepage berm and the depth of soil in the berm are dependent on the porosity of the underlying soil and the amount of pressure pushing water under the levee and through the soil. The higher the water pressure and the more porous the soil, the wider and/or deeper the seepage berm must be to prevent boils.

All seepage berms included in the proposed project would be approximately 4–6 feet deep (i.e., approximately 4-6 feet of compacted soil would be placed above the current ground surface).

Among the reaches proposed for a seepage berm, the length, width, and surface area of the berm and amount of soil required to construct the berm would vary. Some berms would also include a toe drain. A toe drain is placed within a seepage berm and acts as a mechanism to safely collect and channel away water that may saturate seepage berm soils. Table 2-1 provides a brief summary of the activities proposed at each project reach, as well as information on the existing use. A separate discussion of each reach below provides more detail on the characteristics and proposed activities at that reach.

REACH IC

Reach Ic is the northernmost segment in the project area and is bordered by Howard Road to the north and Ott Road to the south (Exhibit 2-2). This reach is approximately 1,070 feet long and constitutes the western edge of an agricultural field used to grow row crops and alfalfa. Project activities would consist of constructing an approximately 65-foot wide seepage berm that would require approximately 14,000 cubic yards (cy) of fill

Table 2-1
Summary of Proposed Activities and Characteristics at Each Project Reach

Project Reach	Reach Length	Proposed Repair Activity	Disturbance Surface Area	Existing Use
Ic	Approximately 1,070 feet	Construction of a 65' seepage berm and placement of approximately 14,000 cy[1] of fill material	Approximately 1.6 acres	Agriculture—row crops and alfalfa
Id	Approximately 1,140 feet	Construction of a 65'–75' seepage berm and placement of approximately 16,000 cy of fill material	Approximately 1.8 acres	Partially an existing seepage berm Partially agriculture—row crops and alfalfa
IVb	Approximately 1,260 feet	Construction of a 65' seepage berm with toe drain[2] and placement of approximately 15,000 cy of fill material	Approximately 1.9 acres	Lathrop city park, corridor park
VIa.2	Approximately 2,500	Construction of an 80' seepage berm with toe drain and placement of approximately 30,000 cy of fill material	Approximately 4.6 acres	Lathrop city park, corridor park
VIa.3	Approximately 1,890 feet	Construction of a 65' seepage berm with toe drain and placement of approximately 23,000 cy of fill material	Approximately 2.8 acres	Vacant strip between levee toe and adjacent residential; ruderal vegetation Planned as a city corridor park
VIa.4	Approximately 10 feet	Construction of a 65' seepage berm with toe drain and placement of approximately 120 cy of fill material	Approximately 0.015 acre	Vacant strip between levee toe and adjacent residential development; ruderal vegetation
VIIc	Approximately 2,140 feet	Construction of a 65' seepage berm and placement of approximately 26,000 cy of fill material	Approximately 3.2 acres	Agriculture—row crops and alfalfa
VIId	Approximately 570 feet	Easement acquisition and levee maintenance with placement of no fill	Less than 1 acre	Vacant; annual grassland and ruderal vegetation
VIIf	Approximately 2,500 feet	Construction of an 80' seepage berm with toe drain and placement of approximately 30,000 cy of fill material	Approximately 4.6 acres	Undeveloped residential lots; graded, utility "stub-outs" present; no structures or foundations

Notes:
[1] cy = cubic yards
[2] toe drain = Space for the toe drain is included in the seepage berm widths shown for each project element.
Source: Data compiled by EDAW in 2009

material. The total surface area of the seepage berm would be approximately 1.6 acres. After construction, the seepage berm would be planted with a seed mix to control erosion and would be available for cultivation of shallow-rooted crops or other agricultural uses (e.g., storage of farm equipment) that would not conflict with the flood-control function of the berm.

REACH ID

Reach Id is located approximately 3,000 feet south of Reach Ic and just north of Bowman Road (Exhibit 2-2). This segment is approximately 1,140 feet long. A seepage berm, which supports annual grassland and ruderal vegetation. already exists at this location. This berm would be widened and deepened as part of the proposed project. The remainder of the project footprint in this area consists of the western edge of an agricultural field

used to grow row crops and alfalfa. Project activities would consist of constructing an approximately 65- to 75-foot-wide seepage berm that would require approximately 16,000 cy of fill material. The total surface area of the seepage berm would be approximately 1.8 acres. After construction, the seepage berm would be planted with a seed mix to control erosion and would be available for cultivation of shallow-rooted crops or other agricultural uses (e.g., storage of farm equipment) that would not conflict with the flood-control function of the berm.

REACH IVb

Reach IVb is located in Lathrop, adjacent to Lathrop Road where it parallels the San Joaquin River (Exhibit 2-2). This segment is approximately 1,260 feet long and overlaps a recently developed City of Lathrop corridor park. The park consists of turf grasses, recently planted ornamental trees, and a paved walkway. Project activities would consist of constructing an approximately 65-foot-wide seepage berm, with a toe drain, and would require approximately 15,000 cy of fill material. The total surface area of the seepage berm would be approximately 1.9 acres. The existing corridor park would be removed during project construction and then replaced on top of and immediately adjacent to the seepage berm, once the berm is completed.

REACH VIa.2

Reach VIa.2 is located in Lathrop, between Inland Passage Way and the San Joaquin River levee (Exhibit 2-2). This segment is approximately 2,500 feet long and overlaps a recently developed City of Lathrop corridor park. The park consists of turf grasses, recently planted ornamental trees, a fenced dog park area, a paved walkway, and various pieces of park furniture (e.g., benches, picnic tables). Several mature oak trees that were retained during park development are also present on the site. Project activities would consist of constructing an approximately 80-foot-wide seepage berm, with a toe drain, and would require approximately 30,000 cy of fill material. The total surface area of the seepage berm would be approximately 4.6 acres. The existing corridor park and associated facilities would be removed during project construction and then replaced on top of and immediately adjacent to the seepage berm, once the berm is completed. Any existing mature oak trees located in the seepage berm footprint would be removed before construction of the berm. Part of the landscaping plan for the proposed replacement park is the planting of large shade tree species between Inland Passage Way and the eastern edge of the seepage berm.

REACH VIa.3

Reach VIa.3 is located in Lathrop, immediately south of Reach VIa.2, between Inland Passage Way and the San Joaquin River levee (Exhibit 2-2). This segment is approximately 1,890 feet long and consists of undeveloped land with annual grassland and ruderal vegetation. The City of Lathrop plans to develop the site as a corridor park. Project activities would consist of constructing an approximately 65-foot-wide seepage berm, with a toe drain, and would require approximately 23,000 cy of fill material. The total surface area of the seepage berm would be approximately 2.8 acres. After the berm is completed, the site would be available for development of the City's planned corridor park on top of and immediately adjacent to the seepage berm.

REACH VIa.4

Reach VIa.4 is located in Lathrop, immediately south of Reach VIa.3, between Inland Passage Way and the San Joaquin River levee (Exhibit 2-2). This segment is approximately 10 feet long and in many respects can be considered a small extension of Reach VIa.3. The site consists of undeveloped land with annual grassland and ruderal vegetation. Project activities would consist of constructing an approximately 65-foot-wide seepage berm, with a toe drain, and would require approximately 120 cy of fill material. The total surface area of the seepage berm would be approximately 0.015 acre. After the berm is completed, the site would be available for continued development of the City's planned corridor park in Reach VIa.3 or would be planted with a seed mix of annual grassland and ruderal species to control erosion.

REACH VIIc

Reach VIIc is located south of the Interstate 5 (I-5) crossing of the San Joaquin River and north of a Union Pacific Railroad (UPRR) river crossing (Exhibit 2-2). The Reach is approximately 2,140 feet long and constitutes the western edge of an agricultural field used to grow row crops and alfalfa. Project activities would consist of constructing an approximately 65-foot-wide seepage berm and would require approximately 26,000 cy of fill material. The total surface area of the seepage berm would be approximately 3.2 acres. After construction, the seepage berm would be planted with a seed mix to control erosion and would be available for cultivation of shallow-rooted crops or other agricultural uses (e.g., storage of farm equipment) that would not conflict with the flood-control function of the berm. One mature valley oak located in the middle of this reach would likely need to be removed before construction of the berm.

REACH VIId

Reach VIId is immediately across from the UPRR tracks that create the southern boundary of Reach VIIc (Exhibit 2-2). The UPRR tracks provide the northern boundary of Reach VIId and a small number of existing homes create the southern boundary. To the east are two artificial lakes surrounded by a partially completed residential development. This segment is approximately 570 feet long and consists of undeveloped land with annual grassland and ruderal vegetation. Project plans in this reach consist of RD 17 acquiring an access easement and conducting various maintenance activities, including minor site grading, removal of trash and debris, hydro-seeding, and reconstruction of an access ramp. No seepage berm construction is proposed for this site. Cleanup and maintenance activities would involve less than 1 acre, and after completion of the proposed activities, the site would continue as an undeveloped strip of annual grassland and ruderal vegetation. It is not known at this time whether four to five small to midsize valley oaks on the site would be removed.

REACH VIIf

Reach VIIf is located approximately 1,800 feet south of Reach VIId, between the San Joaquin River levee and an artificial lake to the north (Exhibit 2-2). The site overlaps a series of 44 undeveloped residential lots and two additional undeveloped lots (one intended for a park and one to provide levee access) within a larger, primarily undeveloped residential project surrounding the two artificial lakes in the area. No structures are within this segment, but the residential lots have been graded and utility "stub-outs" are visible. The site is highly disturbed and has only sparse ruderal vegetation. Reach VIIf is approximately 2,500 feet long. Project activities would consist of constructing an approximately 80-foot-wide seepage berm, with a toe drain, and would require approximately 30,000 cy of fill material. The total surface area of the seepage berm would be approximately 4.6 acres. RD 17 would purchase the residential lots where seepage berm would be constructed, and after the berm is completed the lots would no longer be available for construction of homes or other structures. The seepage berm would initially be stabilized with a seed mix to control erosion. RD 17 would coordinate with the owner of the surrounding residential development regarding potential placement of park or open space uses on the berm.

2.3.2 PROJECT TIMING AND GENERAL CONSTRUCTION METHODS

Construction of the Phase II – RD 17 100-Year Levee Seepage Project is scheduled to begin August 2009 and be completed no later than December 2009. Ideally, construction of each segment would occur sequentially; however, given schedule constraints, weather concerns, and other factors, concurrent construction at up to three reaches at a time may be required. Work would occur Monday through Saturday, with no nighttime construction. Construction equipment typically associated with earthmoving operations, such as dump trucks for delivery of fill, dozers, and compacters, would be used. All fill would be purchased from commercial sources. RD 17 will not be developing borrow sites as a source of fill.

3 ENVIRONMENTAL CHECKLIST

PROJECT INFORMATION		
1.	Project Title:	Phase II – RD 17 100-Year Levee Seepage Project
2.	Lead Agency Name and Address:	Reclamation District (RD) No. 17, c/o Nomellini, Grilli, & McDaniel, 235 E. Weber Avenue, Stockton, CA 95202
3.	Contact Person and Phone Number:	Dante John Nomellini, Secretary and Counsel for RD 17, (209) 465-5883
4.	Project Location:	Along the landside of the east bank levee of the San Joaquin River, adjacent to and/or near the cities of Stockton, Lathrop, and Manteca
5.	Project Sponsor's Name and Address:	Reclamation District (RD) No. 17, c/o Nomellini, Grilli, & McDaniel, 235 E. Weber Avenue, Stockton, CA 95202
6.	General Plan Designation:	Open Space, Neighborhood Park, Open Space/Resource Conservation, Medium- and Low-Density Residential
7.	Zoning:	General Agriculture, Medium- and Low-Density Residential, Open Space/Public, Open Space
8.	Description of Project: (Describe the whole action involved, including but not limited to later phases of the project, and any secondary, support, or off-site features necessary for its implementation. Attach additional sheets if necessary.) The proposed project addresses work needed at of nine levee reaches (or segments) along the landside of the east bank levee of the San Joaquin River, starting near the southern boundary of the city of Stockton, through the city of Lathrop, and to the western boundary of the city of Manteca. At eight of the nine reaches, project activities would involve constructing seepage berms along the landside levee toe. At one site, acquisition of an easement on land along the levee toe would be required to perform various maintenance and site cleanup activities. Construction of seepage berms is needed to increase the RD 17 levee system's resistance to underseepage.	
9.	Surrounding Land Uses and Setting: (Briefly describe the project's surroundings)	Existing San Joaquin River levee along the west side of the project reaches; agricultural land, developed parkway and residential uses, vacant land, and undeveloped residential lots along the east side of the project reaches.
10:	Other public agencies whose approval is required: (e.g., permits, financing approval, or participation agreement)	City of Lathrop, Regional Water Quality Control Board, San Joaquin Valley Air Pollution Control District

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

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

☐	Aesthetics	☐	Agriculture Resources	☒	Air Quality
☒	Biological Resources	☒	Cultural Resources	☒	Geology / Soils
☒	Hazards & Hazardous Materials	☒	Hydrology / Water Quality	☐	Land Use / Planning
☐	Mineral Resources	☒	Noise	☐	Population / Housing
☐	Public Services	☐	Recreation	☐	Transportation / Traffic
☐	Utilities / Service Systems	☐	Mandatory Findings of Significance	☐	None With Mitigation

DETERMINATION (To be completed by the Lead Agency)

On the basis of this initial evaluation:

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

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. ☐

Signature	Date
Printed Name	Title
Reclamation District No. 17	
Agency	

EVALUATION OF ENVIRONMENTAL IMPACTS

1. A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

2. All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

3. Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

4. "Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from "Earlier Analyses," as described in (5) below, may be cross-referenced).

5. Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:

   a) Earlier Analysis Used. Identify and state where they are available for review.

   b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.

   c) Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6. Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.

7. Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.

8. This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.

9. The explanation of each issue should identify:
   the significance criteria or threshold, if any, used to evaluate each question; and
   the mitigation measure identified, if any, to reduce the impact to less than significance.

3.1 AESTHETICS

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

This section describes the visual character of existing views in the project vicinity and evaluates potential effects of the proposed project on those views.

ENVIRONMENTAL SETTING

The project area consists of nine levee reaches (or segments) along the east side of the San Joaquin River, starting near the southern boundary of the city of Stockton, through the city of Lathrop, and into the unincorporated portion of San Joaquin County between Lathrop and the city of Manteca. At eight of the nine segments, project activities would involve constructing or expanding seepage berms along the landside levee toe. At one segment (VIId), Reclamation District No. 17 would acquire an easement on land along the levee toe and perform various maintenance and site cleanup activities; no seepage berm would be constructed along this reach. Although close-in views of all nine segments include the San Joaquin River, the visual character of the project area varies from agricultural land east and west of the river (Reaches Ic and Id), to small areas of grassland or corridor parkland (Reaches IVb, VIa.2, VIa.3, and VIa.4), to the occasional farm residence and related structures often set among trees and landscape vegetation. Intermittent reaches of riparian trees line both sides of the river, with extended gaps along some stretches, complemented by sparsely situated clusters of trees, all of which lend visual contrast to the relatively flat landscape characteristic of the Central Valley. Residential developments, with occasional vacant strips of land and some ruderal vegetation, are adjacent to the east side of the river at four of the segments (IVb, VIa.2, VIa.3, and VIa.4), with undeveloped residential lots and utility "stub-outs" on graded land occupying the southernmost reach (VIIf). Except where developed residential neighborhoods afford residents close views of the river and adjacent structures and vegetation, views of the berms to be constructed or enhanced would be from some distance for a vast majority of the viewers. Viewers would include area residents and those using the sparsely traveled rural roads that run perpendicular (east to west) to the river or the occasional road that crosses the river. Relatively few private residences are located in the immediate vicinity of the three segments that are primarily agricultural (Ic, Id, and VIIc); however, those residents would have close-in views of the proposed berms.

The specific visual setting of each of the nine reaches is described below.

Reach Ic

The site of the proposed seepage berm in Reach Ic is cultivated in row crops or alfalfa (Exhibit 3.1-1, Image A). The site is bordered by Howard Road to the north (with a bridge over the San Joaquin River) and Ott Road to the south (a rural road that ends before reaching the river), with the San Joaquin River levee immediately to the west. A sparse row of trees and minimal vegetation lie between the levee and the river itself. A single-family residence is situated on the west side of the river.

Reach Id

An existing seepage berm is located along the levee toe in Reach Id and supports annual grasses (Exhibit 3.1-1, Image B). No roads cross the river near this site, which is primarily agricultural. The proposed seepage berm would extend beyond the existing berm and into an agricultural field that is cultivated in row crops or alfalfa. To the west lies the San Joaquin River levee, with a row of trees and minimal vegetation between the levee and the river itself.

Reach IVb

The project site in Reach IVb contains a recently developed City of Lathrop park planted with turf grasses and ornamental trees (Exhibit 3.1-2, Image A). This corridor park is situated between the landside toe of the levee and a residential street, with a housing development just to the east. To the west lies the San Joaquin River levee, with a row of trees and minimal vegetation between the levee and the river itself.

Reach VIa.2

The project site in Reach VIa.2 contains a recently developed City of Lathrop park, including a dog park, planted in turf grasses and ornamental trees (Exhibit 3.1-2, Image B). This corridor park is situated between the landside toe of the levee and a residential street and housing development just to the east. The park also contains several scattered mature valley oaks that were retained as the park was developed. To the west lies the San Joaquin River levee, with a row of trees and minimal vegetation between the levee and the river itself.

Reach VIa.3

The project site in Reach VIa.3 contains annual grassland and ruderal vegetation in a strip of open space between the levee toe and an adjacent residential development to the northeast (Exhibit 3.1-3, Image A). The site is planned for development by the City of Lathrop as a corridor park, which would occur on top of the proposed seepage berm after it is constructed. To the west lies the San Joaquin River levee, with a riparian habitat preserve area just beyond the levee.

Reach VIa.4

The project site in Reach VIa.4 contains annual grassland and ruderal vegetation in a strip of open space between the levee toe and adjacent residential development to the east (Exhibit 3.1-3, Image B). A residential street borders the site, and immediately to the southeast is an agricultural field. To the west lies the San Joaquin River levee, with a row of trees and minimal vegetation between the levee and the river itself.

Reach VIIc

The site for the proposed seepage berm in Reach VIIc is cultivated in row crops or alfalfa (Exhibit 3.1-4, Image A). Interstate 5 (I-5) is located north of this segment, and Union Pacific Railroad (UPRR) tracks are located to the south. There is a single mature valley oak on the project site. To the west lies the San Joaquin River levee, with a few trees and minimal vegetation between the levee and the river itself.

Reach VIId

The project site in Reach VIId contains annual grassland and ruderal vegetation in a strip of open space between the levee toe and an adjacent artificial lake to the east (Exhibit 3.1-4, Image B). The site also contains four to five small to midsize valley oaks. A small residential development is located to the south, and UPRR tracks run north of this site. To the west lies the San Joaquin River levee, with scattered trees and minimal vegetation between the levee and the river itself.

Reach VIIf

The project site in Reach VIIf overlaps with a series of undeveloped residential lots within a larger, primarily undeveloped residential project surrounding the two artificial lakes in the area. No structures are within this segment, but the residential lots have been graded (Exhibit 3.1-5, Image A) and utility "stub-outs" are visible. The site is highly disturbed and has only sparse ruderal vegetation. To the north is a paved roadway and additional undeveloped residential lots. To the south lies the San Joaquin River levee, with an intermittent row of trees and minimal vegetation between the levee and the river itself.

DISCUSSION

a) Have a substantial adverse effect on a scenic vista?

No Impact. A scenic vista is generally considered a view of an area that has remarkable scenery or a natural or cultural resource indigenous to the area. Even though what constitutes a scenic vista involves some measure of subjective judgment on the part of viewers, none of the nine reaches provides views of remarkable landscape elements that create what is commonly understood to be a scenic vista. The combination of existing visual elements—agricultural fields, the existing levee and berms, individual private residences and residential developments, farm structures, and sparse rows of trees and minimal vegetation that line the banks of the San Joaquin River—creates a somewhat compartmentalized landscape of mixed uses and elements common to residential areas that abut agricultural enterprises. In addition, because postproject conditions would not be significantly different from existing conditions, the scenic quality of the landscape would remain essentially the same. Thus, implementation of the proposed project would not adversely affect a scenic vista and no impact would occur.

b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

No Impact. No designated or eligible state scenic highways are located in the project vicinity (California Department of Transportation 2009). Therefore, no impact would occur.

c) Substantially degrade the existing visual character or quality of the site and its surroundings?

Less-than-Significant Impact. This impact mechanism is analyzed below for each segment of the project area.

Reach Ic

Implementation of the proposed project would involve constructing a 65-foot seepage berm and placing approximately 14,000 cubic yards (cy) of fill material on approximately 1.6 acres of agricultural land along Reach Ic. Construction of the proposed seepage berm would entail the short-term and temporary presence of earthmoving equipment at the site, which would be viewed by a very small number of residents, motorists traveling along Howard Road to the north, and agricultural workers. This short-term and temporary effect is not considered a substantial degradation of the existing visual character of the site.

Once the proposed seepage berm is complete, the berm itself would not significantly alter the visual character or quality of the site. The berm would remain well below the top elevation of the adjacent levee, would be planted with a seed mix to control erosion and appear as annual grassland habitat, would be cultivated with shallow-rooted crops that would not affect the flood-control function of the berm, or could serve as a parking or storage area for agricultural equipment. In any of these situations, the berm would visually integrate with the current agricultural uses to the east and the levee to the west. The current visual character of the site and surroundings would not change significantly. Thus, construction of the seepage berm along Reach Ic would not substantially degrade the existing visual character or quality of the site and its surroundings.

Reach Id

Implementation of the proposed project would involve expanding the existing seepage berm along Reach Id to a length of 65–75 feet by placing approximately 16,000 cy of fill material. The expanded seepage berm would cover approximately 1.8 acres. The existing berm, located along the levee toe immediately to the west, supports annual grasses. The expansion would extend the berm into an agricultural field cultivated in row crops or alfalfa. Constructing the proposed expansion would entail the temporary presence of earthmoving equipment at the site, which would be viewed by a very small number of residents and agricultural workers. This short-term and temporary effect is not considered a substantial degradation of the existing visual character of the site.

Once the proposed seepage berm is complete, the berm itself would not significantly alter the visual character or quality of the site. The berm would remain well below the top elevation of the existing levee, would be planted with a seed mix to control erosion and appear as annual grassland habitat, would be cultivated with shallow-rooted crops that would not affect the flood-control function of the berm, or could serve as a parking or storage area for agricultural equipment. In any of these situations, the berm would visually integrate with the current agricultural uses to the east and the levee to the west. The current visual character of the site and surroundings would not change significantly. Thus, construction of the seepage berm along Reach Id would not substantially degrade the existing visual character or quality of the site and its surroundings.

Reach IVb

Project implementation along Reach IVb would involve constructing a 65-foot seepage berm, including a toe drain, by placing approximately 15,000 cy of fill material. The proposed seepage berm would cover approximately 1.9 acres. Construction of the seepage berm would require temporarily removing an existing corridor park on the project site. The corridor park was recently constructed and no mature trees exist on the site. Although a residential street and single-family homes are located just to the east, raising the potential for the park's removal to adversely affect residential viewers, generally considered to be among the most sensitive viewer groups, the park's temporary removal could adversely affect residential viewers. However, the existing park would be restored on top of the seepage berm after construction is complete. Therefore, after construction is complete, the visual character of the site would not differ substantially from existing conditions.

The use of earthmoving equipment during project implementation would have a temporary impact on the views afforded nearby residents and passersby, but the relatively brief construction time frame would have no lasting impact on the visual character or quality of the site or the semi-urban landscape. Thus, construction of the seepage berm along Reach IVb would not substantially degrade the existing visual character or quality of the site and its surroundings.

Reach VIa.2

Project implementation along Reach VIa.2 would involve constructing an 80-foot seepage berm, including a toe drain, by placing approximately 30,000 cy of fill material. The proposed seepage berm would cover approximately 4.6 acres. Construction of the seepage berm would require temporarily removing an existing corridor park and associated dog park on the project site. Although a residential street and residential development

are located just to the east, raising the potential for the park's temporary removal to adversely affect residential viewers, the existing park would be restored on top of the seepage berm after construction is complete. This park also contains several scattered mature valley oaks that were retained when the park was developed. Any of these trees located on or adjacent to the seepage berm footprint would need to be removed. However, plans for restoring the park include the planting of large shade trees between the edge of the seepage berm and the adjacent street. Large, deep-rooted trees in these locations, and not on the berm itself, would have no adverse effect on the flood-control function of the berm. Although the appearance of the park may differ after project construction owing to the removal of several mature trees, park facilities and functions would be restored and park landscaping would include large shade tree species outside the footprint of the proposed seepage berm. Therefore, after project construction, the visual character of the site would not differ substantially from existing conditions.

The use of earthmoving equipment during project implementation would have a temporary impact on the views afforded nearby residents and passersby, but the relatively brief construction time frame would have no lasting impact on the visual character or quality of the site or the semi-urban landscape. Thus, construction of the seepage berm along Reach VIa.2 would not substantially degrade the existing visual character or quality of the site and its surroundings.

Reach VIa.3

Implementation of the project along Reach VIa.3 would involve constructing a 65-foot seepage berm, including a toe drain, by placing approximately 23,000 cy of fill material. The proposed seepage berm would cover approximately 2.8 acres. After construction of the seepage berm, the City of Lathrop would implement existing plans to develop the site as a corridor park. This park development has been part of the City of Lathrop's planning for an extended period and is a separate action from the seepage berm. Construction of the berm and stabilization with a seed mix for controlling erosion would not alter the existing visual character of the site, which currently consists of annual grassland and ruderal vegetation.

The use of earthmoving equipment during project implementation would have a temporary impact on the views afforded nearby residents and passersby, but the relatively brief construction time frame would have no lasting impact on the visual character or quality of the site or the semi-urban landscape. Thus, construction of the seepage berm along Reach VIa.3 would not substantially degrade the existing visual character or quality of the site and its surroundings.

Reach VIa.4

Project implementation along Reach VIa.4 would involve an approximately 10-foot-long continuation of the 65-foot seepage berm and toe drain described above for Reach VIa.3. Placement of approximately 120 cy of fill material would be required, and the continuation would cover approximately 0.015 acre. Existing conditions at Reach VIa.4 are the same as described for Reach VIa.3, and potential impacts and the impact conclusion would be the same as for Reach VIa.3. Construction of the seepage berm along Reach VIa.4 would not substantially degrade the existing visual character or quality of the site and its surroundings.

Reach VIIc

Implementation of the proposed project along Reach VIIc would involve constructing a 65-foot seepage berm by placing approximately 26,000 cy of fill material on approximately 3.2 acres of agricultural land. Construction of the proposed seepage berm would entail the temporary presence of earthmoving equipment at the site, which would be viewed from a distance by agricultural workers and motorists on I-5 and State Route (SR) 120. This short-term and temporary effect would not constitute a substantial degradation of the existing visual character of the site.

Once the proposed seepage berm is complete, the berm itself would not significantly alter the visual character or quality of the site. The berm would remain well below the top elevation of the adjacent levee, would be planted with a seed mix to control erosion and appear as annual grassland habitat, would be cultivated with shallow-rooted crops that would not affect the flood-control function of the berm, or could serve as a parking or storage area for agricultural equipment. In any of these situations, the berm would visually integrate with the current agricultural uses to the east and the levee to the west. Although one mature valley oak tree may require removal as part of constructing the seepage berm, overall, the current visual character of the site and surroundings would not change substantially. Thus, construction of the seepage berm along Reach VIIc would not substantially degrade the existing visual character or quality of the site and its surroundings.

Reach VIId

Implementation of the project along Reach VIId would involve levee maintenance and the acquisition of an access easement. The levee maintenance would consist of minor site grading, hydro-seeding, and reconstruction of an access ramp. No seepage berm construction is proposed for this site. Cleanup and maintenance activities would involve less than 1 acre, and after completion of the proposed activities, the site would continue as an undeveloped strip of annual grassland and ruderal vegetation. It is not known whether the four to five small to midsize valley oaks on the site would be removed. If these trees were removed, the visual character of the site and surroundings would not change significantly after project implementation. In addition, the number of individuals who can see the site is currently limited to a small number of residents just to the south. To the north, views are blocked by the UPRR berm, to the west views are blocked by the San Joaquin River levee, and to the east the artificial lakes separate the site from other potential viewers. Given the existing conditions, the type of work proposed, and site conditions after project implementation, proposed activities along Reach VIId would not substantially degrade the existing visual character or quality of the site and its surroundings.

Reach VIIf

Implementation of the proposed project along Reach VIIf would involve constructing an 80-foot seepage berm, including a toe drain, by placing approximately 30,000 cy of fill material. The proposed seepage berm would cover approximately 4.6 acres. Construction of the seepage berm would not substantially alter the current condition of the site, which consists of vacant, undeveloped residential lots. The area is highly disturbed, and no structures or foundations exist at the project site. After the seepage berm is completed, the site would be stabilized with a seed mix for controlling erosion, resulting in annual grassland and ruderal vegetation. Site conditions after completion of the proposed activities would not be substantially different from existing conditions. Thus, the proposed activities along Reach VIId would not substantially degrade the existing visual character or quality of the site and its surroundings.

Less-than-Significant Impact. The construction, cleanup, and maintenance activities described for the nine reaches of the proposed project would not substantially degrade the existing visual character or quality of the site and its surroundings. Therefore, this impact would be less than significant.

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

No Impact. Construction and maintenance activities proposed for all nine reaches would occur only during daylight hours, and no lighting would be required for these activities. No lighting that does not already exist in these areas would be installed as a component of the project, and no metallic surfaces that could create a new source of glare would be included in the construction of the seepage berms. Although earthmoving equipment is not anticipated to create glare, any glare that would occur as a result of construction activities would be temporary and incidental to those activities. There would be no impact.

Source: Photograph taken by Reclamation District No. 17 in 2009
Image A: Reach Ic—Looking Upstream

Source: Photograph taken by Reclamation District No. 17 in 2009
Image B: Reach Id—Looking Upstream

Representative Photographs **Exhibit 3.1-1**

Source: Photograph taken by Reclamation District No. 17 in 2009
Image A: Reach IVb—Looking Upstream

Source: Photograph taken by Reclamation District No. 17 in 2009
Image B: Reach VIa.2—Looking Upstream

Representative Photographs **Exhibit 3.1-2**

Source: Photograph taken by Reclamation District No. 17 in 2009
Image A: Reach VIa.3—Looking Upstream

Source: Photograph taken by Reclamation District No. 17 in 2009
Image B: Reach VIa.4—Looking East

Representative Photographs **Exhibit 3.1-3**

Source: Photograph taken by Reclamation District No. 17 in 2009
Image A: Reach VIIc—Looking Downstream

Source: Photograph taken by Reclamation District No. 17 in 2009
Image B: Reach VIId—Looking East

Representative Photographs **Exhibit 3.1-4**

Source: Photograph taken by Reclamation District No. 17 in 2009

Image A: Reach VIIf—Looking West

Representative Photograph **Exhibit 3.1-5**

3.2 AGRICULTURAL RESOURCES

	ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
II.	**Agricultural 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, as updated) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland.				
	Would the project:				
	a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Important 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) Involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland to non-agricultural use?	☐	☐	☒	☐

This section describes existing agricultural uses on the project site and vicinity and evaluates potential effects of the proposed project on agricultural land and on lands mapped as part of the Farmland Mapping and Monitoring Program (FMMP) by the California Department of Conservation (DOC), Division of Land Resource Protection.

ENVIRONMENTAL SETTING

AGRICULTURAL LAND USES ON THE PROJECT SITE AND VICINITY

Of the nine project reaches, three reaches (Ic, Id, and VIIc) are on lands currently in agricultural production. The remaining six reaches (or segments) are either developed (IVb and VIa.2 as corridor parks and VIIf as residential lots) or are part of a planned development and are not available for agricultural use (VIa.3, VIa.4, and VIId). These six reaches are not considered further in this analysis.

Reaches Ic, Id, and VIIc constitute the western edges of agricultural fields used to cultivate alfalfa and row crops. Reaches Ic and Id are located within a largely agricultural area south of the city of Stockton, with cultivated parcels to the north, south, and east of these sites (the San Joaquin River levee creates the western boundary for these segments). Reach VIIc is within a pocket of agricultural land surrounded by State Route 120 to the north and east, a Union Pacific Railroad line to the south, and the San Joaquin River levee to the east. Beyond these linear features are various types of urban and industrial development. A seepage berm already exists in Reach Id that contains annual grassland and ruderal vegetation, but is not used for agricultural production. However, various seepage berms elsewhere in RD 17 are used for agricultural purposes that do not conflict with the flood control function of the berms, such as cultivation of shallow-rooted crops, livestock pasture, and storage of farm equipment.

FARMLAND MAPPING AND MONITORING PROGRAM

DOC's Division of Land Resource Protection works with landowners, local governments, and researchers to conserve the state's farmland and open space, and it maintains a statewide inventory of farmlands. These lands are mapped as part of the FMMP, based on a classification system that combines technical soil ratings and current land use. Lands are divided and mapped into the following farmland categories (often referred to as Important Farmland categories) and other categories based on their suitability for agricultural use:

- **Prime Farmland—**Farmland with the best combination of physical and chemical features able to sustain long-term agricultural production. This land has the soil quality, growing season, and moisture supply needed to produce sustained high yields. Land must have been used for irrigated agricultural production at some time during the 4 years before the mapping date.

- **Farmland of Statewide Importance—**Farmland similar to Prime Farmland but with minor shortcomings, such as greater slopes or less ability to store soil moisture. Land must have been used for irrigated agricultural production at some time during the 4 years before the mapping date.

- **Unique Farmland—**Farmland of lesser quality soils used for the production of the state's leading agricultural crops. This land is usually irrigated, but may include nonirrigated orchards or vineyards as found in some climatic zones in California. Land must have been cropped at some time during the 4 years before the mapping date.

- **Farmland of Local Importance—**Land of importance to the local agricultural economy, as determined by each county's board of supervisors and a local advisory committee.

- **Grazing Land—**Land on which the existing vegetation is suited to the grazing of livestock.

- **Urban and Built-up Land—**Land occupied by structures with a building density of at least one unit to 1.5 acres, or approximately six structures to a 10-acre parcel.

- **Other Land—**Land not included in any other mapping category. Common examples include low-density rural developments; brush, timber, wetland, and riparian areas not suitable for livestock grazing; confined livestock, poultry, or aquaculture facilities; strip mines; borrow pits; and water bodies smaller than 40 acres. Vacant and nonagricultural land surrounded on all sides by urban development and greater than 40 acres is mapped as Other Land.

- **Water—**Perennial water bodies with an extent of at least 40 acres.

According to the latest FMMP data, Reaches Ic and Id are classified as Prime Farmland (DOC 2006). The southern roughly one-half of Reach VIIc is classified as Prime Farmland and the northern half is classified as Farmland of Local Importance. As stated above, the remaining six project reaches are either developed or are part of a planned development and are not available for agricultural use and are not considered further in this analysis.

DISCUSSION

a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Important Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

Less-than-Significant Impact. Implementation of the proposed project in Reach Ic would place a roughly 65-foot-wide seepage berm on approximately 1.6 acres of Prime Farmland along the western edge of a field used to

grow alfalfa and row crops. The seepage berm in Reach Id would be 65–75-feet wide and would cover approximately 1.8 acres of land classified as Prime Farmland, although approximately half this area contains an existing seepage berm that would be widened as part of the project. In Reach Id, overall, approximately 0.9 acres of currently cultivated farmland along the western edge of a field used to grow alfalfa and row crops would be affected by project construction. The proposed seepage berm in Reach VIIc would be approximately 65–feet wide and would cover approximately 3.2 acres of land along the western edge of a field used to grow alfalfa and row crops. Approximately half of this area (roughly 1.6 acres) is classified as Prime Farmland and the remaining land is classified as Farmland of Local Importance. Although project implementation would place seepage berms on lands classified as Prime Farmland and Farmland of Local Importance, the presence of the seepage berms would not convert these lands to a nonagricultural use. As stated above, various existing seepage berms in the RD 17 area are used for agricultural purposes that do not conflict with the flood control function of the berms, such as cultivation of shallow-rooted crops, livestock pasture, and storage of farm equipment. The seepage berms in Reaches Ic, Id, and VIIc could continue to be used to grow alfalfa and appropriate row crops, could be used to support agricultural equipment and materials supporting continued cultivation of the adjacent fields, or could be used for other agricultural purposes. The presence of the seepage berms would not affect the continuation of agricultural operations in the remaining lands immediately east of the berms. Therefore, implementation of the proposed project would not result in the conversion of Important Farmland to a nonagricultural use. This impact would be less than significant.

b) Conflict with existing zoning for agricultural use or a Williamson Act contract?

No Impact. None of the proposed project reaches are on lands under a Williamson Act contract (DOC 2007). Therefore, project activities would not conflict with a Williamson Act contract. Reaches Ic, Id, and VIIc are located in unincorporated San Joaquin County and are zoned by the county for agricultural uses (see Section 3.9, "Land Use and Planning" for further information on local planning designations on the project site). As stated above, construction of the proposed seepage berms would not preclude continued agricultural operations on or adjacent to the berms. Therefore, no conflict with existing zoning would occur. Because no conflicts with a Williamson Act contract or existing zoning would occur, there would be no impact.

c) Involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland to non-agricultural use?

Less-than-Significant Impact. See responses to items a) and b) above.

3.3 AIR QUALITY

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
III. Air Quality.				
Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied on to make the following determinations.				
Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?				
Short-Term Emissions	☐	☒	☐	☐
Long-Term Emissions	☐	☐	☐	☒
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?				
Short-Term Emissions	☐	☒	☐	☐
Long-Term Emissions	☐	☐	☐	☒
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)?				
Short-Term Emissions	☐	☒	☐	☐
Long-Term Emissions	☐	☐	☐	☒
d) Expose sensitive receptors to substantial pollutant concentrations?				
Short-Term Emissions	☐	☐	☒	☐
Long-Term Emissions	☐	☐	☐	☒
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☒	☐

This section describes ambient air quality conditions, summarizes applicable regulations, and analyzes potential short-term construction and long-term operational impacts of the proposed project on air quality. Mitigation measures are recommended as necessary to reduce any potentially significant air quality impacts to a less-than-significant level.

ENVIRONMENTAL SETTING

The project site is located in San Joaquin County, which is under the jurisdiction of the San Joaquin Valley Air Pollution Control District (SJVAPCD). With respect to ozone, San Joaquin County is currently designated as a

severe nonattainment area for the state 1-hour ambient air quality standards, and nonattainment for the federal 8-hour standard. San Joaquin County is also designated as a nonattainment area with respect to the state standard for respirable particulate matter with a diameter of 10 micrometers or less (PM_{10}) and fine particulate matter ($PM_{2.5}$). San Joaquin County was recently designated in February 2009 as attainment for the federal PM_{10} standard, but is designated as nonattainment for the federal $PM_{2.5}$ standard (ARB 2009a).

Concentrations of ozone, carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), PM_{10}, $PM_{2.5}$, and lead are used as indicators of ambient air quality conditions. Because these are the most prevalent air pollutants known to be deleterious to human health, and because extensive documentation is available on health-effects criteria for these pollutants, they are commonly referred to as "criteria air pollutants." Standards called the California ambient air quality standards (CAAQS) and national ambient air quality standards (NAAQS) have been set for criteria air pollutants by the California Air Resources Board (ARB) and U.S. Environmental Protection Agency (EPA), respectively. Concentrations of criteria air pollutants are measured at several monitoring stations in the San Joaquin Valley Air Basin. The Hazelton Avenue Station, located 10 miles north of the project site in the city of Stockton, is the closest station with recent data for ozone, PM_{10}, and $PM_{2.5}$. In general, the ambient air quality measurements from this station are representative of the air quality in the project vicinity. Table 3.3-1 summarizes air quality data from the Hazelton Avenue station for the most recent 3 years of available data.

Table 3.3-1
Summary of Annual Data on Ambient Air Quality (2006–2008)[a]

	2006	2007	2008
OZONE			
Maximum concentration (1-hour/8-hour average, ppm)	0.109/0.092	0.093/0.082	0.105/0.091
Number of days state standard exceeded (1-hour/8-hour)	6/21	0/4	2/7
Number of days federal standard exceeded (8-hour)	13	3	4
FINE PARTICULATE MATTER ($PM_{2.5}$)			
Maximum concentration ($\mu g/m^3$)	47.0	52.0	81.2
Number of days federal standard exceeded (measured[b])	7	11	5
RESPIRABLE PARTICULATE MATTER (PM_{10})			
Maximum concentration ($\mu g/m^3$)	85.0	75.0	105.0
Number of days state standard exceeded (measured/estimated[b])	11/63	4/24	8/48
Number of days federal standard exceeded (measured/estimated[b])	0/0	0/0	0/0
CARBON MONOXIDE (CO)			
Maximum concentration (8-hour average, ppm)	2.25	2.31	1.86
Number of days state standard exceeded (8-hour)	0	0	0
Number of days federal standard exceeded (8-hour)	0	0	0

Notes:
$\mu g/m^3$ = micrograms per cubic meter; ppm = parts per million
[a] Measurements from the Hazelton Avenue station, Stockton, CA
[b] Measurements are usually collected every 6 days. Measured days refer to the days that a measurement was greater than the level of the standard. Estimated days are mathematical estimates of how many days concentrations would have been greater than the level of the standard had each day been monitored.
Source: ARB 2009b

Both ARB and EPA use the monitoring data to designate areas according to attainment status for criteria air pollutants established by the agencies. The purpose of these designations, identified above, is to identify those areas with air quality problems and thereby initiate planning efforts for improvement.

SJVAPCD prepares and submits air quality attainment plans (AQAPs) in compliance with the requirements set forth in the California Clean Air Act (CCAA). The CCAA also requires a triennial assessment of the extent of air quality improvements and emission reductions achieved through the use of control measures. As part of the assessment, the attainment plans must be reviewed and, if necessary, revised to correct for deficiencies in progress and to incorporate new data or projections. As a nonattainment area, the SJVAPCD is also required to submit rate-of-progress milestone evaluations in accordance with federal Clean Air Act amendments. These milestone reports include compliance demonstrations that the requirements have been met for the nonattainment area. The SJVAPCD air quality attainment plans and reports present comprehensive strategies to reduce emissions of reactive organic gases (ROG), oxides of nitrogen (NO_X) (ROG and NO_X are both ozone precursors), and PM_{10} from stationary, area, mobile, and indirect sources. Such strategies include the adoption of rules and regulations; enhancement of California Environmental Quality Act (CEQA) participation; implementation of a new and modified indirect-source review program; adoption of local air quality plans; and stationary-, mobile-, and indirect-source control measures. ARB submitted the 2004 Extreme Ozone AQAP to EPA on November 15, 2004. On August 21, 2008, SJVAPCD adopted Clarifications for the 2004 Extreme Ozone AQAP for 1-hour Ozone. On October 16, 2008, EPA proposed to approve the 2004 Extreme Ozone AQAP for 1-hour Ozone. The 8-hour Ozone AQAP was adopted by ARB on June 14, 2007. The 2008 $PM_{2.5}$ AQAP was submitted to ARB in April 2008.

AQAPs are based on each county's projected emissions inventory, which includes stationary, areawide, and mobile sources. Emission inventories are based on general plans and anticipated development. According to San Joaquin County's emissions inventory, mobile sources are the largest contributor to the estimated annual average air pollutant levels of ROG, CO, and NO_X, accounting for approximately 52%, 88%, and 87%, respectively, of the total emissions. Areawide sources account for approximately 80% and 57% of San Joaquin County's PM_{10} and $PM_{2.5}$ emissions, respectively (ARB 2009c).

All projects within the SJVAPCD jurisdictional area are subject to adopted SJVAPCD rules and regulations in effect at the time of construction. Specific rules applicable to the construction of the proposed project may include Regulation VIII: Fugitive Dust; Rule 2010: Permits Required; Rule 3135: Dust Control Plan Fee; Rule 4101: Visible Emissions; Rule 4102: Nuisances; and Rule 9510: Indirect Source Review.

THRESHOLDS OF SIGNIFICANCE

To assist with interpreting and answering the "Thresholds of Significance" questions in the checklist table above, additional thresholds are considered in this analysis. It is common for the significance criteria established by the applicable air quality management agency, air pollution control district, or other organizations to be used as the basis for making significance determinations. Thus, in accordance with Appendix G of the State CEQA Guidelines and ARB and SJVAPCD guidance (SJVAPCD 2002, 2009), an impact of the proposed project relating to air quality would be significant if project implementation would result in any of the following conditions:

- Short-term construction-related emissions of criteria air pollutants or precursors would violate an air quality standard, contribute substantially to an existing or projected air quality violation, or expose sensitive receptors to substantial pollutant concentrations, as described below:

  - *PM_{10}*—Emissions would exceed the SJVACPD-recommended threshold of 15 tons per year (TPY); or SJVAPCD-required control measures in compliance with Regulation VIII, "Fugitive Dust PM_{10} Prohibitions"; or other SJVAPCD-recommended mitigation measures applicable to the project would not be incorporated into project design or implemented during project operation.

  - *ROG and NO_X*—Emissions would exceed the SJVAPCD-recommended threshold of 10 TPY.

- Long-term operational (regional) emissions of criteria air pollutants or precursors would violate an air quality standard or contribute substantially to an existing or projected air quality violation, expose sensitive receptors

to substantial pollutant concentrations, or conflict with or obstruct implementation of the applicable air quality plan:

- *PM_{10}*—Emissions would exceed the SJVACPD-recommended threshold of 15 TPY; or SJVAPCD-required control measures in compliance with Regulation VIII, "Fugitive Dust PM_{10} Prohibitions"; or other SJVAPCD-recommended mitigation measures applicable to the project would not be incorporated into project design or implemented during project operation.

- *ROG and NO_X*—Emissions would exceed the SJVAPCD-recommended threshold of 10 TPY.

- Long-term operational emissions of toxic air contaminants (TACs) would expose sensitive receptors to substantial pollutant concentrations (i.e., exposure to a TAC identified by ARB or EPA would exceed 10 in one million for excess cancer risk or one hazard index for noncancer risk at the maximally exposed individual).

EMISSIONS OF GREENHOUSE GASES

At the time of this analysis, no state or local air quality regulatory agency in California, including SJVAPCD, has adopted a significance threshold for greenhouse gas (GHG) emissions generated by any nonindustrial project. By adopting Assembly Bill (AB) 32 (2006) and Senate Bill (SB) 97 (2007), however, the State of California has established GHG-reduction targets and has determined that GHG emissions, as they relate to global climate change, are a source of adverse environmental impacts in California that should be addressed under CEQA (see the discussion of AB 32 below).

CEQA requires that lead agencies consider the reasonably foreseeable adverse environmental effects of projects they are considering for approval. GHGs have the potential to adversely affect the environment because such emissions contribute, on a cumulative basis, to global climate change. In turn, global climate change has the potential to result in rising sea levels, which can inundate low-lying areas; reduce snowpack, leading to less overall water storage in the Sierra Nevada; affect rainfall, leading to changes in water supply, increased frequency and severity of droughts, and increased wildfire risk; and affect habitat and agricultural land, leading to adverse affects on biological and agricultural resources.

Cumulative impacts are the collective impacts of one or more past, present, and future projects that, when combined, result in adverse changes to the environment. When the adverse change is substantial and the project's contribution to the impact is considerable, the cumulative impact would be significant. The cumulative project list for this issue (global climate change) comprises anthropogenic (i.e., human-made) GHG emission sources across the entire planet. No project alone would contribute to a noticeable incremental change to the global climate. However, legislation and executive orders on the subject of climate change in California have established a statewide context for GHG emissions, as well as an enforceable statewide cap on GHG emissions. Given the nature of environmental consequences from GHGs and global climate change, CEQA requires that the cumulative impacts of GHGs, even additions that are relatively small on a global basis, need to be considered. Because of the cumulative nature of the climate change problem, even relatively small contributions may be potentially considerable (and therefore, significant).

In September 2006, Governor Arnold Schwarzenegger signed AB 32, the California Global Warming Solutions Act of 2006 (Chapter 488, Statutes of 2006, enacting Health and Safety Code Sections 38500–38599). AB 32 establishes regulatory, reporting, and market mechanisms to achieve quantifiable reductions in GHG emissions and establishes a cap on statewide GHG emissions. AB 32 requires that statewide GHG emissions be reduced to 1990 levels by 2020. In October 2008, ARB published its *Climate Change AB 32 Scoping Plan*, which is the state's plan to achieve GHG reductions in California required by AB 32 (ARB 2008a).The scoping plan was approved by ARB on December 11, 2008.

In addition to the scoping plan, ARB has also released the *Preliminary Draft Staff Proposal: Recommended Approaches for Setting Interim Significance Thresholds for Greenhouse Gases under the California Environmental Quality Act.* The proposal recommends adhering to interim performance standards for project types and emissions sources, including construction, energy, water use, waste, transportation, and total mass GHG emissions (ARB 2008b). Specific thresholds and performance criteria for these categories have yet to be developed.

On April 13, 2009, the California Office of Planning and Research submitted to the Secretary for Natural Resources its proposed amendments to the State CEQA Guidelines for GHG emissions, as required by SB 97. These proposed CEQA Guideline amendments would provide guidance to public agencies regarding the analysis and mitigation of the effects of GHG emissions in draft CEQA documents. The Natural Resources Agency will conduct formal rulemaking in 2009, before certifying and adopting the amendments, as required by SB 97.

For the purposes of this analysis, if the proposed project would substantially conflict with the GHG reduction goals mandated in AB 32, the impact would be significant.

DISCUSSION

a, b, c) Conflict with or obstruct implementation of the applicable air quality plan?

Violate any air quality standard or contribute substantially to an existing or projected air quality violation?

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)?

SHORT-TERM CONSTRUCTION EMISSIONS

Less than Significant with Mitigation Incorporated. Construction emissions are described as "short term" or temporary in duration and have the potential to represent a significant impact with respect to air quality, especially fugitive dust emissions (PM_{10}). Fugitive dust emissions are associated primarily with heavy site-preparation activities and vary as a function of such parameters as soil silt content, soil moisture, wind speed, acreage of disturbance area, and miles traveled by construction vehicles on-site and off-site. ROG and NO_X emissions are associated primarily with gas and diesel equipment exhaust. With respect to the proposed project, erosion repairs would result in the temporary generation of ROG, NO_X, and PM_{10} emissions from site preparation (e.g., grading and clearing), material transport, material installation, and other miscellaneous activities. For purposes of estimating construction emissions, on-site construction equipment is assumed to include two excavators, a dozer, a grader, a water truck, six dump trucks, a front-end loader, and an equipment maintenance truck. It is estimated that a maximum of 11,856 daily truck round-trips of roughly 20 miles would be needed to transport 154,120 cubic yards (cy) of material necessary for construction, with an average of approximately 99 round-trips per day. This assumes a truck capacity of 13 cy and 120 days of construction operations. In addition, up to 24 additional daily vehicle round-trips would be associated with worker commute trips.

Short-term construction-generated emissions of ROG, NO_X, PM_{10}, and $PM_{2.5}$ were modeled using the SJVAPCD-recommended URBEMIS 2007, Version 9.2.4, computer program. Input parameters were based on default model settings and project-specific information (e.g., number and type of equipment, amount of material transport). The modeled maximum daily construction emissions are summarized in Table 3.3-2 and described in more detail below and in Appendix A, "Construction-Related Emissions Calculations."

Table 3.3-2
Summary of Modeled Maximum Short-Term Construction-Generated Emissions

Source	ROG (TPY)	NO_X (TPY)	PM_{10} (TPY)	$PM_{2.5}$ (TPY)
Levee Repair Activities (2009)				
Mobile Equipment Exhaust [a]	0.8	8.4	0.4	0.36
Fugitive Dust	–	–	0.6	0.12
Total Maximum Unmitigated	0.8	8.4	0.9	0.48
SJVAPCD Significance Threshold	**10**	**10**	**15**	**-[b]**

Notes:
TPY = tons per year; NO_X = oxides of nitrogen; PM_{10} = respirable particulate matter; ROG = reactive organic gases
[a] Accounts for employee commute trips, on-site heavy-duty construction equipment operations, and material transport (e.g., soil and aggregate base).
[b] SJVAPCD has not identified mass emissions thresholds for construction-related $PM_{2.5}$ emissions; data are shown for information only.
See Appendix A for modeling results and assumptions.
Source: Data provided by EDAW in 2009 based on modeling using URBEMIS 2007, Version 9.2.4

As shown in Table 3.3-2, construction-related activities in 2009 would not generate annual unmitigated ROG and NO_X emissions that exceed SJVAPCD's threshold of 10 TPY. Thus, emissions of criteria air pollutants and precursors from project construction would not violate or contribute substantially to an existing or projected air quality violation, or expose sensitive receptors to substantial pollutant concentrations.

However, emissions of fugitive PM dust (e.g., PM_{10} and $PM_{2.5}$) are associated primarily with ground disturbance occurring during site preparation (e.g., demolition, remediation, grading) and soil handling. The amount of fugitive dust emitted depends on such factors as soil silt content, soil moisture, wind speed, acreage of disturbance area, and vehicle miles traveled on- and off-site. Exhaust emissions from diesel equipment and worker commute trips also contribute to short-term increases in PM_{10} and $PM_{2.5}$ emissions, but to a much lesser extent.

SJVAPCD does not require projects to quantify the fugitive PM dust emissions associated with construction. Instead, SJAVPCD requires projects to comply with Regulation VIII, "Fugitive Dust PM_{10} Prohibitions," and applicable supplemental dust control measures. Nonetheless, for the purposes of disclosure, please refer to Table 3.3-2, which summarizes the modeled emissions of PM_{10} and $PM_{2.5}$ from construction of the proposed project.

Project construction would not generate emissions of PM_{10} exceeding SJVAPCD's significance threshold of 15 TPY. Nonetheless, the proposed project would be legally required to comply with SJVAPCD's Regulation VIII, SJVAPCD-recommended control measures. Although these control measure would be applicable and feasible for the proposed project, they are not currently part of the project description. Thus, emissions of fugitive dust from project construction could violate or contribute substantially to an existing or projected air quality violation, or expose sensitive receptors to substantial pollutant concentrations, especially considering San Joaquin County's nonattainment status. As a result, this impact would be significant.

Mitigation Measure AQ-1: Implement SJVAPCD's Recommended Emissions Reduction Measures. RD 17 shall ensure that the construction contractor(s) implement the following applicable SJVAPCD recommended emission reduction measures per Regulation VIII, "Fugitive Dust PM_{10} Prohibitions":

- Pre-water site sufficient to limit visible dust emissions (VDE) to 20% opacity.
- Phase work to reduce the amount of disturbed surface area at any one time.

- During active operations, apply water or chemical/organic stabilizers/suppressants sufficient to limit VDE [visible dust emissions] to 20% opacity.
- During active operations, construct and maintain wind barriers sufficient to limit VDE to 20% opacity.
- During active operations, apply water or chemical/organic stabilizers/suppressants to unpaved haul/access roads and unpaved vehicle/equipment traffic areas sufficient to limit VDE to 20% opacity and meet the conditions of a stabilized unpaved road surface.
- Limit the speed of vehicles traveling on uncontrolled unpaved access/haul roads within construction sites to a maximum of 15 miles per hour.
- Post speed limit signs that meet state and federal Department of Transportation standards at each construction site's uncontrolled unpaved access/haul road entrance. At a minimum, speed limit signs shall also be posted at least every 500 feet and shall be readable in both directions of travel along uncontrolled unpaved access/haul roads.
- When handling bulk materials, apply water or chemical/organic stabilizers/suppressants sufficient to limit VDE to 20% opacity.
- When handling bulk material, construct and maintain wind barriers sufficient to limit VDE to 20% opacity and with less than 50% porosity.
- When storing bulk materials, comply with the conditions for a stabilized surface as listed above.
- When storing bulk materials, cover bulk materials stored outdoors with tarps, plastic, or other suitable material and anchor in such a manner that prevents the cover from being removed by wind action.
- When storing bulk materials, construct and maintain wind barriers sufficient to limit VDE to 20% opacity and with less than 50% porosity. If utilizing fences or wind barriers, apply water or chemical/organic stabilizers/suppressants to limit VDE to 20% opacity or utilize a three-sided structure with a height at least equal to the height of the storage pile and with less than 50% porosity.
- Load all haul trucks such that the freeboard is not less than 6 inches when material is transported across any paved public access road sufficient to limit VDE to 20% opacity.
- Apply water to the top of the load sufficient to limit VDE to 20% opacity.
- Cover haul trucks with a tarp or other suitable cover.
- Clean the interior of the cargo compartment or cover the cargo compartment before the empty truck leaves the site.
- Prevent carryout and trackout, or immediately remove carryout and trackout when it extends 50 feet or more from the nearest unpaved surface exit point of a site.
- Cleanup of carryout and trackout shall be accomplished by manually sweeping and picking up; or operating a rotary brush or broom accompanied or preceded by sufficient wetting to limit VDE to 20% opacity; or operating a PM_{10}-efficient street sweeper that has a pickup efficiency of at least 80%; or flushing with water, if curbs or gutters are not present and where the use of water would not result as a source of trackout material or result in adverse impacts on storm water drainage systems or violate any National Pollutant Discharge Elimination System permit program.

- Submit a dust control plan to the air pollution control officer (APCO) prior to the start of any construction activity on any site that will include 5 acres or more of disturbed surface area, or will include moving, depositing, or relocating more than 2,500 cubic yards per day of bulk materials on at least 3 days. Construction activities shall not commence until the APCO has approved or conditionally approved the dust control plan. Provide written notification to the APCO within 10 days prior to the commencement of earthmoving activities via fax or mail.

Significance after Mitigation

With the implementation of Mitigation Measure AQ-1, the proposed project would comply with SJVAPCD Regulation VIII as required by law. As a result, this impact, generation of construction-related dust (PM_{10} and $PM_{2.5}$ emissions), would be reduced to a less-than-significant level with mitigation incorporated.

LONG-TERM OPERATIONAL (REGIONAL) EMISSIONS

No Impact. Other than during project construction, the proposed project would include no equipment, machinery, or other devices that would result in air emissions. As discussed in Section 3.15, "Transportation/Traffic," the long-term operation of the project would not cause a significant increase in vehicle traffic on the local roadway system. Thus, project operation would not increase long-term regional ROG, NO_X, and PM_{10}, or local CO emissions associated with increases in stationary or mobile sources. In addition, implementation of the proposed project would not result in an increase in vehicle miles traveled, and thus would not result in the generation of emissions that would conflict with or obstruct implementation of SJVAPCD's air planning efforts. Thus, long-term operational emissions would not violate an air quality standard or contribute substantially to an existing or projected air quality violation. In addition, operational emissions would not result in a cumulatively considerable net increase of criteria air pollutants for which the project region is nonattainment under an applicable federal or state ambient air quality standard. Therefore, no impact would occur.

GLOBAL CLIMATE CHANGE

Less-than-Significant Impact. GHG emissions generated by the proposed project would be primarily in the form of carbon dioxide (CO_2) from construction equipment exhaust. Although emissions of other GHGs, such as methane and nitrous oxide, are important with respect to global climate change, the emissions levels of these GHGs for the sources associated with project construction are nominal compared with CO_2 emissions, even considering their higher global warming potential. Therefore, all GHG emissions for construction and operation are reported as CO_2.

Emissions factors and calculation methods for estimating GHG emissions associated with infrastructure projects have not been formally adopted for use by the state, SJVAPCD, or any other air district. The construction-related GHG emissions associated with project implementation were calculated using URBEMIS 2007, Version 9.2.4.

Minimal to no electricity, water, or operational GHG emissions would be associated with implementation of the proposed project.

Construction activities associated with the proposed project would occur over a 3- to 5-month period in 2009. During this time, a net increase in GHG emissions would result from various construction activities. Construction-related GHG emissions would be associated with engine exhaust from heavy-duty construction equipment, transport trucks hauling materials (e.g., soil), and worker commute trips. Although any increase in GHG emissions would add to the quantity of emissions that contribute to global climate change, it is noteworthy that emissions associated with construction of the proposed project would occur over a finite period of time (i.e., 3–5 months). After full project buildout, all construction emissions would cease.

To establish additional context in which to consider the order of magnitude of project-generated construction GHG emissions, it should be noted that facilities (i.e., stationary, continuous sources of GHG emissions) that generate greater than 25,000 metric tons of CO_2 per year are mandated to report their GHG emissions to ARB pursuant to AB 32. In addition, ARB has released a preliminary draft staff proposal that recommends 7,000 metric tons of CO_2 per year be used as the baseline threshold for impacts. As shown in Table 3.3-3, estimated GHG emissions associated with construction of the entire project would be approximately 815 metric tons of CO_2 over a 4-month period. Absent any thresholds adopted by an applicable air quality regulatory agency for GHG emissions, it is notable that the proposed project would generate substantially fewer emissions than 25,000 and 7,000 metric tons of CO_2 per year. This information is presented for informational purposes only, and it is not the intention of the lead agency to adopt 25,000 or 7,000 metric tons of CO_2 per year as a numeric threshold. Rather, the intention is to put project-generated GHG emissions in the appropriate statewide context to evaluate whether the proposed project's contribution to the global impact of climate change would be substantial. Because construction-related emissions would be finite and below the minimum standard for reporting requirements under AB 32, the proposed project's GHG emissions would not be considered a considerable contribution to the cumulative global impact. Therefore, this impact would be less than significant.

Table 3.3-3
Summary of Modeled Construction-Generated Emissions of Greenhouse Gases

Source	Total Mass CO_2 Emissions (metric tons)
Construction Emissions[a]	
2009 Totals	815
Total Construction Emissions (2009)	815

Notes:
CO_2 = carbon dioxide
[a] Construction emissions were modeled with the URBEMIS 2007 computer model. The URBEMIS 2007 model does not account for embedded CO_2 emissions associated with the manufacture of construction equipment or production of concrete or other building materials used in project construction. URBEMIS does not estimate greenhouse gas emissions other than CO_2, such as methane and nitrous oxide, as these levels are expected to be nominal in comparison to the estimated CO_2 levels despite their higher global-warming potential.
See Appendix A for detailed model input, assumptions, and threshold calculations.
Source: Data provided by EDAW in 2009 based on modeling using URBEMIS 2007, Version 9.2.4

d) Expose sensitive receptors to substantial pollutant concentrations?

SHORT-TERM CONSTRUCTION EMISSIONS

Less-than-Significant Impact. Project construction would result in short-term generation of diesel exhaust emissions from the use of off-road diesel equipment required for site grading and other construction activities. Particulate exhaust emissions from diesel-fueled engines (diesel PM) were identified as a TAC by ARB in 1998. The potential cancer risk from the inhalation of diesel PM is the primary health impact associated with this TAC (ARB 2003). The dose to which the receptors are exposed (a function of concentration and duration of exposure) is the primary factor used to determine health risk (i.e., potential exposure to TAC emission levels that exceed applicable standards). According to the Office of Environmental Health Hazard Assessment, health risk assessments (HRAs), which determine the exposure of sensitive receptors to TAC emissions, should be based on a 70-year exposure period. However, such assessments should be limited to the period/duration of activities associated with the project (Salinas, pers. comm., 2004).

The possible sensitive-receptor exposure period for the proposed project is short (less than 2 or 3 months at any one location). SJVAPCD does not have any current guidance on TAC emissions from mobile equipment or a threshold of significance for exposure to emissions of diesel exhaust. SJVAPCD also does not recommend the

completion of HRAs for construction-related emissions of TACs (Reed, pers. comm., 2007). In addition, diesel PM is highly dispersive and studies have shown that measured concentrations of vehicle-related pollutants, including ultra-fine particles, decrease dramatically within approximately 300 feet of the source (Zhu et al. 2002). Because the use of mobilized equipment would be temporary, in combination with the dispersive properties of diesel PM, and because primary construction activities would only be active in each reach for a short period of time, construction-related TAC emissions would not be anticipated to expose sensitive receptors to substantial pollutant concentrations. Therefore, this impact would be less than significant.

LONG-TERM OPERATIONAL EMISSIONS

No Impact. As discussed under items a), b), and c) above, other than during project construction, the proposed project involves no equipment, machinery, or other devices that would result in TAC emissions. Thus, project operation would not increase TAC emissions associated with increases in stationary or mobile sources. Thus, long-term operational emissions would not expose sensitive receptors to substantial pollutant concentrations. Therefore, no impact would occur.

e) Create objectionable odors affecting a substantial number of people?

Less-than-Significant Impact. Construction of the proposed project would result in diesel exhaust emissions from on-site construction equipment. The diesel exhaust emissions would be intermittent and temporary and would dissipate rapidly from the source with an increase in distance. Therefore, these emissions would not result in any objectionable odor that would affect a substantial number of people. In addition, operation of the proposed project would not result in new permanent odor sources or the siting of sensitive receptors near odor sources. Therefore, this impact would be less than significant.

3.4 BIOLOGICAL RESOURCES

	ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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 the 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 the 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?	☐	☐	☐	☒

This section describes the existing conditions of biological resources in the project area, potentially significant impacts from implementation of the proposed project, and mitigation measures to reduce these potentially significant impacts to a less-than-significant level.

ENVIRONMENTAL SETTING

Information on biological resources in the project area is based on a review of pertinent literature, databases, and results of a general reconnaissance-level investigation and wetland delineation conducted on March 19, 2008. The purpose of this survey effort was to characterize biological resources present in the project reaches (or segments) and in the vicinity, and to determine the potential for sensitive biological resources to occur on the project site.

The nine project reaches (or segments) are located along the land side toe of the San Joaquin River east levee in San Joaquin County, California. The proposed repair activities would include the construction of seepage berms,

at eight of the nine reaches to increase the levee's resistance to underseepage. At Reach VIId, project activities would consist of maintenance and "clean-up," including minor site grading, removal of trash and debris, hydro-seeding, and reconstruction of an access ramp.

Topography in the project vicinity is flat, at approximately 10–16 feet above mean sea level. The area surrounding each project segment is composed of one or more of the following: agricultural fields, annual grassland, open space, residential neighborhoods, city parks, and roadways.

Common Vegetation

The project reaches are highly disturbed, supporting ruderal vegetation and annual grassland, cropland, developed parks, or vacant residential lots. Reaches VIa.3, VIa.4, and VIId are composed primarily of ruderal habitat and annual grassland characterized by sparse, nonnative weedy vegetation. Common species in these ruderal and disturbed grassland areas include nonnative grasses such as ripgut brome (*Bromus diandrus*), foxtail barley (*Hordeum murinum* ssp. *leporinum*), and Bermuda grass (*Cynodon dactylon*), and such weeds as yellow star-thistle (*Centaurea solstitialis*), shortpod mustard (*Hirschfeldia incana*), and milk thistle (*Silybum marianum*). Reach VIIf contains graded residential lots with no structures. Vegetation is sparse on these vacant lots, but is dominated by the ruderal and grassland species listed above. The portion of Reach Id closest to the levee toe contains an existing seepage berm supporting ruderal/annual grassland habitat. The remainder of Reach Id is the western edge of an agricultural field used to grow alfalfa and row crops.

Cropland within the project site is dominated by alfalfa fields and row crops and associated agricultural weeds. Reaches Ic and VIIc both comprise the western edge of fields used to grow alfalfa and row crops, as does a portion of Reach Id, as described above. Other crops under cultivation in the project vicinity include tomatoes, hay, squash, safflower, and corn. Fallow fields and pastures present in the project vicinity are also included in this vegetation type.

Developed areas in the project site consist of City of Lathrop corridor parks in Reaches IVb and VIa.2. Vegetation in these parks consists of turf grasses, landscape trees, and scattered mature valley oaks retained in some areas during park development. Landscape trees in the parks include sycamore (*Platanus racemosa*), liquidambar (*Liquidambar styraciflua*), and eucalyptus (*Eucalyptus* sp.). These parks are located between the levee toe and roadways associated with nearby residential development.

There are no wetland or aquatic communities in any of the proposed project segments. Other than the San Joaquin River itself, wetland communities in the project vicinity are limited to occasional agricultural ditches. Wetland vegetation found in these ditches generally occurs in areas that are saturated or inundated for long periods. In this case, emergent perennial wetland plants dominate, and include broad-leaved cattail (*Typha latifolia*), tule (*Scirpus acutus*), umbrella sedge (*Cyperus eragrostis*), and smartweed (*Polygonum* spp.). Floating aquatic plants, such as duckweed (*Lemna* sp.) and mosquito fern (*Azolla filiculoides*), are common in portions of the ditches with slow-moving open water. The agricultural ditches are subject to routine maintenance and vegetation clearing.

Great Valley cottonwood riparian forest is located in scattered patches along the San Joaquin River (i.e., between the water side of the levee and the river) in the project vicinity. The canopy of this native plant community is dominated by Fremont cottonwood *(Populus fremontii*) and Goodding's willow (*Salix gooddingiii*). A dense subcanopy composed of narrow leaved-willow (*S. exigua*) and/or arroyo willow (*S. lasiolepis*) is also characteristic of Great Valley cottonwood riparian forest. Scattered valley oaks (*Quercus lobata*) can occur in this plant community. The understory is typically dominated by California blackberry (*Rubus ursinus*) and wild rose (*Rosa californica*).

Patches of Great Valley riparian scrub also occur along the San Joaquin River bank between the water side of the levee and the river. This plant community is characterized by an open to dense canopy dominated by shrubs. Dominant species include narrow leaved-willow, Goodding's willow, arroyo willow, and buttonbush

(*Cephalanthus occidentalis*). A thicket of wild rose or California blackberry may also be present. Scattered valley oaks are occasionally present on the upland edge of this plant community. Although it shares species in common with Great Valley cottonwood riparian forest, Great Valley riparian scrub does not contain Fremont cottonwood and thus is characterized by a shorter canopy and more uniform structure.

Remnant patches of Great Valley oak riparian forest are located along the land side of the levee in the project area, although none occur in any of the project reaches. This plant community was formerly extensive along rivers in the San Joaquin Valley. Great Valley oak riparian forest is typically characterized by a dense canopy of valley oak. The stands in the project area have been fragmented as a result of agricultural use of the land and urban development.

Common Wildlife

Common wildlife species expected in undeveloped portions of the project site are those typically associated with row crop agricultural and ruderal habitats, and include Botta's pocket gopher (*Thomomys bottae*), western harvest mouse (*Reithrodontomys megalotis*), and California meadow vole (*Microtus californicus*). These small mammals are prey for a variety of raptor species known to occur in the area, including American kestrel (*Falco sparverius*), northern harrier (*Circus cyaneus*), red-tailed hawk (*Buteo jamaicensis*), and Swainson's hawk (*Buteo swainsoni*). A variety of other birds are expected to forage in project site agricultural fields and ruderal habitats, including western kingbird (*Tyrannus verticalis*), barn swallow (*Hirundo rustica*), European starling (*Sturnus vulgaris*), western meadowlark (*Sturnella neglecta*), and Brewer's blackbird (*Euphagus cyanocephalus*).

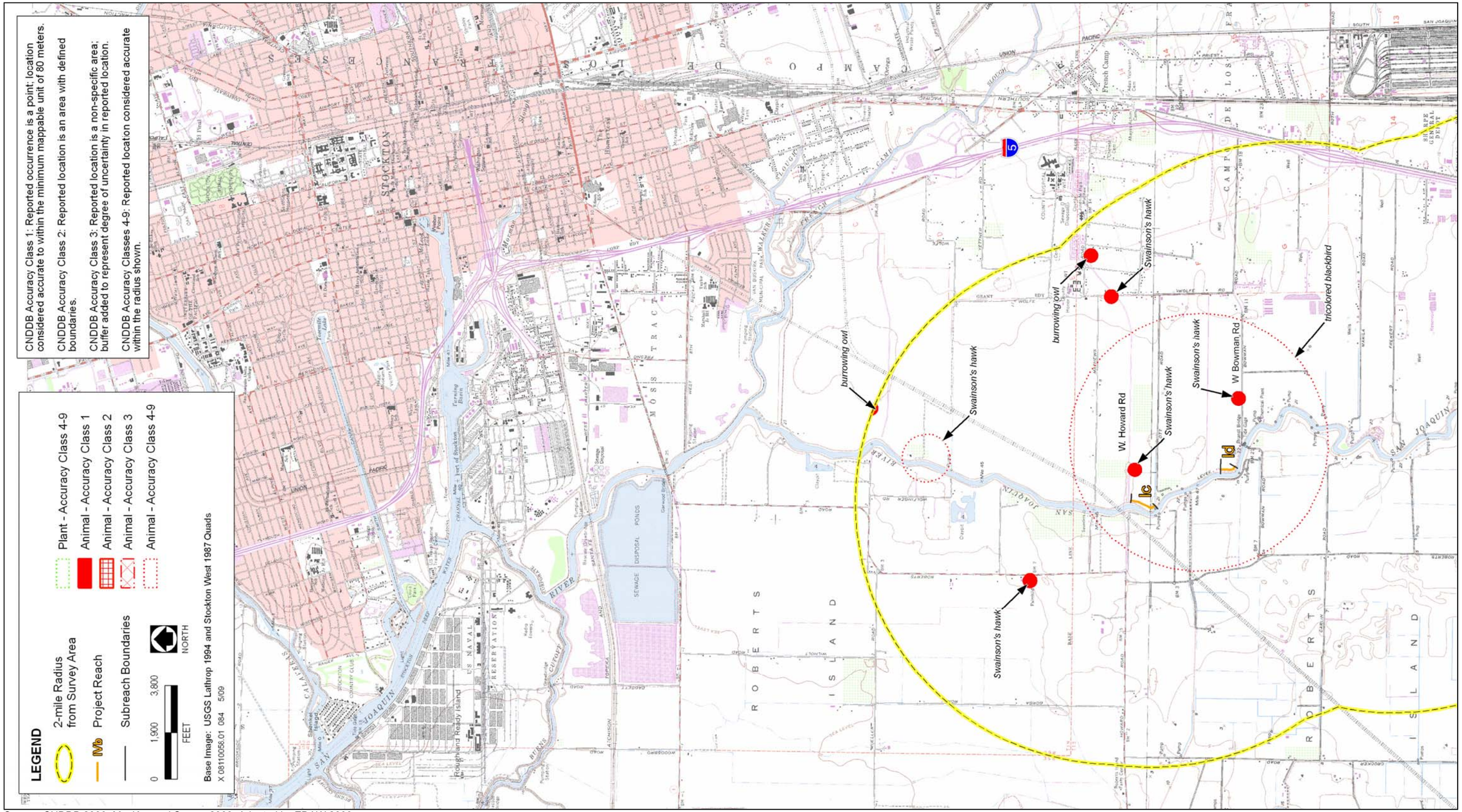
Landscaping and ornamental vegetation associated with the city parks in Reaches IVb and VIa.2 support a relatively low wildlife diversity. These areas are typically utilized by species adapted to highly disturbed and altered environments, such as house sparrow (*Passer domesticus*), house finch (*Carpodacus mexicanus*), raccoon (*Procyon lotor*), and opossum (*Didelphis virginiana*).

Natural habitats within the project vicinity are restricted to narrow patches of riparian vegetation along the San Joaquin River and on the land side of the levee, and scattered individual or small clumps of valley oak trees. An exception is a riparian restoration area located on the water side of the levee near Reaches VIa.2 and VIa.3. Riparian vegetation and oak trees provide nesting habitat for a much wider variety of bird species than other habitats in the area, including black phoebe (*Sayornis nigricans*), western kingbird, western scrub-jay (*Aphelocoma californica*), oak titmouse (*Baeolophus inornatus*), and house wren (*Thryomanes bewickii*). They also provide nest sites for raptors, such as Swainson's hawk, red-tailed hawk, white-tailed kite (*Elanus leucurus*), and red-shouldered hawk (*Buteo lineatus*).

Wildlife diversity in agricultural ditches is limited because of the regular disturbance associated with maintenance activities and absence of natural vegetation in uplands adjacent to the ditches (e.g., agricultural lands), but they can support marsh associated species that may include marsh wren (*Cistothorus palustris*), song sparrow (*Melospiza melodia*), and Pacific chorus frog (*Pseudacris regilla*).

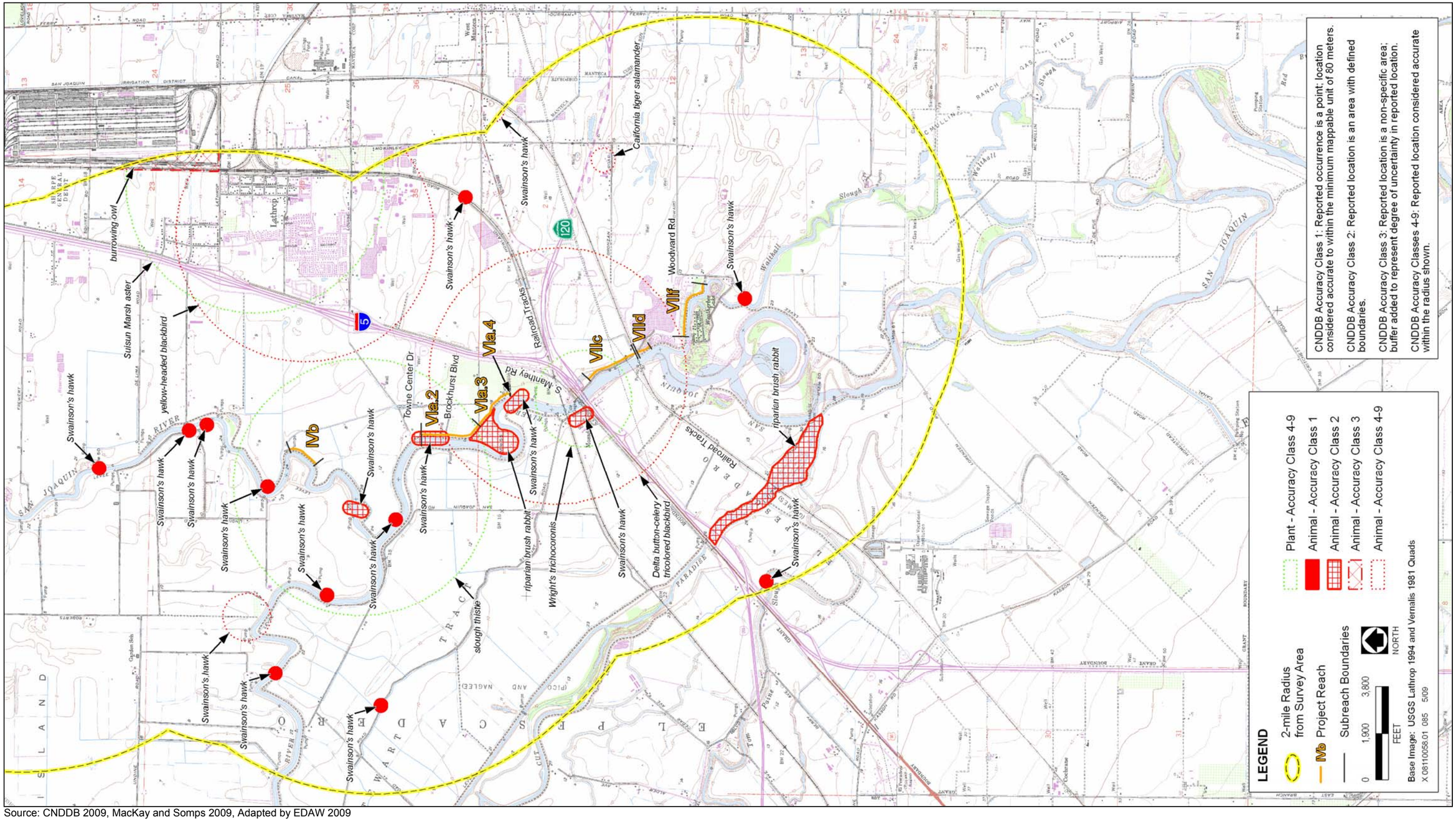
Sensitive Biological Resources

Sensitive biological resources include plants, animals, and habitats that have been afforded special recognition by federal, state, or local resource agencies and organizations. Also included are habitats that are of relatively limited distribution or are of particular value to wildlife. Searches of the California Department of Fish and Game" (DFG") California Natural Diversity Database (CNDDB 2009), the U.S. Fish and Wildlife Service's species list (USFWS 2009), and the California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants (CNPS 2009) of the Lathrop U.S. Geological Survey 7.5-minute quadrangle were conducted to identify sensitive resources previously documented in the project vicinity (see Exhibits 3.4-1 and 3.4-2). EDAW biologists reviewed



Source: CNDDB 2009, MacKay and Somps 2009, Adapted by EDAW 2009

Recorded Occurrences of Sensitive Biological Resources within 2 Miles of the Project Area – North Half **Exhibit 3.4-1**



Source: CNDDB 2009, MacKay and Somps 2009, Adapted by EDAW 2009

Recorded Occurrences of Sensitive Biological Resources within 2 Miles of the Project Area – South Half **Exhibit 3.4-2**

the results of the database searches and existing conditions on the project site and nearby areas to develop a list of special-status species with potential to occur on the project site or in the vicinity.

Special-Status Species

Special-status species are those that are federally listed or state listed as threatened or endangered, are considered as candidates for listing as threatened or endangered or are proposed for listing, are identified by DFG as species of special concern or as fully protected under the Fish and Game Code; or are plants considered by CNPS to be Threatened, Endangered, or Rare, (i.e., plants on CNPS Lists 1 and 2).

Special-Status Plant Species

Five special-status plant species are documented in the California Natural Diversity Database (CNDDB) or CNPS databases as occurring in the project vicinity: Suisun marsh aster (*Symphyotrichum lentus*), slough thistle (*Cirsium crassicaule*), Sanford's arrowhead (*Sagittaria sanfordii*), Delta button-celery (*Erynqium racemosum*), and Wright's trichocoronis (*Trichocoronis wrightii* var. wrightii*)*. Sanford's arrowhead and Delta button-celery are thought to be extirpated from San Joaquin County and are not discussed further. The remaining species are associated with brackish or freshwater wetland habitats that occur as agricultural ditches in the project vicinity. However, no wetland habitats occur on the project site or would be affected by project activities. In addition, the highly disturbed conditions of wetland habitats in the project vicinity (i.e., on the land side of the levee), greatly limit the potential of these areas to support any special-status plants. Therefore, no special-status plants are expected to occur on the project site and none would be affected by project activities.

Special-Status Wildlife Species

Nine special-status wildlife species are documented in the CNDDB as occurring in the project vicinity. Based on conditions in the project vicinity and literature review, suitable habitat for two of the species, yellow-headed blackbird (*Xaanthocephalus xanthocephalus*) and California tiger salamander (*Ambystoma californiense*), do not occur. The project site or vicinity does contain suitable habitat for the seven remaining special-status wildlife species. The names of these species, their protection status, habitat requirements, and information on their potential to occur on or adjacent to the project site are provided in Table 3.4-1.

Invertebrates

Valley elderberry longhorn beetles require blue elderberry shrubs for reproduction and survival. Although focused surveys for elderberry shrubs were not conducted, locations of isolated shrubs and clumps of shrubs observed during reconnaissance-level surveys were recorded. These shrubs are scattered along both sides of the San Joaquin River levee. No blue elderberry shrubs were found on the project reaches, although shrubs were found in the vicinity of Reaches, Ic, Id, IVb, VIa.2, and VIa.3 and along anticipated access routes to some of these reaches. Based on the presence of blue elderberry shrubs, valley elderberry longhorn beetle could occur in the project vicinity, although no shrubs occur in any of the project reaches.

Raptors

A number of special-status raptor species are expected to occur in the project area, including Swainson's hawk, burrowing owl, white-tailed kite, and northern harrier. Agricultural fields, annual grasslands, and ruderal habitat in the project site and vicinity provide suitable foraging habitat for all of these special-status raptors. Reaches Ic, Id, VIa.3, VIa.4, VIIc, VIId, and VIIf all provide potential raptor foraging habitat. Swainson's hawks and white-tailed kites typically nest in riparian habitat or scattered trees adjacent to foraging habitat. Swainson's hawk nests have been documented in the vicinity of the project site (CNDDB 2009). Valley oaks, cottonwoods, and black willows scattered throughout the project area provide suitable nesting sites for both species, although no suitable

nest trees occur in any of the project reaches, either because no trees are present or because of extensive human disturbance (e.g., within corridor parks and adjacent to residential development).

Table 3.4-1
Special-Status Wildlife Species with Potential to Occur in the Project Vicinity

Species	Status	Habitat	Potential for Occurrence
Invertebrates			
Valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	Federal: Threatened State: Species of Concern	Inhabits elderberry shrubs, primarily in riparian woodlands.	Occurs year round; elderberry shrubs are present in the vicinity of some project reaches.
Birds			
Burrowing owl *Athene cunicularia (breeding)*	State: Species of Concern	Nests and forages in grasslands, shrublands, deserts, and agricultural fields, especially where ground squirrel burrows are present.	Could occur year round; suitable nesting and foraging habitat is present both on and adjacent to the project site.
Swainson's hawk *Buteo swainsoni (breeding)*	State: Threatened	Nests in riparian woodlands and isolated trees; forages in grasslands, shrublands, and agricultural fields.	Known to nest in the project vicinity in late spring and summer. Suitable nesting habitat is adjacent to the project site, and suitable foraging habitat is present on and adjacent to the project site.
Northern harrier *Circus cyanus (breeding)*	State: Species of Concern	Nests and forages in a variety of open habitats, including marshes, grasslands, shrublands, and agricultural fields.	Could occur year round; suitable nesting and foraging habitat is present on and adjacent to the project site.
White-tailed kite *Elanus leucurus (breeding)*	State: Fully Protected	Nests in woodlands and isolated trees; forages in grasslands, shrublands, and agricultural fields.	Could occur year round; suitable nesting habitat is present adjacent to the project site and suitable foraging habitat is present on and adjacent to the project site
Tricolored Blackbird *Agelaius tricolor (breeding)*	State: Species of Concern	Nests in dense cattails and tules, riparian scrub, and other low, dense vegetation; forages in grasslands and agricultural fields.	Suitable foraging habitat is present on the project site and vicinity, but no nesting habitat is present on or near the project site.
Mammals			
Riparian brush rabbit *Sylvilagus bachmani riparius*	Federal: Endangered State: Endangered	Inhabits riparian forest with dense understory.	Known to occur in riparian and ruderal vegetation along the San Joaquin River. No suitable habitat on the project site, although known to occur on the water side of the levee in the project vicinity.

Sources: Data provided by EDAW in 2008; CNDDB 2008; USFWS 2008

Northern harriers nest on the ground in dense, low-lying vegetation (e.g., grassland, marsh, and field crops). Active and fallow agricultural fields in the project vicinity could provide suitable nesting habitat for northern harriers, including those in reaches Ic, Id, and VIIc. Burrowing owls nest and roost in burrow systems created by medium-size mammals (e.g., ground squirrels) or artificial sites (e.g., drain pipes and culverts). Agricultural field margins and the levee along the San Joaquin River have limited potential to provide suitable burrowing owl burrows because of regular maintenance activities and ground squirrel control efforts.

Tricolored Blackbird

Tricolored blackbirds forage in grasslands and agricultural fields, and suitable foraging habitat is present in all project reaches except IVb and VIa.2. They nest colonially in patches of dense vegetation, particularly cattails and blackberry. No suitable nesting habitat occurs on the project site, and the small patches of potential nesting vegetation in the project vicinity are unlikely to provide suitable habitat because they are very limited in size and are surrounded by agricultural fields subject to high levels of disturbance. In addition, no recent tricolored blackbird colonies have been known to occur in or near the project site. There are records from the 1970s of a colony at the southern end of the project site, but it was extirpated as a result of development. Therefore, tricolored blackbirds are not expected to nest in the project site or vicinity.

Riparian Brush Rabbit

Riparian brush rabbits inhabit riparian communities dominated by willow thickets and large clumps of shrubs and vines. They also use dense, tall patches of herbaceous plants adjacent to riparian habitat. Trapping was conducted on February 9, 2004 at six locations along the San Joaquin River near the project site north of Reach IVb. One riparian brush rabbit was trapped at each of five locations (Vincent-Williams et al. 2004). Riparian brush rabbits are known to occur at only a limited number of locations aside from the area north of Reach IVb, including Stewart Tract (opposite side of the river from the proposed project), Paradise Cut (approximately 1 mile southwest of the nearest project segment), and Caswell Memorial Park in Stanislaus County, approximately 8 miles southeast of the nearest project segment. Although riparian brush rabbits occur in the project vicinity, no suitable habitat occurs in any of the proposed project reaches. Small patches of potential riparian brush rabbit habitat occur on the water side of the levee opposite portions of Reaches Ic, Id, IVb, and VIIf. Portions of Reaches VIa.2 and VIa.3 are on the opposite side of the levee from an identified riparian mitigation area that provides suitable habitat for riparian brush rabbit. It should be noted that the small patches of suitable habitat between the levee and the river north of Reach IVb are considered unlikely to support a long-term viable population of the species (Hamilton, pers. comm., 2004).

DISCUSSION

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 the U.S. Fish and Wildlife Service?

Special-Status Plants

No Impact. The project site does not support suitable habitat for special-status plants and none are expected to occur. Therefore, no impact would occur.

Valley Elderberry Longhorn Beetle

Less than Significant with Mitigation Incorporated. No elderberry shrubs have been observed in the project reaches. However, during reconnaissance level surveys conducted in 2008, several shrubs or groups of shrubs were observed in the vicinity of Reaches, Ic, Id, IVb, VIa.2, and VIa.3 and along anticipated access routes to some

of these reaches. None of these shrubs would be removed as a part of project activity. However, the potential exists for damage and mortality to these shrubs from nearby construction activities associated with the proposed project. Therefore, this impact would be potentially significant.

According to USFWS's *Conservation Guidelines for Valley Elderberry Longhorn Beetle* (USFWS 1999), a 100-foot buffer around elderberry shrubs shall be established by the project applicant wherever feasible to completely avoid potential impacts on valley elderberry longhorn beetle. Where a 100-foot buffer is not feasible, a minimum buffer of 20 feet from the dripline shall be maintained around each elderberry shrub. Implementation of Mitigation Measure Bio-1 would reduce the potentially significant impact on valley elderberry longhorn beetle to a less-than-significant level.

Mitigation Measure Bio-1: Maintain a Minimum 20-Foot Buffer Around Elderberry Shrubs. RD 17 shall implement the following measures, based on USFWS guidelines (USFWS 1999) to reduce impacts on valley elderberry longhorn beetle:

- Wherever feasible, RD 17 shall establish and maintain a 100-foot buffer around elderberry shrubs through the duration of project construction. The 100-foot distance shall be measured from the dripline of the shrub. Buffer areas shall be clearly marked in the field. No project activity shall occur within the buffer areas.

- If a 100-foot buffer cannot be maintained around one or more elderberry shrubs, RD 17 shall establish and maintain a minimum buffer of 20 feet around each elderberry shrub through the duration of project construction. The 20-foot minimum distance shall be measured from the dripline of the shrub. These buffer areas shall be clearly marked in the field with brightly colored temporary construction fencing. No project activity shall occur within the buffer areas.

- No insecticides, herbicides, fertilizers, or other chemicals that might harm the beetle or its host plant shall be used in the buffer areas, or within 100 feet of any elderberry plant with one or more stems measuring 1.0 inch or greater in diameter at ground level.

- Following USFWS guidelines (USFWS 1999), construction crews shall be informed about the status of the beetle and the need to protect its elderberry host plant. If requested by USFWS, a qualified biologist shall monitor construction activities to ensure that the buffers remain protected throughout the construction period.

Nesting Raptors/Special-Status Birds

Less than Significant with Mitigation Incorporated. Two special-status bird species, burrowing owl and northern harrier, could nest within the project site. Two other special-status bird species, Swainson's hawk and white-tailed kite, could nest near the project site. In addition to these special-status species, several common raptor species could nest in the project vicinity. The nests of all raptor species are protected under Section 3503.5 of the California Fish and Game Code. Nest disturbance resulting from project construction has the potential to cause nest abandonment or the loss of eggs or chicks as a result of reduced parental care. The proposed project would not remove any known or potential nesting trees for special-status birds or common raptors. Loss of a nest for other special-status bird species or loss of a raptor nest caused by disturbance during project construction would be a significant impact. Therefore, this impact would be potentially significant. Implementation of Mitigation Measure Bio-2 would reduce this impact to a less-than-significant level.

Mitigation Measure Bio-2: Conduct Preconstruction Surveys for Nesting Raptors. RD 17 shall implement the following measures to reduce potentially significant impacts on Swainson's hawk and other common and special-status raptors:

- If project activity is scheduled to occur during the raptor nesting season (March 1–September 15), a focused survey for raptors shall be conducted by a qualified biologist before commencement of activities to identify

active nests on the project site and in the vicinity. Surveys for Swainson's hawk nests shall include all areas of suitable nesting habitat within 0.25 mile of the project site. Surveys for other raptors shall include suitable nesting habitat within 500 feet of the areas where construction would occur. If no active nests are found, no further mitigation shall be required.

- If active nests are found during the surveys, appropriate buffers shall be established to minimize impacts. No project activity shall commence within the buffer area until a qualified biologist confirms that the nest is no longer active. The size of the buffers may be adjusted, depending on the project activity and stage of the nest, if a qualified biologist determines that activity within a reduced buffer would not be likely to adversely affect the adults or their young.

RD 17 shall implement the following measures to reduce potentially significant impacts on burrowing owls:

- Before any ground-disturbing project-related construction activity, a focused survey for burrowing owls shall be conducted by a qualified biologist in accordance with DFG protocol (DFG 1995) to identify active burrows on and within 250 feet of each project segment. The surveys shall be conducted no more than 30 days before the beginning of construction.

- If no occupied burrows are found in the survey area, the biologist shall document survey methods and findings in a letter report to DFG, and no further mitigation would be required.

- If an occupied burrow is found, a buffer shall be established for all project-related construction activities. The buffer shall be 165 feet during the nonbreeding season (September 1–January 31) or 250 feet during the breeding season (February 1–August 31). The size of the buffer area may be adjusted if a qualified biologist and DFG determine that project-related construction activities would not be likely to have adverse effects. No project-related construction activity shall commence within the buffer area until a qualified biologist confirms that the burrow is no longer occupied, or consultations with DFG specifically allow certain construction activities to continue.

- If maintenance of acceptable buffer distances is infeasible, passive relocation techniques approved by DFG shall be used to encourage owls to move to alternative burrows outside of the project site. However, relocation efforts shall not be attempted during the burrowing owl nesting season unless a qualified biologist verifies through noninvasive methods that no eggs or chicks are in the burrow.

Habitat for Special-Status Birds

Less-than-Significant Impact. Project construction would result in the temporary loss of approximately 15 acres of potential foraging habitat for Swainson's hawk, white-tailed kite, burrowing owl, northern harrier, and tricolored blackbird. Given the relatively small area of existing habitat that would be temporarily disturbed by project construction, and the fact that higher quality habitat is abundant in the project vicinity, this impact would be less than significant.

Riparian Brush Rabbit

Patches of riparian forest and scrub habitat with dense vegetation along the San Joaquin River and adjacent levee provide suitable habitat for riparian brush rabbit (federally listed and state listed as endangered). Such habitat exists on the water side of the levee, opposite portions of Reaches Ic, Id, IVb, VIa.2, VIa.3, and VIIf. No potential habitat occurs in the project area and no habitat would be directly removed by project activities. However, disturbance and noise from construction activities could cause riparian brush rabbits to leave habitat areas, making them more susceptible to predation, or adversely affect breeding activity if construction were to occur during the breeding season (December through May). Loss of a riparian brush rabbit as a result of increased predation risk or reduced productivity, or a reduced survival rate of young as a result of disturbance during the breeding season,

would be a significant project impact. Implementation of Mitigation Measure Bio-3 would reduce this impact to a less-than-significant level.

Mitigation Measure Bio-3: Minimize Potential Disturbance to Riparian Brush Rabbit. RD 17 shall implement the following measures in project segments near potential riparian brush rabbit habitat (i.e., Reaches Ic, Id, IVb, VIa.2, and VIa.3) to reduce potentially significant adverse impacts on riparian brush rabbit:

- A worker awareness training program for construction personnel will be conducted by a qualified biologist prior to beginning construction activities in the subject reaches. The program will inform construction personnel about the life history and status of the riparian brush rabbit, requirements to protect the rabbit, and the possible penalties for not complying with these requirements.

- Construction activity will be maintained as much as possible on the land side of the levee in the subject reaches. If activity must occur on the levee crown or on the water side of the levee, including movement of vehicles, equipment, and personnel, this activity will be minimized to the greatest extent possible.

- During the riparian brush rabbit breeding season (December through May), ground disturbing activities will avoid occupied riparian brush rabbit habitat with a buffer of at least 500 feet. The buffer will be clearly delineated with brightly colored markers or other easily visible temporary fencing.

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 the U.S. Fish and Wildlife Service?

No Impact. Riparian habitat or other sensitive natural communities do not occur on the project site and would not be affected by project activities. No impact would occur.

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

No Impact. The project site does not support federally protected wetlands as defined by Section 404 of the Clean Water Act and none would be affected by project activities. No impact would occur.

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?

Less-than-Significant Impact. A wildlife corridor is generally a topographical or landscape feature, or movement area, that connects two open-space habitat parcels that would otherwise be entirely fragmented or isolated from one another. Although a variety of wildlife species may use the project site, it does not function as a known or major migratory corridor. Project construction and operation would not substantially interfere with the movement of any native resident or migratory fish or wildlife species or with established resident or migratory wildlife corridors, or impede the use of wildlife nursery sites. Therefore, this impact would be less than significant.

e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

Less-than-Significant Impact. Local policies or ordinances that apply to the project site include the San Joaquin County General Plan (San Joaquin County 1992) and the City of Lathrop General Plan (City of Lathrop 2004), which both include several resource conservation objectives that aim to protect significant biological resources,

such as riparian habitat. The San Joaquin County General Plan also contains policies to protect heritage trees. As discussed above, no riparian habitat, wetlands, or similar sensitive habitats would be affected by the proposed project. Although the proposed project may require the removal of several mature valley oak trees in Segment VIa.2, within Lathrop, as long as RD 17 obtains tree removal permits from the City of Lathrop, this activity does not conflict with Lathrop's general plan, city ordinances, or the municipal code. RD 17 is in close coordination with the City of Lathrop regarding all aspects of work in Reach VIa.2 (e.g., removal of existing corridor park, park reconstruction), and there is no reason to believe that a tree removal permit would not be issued. There are no trees that might require removal in project reaches within San Joaquin County that would be considered heritage trees. Therefore, no conflicts with San Joaquin County policies or ordinances would occur. This impact would be less than significant.

f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

No Impact. San Joaquin County has adopted the San Joaquin County Multi-Species Habitat Conservation and Open Space Plan (SJMSCP). There are no natural community conservation plans or other local, regional, or state habitat conservation plans that apply in the project area. The SJMSCP provides a strategy for balancing the desires to conserve open space, maintain the agricultural economy, and allow development in San Joaquin County. It was developed to avoid, minimize, and mitigate impacts on plant and wildlife habitat projected to occur in the county between 2001 and 2051, resulting from the anticipated conversion of as much as 109,300 acres of open space land to non-open space uses (San Joaquin County 2000). The approach of the SJMSCP is to minimize the potential for take of species addressed in the plan through implementation of take avoidance and minimization measures and compensation for incidental take and habitat conversion through payment of fees (or in-lieu land dedication) for conversion of open space lands. These fees shall be used to preserve and create natural habitats to be managed in perpetuity through the establishment of habitat preserves. Participation in the SJMSCP is voluntary for local jurisdictions and project proponents.

RD 17 does not propose to use the SJMSCP for mitigation of project impacts because the proposed project does not result in the conversion of open space areas to developed uses. Except for sites where parks would be restored or constructed on top of the seepage berms under permits and authorizations already obtained by others, all other seepage berms would qualify as open space under the SJMSCP. Also, none of the project reaches occur in areas specifically identified for conservation in the SJMSCP. Therefore, the proposed project does not conflict with the implementation of, or any provisions within the SJMSCP. No impact would occur. Also see Section 3.9, "Land Use and Planning" for an additional evaluation of the project's consistency with the SJMSCP.

3.5 CULTURAL RESOURCES

	ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	☐	☒	☐	☐

REGULATORY SETTING

CEQA provides a broad definition of what constitutes a cultural or historical resource. Cultural resources can include traces of prehistoric habitation and activities, historic-era sites and materials, and places used for traditional cultural practices or places with special cultural significance. In general, any trace of human activity more than 50 years in age is required to be treated as a potential cultural resource.

CEQA states that if a project would have significant impacts on important cultural resources, then alternative plans or mitigation measures must be considered. However, only significant cultural resources (termed "historical resources") need to be addressed. The State CEQA Guidelines define a historical resource as a resource listed or eligible for listing on the California Register of Historical Resources (CRHR) (California Public Resources Code [PRC] Section 5024.1). A resource may be eligible for inclusion in the CRHR if it:

1. is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;

2. is associated with the lives of persons important in our past;

3. embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or

4. has yielded, or may be likely to yield, information important in prehistory or history.

In addition to meeting one or more of the above criteria, resources eligible for listing in the CRHR must retain enough of their historic character or appearance to be recognizable as historical resources and to convey the reasons for their significance. Integrity is evaluated with regard to the retention of location, design, setting, materials, workmanship, feeling, and association (California Department of Parks and Recreation 1999:69–70).

The State CEQA Guidelines also require consideration of unique archaeological resources (Section 15064.5). As used in the PRC (Section 21083.2), the term "unique archaeological resource" means an archaeological

artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

1. contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information,

2. has a special and particular quality such as being the oldest of its type or the best available example of its type, or

3. is directly associated with a scientifically recognized important prehistoric or historic event or person.

ENVIRONMENTAL SETTING

PREHISTORIC SETTING

The earliest well-documented entry and spread of humans into California occurred at the beginning of the Paleo-Indian Period (10,000–6000 BC). Social units are thought to have been small and highly mobile. Because of the plentiful resources and temperate climate, the Central Valley was well populated in prehistory and served as the location for some of the more substantial village sites known in California. Known sites have been identified within the contexts of ancient pluvial lake shores and coast lines, as evidenced by such characteristic hunting implements as fluted projectile points and chipped stone crescent forms. Prehistoric adaptations over the ensuing centuries have been identified in the archaeological record by numerous researchers working in the area since the early 1900s, as summarized by Fredrickson (1974) and Moratto (1984).

Beardsley (1948), Lillard et al. (1939), and others conducted numerous studies that form the core of our early understanding of upper Central Valley archaeology. Little has been found archaeologically that dates to the Paleo-Indian or the Lower Archaic (6,000–3,000 BC) time periods; however, archaeologists have recovered a great deal of data from sites occupied by the Middle Archaic period. The lack of sites from earlier periods may be the result of high sedimentation rates, leaving the earliest sites deeply buried and inaccessible. During the Middle Archaic Period (3,000–1,000 BC), the broad regional patterns of foraging subsistence strategies gave way to more intensive procurement practices. Subsistence economies were more diversified, possibly including the introduction of acorn processing technology. Human populations were growing and occupying more diverse settings. Permanent villages occupied throughout the year were established, primarily along major waterways. The onset of status distinctions and other indicators of growing sociopolitical complexity mark the Upper Archaic Period (1,000 BC to AD 500). Exchange systems became more complex and formalized and evidence of regular, sustained trade between groups was seen for the first time.

Several technological and social changes characterized the Emergent Period (AD 500–1800). The bow and arrow were introduced, ultimately replacing the dart and atlatl. Territorial boundaries between groups became well established. It became increasingly common that distinctions in an individual's social status could be linked to acquired wealth. Exchange of goods between groups became more regularized with more goods, including raw materials, entering into the exchange networks. In the latter portion of this period (AD 1,500–1,800), exchange relations became highly regularized and sophisticated. The clamshell disk bead became a monetary unit for exchange, and increasing quantities of goods moved greater distances.

Three time periods were well represented in archaeological assemblages in the general vicinity of the project area. These assemblages are discussed in detail in Moratto (1984) and summarized here. The Windmiller Pattern (3,000–1,000 BC) of archaeological assemblages included an increased emphasis on acorn use, as well as a continuation of hunting and fishing activities. Ground and polished charmstones, twined basketry, baked-clay artifacts, and worked shell and bone were hallmarks of Windmiller culture. Widely ranging trade patterns brought goods in from the Coast Ranges and trans-Sierran sources, in addition to closer trading partners. The Berkeley Pattern (1,000 BC to AD 500) represented a greater reliance on acorns as a food source than was seen previously.

Distinctive stone and shell artifacts distinguished it from earlier or later cultural expressions. The Berkeley Pattern appears to have developed in the Bay Area and was spread through the migration of Plains Miwok Indians. The Augustine Pattern (AD 500 to Historic Era) is characterized by increasing populations resulting from more intensive food procurement strategies, as well as a marked change in burial practices and an increase in trade activities.

ETHNOGRAPHIC CONTEXT

The Northern Valley Yokuts occupied the project area and surrounding region—that is, the land on each side of the San Joaquin River from the Sacramento–San Joaquin Delta (Delta) to south of Mendota. The Diablo Range probably marked the Yokuts' western boundary (Wallace 1978) and the eastern edge would have lain along the Sierra foothills. Yokuts' occupation of the northern parts of the range may be relatively recent, as linguistic evidence points toward an earlier Miwok occupation. The Yokuts gradually expanded their range northward, and clearly occupied the northern San Joaquin Valley during the Spanish Colonial period, as evidenced by mixed historic and prehistoric artifact assemblages. The late prehistoric Yokuts may have been the largest ethnic group in pre-contact California.

Euro-American contact with the Northern Valley Yokuts began with infrequent excursions by Spanish explorers traveling through the Sacramento–San Joaquin Valley in the late 1700s to early 1800s. Many Yokuts were lured or captured by missionaries and scattered among the various missions, although many escaped and returned to the valley. Raiding parties among the Spanish (and later Mexican) livestock herds became prevalent, leading to retaliatory action by the Euro-American settlers, which often led to the deaths of numerous Yokuts individuals. However, major impacts to the native peoples of the region came with the malaria epidemic of 1833, which decimated the population, killing thousands of Yokuts and people of surrounding groups. The influx of Europeans during the Gold Rush era further reduced the population through disease and violent relations with the miners. Although there was no gold within the Yokuts territory, miners passing through on their way to the diggings caused some upheaval. Former miners, who had seen the richness of the San Joaquin Valley on their way east, later returned to settle and farm the area (Wallace 1978), further displacing the remaining native populations. Today, Yokuts descendents are reinvesting in their traditions and constitute a growing and thriving community.

HISTORIC-ERA CONTEXT

Early Exploration and Settlement

The earliest recorded European explorations of the area around present-day RD 17 occurred in 1806 and 1808. Two expeditions led by Alferez Gabriel Moraga and Father Pedro Muñoz passed through the general region in search of suitable mission sites (Beck and Haas 1974). In general, these earliest expeditions to the interior lands were peaceful in nature and the contemplated missions never materialized; nonetheless, by 1813 some explorations took a more belligerent course, in part through their pursuit and capture of neophytes escaped from the coastal missions. Other early Euro-American contact with the Native populations began in the late 1820s, when trapper Jedediah Smith traveled into the San Joaquin Valley and Peter Ogden of the Hudson's Bay Company scouted the Sacramento Valley as far south as Stockton. Substantial Euro-American settlement and development, however, did not occur in the RD 17 area until Antonio M. Pico was granted the 35,546-acre *Rancho El Pescador* in 1843. Long after the change from Mexican to U.S. control in 1846, the land was patented on March 10, 1865 to Pico and Henry M. Naglee, one of the earliest area property holders to reclaim land in the Delta region (Beck and Haas 1974, Thompson 1958, West 1994).

Settlements in the Delta were initially situated on naturally formed levees created by the merging of floodplains and tidal environments, and consisted of single-family farms and farm labor camps. However, in the central Delta, sediments consisted primarily of peat, and the natural levees were poorly developed. The earliest attempt at reclamation and levee construction in the Delta occurred in 1852 on Merrit Island and the east bank of the Mokelumne River (Thompson 1958:211). Most early levees, including the 1852 Merrit Island levees, were

referred to as "shoestring" levees, a term that expressed their hasty and often inadequate construction, which offered little protection beyond periodic high tides. The early shoestring levees and even later structures built in the 1860s and 1870s rarely remained intact for more than 1 or 2 years and required frequent repairs and upgrades.

Apart from difficulties, such as substandard materials and often inadequate engineering, the early years of levee construction in the Delta were disorganized. Higher levees on one tract would lead to flooding on a neighboring tract with lower levees. For example, the levees constructed on Union Island (located several miles to the west of RD 17) in the 1870s were very different from others in the area, mainly because they started out as fairly large structures, averaging 50 feet in width at the base and 8 feet in height, and were set back 200 feet from the rivers. Most early levees in the Delta were initially much smaller and were only expanded and enhanced as the need arose, on nearly a seasonal basis (Thompson 1958).

Reclamation District No. 17

According to Thompson (1958:482–484), in the southern Delta, only Grand Island (RD 3) and RD 17 have maintained their organizational and areal integrity since the 1860s, with other districts having been reorganized several times. RD 17 was completely leveed along the San Joaquin River by early 1864 but, as with most Delta levees, periodically required seasonal repairs. At RD 17, such repairs were necessary in response to the winters of 1868 and 1875, but by 1877 the entire levee system was strengthened and enlarged, by which time the entire district had been reclaimed for agricultural purposes. RD 17's newly strengthened levees held up against the winter and spring floods of 1878, although levee breaks were documented in 1901 and 1911. Since that time, RD 17's levees have been continually upgraded and modified to a point where they bear little resemblance to their 19th century counterparts in terms of size and overall configuration.

PREVIOUSLY DOCUMENTED CULTURAL RESOURCES IN PROJECT VICINITY

Research into known cultural resources in the vicinity of the proposed project began with a records search conducted by the Central California Information Center of the California Historical Resources Information System. The records search included, but was not necessarily restricted to, reviews of select publications, maps, and information listed in the following sources:

- *National Register of Historic Places* (National Park Service 1996 and updates)
- *California Register of Historical Resources* (California Department of Parks and Recreation 1976 and updates)
- *California Points of Historical Interest* (California Department of Parks and Recreation 1992 and updates)
- *California Historical Landmarks* (California Department of Parks and Recreation 1990)
- *Directory of Properties in the Historical Resources Inventory* (State of California 2000)
- *Historic Spots in California* (Rensch 1966)
- *State and Local Bridge Survey* (California Department of Transportation 1987 and updates)
- *Survey of Surveys* (California Department of Parks and Recreation 1989)

Previously conducted cultural resources investigations in the RD 17 area that were identified during the records search included:

- ECORP Consulting—Subsurface Testing and Evaluation at South Lathrop South Village (2008)
- ECORP Consulting—Cultural Resources Inventory and Assessment, South Lathrop South Village (2006)
- EDAW—Draft Environmental Impact Report for the Central Lathrop Specific Plan (2004)
- Tanksley/Caltrans—Extended Phase I Report for CA-Sjo-003. Mossdale I-5 Widening Project, San Joaquin County, California (2003)

- EDAW—Cultural Resource Assessment for the Lathrop Water Recycling Plant No. 1, Phase 1 Expansion Project (2003)
- EDAW—Cultural Resources Survey for the Mossdale Landing Urban design Concept (2002a)
- EDAW—Historical Architectural Assessment for the River Islands at Lathrop Project (2002b)

The areas included in these surveys encompass all nine reaches included in the proposed project.

Table 3.5-1 lists prehistoric and historic-era cultural resources that have been previously identified in the vicinity of the project site. No sites eligible for inclusion in the CRHR or the National Register of Historic Places (NRHP) occur within the project site or in the immediate vicinity. Specific locations for cultural resources sites are typically considered confidential information to minimize the potential for vandalism or damage to the sites (e.g., removal of materials). Therefore, location information for the sites listed in Table 3.5-1 is not provided.

Table 3.5-1
Previously Documented Cultural Resources

Site Number	Association	Type	NRHP/CRHR Eligibility Status
APN 191-220-22	historic-era	residence	not eligible
Moss-1	historic-era	debris scatter	not eligible
ISO-4	historic-era	water pump	not eligible
ISO-5	prehistoric	pestle fragment	not eligible
ISO-6	prehistoric	chert flake	not eligible
P-39-00002	historic-era	railroad bridge	eligible
CA-Sjo-3	prehistoric	habitation-burial	eligible
CA-Sjo-313H	historic-era	debris scatter	not eligible

Notes:
NRHP = National Register of Historic Places
CRHR = California Register of Historic Resources
Source: EDAW 2008

FIELD SURVEYS

Given that archival research and review described above indicated that the entire project area had been surveyed during previous investigations conducted primarily by EDAW and ECORP in recent years, it was not deemed necessary to repeat these intensive surveys. Consequently, EDAW cultural resources specialists conducted a reconnaissance-level survey intended to review the accuracy of previous studies and revisit any documented cultural resources to update existing records if necessary. This reconnaissance survey was conducted along the RD 17 levee and included the pedestrian examination of the levee and its immediate vicinity.

All aspects of the cultural resource study were conducted in accordance with the *Secretary of the Interior's Standards and Guidelines for Identification of Cultural Resources* (48 CFR 44720-23). Resource documentation followed the guidance outlined in *Instructions for Recording Historical Resources* (California Department of Parks and Recreation 1995).

NATIVE AMERICAN COORDINATION

Coordination with the Native American community was initiated by EDAW prior to conducting fieldwork, with a letter to the Native American Heritage Commission (NAHC) requesting a list of local Native American representatives or tribal contacts. This letter also requested a search of the NAHC Sacred Lands file to determine if any properties of cultural concern to the Native American community are situated within or near the project area. No such properties were identified by the NAHC in the area. Letters and follow-up phone calls were made to the Native American groups and individuals identified by the NAHC. To date, no response has been received.

THRESHOLDS OF SIGNIFICANCE

Beyond the thresholds of significance provided in the checklist table above, the following information is also used to assist in evaluating the significance of impacts on cultural resources.

A substantial adverse change in the significance of a historical resource means the physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings, such that the significance of a historical resource would be materially impaired. Actions that would materially impair the significance of a historical resource are any actions that would demolish or adversely alter those physical characteristics of a historical resource that convey its significance and qualify it for inclusion in the CRHR or in a local register or survey that meets the requirements of PRC Sections 5020.1(k) and 5024.1(g).

DISCUSSION

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

Less-Than-Significant Impact. Archival research and the reconnaissance survey conducted by EDAW resulted in confirmation that no previously documented significant cultural resources occur on the project site and vicinity. Therefore, the project would not result in an adverse change to a previously documented significant historical resource as defined by the State CEQA Guidelines (Section 15064.5).

Studies conducted in support of this Initial Study/Mitigated Negative Declaration resulted in the documentation of one previously unrecorded cultural resource consisting of historic portions of the RD 17 levee. According to Thompson (1958), initial RD 17 levees would have been constructed prior to 1864. These levees clearly have been modified and rebuilt numerous times, however, resulting in a process of near-continuous alteration to their initial configuration since at least the last quarter of the 19th century.

Regarding the setting of the levee, although much of the RD 17 project area is still dominated by the same general agricultural activities that were prevalent during the 19th century, the area is rapidly urbanizing and the visual and physical context of the levee system has been compromised in many locations within and near the proposed project area. Even though the general location, setting, and feel of the levee have remained largely unchanged since its construction in many areas, the integrity of materials and workmanship of the levee has changed dramatically in the 150 years since its original construction. In addition, though the levees were critical in the formation and maintenance of RD 17, as a system and as an individual resource, such levees are ubiquitous on the Delta landscape and their full data potential has been realized through documentation and discussion. Consequently, EDAW recommends that the RD 17 levees located in the project area are not eligible for CRHR listing, and therefore are not considered historical resources. Thus, any modifications to the levees would result in a less-than-significant impact.

b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?

Less Than Significant with Mitigation Incorporated. Archival research and the reconnaissance survey conducted by EDAW resulted in confirmation that no previously documented significant archaeological resources occur on the project site and vicinity. However, numerous prehistoric archaeological sites have been recorded in the Delta region (Cook and Elsasser 1956, Moratto 1984, Holson et al. 1993), and early Native American artifacts and sites have been found in the overall RD 17 area. These findings suggest that additional habitation and activity sites and human interments could be found in subsurface contexts within the RD 17 project area. Buried cultural materials may be very close to the ground surface, within the range of ground disturbance included in the proposed project. In light of the potential to uncover unknown or undocumented subsurface cultural remains, this impact would be potentially significant. Implementation of Mitigation Measure Cul-1 would reduce this impact to a less-than-significant level.

Mitigation Measure Cul-1: Immediately Halt Construction Activities if Any Cultural Materials Are Discovered. If an inadvertent discovery of cultural materials (e.g., unusual amounts of shell, animal bone, flaked stone, bottle glass, ceramics, structure/building remains) is made during project-related construction activities, ground disturbances in the area of the find shall be halted immediately and a qualified professional archaeologist shall be notified regarding the discovery. The archaeologist shall determine whether the resource is potentially significant in accordance with the CRHR and develop appropriate mitigation. Appropriate mitigation may include no action, avoidance of the resource, and potential data recovery.

c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

No Impact. Construction of seepage berms on eight of the nine project reaches (or segments) would involve the purchase of commercially available fill and the placement of this fill in compacted layers with little modification to the native soils beneath. Maintenance activities in Reach VIId would include minor site grading, removal of trash and debris, hydro-seeding, and reconstruction of an access ramp. None of the proposed project activities would result in excavations or other actions at sufficient depths to encounter or cause damage to unique paleontological resources or unique geologic features. Because no unique paleontological resources or unique geological features would be encountered or disturbed, no impact would occur.

d) Disturb any human remains, including those interred outside of formal cemeteries?

Less Than Significant with Mitigation Incorporated. Although no human remains have been documented within the project area, the presence of a CRHR-eligible prehistoric cultural resource (CA-Sjo-3) in the overall RD 17 area indicates that human interments could be found in subsurface contexts in other locations. Future ground-disturbing activities related to the project could adversely affect unknown prehistoric burials. Buried human remains may be very close to the ground surface, within the range of ground disturbance included in the proposed project. California law recognizes the need to protect interred human remains, particularly Native American burials and associated items of patrimony, from vandalism and inadvertent destruction. In light of the potential to uncover unknown or undocumented Native American burials, this impact would be potentially significant. Implementation of Mitigation Measure Cul-2 would reduce this impact to a less-than-significant level.

Mitigation Measure Cul-2: Immediately Halt Construction Activities if Any Human Remains Are Discovered. The procedures for the treatment of discovered human remains are contained in Sections 7050.5 and 7052 of the California Health and Safety Code and Section 5097 of the PRC.

In accordance with the California Health and Safety Code, if human remains are uncovered during ground-disturbing activities, all such activities within the vicinity of the find shall be halted immediately and the project proponent or designated representative shall be notified. The project proponent shall immediately notify the

county coroner and a qualified professional archaeologist. 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 (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 phone within 24 hours of making that determination (Health and Safety Code, Section 7050[c]). The project proponent's responsibilities for acting on notification of a discovery of Native American human remains are identified in detail in Section 5097.9 of the PRC. The project proponent or its appointed representative and the professional archaeologist shall consult with a Most Likely Descendant (MLD) determined by the NAHC regarding the removal or preservation and avoidance of the remains and shall determine whether additional burials could be present in the vicinity.

Assuming that an agreement can be reached between the MLD and the project proponent or the designated representative with the assistance of the archaeologist, these steps would minimize or eliminate adverse impacts on the uncovered human remains.

3.6 GEOLOGY AND SOILS

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

This section describes the geologic and soil conditions in the project vicinity and evaluates potential effects of the proposed project related to unstable soils, soil erosion, and seismic activity.

ENVIRONMENTAL SETTING

The levee reaches (or segments) that collectively make up the project area are in the northern part of the San Joaquin Valley, which, together with the Sacramento Valley, compose the Great Valley geomorphic and geotectonic province. The Great Valley province is the geologic term for the Central Valley of California, which is bounded by the Sierra Nevada range to the east and south, the Coast Ranges to the west, and the Klamath Mountains to the north. The Great Valley is drained by the Sacramento and San Joaquin Rivers, which join and flow out of the province through the San Francisco Bay. This geomorphic province is an asymmetric trough approximately 400 miles long and 50 miles wide, and is filled with a thick sequence of sediments ranging from Jurassic (180 million years ago) to recent age (i.e., Holocene time, over approximately the last 11,000 years). The

sediments in the Great Valley vary between 5 and 10 kilometers in thickness and were derived primarily from erosion of the Sierra Nevada to the east, with lesser amounts of material from the Coast Ranges to the west.

The local setting for the project area is defined by geological processes that occurred in the Sacramento–San Joaquin Delta (Delta). Most of the sediments in the Delta were deposited between 175 million and 25 million years ago and were accumulated in marine environments. Younger deposits (25 million years ago to recent) are generally described as nonmarine; however, some of the younger deposits may have formed as marine deposits in shallow seas and estuaries. According to the geologic maps of the Delta, Lathrop Quadrangle (Atwater 1982:sheet 20), the geologic formation exposed in the project area is undifferentiated Holocene alluvium, which consists of undivided floodplain deposits and is mapped in an extensive area in the Delta, including along the San Joaquin River. This unit consists of unweathered gravel, sand, silt, and clay deposited by present-day stream and river systems.

No active faults are mapped across the project area, or within San Joaquin County, by the California Geological Survey (CGS) or the U.S. Geological Survey (USGS). The CGS also does not list San Joaquin County as an area included in the Alquist-Priolo earthquake fault zones (Hart and Bryant 2007:3). Several active faults (those that show evidence of displacement during Holocene time) are located west of the project area in the Coast Ranges. Geologic studies indicate that a tectonic boundary exists along the western margin of the Central Valley of California, referred to as the Coast Ranges/Sierran Block or Great Valley Fault System (American Association of Petroleum Geologists 1992). The Richter Magnitude (M) 6.7 Coalinga earthquake in 1983 and the M >6.0 earthquakes in 1892 near Vacaville and Winters occurred on segments of the Great Valley Fault System. In addition, at least three M 6.0 and one M 6.5 earthquakes have occurred along this zone within the San Joaquin Valley, indicating this zone is seismically active (American Association of Petroleum Geologists 1992). Rupture is along subsurface blind-thrust faults, which do not intersect the ground surface; therefore, no known surface fault rupture has been observed.

The location and nature of the Great Valley Fault System and associated blind-thrust faults are not well known. Wakabayashi and Smith (1994) have proposed preliminary segmentation of the Great Valley Fault System. Approximately 16 miles to the west of Reclamation District No. 17 (RD 17), a 30-kilometer-long segment with a characteristic earthquake M of 6.7 is indicated. Overall, Wakabayashi and Smith (1994) state the recurrence interval for the average Great Valley Fault segment, as estimated from historical seismicity, is 360 to 440 years.

The known active faults in the region include Class “A” and Class “B” faults, based on the California Building Code “Seismic Source Type” descriptions. This system defines three fault types: “A”, “B”, and “C”. Faults with an “A” classification are capable of producing large-magnitude events, have a high rate of seismic activity (e.g., slip rates greater than 5 millimeters per year), and have well-constrained paleoseismic data (e.g., evidence of displacement within the last 700,000 years) (Petersen et al. 1996). Type “C” faults are those not capable of producing large-magnitude earthquakes and that have a relatively low rate of seismic activity. Faults with a “B” classification are those that lack paleoseismic data necessary to constrain the recurrence intervals of large-scale events and may produce medium- to large-magnitude earthquakes.

The nearest known surface trace of a fault designated as active by the CGS is the Class B Greenville fault, approximately 25 miles west of the project area (Cao et al. 2003, Jennings and Saucedo 1999). The most recent rupture of the Greenville fault occurred in January 1980 when two earthquakes resulted in discontinuous surface rupture along traces of the fault in the area southeast of Mt. Diablo and north of the city of Livermore (Martin 1980). The first earthquake was reported as an M 5.5 event. The earthquake that followed 2 days later was reported by different sources as an M 5.2 and an M 5.8 event. The next substantial fault zone designated active by the CGS is the Class B Calaveras fault, approximately 35 miles west of the project area. The closest traces of Class A faults are the Hayward fault, approximately 45 miles west of the project area, and the San Andreas fault, approximately 60 miles west of the project area. The CGS Probabilistic Seismic Hazards Page (CGS 2003) was consulted to estimate site-specific probabilistic ground acceleration for the project area. Peak horizontal ground acceleration (the level of ground shaking) with 10% probability of being exceeded in 50 years was calculated in

percentage of gravity (*g*) (or percentage of the earth's normal gravitational strength). These calculations found that there is a 1-in-10 probability that an earthquake will occur within 50 years that would result in a peak horizontal ground acceleration exceeding 0.29*g* in alluvial soils in the project area (CGS 2003. Ground motions exceeding 0.3*g* are often associated with an M 5.5 or larger event (Christenson 1994).

Potential seismic hazards resulting from a moderate to major earthquake in the region can generally be classified as primary and secondary. The primary effect is fault ground rupture. Common secondary seismic hazards include ground shaking, liquefaction, and subsidence, which are discussed below under item a).

The topography in the project area is generally flat, with minor sloping toward the San Joaquin River. The elevation near the San Joaquin River in the project area varies from approximately 5–15 feet above mean sea level (msl).

The Natural Resources Conservation Service's (NRCS's) online database includes map unit descriptions and related data for the major soil types represented along the nine project reaches included in the proposed project. A map unit is identified and named according to the taxonomic classification of the dominant soils. A description of the map units in each reach is provided in Table 3.6-1.

DISCUSSION

a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:

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

Less-than-Significant Impact. The primary effect from a moderate to major earthquake is fault ground rupture, also called surface faulting. Because no active faults are mapped across the project sites by CGS or USGS, and the project area is not located within an Alquist-Priolo Earthquake Fault Zone, fault ground rupture is unlikely.

Construction of seepage berms as part of the proposed project would improve the reliability and seismic stability of the flood protection system in the project area overall and would provide increased flood protection for local communities. With implementation of the proposed project, a seismic event centered in the Coast Ranges to the west would be less likely to result in loss, injury, or death from a levee system failure in the project area than under existing conditions. Therefore, this impact would be less than significant.

ii) Strong seismic ground shaking?

Less-than-Significant Impact. As described previously, no active faults are mapped across the project sites by CGS or USGS, and the project area is not located in an Alquist-Priolo Earthquake Fault Zone. However, the project area could be subject to ground shaking from earthquakes originating in the Coast Ranges. The known active fault trace nearest the project area is the Greenville fault, approximately 25 miles west of the project area (Jennings and Saucedo 1999). Surface rupture of the Greenville fault last occurred in January 1980 near the city of Livermore.

Although the project area could be subject to ground shaking from seismic events originating in the Coast Ranges, construction of seepage berms and implementation of other improvements under the proposed project would improve the reliance and seismic stability of the flood protection system in the project area overall and provide increased flood protection for local communities. No new structures or other facilities are proposed that could increase hazards during a seismic event. Relative to existing conditions, increasing the strength and reliability of

the flood protection system at the project reaches would reduce the possibility of structural failure of the local levee system as a result of an earthquake. Therefore, this impact would be less than significant.

Table 3.6-1
Soil Mapping Unit Descriptions for Soil Types at the Project Reaches

Project Reach	Map Symbol and Soil Name	Depth (inches)	Shrink-Swell Potential	Erosion Factor[b] Kw	Ksat[a]	Drainage Class	Wind Erodibility Group[c]
Ic, Id	261–Valdez silt loam, organic substratum, partially drained, 0–2% slopes	0–14	Low	.43	Moderately high (0.20–0.57 in/hr)	Poorly drained	5
		14–40	Moderate	.43			
		40–50	Low	.28			
IVb	167–Grangeville clay loam, partially drained, 0–2% slopes	0–16	Moderate	.32	Moderately high (0.20–0.57 in/hr)	Somewhat poorly drained	6
		16–32	Low	.32			
		32–60	Low	.32			
IVb	130–Columbia fine sandy loam, drained, 0–2% slopes	0–12	Low	.32	High (1.98–5.95 in/hr)	Somewhat poorly drained	7
		12–60	Low	.32			
VIa.2, VIIc, VIId, VIIf	153–Egbert silty clay loam, partially drained, 0–2% slopes	0–8	Moderate	.28	Moderately low to moderately high (0.06–0.20 in/hr)	Poorly drained	4
		8–19	High	.24			
		19–60	High	.24			
VIa.2, VIa.3, VIIf	197–Merritt silty clay loam, partially drained, 0–2% slopes	0–14	Low	.43	Moderately high (0.20–0.57 in/hr)	Poorly drained	7
		14–40	Moderate	.43			
		40–50	Low	.28			
VIa.2, VIa.3	132–Columbia fine sandy loam, channeled, partially drained, 0–2% slopes, frequently flooded	0–12	Low	.32	High (1.98–5.95 in/hr)	Somewhat poorly drained	7
		12–60	Low	.32			
VIa.3, VIa.4, VIIc	166–Grangeville fine sandy loam, partially drained, 0–2% slopes	0–20	Low	.32	High (1.98–5.95 in/hr)	Somewhat poorly drained	7
		20–60	Low	.32			

Notes:
In/hr = inches per hour

[a] Saturated hydraulic conductivity (Ksat) refers to the capacity of the most limiting layer to transmit water. The U.S. Department of Agriculture previously used the term "permeability" to describe this soil factor.

[b] Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and Ksat. Experimentally measured Kw factors vary from 0.02 to 0.69. For soil interpretations, the factors are grouped into 14 classes. The classes are identified by a representative class value, as follows: .02, .05, .10, .15, .17, .20, .24, .28, .32, .37, .43, .49, .55, and .64. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water. Erosion factor Kw indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

[c] Wind erodibility groups are made up of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible.

Some soil types are present in more than one levee reach. For example, in Reach VIa.3, soils present along an approximately 65-foot-wide corridor along the east side of the existing levee contain Merritt silty clay loam, Columbia fine sandy loam, and Grangeville fine sandy loam. For this reason, some reaches are repeated in this table.

Source: NRCS 2008

iii) Seismic-related ground failure, including liquefaction?

Less-than-Significant Impact. Under existing conditions, high-water events in the San Joaquin River are known to have caused underseepage and formation of boils along RD 17 levees. Therefore, soils under the proposed seepage berms do become saturated and could be susceptible to liquefaction. As discussed under items i) and ii) above, the existing levees and the surrounding area could be subject to ground shaking from earthquakes originating from active faults in the Coast Ranges. The soils in the project vicinity, where saturated, may lose strength during and immediately after strong earthquake shaking (the phenomenon referred to as soil liquefaction). Such a situation is possible, but the probability that strong ground motion would coincide with or immediately precede high river levels is very low. The susceptibility of the existing RD 17 levees to saturation of foundation soils coinciding with a seismic event is part of the existing condition. The presence of the seepage berms would not alter the potential for soil liquefaction in the project area during a seismic event because levee foundation soils would be saturated during a high-water event whether or not the seepage berms were present.

Construction of seepage berms in the project area would provide additional overburden at the landside levee toe Relative to existing conditions, construction of seepage berms and related improvements would fortify the RD 17 flood protection system and improve the overall stability of the levee system and resistance to seismic damage in the project area. Although a seismic event could cause cracking or deformation of any of the seepage berms that would be constructed, repairs and any necessary reconstruction would be implemented before high-water conditions in the San Joaquin River occurred again.

The proposed Phase II Project would increase the stability, reliability, and performance of the RD 17 flood protection system, and damage would be less likely to result from a strong seismic event. The risk of loss, injury, or death from a levee system failure in the project area would be less than under existing conditions. Therefore, this impact would be less than significant.

iv) Landslides?

Less-than-Significant Impact. The project area is in the northern part of the San Joaquin Valley where slopes are generally flat. The elevation near the San Joaquin River in the project area varies from approximately 5 to 15 feet msl. The only topographic feature of note in the project area is the levees themselves. Proposed seepage berms would place approximately 4–6 feet of compacted fill along the levee toe.

A seismic event centered on an active fault in the Coast Ranges could cause differential settlement of any of the proposed seepage berms. However, embankment slopes and heights are not steep enough or high enough for a seismic event to result in a landslide that could potentially result in loss, injury, or death. Therefore, this impact would be less than significant.

b) Result in substantial soil erosion or the loss of topsoil?

Less than Significant with Mitigation Incorporated. Activities associated with construction of seepage berms would disturb earth during site preparation (e.g., grading and clearing), set up of staging areas adjacent to the project sites, material transport, and other work that would include movement of soil. These activities could result in localized erosion or an incidental release of sediment to adjacent lands. Ground disturbances would be temporary and would occur only during project construction. Fill material would be purchased from commercial sources and no excavations of borrow areas would be conducted as part of the project.

Table 3.6-1 includes data on the susceptibility of soils at the project reaches to sheet and rill erosion by water (erosion factor K). As shown in Table 3.6-1, erosion factor Kw indicates the erodibility of the whole soil. For soil interpretations, the factors are grouped into 14 classes. The classes are identified by a representative class value, with class .02 being the least susceptible to sheet and rill erosion by water and class .64 being the most susceptible. The K factors for soils represented in the project reaches are estimated to be .28 (Egbert silty clay

loam), .32 (Columbia fine sandy loam, Grangeville fine sandy loam, and Grangeville clay loam), and .43 (Valdez silt loam and Merritt silty clay loam) (NRCS 2008).

Of the soils described in Table 3.6-1, soils with the higher Kw factor of .43 are present in Reaches Ic, Id, VIa.2, VIa.3, and VIIf. Based on NRCS soils data, the soils at the project site are minimally to moderately susceptible to wind erosion. Implementation of the proposed project would not require excavation of soils at the project reaches. Grading and clearing of the ground surface would be required. These activities would cause relatively minor disturbance of soils during project construction, which could increase the potential for some wind and water erosion at areas near the project sites. Any soil entering nearby waterways could adversely affect water quality. Therefore, this impact is potentially significant. Mitigation Measure Haz-1 in Section 3.7, "Hazards and Hazardous Materials," requires preparation of a storm water pollution prevention plan (SWPPP) and submittal of a notice of intent to the Central Valley Regional Water Quality Control Board for stormwater discharges associated with general construction activity. The SWPPP shall include detailed measures to prevent and control soil erosion and waste discharges from the construction areas. Implementation of Mitigation Measure Haz-1 would reduce this impact to a less-than-significant level.

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

Less-than-Significant Impact. As described previously, improvements that are proposed under the proposed project would improve the seismic stability of the flood control system in the project area relative to existing conditions. The responses to items i), ii), iii), and iv) are also applicable to this item. This impact would be less than significant.

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

Less-than-Significant Impact. Expansive soils shrink and swell as a result of moisture changes, swelling when wet and shrinking when dry. The severity of shrinking and swelling can be expressed as "shrink-swell potential." The shrinking and swelling of soils can cause differential movement and settlement of structures constructed on these soils unless proper engineering techniques are used. As shown in Table 3.6-1, the project segments proposed for construction of seepage berms are in areas where soils adjacent to the existing levee primarily exhibit low or low to moderate shrink-swell potential to depths of 50 or 60 inches below the soil surface. The shrink-swell potential for Egbert silty clay loam is estimated to be moderate in the top 8 inches of the soil column. At depths below 8 inches, this soil type is estimated to have high shrink-swell potential. Based on NRCS data, Egbert silty clay loam is mapped in portions of Reaches VIa.2, VIIc, and VIIf. Shrink-swell potential for the other soil types in these project segments is estimated to be low or low to moderate. Reach VIId, which covers less than 1 acre, is shown to have only the Egbert silty clay loam soil type. Proposed repair work in this segment would be limited to easement acquisition and levee maintenance. No fill and no structures would be placed or installed at this location.

No structures for human occupancy would be constructed as part of the proposed project. Because six of the seven dominant soils mapped by NRCS in the project area have low or low to moderate shrink-swell potential, and no new risks to life or property would be created, the proposed project would have a less-than-significant impact related to expansive or unstable soils.

e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?

No Impact. No septic systems or wastewater disposal systems would be constructed as part of the proposed project. Therefore, no impact would occur.

3.7 HAZARDS AND HAZARDOUS MATERIALS

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

This section provides a description of potential hazards and hazardous materials that may be encountered or created as a result of project implementation, and mitigation measures as needed to reduce any significant hazardous materials–related effects to a less-than-significant level.

ENVIRONMENTAL SETTING

Three of the nine project reaches (or segments) have been recently developed, either as City of Lathrop corridor parks (Reaches IVb and VIa.2) or as residential lots (Reach VIIf). Any hazardous materials that might have been

present in the area to be disturbed by seepage berm construction would have been encountered and removed during development of these sites. In addition, these project segments, as well as Reaches VIa.3 and VIa.4, have all been evaluated as parts of larger development projects (i.e., Mossdale Landing, Mossdale Landing South, Oakwood Lake), with environmental reviews prepared to comply with the California Environmental Quality Act (CEQA). Appropriate mitigation for existing hazardous materials, if needed, has already been identified and implemented in these areas. Land included in Reaches Ic, Id, and VIIc is currently used for production of alfalfa and row crops, and would be exposed to the same application of agricultural chemicals (e.g., fertilizers, pesticides) as other agricultural land used to grow similar crops. No sheds, equipment yards, or similar sites typically associated with concentrations or spills of hazardous materials on agricultural land are present on these sites. Information on the history of use at Reach VIId is not available at this time.

In May 2009, a Cortese List database search was performed by EDAW staff for the project site and surrounding area (DTSC 2009a). The Cortese List is a planning document used by the state, local agencies, and developers to comply with CEQA, which requires that information be provided about the location of hazardous materials release sites. Government Code section 65962.5 requires the California Environmental Protection Agency (Cal/EPA) to update the Cortese List database annually. Within Cal/EPA, the California Department of Toxic Substance Control (DTSC) is responsible for a portion of the information contained in the Cortese List. Other state and local government agencies are required to provide additional hazardous material release information for the Cortese List.

No documented hazardous materials release sites are located on project segments. However, the database search identified two hazardous materials properties in the project vicinity: Defense Distribution Depot San Joaquin California–Sharpe, located approximately 2.5 miles northeast of the closest project segment (Reach IVb); and the J.R. Simplot Company, located approximately 1.5 miles east of the closest project segment (Reach VIa2). Clean-up activities are underway at both of these sites (DTSC 2009b).

DISCUSSION

a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

Less than Significant with Mitigation Incorporated. Construction of the proposed project would involve the routine transport and handling of hazardous substances, such as diesel fuels and lubricants. Handling and transport of these materials could result in the exposure of workers to hazardous materials. Therefore, this impact would be significant. Implementation of Mitigation Measure Haz-1 would reduce this impact to a less-than-significant level.

In addition, various state agencies regulate hazardous materials, including the Cal/EPA and the Governor's Office of Emergency Services. The California Highway Patrol and California Department of Transportation (Caltrans) enforce regulations for hazardous materials transport. DTSC has primary regulatory authority for enforcing hazardous materials regulations. State hazardous waste regulations are contained primarily in Title 22 of the California Code of Regulations. The California Occupational Health and Safety Administration has developed rules and regulations regarding worker safety around hazardous and toxic substances. Compliance with these regulations would further minimize the potential for construction workers, the public, or the environment to be exposed to a significant hazard related to the routine transport, use, and disposal of hazardous materials. Such compliance, combined with implementation of Mitigation Measure Haz-1, would reduce this impact to a less-than-significant level.

Mitigation Measure Haz-1: Prepare a Storm Water Pollution Prevention Plan and Comply with Other Applicable Regulations. Before the start of any ground-disturbing activities, Reclamation District No. 17 (RD 17) or its primary construction contractor shall prepare a Storm Water Pollution Prevention Plan (SWPPP) detailing measures to control soil erosion and waste discharges from construction areas and shall submit a notice of intent

to the Central Valley Regional Water Quality Control Board (Central Valley RWQCB) for stormwater discharges associated with general construction activity. RD 17 shall require all contractors conducting construction-related work to implement the SWPPP to control soil erosion and waste discharges of other construction-related contaminants. The general contractor(s) and subcontractor(s) conducting the work shall be responsible for constructing or implementing, regularly inspecting, and maintaining the measures in good working order.

The SWPPP shall identify the grading and erosion-control best management practices (BMPs) and specifications necessary to avoid and minimize water quality impacts to the extent practicable. Standard erosion control measures (e.g., management, structural, and vegetative controls) shall be implemented for all construction activities that expose soil. Grading operations shall be conducted to eliminate direct routes for conveying potentially contaminated runoff to any nearby water bodies. Erosion control barriers, such as silt fences and mulching material, shall be installed, and disturbed areas shall be reseeded with grass or other plants, where necessary.

The SWPPP shall contain specific measures for stabilizing soils at the construction site before the onset of the winter rainfall season. These standard erosion-control measures shall be designed to reduce the potential for soil erosion and sedimentation of drainage channels.

The following specific BMPs are recommended for implementation:

- Conduct all work according to site-specific construction plans that identify areas for clearing, grading, and revegetation so that ground disturbance is minimized.
- Avoid existing vegetation wherever possible and identify vegetation to be retained for habitat maintenance (i.e., as identified through preconstruction biological surveys); cover cleared areas with mulches; install silt fences, if needed to control erosion and trap sediment; and reseed cleared areas with native vegetation.
- Stabilize disturbed soils at all construction sites and staging areas before the onset of the winter rainfall season.
- Stabilize and protect stockpiles from exposure to erosion and flooding.

The SWPPP also shall specify appropriate hazardous materials handling, storage, and spill response practices to reduce the possibility of adverse impacts from use or accidental spills or releases of contaminants. Specific measures applicable to the project include the following:

- Develop and implement strict on-site handling rules to keep construction and maintenance materials out of waterways.
- Prevent oil or other petroleum products, or any other substances that could be hazardous to aquatic life, from contaminating the soil or entering watercourses.
- Maintain spill clean-up equipment in proper working condition. Clean up all spills immediately in accordance with the spill prevention and response plan, and immediately notify the California Department of Fish and game and the Central Valley RWQCB of any spills and clean-up procedures.

b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and/or accident conditions involving the release of hazardous materials into the environment?

Less than Significant with Mitigation Incorporated. During construction of the proposed project, hazardous materials such as fuels and lubricants would be used to operate construction equipment such as dozers, compactors, haul trucks, and loaders. Fuels and lubricants have the potential to be released into the environment

at the project site, causing environmental and/or human exposure to these hazards. This impact would be potentially significant. Implementation of Mitigation Measure Haz-1, described above, and Mitigation Measure Haz-2 would reduce this impact to a less-than-significant level.

Mitigation Measure Haz-2: Ensure that All Employees Handling Hazardous Materials are Trained in the Safe Handling and Storage of Hazardous Materials. Before the commencement of project construction, RD 17 or its contractor shall:

- ensure that any employee handling hazardous materials is trained in the safe handling and storage of hazardous materials and trained to follow all applicable regulations with regard to such hazardous materials; and
- identify staging areas where hazardous materials will be stored during construction, in accordance with applicable state and federal regulations.

c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

Less-than-Significant Impact. Mossdale Elementary School, located at 455 Brookhurst Blvd. in the city of Lathrop, is located approximately one-quarter mile east of the closest project element, Reach VIa3. Mitigation Measures Haz-1 and Haz-2 would ensure the safe handling and use of hazardous materials during project construction. Therefore, implementation of the proposed project, including construction activities, would not pose a hazard to students attending Mossdale Elementary School. This impact would be less than significant.

d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code §65962.5 and, as a result, would it create a significant hazard to the public or the environment?

No Impact. No hazardous materials sites were identified at the project site in the Cortese List database search completed for the project. There is no indication that the proposed project would create a significant hazard to the public or to the environment as a result of existing hazardous material contamination. No impact would occur.

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?

No Impact. The project area is not located within an airport land use plan (San Joaquin County 2008a) or within 2 miles of a public airport or public use airport. The Defense Distribution Depot San Joaquin California–Sharpe, located approximately 2.5 miles east of the nearest project segment, contains an airstrip but no longer provides flight services (Hermosilla, pers. comm., 2009). The nearest airport is the Stockton Metropolitan Airport, located approximately 5 miles from the closest project segment, Reach Ic. No impact would occur.

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?

No Impact. No private airstrips occur within or near the project site. The closest active air transport facility is the Stockton Metropolitan Airport, located approximately 5 miles from the closest project segment, Reach Ic. No impact would occur.

g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

No Impact. The proposed project would not impair implementation of or physically interfere with the adopted San Joaquin County's Multi- Hazard Functional Plan, also known as the Basic Emergency Plan, (San Joaquin County 1994) or any emergency evacuation plans. Project activities would not intersect any identified emergency response or emergency evacuation route. Therefore, no impact would occur.

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

Less-than-Significant Impact. Land uses in the project vicinity consist of agriculture, residences, park corridors, ruderal vegetation, grassland vegetation, and the San Joaquin River. The project site is not in a high wildfire risk area (California Department of Forestry and Fire Protection 2009). The proposed repair and maintenance activities are not at high risk of igniting a wildfire, would not substantially increase the potential risk of a wildfire occurring, and would not place structures susceptible to wildfire in a fire risk area. Therefore, this impact would be less than significant.

3.8 HYDROLOGY AND WATER QUALITY

	ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
VIII.	**Hydrology and Water Quality. Would the project:**				
	a) Violate any water quality standards or waste discharge requirements?	☐	☒	☐	☐
	b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level that 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 on- or off-site erosion or siltation?	☐	☐	☒	☐
	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 on- or off-site flooding?	☐	☐	☒	☐
	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 that would impede or redirect flood flows?	☐	☐	☒	☐
	i) Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☐	☒
	j) Result in inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☒

This section discusses conditions related to hydrology, drainage, and water quality in the project area and describes the potential effects of the proposed project on those resources.

ENVIRONMENTAL SETTING

The project area is in the southeastern portion of the Sacramento–San Joaquin Delta (Delta), within the legal boundary of the Delta, as defined by Section 12220 of the California Water Code. The legal Delta encompasses the Primary Zone and the Secondary Zone, as defined by the Delta Protection Act of 1992. Land uses in the Primary Zone are regulated to protect the area for agriculture, wildlife habitat, and recreation uses. The Secondary Zone is the area outside the Primary Zone and within the legal Delta. Where urban development activities occur in the Secondary Zone, efforts should be taken to ensure that these activities do not adversely affect Delta waters, Primary Zone habitat, or recreational uses. The San Joaquin River delineates the Primary Zone to the west and the Secondary Zone to the east. Accordingly, the proposed project is located in the Secondary Zone.

A majority of the levees within the Delta, including those protecting Reclamation District No. 17 (RD 17) (Exhibit 2-1, "Reclamation District No. 17 Vicinity Map"), are considered "federal project levees." Federal project levees were either constructed by the federal government (typically through the U.S. Army Corps of engineers) or were built by others and later brought under federal jurisdiction.

The average annual precipitation in the project region ranges from about 8 inches west of Lathrop near Tracy to approximately 17 inches north of Lathrop near Lodi. Near Lathrop, the annual rainfall is approximately 12 inches. Most of the precipitation occurs during the months of November through March.

SURFACE WATER HYDROLOGY

San Joaquin River

The levee reaches proposed for seepage repairs for the proposed project are located along the landside of the east bank levee of the San Joaquin River. The 330-mile-long river flows through portions of Fresno, Madera, Merced, Stanislaus, San Joaquin, Sacramento, and Contra Costa Counties. The river has flows ranging from 1,500 cubic feet per second (cfs) in dry years to more than 40,000 cfs in wet years.

Drainage and Flooding

Runoff from the area east of the San Joaquin River, along levee Reaches Ic, Id, and VIIc, is directed west through agricultural swales and ditches, and then pumped into the river by means of private agricultural pumps. Runoff from developed lands adjacent to Reaches IVb, VIa.2, VIa.3, and VIa.4 is directed to the City of Lathrop's storm drainage system, held in detention basins, and ultimately pumped into the San Joaquin River through a municipal stormwater outfall. Runoff in the area around Reaches VIId and VIIf, which encompasses the Oakwood Lake development, first flows into the artificial lakes in the center of the development, then is pumped into the river if lake levels become too high. The drainage classes for soils at the proposed project levee reaches are shown as either poorly drained or somewhat poorly drained (see Table 3.6-1 in Section 3.6, "Geology and Soils").

As discussed in Chapter 2, "Project Description," implementation of the Map Modernization Program by the Federal Emergency Management Agency (FEMA) initiated in 2006, and input from the California Department of Water Resources (DWR), led to a determination that without further repairs and improvements the RD 17 levees would not meet DWR desired seepage exit gradient criteria. Based in part on input from DWR, the RD 17 levees have been assigned "provisional status" from FEMA (rather than full accreditation) regarding meeting 100-year flood protection requirements. The primary deficiencies identified in the RD 17 levees relate to portions of the levee system that do not provide seepage exit gradients less than 0.5 at the water surface elevation for the 100-year flood event. See Chapter 2, "Project Description" for a definition of "seepage exit gradients."

GROUNDWATER HYDROLOGY

The groundwater basin in the project area is within the Delta subregion, a part of the Central Valley aquifer system. Within this basin, the San Joaquin River divides the Tracy Subbasin to the west and the San Joaquin Subbasin to the east. Most of the fresh groundwater is unconfined (i.e., not bounded by an impermeable or less permeable confining geologic formation) and occurs at depths of less than 2,500 feet (California Department of Water Resources 2006). The shallower aquifers are used as sources of fresh water. Groundwater levels in the project area are generally very shallow as a result of the low elevation and proximity to the San Joaquin River channel. High groundwater can be influenced by water level in the river, subsurface groundwater flow from areas of higher elevation to the east, and local irrigation practices. Wet-season observations by RD 17 staff during flood periods identified high groundwater and surface ponding near the San Joaquin River levee.

WATER QUALITY

Surface Water Quality

Under Section 303(d) of the federal Clean Water Act (CWA), states are required to develop lists of surface water bodies that are not attaining water quality objectives (i.e., that are found to be polluted). Section 303(d) requires that the state develop a total maximum daily load (TMDL), which is the amount of loading that the water body can receive and still be in compliance with water quality objectives, for each of the listed pollutants causing the impairment. The list is known as the 303(d) list of impaired waters.

The latest version of the Section 303(d) list for California issued by the State Water Resources Control Board (approved October 26, 2006) identifies impaired status for waterways in the eastern Delta, including the upper San Joaquin River. Potential sources of pollution for all of the listed constituents in the basin include agriculture, urban runoff/storm sewers, resource extraction, and unknown sources. The eastern Delta, including the upper San Joaquin River, is on the Section 303(d) list for impairment from boron, chlorpyrifos, diazinon, DDT, electrical conductivity, unknown toxicity, Group A pesticides, exotic species, and mercury. Downstream of the project area, the Stockton Deepwater Ship Channel is being addressed by a TMDL for dissolved oxygen and is no longer on the Section 303(d) list. TMDLs have been initiated for organophosphorus pesticides (i.e., diazinon and chlorpyrifos), salinity and boron, and selenium in the upper San Joaquin River watershed and for total dissolved solids (TDS) and mercury in Delta channels. TMDLs for the other listed pollutants are scheduled to be developed at various times over the next 10 years, in accordance with the priorities contained in the Section 303(d) list.

Major monitoring programs in the San Joaquin River include the DWR Municipal Water Quality Investigations Program and the DWR D-1485 Water Quality Monitoring Program. The City of Stockton also monitors ambient water quality to assess potential effects associated with discharges from the Stockton Regional Wastewater Control Facility. Data is collected at five water quality monitoring sites in the project vicinity along the SJR. The Mossdale Bridge sampling site at the Interstate 5 crossing over the SJR is just downstream of Reach VIIc.

Salinity in the Delta is the result of tidal exchange with San Francisco Bay, variations in freshwater inflow from the San Joaquin and Sacramento Rivers, agricultural and urban exports/diversions, and agricultural return flows. The salinity of surface waters is often measured by the concentration of TDS and electrical conductivity (EC). EC is commonly used as a surrogate parameter upon which to evaluate TDS. Discharges from agriculture, wetlands, mines, industries, and urban areas contribute TDS, and therefore EC, to the San Joaquin River and the Delta. Median TDS concentrations have been greater during critical (drought) water years than during wet or above-normal water years. The *Water Quality Control Plan for the Sacramento–San Joaquin River Basins* (Basin Plan), adopted by the Central Valley Regional Water Quality Control Board (Central Valley RWQCB) in 1998, addresses water quality objectives and standards for waters in the Basin Plan area. Historical data indicate that seasonal water quality objectives in the Basin Plan for EC in the Delta were routinely exceeded in the SJR near Vernalis (several miles upstream of the project area) and at Mossdale Bridge; the standards were typically met at the other monitoring locations in the project vicinity (EDAW 2001). As with TDS, specific conductance values

have been greater during critically dry water years than during wet or above-normal water years. Recent data indicate that these trends are continuing (California Bay-Delta Authority 2005:B-3).

Fecal coliform bacteria are used as an indicator of the presence of human pathogens in water. Monitoring data typically measure coliform concentrations in units of Most Probable Number (MPN) per 100 milliliters. Historical data show that fecal coliform concentrations decreased in the downstream direction in the San Joaquin River and into the Delta. All data collected at Vernalis for the pathogens Giardia and Cryptosporidium were below laboratory detection limits (EDAW 2001).

Historical data show that the dissolved oxygen concentrations regularly fall below the Basin Plan's minimum standards in the San Joaquin River near Stockton (EDAW 2001). Low or negative streamflow past Stockton reduces dilution and mixing, which reduces re-aeration of the water. Oxygen depletion in water bodies in the Central Valley is typically highest in late summer and fall, when high water temperature reduces the oxygen-carrying capacity of the water.

One measurement of the acidity of water is commonly expressed in terms of the pH scale. Aquatic life may begin to be adversely affected by pH values less than 6.5 or greater than 8.5. In natural waters, pH levels are influenced by both the photosynthesis of algae and aquatic plants and the respiration of plants, animals, and bacteria. Historical data show a high level of compliance with the Basin Plan pH objective at all monitoring sites (EDAW 2001).

The distribution of ammonia in freshwater rivers and lakes is highly variable regionally, seasonally, and spatially, and depends on the level of productivity of the water body and the extent of inputs from organic matter. Ammonia may be acutely toxic at high concentrations or chronically toxic at low concentrations, depending on the length of the exposure period. Historical data indicate that ammonia concentrations at monitoring sites in the project vicinity were below levels that would cause either acute or chronic toxicity (EDAW 2001).

Trace elements (metals and minerals) may affect aquatic organisms directly or may affect human health or wildlife through water consumption or through bioaccumulation in fish or shellfish consumed by humans or high-end predators. The state is currently developing a TMDL program for mercury in the Delta that would result in the identification of regulatory target(s), determination of sources and their associated loads, development of a quantitative model to predict loading, and implementation of a mercury control program to achieve load reductions that would lead to compliance with water quality objectives.

Other data collected at the Mossdale Bridge sampling site include organic carbon, in both its total and dissolved forms, and ambient water temperature data. Organic compound concentrations were greater at all monitoring sites during critically dry water years than during wet or above-normal water years (EDAW 2001). The Central Valley RWQCB has not adopted water quality objectives for total organic carbon or dissolved organic carbon in the Basin Plan. Specific numeric Basin Plan objectives have not been adopted for temperature in the San Joaquin River or the Delta. Median water temperatures collected during critically dry water years showed the mainstem river to be a few degrees cooler than median temperatures calculated for the Delta.

Results from recent sampling in the Delta showed concentrations of the parameters above to be within historical ranges (SWRCB 2008). Measured parameters exhibited seasonal variation, as well as changes in response to significant rainfall events or changes in flow rates.

Groundwater Quality

Saltwater intrusion into the Delta and infiltration of runoff from the San Joaquin River, adjacent agricultural areas, and urban areas have caused groundwater quality to be poor for the shallowest aquifer in the area, which extends to a depth of approximately 150 feet below the ground surface. TDS provides a measure of the level of saltwater intrusion into the groundwater supply. Groundwater quality from the shallow aquifer in the Lathrop area

near the proposed project levee reaches (or segments) generally exhibits concentrations of chloride above recommended standards for drinking water. However, wells for potable water draw from the deeper aquifer, and the poor-quality shallow groundwater is generally not used for drinking water purposes.

Other groundwater quality concerns in the Lathrop area include nitrate, iron, manganese, and bacteriological contamination. As a result of the bacteriological contamination, the City of Lathrop began chlorinating water at all of its municipal wells in 1996. In general, groundwater within Lathrop currently meets all drinking water standards.

DISCUSSION

a) Violate any water quality standards or waste discharge requirements?

Less than Significant with Mitigation Incorporated. The proposed project would entail construction of seepage berms along the land side of the east bank levee of the San Joaquin River. Project activities would include set up of staging areas, site preparation (e.g., grading and clearing), and placement of soil and other construction materials (e.g., toe drain materials) at the project sites. No work would be conducted on the water side of the San Joaquin River levee, and no excavations would be necessary for implementation of the project.

The work proposed on the landside of the levee has the potential to temporarily impair water quality if disturbed and eroded soil, petroleum products, or construction-related wastes are discharged into local drainages or onto the ground where they could be carried into receiving waters. For project sites adjacent to agricultural land (Reaches Ic, Id, and VIIc), accidental spills of construction-related substances such as oils and fuels could contaminate both surface water (e.g., through local ditches or other drainages) and groundwater. Potential runoff from project segments near developed areas or areas planned for development (Reaches IVb, VIa.2, VIa.3, VIa.4, VIId, and VIIf) could enter urban drainage systems, ultimately leading to discharges to the San Joaquin River. The extent of potential impacts on water quality would depend on the following factors: tendency for erosion of soil types encountered, types of construction practices, extent of the disturbed area, duration of construction activities, timing of particular construction activities relative to the rainy season, proximity to receiving water bodies, and sensitivity of those water bodies to construction-related contaminants.

Because there is a potential for soil or construction-related materials to be discharged locally that could cause temporary adverse effects on surface water or groundwater quality, this impact is potentially significant. Implementation of Mitigation Measure Haz-1, described in Section 3.7, "Hazards and Hazardous Materials," which would require the preparation of a storm water pollution prevention plan (SWPPP) and implementation of standard best management practices (BMPs) to minimize ground and vegetation disturbance and establish requirements for the use and storage of hazardous materials in designated staging areas, would reduce this impact to a less-than-significant level.

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

Less-than-Significant Impact. The proposed project would not require the use of groundwater. Construction of seepage berms along eight of the nine project reaches would affect a total of approximately 20.5 acres along the landside of the existing San Joaquin River levee. In most reaches, the seepage berms would create a less permeable surface than currently exists (i.e., compacted soil intended to impede water passage versus agricultural land or park turf), resulting in less potential for groundwater recharge via percolation from the soil surface. However, given the relatively small area of the seepage berms relative to the overall groundwater basin, installation of the seepage berms would not substantially interfere with groundwater recharge.

As discussed above, groundwater levels in the project area are generally shallow as a result of the low elevation and proximity to the San Joaquin River channel. However, because project construction would not involve excavation or burying of materials that could impede groundwater flow, the addition of seepage berms along the existing levee would not affect the lateral movement of groundwater in the project area or the availability of potable groundwater from the deeper aquifers.

Given these conditions, the proposed project would not deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level. This impact would be less than significant.

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 on- or off-site erosion or siltation?

Less-than-Significant Impact. As discussed in Chapter 2, "Project Description," the purpose of the proposed project is to construct seepage berms at eight of the nine levee reaches. A seepage berm is essentially a layer of compacted soil that is designed to retain water below the ground surface that may seep under a levee during high river flows. The footprint for the proposed seepage berms would include approximately 6 acres of existing agricultural land (see Table 2-1). Some of the proposed seepage berms would be constructed on vacant land and along portions of developed parkland and undeveloped residential lots. The seepage berms would be 4 to 6 feet higher than the existing ground surface, and would be constructed next to the existing San Joaquin River levee. The compacted soils creating the seepage berms would constitute a semipervious surface. In most project reaches, the seepage berms would be somewhat less pervious than the existing ground surface. However, the area of decreased pervious surface would be less than 20 acres.

The relatively minor changes in pervious area and topography adjacent to the existing San Joaquin River levee from construction of the seepage berms would not be sufficient to cause substantial changes to drainage patterns or erosion potential in the project area. The seepage berms themselves would be protected from erosion through planting of grasses and similar vegetation, so that they would not act as a source of sediment or siltation. This impact would be less than significant.

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 on- or off-site flooding?

Less-than-Significant Impact. See response to item "c" above. Any increase in surface runoff caused by the proposed project would be minor compared with existing conditions, and no localized flooding on- or off-site would occur as a result of the proposed project. Proposed project activities are located on the land side of the San Joaquin River levee and would not alter the course of the river. This impact would be less than significant.

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?

Less-than-Significant Impact. See response to item "c" above. Any increase in surface runoff caused by the proposed project would be minor compared with existing conditions given the semipervious nature of the seepage berms. In Reaches IVb, VIa.2, VIa.3, and VIa.4, where parks would be placed on top of the seepage berms, parkway turf areas would absorb stormwater runoff except during severe storm events where turf soils are saturated and percolating water reaches the semipervious seepage berm soils beneath. Any additional stormwater that might enter the adjacent street would be accommodated by the existing Lathrop stormwater system. In the case of Reach VIIf, the seepage berm would generate less runoff than the planned residential development the stormwater system was designed to serve. Therefore, the seepage berm would result in runoff below the design

capacity of the stormwater system. Any incremental increase in stormwater runoff from the new seepage berms in other project segments would percolate through the soil at adjacent agricultural or open space areas.

The planned seepage berms would be constructed using clean fill from commercial sources and would not act as an additional source of polluted runoff. See item "a" (above) for a discussion of control of potential polluted runoff during project construction.

Because the proposed project would not create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff, this impact would be less than significant.

f) Otherwise substantially degrade water quality?

Less-than-Significant Impact. As discussed in Mitigation Measure Haz-1 in Section 3.7, "Hazards and Hazardous Materials," a SWPPP would be prepared and standard BMPs would be implemented to protect water quality in the project area. (See also item "a" above.) The proposed project would not substantially degrade water quality. Therefore, this impact would be less than significant.

g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?

No Impact. The proposed project would not include construction of any housing. No impact would occur.

h) Place within a 100-year flood hazard area structures that would impede or redirect flood flows?

Less-than-Significant Impact. Construction of 4- to 6-foot-high seepage berms next to the existing San Joaquin River east bank levee would improve the reliability and stability of the flood protection system in the project area overall and would provide increased flood protection for local communities. The proposed levee repairs would reduce the risk of a levee system failure in the project area. All work would be performed on the land side of the levee, outside of the San Joaquin River floodplain. The proposed seepage berms and related improvements would not impede or redirect flood flows. This impact would be less than significant.

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?

No Impact. The proposed project would increase the stability, reliability, and performance of the RD 17 flood protection system. The risk of loss, injury, or death from a levee system failure in the project area would be less than under existing conditions. There would be no impact.

j) Result in inundation by seiche, tsunami, or mudflow?

No Impact. The project area is approximately 50 miles inland from San Francisco Bay. The project sites are geographically removed from areas where the potential for seiche, tsunami, or mudflow exists (e.g., near a lake, the California coastal zone, or hillsides). Therefore, no impact would occur.

3.9 LAND USE AND PLANNING

	ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
IX.	**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, a general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒
	c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☒

This section describes existing land uses at the project site and evaluates the effects of the project related to land use and planning.

ENVIRONMENTAL SETTING

The proposed project addresses work needed at nine levee reaches. The levee reaches (or segments) requiring seepage repairs are located along the landside levee toe of the San Joaquin River east levee, with the northernmost reaches (Ic and Id) being in an area south of the city of Stockton and the southernmost reaches (VIIc, VIId, and VIIf) being in an area near the southwest edge of the Manteca city limit. These northern and southern reaches are located in unincorporated San Joaquin County, although Reach VIIc is within the sphere of influence (SOI) of the City of Lathrop and Reaches VIId and VIIf are within the SOI of the City of Manteca. The remaining project segments (IVb, VIa.2, VIa.3, and VIa.4) are in Lathrop. Table 3.9-1 shows the designated land uses for the local municipalities where the levee reaches are located and the existing land uses for each of those segments.

Table 3.9-1
Designated and Existing Land Uses for the Project Levee Reaches

Levee Reach	Local Municipality	Land Use Designations	Existing Land Uses
Ic, Id	San Joaquin County[a]	Agriculture/General—Crop production, feed and grain storage and sales, aerial crop spraying, animal raising and sales	▸ Reach Ic: Agriculture (row crops and alfalfa) ▸ Reach Id: Partially an existing seepage berm, and partially agriculture (row crops and alfalfa)
IVb	City of Lathrop[b]	Open Space—Encompasses natural features, buffers, stormwater and water quality management, natural habitat preservation and maintenance, and active or passive recreational opportunities, which include the river, associated lands along the river and levee, drainage corridors, and other uses (e.g., boat launches, picnic facilities, and fishing sites). In addition to	Lathrop city park, corridor park

Table 3.9-1
Designated and Existing Land Uses for the Project Levee Reaches

Levee Reach	Local Municipality	Land Use Designations	Existing Land Uses
		recreation, permitted uses include linear detention basins and other stormwater and water quality features, as well as trails. Neighborhood Park—Provides local recreational opportunities, such as play and tot lots, ball fields, free play areas, and picnic facilities for residents in adjacent neighborhoods. These parks may contain stormwater and water quality facilities.	
VIa.2, VIa.3, VIa.4	City of Lathrop[b]	Open Space—As described above for Reach IVb	▸ Reach VIa.2: Lathrop city park, corridor park ▸ Reach VIa.3: Vacant strip between levee toe and adjacent residential development; ruderal vegetation; planned as city corridor park ▸ Reach VIa.4: Vacant strip between levee toe and adjacent residential development; ruderal vegetation
VIIc[c]	San Joaquin County[a]	Open Space/Resource Conservation—Applies to significant mineral resource areas, unless the immediate area has been committed to other uses; allowable uses restricted to those that will not limit resource extraction	Agriculture (row crops and alfalfa)
VIId[d]	San Joaquin County[a]	Medium-Density Residential—Typically single-family detached dwelling units, mobile homes, and attached units including duplexes, triplexes, and fourplexes; appropriate as a transition from lower density areas to commercial areas and more intensely developed residential areas; 6–10 primary du/ac.	Vacant, annual grassland and ruderal vegetation
VIIf[d]	San Joaquin County[a]	Low-Density Residential—Typically single-family detached du, 2–6 primary du/ac, appropriate for single-family neighborhoods.	Undeveloped residential lots, graded, utility "stub-outs" present, no structures or foundations

Sources: San Joaquin County 1992: Volume I:IV-18–IV-19, VI-3, VI-10; City of Lathrop 2004:4-A-21; Gorham, pers. comm., 2009; City of Lathrop 2008a

Notes:

du/ac = dwelling units per gross acre

[a] For San Joaquin County, the corresponding zoning classification for levee reaches Ic, Id, and VIIc is General Agriculture (Gorham, pers. comm., 2009). For levee reaches VIId and VIIf, the zoning classifications are Medium- and Low-Density Residential, respectively.

[b] For the City of Lathrop, the corresponding zoning classifications for levee reach IVb are Open Space and Public (schools, park, and open space) (City of Lathrop 2008b). For levee reaches VIa.2, VIa.3, and VIa.4, the zoning classification is Open Space.

[c] Reach VIIc is also within the City of Lathrop's SOI, where the land use designation is Limited Industrial.

[d] Reaches VIId and VIIf are also within the City of Manteca's SOI, where the land use designation is Low-Density Residential (2.1 to 8 du/ac).

The *San Joaquin County General Plan 2010* (County General Plan) contains objectives and policies that guide land use decisions in the unincorporated parts of the county. The Public Health and Safety Element includes the following policies addressing flood control and levees that may be applicable to the project (San Joaquin County 1992:Volume I:V-5):

- **Flood Control Policy 5:** The primary use and purpose of levees shall be flood control. Other uses shall be allowed only if the uses are compatible with the primary purpose of the levee and do not reduce the flood control integrity.

- **Flood Control Policy 6:** Levees in areas planned for urban development shall provide 100-year flood protection, and levees in areas not planned for urban development shall provide 50-year flood protection.

- **Flood Control Policy 7:** Flood control levees should be designed to conserve resources, incorporate and preserve scenic values, and shall incorporate opportunities for recreation, where appropriate.

The Resources Element of the County General Plan includes goals and policies addressing agricultural land uses, including the following policy relating to preservation of agricultural lands and compatible uses (San Joaquin County 1992:Volume I:VI-12):

- **Agricultural Lands Policy 5:** Agricultural areas shall be used principally for crop production, ranching, and grazing. All agricultural support activities and non-farm uses shall be compatible with agricultural operations and shall satisfy the following criteria:

  (a) The use requires a location in an agricultural area because of unusual site area requirements, operational characteristics, resource orientation, or because it is providing a service to the surrounding agricultural area;

  (b) The operational characteristics of the use will not have a detrimental impact on the management or use of surrounding agricultural properties;

  (c) The use will be sited to minimize any disruption to the surrounding agricultural operations; and

  (d) The use will not significantly impact transportation facilities, increase air pollution, or increase fuel consumption.

The *Comprehensive General Plan for the City of Lathrop, California* (Lathrop General Plan) addresses open space for managed resource production, including preservation of lands having significant value for mineral production (see Section 3.10, "Mineral Resources," for a discussion of aggregate resources in this part of San Joaquin County). The Resource Management Element includes the following policy relating to preservation of lands that are classified MRZ-2 (i.e., areas where adequate information indicates that significant mineral deposits are present, or where it is judged that a high likelihood for their presence exists) (City of Lathrop 2004:5-7):

- **Mineral Resource Policy 1:** Lands classified by the State Department of Conservation as MRZ-2 as shown on Figure V-1 [of the Lathrop General Plan] and as designated by the State Mining and Geology Board as shown on Figure V-2 [of the Lathrop General Plan], are urged for protection to assure their availability for mining under applicable provisions of State Law and local ordinance. If determined practical and feasible, these lands are to be mined and reclaimed in accordance with the provisions of the California Surface Mining and Reclamation Act of 1975, as amended, prior to their being utilized for the various urban purposes depicted on the General Plan Diagram and described in this Document [the Lathrop General Plan].

DISCUSSION

a) Physically divide an established community?

No Impact. The project reaches requiring seepage berms or maintenance are located along the land side of the San Joaquin River east levee. As shown in Table 3.9-1, some project reaches are adjacent to agricultural land and others are located adjacent to areas that are either planned or currently undergoing development for residential and parkway uses. In all cases, one side of each project segment borders the existing levee, with the San Joaquin River just opposite the levee. There are no circumstances where any form of development occurs on both sides of a project segment; thus, there are no circumstances where project implementation could separate one portion of a community from another portion. No physical division of an established community would occur as a result of implementing the project. Therefore, no impact would occur.

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

No Impact. Work associated with the proposed project would be consistent with policies contained in the County General Plan, including those that address flood control and compatibility with agricultural operations. Flood Control Policies 5, 6, and 7 (above) affirm the primary function of levees for flood control, while allowing for other compatible uses as appropriate and providing for resource conservation. Agricultural Lands Policy 5 addresses compatibility of non-farm uses with agricultural operations. Implementing seepage repair to the project segments adjacent to agricultural land would reduce the potential for underseepage to occur. The proposed project would not have a detrimental impact on the management or use of surrounding agricultural properties. Similarly, Mineral Resource Policy 1 contained in the Lathrop General Plan addresses protection of areas classified MRZ-2. Section 3.10, "Mineral Resources," discusses how construction of a seepage berm would not affect the potential to mine aggregate resources from areas classified MRZ-2.

It is important to note that inconsistencies with land use designations and zoning are considered land use regulation issues rather than physical environmental consequences of a project. Any identified inconsistencies would not be treated as significant effects under the California Environmental Quality Act (CEQA) unless they also contribute to a significant adverse physical/environmental effect, or if the underlying policies associated with the land use designation are intended to reduce environmental effects, and are violated. Discussions of environmental impacts are limited to the direct and indirect physical changes in the environment that may be caused by the project (Section 15064[d] of the State CEQA Guidelines). Potential environmental effects that could be caused by the project, including in relation to environmental protection policies, are evaluated within the respective environmental topic areas within this IS/MND. No impact would occur.

c) Conflict with any applicable habitat conservation plan or natural community conservation plan?

No Impact. The project area is located within the planning area for the *San Joaquin County Multi-Species Habitat Conservation and Open Space Plan (SJMSCP)*. The SJMSCP provides comprehensive measures to minimize and mitigate impacts on various biological resources and habitats, and to compensate for some impacts to recreational, agricultural, scenic enjoyment, and other beneficial open space uses. In the SJMSCP, it is anticipated that approximately 109,000 acres of various categories of open space lands (including agriculture, range lands, and natural habitat) in the county would be converted to non-open space uses between 2001 and 2051, based on full buildout of each of the general plans in the county and construction of all anticipated transportation and other public projects (San Joaquin Council of Governments 2000:2–4, 15, 5-1). The SJMSCP conservation strategy relies on minimizing, avoiding, and mitigating impacts for species covered by the SJMSCP. Minimization of impacts takes a species-based approach, emphasizing the implementation of incidental take

minimization measures aimed at averting the actual killing or injury of individual species covered by the SJMSCP, and minimization of impacts to habitat for such species on open space lands converted to non-open space uses.

The SJMSCP compensates for conversions of open space for the following activities: urban development, mining, expansion of existing urban boundaries, non-agricultural activities occurring outside of urban boundaries, levee maintenance undertaken by the San Joaquin Area Flood Control Agency, transportation projects, school expansions, non-federal flood control projects, new parks and trails, maintenance of existing facilities for non-federal irrigation district projects, utility installation, maintenance activities, managing preserves, and similar public agency projects (San Joaquin Council of Governments 2000:1). These activities can be undertaken by both public and private individuals throughout San Joaquin County.

At eight of the nine levee reaches for the proposed Phase II Project, project activities would consist of construction of seepage berms along the landside levee toe (see Chapter 2, "Project Description"). The footprint for the proposed seepage berms would include approximately 6 acres of existing agricultural (i.e., open space) land. Altering the land use at these sites would not represent a conversion of open space to developed uses. Any potential impacts to terrestrial biological species would be mitigated to less-than-significant levels. (See Section 3.4, "Biological Resources," for an evaluation of potential effects of the proposed project on those resources.)

Implementation of the proposed project would result in no conflicts with the SJMSCP. No impact would occur.

3.10 MINERAL RESOURCES

	ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
X.	**Mineral Resources. Would the project:**				
	a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☒	☐
	b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	☐	☐	☒	☐

This section describes mineral resources that are known to occur in the San Joaquin Valley and in the project vicinity and evaluates the potential effects of the project on these resources.

ENVIRONMENTAL SETTING

The California Surface Mining and Reclamation Act (SMARA) was enacted by the California Legislature to regulate activities related to mineral resource extraction. The act requires the prevention of adverse environmental effects caused by mining, the reclamation of mined lands for alternative land uses, and the elimination of public health and safety hazards from the effects of mining activities.

The California Geological Survey (formerly California Division of Mines and Geology) classifies the regional significance of mineral resources in accordance with SMARA. Mineral Resource Zones (MRZs) have been designated to indicate the significance of mineral deposits (California Department of Conservation 1988:9). A classification of MRZ-1 designates areas where adequate information indicates that no significant mineral deposits are present, or where it is judged that little likelihood exists for their presence. MRZ-2 designates areas where adequate information indicates that significant mineral deposits are present, or where it is judged that a high likelihood for their presence exists. The MRZ-3 classification designates areas where the significance of mineral deposits cannot be evaluated from available data. These designations are intended to preserve known mineral resources for future mining and prevent encroachment of urban development that would compromise the resource's value.

Table 3.10-1 shows the MRZ classifications at each of the nine project reaches and the existing land uses at each site. As shown in Table 3.10-1, only Reach VIIc occurs in an area designated as MRZ-2. All other project reaches are on lands designated as either MRZ-1 or MRZ-3.

The primary extractive resources in San Joaquin County are sand, gravel, and natural gas (San Joaquin County 1992:VI-15). Sand, gravel and crushed stone are construction materials that are collectively referred to as "aggregate." These materials provide bulk and strength to Portland cement concrete (PCC), asphaltic concrete, plaster, and stucco. Aggregate is also used as road base, subbase, railroad ballast, and fill (California Department of Conservation 1988:4).

The project sites are located in the Stockton-Lodi Production-Consumption (P-C) Region for PCC-grade aggregate. Areas in the Stockton–Lodi P-C Region that are classified MRZ-2 for PCC-grade aggregate include the Quaternary (the last 2 million years) sand deposits of the San Joaquin River near Lathrop (California Department of Conservation 1988:11). This is the case for the MRZ-2 area encompassing Reach VIIc. More specifically, Reach

Table 3.10-1
Mineral Land Classifications and Existing Uses at Project Reaches

Levee Reach	Mineral Resource Zone (MRZ)	Existing Uses
Ic, Id, IVb, VIId, VIIf	MRZ-1	▸ Reach Ic: Agriculture (row crops and alfalfa) ▸ Reach Id: Partially an existing seepage berm, and partially agriculture (row crops and alfalfa) ▸ Reach IVb: Lathrop city park, corridor park ▸ Reach VIId: Vacant, annual grassland and ruderal vegetation ▸ Reach VIIf: Undeveloped residential lots, graded, utility stub-outs present, no structures or foundations
VIa.2, VIa.3, VIa.4	MRZ-3	▸ Reach VIa.2: Lathrop city park, corridor park ▸ Reach VIa.3: Vacant strip between levee toe and adjacent residential development; ruderal vegetation; planned as city corridor park. ▸ Reach VIa.4: Vacant strip between levee toe and adjacent residential development; ruderal vegetation
VIIc	MRZ-2	Agriculture (row crops and alfalfa)

Source: Data compiled by EDAW in 2009

VIIc is located along the edge of an area identified as the Lathrop deposit (also known as Sector D), a 2-square-mile fluvial sand deposit of Recent age located along the San Joaquin River south of Lathrop and the intersection of Interstate 5 (I-5), I-205, and State Route 120 (City of Lathrop 2004:5-6, California Department of Conservation 1988:Plate 18). Since 1969, Brown Sand, Inc. has been mining this deposit in an area on the west side of the San Joaquin River, across the river from Reach VIIc. The artificial lakes east of project segments VIId and VIIf originated from past mining of the Lathrop deposit, although neither segment is on land given the MRZ-2 designation.

Lands classified MRZ-3 in the project area may contain aggregate deposits; however, the significance of these deposits cannot be evaluated based on available data. In the San Joaquin Valley, older unconsolidated alluvial sediments are often classified MRZ-3. Additional information, such as engineering test data on the physical and chemical properties of the material in these areas, could either upgrade the classification to MRZ-2 or downgrade the classification to MRZ-1. Levee reaches VIa.2, VIa.3, and VIa.4 are in an area that is classified MRZ-3 (City of Lathrop 2004:5-5, California Department of Conservation 1988:Plate 12).

Of the nine project reaches being evaluated for the Phase II Project, only Reach VIIc is in an area that could be considered a "locally important mineral resource recovery site." The area encompassing Reach VIIc is designated on the San Joaquin County land use map as Open Space/Resource Conservation. Open space "…includes any parcel or area of land or waters which is essentially unimproved and designated as such for the preservation of natural resources, the managed production of natural resources, recreation, and public health and safety." (San Joaquin County 1992:VI-1, VI-2, and VI-3; Gorham, pers. comm., 2009). Unless the immediate area has been committed to other uses, the Resource Conservation designation applies to significant mineral resource areas, and allowable uses are restricted to those that will not limit resource extraction. In addition, the Resource Management Element of the City of Lathrop General Plan contains a policy, stating in part that "Land classified by the State Department of Conservation as MRZ-2 as shown on Figure V-1 [of the General Plan] and as designated by the State Mining and Geology Board as shown on Figure V-2 [of the General Plan] are urged for protection to assure their availability for mining under applicable provisions of State law and local ordinance." Project segment VIIc falls within the area designated in the Lathrop General Plan "urged for protection." (Also see Section 3.9, "Land Use and Planning," for further details on designated land uses at the project sites.)

DISCUSSION

a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

Less-than-Significant Impact. Project Reaches Ic, Id, IVb, VIId, and VIIf are in areas classified as MRZ-1. As discussed above, MRZ-1 designates areas where adequate information indicates that no significant mineral deposits are present, or where it is judged that little likelihood exists for their presence. Implementation of the proposed project in these areas would have no effect on the availability of known mineral resources.

Reaches VIa.2, VIa.3, and VIa.4 are in an area classified as MRZ-3. As discussed above, MRZ-3 designates areas where the significance of mineral deposits cannot be evaluated from available data. It is unknown whether these areas contain deposits that could yield PCC-grade aggregate. These three project reaches consist of relatively thin corridors along the levee toe with residential development immediately to the east. Because of their location adjacent to developed sites, these areas are no longer reasonably available for aggregate mining operations, even if mineable resources were present. Implementation of the proposed project in these areas would have no effect on the availability of known mineral resources.

Reach VIIc is in an area that is classified MRZ-2 and along the edge of the Lathrop deposit. Known mineable sands are located in the area. The proposed seepage berm site and adjacent lands are currently farmed and could conceivably be made available for mining operations. However, construction of a seepage berm in this reach would not preclude future mining operations, if desired. Under current conditions, mining operations near the San Joaquin River levee would be restricted to ensure preservation of levee integrity and prevention of increased underseepage potential. Mining would either not be permitted near the levee or would have to be conducted outside the flood season, and any excavations reclaimed with engineered/compacted fill before the flood season began. The presence of a seepage berm would not alter this process or alter the mining potential in the seepage berm footprint, other than potentially prompting a requirement to replace the seepage berm after mining along the levee was complete. Therefore, the presence of the seepage berm in Reach VIIc would not result in a loss of availability of a known mineral resource relative to existing conditions. The presence of the seepage berm also would not affect the ability to mine remaining agricultural lands east of the berm footprint. This impact is less than significant.

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?

Less-than-Significant Impact. Of the nine project reaches, only Reach VIIc is in an area that could be considered a locally important mineral resource, based on land use designations and policies contained in the San Joaquin County General Plan and City of Lathrop General Plan. Work required to repair the levee along Reach VIIc would not conflict with the intent of San Joaquin County or the City of Lathrop to protect locally important mineral resource sites. As discussed under item a) above, the work required to repair levee seepage along Reach VIIc would not alter the existing conditions regarding potential future aggregate mining of the Lathrop deposit on the project site or on properties east of the levee at this location. Therefore, this impact is less than significant.

3.11 NOISE

THRESHOLDS OF SIGNIFICANCE	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XI. Noise. Would the project result in:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or in other applicable local, State, or federal standards?				
Short-term Noise Sources	☐	☒	☐	☐
Long-term Noise Sources	☐	☐	☐	☒
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☒
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☒	☐	☐
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

This section includes a description of ambient-noise conditions, a summary of applicable regulations, and an analysis of potential short-term construction and long-term operational-source noise impacts of the proposed project. Mitigation measures are recommended, as needed, to reduce significant noise impacts to a less-than-significant level.

ENVIRONMENTAL SETTING

EXISTING NOISE SOURCES AND SENSITIVE RECEPTORS

The project site is located in San Joaquin County, with several project reaches (or segments) within the city of Lathrop (Reaches IVb, VIa.2, VIa.3, and VIa.4); the remaining reaches are within the unincorporated county north (Reaches Ic and Id) and south (Reaches VIIc, VIId, and VIIf) of Lathrop. Existing noise-sensitive land uses[1] in the vicinity include scattered residences across the river from Reach Ic, the neighborhood along Reach IVb (e.g., residences on Lathrop Road), the neighborhood along Reaches VIa.2, VIa.3, and VIa.4 (e.g., residences on

[1] Noise-sensitive land uses generally include those uses where exposure would result in adverse effects, particularly on residences (e.g., sleep disturbance, annoyance), as well as uses where quiet is an essential element of their intended purpose (e.g., hospitals, convalescent homes, parks, churches, libraries).

Inland Passage Way), residences across the river from Reach VIIc, and the residences between Reaches VIId and VIIf, of which the closest is approximately 50 feet to the east of where project activity would occur. Mossdale Elementary School is located approximately 1,500 feet east of Reach VIa.2 on Brookhurst Boulevard.

The existing noise environment within the project vicinity is primarily influenced by surface-transportation noise emanating from vehicular traffic on nearby roadways, such as Interstate (I-) 5 (I-5) and State Route (SR) 120, the Union Pacific Railroad, and routine agricultural activities (e.g., use of heavy-duty equipment). Intermittent noise from outdoor activities at the surrounding residences (e.g., people talking, operation of landscaping equipment, car doors slamming, and dogs barking) though minor, also influences the existing noise environment.

As stated above, the dominant noise sources in the vicinity of the project site is vehicular traffic on nearby roadways. Traffic on I-5 and SR 120 contributes the highest background noise levels at the project site and vicinity. Existing roadway traffic noise levels are published by the California Department of Transportation (Caltrans) for I-5 and SR 120 (Caltrans 2007). Modeling was conducted using the Federal Highway Administration's (FHWA's) Traffic Noise Prediction Model (FHWA-RD-77-108). The FHWA model is based on California Vehicle Noise reference factors (i.e., CALVENO reference noise factors) for automobiles, medium trucks, and heavy trucks, with consideration given to vehicle volume, speed, roadway configuration, distance to the receptor, and ground attenuation factors.

Table 3.11-1 presents the modeled Community Noise Equivalent Levels (CNEL) at 50 feet from the centerline of the near travel lane and at the distance from the roadway centerline to the 60- and 65-dBA (A-weighted decibels) CNEL contours for existing average daily traffic (ADT) volumes. Based on the modeling conducted, existing traffic on I-5 would result in noise levels of approximately 58 dBA CNEL at 3,200 feet, which is the distance to the residence closest to project site from I-5.

Table 3.11-1
Summary of Modeled Traffic Noise Levels

Roadway	Average Daily Traffic	Noise Level at 50 feet (dBA CNEL)	60 dBA CNEL contour (feet)	65 dBA CNEL contour (feet)
I-5 from I-205 to SR 120	160,000	87.1	3,185	1,479
I-5 from SR 120 to Lathrop Rd.	106,000	85.2	2,399	1,113
I-5 from Lathrop Rd. to French Camp Interchange	104,000	85.1	2,351	1,091
I-5 from French Camp Interchange to Mathews Rd.	112,000	85.3	2,447	1,136
SR 120 from I-5 to Yosemite Ave.	77,000	82.8	1,665	773

Notes:
dBA = A-weighted decibels, CNEL = Community Noise Equivalent Level, I- = Interstate, SR = State Route
Source: Modeled by EDAW in 2009 using the Federal Highway Administration's Traffic Noise Prediction Model (FHWA-RD-77-108)

REGULATORY BACKGROUND

San Joaquin County

The current Noise Element in the Public Health and Safety portion of Volume I of the San Joaquin County General Plan and County Development Code has set daytime noise standards for non-transportation noise sources as 50 dBA hourly average noise level (L_{eq}) from 7:00 a.m. to 10:00 p.m. and 45 dBA L_{eq} from 10:00 p.m. to 7:00 a.m. (San Joaquin County 1999a).

San Joaquin County has adopted noise regulations within the County noise ordinance, outlined under Chapter 9-1025 Performance Standards (San Joaquin County 1999b). The noise ordinance has a declaration of policies, definitions, criteria for sound level measurements, an ambient base noise level, and the authority to enforce noise ordinance violations. Policies 9-1025.5 and 9-1025.9, presented below, are relevant to this project.

9-1025.5 Vibration. (c) Exceptions. The limits of this Section shall not apply to operations involved in the construction or demolition of structures or infrastructure or to vibration caused by motor vehicles or trains. (Ord. 3675)

9-1025.9 Noise. (c) Exceptions. Noise sources associated with construction provided such activities do not take place before 6:00 a.m. or after 9:00 p.m. on any day.

City of Lathrop

The Noise Element of the City of Lathrop General Plan has set noise standards for non-transportation noise sources as 60 dBA CNEL (City of Lathrop 1991).

The City of Lathrop has adopted noise regulations within the City noise ordinance, as outlined in Chapter 8.20, "Noise". The noise ordinance has a declaration of policies, definitions, criteria for sound level measurements, an ambient base noise level, and the authority to enforce noise ordinance violations. Policy 8.20.110, presented below, is relevant to this project.

8.20.110 Construction of buildings and projects. It shall be unlawful for any person within a residential zone or within a radius of five hundred (500) feet therefrom, to operate equipment or perform any outside construction or repair work on buildings, structures or projects or to operate any pile driver, power shovel, pneumatic hammer, derrick, power hoist, or any other construction type device between the hours of ten p.m. of one day and seven a.m. of the next day, or eleven p.m. and nine a.m. Fridays, Saturdays and legal holidays, in such a manner that a reasonable person of normal sensitiveness residing in the area is caused discomfort or annoyance unless beforehand a permit therefore has been duly obtained from the office or body of the city having the function to issue permits of this kind. No permit shall be required to perform emergency work as defined in Sections 8.20.010 through 8.20.040. (Prior code § 99.40)

DISCUSSION

a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or in other applicable local, State, or federal standards?

SHORT-TERM CONSTRUCTION SOURCE NOISE

Less than Significant with Mitigation Incorporated. Construction activities at the project site would include site preparation (e.g., grading and clearing), material transport, placing and compacting soil for seepage berms, and other miscellaneous activities. On-site construction equipment would include a dozer, a grader, a water truck, haul trucks, a front-end loader, and an equipment maintenance truck. Noise levels for individual equipment can range from 71 to 81 dBA at 50 feet, as indicated in Table 3.11-2.

Table 3.11-2 Modeled Construction Equipment Noise Levels	
Type of Equipment	Noise Level in dBA at 50 feet
Dozer	77.7
Grader	81.0
Water Truck	72.5
Haul Trucks	72.5
Front-end Loader	75.1
Maintenance Truck	71.0
Total Combined Noise Level	86.3
Source: Modeling conducted by EDAW (FHWA 2006)	

The simultaneous operation of on-site construction equipment could result in combined intermittent noise levels up to 86 dBA at 50 feet from the project site. Based on these noise levels and a typical noise-attenuation rate of 6 dBA per doubling of distance, exterior noise levels at noise-sensitive receptors located within 3,000 feet from the project site (e.g., residences) could exceed 50 dBA L_{eq} (San Joaquin County hourly daytime standard) without feasible noise controls. Intervening buildings, topographic features, and other noise sources, such as I-5 and SR 120, would likely reduce the distance that noise from construction activities would be noticeable. However, 3,000 feet is the maximum distance that noise would exceed San Joaquin County standards. More specifically, construction-generated noise levels could reach 86 dBA at the closest residence within approximately 50 feet from the project site. Mossdale Elementary School is approximately 1,500 feet to the east of the project site. Construction-generated noise levels at the school could reach 56 dBA. Windows and building facades typically reduce interior noise levels by 15 dBA (Lipscomb and Taylor 1978). Thus, inside the school noise levels from project construction would be less than 41 dBA, which is within acceptable levels for schools (City of Lathrop 1999).

Construction of the project would also result in a short-term increase in traffic on the local area roadway network, but this increase would not be sufficient to increase traffic noise levels. It is expected that up to approximately 123 daily trips (consisting of approximately 99 haul and 24 employee trips) would occur during the maximum construction activity periods. Construction-related traffic would be distributed over the roadway network identified in Section 3.15, "Transportation/Traffic.". Noticeable increases of 3 dBA (CNEL) do not typically occur without a substantial (i.e., doubling) increase in roadway traffic volumes (Caltrans 1998:N-96). Since the added traffic is minimal and on dispersed routes, it would not increase the overall traffic noise levels a substantial amount. (See the "Transportation/Traffic" section for additional information.)

Noise levels from on-site heavy-duty construction equipment would exceed standards set by San Joaquin County and the City of Lathrop (see discussion above and Table 3.11-2). However, both the County and City noise regulations provide exceptions for construction noise, allowing construction activities to exceed applicable noise standards when construction takes place during daytime hours (i.e., generally between 7:00 a.m. and 9:00 p.m., using the most restrictive time frames among both regulations). Although the proposed project does not include nighttime construction or construction on Sundays, there is the potential for morning construction on weekdays and Saturdays to begin prior to time limitations identified in the applicable noise regulations. Thus, if construction activities were to occur in unincorporated San Joaquin County before 6:00 a.m., or in the city of Lathrop before 7:00 a.m. on weekdays and 9:00 a.m. on Saturdays, project activities could violate standards established in the local general plan or noise ordinance. As a result, this impact is considered potentially significant. Implementation of Mitigation Measure Noise-1 would reduce short-term construction source noise to a less-than-significant level.

Mitigation Measure Noise-1: Conduct Construction at Times Consistent with Local Noise Regulations. Construction activities shall be conducted during times allowed by construction exceptions in the San Joaquin County and City of Lathrop noise regulations. Within project segments located in unincorporated San Joaquin County (Reaches Ic, Id, VIIc, VIId, and VIIf), construction activities will only be permitted between 6:00 a.m. and 9:00 p.m. In project segments within the city of Lathrop (Reaches IVb, VIa.2, VIa.3, and VIa.4), construction activities will only be permitted between 7:00 a.m. and 10:00 p.m. Mondays through Thursdays, 7:00 a.m. and 11:00 p.m. on Fridays, and 9:00 a.m. and 11:00 p.m. on Saturdays and legal holidays. Although no project work is proposed for Sundays, if construction work is conducted on a Sunday in the city of Lathrop, it must occur between 9:00 a.m. and 9:00 p.m.

LONG-TERM OPERATIONAL SOURCE NOISE

No Impact. Long-term operation of the project would not include any new major stationary or mobile noise sources. No new maintenance activities beyond existing conditions would be created, and existing maintenance operations would continue with the levees. Thus, long-term stationary and mobile source noise levels would be the same as existing conditions. No impact would occur.

b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?

Less-than-Significant Impact. Construction activities have the potential to result in varying degrees of temporary groundborne vibration, depending on the specific construction equipment used and operations involved. Vibration generated by construction equipment spreads through the ground and diminishes in magnitude with increases in distance. Table 3.11-3 displays vibration levels for typical construction equipment.

Table 3.11-3
Typical Construction Equipment Vibration Levels

Equipment	PPV at 25 feet (in/sec)[a]	Approximate L_v at 25 feet[b]
Large Bulldozer	0.089	87
Caisson Drilling	0.089	87
Trucks	0.076	86
Jackhammer	0.035	79
Small Bulldozer	0.003	58

Notes:
[a] Where PPV is the peak particle velocity
[b] Where L_v is the velocity level in decibels (VdB) referenced to 1 microinch/second and based on the root-mean-square (RMS) velocity amplitude.
Source: Federal Transit Administration 2006

As discussed above, it is assumed that on-site construction equipment would include a dozer, a grader, a water truck, haul trucks, a front-end loader, and an equipment maintenance truck. According to the Federal Transit Administration (FTA), vibration levels associated with the use of bulldozers range from approximately 0.003 to 0.089 inches per second (in/sec) peak particle velocity (PPV) and 58 to 87 in velocity level in decibels (VdB) (referenced to 1 microinch per second and based on the root-mean-square velocity amplitude) at 25 feet, as shown in Table 3.11-3. Using FTA's recommended procedure for applying a propagation adjustment to these reference levels, predicted worst-case vibration levels of approximately 0.03 in/sec PPV and 78 VdB at the nearest sensitive residence (50 feet) could occur from use of large bulldozers. These vibration levels would not exceed Caltrans's recommended standard of 0.2 in/sec PPV (Caltrans 2002:11), with respect to the prevention of structural damage

for normal buildings, or FTA's maximum-acceptable vibration standard of 80 VdB (FTA 2006), with respect to human annoyance for residential uses. Thus vibration and groundborne noise resulting from the project would not expose persons to levels exceeding the recommendations of Caltrans and FTA. The long-term operations and maintenance of the project would not include any vibration sources. This would be a less-than-significant impact.

c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

No Impact. As discussed in a) above, long-term operation of the project would not include any new stationary or mobile noise sources. No new maintenance activities beyond existing conditions would be created, and existing maintenance operations would continue with the levees. Thus, long-term stationary source noise levels would be equal to existing conditions and no impact would occur.

d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

Less than Significant with Mitigation Incorporated. As discussed in a) above, San Joaquin County and the City of Lathrop have adopted noise ordinances for which construction-generated noise levels are limited to daylight hours (i.e., generally between 7:00 a.m. and 9:00 p.m., using the most restrictive time frames among both regulations). Nevertheless, if construction activities were to occur during the more noise-sensitive nighttime and early morning hours, or construction equipment was not properly equipped with noise control devices or other noise control measures were not implemented, construction-generated source noise could result in annoyance or sleep disruption to occupants of the nearby existing noise-sensitive land uses (e.g., residences, Mossdale Elementary School) and create a substantial temporary increase in ambient noise levels in the project vicinity. As a result, this impact is considered potentially significant.

Implementation of Mitigation Measures Noise-1 (above) and Noise-2 through Noise-4 (below) would reduce short-term construction source noise to a less-than-significant level.

Mitigation Measure Noise-2: Maintain and Equip Construction Equipment with Noise Control Devices. To minimize overall construction noise, construction equipment shall be properly maintained and equipped with appropriate noise control features, such as mufflers, in accordance with manufacturers' specifications.

Mitigation Measure Noise-3: Arrange Construction Equipment Travel to Minimize Disturbance to Occupied Residences and Limit Idling Times. Construction equipment travel shall be arranged to minimize disturbance to occupied residences and shall remain in staging areas when not in use. Equipment not in use shall not be left idling for more than 5 minutes.

Mitigation Measure Noise-4: Designate a Disturbance Coordinator to Receive All Public Complaints. A disturbance coordinator shall be designated and the person's telephone number shall be conspicuously posted around the project site and made available to nearby sensitive receptors. The disturbance coordinator shall receive all public complaints and be responsible for determining the cause of the complaint and implementing any feasible measures to alleviate the problem.

Implementation of Mitigation Measures Noise-1 through Noise-4 would reduce construction-generated noise levels by 15 dB to 25 dB at noise-sensitive receptors in the project vicinity. Furthermore, restriction of operation of construction-related equipment during less-sensitive daytime hours would reduce sleep disturbance and human annoyance. As a result, short-term construction-generated noise levels would be reduced to a less-than-significant impact after mitigation.

e, f) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, and for a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?

No Impact. The project area is not located within 2 miles of an airport land use plan or a public airport, or in the vicinity of private airport. Stockton Metropolitan Airport is located approximately 6 miles northeast of the project site. Tracy Municipal Airport is located approximately 12 miles southwest of the project site. The Defense Distribution Depot San Joaquin California–Sharpe, located approximately 2.5 miles east of the nearest project segment, contains an airstrip but no longer provides flight services (Hermosilla, pers. comm., 2009). Given the distance from these airports and the fact that the project does not include the development of any noise-sensitive receptors, the project would not expose people residing or working on the project site to excessive noise levels. The project would have no impact from aircraft source noise.

3.12 POPULATION AND HOUSING

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

This section describes existing population and housing conditions in the city of Lathrop and San Joaquin County and provides estimates of changes to those conditions that could be created by implementation of the proposed project. The estimated changes include those that could trigger adverse physical effects in the region.

ENVIRONMENTAL SETTING

The nine reaches (or segments) that collectively make up the project area are located along the landside levee toe of the San Joaquin River, with the northernmost segments lying in an area south of the city of Stockton and the southernmost segments lying in an area adjacent to the southwest edge of the Manteca city limit. The northernmost segments (Ic and Id) and the southernmost segments (VIIc, VIId, and VIIf) are located within unincorporated San Joaquin County, with the remaining four reaches (IVb, VIa.2, VIa.3, and VIa.4) located in Lathrop.

POPULATION

As of 2000, the unincorporated portion of San Joaquin County had a household population (i.e., population residing in housing units) of 118,625 residents, which represented 22% of the county's total household population (San Joaquin County 2008b:Vol. III:II.B-2). Between 1990 and 2000, household population in the unincorporated area increased by 3,617 residents, whereas household population in the incorporated cities increased by 77,386 residents during the same period. Because most residential development in San Joaquin County occurs on lands that have been annexed to cities, a lower rate of growth is typical for the unincorporated areas. Much of the population increase in the unincorporated areas occurred in the City of Stockton's planning area, which increased by 3,408 residents between 1990 and 2000. San Joaquin County has estimated that the household population in the unincorporated area will increase to 138,056 by 2020, which would represent 16.8% of the county's total household population (San Joaquin County 2008b:Vol. III:I.B-4).

Between 1990 and 2000, the population of Lathrop increased from 6,841 to 10,445, which represents growth of 52.7%. In 2004, the City of Lathrop estimated its population to be 11,742 (City of Lathrop 2004:12–13). Population projections in the City's General Plan indicated that Lathrop would experience moderate growth and reach a projected population of 14,032 by 2008. Estimates by the California Department of Finance indicate that the population in Lathrop increased from 16,358 in January 2007 to 17,429 in January 2008, which represents an estimated growth rate for that year of 6.5% (California Department of Finance 2008).

HOUSING

According to data compiled by the U.S. Census Bureau in 2000, there were a total of 181,629 occupied housing units in San Joaquin County at that time (U.S. Census Bureau 2000, San Joaquin County 2008b:Vol. III:I.C-2). Of that total, 40,181 units were in the unincorporated area of the county. In 2000, Lathrop had a total of 2,967 housing units.

DISCUSSION

a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

No Impact. The work required to repair levee seepage along each of the levee reaches would not involve the construction of new homes or businesses or the extension of roads or infrastructure. Construction would occur over approximately 5 months from August through December, and work weeks would be 6 days long over the construction period. Based on the anticipated work effort and number of construction personnel working on past RD 17 seepage berm projects, it is estimated that no more than 18–24 construction employees would work on the proposed project at any one time. Construction jobs generated by project activity would be temporary and could be filled by the existing construction workforce in the area. These jobs would not directly or indirectly induce substantial population growth. Implementation of the proposed project would not affect current and/or planned population growth patterns in Lathrop or San Joaquin County and would not affect the population goals as outlined in the respective general plans of these two municipalities. Therefore, no impact would occur.

b) Displace substantial numbers of existing homes, necessitating the construction of replacement housing elsewhere?

No Impact. The work required to repair levee seepage along the proposed project segments would not remove or displace any existing homes. Although Reaches IVb, VIa.2, VIa.3, and VIa.4 are located adjacent to existing residential development, a street separates those project segments from the homes, and no residences would be affected or displaced. The area along Reach VIIf has been subdivided for single-family homes. The lots have been graded and utility stub-outs are present where underground utilities have been installed; however, no structures or foundations have been constructed. Although RD 17 would purchase 44 of these undeveloped residential lots and place the proposed seepage berm on the lots, no homes would be displaced. There are no immediate plans to develop these lots, and ample vacant lots are available for purchase in the remainder of the development north of Reach VIIf. Therefore, conversion of the vacant lots to a seepage berm in Reach VIIf would not necessitate the construction of replacement residential development elsewhere. Because no existing homes would be displaced by the proposed project, no impact would occur.

c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?

No Impact. Because the levee seepage repair activities would not disturb any existing homes, no residents would be displaced. Because the proposed project would not displace people or necessitate the construction of replacement housing elsewhere, no impact would occur.

3.13 PUBLIC SERVICES

	ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XIII.	**Public Services. Would the project:**				
	a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:				
	Fire protection?	☐	☐	☐	☒
	Police protection?	☐	☐	☐	☒
	Schools?	☐	☐	☐	☒
	Parks?	☐	☐	☒	☐
	Other public facilities?	☐	☐	☐	☒

This section provides an overview of existing public services in the project vicinity—fire protection, police service, school facilities, and parks. Impacts are evaluated in relation to the potential for increased demand for public services associated with the proposed project.

ENVIRONMENTAL SETTING

FIRE PROTECTION

The northern project area, containing Reaches Ic and Id, is served by the French Camp McKinley Fire District, which has one fire station located at 310 East French Camp Road in the town of French Camp, approximately 3 miles east of the nearest portion of the project site. This fire station has 10 full-time paid firefighters and four fire trucks (Burk, pers. comm., 2009).

The southern project area, containing the remaining seven project elements, is served by the Lathrop-Manteca Fire Protection District, which has two fire stations in the city of Lathrop. Fire Station 31 is located at 800 East J Street, approximately 2 miles east of the nearest project element (Reach IVb). Fire Station 34 is located at 460 River Islands Parkway, approximately 0.5 mile east of the nearest project element (Reach VIa.2). The fire district has 37 paid firefighters and 18 reserve firefighters (City of Lathrop 2009a).

POLICE SERVICES

San Joaquin County Sheriff's Department provides law enforcement services for the unincorporated areas of the county (Reaches Ic, Id, VIIc, VIId, and VIIF) and in Lathrop (Reaches IVb, VIa.2, VIa.3, and VIa.4). The City of Lathrop contracts with the San Joaquin County Sheriff's Department for law enforcement services and Lathrop police officers are San Joaquin County deputy sheriffs assigned to the City. The County police department has 124 patrol officers that rotate shifts to provide law enforcement services 24 hours a day, 7 days per week (San Joaquin County 2009a). San Joaquin County and the City of Lathrop have a flexible police staff agreement that accommodates modifications to service levels (City of Lathrop 2009b).

SCHOOL FACILITIES

Manteca Unified School District provides educational services to the project site. George Y. Komure Elementary School is the closest school to the northernmost project sites (Reaches Ic and Id), located approximately 2 miles east of these sites at 2121 Henry Long Boulevard in the city of Stockton (California Department of Education 2009). Mossdale Elementary School is the closest school to the southern project area, located approximately one-quarter mile east of the nearest project element (Reach VIa.3), at 455 Brookhurst Boulevard in Lathrop (Manteca Unified School District 2009). Both schools provide educational services for kindergarten through eighth grade (California Department of Education 2009).

PARKS

There are several parks within the project vicinity. The following parks are located within one-half mile and east of one or more project elements (City of Lathrop 2009c):

- The Green, 16700 English Country Trail
- Mossdale Commons, 740 Green Plaza
- Crescent Park, 15980 Crescent Park Circle
- Mossdale Landing Community Park, 700 Towne Centre Drive
- River Park North, 16001 South Lathrop Road (located along Reach IVb)
- River Park South and Dog Park, 17801 Inland Passage Way (located along Reach VIa.2)

DISCUSSION

a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:

No Impact for Fire Protection, Police Services, or School Facilities. The proposed project would not increase demands for fire protection, sheriff services, or other public facilities because it would not include new structures, such as housing or businesses, or indirectly increase housing or businesses in the project vicinity. The project does not propose new housing, and would not generate new residents or students. Therefore, the proposed project would not increase demands for school services or park facilities. Landside levee repair and maintenance would not change the type or intensity of land uses in the area; therefore, the demand for fire and sheriff's protection services under the proposed project would remain the same. Emergency response services would be unhampered during project construction and operation. Nonetheless, plans to ensure the continuation of emergency response services during construction would be incorporated into final project specifications in accordance with San Joaquin County or City of Lathrop requirements. The proposed project would not alter the current demand for fire protection, police services, or school facilities, and no additional services or changes to existing services would be required. There would be no impact.

Less-Than-Significant Impact for Parks. Implementation of the proposed project would require temporary closure of River Park North, River Park South, and the dog park at River Park South during construction of the proposed seepage berm. These parks are located in levee segments IVb and VIa.2, which total approximately 6.5 acres. Implementation of the proposed project includes reconstruction of the existing park facilities on top of the proposed seepage berm once the berm is completed. Consequently, the loss of park facilities would be short term and temporary. No new parks would need to be constructed in another location that could result in significant environmental effects. (See Section 3.14, "Recreation," for further analysis of project effects on recreation facilities.) Therefore, impacts related to park facilities would be less than significant.

3.14 RECREATION

	ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XIV.	**Recreation. Would the project:**				
	a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☒	☐
	b) Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?	☐	☐	☐	☒

ENVIRONMENTAL SETTING

There are several parks within the project vicinity. The following parks are located within 0.5 mile and east of one or more project reaches (or segments) (City of Lathrop 2009d):

- The Green, 16700 English Country Trail
- Mossdale Commons, 740 Green Plaza
- Crescent Park, 15980 Crescent Park Circle
- Mossdale Landing Community Park, 700 Towne Centre Drive
- River Park North, 16001 South Lathrop Road (located in Reach IVb)
- River Park South and Dog Park, 17801 Inland Passage Way (located in Reach VIa.2)

In addition to more formal recreational facilities in the area, the tops of local levees are occasionally used for walking and jogging. However, the San Joaquin River east levee in the project area is not intended to act as a recreational facility. Frequent locked gates prevent vehicle access and severely limit bicycle use. Although fishing access occurs along the San Joaquin River at access points available to the public, the project site and vicinity are not intended to be public access points.

DISCUSSION

a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

Less-Than-Significant Impact. The proposed project does not include proposals for new housing; therefore, it would not generate new demand for recreational services or facilities. As stated above, there are two parks on segments of the project site. River Park North, a relatively new City of Lathrop corridor park is located along the toe of the San Joaquin River east levee within the area proposed for a seepage berm in Reach IVb. River Park South, which includes a dog park, is also a relatively new City of Lathrop corridor park and is located along the toe of the San Joaquin River east levee within the area proposed for a seepage berm in Reach VIa.2.

These parks would be removed temporarily during construction of the seepage berms, then reconstructed on top of the berms. Although seepage berm construction would result in a net reduction in available park facilities in the area, the reduction would be temporary, with park facilities restored in less than a year after removal. During the

time when River Park North and River Park South are not available, use of other parks in the area may increase, such as those listed above in the "Environmental Setting" section. However, given that increased use would likely be spread among several parks, and would be short term and temporary, a substantial physical deterioration of these facilities is not expected to occur or be accelerated.

Although the levee area near the project site is informally used for various recreational activities (e.g., walking, jogging, access to the San Joaquin River), the project site is not intended to be a public access point. Multiple other access points to the levee and San Joaquin River are available in the area, and project construction would not substantially restrict recreational access.

Any temporary shift in use of off-site recreational facilities resulting from project construction would not be expected to accelerate the physical deterioration of any existing facility. This impact would be less than significant.

b) Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?

No Impact. The proposed project does not include proposals for new housing; therefore, it would not generate new demand for recreational services or facilities that could lead to the construction of new facilities. Although parks will be reconstructed on the seepage berms in Reaches IVb and VIa.2, and a planned city park will be constructed on the seepage berm in Reach VIa.3, these actions will be undertaken by the City of Lathrop and are not part of the proposed project. In addition, the replacement parks would be placed on ground already disturbed by construction of the original park and the seepage berm. The park in Reach VIa.3 would be placed on ground already disturbed by construction of the seepage berm. Environmental effects of construction of the original parks and the planned park in Reach VIa.3 were evaluated in California Environmental Quality Act reviews conducted for the original projects (e.g., Central Lathrop Specific Plan, Mossdale Landing) and environmental effects from seepage berm construction are described in this Initial Study/Mitigated Negative Declaration. Construction/reconstruction of parks on the seepage berms would not result in any new or additional adverse physical effects on the environment. Therefore, no impact would occur.

3.15 TRANSPORTATION/TRAFFIC

	ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XV.	**Transportation/Traffic. Would the project:**				
	a) Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?	☐	☐	☒	☐
	b) Exceed, individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?	☐	☐	☒	☐
	c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒
	d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☒	☐
	e) Result in inadequate emergency access?	☐	☐	☒	☐
	f) Result in inadequate parking capacity?	☐	☐	☐	☒
	g) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?	☐	☐	☐	☒

ENVIRONMENTAL SETTING

STATE HIGHWAYS

I-5

Interstate 5 (I-5) is the primary highway in the project area and provides north-south circulation throughout the state. In San Joaquin County, I-5 connects Stockton to Tracy and passes through Lathrop. I-5 is a six-lane divided highway in the project area.

SR 120

State Route (SR) 120 is a state highway in the project vicinity. SR 120 provides east-west circulation between I-5 and SR 99, and continues east across the San Joaquin Valley. SR 120 is a four-lane divided highway in the project area.

LOCAL ROADWAYS

West Howard Road

West Howard Road is a two-lane east-west rural roadway in the project area. West Howard Road merges with West Matthews Road near I-5, providing access to I-5. The western terminus of West Howard Road is Tracy Boulevard, approximately 6 miles north of the city of Tracy. West Howard Road crosses the San Joaquin River at a bridge immediately north of project Reach Ic.

Ott Road

Ott Road is a two-lane rural roadway running parallel to and approximately 0.2 mile south of West Howard Road. Ott Road begins in the east at South Wolfe Road, approximately 1.3 miles west of I-5, and terminates at the San Joaquin River immediately south of Reach Ic.

Bowman Road

Bowman Road is a two-lane east-west rural roadway that terminates in the west at the San Joaquin River, approximately 200 feet upstream of Reach Id. Bowman Road begins in the east near I-5 at South Manthey Road.

Manthey Road

Manthey Road is a north-south frontage road that runs parallel to southbound I-5. The northern terminus is West 8th Street in Stockton. Manthey Road continues south and becomes West Manthey Road toward its terminus near the junction of I-5 and I-205 in the city of Lathrop. Manthey Road is one lane in each direction in the project area.

Lathrop Road

Lathrop Road provides east-west access to I-5 and connects Lathrop and Manteca. The western terminus for public access on Lathrop Road is the Lathrop Road/Manthey Road intersection, just west of the I-5/Lathrop Road interchange. However, the road continues through the undeveloped Central Lathrop Specific Plan area, then enters the Mossdale Landing residential development and terminates several hundred feet south of Reach IVb. Lathrop Road is signalized at various intersections and varies from one to two travel lanes in each direction.

Louise Avenue/River Island Parkway

Louise Avenue provides east-west access to I-5 and connects the cities of Lathrop and Manteca. Louise Avenue extends west beyond Manthey Road, where it turns into River Island Parkway heading southwest and ending at the McKee Boulevard intersection within the Mossdale Landing development. Louise Avenue is signalized at various intersections and varies from one to three travel lanes in each direction.

Town Center Drive

Town Center Drive is a local residential street that provides east-west access between South Manthey Road and the Mossdale Landing development. The eastern terminus of Town Center Drive is Village Avenue, several hundred feet east of the northern end of Reach VIa.2. Town Center Drive is a one lane in each direction.

OTHER LOCAL ROADWAYS

Various residential and collector roadways within the Mossdale Landing development would be used to access Reaches IVb, VIa.2, VIa.3, and VIa.4. Reaches VIIc and VIId are located in an undeveloped area that is accessed

from SR 120 and various public and private rural roadways. Reach VIIf is located in the Oakwood Lake Development, with access provided by Durham Ferry Road and Woodward Avenue.

AIRPORTS

The closest active air transport facility is the Stockton Metropolitan Airport, located approximately 5 miles from the closest project segment, Reach Ic. The Defense Distribution Depot San Joaquin California–Sharpe, located approximately 2.5 miles east of the nearest project segment, contains an airstrip but no longer provides flight services (Hermosilla, pers. comm., 2009).

TRANSIT

No transit facilities are located in the project area. There are several transit routes that operate in the project area west of I-5 in the city of Lathrop and serve the residential development adjacent to Reaches IVb, VIa.2, VIa.3, and VIa.4. The San Joaquin Regional Transit District (SJRTD) operates bus routes in the city of Lathrop and San Joaquin County, including fixed-route regional bus service, flexible fixed-route bus service, and commuter rail service (SJRTD 2009).

RAILROADS

One Union Pacific Railroad line traverses the project site. The Tracy Line runs between reaches VIIc and VIId in a northeast-southwest direction and is used for the Altamont Commuter Express (ACE) commuter rail service.

DISCUSSION

a) Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?

Less-than-Significant Impact. The proposed project would not result in any new or changed land uses or population increases, and thus changes in traffic conditions related to these mechanisms would not occur. In addition, project operation would not require any additional vehicle trips. Maintenance and monitoring of the levee system would continue under the existing maintenance and monitoring schedule. Therefore, the proposed project would not result in any permanent changes in traffic volumes or patterns. Traffic impacts would be limited to the construction phase of project implementation.

It is estimated that approximately 11,856 truck round-trips would be needed to transport approximately 154,120 cubic yards (cy) of soil necessary for construction at all proposed project reaches. This assumes a truck capacity of approximately 13 cy. The material for the proposed seepage berms would be moved from nearby commercial sources to each construction site. Construction operations would occur between August and December, 6 days per week, resulting in approximately 120 active construction days. It is expected that construction would occur at three of the nine project segments at any one time during this period, with eight of the nine segments requiring the transport and placement of fill material for a seepage berm. The project area is spread over more than 8 miles, and most reaches are not contiguous. Therefore, construction truck trips would be spread over multiple local haul routes. Table 3.15-1 shows the project reaches, their anticipated haul routes, and the estimated number of truck trips based on the amount of fill anticipated for each reach.

Table 3.15-1
Estimated Number of Truck Haul Trips for Each Project Reach

Reach	Expected Access/Haul Routes	Estimated Number of Truck Haul Trips[a]	Fill (Cubic Yards)
Ic	Howard Road and Ott Road	1,077	14,000
Id	Bowman Road	1,231	16,000
IVb	Manila Road and De Lima Road	1,155	15,000
VIa.2	Manthey Road, Golden Valley Parkway, and Town Center Drive	2,308	30,000
VIa.3	Manthey Road, Town Center Drive, and Queirolo Road	1,769	23,000
VIa.4	Manthey Road, Town Center Drive, and Queirolo Road	9	120
VIIc	SR 120	2,000	26,000
VIId	SR 120	0	0
VIIf	Durham Ferry Road and Woodward Avenue	2,308	30,000
Total		**11,856**	**154,120**

Notes:
SR = State Route
[a] Truck trips estimates are round-trips.
Source: Data compiled by EDAW in 2009.

The specific schedule and sequencing for construction in each project reach (or segment) is not known at this time, just as it is not known which reaches may have overlapping construction periods. However, it is reasonable to assume that reaches close to one another have the greatest potential for concurrent construction periods. Nearby or adjacent reaches also have the greatest potential to utilize the same access routes, placing greater numbers of vehicle trips on the same roadways. Given these conditions, construction of Reaches VIa.2, VIa.3, and VIa.4 is expected to have the greatest potential for adverse traffic impacts, for the following reasons:

- construction might occur concurrently in these adjacent segments;
- many of the same access routes will be used;
- many of the access routes pass through residential areas, which can be more sensitive to increases in traffic volumes; and
- combined fill needed for these segments (53,120 cy) is the greatest amount of fill required in any portion of the project area, thereby generating the greatest number of haul truck trips.

As shown in Table 3.15-1, construction in Reaches VIa.2, VIa.3, and VIa.4 would require approximately 4,086 truck round-trips to haul fill material. Assuming a relatively short 6-week construction period, this would result in an average of approximately 114 daily haul truck trips. These trips would be spread over various times during the day with multiple access routes used during the day. In addition, it is estimated that up to 24 additional daily vehicle round-trips would be associated with worker commute trips. However, few, if any of these trips would overlap with the truck haul trips because hauling of material to construct seepage berms would not typically begin until construction staff are on-site to operate trucks, graders, compactors, and other equipment.

Assuming haul truck trips are spread relatively evenly over the day, it can be expected that no more than roughly 15 haul truck trips per hour would be generated by construction at Reaches VIa.2, VIa.3, and VIa.4. These trips would be expected to use at least two different routes to reach Manthey Road at any one time. This level of

construction traffic would not be substantial in relation to the existing traffic load and capacity of the street system, especially given that the streets in the area were designed to support significantly more development and traffic volumes than is currently generated by the unfinished Mossdale Landing and Central Lathrop Specific Plan projects. Given these conditions, concurrent construction of Reaches VIa.2, VIa.3, and VIa.4 would not result in a substantial increase in the number of vehicle trips, the volume-to-capacity ratio on roads, or congestion at intersections. As discussed above, concurrent construction at Reaches VIa.2, VIa.3, and VIa.4 is expected to generate the greatest potential for adverse traffic impacts among the various project segments. Therefore, the lack of significant adverse affects identified for Reaches VIa.2, VIa.2, and VIa.4 would also apply to the remaining project segments. Therefore, this impact would be less than significant.

b) Exceed, individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?

Less-than-Significant Impact. As above under impact mechanism a), the increased traffic resulting from project construction would be short term and temporary. Because of the relatively small size of the project, the dispersed nature of the project segments, and the multi-month construction period, a substantial number of trips would not be generated in any one location during any one day. In addition, many project-generated vehicle trips would be spread out over the day and over different roadways, thus limiting the potential for substantial numbers of trips to be added to any one intersection or roadway during a peak-hour period. It is not anticipated that the proposed project would add sufficient trips to degrade levels of service below acceptable standards. Therefore, this impact would be less than significant.

c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?

No Impact. The proposed project would not change air traffic patterns or increase air traffic levels. No impact would occur.

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

Less-than-Significant Impact. The proposed project would not result in alterations to existing public roadways. Thus, the safety of the public transportation network would not be affected. Project operation would not result in any change in land uses and would not alter the compatibility of uses served by the public roadway network. Therefore, this impact would be less than significant.

e) Result in inadequate emergency access?

Less-than-Significant Impact. Emergency access to the project site and vicinity would not be altered during project construction or operation. As part of San Joaquin County and city of Lathrop authorizations, plans to ensure the continuation of emergency response services during construction would be incorporated into construction traffic planning. This impact would be less than significant.

f) Result in inadequate parking capacity?

No Impact. Operation of the proposed project would not generate parking demand. Parking for construction and crew vehicles would be provided within proposed construction staging areas. Therefore, no impact would occur.

g) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?

No Impact. Implementation of the proposed project would not interfere with SJRTD or ACE routes or service in the project vicinity. No impact would occur.

3.16 UTILITIES AND SERVICE SYSTEMS

	ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XVI.	**Utilities and Service Systems. Would the project:**				
	a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☒
	b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
	c) Require or result in the construction of new 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 that 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?	☐	☐	☐	☒

This section provides an overview of utilities and service systems in the project vicinity—water supply, wastewater service, solid waste management, and stormwater drainage. Impacts are evaluated in relation to increased demand for utilities and service systems associated with the proposed project.

ENVIRONMENTAL SETTING

The project area is located in nine reaches (or segments) along the east side of the San Joaquin River in San Joaquin County. The northernmost and southernmost project segments (Reaches Ic and Id and Reaches VIIc, VIId, and VIIf, respectively), are located in the unincorporated county. The remaining four segments (Reaches IVb, VIa.2, VIa.3, and VIa.4) are located in the city of Lathrop. The Water Resources Division of the County of San Joaquin Public Works Department is responsible for providing water service to the unincorporated portions of the county in the project area (San Joaquin County 2009b). Private wells and agricultural diversions from the San Joaquin River are also used as water sources in this area.

The City of Lathrop provides water to the project segments in the city. The South County Water Supply Program supplies the cities of Tracy, Lathrop, Manteca, and Escalon with water from the South San Joaquin Irrigation

District. The City of Lathrop's Municipal Well System is also a source of domestic water in the city (City of Lathrop 2009e).

Storm drainage service in the project area is provided by RD 17. Storm water drainage consists of surface run-off to detention basins (if detention basins are needed in an area), then discharges to the San Joaquin River (City of Lathrop 2009f).

Reaches Ic and Id in the northern portion and Reach VIIc in the southern portion of the project area are surrounded by agricultural fields, and no wastewater service is provided to these locations or in the immediate vicinity. In Lathrop, wastewater generated in the areas west of I-5 and south of Louise Avenue is conveyed to the Lathrop Water Recycling Plant No. 1 (City of Lathrop 2009g). Development adjacent to Reaches VIId and VIIf is served by a small on-site wastewater treatment system.

Electricity and natural gas are provided to the project area by the Pacific Gas and Electric Company.

DISCUSSION

a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?

No Impact. The proposed project would not involve the construction of new homes, businesses, or other uses that could generate any new source of wastewater. Therefore, no impact would occur.

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?

No Impact. The proposed project would not involve the construction of new homes, businesses, or other uses that could generate any new source of wastewater. Therefore, no new demand for wastewater treatment facilities would be generated. No impact would occur.

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?

No Impact. Storm drainage services in the project area are provided by RD 17 through a system of detention basins and pumps. The proposed project would not require the construction or modification of existing storm drainage facilities and would not generate additional stormwater that would require new facilities. No impact would occur.

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

Less-than-Significant Impact. Construction and operation of the proposed project would not create any new demands for water supply other than relatively small amounts of water usage associated with dust control during construction. This temporary and short-term water demand can be met by existing available supplies. This impact would be less than significant.

e) Result in a determination by the wastewater treatment provider that 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?

No Impact. The proposed project would not involve the construction of new homes, businesses, or other uses that could generate any new source of wastewater. Therefore, no impact would occur.

f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid-waste disposal needs?

Less-than-Significant Impact. Other than disposal of a small amount of excess construction material and packaging, the proposed project is not anticipated to generate any additional solid waste or create a demand for additional solid-waste disposal capacity. This temporary and short-term generation of a relatively small amount of solid waste can be accommodated within existing solid-waste disposal facilities. This impact would be less than significant.

g) Comply with federal, state, and local statutes and regulations related to solid waste?

No Impact. Solid waste generated by project construction would be disposed of in compliance with all applicable laws and regulations. No waste types would be generated outside of what would be expected at a construction site with activities focused on earthmoving. Therefore, no impact would occur.

3.17 MANDATORY FINDINGS OF SIGNIFICANCE

	ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XVII.	**Mandatory Findings of Significance.**				
	a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of an endangered, rare, or threatened species, or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐
	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 that will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐	☐

Authority: Public Resources Code Sections 21083 and 21087.
Reference: Public Resources Code Sections 21080(c), 21080.1, 21080.3, 21082.1, 21083, 21083.3, 21093, 21094, 21151; *Sundstrom v. County of Mendocino*, 202 Cal.App.3d 296 (1988); *Leonoff v. Monterey Board of Supervisors*, 222 Cal.App.3d 1337 (1990).

DISCUSSION

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

Less than Significant with Mitigation Incorporated. Development of the proposed project would not substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce or restrict the range of rare or endangered plants or animals, or eliminate important examples of the major periods of California history or prehistory. As discussed in the analyses provided in this initial study, mitigation measures are proposed to reduce all potentially significant impacts on biological and cultural resources, as well as on other issue areas, to a less-than-significant level.

b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a

project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)

Less than Significant with Mitigation Incorporated. No past, current, or probable future projects were identified in the project vicinity that, when added to project-related impacts, would result in cumulatively considerable impacts. The proposed project does not make any substantial contributions to cumulatively considerable impacts. As discussed in the analyses provided in this initial study, mitigation measures are proposed to reduce all potentially significant impacts to a less-than-significant level. The incremental effects of the proposed project are not cumulatively considerable when viewed in connection with the effects of past, current, and probable future projects.

c) Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?

Less than Significant with Mitigation Incorporated. No project-related environmental effects were identified that would cause substantial adverse effects on human beings after mitigation is incorporated. As discussed herein, the proposed project has the potential to create significant or potentially significant impacts related to air quality, biological resources, cultural resources, geology and soils, hazards and hazardous materials, hydrology and water quality, and noise during construction. However, with implementation of required mitigation measures, these impacts would be reduced to a less-than-significant level.

4 REFERENCES

American Association of Petroleum Geologists. 1992 (April). *Field Guide to the Tectonics of the Boundary Between the California Coast Ranges and the Great Valley of California.* Guidebook 70, edited by M. C. Erskine, J. Unruh, W. R. Lettis, and J. A. Bartow. Pacific Section of the American Association of Petroleum Geologists, Bakersfield, CA.

ARB. *See* California Air Resources Board.

Atwater, B. F. 1982. Geologic Maps of the Sacramento–San Joaquin Delta, California. U.S. Geological Survey Map MF-1401.

Beardsley, R. K. 1948. Cultural Sequences in Central California Archaeology. *American Antiquity* 14(1):1–28.

Beck, Warren A., and Ynez Haas. 1974. *Historical Atlas of California*. University of Oklahoma Press, Norman, OK.

Burk, Chris. Firefighter. French Camp McKinley Fire District, French Camp, CA. April 24, 2009—telephone conversation with Nisha Chauhan at EDAW regarding the service area and staff of the French Camp McKinley Fire District.

California Air Resources Board. 2003. *HARP User Guide.* Sacramento, CA.

————. 2008a (December). *Climate Change Proposed Scoping Plan*. Sacramento, CA. Available: <http://www.arb.ca.gov/cc/scopingplan/document/scopingplandocument.htm>. Last updated December 2008. Accessed May 1, 2009.

————. 2008b. *Recommended Approaches for Setting Interim Significance Thresholds for Greenhouse Gases under the California Environmental Quality Act.* Available: <http://www.arb.ca.gov/cc/localgov/ceqa/ceqa.htm>. Last updated December 11, 2008. Accessed May 1, 2009.

————. 2009a. *Ambient Air Quality Standards and Area Designation Maps – State and National*. Available: <http://www.arb.ca.gov/desig/adm/adm.htm#state>. Last updated February 2009. Accessed May 1, 2009.

————. 2009b. *Air Quality Data Statistics.* Available: <http://www.arb.ca.gov/adam/welcome.html>. Last updated 2009. Accessed May 1, 2009.

————. 2009c. *Air Resources Board Emissions Inventory*. Available: <http://www.arb.ca.gov/ei/ei.htm>. Last updated 2009. Accessed May 1, 2009.

California Bay-Delta Authority. 2005. CALFED Water Quality Program Assessment Report. Prepared by Brown and Caldwell in association with CALFED Water Quality Program Staff, the Drinking Water Subcommittee of the Bay-Delta Public Advisory Committee, and various stakeholder groups.

California Department of Conservation. 1988. *Mineral Land Classification of Portland Cement Concrete Aggregate in the Stockton–Lodi Production-Consumption Region, Special Report 160.* Prepared by Laurel S. Jensen and Michael A. Silva. Division of Mines and Geology. Sacramento, CA.

————. 2006. San Joaquin County Important Farmland 2006. Available: <ftp://ftp.consrv.ca.gov/pub/dlrp/FMMP/pdf/2006/sjq06.pdf>. Accessed May 12, 2009.

————. 2007. San Joaquin County Williamson Act Lands 2007. Available: <ftp://ftp.consrv.ca.gov/pub/dlrp/wa/Map%20and%20PDF/San%20Joaquin/SanJoaquinWA_07_08.pdf>. Accessed May 12, 2009.

California Department of Education. 2009. California School Directory. Available: <http://www.cde.ca.gov/re/sd/index.asp>. Accessed April 22, 2009.

California Department of Finance. 2008 (May). E-1 Population Estimates for Cities, Counties and the State with Annual Percent Change – January 1, 2007 and 2008. Available: <http://www.dof.ca.gov/research/demographic/reports/estimates/e-1_2006-07/>. Sacramento, CA. Accessed April 27, 2009.

California Department of Fish and Game. 1995. *Staff Report on Burrowing Owl Mitigation*. Sacramento. CA.

California Department of Forestry and Fire Protection. 2009. Fire Threat. Available: <http://frap.cdf.ca.gov/webdata/maps/statewide/fthreat_map.pdf>. Accessed April 30, 2009.

California Department of Parks and Recreation. 1976 and updates. *California Register of Historical Resources*. Office of Historic Preservation. On file, Central California Information Center of the California Historical Resources Information System, California State University, Stanislaus. Turlock, CA.

————. 1989. *Survey of Surveys* (historic and architectural resources). Office of Historic Preservation. On file, Central California Information Center of the California Historical Resources Information System, California State University, Stanislaus. Turlock, CA.

————. 1990. *California Historical Landmarks*. Office of Historic Preservation, Sacramento.

————. 1992 and updates. *California Points of Historical Interest*. Office of Historic Preservation. On file, Central California Information Center of the California Historical Resources Information System, California State University, Stanislaus. Turlock, CA.

————. 1995. *Instructions for Recording Historical Resources*. Office of Historic Preservation. Sacramento, CA.

————. 1999. Technical Assistance Series #10. California State Law and Historic Preservation: Statues, Regulations, and Administrative Policies regarding Historic Preservation of Cultural and Historical Resources. Office of Historic Preservation. Sacramento, CA.

California Department of Toxic Substance Control. 2009a. Envirostor Search Results. Available: <http://www.envirostor.dtsc.ca.gov/public/profile_report.asp?global_id=39970002>. Accessed April 28, 2009.

————. 2009b. Envirostor Search Results. Available: <http://www.envirostor.dtsc.ca.gov/public/profile_report.asp?global_id=80001748>. Accessed April 28, 2009.

California Department of Transportation. 1987. *State and Local Bridge Survey*. On file, Central California Information Center of the California Historical Resources Information System, California State University, Stanislaus. Turlock, CA.

————. 1998 (October). *Technical Noise Supplement.* Available: <http://www.dot.ca.gov/hq/env/noise/pub/Technical%20Noise%20Supplement.pdf>. Accessed May 15, 2009.

————. 2002 (February 20). *Transportation Related Earthborne Vibrations.* Available: http://www.dot.ca.gov/hq/env/noise/pub/TRANSPORTATION_RELATED_EARTHBORNE_VIBRATIONS.pdf. Accessed December 26, 2008.

————. 2007 (October). 2007 All Traffic Volumes on California State Highway System. Traffic and Vehicle Data Systems Unit. Available: <http://www.dot.ca.gov/hq/traffops/saferesr/trafdata/2007all.htm>. Accessed May 2009.

————. 2009. Eligible (E) and Officially Designated (OD) Routes. Available: <http://www.dot.ca.gov/hq/LandArch/scenic/cahisys.htm>. Last updated May 19, 2008. Accessed April 27, 2009.

California Department of Water Resources. 2006. *California's Groundwater.* Bulletin 118. Sacramento Valley Groundwater Basin, North American Subbasin. Last updated January 20, 2006. California Resources Agency, Department of Water Resources.

California Geological Survey. 2003. Seismic Shaking Hazards in California, Based on the USGS/CGS Probabilistic Seismic Hazards Assessment (PSHA) Model, 2002 (revised April 2003). Available: <http://redirect.conservation.ca.gov/cgs/rghm/pshamap/pshamain.html>. Accessed May 13, 2009.

California Native Plant Society. 2009. Electronic Inventory of Rare and Endangered Vascular Plants of California v7-09b. Available: <http://www.cnps.org/inventory>. Last updated April 10, 2009. Accessed May. 18, 2009.

California Natural Diversity Database. 2009 (May). Database Record Search for Information about Threatened, Endangered, Rare, or Otherwise Sensitive Species and Communities for the Lathrop U.S. Geological Survey (USGS) 7.5 minute quadrangle. Version 3.1.0. California Department of Fish and Game. Sacramento, CA.

Caltrans. *See* California Department of Transportation.

Cao, T., W. A. Bryant, B. Rowshandel, D. Branum, and C. J. Wills. 2003 (June). The Revised 2002 California Probabilistic Seismic Hazard Maps, June 2003. Available: <http://www.conservation.ca.gov/cgs/rghm/psha/fault_parameters/pdf/Documents/2002_CA_Hazard_Maps.pdf>. Accessed May 12, 2009.

CGS. *See* California Geological Survey.

Christenson, G. E. 1994 (August). Earthquake Ground Shaking in Utah. Utah Geological Survey, Public Information Series 29. Available: <http://geology.utah.gov/online/pdf/pi-29.pdf>. Accessed May 15, 2009.

City of Lathrop. 1991 (December). Comprehensive General Plan & Environmental Impact Report for the City of Lathrop, California. As amended through November 9, 2004. Lathrop, CA. Prepared by Grunwald & Associates, Sacramento, CA.

————. 2004 (November 9). *Comprehensive General Plan for the City of Lathrop, California.* Adopted by the Lathrop City Council December 17, 1991; second revision to reflect amendments and corrections as of November 9, 2004. Lathrop, CA.

————. 2008a (January). General Plan Map, 20 Year Plan, Adopted December 1991 and revised January 2008. Lathrop, CA. Available: <http://www.ci.lathrop.ca.us/cdd/documents/>. Accessed April 28, 2009.

————. 2008b (January). Zoning Map, Last Revised January 2008. Available: <http://www.ci.lathrop.ca.us/cdd/documents/>. Accessed April 28, 2009.

————. 2009a. Lathrop–Manteca Fire Protection District: Operations. Available: <http://lmfd.org/operations.htm>. Accessed April 22, 2009.

————. 2009b. Lathrop Police Department. Available: <http://www.ci.lathrop.ca.us/lpd/about/history.asp>. Accessed April 22, 2009.

————. 2009c. Lathrop Parks and Amenities. Available: <http://www.ci.lathrop.ca.us/prd/parks.asp>. Accessed April 24, 2009.

————. 2009d. Lathrop Parks and Amenities. Available: <http://www.ci.lathrop.ca.us/prd/parks.asp>. Accessed April 24, 2009.

————. 2009e. Lathrop Water System. Available: <http://www.ci.lathrop.ca.us/pwd/utilities/water.asp>. Accessed April 22, 2009.

————. 2009f. Lathrop Storm Drain System. Available: <http://www.ci.lathrop.ca.us/pwd/utilities/storm.asp>. Accessed April 22, 2009.

————. 2009g. Lathrop Sewer System. Available: <http://www.ci.lathrop.ca.us/pwd/utilities/sewer.asp>. Accessed April 22, 2009.

CNDDB. *See* California Natural Diversity Database.

CNPS. *See* California Native Plant Society.

Cook, Sherburne F., and Albert B. Elsasser. 1956. Burials in the Sand Mounds of the Delta Region of the Sacramento–San Joaquin River System. *University of California Archaeological Survey Reports* 35:26–46, Berkeley, CA.

County of San Joaquin. 1999a. County of San Joaquin General Plan. Volume 1. Public Health and Safety Element. Stockton, CA.

————. 1999b. Chapter 9-1025 Performance Standards of the County of San Joaquin County Code of Ordinances. Stockton, CA.

DFG. *See* California Department of Fish and Game.

DOC. *See* California Department of Conservation.

DTSC. *See* California Department of Toxic Substance Control.

ECORP. 2006. *Cultural Resources Inventory and Assessment – South Lathrop South Village.* Report prepared by ECORP Consulting, Inc., Rocklin, CA. Prepared for for Richland Planned Communities, Roseville, CA.

————. 2008. *Subsurface Testing and Evaluation at South Lathrop South Village, San Joaquin County, California.* Report prepared by ECORP Consulting, Inc., Rocklin, CA. Prepared for Richland Planned Communities, Roseville, CA.

EDAW. 2001 (June). *Final Environmental Impact Report for the Lathrop Water, Wastewater, and Recycled Water Master Plan.* Sacramento, California. Prepared for the City of Lathrop, California.

————. 2002a. *Cultural Resources Survey for the Mossdale Landing Urban Design Concept.* Prepared for the City of Lathrop, Lathrop, CA.

————. 2002b. *Historical Architectural Assessment for the River Islands at Lathrop Project.* Prepared for the City of Lathrop, Lathrop, CA.

————. 2003. *Cultural Resources Assessment for the Lathrop Water Recycling Plant No. 1, Phase 1 Expansion Project.* Prepared for the City of Lathrop, Lathrop, CA.

————. 2004. *Draft Environmental Impact Report for the Central Lathrop Specific Plan.* Prepared for the City of Lathrop Community Development/Planning Department, Lathrop, CA.

Federal Highway Administration. 2006 (January). Roadway Construction Noise Model Version 1.0 (FHWA RCNM V. 1.0). Washington, DC.

Federal Transit Administration. 2006 (May). *Transit Noise and Vibration Impact Assessment.* Chapters 10 and 12. Washington, DC.

FHWA. *See* Federal Highway Administration.

Fredrickson, D. A. 1974. Cultural Diversity in Early Central California: A View from the North Coast Ranges. *Journal of California Anthropology* 1(1):41–53.

FTA. *See* Federal Transit Administration.

Gorham, G. GIS Manager. San Joaquin County Community Development Department, Stockton, CA. March 3, 2009—GIS data on land use designations and zoning for San Joaquin County, created and managed by the San Joaquin County Community Development Department Geographic Information System Group and delivered via file transfer protocol site.

Hamilton, Laurissa. Biologist. Endangered Species Recovery Program, California State University, Stanislaus, Turlock, CA. March 18, 2004—telephone conversation with Sean Bechta of EDAW regarding results of riparian brush rabbit trapping.

Hart, E. W. and W. A. Bryant. 2007. Fault-Rupture Hazard Zones in California, Alquist-Priolo Earthquake Fault Zoning Act with Index to Earthquake Fault Zone Maps. Special Publication 42. Interim Revision 2007. California Geological Survey, Sacramento, CA.

Hermosilla, Maria. Senior Administrator. City of Lathrop Planning Department, Lathrop, CA. April 30, 2009—telephone call with Nisha Chauhan of EDAW regarding Defense Distribution Depot San Joaquin California–Sharpe and Sharpe Air Force Base.

Holson, J., Lisa Shapiro, S. Goddard, and James Bennyhoff. 1993. *Final Report National Register of Historic Places Determination of Eligibility Report for Prehistoric Sites on Holland Tract, Contra Costa County, California*. Biosystems Analysis, Inc.

Jennings, C. W. and G. J. Saucedo. 1999. Simplified Fault Activity Map of California. Revised 2002, T. Toppozada and D. Branum. Available: <http://www.conservation.ca.gov/cgs/information/Documents/Simplified_Fault_Activity_Map_8x10.pdf>. Accessed May 12, 2009.

Lillard, J. B., R. F. Heizer and F. Fenenga. 1939. An Introduction to the Archaeology of Central California. Sacramento*: Sacramento Junior College, Department of Anthropology Bulletin 2*.

Lipscomb, David M., and Arthur C. Taylor, Jr. 1978. *Noise Control Handbook of Principles and Practices*. Van Nostrand Reinhold Company. New York, NY.

Manteca Unified School District. 2009. Manteca Unified School District. Schools: Elementary School Directory. Available: <http://www.mantecausd.net/>. Accessed April 22, 2009.

Martin, J. 1980 (April). The Livermore Earthquake of January 1980. Contra Costa and Alameda Counties, California. *California Geology* 33(4). Available: <http://www.johnmartin.com/earthquakes/eqpapers/00000044.htm>. Accessed May 13 and 14, 2009.

Moratto, Michael J. 1984. *California Archaeology*. Academic Press, San Francisco, CA.

National Park Service. 1996 and updates. National Register of Historic Places. On file, Central California Information Center of the California Historical Resources Information System, California State University, Stanislaus. Turlock, CA.

Natural Resources Conservation Service. 2008. Web Soil Survey, Version 2.1. San Joaquin County, California. Available: <http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>. Web Soil Survey site last modified November 13, 2008. Accessed May 13 and 14, 2009.

Petersen, M. D., W. A. Bryant, C. H. Cramer, T. Cao, and M. Reichle. 1996. *Probabilistic Seismic Hazard Assessment for the State of California.* California Department of Conservation, Division of Mines and Geology. Open-File Report 96-08. U.S. Department of the Interior, U.S. Geological Survey, Open-File Report 96-706. Available: <http://www.conservation.ca.gov/cgs/rghm/psha/ofr9608/Pages-index.aspx>. Accessed May 12, 2009.

Reed, Glenn. Staff. San Joaquin Valley Air Pollution Control District, Fresno, CA. January 4, 2007—telephone conversation with Honey Walters of EDAW regarding the preparation of health risk assessments for construction-related emissions.

Rensch, E. 1966. *Historic Spots in California.* Stanford University Press, Palo Alto, CA.

Salinas, Julio. Staff Toxicologist. Office of Health Hazard Assessment, Sacramento, CA. August 3, 2004—telephone conversation with Kurt Legleiter of EDAW regarding the exposure period for determining heath risk.

San Joaquin Council of Governments. 2000 (November 14). *San Joaquin County Multi-Species Habitat Conservation and Open Space Plan (SJMSCP).* Available: <http://www.sjcog.org/Programs%20&%20Projects/Habitat_files/The-Plan.htm>. Accessed April 29, 2009.

San Joaquin County. 1992. *San Joaquin County General Plan 2010. Volume I: Countywide General Plan.* Adopted by the San Joaquin County Board of Supervisors July 29, 1992; comprehensive revision begun in June 2008 and scheduled to be completed in June 2011. Stockton, CA.

————. 1994 (August). San Joaquin County: *Office of Emergency Services Basic Emergency Plan.* Available: <http://www.sjgov.org/Oes/getplan/MHFP/Basic_Emergency_Plan.pdf>. Accessed April 30, 2009.

————. 2000 (November 14). *San Joaquin County Multi-Species Habitat Conservation and Open Space Plan.* Prepared by a consortium of local, state, and federal agencies. Stockton, CA.

————. 2008a (February 1). Stockton Metropolitan Airport: Airport Layout Plan (0103s002 ALPSTOCK08). Available: <http://www.co.san-joaquin.ca.us/airport/alp.aspx>. Accessed April 29, 2009.

————. 2008b. Housing Element Components of the General Plan 2010. Available: <http://www.sjgov.org/commdev/cgi-bin/cdyn.exe?grp=neighpresv&htm=housingelementcomp>. Accessed April 27, 2009.

————. 2009a. Sheriff's Department: Patrol Division. Available: <http://www.co.san-joaquin.ca.us/sheriff/pat.htm>. Accessed April 28, 2009.

————. 2009b. Public Works Department: Water Resources. Available: <http://www.co.san-joaquin.ca.us/pubworks/divisions.htm#WATER%20RESOURCES>. Accessed April 27, 2009.

San Joaquin Regional Transit District. 2009. Services. Available: <http://sanjoaquinrtd.com/services/services.htm>. Accessed May 4, 2009.

San Joaquin Valley Air Pollution Control District. 2002. *Guide for Assessing and Mitigating Air Quality Impacts (GAMAQI)*. Fresno, CA.

San Joaquin Valley Air Pollution Control District. 2009. General Information/CEQA Planning. Available: <http://www.valleyair.org/transportation/ceqa_idx.htm>. Last updated in 2009. Accessed May 1, 2009.

SJRTD. *See* San Joaquin Regional Transit District.

SJVAPCD. *See* San Joaquin Valley Air Pollution Control District.

State of California. 2000. *Directory of Properties in the Historical Resources Inventory*. On file, Central California Information Center of the California Historical Resources Information System, California State University, Stanislaus. Turlock, CA.

State Water Resources Control Board. 2008 (January). *Water Quality Conditions in the Sacramento–San Joaquin Delta and Suisun and San Pablo Bays during 2006.* Report to the State Water Resources Control Board in accordance with Water Right Decision 1641.

SWRCB. *See* State Water Resources Control Board.

Tanksley, Kim A. 2003. Extended Phase I Report for CA-Sjo-003. Mossdale I-5 Widening Project, San Joaquin County, California. California Department of Transportation—District 10, Fresno, CA.

Thompson, John. 1958. The Settlement Geography of the Sacramento–San Joaquin Delta, California. Ph.D. dissertation, Stanford University, Palo Alto, CA. University Microfilms International, Ann Arbor, MI.

U.S. Census Bureau. 2000. GCT-H6 Occupied Housing Characteristics: 2000. Available: <http://factfinder.census.gov/servlet/GCTSubjectShowTablesServlet?_lang=en&_ts=258922471033>. Accessed April 27, 2009.

U.S. Fish and Wildlife Service. 1999. *Conservation Guidelines for Valley Elderberry Longhorn Beetle.* Sacramento Field Office, Sacramento, CA.

————. 2009 (May). Federal Endangered and Threatened Species that Occur in or May Be Affected by Projects in the Lathrop U.S.G.S. 7 1/2 Minute Quadrangle. Document Number: 090518020410. Database Last Updated: January 29, 2009. Sacramento, CA.

USFWS. *See* U.S. Fish and Wildlife Service.

Vincent-Williams, E., M.R. Lloyd, D.F. Williams, and P.A. Kelly. 2004 (March). *Riparian Brush Rabbit Central Lathrop Specific Plan, San Joaquin County, California, February 2004.* California State University, Stanislaus, Endangered Species Recovery Program. Turlock, CA. Prepared for EDAW, Sacramento, CA.

Wakabayashi, J., and D. L. Smith. 1994. *Evaluation of Recurrence Intervals, Characteristic Earthquakes, and Slip Rates Associated with Thrusting along the Coast Range-Central Valley Geomorphic Boundary, California.* Bulletin of the Seismological Society of America, Vol. 84, No. 6.

Wallace, William J. 1978. Northern Valley Yokuts. In R. F. Heizer (Ed). *Handbook of North American Indians.* Vol.8: California. Pages 462–476. Smithsonian Institution, Washington DC.

West, James. 1994 (August). *A Class III Archeological Survey of the South Delta Water Management Program Area, San Joaquin and Contra Costa Counties, California.* U.S. Bureau of Reclamation, Sacramento, CA.

Zhu, Y., W. C. Hinds, S. Kim, and S. Shen. 2002. Study of Ultrafine Particles Near a Major Highway with Heavy-duty Diesel Traffic. In *Atmospheric Environment* 36:4323–4335.

5 PREPARERS OF THE ENVIRONMENTAL DOCUMENT

This initial study (IS) was prepared by Reclamation District (RD) No. 17, the lead agency for the project under the California Environmental Quality Act. EDAW was responsible for project management and IS preparation. The IS technical team, including project engineers, provided technical expertise, as presented below.

IS TECHNICAL TEAM (EDAW)

Principal-In-Charge ..... Gary Jakobs
Project Director ..... Richard Hunn
Project Manager ..... Sean Bechta
Aesthetics ..... William O'Daly
Agricultural Resources ..... Nisha Chauhan
Hazards and Hazardous Materials ..... Nisha Chauhan
Public Services ..... Nisha Chauhan
Recreation ..... Nisha Chauhan
Transportation/Traffic ..... Nisha Chauhan
Utilities and Service Systems ..... Nisha Chauhan
Mandatory Findings of Significance ..... Nisha Chauhan
Air Quality ..... Jake Weirich
Noise ..... Jake Weirich
Air Quality and Noise Review ..... Honey Walters
Biological Resources ..... John Downs/Sean Bechta
Biological Resources Review ..... Linda Leeman
Cultural Resources ..... Brian Ludwig
Geology and Soils ..... Jeanine Hinde
Hydrology and Water Quality ..... Jeanine Hinde
Land Use and Planning ..... Jeanine Hinde
Mineral Resources ..... Jeanine Hinde
Population and Housing ..... Jeanine Hinde
Technical Editing ..... William O'Daly

OTHER TECHNICAL TEAM MEMBERS AND ROLES

Reclamation District No. 17 (lead agency) ..... Dante John Nomellini

Kjeldsen, Sinnock, Neudeck Civil Engineers (RD 17 District Engineers) ..... Christopher Neudeck
..... Jerry Hadley

MacKay & Somps Civil Engineers (engineering design) ..... Steve Lichliter
..... Christopher Guenther

ENGEO (geotechnical) ..... Josef Tootle
..... Matthew Swanson

APPENDIX A

Construction-Related Emissions Calculations

5/5/2009 3:38:42 PM

Urbemis 2007 Version 9.2.4

Detail Report for Annual Construction Unmitigated Emissions (Tons/Year)

File Name: C:\Documents and Settings\weirichj\Desktop\RD 17\RD 17.urb924

Project Name: RD 17

Project Location: San Joaquin Valley APCD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Annual Tons Per Year, Unmitigated)

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
2009	0.81	8.43	3.83	0.00	0.55	0.39	0.94	0.12	0.36	0.47	897.91
Mass Grading 08/01/2009-08/31/2009	0.08	0.86	0.40	0.00	0.07	0.04	0.11	0.01	0.04	0.05	89.81
Mass Grading Dust	0.00	0.00	0.00	0.00	0.07	0.00	0.07	0.01	0.00	0.01	0.00
Mass Grading Off Road Diesel	0.06	0.50	0.25	0.00	0.00	0.03	0.03	0.00	0.02	0.02	43.44
Mass Grading On Road Diesel	0.02	0.36	0.12	0.00	0.00	0.01	0.02	0.00	0.01	0.01	44.38
Mass Grading Worker Trips	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.99
Mass Grading 08/15/2009-09/14/2009	0.09	0.91	0.41	0.00	0.07	0.04	0.11	0.01	0.04	0.05	96.15
Mass Grading Dust	0.00	0.00	0.00	0.00	0.07	0.00	0.07	0.01	0.00	0.01	0.00
Mass Grading Off Road Diesel	0.06	0.50	0.25	0.00	0.00	0.03	0.03	0.00	0.02	0.02	43.44
Mass Grading On Road Diesel	0.03	0.41	0.14	0.00	0.00	0.02	0.02	0.00	0.01	0.02	50.72
Mass Grading Worker Trips	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.99
Mass Grading 09/01/2009-09/30/2009	0.09	0.88	0.41	0.00	0.07	0.04	0.11	0.01	0.04	0.05	92.98
Mass Grading Dust	0.00	0.00	0.00	0.00	0.07	0.00	0.07	0.01	0.00	0.01	0.00
Mass Grading Off Road Diesel	0.06	0.50	0.25	0.00	0.00	0.03	0.03	0.00	0.02	0.02	43.44
Mass Grading On Road Diesel	0.02	0.38	0.13	0.00	0.00	0.01	0.02	0.00	0.01	0.01	47.55
Mass Grading Worker Trips	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.99

Mass Grading 09/16/2009-10/15/2009	0.11	1.26	0.53	0.00	0.07	0.06	0.12	0.01	0.05	0.07	140.54
Mass Grading Dust	0.00	0.00	0.00	0.00	0.07	0.00	0.07	0.01	0.00	0.01	0.00
Mass Grading Off Road Diesel	0.06	0.50	0.25	0.00	0.00	0.03	0.03	0.00	0.02	0.02	43.44
Mass Grading On Road Diesel	0.05	0.77	0.26	0.00	0.00	0.03	0.03	0.00	0.03	0.03	95.10
Mass Grading Worker Trips	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.99
Mass Grading 10/01/2009-10/31/2009	0.10	1.10	0.49	0.00	0.07	0.05	0.12	0.01	0.05	0.06	120.09
Mass Grading Dust	0.00	0.00	0.00	0.00	0.07	0.00	0.07	0.01	0.00	0.01	0.00
Mass Grading Off Road Diesel	0.06	0.52	0.26	0.00	0.00	0.03	0.03	0.00	0.02	0.02	45.11
Mass Grading On Road Diesel	0.04	0.59	0.20	0.00	0.00	0.02	0.03	0.00	0.02	0.02	72.91
Mass Grading Worker Trips	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.07
Mass Grading 10/16/2009-11/15/2009	0.06	0.50	0.28	0.00	0.01	0.03	0.03	0.00	0.02	0.03	45.81
Mass Grading Dust	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00
Mass Grading Off Road Diesel	0.06	0.50	0.25	0.00	0.00	0.03	0.03	0.00	0.02	0.02	43.44
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.38
Mass Grading Worker Trips	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.99
Mass Grading 11/01/2009-12/01/2009	0.10	1.14	0.49	0.00	0.07	0.05	0.12	0.01	0.05	0.06	124.80
Mass Grading Dust	0.00	0.00	0.00	0.00	0.07	0.00	0.07	0.01	0.00	0.01	0.00
Mass Grading Off Road Diesel	0.06	0.50	0.25	0.00	0.00	0.03	0.03	0.00	0.02	0.02	43.44
Mass Grading On Road Diesel	0.04	0.64	0.21	0.00	0.00	0.02	0.03	0.00	0.02	0.02	79.37
Mass Grading Worker Trips	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.99
Fine Grading 11/15/2009-12/15/2009	0.06	0.50	0.28	0.00	0.07	0.03	0.09	0.01	0.02	0.04	45.43
Fine Grading Dust	0.00	0.00	0.00	0.00	0.07	0.00	0.07	0.01	0.00	0.01	0.00
Fine Grading Off Road Diesel	0.06	0.50	0.25	0.00	0.00	0.03	0.03	0.00	0.02	0.02	43.44
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.99

Mass Grading 12/01/2009-12/31/2009	0.11	1.28	0.55	0.00	0.07	0.06	0.13	0.02	0.05	0.07	142.28
Mass Grading Dust	0.00	0.00	0.00	0.00	0.07	0.00	0.07	0.01	0.00	0.01	0.00
Mass Grading Off Road Diesel	0.06	0.52	0.26	0.00	0.00	0.03	0.03	0.00	0.02	0.02	45.11
Mass Grading On Road Diesel	0.05	0.77	0.26	0.00	0.00	0.03	0.03	0.00	0.03	0.03	95.10
Mass Grading Worker Trips	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.07

Phase Assumptions

Phase: Fine Grading 11/15/2009 - 12/15/2009 - Reach VIId

Total Acres Disturbed: 1

Maximum Daily Acreage Disturbed: 0.25

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 8/1/2009 - 8/31/2009 - Reach Ic

Total Acres Disturbed: 1.6

Maximum Daily Acreage Disturbed: 0.25

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 847.97

Off-Road Equipment:

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

5/5/2009 3:38:42 PM

Phase: Mass Grading 8/15/2009 - 9/14/2009 - Reach Id
Total Acres Disturbed: 1.8
Maximum Daily Acreage Disturbed: 0.25
Fugitive Dust Level of Detail: Default
20 lbs per acre-day
On Road Truck Travel (VMT): 969.11
Off-Road Equipment:
2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day
1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day
1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 9/1/2009 - 9/30/2009 - Reach IVb
Total Acres Disturbed: 1.9
Maximum Daily Acreage Disturbed: 0.25
Fugitive Dust Level of Detail: Default
20 lbs per acre-day
On Road Truck Travel (VMT): 908.54
Off-Road Equipment:
2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day
1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day
1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 9/16/2009 - 10/15/2009 - Reach VIa.2
Total Acres Disturbed: 4.6
Maximum Daily Acreage Disturbed: 0.25
Fugitive Dust Level of Detail: Default
20 lbs per acre-day
On Road Truck Travel (VMT): 1817.08
Off-Road Equipment:
2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day
1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 10/1/2009 - 10/31/2009 - Reach VIa.3
Total Acres Disturbed: 2.8
Maximum Daily Acreage Disturbed: 0.25
Fugitive Dust Level of Detail: Default
20 lbs per acre-day
On Road Truck Travel (VMT): 1341.5
Off-Road Equipment:
2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day
1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day
1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 10/16/2009 - 11/15/2009 - Reach VIa.4
Total Acres Disturbed: 0.02
Maximum Daily Acreage Disturbed: 0.02
Fugitive Dust Level of Detail: Default
20 lbs per acre-day
On Road Truck Travel (VMT): 7.27
Off-Road Equipment:
2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day
1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day
1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 11/1/2009 - 12/1/2009 - Reach VIIc
Total Acres Disturbed: 3.2
Maximum Daily Acreage Disturbed: 0.25
Fugitive Dust Level of Detail: Default
20 lbs per acre-day

5/5/2009 3:38:42 PM

On Road Truck Travel (VMT): 1516.48

Off-Road Equipment:

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 12/1/2009 - 12/31/2009 - Reach VIIf

Total Acres Disturbed: 4.6

Maximum Daily Acreage Disturbed: 0.25

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 1749.78

Off-Road Equipment:

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day