

Final Environmental Impact Statement



408 Permission and 404 Permit to Sacramento Area Flood Control Agency
for the Natomas Levee Improvement Project, Sacramento, CA



**US Army Corps
of Engineers**®
Sacramento District

November 2008

Final Environmental Impact Statement



408 Permission and 404 Permit to Sacramento Area Flood Control Agency
for the Natomas Levee Improvement Project, Sacramento, CA

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November 2008



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, SACRAMENTO
CORPS OF ENGINEERS
1325 J STREET
SACRAMENTO, CALIFORNIA 95814-2922

Environmental Resources Branch

NOV 14 2008

TO ALL INTERESTED PARTIES:

Enclosed is the Final Environmental Impact Statement (FEIS) that the U.S. Army Corps of Engineers (USACE), Sacramento District has prepared for the Natomas Levee Improvement Program, entitled *408 Permission and 404 Permit to Sacramento Area Flood Control Agency for the Natomas Levee Improvement Project, Sacramento, CA*. This FEIS has been prepared in accordance with the requirements of the National Environmental Policy Act (NEPA).

This project is being proposed by the Sacramento Area Flood Control Agency (SAFCA), and consists of early implementation (2008–2010) improvements to the perimeter levee system of the Natomas Basin, and associated landscape and irrigation/drainage infrastructure modifications in Sutter and Sacramento Counties, California. The FEIS considers the early implementation project in its entirety, with the “2008 construction phase” addressed in detail and the 2009 and 2010 construction phases addressed at a general, programmatic level.

To implement the project, the Central Valley Flood Protection Board has requested that USACE issue a letter of permission under Section 14 of the Rivers and Harbors Act of 1899 (Section 408) to alter Federal project levees, and SAFCA has requested that USACE issue a permit under the Clear Water Act for placement of dredged or fill material into jurisdictional waters of the United States.

The FEIS references 2008 as the year the 2008 construction phase would begin; however, it is now anticipated that although some project construction would begin in late 2008, after the requested permits are issued, the bulk of the “2008 construction phase” would occur in 2009. Further, the “2008 construction phase” could occur simultaneously with the 2009 construction phase. The environmental analysis of this simultaneous construction scenario is included in the joint EIS/Environmental Impact Report (EIR) on the 2009 and 2010 construction phases (referred to as the Phase 3 and 4 Projects in that document) that is being prepared by USACE and SAFCA and anticipated to be issued in early 2009.

During the public comment period on the Draft Environmental Impact Statement (DEIS), we received sixteen written comments from Federal, state, and local agencies; and individuals. We also received written comments at a public meeting that was held on July 16, 2008. All comments are provided in Section/Appendix H of the FEIS. This FEIS presents additional analysis and information to address comments received on the DEIS and to take into account SAFCA’s ongoing NLIP planning efforts.

The 30-day review period for the FEIS begins on November 14, 2008 and closes on December 15, 2008. The FEIS is being provided to public agencies and to those parties who submitted comments on the DEIS. Other interested parties may review a printed copy of the FEIS at the USACE, Sacramento District's office (see address below). The FEIS is also available for viewing or downloading at USACE's Web site: www.spk.usace.army.mil and SAFCA's Web site: www.safca.org. Printed or CD copies of the FEIS may be requested from USACE by contacting Elizabeth Holland (see contact information below).

Following the 30-day review period, USACE will consider adoption of the EIS and will prepare a Record of Decision (ROD) documenting the agency's decision on the project.

For further information regarding the FEIS, please contact Elizabeth Holland, USACE Sacramento District, Planning Division, 1325 J Street, Sacramento, CA, 95814-2922, telephone number (916) 557-6763, fax number (916) 557-7856, or Elizabeth.G.Holland@usace.army.mil.

Sincerely,



 Francis Piccola
Chief, Planning Division

**408 PERMISSION AND 404 PERMIT
TO SACRAMENTO AREA FLOOD CONTROL AGENCY
FOR THE NATOMAS LEVEE IMPROVEMENT PROJECT, SACRAMENTO, CA**

FINAL ENVIRONMENTAL IMPACT STATEMENT

NOVEMBER 2008

Lead Federal Agency: U.S. Army Corps of Engineers (USACE), Sacramento District

Abstract:

The Sacramento Area Flood Control Agency (SAFCA) is proposing the Natomas Levee Improvement Program (NLIP) Landside Improvements Project, consisting of early implementation (2008–2010) improvements to the perimeter levee system of the Natomas Basin in Sutter and Sacramento Counties, California, and associated landscape and irrigation/drainage infrastructure modifications. This EIS considers the early implementation project in its entirety, with the 2008 construction phase addressed in detail and the 2009 and 2010 construction phases addressed at a general, programmatic level. The 2008 construction phase would be initiated in 2008 and completed in 2009.

To implement the proposed improvements, SAFCA is requesting permission from USACE pursuant to Section 14 of the Rivers and Harbors Act of 1899 (33 United States Code [USC] 408, hereinafter referred to as “Section 408”) for alteration of Federal Project levees, and under Section 404 of the Clean Water Act (33 USC 1344) for the placement of fill in jurisdictional waters of the United States. Permission under Section 10 of the Rivers and Harbors Act (33 USC 403) would also be required where work would be performed in, under, or over navigable waters.

The EIS describes the flood control and related problems and needs that would be addressed by the proposed early implementation project, identifies the proposed action (Alternative 1) and alternatives to the proposed action, and presents an analysis of the environmental impacts and mitigation associated with the proposed action and alternatives. The action alternatives would result in unavoidable significant adverse effects to agricultural resources, aesthetics, transportation and circulation, noise, air quality, and potentially to cultural resources.

Public Review and Comment:

The public comment period for the FEIS begins on November 14, 2008 and closes on December 15, 2008. For further information regarding the EIS, please contact Elizabeth Holland, USACE Sacramento District, Planning Division, 1325 J Street, Sacramento, CA, 95814, or email Elizabeth.G.Holland@usace.army.mil.

TABLE OF CONTENTS

Section	Page
ACRONYMS AND ABBREVIATIONS	x
ES EXECUTIVE SUMMARY	ES-1
Purpose of this Document	ES-1
Changes to the DEIS	ES-1
Project Phasing	ES-2
Project Location	ES-3
Background	ES-3
Purpose and Need for Action	ES-5
Project Objectives	ES-7
Plan Formulation Process	ES-7
Alternatives	ES-8
Measures Eliminated from Consideration	ES-8
Alternatives Carried Forward for Evaluation in This EIS	ES-9
Major Conclusions of the Environmental Analysis	ES-12
Summary of Environmental Effects and Mitigation Measures	ES-12
Significant and Unavoidable Effects	ES-13
Areas of Controversy and Issues to be Resolved	ES-13
Areas of Controversy	ES-13
Issues to be Resolved	ES-14
Intended Uses of the EIS	ES-14
1.0 PURPOSE OF AND NEED FOR ACTION	1-1
1.1 Introduction	1-1
1.2 Project Location	1-1
1.2.1 Perimeter Levee System	1-2
1.2.2 Floodflow Conditions	1-4
1.3 Purpose of the Proposed Action	1-4
1.4 Need for Action	1-5
1.4.1 Flood Problems and Needs	1-6
1.4.2 Related Problems and Needs	1-8
1.5 Efforts to Provide Increased Flood Protection	1-10
1.5.1 1986 Flood	1-10
1.5.2 Sacramento Urban Levee Reconstruction Project	1-10
1.5.3 ARWI Selected Plan	1-11
1.5.4 North Area Local Project	1-11
1.5.5 Folsom Dam Reoperation	1-11
1.5.6 American River Common Features Project	1-11
1.5.7 1997 Flood	1-12
1.5.8 Folsom Dam Modification Project and Expansion of the Common Features Project	1-12
1.5.9 Joint Federal Project	1-12
1.5.10 General Re-evaluation of the Common Features Project	1-13
1.6 Project Authorization	1-13
1.7 Related NEPA Documents	1-13
1.8 Purpose of This Document	1-14

TABLE OF CONTENTS

Section	Page
2.0 ALTERNATIVES	2-1
2.1 Formulation of Alternatives	2-1
2.1.1 Measures Eliminated from Consideration.....	2-1
2.1.2 Measures Retained for Further Consideration	2-4
2.2 Alternatives Carried Forward in this EIS	2-8
2.2.1 No-Action Alternative.....	2-9
2.2.2 Alternative 1 – Adjacent Setback Levee Alternative (Preferred Alternative)	2-10
2.2.3 Alternative 2 – Raise Levee in Place with Setback.....	2-43
2.2.4 Alternative 3 – Adjacent Levee with Setback.....	2-49
2.3 Comparison of the Effects of the Alternatives	2-52
 3.0 AFFECTED ENVIRONMENT	 3-1
3.1 General Site Conditions.....	3-1
3.1.1 Natomas Basin	3-1
3.1.2 Levee Improvement Areas	3-1
3.2 Environmental Resources Not Considered in Detail	3-5
3.2.1 Climate.....	3-5
3.2.2 Mineral Resources.....	3-5
3.3 Environmental Resources Evaluated in Detail	3-5
3.3.1 Agricultural Resources.....	3-5
3.3.2 Land Use and Socioeconomics	3-6
3.3.3 Topography, Geology, and Soils.....	3-9
3.3.4 Hydrology and Hydraulics	3-12
3.3.5 Water Quality.....	3-16
3.3.6 Fish and Aquatic Habitat.....	3-16
3.3.7 Sensitive Aquatic Habitats	3-25
3.3.8 Vegetation and Wildlife.....	3-26
3.3.9 Special-Status Terrestrial Species	3-28
3.3.10 Cultural Resources	3-35
3.3.11 Paleontological Resources	3-49
3.3.12 Transportation and Circulation	3-51
3.3.13 Air Quality	3-53
3.3.14 Noise	3-54
3.3.15 Recreation	3-59
3.3.16 Visual Resources.....	3-60
3.3.17 Utilities and Service Systems.....	3-62
3.3.18 Hazards and Hazardous Materials.....	3-64
3.3.19 Airport Safety.....	3-65
3.3.20 Wildfire Hazards	3-66
 4.0 ENVIRONMENTAL CONSEQUENCES	 4-1
4.1 Agricultural Resources	4-1
4.1.1 Methodology	4-1
4.1.2 Impacts and Mitigation Measures	4-1
4.1.3 Unavoidable Significant Adverse Effects	4-5

TABLE OF CONTENTS

Section	Page
4.2 Land Use and Socioeconomics.....	4-5
4.2.1 Methodology	4-5
4.2.2 Impacts and Mitigation Measures	4-6
4.2.3 Unavoidable Significant Adverse Effects	4-7
4.3 Topography, Geology, and Soils	4-7
4.3.1 Methodology	4-7
4.3.2 Impacts and Mitigation Measures	4-8
4.3.3 Unavoidable Significant Adverse Effects	4-9
4.4 Hydrology and Hydraulics	4-10
4.4.1 Methodology	4-10
4.4.2 Impacts and Mitigation Measures	4-10
4.4.3 Unavoidable Significant Adverse Effects	4-25
4.5 Water Quality	4-25
4.5.1 Methodology	4-25
4.5.2 Impacts and Mitigation Measures	4-26
4.5.3 Unavoidable Significant Adverse Effects	4-29
4.6 Fish and Aquatic Habitat	4-30
4.6.1 Methodology	4-30
4.6.2 Impacts and Mitigation Measures	4-30
4.6.3 Unavoidable Significant Adverse Effects	4-34
4.7 Sensitive Aquatic Habitats	4-34
4.7.1 Methodology	4-34
4.7.2 Impacts and Mitigation Measures	4-34
4.7.3 Unavoidable Significant Adverse Effects	4-41
4.8 Vegetation and Wildlife	4-41
4.8.1 Methodology	4-41
4.8.2 Impacts and Mitigation Measures	4-41
4.8.3 Unavoidable Significant Adverse Effects	4-47
4.9 Special-Status Terrestrial Species	4-47
4.9.1 Methodology	4-47
4.9.2 Impacts and Mitigation Measures	4-48
4.9.3 Unavoidable Significant Adverse Effects	4-67
4.10 Cultural Resources	4-67
4.10.1 Methodology	4-67
4.10.2 Impacts and Mitigation Measures	4-67
4.10.3 Unavoidable Significant Adverse Effects	4-76
4.11 Paleontological Resources.....	4-77
4.11.1 Methodology	4-77
4.11.2 Impacts and Mitigation Measures	4-77
4.11.3 Unavoidable Significant Adverse Effects	4-79
4.12 Transportation and Circulation.....	4-79
4.12.1 Methodology	4-79
4.12.2 Impacts and Mitigation Measures	4-79
4.12.3 Unavoidable Significant Adverse Effects	4-88

TABLE OF CONTENTS

Section	Page
4.13 Air Quality.....	4-88
4.13.1 Methodology	4-88
4.13.2 Impacts and Mitigation Measures	4-89
4.13.3 Unavoidable Significant Adverse Effects	4-104
4.14 Noise.....	4-104
4.14.1 Methodology	4-104
4.14.2 Impacts and Mitigation Measures	4-106
4.14.3 Unavoidable Significant Adverse Effects	4-116
4.15 Recreation.....	4-116
4.15.1 Methodology	4-116
4.15.2 Impacts and Mitigation Measures	4-117
4.15.3 Unavoidable Significant Adverse Effects	4-119
4.16 Visual Resources	4-119
4.16.1 Methodology	4-119
4.16.2 Impacts and Mitigation Measures	4-119
4.16.3 Unavoidable Significant Adverse Effects	4-122
4.17 Utilities and Service Systems	4-122
4.17.1 Methodology	4-122
4.17.2 Impacts and Mitigation Measures	4-123
4.17.3 Unavoidable Significant Adverse Effects	4-127
4.18 Hazards and Hazardous Materials	4-127
4.18.1 Methodology	4-127
4.18.2 Impacts and Mitigation Measures	4-128
4.18.3 Unavoidable Significant Adverse Effects	4-132
4.19 Airport Safety.....	4-132
4.19.1 Methodology	4-132
4.19.2 Impacts and Mitigation Measures	4-132
4.19.3 Unavoidable Significant Adverse Effects	4-135
4.20 Wildfire Hazards	4-135
4.20.1 Methodology	4-135
4.20.2 Impacts and Mitigation Measures	4-136
4.20.3 Unavoidable Significant Adverse Effects	4-136
5.0 CUMULATIVE AND GROWTH-INDUCING EFFECTS.....	5-1
5.1 Cumulative Effects	5-1
5.1.1 Geographic Scope of Effects of the Proposed Action and Alternatives	5-1
5.1.2 Resource Topics for Which Effects of the Proposed Action and Alternatives Would Not Be Cumulatively Considerable	5-2
5.1.3 Planning Context and Projects Considered in the Cumulative Impact Analysis.....	5-4
5.1.4 Analysis of Cumulative Effects	5-14

TABLE OF CONTENTS

Section	Page
5.2 Growth Inducement	5-23
5.2.1 Introduction	5-23
5.2.2 Local General Plans	5-24
5.2.3 Prior Analysis of Growth	5-25
5.2.4 Blueprint for Regional Growth	5-26
5.2.5 State Plan of Flood Control.....	5-27
5.2.6 Residual Risk	5-28
5.2.7 Growth-Inducement Analysis for the Natomas Levee Improvement Program.....	5-30
6.0 COMPLIANCE WITH OTHER ENVIRONMENTAL LAWS AND REGULATIONS	6-1
6.1 Federal.....	6-1
6.1.1 Federal Clean Water Act and Section 404	6-1
6.1.2 Rivers and Harbors Act of 1899.....	6-2
6.1.3 Fish and Wildlife Coordination Act of 1934, as Amended	6-3
6.1.4 Endangered Species Act of 1973, as Amended.....	6-3
6.1.5 Migratory Bird Treaty Act of 1918	6-4
6.1.6 Bald Eagle Protection Act of 1940.....	6-4
6.1.7 Clean Air Act of 1963, as Amended	6-4
6.1.8 National Historic Preservation Act of 1966, as Amended	6-5
6.1.9 Wild and Scenic Rivers Act (16 U.S.C. 1271 et seq.).....	6-7
6.1.10 Executive Order 11988, Floodplain Management	6-7
6.1.11 Executive Order 11990, Protection of Wetlands.....	6-8
6.1.12 Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations	6-9
6.1.13 Farmland Protection Policy Act.....	6-9
6.1.14 Federal Aviation Administration Advisory Circular 150/5200-33B, Hazardous Wildlife Attractants on or Near Airports	6-10
6.2 State.....	6-11
6.2.1 California Environmental Quality Act.....	6-11
6.2.2 Central Valley Flood Protection Board Encroachment Permit	6-11
6.2.3 California Surface Mining and Reclamation Act.....	6-11
6.2.4 Clean Water Act Section 401	6-12
6.2.5 Porter-Cologne Water Quality Control Act and Clean Water Act Section 402.....	6-12
6.2.6 California Endangered Species Act	6-13
6.2.7 California Fish and Game Code Section 1602 Streambed Alteration Agreement.....	6-13
6.3 Relationship between Short-Term Uses of the Environment and Long-Term Productivity	6-13
6.4 Irreversible and Irrecoverable Commitments of Resources.....	6-14
7.0 CONSULTATION AND COORDINATION	7-1
7.1 Public Involvement Under CEQA.....	7-1
7.2 Public Involvement Under NEPA	7-2
7.3 Native American Contact Program	7-2
7.4 Coordination with Other Federal Agencies.....	7-3

TABLE OF CONTENTS

Section	Page
8.0 REFERENCES.....	8-1
9.0 LIST OF PREPARERS.....	9-1
10.0 LIST OF RECIPIENTS	10-1
11.0 INDEX.....	11-1

APPENDICES (Included in this printed volume)

H Comments and Responses to Environmental Issues

APPENDICES (Included on CD – see back cover)

A Hydraulic Impact Analysis
B Air Quality Modeling Results
C Noise Modeling Results
D Cultural Resources Programmatic Agreement
E Correspondence Regarding Special-Status Species
E1 Letter to the U.S. Fish and Wildlife Service from USACE (Includes Biological Assessment)
E2 Letter to the National Marine Fisheries Service from USACE
E3 Fish and Wildlife Coordination Act Report
E4 Biological Opinion
F Correspondence Regarding Cultural Resources
G SAFCA and Garden Highway Settlement Agreement

LIST OF TABLES

ES-1	Summary of Impacts and Mitigation Measures	ES-15
2-1	Summary of the Major Construction Elements of Alternative 1	2-21
2-2	Anticipated Equipment Types and Duration of Use for Construction of the Natomas Cross Canal South Levee Cutoff Wall (2008 Construction Phase, Ending in 2009).....	2-23
2-3	Anticipated Equipment Types and Duration of Use for Raising the Natomas Cross Canal South Levee (2008 Construction Phase, Ending in 2009)	2-25
2-4	Quantities of Fill Required for Alternative 1 Improvements to the Sacramento River East Levee in Reaches 1–4B (2008 Construction Phase, Ending in 2009).....	2-30
2-5	Anticipated Equipment Types and Duration of Use for Alternative 1 Improvements to Sacramento River East Levee Reaches 1–4B (2008 Construction Phase, Ending in 2009)	2-31
2-6	Material Quantities Anticipated for Alternative 1 Improvements to the Sacramento River East Levee in Reaches 5A–20A (2009 and 2010 Construction Phases).....	2-34
2-7	Construction of the Relocated Elkhorn and Riverside Canal Segments Anticipated Equipment Requirements and Duration of Use in 2008 and 2009	2-37
2-8	Anticipated Equipment Requirements and Duration of Use for Construction of the New GGS/Drainage Canal Segment in 2008 and 2009.....	2-39
2-9	Estimated Material Quantities Required for Alternative 2 Improvements to the Sacramento River East Levee in Reaches 1–20A (2008, 2009, and 2010 Construction Phases).....	2-48
2-10	Estimated Material Quantities Required for Alternative 3 Improvements to the Sacramento River East Levee in Reaches 1–20A (2008, 2009, and 2010 Construction Phases).....	2-52
2-11	Summary of the Environmental Effects of the Alternatives	2-53
3-1	Description of the Sacramento River East Levee Area by Reach.....	3-2
3-2	Active Faults in the Project Area	3-10
3-3	Basin Runoff Characteristics	3-12
3-4	Fishes Present in the Natomas Cross Canal, Lower Sacramento River, Pleasant Grove Creek Canal, and/or NEMDC/Steelhead Creek	3-17
3-5	Special-Status Fish Species Potentially Occurring in the Natomas Cross Canal, Lower Sacramento River, Pleasant Grove Creek Canal, and/or NEMDC/Steelhead Creek	3-19
3-6	Land Cover Types in the Natomas Basin.....	3-27
3-7	Special-Status Plant Species Evaluated for Potential to Occur in the Project Area.....	3-29
3-8	Special-Status Wildlife Species Evaluated for Potential to Occur in the Project Area.....	3-30
3-9	Previous Cultural Resources Surveys Conducted in the Project Area in Sutter County.....	3-37
3-10	Previous Cultural Resources Surveys Conducted in the Project Area in Sacramento County ...	3-38
3-11	Cultural Resources in the Sutter County Portion of the Project Area.....	3-42
3-12	Cultural Resources in the Sacramento County Portion of the Project Area.....	3-44
3-13	Project Area Roadway Network	3-52
3-14	Level of Service Descriptions.....	3-53
3-15	Summary of Annual Air Quality Data	3-55
3-16	Ambient Air Quality Standards and Attainment Status Designations for Sutter and Sacramento Counties	3-56
3-17	Recreational Facilities In or Near the Project Area	3-60
3-18	Major Landfills in the Project Region	3-63
4-1	Definition of Model Assumptions for Various Conditions.....	4-11
4-2	Levee Failure Summary (Number of Levee Failures).....	4-11
4-3	100-year Maximum Water Surface Elevation Summary, Levees Fail When Water Reaches Top of Levee	4-12

LIST OF TABLES (CONTINUED)

4-4	200-year Maximum Water Surface Elevation Summary, Levees Fail When Water Reaches Top of Levee	4-13
4-5	500-year Maximum Water Surface Elevation Summary, Levees Fail When Water Reaches Top of Levee	4-14
4-6	100-year Maximum Water Surface Elevation Summary, No Levee Failures (Sensitivity Analysis)	4-15
4-7	200-year Maximum Water Surface Elevation Summary, No Levee Failures (Sensitivity Analysis)	4-16
4-8	500-year Maximum Water Surface Elevation Summary, No Levee Failures (Sensitivity Analysis)	4-17
4-9	Estimated Effects on Jurisdictional Waters of the United States for the 2008 Construction Phase	4-35
4-10	Potential Effects on Jurisdictional Waters of the United States in the 2009 and 2010 Construction Phases	4-36
4-11	Effects of the Project Alternatives on Woodlands	4-42
4-12	Effects of the Project Alternatives on Elderberry Shrubs	4-50
4-13	Permanent Effects of the Project Alternatives on Giant Garter Snake Habitat	4-53
4-14	Summary of Maximum Daily Emissions during the 2008 Construction Phase for Alternative 1	4-91
4-15	Summary of Maximum Annual Construction Emissions during the 2009 Calendar Year Associated with the 2008 and 2009 Phases of Construction	4-101
4-16	Local Government Non-transportation Noise Standards	4-105
4-17	Typical Construction Equipment Noise Levels	4-107
4-18	Predicted Noise Levels Attributable to Major NLIP Construction Activities	4-108
4-19	Typical Construction Equipment Vibration Levels	4-112
4-20	Summary of Modeled Haul Truck Noise Levels	4-114
5-1	Geographic Areas that Would Be Affected by the Proposed Action and Alternatives	5-1
5-2	Land Use Conversions Involving Important Farmland	5-5
7-1	Biological Permitting Meetings	7-4

LIST OF PLATES

1	Project Location
2	Natomas Basin Levee System
3	Sacramento River Flood Control Project (SRFCP)
4	Levee Segments Requiring Seepage Remediation and Increases in Levee Height
5	Underseepage and Through-Seepage Levee Risks
6	Natomas Basin Erosion Sites
7a	Examples of Waterside Encroachments on the Sacramento River East Levee
7b	Examples of Waterside Encroachments on the Sacramento River East Levee
8	Sacramento International Airport
9	The Natomas Basin Conservancy Lands
10	Existing Natomas Basin Drainage and Irrigation Features
11	Reduced Natomas Urban Levee Perimeter
12	Typical Levee Raise, Flattening of Landside Levee Slope, and Seepage Cutoff Wall
13	Alternative Methods for Increasing Levee Height
14	Concept Plan for a 1,000-Foot Setback Levee

LIST OF PLATES (CONTINUED)

- 15 Typical Seepage Berm
- 16 Typical Relief Well
- 17 SACOG Preferred Blueprint Scenario Map
- 18 Construction Phases
- 19 Borrow Areas
- 20a Overview of Proposed Project Features (2008–2010 Construction Phases) Map 1 of 3
- 20b Overview of Proposed Project Features (2008–2010 Construction Phases) Map 2 of 3
- 20c Overview of Proposed Project Features (2008–2010 Construction Phases) Map 3 of 3
- 21 Anticipated Haul Routes from Soil Borrow Areas
- 22 Sacramento River East Levee Features – 2008 Construction Phase for Alternative 1
- 23 Typical Cross Section of the New GGS/Drainage Canal North of Reservoir Road (2008 Construction Phase)
- 24 Typical Cross Section of the New GGS/Drainage Canal South of Teal Bend Golf Club and North of I-5 (2009 Construction Phase)
- 25 Sacramento River East Levee Features – 2008 Construction Phase for Alternative 2
- 26 Bank Protection Improvement Concept
- 27 Concept Plan for a 500-Foot Setback Levee
- 28 Sacramento River East Levee Features – 2008 Construction Phase for Alternative 3
- 29 Important Farmland in the Project Area
- 30 Contributing Features of the RD1000 Rural Historic Landscape District
- 31 Rock Formations in the Project Area
- 32 Typical Noise Levels
- 33 Recreation Facilities In or Near the Project Area

ACRONYMS AND ABBREVIATIONS

μg/L	micrograms per liter
μg/m ³	micrograms per cubic meter
μin/sec	microinch per second
μS/cm	microSiemens per centimeter
AB	Assembly bill
AC	Advisory Circular
ACHP	Advisory Council on Historic Preservation
ADT	average daily traffic
afy	acre-feet per year
Airport	Sacramento International Airport
ALUC	airport land use commission
AQAP	air quality attainment plan
AQMD	air quality management district
ARB	California Air Resources Board
ARWI	American River Watershed Investigation
ASTM	American Society for Testing and Materials
ATCM	Airborne Toxics Control Measure
BACT	best available control technology
Bank Protection EIR	<i>Draft Environmental Impact Report on Natomas Levee Improvement Program Bank Protection Project</i>
Basin Plan	<i>Water Quality Control Plan for the Sacramento and San Joaquin River Basins</i>
Bay-Delta	San Francisco Bay/Sacramento–San Joaquin Delta
BMP	best management practice
B.P.	Before Present
Bypass	Sacramento River and the Yolo Basin
°C	degrees Celsius
CAA	Clean Air Act
CAAA	Clean Air Act Amendments of 1990
CAAQS	California ambient air quality standards
Cal/EPA	California Environmental Protection Agency
Cal/OSHA	California Occupational Safety and Health Administration
Caltrans	California Department of Transportation
CAR	California Association of Realtors
CB	cement-bentonite
CCAA	California Clean Air Act
CCR	California Code of Regulations
CDF	California Department of Forestry and Fire Protection
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
cfs	cubic feet per second
CHABA	Committee of Hearing, Bio Acoustics, and Bio Mechanics
CLUP	<i>Sacramento International Airport Comprehensive Land Use Plan</i>
cmbs	centimeters below surface
CNDDB	California Natural Diversity Database

CNEL	community noise equivalent level
CNPS	California Native Plant Society
CO	carbon monoxide
Comprehensive Study	Sacramento and San Joaquin River Basins California Comprehensive Study
Cortese list	California Department of Toxic Substances Control Hazardous Waste & Substances Site
CTR	California Toxics Rule
cu. yd.	cubic yards
CWA	Clean Water Act
dB	decibel(s)
dBA	A-weighted decibel(s)
DEIR	draft environmental impact report
Delta	Sacramento–San Joaquin Delta
DFG	California Department of Fish and Game
DOC	dissolved organic carbon
DOT	U.S. Department of Transportation
DPS	Distinct Population Segments
DSM	deep soil mixing
DTSC	California Department of Toxic Substances Control
DWR	California Department of Water Resources
EDR	Environmental Data Resources, Inc.
EFH	essential fish habitat
EHS	Sutter County Environmental Health Services Department
EIR	environmental impact report
EMD	Sacramento County Environmental Management Department
EPA	U.S. Environmental Protection Agency
EO	Executive Order
ER-L	Effects Range–Low
ER-M	Effects Range–Median
ESA	federal Endangered Species Act
ESU	Evolutionarily Significant Unit
°F	degrees Fahrenheit
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulations
FBI	Federal Bureau of Investigation
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FIP	Federal Implementation Plan
FIRM	Flood Insurance Rate Map
FMMP	Farmland Mapping and Monitoring Program
FPP	Farmland Protection Program
FPPA	Farmland Protection Policy Act
FR	Federal Register
FRAQMD	Feather River Air Quality Management District
FTA	Federal Transit Administration
FWCA	Fish and Wildlife Coordination Act

GGs/Drainage Canal	canal designed to provide giant garter snake habitat and convey drainage
GHG	greenhouse gas
GRR	General Re-evaluation Report
HAP	hazardous air pollutant
hp	horsepower
HPMP	Historic Property Management Plan
HRA	health risk assessment
HUD	U.S. Department of Housing and Urban Development
H:V	horizontal-to-vertical
I-	interstate highway
in/sec	inches per second
IWM	instream woody material
Joint Vision	<i>North Natomas Joint Vision Plan</i>
kV	kilovolt(s)
L _{dn}	day-night average noise level
L _{eq}	energy-equivalent noise level
LESA	Land Evaluation and Site Assessment
LAFCo	Local Agency Formation Commission
lb/day	pounds per day
lb/in	pounds per inch
L _{max}	Maximum Noise Level
L _{min}	Minimum Noise Level
LNWI	Lower Northwest Interceptor
Local Funding EIR	<i>Environmental Impact Report on Local Funding Mechanisms for Comprehensive Flood Control Improvements for the Sacramento Area</i>
LOS	level of service
L _x	noise level exceeded X% of a specific period of time
M	(earthquake) magnitude
MACT	maximum available control technology
masl	meters above sea level
mbsl	meters below sea level
MBTA	Migratory Bird Treaty Act
MCL	maximum contaminant level
mg/L	milligrams per liter
mg/m ³	milligrams per cubic meter
MLD	Most Likely Descendant
mm	millimeter(s)
msl	mean sea level
MVA	megavolt ampere(s)
N	nitrogen
NA	not available
NAAQS	national ambient air quality standards
NAHC	Native American Heritage Commission

NALP	North Area Local Project
NBHCP	Natomas Basin Habitat Conservation Plan
NCC	Natomas Cross Canal
NCC Phase 1 Improvements	Natomas Cross Canal South Levee Phase 1 Improvements
NCIC	North Central Information Center
NCMWC	Natomas Central Mutual Water Company
NEIC	Northeast Information Center
NEMDC	Natomas East Main Drainage Canal
NEPA	National Environmental Policy Act
NESHAP	national emissions standards for hazardous air pollutants
NFIP	National Flood Insurance Program
NGVD	National Geodetic Vertical Datum
NHPA	National Historic Preservation Act
NLIP	Natomas Levee Improvement Program
NMFS	National Marine Fisheries Service
NNCP	North Natomas Community Plan
NO ₂	nitrogen dioxide
NOI	notice of intent
NOP	notice of preparation
NO	nitric oxide
NO _x	oxides of nitrogen
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NTR	National Toxics Rule
NTU	nephelometric turbidity unit(s)
NWP	nationwide permit
OES	Governor's Office of Emergency Services
OPR	Governor's Office of Planning and Research
OSHA	Occupational Safety and Health Administration
P	phosphorus
PA	programmatic agreement
PCB	polychlorinated biphenyl
PG&E	Pacific Gas and Electric Company
PGCC	Pleasant Grove Creek Canal
PL	Public Law
PM	particulate matter
PM _{2.5}	fine particulate matter with an aerodynamic diameter of 2.5 micrometers or less
PM ₁₀	respirable particulate matter with an aerodynamic diameter of 10 micrometers or less
ppm	parts per million
PPV	peak particle velocity
Porter-Cologne Act	Porter-Cologne Water Quality Control Act of 1969
PRC	Public Resources Code
PRG	preliminary remediation goal
RBDD	Red Bluff Diversion Dam
RCRA	Resource Conservation and Recovery Act
RD	Reclamation District

Reclamation	U.S. Bureau of Reclamation
RM	River Mile
RMS	root mean square
ROG	reactive organic gases
RWQCB	regional water quality control board
SACOG	Sacramento Area Council of Governments
SAFCA	Sacramento Area Flood Control Agency
SB	soil-bentonite
SCAS	Sacramento County Airport System
SCB	soil-cement-bentonite
SEIS	supplemental environmental impact statement
SGA	Sacramento Groundwater Authority
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SIR	Supplemental Information Report
SLIC	State Water Resources Control Board's California Spills, Leaks, Investigations, and Cleanup
SMAQMD	Sacramento Metropolitan Air Quality Management District
SMARA	Surface Mining and Reclamation Act of 1975
SMF Master Plan	<i>Sacramento International Airport Master Plan</i>
SMUD	Sacramento Municipal Utility District
SO ₂	sulfur dioxide
SR	State Route
SRA	shaded riverine aquatic
SRFCP	Sacramento River Flood Control Project
SSCI/C	South Sutter County Industrial/Commercial
State	California Central Valley Flood Protection Board
STP	shovel test pit
SVAB	Sacramento Valley Air Basin
SVP	Society of Vertebrate Paleontology
SWPPP	storm water pollution prevention plan
SWRCB	State Water Resources Control Board
TAC	toxic air contaminant
T-BACT	toxic best available control technology
TDS	total dissolved solids
The Reclamation Board	State of California Reclamation Board
TMDL	total maximum daily load
TNBC	The Natomas Basin Conservancy
TPY	tons per year
TRD	trench remixing deep
UCMP	University of California, Berkeley Museum of Paleontology
UNWI	Upper Northwest Interceptor
USACE	U.S. Army Corps of Engineers
USC	United States Code
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UST	underground storage tank

VdB
VMT

vibration decibels
vehicle miles traveled

WDR
WHMP

waste discharge requirement
Wildlife Hazard Management Plan

ES EXECUTIVE SUMMARY

PURPOSE OF THIS DOCUMENT

The Sacramento Area Flood Control Agency (SAFCA) is proposing the Natomas Levee Improvement Program (NLIP) Landside Improvements Project, consisting of early implementation (2008–2010) improvements to the perimeter levee system of the Natomas Basin in Sutter and Sacramento Counties, California, and associated landscape and irrigation/drainage infrastructure modifications. SAFCA has initiated this effort in concert with the California Department of Water Resources and the California Central Valley Flood Protection Board (State), and the U.S. Army Corps of Engineers (USACE) with the aim of incorporating the early implementation improvements and the NLIP as a whole into the Federally authorized American River Common Features Project (Common Features Project).

To implement the proposed improvements, SAFCA is requesting permission from USACE pursuant to Section 14 of the Rivers and Harbors Act of 1899 (33 United States Code [USC] 408, hereinafter referred to as “Section 408”) for alteration of Federal Project levees, and under Section 404 of the Clean Water Act (33 USC 1344) for the placement of fill in jurisdictional waters of the United States. Permission under Section 10 of the Rivers and Harbors Act (33 USC 403) would also be required where work would be performed in, under, or over navigable waters. USACE has prepared this Environmental Impact Statement (EIS) in compliance with the National Environmental Policy Act (NEPA) to evaluate the effects of the project on the human environment and will use the EIS to support its decisions about whether to grant the requested permissions for the 2008 construction phase of the project.

The EIS considers the proposed early implementation project in its entirety, with the 2008 construction phase addressed in detail and the 2009 and 2010 construction phases addressed at a general, programmatic level. The 2008 construction phase would be initiated in 2008 and completed in 2009. The program-level approach for the 2009–2010 construction elements allows for the consideration in this EIS of broad policy-level issues for the project as a whole, including fundamental alternative approaches to meeting the project purpose and the combined effects of all phases of the project, while supporting the specific USACE decisions on whether to grant permission for the 2008 construction phase of the improvements proposed by SAFCA pursuant to Section 408 and Section 404 and to Section 10 if applicable.

CHANGES TO THE DEIS

Based on the agency and public comments received on the DEIS, the following changes were made to the DEIS issued in June 2008, and are reflected in this FEIS:

- The Federal Aviation Administration (FAA) has been added as a cooperating agency for this EIS;
- The term “insufficient levee height” is used to explain conditions where the water rises during large floods so high that the levee will not provide protection in accordance with established engineering standards;
- The baseline for the No-Action Alternative reflects the fact that lands north of the Sacramento International Airport (Airport) are no longer leased for rice production, nor planned for mitigation as marsh habitat;
- Two properties, Sutter Pointe in Sutter County and Dunmore in Sacramento County, have been included as potential borrow sources;

- Discussion of Airport hazard reduction measures has been clarified;
- Updated information regarding public outreach has been included in Chapter 7 and Appendix G; and
- Updated information regarding Native American consultation has been included in Chapter 7.

PROJECT PHASING

To facilitate early implementation of the proposed improvements to the Natomas Basin perimeter levee system, SAFCA has identified four project phases, all with independent utility, as part of the early implementation project as follows:

- The Phase 1 Project involved improvements to address underseepage deficiencies affecting a 1.9-mile segment of the Natomas Cross Canal (NCC). The environmental impacts of these improvements were evaluated in the Local Funding EIR, which the SAFCA Board certified in February 2007. These improvements were constructed in 2007 and 2008.
- The Phase 2 Project, which is the subject of this EIS at a project level, focuses on improvements to address remaining underseepage and levee height deficiencies along the entire 5.3-mile length of the NCC, as well as underseepage, erosion, encroachment, and levee height deficiencies along the upper 4.5 miles of the Sacramento River east levee. The environmental impacts of these improvements are evaluated in detail in the *EIR on the Natomas Levee Improvement Program, Landside Improvements Project* (Phase 2 Project EIR), which the SAFCA Board certified in November 2007, and the *Draft EIS for 408 Permission and 404 Permit to SAFCA for the Natomas Levee Improvement Project, Sacramento, CA* (Phase 2 Project EIS), which was issued in June 2008. USACE is currently considering whether to grant Section 408 permission and permits under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act for the Phase 2 Project. A Record of Decision (ROD) is expected to be signed by USACE in late fall 2008. If permitted, the Phase 2 Project could be constructed on a stand-alone basis assuming no further action on the balance of the NLIP is taken. Construction is planned to begin in late 2008 and anticipated be completed in 2009, assuming receipt of all required environmental clearances and permits.
- The Phase 3 Project, which is the subject of this EIS at a program level, focuses on underseepage, erosion, encroachment, and levee height deficiencies along 4.5 miles of the Sacramento River east levee, 3.2 miles of the Pleasant Grove Creek Canal (PGCC) west levee, and 6.2 miles of the Natomas East Main Drainage Canal (NEMDC) west levee. If permitted, these improvements could be constructed in concert with the Phase 2 Project. The Phase 3 Project at a project-specific level is the subject of a separate EIS/EIR that is anticipated to be released to the public in early 2009. Construction is planned to begin in 2009 and be completed in 2010, assuming receipt of all required environmental clearances and permits.
- The Phase 4 Project focuses on underseepage, erosion, encroachment, and levee height deficiencies along 9 miles of the Sacramento River east levee, 7.1 miles of the NEMDC west levee, and 0.6 mile of the American River north levee. The environmental impacts of these improvements are evaluated at a program level in this EIS, as well as in the Local Funding EIR. The project-specific impacts of the Phase 4 Project will be evaluated in a separate

EIS/EIR in 2009. Construction is planned to begin and be completed in 2010, assuming receipt of all required environmental clearances and permits.

Each of the project phases discussed above also includes associated habitat, drainage, irrigation, and related infrastructure improvements.

This FEIS refers to the 2008, 2009, and 2010 construction phases; however, future environmental documentation will refer to these as the Phase 2, 3, and 4 Projects, respectively.

PROJECT LOCATION

The Natomas Basin is located at the confluence of the American and Sacramento Rivers. Encompassing approximately 53,000 acres, the basin extends northward from the American River and includes portions of the City of Sacramento, the County of Sacramento, and the County of Sutter (**Plates 1 and 2**). In addition to the American and Sacramento Rivers on the south and west, the Natomas Basin is bordered on the north by the NCC and on the east by the PGCC and the NEMDC/Steelhead Creek. The NCC diverts the runoff from a large watershed in western Placer and southern Sutter Counties around the Natomas area and is a major contributor to the flows in the upper reach of the Sacramento River channel in SAFCA's jurisdiction. The NEMDC is an engineered channel along the southeastern flank of Natomas. Tributaries to the NEMDC include Dry Creek, Arcade Creek, Rio Linda Creek, Robla Creek, and Magpie Creek Diversion Channel. The Natomas Basin is protected from high flows in these water bodies and in the American and Sacramento Rivers by an interconnected perimeter levee system.

BACKGROUND

The Natomas Basin perimeter levee system was originally created to promote agricultural development. Flood control has historically been a major concern to the agricultural and urban settlers in the Sacramento River basin because of the unique topographical and meteorological factors that make the basin capable of producing very high peak flood discharges. Nevertheless, a coordinated flood control plan for the basin was not initiated until after the historic Sacramento River floods of 1907 and 1909. These two floods triggered the comprehensive, Federally financed and managed flood control effort that has unfolded over the past 85 years, under the leadership of USACE and the State. The product of this effort is the Sacramento River Flood Control Project (SRFCP), an integrated system of levees, overflow bypass channels, and dams that was designed and constructed by Federal, State, and local interests over several decades of the 20th century to protect farmlands and urban areas in the Sacramento Valley from large floods.

Today, the Natomas Basin is the location of the Airport and the site of extensive recent urban development occupying the southern third of the basin. The basin's remaining agricultural lands provide habitat for a number of important wildlife species. This habitat is protected under the State and Federal law, and expansion of the urban footprint into the remaining agricultural areas is regulated by the Natomas Basin Habitat Conservation Plan (NBHCP), which is aimed at setting aside and conserving tracts of agricultural land that are needed to sustain the affected species. The Natomas Basin floodplain is occupied by more than 83,000 residents and \$8.2 billion in damageable property.

Following is a timeline of the major events in the history of the Natomas Basin flood control system. The major flood control projects that are related to the proposed action are described below.

History of the Natomas Basin Flood Control System	
Year/ Timeframe	Flood Control Project/Event
1911–1915	Natomas Basin reclaimed: levees and interior drainage constructed
1917	Levees authorized as part of SRFCP
1968	National Flood Insurance Program (NFIP) authorized
1978	First NFIP Flood Maps issued
1986	Major floods lead to SRFCP system re-evaluation
1989	Sacramento urban area mapped into regulatory floodplain
1990–1993	Sacramento Urban Levee Reconstruction Project
1993–1998	North Area Local Project (NALP)
1996	Congress authorizes raise and strengthening of Sacramento River east levee and strengthening of American River north levee
1997	Major flood in SRFCP
1998	Natomas Basin restores 100-year FEMA flood protection
1999	Congress authorizes raise and strengthening of Natomas Cross Canal south levee
1999	Post-1997 Flood Assessment recognizes deep underseepage as a threat
2000	USACE initiates Natomas Basin Common Features Design
2002	USACE conducts public scoping meetings
2003	USACE Levee Task Force completes development of seepage criteria
2004	USACE adopts Standard Operating Levee Design Procedures
2004	USACE initiates General Re-Evaluation of the Common Features Project
2004	SAFCA initiates planning for Natomas Levee Evaluation Program (NLEP)
2006	SAFCA completes NLEP
2006	USACE recommends levee decertification based on new geotechnical information and new standards
2006	SAFCA initiates Natomas Levee Improvement Program (NLIP)
2006	SAFCA certifies EIR for NLIP Phase 1 Project, and USACE adopts Finding of No Significant Impact and issues 408 permit for Phase 1 Project
2007	SAFCA Board certifies EIR for NLIP Phase 2 Project
2008	USACE issues Draft EIS for NLIP Phase 2 Project
2008	SAFCA completes Phase 1 of the NLIP

The proposed improvements address identified deficiencies in the Natomas Basin perimeter levee system based on: (1) design criteria used to certify levees as providing 100-year flood protection under regulations adopted by the Federal Emergency Management Agency (FEMA), (2) design criteria used by the USACE and the State for the levees comprising the Common Features Project, and (3) design “200-year” water surface elevations developed by SAFCA in cooperation with the State using hydrologic modeling data developed as part of the Sacramento-San Joaquin River Basins Comprehensive Study.

While SAFCA anticipates that all segments of the Natomas perimeter levee system will be improved to meet all of the above design criteria, the early implementation project focuses only on the segments that do not currently meet the 100-year design criteria adopted by FEMA: 18 miles along the Sacramento River east levee, more than 5 miles along the NCC south levee, and more than 3 miles along the PGCC west levee. SAFCA proposes to modify these segments to meet all of the above design criteria by the end of 2010. The remaining segments of the perimeter levee system would be improved by the USACE to meet USACE and State standards for the “200-year” water surface elevation following Congressional approval for expanding the scope of the Common Features Project based on a General Re-evaluation Report (GRR) to be completed by the USACE for presentation to Congress in 2010.

The 100-year early implementation project and the subsequent “200-year” improvement project that constitute the NLIP are part of a larger program of improvements to the flood control system protecting the Sacramento Area that was initiated as part of the American River Watershed Investigation (ARWI) following the record flood of 1986. These improvements include the following:

- **Sacramento Urban Levee Reconstruction Project:** A project carried out by USACE, the State and SAFCA between 1990 and 1993 to stabilize the levees along the east bank of the Sacramento River upstream and downstream of the American River.
- **North Area Local Project:** A project authorized by Congress and carried out by SAFCA to raise and strengthen the levees protecting the Natomas Basin and the North Sacramento area along the lower reaches of the NEMDC/Steelhead Creek, Arcade Creek and Dry/Robla Creek.
- **Folsom Dam Reoperation:** A project initiated by SAFCA and the U. S. Bureau of Reclamation in 1995 to increase the reservoir storage space available for flood control at Folsom Dam until such time as a comprehensive flood control program for the American River is in place.
- **American River Common Features Project:** A project to strengthen and raise the levees along the Lower American River and the upper reaches of the Natomas Basin initially authorized by Congress in 1996 and expanded in 1999.
- **Folsom Dam Modification Project:** A project authorized by Congress in 1999 to increase the discharge capacity of Folsom Dam’s low-level river outlets so as to allow more efficient use of the reservoir storage space allocated to flood control.
- **Joint Federal Project:** A project authorized by Congress in 2007 and recently initiated to reorient the Folsom Dam Modification Project to focus on construction of an auxiliary spillway capable of increasing the Dam’s low level discharge capacity, while simultaneously meeting Federal dam safety standards.
- **Common Features Project GRR:** A project to re-analyze and potentially expand the scope of the Common Features Project to address changes in engineering standards affecting the levees around the Natomas Basin and along the Lower American and Sacramento Rivers. The GRR would be the vehicle for incorporating the early implementation project and the NLIP as whole into the Common Features Project.

Improvements to the Natomas Basin perimeter levee system completed as part of the Sacramento Urban Levee Reconstruction Project and the North Area Local Project have significantly improved flood protection for the area. However, segments of the levee system have insufficient levee height to provide protection from very large floods, and recent studies indicate the potential for underseepage and through-seepage in many locations, and several sites of substantial bank erosion exist along the Sacramento River east levee.

PURPOSE AND NEED FOR ACTION

The Natomas Basin is presently vulnerable to flooding in a less than 100-year flood event. Uncontrolled flooding in the Natomas Basin floodplain in a flood exceeding a 100-year event could result in \$7.4 billion in damage (SAFCA 2007). Depending on the circumstances, flood depths in the Natomas

Basins could reach life-threatening levels. Flooding could also result in releases of toxic and hazardous materials, groundwater contamination, and damage to the metropolitan power and transportation grids. The disruption in transportation that would result from a major flood would affect the Airport and interstate and state highways. The day-to-day functioning of the state capital also would be significantly affected by these interruptions.

The need for the early implementation project was initially outlined in the *Natomas Levee Evaluation Study Final Report Prepared for SAFCA in Support of the Natomas Basin Components of the American River Common Features* (July 14, 2006). This evaluation was based on the following engineering studies and reports, which have been included as appendices to the above-referenced report and have been updated as the design of the early implementation project has proceeded:

- A. *Design Water Surface Profile for the Sacramento River East Levee and Natomas Cross Canal Levees in Natomas* prepared by MBK Engineers (August 9, 2005)
- B. *Problem Identification Report—American River North Levee, Reclamation District 1000, Sacramento County, California* prepared by Kleinfelder (February 1, 2006)
- C. *Problem Identification Report—Sacramento River East Levee, Reclamation District 1000, Sacramento and Sutter Counties, California* prepared by Kleinfelder (February 1, 2006)
- D. *Problem Identification Report—Natomas Cross Canal South Levee, Reclamation District 1000, Sutter County, California* prepared by Kleinfelder (March 14, 2006)
- E. *Preliminary Geotechnical Evaluation—Proposed Secondary Levee for the Sacramento River East Levee, Reclamation District 1000, Sacramento and Sutter Counties, California* prepared by Kleinfelder (February 1, 2006)
- F. *Natomas Levee Evaluation Program—Erosion Assessment—Draft Report* prepared by Northwest Hydraulic Consultants (February 2006)
- G. *Natomas Levee Evaluation Program—Preliminary Cost Estimate* prepared by Parsons Brinckerhoff (February 2006)

These studies and reports indicate that segments of the Natomas perimeter levee system reflect the following problems for both the FEMA 100-year and “200-year” design water surface elevations:

- inadequate levee height,
- through-levee seepage and foundation underseepage with excessive gradients,
- embankment instability, and
- susceptibility to erosion and scour.

Although not highlighted in the levee evaluation, portions of the perimeter levee system, particularly along the east levee of the Sacramento River, are also subject to vegetative and structural encroachments into the levee prism.

In January 2008, FEMA proposed remapping the Natomas Basin as an AE zone, with the designation to take effect in December 2008. FEMA defines AE zones as areas with a 1% annual chance of flooding. The designation would result in the requirement that the bottom floor of all new buildings be constructed at or above the base flood elevation—as little as 3 feet in some of Natomas but up to 20 feet above the ground level in much of the basin. It is therefore anticipated that this designation would effectively stop

any projects that are not issued building permits by the time the new Flood Insurance Rate Map takes effect.

In formulating plans to address the conditions listed above, it has become clear that the necessary flood control improvements will require a substantial volume of soil borrow material and that this material could be obtained in a manner that could improve aviation safety through grading and recontouring the bufferlands surrounding the Airport and enhance habitat values consistent with the goals of the NBHCP.

PROJECT OBJECTIVES

The following objectives were adopted by SAFCA in connection with the NLIP: (1) provide at least a 100-year level of flood protection to the Natomas Basin as quickly as possible, (2) provide “200-year” protection to the basin over time, and (3) avoid any substantial increase in expected annual damages as new development occurs in the basin. SAFCA’s approach to defining level of protection (system performance) differs from that of USACE. References in this document to levels of flood protection are based on SAFCA’s deterministic approach (the current FEMA method) and should not be taken as USACE concurrence that such levels will be achieved when the USACE probabilistic approach is utilized to define system performance. In any case, flood risk to the Natomas Basin would be considerably reduced by the proposed project.

The specific purpose of the proposed action analyzed in this EIS is to provide at least 100-year flood protection as quickly as possible while laying the groundwork to achieve at least “200-year” flood protection over time.

Additional project objectives that informed SAFCA’s project design were to:

- (1) use flood control projects in the vicinity of the Airport to manage Airport lands in accordance with the Airport’s *Wildlife Hazard Management Plan* (WHMP), and
- (2) use flood control projects to increase the extent and connectivity of the lands in Natomas being managed to provide habitat for giant garter snake, Swainson’s hawk, and other special-status species.

PLAN FORMULATION PROCESS

Based on these objectives, SAFCA formulated a proposed project and a range of project alternatives intended to achieve the specific project objectives through the following steps:

- Identification of the deficiencies that must be addressed to provide at least 100-year flood protection as quickly as possible,
- Identification of feasible remedial measures to address the deficiencies,
- Determination of the likely environmental impacts of the remedial measures,
- Development of a reasonable range of flood control alternatives around the remedial measures,
- Identification of the deficiencies in the Natomas levee system that must be addressed to provide “200-year” flood protection, and

- Addition of measures to ensure that each alternative would improve aviation safety, maintain habitat values, and contribute to the long-term operability of the Natomas Basin's agricultural irrigation and drainage infrastructure.

ALTERNATIVES

Measures Eliminated from Consideration

Two measures that could contribute to addressing the Natomas Basin's flood problems and needs were reviewed and eliminated from further consideration: Yolo Bypass Improvements and Reduced Natomas Urban Levee Perimeter.

The **Yolo Bypass Improvements** would involve lengthening the Fremont Weir and widening the Yolo Bypass, which is estimated to cost more than \$700 million (unescalated construction costs) (Cermak, pers. comm., 2008). In addition to its high cost, these improvements would not meet the project purpose of providing at least 100-year flood protection to the Natomas Basin because they would not fully address levee height deficiencies and would leave substantial underseepage and through-seepage conditions unaddressed. If implemented, these improvements would have to be combined with extensive seepage remediation measures, further adding to cost.

The **Reduced Natomas Urban Levee Perimeter** would involve construction of a cross levee running east to west across the Natomas Basin for a distance of approximately 8 miles along an alignment north of Elkhorn Boulevard to protect existing developed areas in the City and County of Sacramento. USACE, as part of the American River Watershed Investigation Feasibility Study, previously analyzed the feasibility of using a Natomas cross levee to limit development to the southern portion of the Natomas Basin but rejected this measure as infeasible (USACE 1991a, 1991b). The concept of a cross levee was reconsidered as part of the present study and again rejected as infeasible. Cost is a major factor in the rejection of this alternative; the results of the previous analysis indicated that it would be significantly more cost effective to protect all of the Natomas Basin than to protect a portion with a cross levee. The study concluded that a levee constructed across the Natomas Basin would cause floodwaters to be considerably deeper than they would be without the cross levee, and that either flowage easements would need to be acquired on all lands in the basin north of the cross levee or a weir and pumping facilities would need to be constructed to facilitate evacuation of floodwaters from this area. Either concept was determined to be extremely costly. In reconsidering this measure, it was concluded that it is also infeasible because it would strand Federal, State, and local investments made in past NCC south levee and Sacramento River east levee improvements; would not protect existing commercial and industrial infrastructure in Sutter County; would present significant barriers to achievement of the NBHCP goals and, therefore, compliance with the Federal Endangered Species Act and California Endangered Species Act; and would require 30%–80% more borrow material than the alternatives carried forward for analysis in this EIS, resulting in increased costs of \$30–\$90 million, in addition to approximately \$70 million in flowage easements and the costs of relocating or providing flood protection to State Route 99/70.

Consequently, improvements to the Natomas Basin perimeter levee system have been determined by USACE, the State, and SAFCA to be the feasible method of providing adequate flood protection to existing development within the basin. Although improving the perimeter levee system would fail to discourage further development within the basin, this action is consistent with efforts by the State of California to comprehensively address floodplain development and flood risk on a regional scale. This comprehensive approach differentiates between flood protection requirements for urbanized and non-urbanized (i.e., agricultural) floodplain areas and will direct urban development away from those floodplains where a "200-year" level of flood protection cannot be achieved while ensuring that this level of protection is provided for already heavily populated areas such as the Natomas Basin. Improving the

perimeter levee system and thereby facilitating development of the basin is also consistent with regional planning efforts that aim to concentrate growth in or adjacent to already urbanized areas. Both of these efforts direct development away from currently unpopulated agricultural areas.

Alternatives Carried Forward for Evaluation in This EIS

The **No-Action Alternative** consists of the conditions that would be reasonably expected to occur in the foreseeable future if no permissions to alter the existing levees or discharge dredged or fill material into waters of the United States would be granted. Different scenarios are possible under this circumstance. The most likely No-Action scenario, which is evaluated in this EIS, is that SAFCA would not be authorized by USACE to undertake improvements on the Natomas Basin perimeter levee system. The Natomas area would be designated as a special flood hazard area; new development would be effectively precluded in most areas of the Natomas Basin; and existing residential, commercial and industrial developments in Natomas would remain subject to a significant risk of flooding. However, flood protection in the form of a compartment levee may be constructed by Sacramento County to provide flood protection for the Airport.

Alternatives 1, 2, and 3 consist of levee improvements and associated landscape and irrigation/drainage system improvements that would be completed during 2008–2010. The improvements would be implemented in three phases, initiated in 2008, 2009, and 2010. The elements of these alternatives are summarized below.

Development of the action alternatives included consideration of potential effects on environmental resources (e.g., waters of the United States, woodlands, and habitat). Accordingly, levee improvements were designed to avoid or minimize such effects where practicable. However, agricultural canals and seasonal wetlands present near the toe of the levees would require filling under any of the action alternatives because their proximity to the existing levees places them within the expanded landside levee footprint or adjacent maintenance access under all alternatives. Similarly, woodlands extend into the proposed footprint under any of the action alternatives and would need to be removed and/or relocated. Consequently, effects on waters of the United States and other habitats are very similar among the action alternatives, and the same compensation strategies are proposed for unavoidable effects.

Summary of the Proposed Elements of the Action Alternatives			
Proposed Levee Improvements	Alternative 1, Adjacent Setback Levee (Preferred Alternative)	Alternative 2, Raise Levee in Place with Setback	Alternative 3, Adjacent Levee with Setback
Levee raising and seepage remediation: NCC south levee (2008 construction phase)	Raise and realign the NCC south levee to provide additional levee height and more stable waterside and landside slopes and to reduce the need for removal of waterside vegetation. Construct a seepage cutoff wall through the levee crown in Reaches 3–7.	Same as Alternative 1	Same as Alternative 1
Levee raising and seepage remediation: Sacramento River east levee (2008 construction phase: Reaches 1–4B; 2009–2010 construction phases: Reaches 5A–20)	Construct an adjacent setback levee from the NCC to the American River north levee, raised where needed to provide adequate levee height (see Plate 13 , lower illustration), with a combination of cutoff walls, seepage berms, and relief wells for seepage remediation where required.	Set back 1.5 miles of the Sacramento River east levee by 1,000 feet in Reaches 1 and 2 (from approximately Station 5+00 to Station 88+00) and construct a 100-foot seepage berm along the setback levee. Raise the existing levee from the southern end of the setback levee through Reach 11B, flatten the land side of the existing levee from Reach 12 through Reach 19A, and construct cutoff walls for seepage remediation as required from the southern end of the setback levee through Reach 20.	Set back 1.5 miles of the Sacramento River east levee by 500 feet in Reaches 1 and 2 (from approximately Station 5+00 to Station 88+00) and construct a 100-foot seepage berm along the setback levee. Construct an “adjacent setback levee” (see Plate 13) from the southern end of the setback levee to the American River north levee, raised where needed to provide adequate levee height, with cutoff walls for seepage remediation as required.
Erosion control (2008 or 2009–2010 construction phases)	None	Implement erosion control improvements along approximately 3,710 feet of river bank at the waterside toe of the Sacramento River east levee at River Miles 73.5, 69.8, and 68.8.	None
Levee widening and seepage remediation: PGCC west levee (2009 construction phase)	Widen, flatten waterside and landside slopes, and construct seepage berms along the PGCC west levee (specific berm widths and potential use of cutoff walls in some areas to be determined).	Same as Alternative 1	Same as Alternative 1
Improvements to major irrigation and drainage infrastructure (2008 and 2009)	<u>Irrigation:</u> Relocate the highline Elkhorn Main Irrigation Canal (Elkhorn Canal) and Riverside Main Irrigation Canal (Riverside Canal). <u>Drainage:</u> Construct a new canal designed to provide drainage and associated giant garter snake habitat (the “GGS/ Drainage Canal”) between the North Drainage Canal and the West	Same as Alternative 1	Same as Alternative 1

Summary of the Proposed Elements of the Action Alternatives			
Proposed Levee Improvements	Alternative 1, Adjacent Setback Levee (Preferred Alternative)	Alternative 2, Raise Levee in Place with Setback	Alternative 3, Adjacent Levee with Setback
construction phases)	Drainage Canal, and modify the West Drainage Canal to improve associated giant garter snake habitat (these features are intended to offset project impacts on giant garter snake canal and ditch habitat). Implement Airport West Ditch improvements in connection with construction of the GGS/Drainage Canal to allow the Airport to decommission the agricultural irrigation function of this facility and eliminate the hazards currently associated with it. The Airport stormwater detention function provided by this ditch would continue. The ditch would therefore be recontoured as a gently sloping swale to facilitate periodic maintenance such as mowing. Remove a deep culvert at the location of Reclamation District (RD) 1000 Pumping Plant No. 2, and reconstruct Pumping Plant No. 2.		
Habitat creation and management (2008 and 2009–2010 construction phases)	Establish giant garter snake habitat features in the new GGS/ Drainage Canal and improved West Drainage Canal. Recontour and reclaim lands used as borrow sources to improve drainage. Establish grassland on the adjacent setback levee slopes and seepage berms. Install woodland plantings to offset the loss of portions of tree groves within the landside levee footprint. Airport grasslands, however, would not be managed as habitat; rather, these lands would be managed to minimize the potential for attracting hazardous wildlife.	Same as Alternative 1. In addition, install approximately 140 acres of trees in the levee setback area to offset the removal of trees from the water side of the existing levee to meet USACE design criteria (see below).	Same as Alternative 1. In addition, install woodland plantings in the levee setback area to offset the loss of portions of tree groves in the landside levee footprint.
Additional actions to meet FEMA, USACE, and State design requirements (2009–2010 construction phases)	Remove encroachments from a portion of the water side and land side of the Sacramento River east levee as needed to ensure that the levee can be certified as meeting the minimum requirements of the National Flood Insurance Program (NFIP) and USACE design criteria.	Remove substantial encroachments (structures and vegetation) from the water side and land side of the Sacramento River east levee to ensure that the levee can be certified as meeting the minimum requirements of the NFIP and USACE design criteria.	Same as Alternative 1
	Modify the State Route (SR) 99/70 crossing of the NCC as needed to meet FEMA, USACE, and State design requirements.	Same as Alternative 1	Same as Alternative 1
Right-of-way acquisition	Acquire right-of-way through fee title or easement interest within the project footprint, at the borrow sites, and to prevent encroachments into the flood control system.	Same as Alternative 1	Same as Alternative 1

MAJOR CONCLUSIONS OF THE ENVIRONMENTAL ANALYSIS

Summary of Environmental Effects and Mitigation Measures

The environmental effects of the proposed action and alternatives, and mitigation measures to reduce those effects, are summarized in Table ES-1 for major issues. This table addresses only the impact issues for which there may be significant impacts. Chapter 4, “Environmental Consequences,” of the EIS includes a discussion of all potential impacts. The basis of the impact conclusions summarized in the table consists of regulatory thresholds for those resource topics for which such thresholds exist, and qualitative thresholds for other resource topics. The significance thresholds are described for each topic in Chapter 4. It is difficult to compare the effects of the action alternatives against those of the No-Action Alternative because the types of effects associated with the action alternatives are construction- and footprint-related, whereas the effects of the No-Action Alternative are related to flood damages. This fundamental difference does not readily lend itself to meaningful comparison except under the topic of hydrology and flood risk.

Following is a summary of the NLIP’s temporary and permanent effects on waters of the United States, by project alternative.

Effects on Waters of the United States of the NLIP			
Alternative	Temporary Effects on Waters of the United States in 2008–2010 (Acres)	Permanent Effects on Waters of the United States in 2008–2010 (Acres)	
No-Action Alternative	0	0	
1 Construct an Adjacent Setback Levee (Preferred Alternative)	371.48	36.75	
2 Raise Levee in Place with a 1,000-Foot Levee Setback	371.48	44.21	
3 Construct an Adjacent Setback Levee with a 500-Foot Levee Setback	371.48	36.77	

Note: As explained in Chapter 2, “Alternatives,” only portions of each borrow site and not all of the sites identified would ultimately be used for borrow. Therefore, the maximum acreage of temporary impacts would not be reached unless all the borrow sites are completely disturbed within their maximum footprints. See Section 4.7, “Sensitive Aquatic Habitats,” for additional details on the project’s potential impacts on waters of the United States.

As described in the biological opinion (BO) (Appendix E), over all three years of the project, compensation for the anticipated temporary disturbance of rice fields from borrow activities on the Brookfield borrow site and the permanent loss of rice and canal habitat would be accomplished through the preservation of rice at the Brookfield borrow site and the creation of new canal habitat and new marsh.

Overall, because all the action alternatives would include the creation of acreages of waters of the United States that are expected to more than offset the filling and dewatering of waters of the United States included in the project, and because new jurisdictional habitats would be created and managed in a manner that minimizes maintenance disturbance and provides the essential functions of the habitats that would be lost, the project is expected to have a less-than-significant or beneficial effect on overall acreage and quality of waters of the United States in the Natomas Basin.

Significant and Unavoidable Effects

The action alternatives would have several unavoidable significant effects, as described below. These effects would be minimized to the extent feasible.

Because of the volume of borrow material that would be needed to construct each of the project alternatives, the project could result in unavoidable significant temporary increases in traffic on local roadways in Sutter County. (The work in Sacramento County, along the Sacramento River east levee and canals, would primarily be accomplished using haul routes off of public roadways.) Due to the large volume of haul truck traffic and to the operation of a wide range of construction equipment, temporary emissions of ROG, NO_x, and PM₁₀ during construction would result in significant and unavoidable air quality impacts. Temporary short-term noise and vibration affecting residents along the Garden Highway would also be significant and unavoidable.

The expansive footprint of the project would result in the conversion of a significant amount of Important Farmland to non-agricultural use. Moreover, because of the existence of known prehistoric resources along the Sacramento River, it is possible that project construction activities will encounter these resources as well as other undiscovered cultural resources and human remains.

The removal of a large number of mature trees from the land side of the Sacramento River east levee would result in an unavoidable significant impact on visual resources under all alternatives. Under Alternative 2, the removal of a substantial acreage of mature trees from the water side of the Sacramento River east levee would add to the significant impact on visual resources and is also likely to result in unavoidable significant long-term impacts on wildlife corridors, Swainson's hawk nesting, and shaded riverine aquatic (SRA) habitat.

Under the No-Action Alternative, construction of a compartment levee around the Airport could result in unavoidable significant effects on Important Farmland, cultural resources, air quality, noise, and transportation similar to the effects of the action alternatives. Under the No-Action Alternative, there would also be an unavoidable significant effect on visual resources caused by the introduction of the compartment levee into the landscape. The No-Action Alternative could also result in numerous unavoidable significant impacts associated with catastrophic flooding of the Natomas Basin in the event of a failure of the perimeter levee system. These could include impacts related to loss of Important Farmland, soil erosion, water supply contamination, loss of habitat and populations of giant garter snake and other special-status species, disruption of transportation systems and utility service, and upset of and exposure to hazardous materials. In addition, the No-Action Alternative would require the removal of a large acreage of mature vegetation from the water side of the Sacramento River east levee and the NCC south levee, which would result in a significant loss of woodland habitats, wildlife movement corridors, and SRA habitat.

AREAS OF CONTROVERSY AND ISSUES TO BE RESOLVED

Areas of Controversy

Scoping comments received by USACE focused on the following issue areas:

- effects of cutoff wall construction on groundwater,
- interruption of irrigation by construction activities,
- hydraulic effects of levee improvements,
- aircraft-wildlife strike impacts,

- regional flood control solutions,
- construction effects on local businesses,
- construction effects on residents (e.g., increases in noise, traffic, dust),
- giant garter snake habitat quality,
- loss of farmland,
- removal of trees,
- relocation of power poles,
- analysis of an appropriate range of project alternatives,
- global warming (climate change),
- adequate compensation for landowners, and
- effects on Native American burial grounds.

Based on these comments and the history of the CEQA process undertaken by SAFCA, the major areas of controversy associated with the project are construction-related effects on Garden Highway residents and concerns about the hydraulic modeling used to analyze the project's hydraulic impacts. These two issues were the subject of a lawsuit filed by the Garden Highway Community Association against the EIR prepared by SAFCA, which was settled. A copy of the settlement agreement is included as Appendix G to the FEIS, and applies to all affected Garden Highway residents. SAFCA intends to apply the design and construction provisions in the agreement to all Sacramento River phases of the project. Commitments made by SAFCA in the settlement regarding construction practices are reflected, as appropriate, in the mitigation measures in this EIS, and the hydraulic modeling approach has been updated for this EIS.

Issues to be Resolved

USACE will need to determine whether to grant permission for the proposed actions for the 2008 construction phase pursuant to Section 408 and Section 404.

INTENDED USES OF THE EIS

The EIS will be used by USACE in exercising its decision-making authority under Section 404 of the Federal Clean Water Act (33 USC 1344), and Sections 10 and 408 of the Rivers and Harbors Act of 1999 (33 USC 403 and 33 USC 408, respectively).

If USACE selects an alternative for implementation that requires the Airport to change its Airport Layout Plan or seek a release from Federal obligations incurred when the airport accepted Federal Airport Improvement Grants, the FAA would use this EIS in exercising its decision-making authority under 49 USC 47107 regarding whether to approve those actions.

<p align="center">Table ES-1 Summary of Significant Impacts and Mitigation Measures for Major Topics—2008 Construction Phase</p>						
Resource Topic/Impact	Alternative	Duration of Impact	Quantification of Impact	Level of Significance before Mitigation	Mitigation Measure	Level of Significance after Mitigation
Agricultural Resources						
Impact 4.1-a: Conversion of Important Farmland to Nonagricultural Uses	No-Action	Permanent conversion	Unknown – footprint of Airport compartment levee	Potentially significant	Mitigation similar to Mitigation Measure 4.1-a if the Sacramento County Airport System (SCAS) constructs a compartment levee	Significant and unavoidable
	1, 2, 3	Permanent conversion	Approximately 180 acres	Significant	Mitigation Measure 4.1-a: Minimize Important Farmland Conversion to the Extent Practicable and Feasible	Significant and unavoidable
Hydrology and Hydraulics						
Impact 4.4-a: Hydraulic Effects and Exposure to Flood Risk	No-Action	Permanent	Continued high risk of flooding	Significant	No mitigation is available	Significant and unavoidable
	1, 2, 3	Permanent	Substantially reduced risk of flooding; no hydraulic effects	Less than significant	No mitigation is required	Less than significant
Water Quality						
Impact 4.5-a: Temporary Effects on Water Quality from Stormwater Runoff, Erosion, or Spills	No-Action	Duration cannot be predicted	Magnitude cannot be predicted; dependent on flood effects	Significant	No mitigation is available	Significant and unavoidable
	1, 2, 3	Temporary, during construction	Unknown; dependent on multiple factors	Significant	Mitigation Measure 4.5-a: Implement Standard BMPs, Prepare and Implement a SWPPP, and Comply with NPDES Permit Conditions	Less than significant
Fish and Aquatic Habitat						
Impact 4.6-a: Loss of Fish or Aquatic Habitat Through Increased Sedimentation and Turbidity or Releases of Contaminants	No-Action	Temporary, during a levee failure	Unquantifiable	Potentially significant	No mitigation is available	Significant and unavoidable
	1, 2, 3	Temporary,	Unquantifiable	Significant	Mitigation Measure 4.6-a: Implement	Less than

<p align="center">Table ES-1 Summary of Significant Impacts and Mitigation Measures for Major Topics—2008 Construction Phase</p>						
Resource Topic/Impact	Alternative	Duration of Impact	Quantification of Impact	Level of Significance before Mitigation	Mitigation Measure	Level of Significance after Mitigation
Impact 4.6-b: Loss of Shaded Riverine Aquatic (SRA) Habitat Associated with Levee Improvement Activities	No-Action	during construction Permanent removal	SRA habitat associated with 45 acres of waterside woodland	Significant	Mitigation Measure 4.5-a, described above (Implement Standard BMPs, Prepare and Implement a SWPPP, and Comply with NPDES Permit Conditions) Sufficient mitigation is not available	significant Significant and unavoidable
	1, 3	Permanent removal	Small amounts of riparian vegetation, potentially providing SRA habitat function	Significant	Mitigation Measure 4.6-b: Restore, Replace, or Rehabilitate Loss of Degraded SRA Habitat Function and Comply with Section 1602, Section 7, and Section 2081 Permit Conditions	Less than significant
	2	Permanent removal	SRA habitat associated with 35 acres of waterside woodland	Significant	Implement Mitigation Measure 4.6-b	Significant and unavoidable
Sensitive Aquatic Habitats						
Impact 4.7-a: Effects on Jurisdictional Waters of the United States	No-Action	Permanent effects	Unknown	Significant	Implement mitigation similar to Mitigation Measure 4.7-a if SCAS constructs a compartment levee	Less than significant
	1	Temporary and permanent effects	Temporary: 371.48 acres Permanent: 15.15 acres	Potentially significant	Mitigation Measure 4.7-a: Minimize Effects on Jurisdictional Waters of the United States, Complete Detailed Design of Habitat Creation Components and Management Agreements to Ensure Compensation for Unavoidable Adverse Effects, and Comply with Section 404, Section 401, and Section 1602 Permit Processes	Less than significant
	2		Temporary: 371.48 acres Permanent: 22.61 acres			
	3		Temporary: 371.48 acres Permanent: 15.17 acres			

<p align="center">Table ES-1 Summary of Significant Impacts and Mitigation Measures for Major Topics—2008 Construction Phase</p>						
Resource Topic/Impact	Alternative	Duration of Impact	Quantification of Impact	Level of Significance before Mitigation	Mitigation Measure	Level of Significance after Mitigation
Vegetation and Wildlife						
Impact 4.8-a: Effects on Woodland Habitats	No-Action	Permanent	15 acres	Significant	No mitigation is available	Significant and unavoidable
	1, 3	Permanent	14.5 acres	Potentially significant	Mitigation Measure 4.8-a: Minimize Effects on Woodland Habitat, Complete Detailed Design of Woodland Creation and Management Agreements to Ensure Compensation for Unavoidable Adverse Effects, and Comply with the DFG Section 1602 Permit Process	Less than significant
	2	Permanent	5 acres + 14.5 acres	Potentially significant		Significant and unavoidable
Impact 4.8-b: Effects on Wildlife Corridors	No-Action	Permanent	Extensive removal of riparian vegetation	Significant	Implement mitigation similar to Mitigation Measure 4.8-b if SCAS constructs a compartment levee	Significant and unavoidable
	1, 3	Temporary disturbance and permanent loss	Minor woodland effects; adverse aquatic effects would be offset by creation of new canals	Potentially Significant	Mitigation Measure 4.8-b: Implement Mitigation Measure 4.9-c (Minimize the Potential for Direct Loss of Giant Garter Snake Individuals, Develop Detailed Design of Managed Marsh and New Canals and Management Agreements to Ensure Adequate Compensation for Unavoidable Adverse Effects, and Obtain Incidental Take Authorization)	Less than significant
	2	Permanent	Extensive removal of riparian vegetation, but adverse aquatic effects would be offset by creation of new canals	Significant		Implement Mitigation Measure 4.8-b

Table ES-1 Summary of Significant Impacts and Mitigation Measures for Major Topics—2008 Construction Phase						
Resource Topic/Impact	Alternative	Duration of Impact	Quantification of Impact	Level of Significance before Mitigation	Mitigation Measure	Level of Significance after Mitigation
Special-Status Terrestrial Species						
Impact 4.9-c: Effects on Giant Garter Snake	No-Action	Permanent and temporary loss and disturbance of potential habitat	Unquantifiable flood effect	Significant	Implement mitigation similar to Mitigation Measure 4.9-c if SCAS constructs a compartment levee	Significant and unavoidable
	1	Permanent and temporary loss and disturbance of potential habitat	25 acres of rice and 1.8 acres of canal habitat	Potentially Significant	Mitigation Measure 4.9-c: Minimize the Potential for Direct Loss of Giant Garter Snake Individuals, Develop Detailed Design of Managed Marsh and New Canals and Management Agreements to Ensure Adequate Compensation for Unavoidable Adverse Effects, and Obtain Incidental Take Authorization	Less than significant
	2	Permanent and temporary loss and disturbance of potential habitat	35 acres of rice and 1.8 acres of canal habitat			
	3	Permanent and temporary loss and disturbance of potential habitat	30 acres of rice and 1.8 acres of canal habitat			
Impact 4.9-d: Effects on Northwestern Pond Turtle	No-Action	Permanent loss of and temporary disturbance to potential habitat	Unquantifiable flood effect	Potentially significant	No mitigation is available	Significant and unavoidable
	1, 3	Permanent loss of and temporary disturbance to potential habitat	Permanent: 1.8 acres Temporary: 0.5 acre	Potentially Significant	Mitigation Measure 4.9-d: Conduct Focused Surveys for Northwestern Pond Turtles and Relocate Turtles	Less than significant
	2	Permanent loss of and temporary disturbance to potential habitat	Slightly lower amount of habitat, compared to Alternatives 1 and 3			

<p align="center">Table ES-1 Summary of Significant Impacts and Mitigation Measures for Major Topics—2008 Construction Phase</p>						
Resource Topic/Impact	Alternative	Duration of Impact	Quantification of Impact	Level of Significance before Mitigation	Mitigation Measure	Level of Significance after Mitigation
Impact 4.9-e: Effects on Special-status Birds	No-Action	Permanent conversion of suitable foraging habitat	Unquantifiable flood and compartment levee construction effects	Potentially significant	No mitigation is available	Significant and unavoidable
	1, 3	Permanent loss of and temporary disturbance of suitable foraging habitat; temporary disturbance of nesting pairs	290 acres of potential foraging habitat and 8 acres of potential nesting habitat	Potentially significant	Mitigation Measure 4.9-e: Minimize Potential Impacts on Burrowing Owls and Other Special-Status Bird Species, Relocate Owls as Needed, Complete Detailed Design of Woodlands and Grasslands and Management Agreements to Ensure Adequate Compensation for Unavoidable Adverse Effects, and Obtain Incidental Take Authorization	Less than significant
	2		Same as Alternatives 1 and 3, plus loss of 35 acres of waterside nesting habitat	Potentially significant	Implement Mitigation Measure 4.9-e	Significant and unavoidable
Impact 4.9-f: Effects on Successful Implementation of the NBHCP	No-Action	Long-term	Unquantifiable flood effect	Significant	No mitigation is available	Significant and unavoidable
	1, 2, 3	See 4.9-c, -d, and -e	Unquantifiable	Significant	Mitigation Measure 4.9-f: Ensure that Compliance with Mitigation Requirements of Established NBHCP Reserves is Not Adversely Affected, and Implement Mitigation Measures 4.7-a and 4.9-a through 4.9-e	Less than significant

<p align="center">Table ES-1 Summary of Significant Impacts and Mitigation Measures for Major Topics—2008 Construction Phase</p>						
Resource Topic/Impact	Alternative	Duration of Impact	Quantification of Impact	Level of Significance before Mitigation	Mitigation Measure	Level of Significance after Mitigation
Cultural Resources						
Impact 4.10-c: Potential Construction Effects on Known Prehistoric Resources	No-Action, 1, 2, 3	Short-term, during construction	Unquantifiable	Significant	Mitigation Measure 4.10-c(1): Avoid Ground Disturbance Near Known Prehistoric Archaeological Site CA-Sac-485/H to the Extent Feasible, and Treat the Resource in Accordance with Measures Stipulated in an HPTP Developed in Consultation between USACE, the SHPO, and SAFCA Mitigation Measure 4.10-c(2): Avoid Ground Disturbance near Known Prehistoric Archaeological Sites CA-Sac-15/H, CA-Sac-16/H, CA-Sac-17, CA-Sac-160/H, and CA-Sac-164 to the Extent Feasible, and Treat Resources in Accordance with Measures Stipulated in an HPTP Developed in Consultation between USACE, the SHPO, and SAFCA	Significant and unavoidable
Impact 4.10-d: Damage to or Destruction of Previously Undiscovered Cultural Resources	No-Action, 1, 2, 3	Short-term, during construction	Unquantifiable	Significant	Mitigation Measure 4.10-d: Perform Research and/or Surveys, Brief Workers Before Construction, Monitor Construction, Halt Potentially Damaging Activities, Investigate and Avoid Resources to the Extent Feasible, and Treat Resources in Accordance with Measures Stipulated in an HPTP Developed in Consultation between USACE, the SHPO, and SAFCA	Significant and unavoidable
Impact 4.10-e: Discovery of Human Remains during Construction	No-Action, 1, 2, 3	Temporary, during construction	Unquantifiable	Significant	Mitigation Measure 4.10-e: Halt Work Within 50 Feet of the Find, Notify the County Coroner and Most Likely	Significant and unavoidable

<p align="center">Table ES-1 Summary of Significant Impacts and Mitigation Measures for Major Topics—2008 Construction Phase</p>						
Resource Topic/Impact	Alternative	Duration of Impact	Quantification of Impact	Level of Significance before Mitigation	Mitigation Measure	Level of Significance after Mitigation
					<p align="center">Descendant, and Treat Human Remains in Accordance with Measures Stipulated in an HPTP Developed in Consultation between USACE, the SHPO, and SAFCA</p>	
Transportation and Circulation						
Impact 4.12-a: Temporary Increase in Traffic on Local Roadways during Construction	No-Action	Temporary, during a levee failure	Unquantifiable flood effect	Significant	Implement mitigation similar to Mitigation Measure 4.12-a if SCAS constructs a compartment levee	Significant and unavoidable
	1, 2, and 3	Temporary, during construction	475 daily haul truck trips on local roadways	Significant	Mitigation Measure 4.12-a: Prepare and Implement a Traffic Routing Plan for Both Crew Commute Trips to the Work Sites and Construction-Related Truck Trips	Significant and unavoidable
Impact 4.12-b: Temporary Increase in Traffic Hazards on Local Roadways during Construction	No-Action	Temporary, during a levee failure	Unquantifiable flood effect	Significant	No mitigation is available	Significant and unavoidable
	1, 2, 3	Temporary, during construction	Unquantifiable	Significant	Mitigation Measure 4.12-b: Prepare and Implement a Traffic Safety and Control Plan and Implement Measures to Avoid and Minimize Traffic Hazards on Local Roadways during Construction	Less than significant
Impact 4.12-c: Temporary Effect on Emergency Service Response Times and Access	No-Action	Temporary, during a levee failure	Unquantifiable flood effect	Significant	No mitigation is available	Significant and unavoidable
	1, 2, 3	Temporary, during construction	Unquantifiable	Significant	Mitigation Measure 4.12-c: Notify Emergency Service Providers about Project Construction and Maintain Emergency Access or Coordinate Detours with Providers	Less than significant

Table ES-1 Summary of Significant Impacts and Mitigation Measures for Major Topics—2008 Construction Phase						
Resource Topic/Impact	Alternative	Duration of Impact	Quantification of Impact	Level of Significance before Mitigation	Mitigation Measure	Level of Significance after Mitigation
Air Quality						
Impact 4.13-a: Temporary Emissions of ROG, NO _x , and PM ₁₀ during Construction	No-Action	Temporary, during construction of an interior compartment levee	Amounts similar to Alternatives 1, 2, and 3, exceeding local thresholds for ROG, NO _x , and PM ₁₀	Significant	Implement mitigation similar to Mitigation Measure 4.13-c if SCAS constructs a compartment levee	Significant and unavoidable
	1, 2, 3	Temporary, during construction	Quantities depend on timing and duration of construction activities: 222–386 pounds per day (lb/day) of ROG, 931–1,214 lb/day of NO _x , and 902–1,839 lb/day of PM ₁₀ . for 2008 construction, Alternative 2 emissions would be 3% higher and Alternative 3 emissions 8% higher than Alternative 1 emissions	Significant	Mitigation Measure 4.13-a: Implement District-Recommended Control Measures to Minimize Temporary Emissions of ROG, NO _x , and PM ₁₀ during Construction	Significant and unavoidable
Noise						
Impact 4.14-a: Generation of Short-Term Construction Noise	No-Action	Temporary, during construction of an interior compartment levee	Unknown	Potentially significant	Implement mitigation similar to Mitigation Measure 4.14-a if SCAS constructs a compartment levee	Unknown, assumed Less than significant
	1, 2, 3	Temporary, during	79 to 101 dBA without feasible noise control	Significant	Mitigation Measure 4.14-a: Implement Noise-Reducing Construction Practices,	Significant and

<p align="center">Table ES-1 Summary of Significant Impacts and Mitigation Measures for Major Topics—2008 Construction Phase</p>						
Resource Topic/Impact	Alternative	Duration of Impact	Quantification of Impact	Level of Significance before Mitigation	Mitigation Measure	Level of Significance after Mitigation
		construction	(50 feet from nearest noise source); highest noise level would be 89.0 dBA L _{eq} (100 feet from pile driving)		Prepare a Noise Control Plan, and Monitor and Record Construction Noise Near Sensitive Receptors	unavoidable
Impact 4.14-b: Exposure of Sensitive Receptors to or Generation of Excessive Groundborne Vibration or Noise	No-Action	Temporary, during construction of an interior compartment levee	Unknown	Potentially significant	Implement mitigation similar to Mitigation Measure 4.14-b if SCAS constructs a compartment levee	Less than significant
	1, 2, 3	Temporary, during construction at Pump Station No. 2	0.076 in/sec PPV or 86 VdB (for haul trucks) to as high as 1.518 in/sec PPV or 112 VdB (for pile driving)	Significant	Mitigation Measure 4.14-b: Implement Measures to Avoid Construction-Related Vibration Effects	Significant and unavoidable for one location
Impact 4.14-c: Exposure of Residents to Increased Traffic Noise Levels from Hauling Activity	No-Action	Temporary, during construction of an interior compartment levee	Unknown	Potentially significant	Implement mitigation similar to Mitigation Measure 4.14-c if SCAS constructs a compartment levee	Unknown, assumed Less than significant
	1, 2, 3	Temporary, during construction	65.0 to 68.8 dBA L _{eq} (50 feet from roadway centerline)	Significant	Mitigation Measure 4.14-c: Implement Noise-Reduction Measures to Reduce the Effects of Haul Truck Traffic Noise	Significant and unavoidable
Visual Resources						
Impact 4.16-a: Changes in Scenic Vistas, Scenic Resources, and Existing Visual Character of the Project Area	No-Action, 1, 2, 3	Temporary, during construction	Unquantifiable	Significant	No mitigation is available	Significant and unavoidable

<p align="center">Table ES-1 Summary of Significant Impacts and Mitigation Measures for Major Topics—2008 Construction Phase</p>						
Resource Topic/Impact	Alternative	Duration of Impact	Quantification of Impact	Level of Significance before Mitigation	Mitigation Measure	Level of Significance after Mitigation
Hazards and Hazardous Materials						
Impact 4.18-a: Spills of Hazardous Materials	No-Action	Temporary, during a levee failure	Unquantifiable flood effect	Potentially significant	No mitigation is available	Significant and unavoidable
	1, 2, 3	Temporary, during construction	Unquantifiable	Less than significant	No mitigation is required	Less than Significant
Impact 4.18-b: Exposure to Hazardous Materials Encountered at Project Sites	No-Action	Temporary, during construction of an interior compartment levee	Unquantifiable flood effect	Significant	Implement mitigation similar to Mitigation Measure 4.18-b(2) if SCAS constructs a compartment levee	Significant and unavoidable
	1, 2, 3	Temporary, during construction	Unquantifiable	Significant	Mitigation Measure 4.18-b(1): Ensure that Contaminants Are Not Present at Unacceptable Levels on the Yuki Farms Site Near the Location of Project Construction Activities Mitigation Measure 4.18-b(2): Prepare a Worker Health and Safety Plan, and Implement Appropriate Measures to Minimize Potential Exposure to Unknown Hazardous Materials	Less than Significant
Airport Safety						
Impact 4.19-b: Potential to Result in Higher Frequency of Collisions between Aircraft and Wildlife at Sacramento International Airport	No-Action	Short-term, in the months following flooding and the	Unquantifiable flood effect	Significant	No mitigation is available	Significant and unavoidable

**Table ES-1
Summary of Significant Impacts and Mitigation Measures for Major Topics—2008 Construction Phase**

Resource Topic/Impact	Alternative	Duration of Impact	Quantification of Impact	Level of Significance before Mitigation	Mitigation Measure	Level of Significance after Mitigation
	1, 2, 3	resumption of Airport operations Long-term, during project operation	Unquantifiable	Less than Significant	No mitigation is required	Less than Significant