

Draft Initial Study/Proposed Mitigated Negative Declaration

Morrow Lane Bridge Replacement Project



Prepared for:



California Department of Water Resources

AECOM

September 2016

Draft Initial Study/Proposed Mitigated Negative Declaration
Morrow Lane Bridge Replacement Project



Prepared for:



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Date: September 22, 2016

To: Responsible and Trustee Agencies, Interested Parties, and Organizations

**Subject: NOTICE OF AVAILABILITY AND INTENT TO ADOPT A PROPOSED MITIGATED
NEGATIVE DECLARATION FOR THE MORROW LANE BRIDGE REPLACEMENT
PROJECT**

The California Department of Water Resources (DWR) has directed the preparation of an initial study (IS) and intends to adopt the proposed mitigated negative declaration (MND) for the Morrow Lane Bridge Replacement Project (Proposed Project) in compliance with the California Environmental Quality Act (CEQA) and State CEQA Guidelines.

Project Title: Morrow Lane Bridge Replacement Project

Lead Agency: DWR

Project Location: The bridge replacement would occur at the existing location of the Morrow Lane Bridge; within Suisun Marsh and unincorporated southern Solano County at the western edge of Grizzly and Suisun Bays, approximately 0.3 mile east of Interstate 680 (I-680) along Morrow Lane. The project site can be accessed via roadway from Goodyear Road and I-680. The project site can also be accessed via an unimproved road located off of Lake Herman Road and by boat. Pierce Harbor is the nearest marina to the project site, approximately 2 miles to the north of Morrow Lane Bridge.

Project Description: Morrow Lane Bridge spans Goodyear Slough and provides access to Morrow Island. The bridge is used by the Goodyear Land and Development Company (GLDC) and adjacent landowners for recreation, by the DWR for operations and maintenance of a water distribution system and water quality monitoring stations, and to access three private residences on Morrow Island.

Over the years the bridge has begun to deteriorate and requires many repairs. GLDC, the private landowners on Morrow Island, and DWR, are proposing to construct a new Morrow Lane Bridge over Goodyear Slough. Demolition of the old bridge would occur subsequent the construction of the new bridge.

Construction of the proposed project would be implemented in two phases between December 2016 and September 2018. The first phase would involve construction of the new bridge. The second phase would involve the demolition of the existing bridge.

Additional detail is provided in Chapter 2, "Project Description."

Environmental Review Process: DWR has directed the preparation of an IS/MND on the proposed project in accordance with the requirements of CEQA and the State CEQA Guidelines. The IS/MND describes the proposed project and provides an assessment of the proposed project's potentially significant adverse impacts on the physical environment. It concludes that the proposed project would not have any significant adverse effects on the environment after adoption and implementation of mitigation measures.

Public Review Period: The IS/MND is being circulated for public review and comment for a review period of 30 days from release of the document to the State Clearinghouse, starting on September 22, 2016.

Written comments must be submitted to and received at the following address no later than close of business (5:00 p.m.) on October 22, 2016:

Elaine Jeu
Environmental Scientist
California Department of Water Resources, Suisun Marsh Branch
Habitat Management, Maintenance, and Monitoring Section
3500 Industrial Blvd.
West Sacramento, CA 95691
E-mail: elaine.jeu@water.ca.gov

To Review or Obtain a Copy of the Environmental Document: Copies of the IS/MND may be reviewed at the following locations:

Online:
<http://www.dwr.water.ca.gov/suisun/dataReports>

Solano County Clerk of the Board
675 Texas Street, Suite 6500
Fairfield, CA 94533-6338

PROPOSED MITIGATED NEGATIVE DECLARATION

PROJECT TITLE: Morrow Lane Bridge Replacement Project

LEAD AGENCY: California Department of Water Resources

PROJECT LOCATION: The project site is located within Suisun Marsh and unincorporated southern Solano County at the western edge of Grizzly and Suisun bays, approximately 0.3 mile east of Interstate 680 (I-680) along Morrow Lane. It can be accessed via roadway from Goodyear Road and I-680. The project site can also be accessed via an unimproved road located off Lake Herman Road and by boat. Pierce Harbor is the nearest marina to the project site, approximately 2 miles to the north of Morrow Lane Bridge.

PROJECT DESCRIPTION: Goodyear Land and Development Agency (GLDC), the private landowners on Morrow Island, and DWR propose to construct a new Morrow Lane Bridge over Goodyear Slough (Proposed Project). The new bridge would replace the existing structurally deficient Morrow Lane Bridge, improve public safety, and ensure current regulatory



requirements and safety standards are met. The design of the new bridge and construction will be led by GLDC, the owner of the bridge.

Construction of the Proposed Project would be implemented in two phases between December 2016 and October 2018. The first phase would involve constructing the new bridge and the second phase would involve demolishing the existing bridge.

DWR uses the bridge to access state water facilities and will ensure that the project follows environmental standards and requirements and bridge design complies with state standards. Because the Proposed Project is a discretionary project that requires California Environmental Quality Act (CEQA) review, DWR, as the lead agency under CEQA, has prepared this initial study/proposed mitigated negative declaration (IS/MND) in compliance with CEQA.

FINDINGS: An IS/MND has been prepared to assess the potential environmental effects of the Proposed Project and the significance of those effects. Based on the IS, it has been determined that the Proposed Project would not have any significant adverse effects on the environment after implementation of mitigation measures. This conclusion is supported by the following findings:

1. The Proposed Project would have no impacts on agriculture and forestry resources, mineral resources, population and housing, and public services.
2. The Proposed Project would have less-than-significant impacts on aesthetics, geology and soils, greenhouse gas emissions, hazards and hazardous materials, land use and planning, recreation, transportation/traffic, and utilities and service systems.
3. The Proposed Project would have potentially significant impacts on air quality, biological resources, cultural resources, hydrology and water quality, and noise, but mitigation measures are proposed to reduce these effects to less-than-significant levels.

The mitigation measures that would be implemented by DWR to avoid or minimize environmental impacts are listed below. Implementation of these mitigation measures would reduce the environmental impacts of the Proposed Project to a less-than-significant level.

Mitigation Measure 3.3-1: Implement BAAQMD Basic Construction Mitigation Measures.

Bay Area Air Quality Management District (BAAQMD) recommends that all projects, regardless of significance, implement certain basic construction mitigation measures. Because construction of the Proposed Project would create emissions in BAAQMD's service area only when materials are transported to the project site, a subset of the measures that BAAQMD normally recommends to reduce construction emissions will apply to the Proposed Project. Therefore, the following measures will be implemented during project construction:

- ▶ All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) will be watered two times per day.
- ▶ All haul trucks transporting soil, sand, or other loose material off-site will be covered.
- ▶ All visible mud or dirt track-out onto adjacent public roads will be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
- ▶ All vehicle speeds on unpaved roads will be limited to 15 miles per hour.
- ▶ Idling times will be minimized either by shutting equipment off when not in use or by reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of the California Code of Regulations). Clear signage will be provided for construction workers at all access points.
- ▶ All construction equipment will be maintained and properly tuned in accordance with manufacturer's specifications. All equipment will be checked by a certified visible emissions evaluator.

- ▶ A publicly visible sign will be posted at the soil transfer site within BAAQMD, with the telephone number and person to contact at the Solano County and BAAQMD regarding dust complaints. This person will respond and take corrective action within 48 hours. BAAQMD's phone number also will be visible, to ensure compliance with applicable regulations.

Timing: During project construction.

Responsibility: GLDC and construction contractors.

Mitigation Measure 3.3-2: Implement Mitigation Measure 3.3-1: Implement BAAQMD Basic Construction Mitigation Measures.

Mitigation Measure 3.4-1: Conduct Preconstruction Surveys for Nesting Special-Status and Common Raptors

To ensure that there is no construction disturbance of special-status and common raptor nest sites from February 1 through August 31 (the nesting season), a preconstruction survey will be conducted by a qualified biologist in the project area. For raptor species, the survey buffer will be a minimum of 500 feet beyond the boundaries of the project area. If an active nest is found sufficiently close (as determined by the qualified biologist) to the area to be affected by construction activities, a qualified biologist will determine the extent of a construction-free buffer zone to be established around the nest. Construction-related disturbances that may cause nest abandonment, a reduction in the level of care provided by adults (e.g., duration of brooding, frequency of feeding), or forced fledging will not be initiated within this buffer zone until it is determined by a qualified biologist in coordination with USFWS and/or CDFW that the young have fledged and are feeding on their own. Fencing will be established around the buffer zone and contractor education will be conducted.

Timing: Before project construction.

Responsibility: DWR and construction contractors.

Mitigation Measure 3.4-2: Conduct Preconstruction Surveys for Non-raptor Special-Status and Common Migratory Birds

To ensure that there is no construction disturbance of non-raptor special-status and migratory bird nest sites from February 1 through August 31 (the nesting season), a preconstruction survey will be conducted by a qualified biologist in and immediately adjacent to the project area within 10 days of the start of project activities. If an active nest is found sufficiently close (as determined by the qualified biologist) to the area to be affected by construction activities, a qualified biologist will determine the extent of a construction-free buffer zone to be established around the nest. Construction-related disturbances that may cause nest abandonment, a reduction in the level of care provided by adults (e.g., duration of brooding, frequency of feeding), or forced fledging will not be initiated within this buffer zone until it is determined by a qualified biologist in coordination with USFWS and/or CDFW that the young have fledged and are feeding on their own. Fencing will be established around the buffer zone and contractor education will be conducted.

Timing: Before project construction.

Responsibility: DWR and construction contractors.

Mitigation Measure 3.4-3: Observe In-Water Work Window to Protect Fish

In-water work will be restricted the period of June 15th to September 30th, unless otherwise authorized by NMFS, USFWS and/or other appropriate regulatory agencies.

Timing: During project construction.

Responsibility: GLDC and construction contractors.

Mitigation Measure 3.4-4: Implement Soft-Start Pile-Driving Technique

A soft start to pile driving technique will be implemented before pile driving begins each day and any time after pile driving ceases for 30 minutes or longer. The contractor will implement an initial set of strikes at a reduced energy followed by a 30-second waiting period, then will repeat this procedure two additional times before initiating continuous pile driving.

Timing: During project construction.

Responsibility: GLDC and construction contractors.

Mitigation Measure 3.4-5: Conduct Underwater Sound Monitoring

Underwater sound monitoring will be conducted by a qualified acoustics expert during all pile-driving and pile removal activities. Underwater sound levels will not exceed peak-pressure, accumulated SEL, or RMS thresholds, as determined using NMFS requirements for the Proposed Project. To the maximum extent possible, underwater sound readings will be collected downstream at a distance determined using NMFS calculations for pile-driving activities and may be adjusted based on site conditions and safety considerations. The monitoring distance is estimated to be 5–10 meters (approximately 16.4 to 32.8 feet) from each pile, depending on the equipment set up on-site each day for each pile, and may vary up to 20 meters (approximately 65.6 feet) from each pile. The impact distance will be determined for fish species with the potential to occur in the project area using NMFS requirements for the project. The impact distance is estimated to be 3–13 feet from each pile.

Timing: During pile-driving and pile removal activities.

Responsibility: GLDC and construction contractors.

Mitigation Measure 3.4-6: Employ Noise Attenuation Measures

If sound thresholds established by NMFS are exceeded, sound-deadening cushions, pile encasings, or air bubble curtains around piles may be employed. Pile-driving activities may also be limited for short time periods during daylight hours or work may be temporarily halted if applicable thresholds are exceeded.

Timing: During pile-driving and pile removal activities.

Responsibility: GLDC, DWR, and construction contractors.

Mitigation Measure 3.4-7: Manage Debris

Debris generated during construction activities will be properly managed to avoid adverse impacts to water quality and aquatic environments. Booms and other debris-catching devices, such as netting and covers, will be used by construction contractors to protect water bodies from debris and wastes associated with structure demolition or removal over or adjacent to Goodyear Slough. Debris-catching devices will also be emptied by construction contractors regularly and collected debris will be removed and stored away from waterways and protected from run-on and runoff.

Timing: During project construction.

Responsibility: GLDC and construction contractors.

Mitigation Measure 3.4-8: Monitor Water Quality during Pile-Driving Activities

Water quality monitoring for turbidity, dissolved oxygen, pH, and water temperature will be conducted upstream and downstream of construction work during pile-driving activities to ensure that the Proposed Project complies with mandated thresholds for meeting water quality objectives. Visual observations for turbidity plumes, sheens, or black-colored water will also be performed. If water quality thresholds are exceeded, in-water control measures will be implemented.

Timing: During pile-driving activities.

Responsibility: GLDC, DWR, and/or its construction contractors.

Mitigation Measure 3.4-9: Deploy In-Channel Water Quality Controls

If water quality thresholds are exceeded, appropriate turbidity and siltation control measures will be deployed to reduce effects. These measures may include a turbidity barrier, curtain, or diffusion mat. The appropriate controls will be rated according to wind speed, wave height, and the flow velocity of Goodyear Slough. If applicable thresholds are exceeded, pile-driving activities may be limited for short time periods or work may be temporarily halted until ambient water quality conditions return to concentrations below threshold levels. Installing a turbidity barrier would have the added benefit of excluding fish from the immediate area of in-water work (i.e., pile-driving and pile removal).

Timing: During project construction.

Responsibility: GLDC and construction contractors.

Mitigation Measure 3.4-10: Provide Compensatory Mitigation for Loss of Northern Coastal Salt Marsh Habitat

GLDC will provide compensatory mitigation for loss of northern coastal salt marsh habitat at a ratio of 1:1. Appropriate monitoring and success criteria will be determined in consultation with and approved by CDFW.

Timing: Before project construction.

Responsibility: GLDC.

Mitigation Measure 3.4-11: Implement Mitigation Measure 3.4-10: Provide Compensatory Mitigation for Loss of Northern Coastal Salt Marsh Habitat

Mitigation Measure 3.5-1: Halt Construction Activities if Cultural Resources Are Discovered.

If potentially significant archaeological or tribal cultural resources are discovered at any time during construction, all earth-disturbing work in the vicinity of the discovery will be temporarily suspended or redirected until a professional archaeologist has evaluated the nature and significance of the discovery. If a potentially significant archaeological or tribal cultural resource is discovered, GLDC, DWR, and any local, state, or federal agency with approval or permitting authority over the project that has requested such notification will be notified. Impacts on previously unknown significant archaeological or tribal cultural resources will be avoided through preservation in place if feasible. Damaging effects on tribal cultural resources will be avoided or minimized following the measures identified in California Public Resources Code Section 21084.3(b), if feasible, unless other measures that would be more effective are mutually agreed to with the lead archaeologist. If the lead archaeologist believes that damaging effects on significant resources will be avoided or minimized, then work in the area may resume.

Timing: During project construction.

Responsibility: GLDC, DWR, and construction contractors.

Mitigation Measure 3.5-2: Halt Construction Activities if Any Human Remains Are Discovered.

The procedures for the treatment of discovered human remains are described in Sections 7050.5 and 7052 of the California Health and Safety Code and Section 5097 of the California Public Resources Code. In accordance with the California Health and Safety Code, if human remains are uncovered during ground-disturbing activities, such activities that may affect the remains will be halted within 100 feet, and GLDC or its designated representative will be notified. GLDC will immediately notify the county coroner and a qualified professional archaeologist. If the coroner determines that the remains are those of a Native American, the coroner will contact the Native American Heritage Commission (NAHC) by telephone within 24 hours of making that determination (California Health and Safety Code, Section 7050.5[c]).

Responsibilities for acting on notification of a discovery of Native American human remains are identified in Section 5097.9 of the California Public Resources Code. DWR or its appointed representative and the professional archaeologist will consult with a Most Likely Descendant (MLD), determined by the NAHC, regarding the removal or preservation and avoidance of the remains, and will determine whether additional burials could be present in the vicinity.

Timing: During project construction.

Responsibility: GLDC, DWR, and construction contractors.

Mitigation Measure 3.9-1: Implement Mitigation Measure 3.4-7: Manage Debris; Mitigation Measure 3.4-8: Monitor Water Quality during Pile-Driving Activities; Mitigation Measure.4-9: Deploy In-Channel Water Quality Controls

Mitigation Measure 3.9-2: Implement Bank Protection and Scour Controls for New Bridge Structure

As part of project design, appropriate bank protection and scour controls will be determined and implemented to minimize the potential for erosion, sedimentation, and/or scour that may occur as a result of the placement of the new bridge structures and/or removal of the existing bridge. Such controls may include bank contouring to minimize steep slopes and placement of riprap or rock slope protection, and/or reestablishing vegetation along the channel banks adjacent to the new bridge abutments.

Timing: During final design.

Responsibility: GLDC and construction contractors.

Mitigation Measure 3.12-1: Implement Construction Noise Reduction Measures.

GLDC will implement the following measures to minimize noise impacts of construction:

- Written notification of heavy construction activities will be provided to all noise-sensitive receptors located adjacent to the project site and heavy construction activities, or within 500 feet of such activities. Notification will include the dates and hours when construction activities are anticipated to occur, and contact information, including a daytime telephone number, for the project representative to be contacted if noise levels are deemed excessive. Recommendations to assist noise-sensitive land uses in reducing interior noise levels (e.g., closing windows and doors) will be included in the notification.
- Construction activities will not occur on weekends or federal holidays and will not occur on weekdays between 7 p.m. of one day and 7 a.m. of the following day.
- Fixed/stationary equipment (e.g., generators, compressors) will be located as far as possible from noise-sensitive receptors. All impact tools will be shrouded or shielded, and all intake and exhaust ports on powered construction equipment will be muffled or shielded.
- All construction equipment will be properly maintained and equipped with noise-reduction intake and exhaust mufflers and engine shrouds, in accordance with manufacturers' recommendations. Equipment engine shrouds will be closed during equipment operation.
- All motorized construction equipment will be shut down when not in use, to prevent excessive idling noise.

- All construction equipment powered by gasoline or diesel engines will have sound control devices that are at least as effective as those originally provided by the manufacturer, and all equipment will be operated and maintained to minimize noise generation.

Noise-reducing enclosures will be used around noise-generating equipment, and temporary barriers (e.g., plywood, sound attenuation blankets) will be used between noise sources and noise-sensitive land uses, where feasible and when noise levels would exceed the threshold of 10 dB above ambient noise levels.

Timing: During project construction.

Responsibility: GLDC and construction contractors.

INITIAL STUDY

Morrow Lane Bridge Replacement Project

1. Project Title:

Morrow Lane Bridge Replacement Project

2. Lead Agency Name and Address:

California Department of Water Resources
3500 Industrial Blvd.
West Sacramento, CA 95691

3. Contact Person and Phone Number:

Elaine Jeu, Environmental Scientist
Phone: (916) 376-9796
E-mail: elaine.jeu@water.ca.gov

4. Project Location:

The project site is located within Suisun Marsh and unincorporated southern Solano County at the western edge of Grizzly and Suisun bays, approximately 0.3 mile east of Interstate 680 (I-680) along Morrow Lane. It can be accessed via roadway from Goodyear Road and I-680. The project site can also be accessed via an unimproved road located off Lake Herman Road and by boat. Pierce Harbor is the nearest marina to the project site, approximately 2 miles to the north of Morrow Lane Bridge.

5. Project Sponsor's Name:

Goodyear Land Development Company
541 Old Orchard Drive
Danville, CA 94526

6. General Plan Designation:

The project site is designated in the Solano County General Plan, as it is lying within a Resource Conservation Overlay and zoned Marsh Preservation (MP).

7. Zoning:

Solano County Marsh Preservation (MP)

8. Description of Project:

Morrow Lane Bridge spans Goodyear Slough and provides access to Morrow Island. The bridge is used by the Goodyear Land and Development Company (GLDC) and adjacent landowners for recreation, by the Department of Water Resources (DWR) for operations and maintenance of a water distribution system and water quality monitoring stations, and to access three private residences on Morrow Island. Over the years the bridge has begun to deteriorate and requires many repairs. GLDC, the private landowners on Morrow Island, and DWR, are proposing to construct a new Morrow Lane Bridge over Goodyear Slough (Proposed Project). Demolition of the old bridge would occur subsequent the construction of the new bridge.

9. Surrounding Land Uses and Setting:

Surrounding land uses includes residential, managed wetlands for recreation and conservation, and a railroad corridor.

10. Other Public Agencies Whose Approval Is Required:

U.S. Army Corps of Engineers, National Marine Fisheries Service, U.S. Fish and Wildlife Service, San Francisco Bay Regional Water Quality Control Board, San Francisco Bay Conservation and Development Commission , U.S. Coast Guard, and Solano County Building and Safety Division.

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1 INTRODUCTION

This initial study/proposed mitigated negative declaration (IS/Proposed MND) for the proposed Morrow Lane Bridge Replacement Project (Proposed Project) has been prepared by the California Department of Water Resources (DWR) to evaluate the potential environmental effects of the Proposed Project. This document has been prepared in accordance with the California Environmental Quality Act (CEQA) (Public Resources Code Section 21000 et seq.) and the State CEQA Guidelines (California Code of Regulations [CCR] Title 14, Section 15000 et seq.).

An IS is prepared by a lead agency to determine whether a project may have a significant effect on the environment and to determine the appropriate environmental document for CEQA compliance. In accordance with State CEQA Guidelines Section 15070, a public agency shall prepare a proposed negative declaration or MND when either of the following situations occurs:

- ▶ The IS shows that there is no substantial evidence that the project may have a significant effect on the environment. OR
- ▶ The IS identifies potentially significant effects, but revisions in the project plans or proposals made by, or agreed to by, the applicant would avoid the effects or mitigate the effects to a point where clearly no significant effects would occur.

In this circumstance, the lead agency prepares a written statement describing its reasons for concluding that the project would not have a significant effect on the environment and, therefore, does not require the preparation of an environmental impact report (EIR). This IS/Proposed MND conforms to these requirements and to the content requirements of State CEQA Guidelines Section 15071.

1.1 PURPOSE OF THE INITIAL STUDY

DWR is the lead agency for the Proposed Project and has determined that an IS/MND is the appropriate document for compliance with CEQA. The purpose of this document is to disclose to the public and reviewing agencies the environmental consequences of implementing the Proposed Project. This disclosure document is being made available to the public for review and comment. The IS/MND is available for a 30-day public review period from September 22, 2016 to October 22, 2016.

The public is invited to submit comments to:

Elaine Jeu, Environmental Scientist
California Department of Water Resources, Suisun Marsh Branch
Habitat Management, Maintenance, and Monitoring Section
3500 Industrial Blvd.
West Sacramento, CA 95691

Comments received from the public and reviewing agencies will be considered by DWR in its decision about the Proposed Project.

This IS/MND is available for public review on DWR's Web site (www.dwr.water.ca.gov/suisun/dataReports) and at the following location:

Solano County Clerk of the Board
675 Texas Street, Suite 6500
Fairfield, CA 94533-6338

1.2 SUMMARY OF FINDINGS

Chapter 3 of this document contains the analysis and discussion of potential environmental impacts of the Proposed Project. The analysis determined that the Proposed Project would result in no impacts on the following topics:

- ▶ Agriculture and Forestry Resources
- ▶ Mineral Resources
- ▶ Population and Housing
- ▶ Public Services

Impacts of the Proposed Project were determined to be less than significant for the following topics:

- ▶ Aesthetics
- ▶ Geology and Soils
- ▶ Greenhouse Gas Emissions
- ▶ Hazards and Hazardous Materials
- ▶ Land Use and Planning
- ▶ Recreation
- ▶ Transportation/Traffic
- ▶ Utilities and Service Systems

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

- ▶ Air Quality
- ▶ Biological Resources
- ▶ Cultural Resources
- ▶ Hydrology and Water Quality
- ▶ Noise

1.3 DOCUMENT ORGANIZATION

This document is divided into the following sections:

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

Chapter 1, “Introduction.” This chapter briefly summarizes the Proposed Project and describes the purpose of the IS/MND, summarizes findings, and describes the organization of this IS/MND.

Chapter 2, “Project Description.” This chapter describes the purpose of and need for the Proposed Project, general background, and project elements.

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

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

Chapter 5, “Report Preparers.” This chapter identifies report preparers.

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2 PROJECT DESCRIPTION

2.1 INTRODUCTION

Morrow Lane Bridge is a one-lane wooden bridge that spans Goodyear Slough and provides access to Morrow Island. The bridge is privately owned and maintained by the Goodyear Land and Development Company (GLDC) and adjacent landowners. It is used to access three private residences and several private duck clubs located on Morrow Island, and by the California Department of Water Resources (DWR) for operations and maintenance of a water distribution system and water quality monitoring stations.

The bridge has begun to deteriorate over the years, and it has undergone a series of repairs. Bridge evaluations conducted in 2013 indicated that structural components had deteriorated so severely that the bridge posed a potential danger to vehicular use; therefore, interim strengthening measures were implemented so that the bridge could safely support vehicles up to a total load of approximately 36,000 pounds (DWR 2014). Morrow Lane Bridge is currently unable to safely support emergency response vehicles and the heavy equipment needed to manage nearby wetland areas for waterfowl hunting and maintain DWR's water system infrastructure.

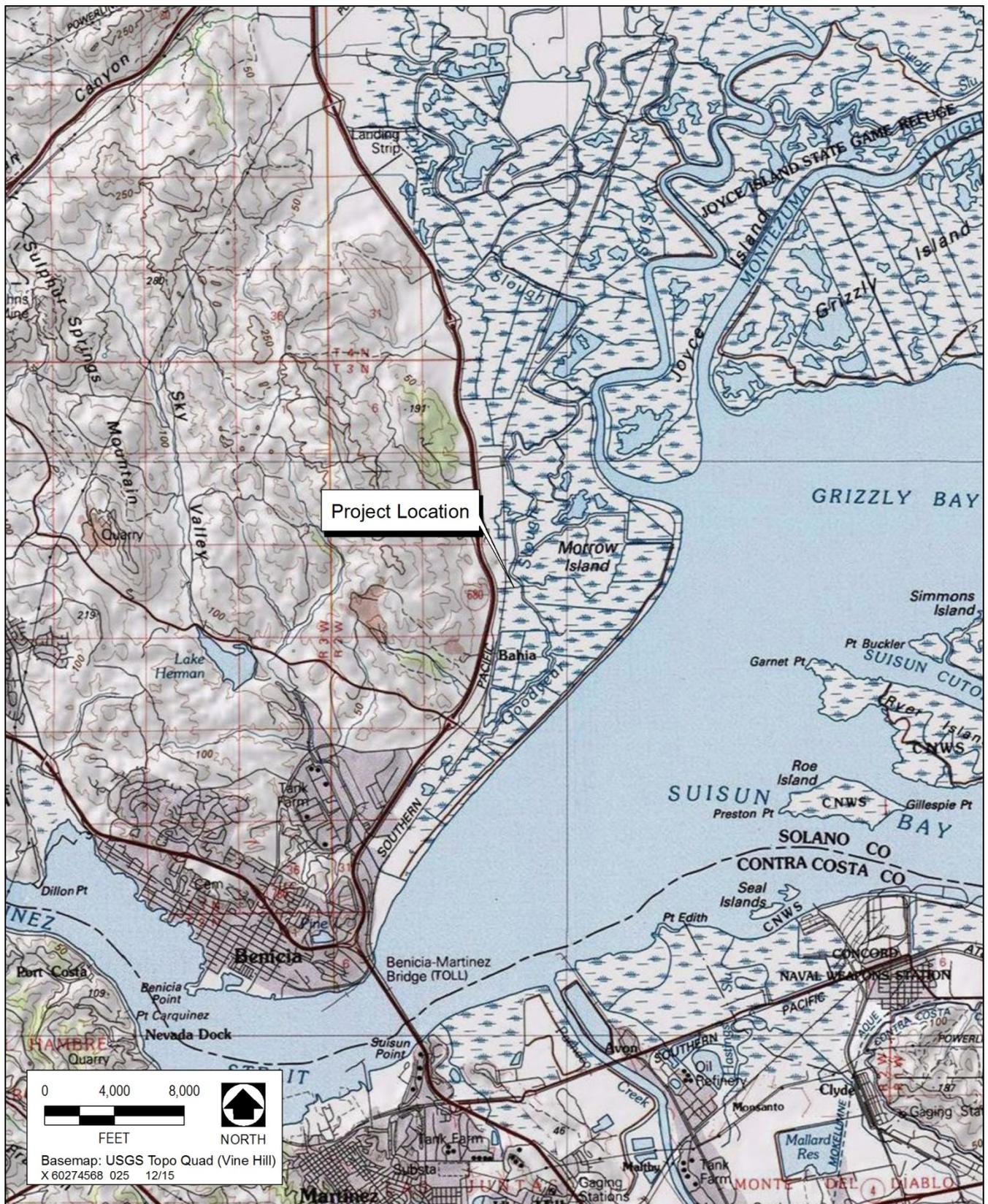
GLDC, the private landowners on Morrow Island, and DWR propose to construct a new Morrow Lane Bridge over Goodyear Slough (Proposed Project). The design of the new bridge and construction will be led by GLDC, the owner of the bridge. DWR uses the bridge to access State Water Project (SWP) facilities and will ensure that the project follows environmental standards and requirements, and bridge design complies with state standards. Because the Proposed Project is a discretionary project that requires California Environmental Quality Act (CEQA) review, DWR, as the lead agency under CEQA, has prepared this initial study in compliance with CEQA.

2.2 PROJECT LOCATION

Morrow Lane Bridge (project site) is located in the Suisun Marsh and unincorporated southern Solano County at the western edge of Grizzly and Suisun bays, approximately 0.3 mile east of Interstate 680 (I-680) (Figures 2-1 and 2-2). This location is within Township 2N, Range 2W of the "Vine Hill, California" U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle. The bridge is situated on parcel 0090-270-440 (Solano County).

The project site encompasses approximately 0.62 acre. It is located just east of the Southern Pacific Railroad tracks along Morrow Lane and can be accessed via Goodyear Road and I-680. The project site can also be accessed via an unimproved road located off of Lake Herman Road and by boat (Figure 2-3). Pierce Harbor is the closest marina to the project site, approximately 2 miles north of Morrow Lane Bridge (Figure 2-3).

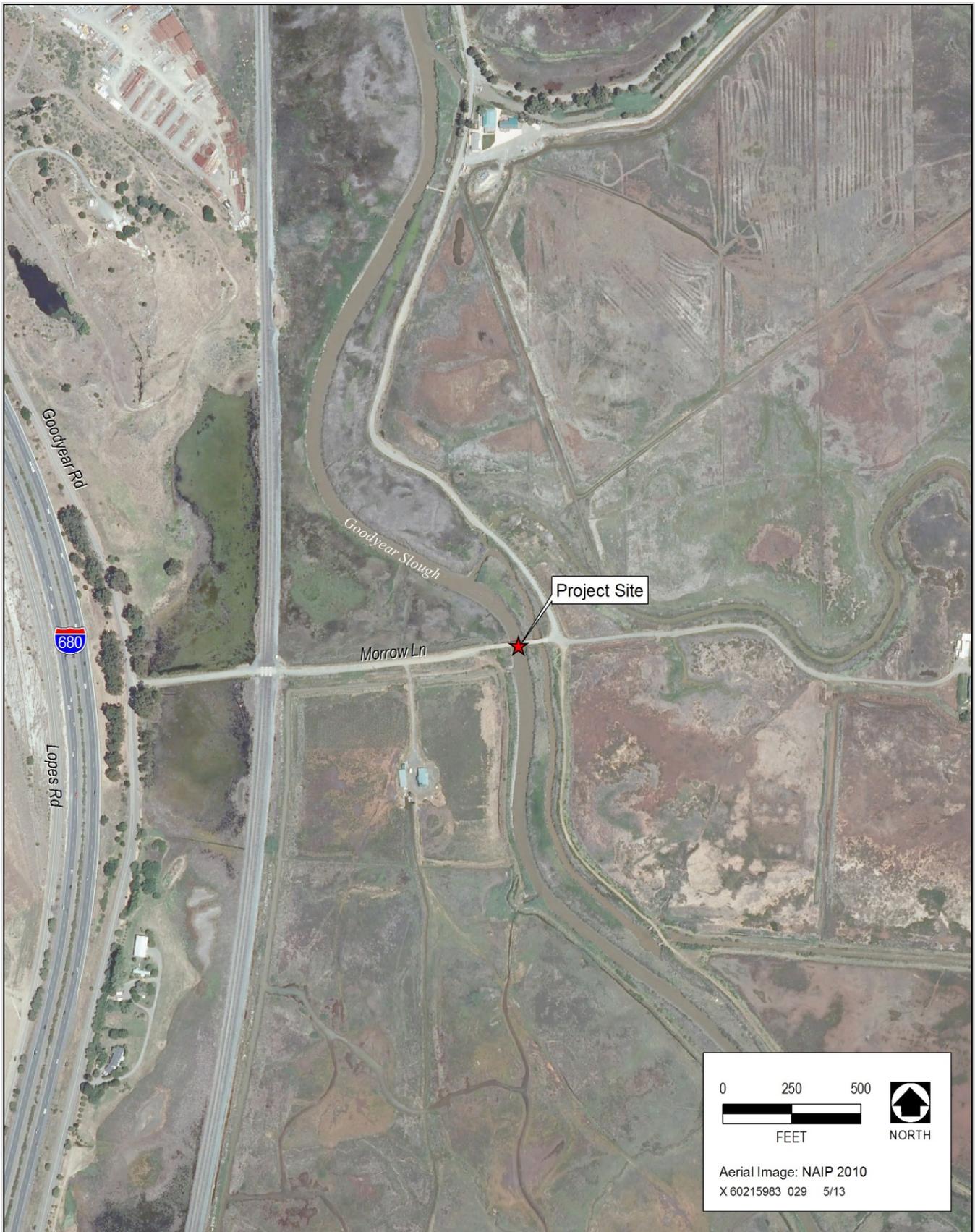
The project site is surrounded by privately owned wetlands managed for waterfowl. On-site residences are located on these properties. There are also a few private residences and industrial businesses in the vicinity, including a landscaping supply company, and a construction company and storage yard located along Goodyear Road to the west.



Source: Data compiled by AECOM in 2015

Figure 2-1.

Morrow Lane Bridge Site and Vicinity Map



Source: Data compiled by AECOM in 2015

Figure 2-2.

Morrow Lane Bridge Aerial Map



Source: Data compiled by AECOM in 2015

Figure 2-3.

Morrow Lane Bridge Project Features

2.3 PROJECT BACKGROUND

Morrow Lane Bridge was originally constructed in 1931, in the alignment of the proposed new bridge. GLDC replaced the original 1931 bridge with a new bridge and alignment during the early 1950s. Several wooden piles and remnants of roadway from the 1931 bridge are present in the alignment of the proposed new bridge.

A portion of the existing bridge deck can be removed to allow for navigation by large watercraft on Goodyear Slough; however, according to GLDC, the bridge deck has never been removed, and navigational charts depict Morrow Lane Bridge as a fixed bridge. As part of the repairs over the years, additional piles were installed, which has narrowed the original navigable horizontal span of 28 feet to approximately 14.4 feet (DWR 2014; Jeu, pers. comm., 2016). In addition, approximately 26 of the 81 piles associated with the existing bridge have been encased with a concrete jacket. The most recent rehabilitation occurred in 2013 when two horizontal steel beams and an I-beam were installed, a pier cap was removed, and cable tension deck stringers were replaced. This rehabilitation was intended to be a temporary fix until the bridge could be replaced. Several bridge piles remain in a visibly compromised condition and/or have failed substantially or completely (DWR 2014).

2.4 PROJECT PURPOSE

The purpose of the Proposed Project is to improve public safety, address the structurally deficient Morrow Lane Bridge, and ensure that the bridge meets current regulatory requirements and safety standards. The proposed new bridge would be designed and constructed in accordance with the American Association of State Highway and Transportation Officials' bridge and seismic standards, California State Lands Commission requirements, and U.S. Coast Guard requirements to allow for navigation by oar- or motor-propelled small watercraft. The proposed new bridge would be wider and would include additional safety features including a pedestrian guardrail and bridge rail curb.

2.5 PROJECT DESCRIPTION

Morrow Lane, approximately 0.6 mile long, runs east-west from Morrow Island to Goodyear Road. An unnamed north-south road, which intersects Morrow Lane just east of the bridge, parallels Goodyear Slough and provides access to northern Morrow Island. Morrow Lane Road, approaching the bridge from the west end, is approximately 22 feet wide as it approaches the bridge from the west end, allowing two lanes of traffic. The roadway's width tapers down to approximately 14 feet wide down in the immediate vicinity of the existing bridge, which is only 14 feet wide between barriers and is considered a one-lane bridge. Drivers must stop near the bridge and yield to traffic coming from the opposite direction.

As shown in Figure 2-4, the existing one-lane wooden bridge is approximately 14 feet wide between barriers and 208 feet long. The bridge abutments are at an elevation of approximately 9 feet above mean sea level (Purcell, Rhoades & Associates 2015). The existing bridge rises slightly over the waterway to a maximum estimated height of about 10 feet above mean low water (Purcell, Rhoades & Associates 2015:2). The bridge currently provides a horizontal clearance for navigation of approximately 14.4 feet with remaining piles spaced 5–8 feet apart. Navigational charts show the existing Morrow Lane Bridge with a vertical clearance of 8 feet above the mean high water (MHW) (NOAA 2016).

The Proposed Project involves constructing a new Morrow Lane bridge and demolishing the existing bridge. The project site, approximately 0.62 acre, encompasses the bridge construction and demolition footprints and staging

areas. Staging areas, approximately 0.36 acre, would be located along Morrow Lane on the east and west sides of the existing bridge and in a storage yard adjacent to GLDC's buildings at the end of Morrow Lane (Figure 2-5).

Construction of the Proposed Project would be phased over a 2-year period. The first phase would involve removing approximately 13 wooden piles, removing vegetation, and constructing the new bridge alongside the existing one within the 1930s bridge alignment (Figure 2-5). The second phase, involving the demolition and removal of the existing bridge, would be implemented during the following year. For approximately 1 year both bridges would span Goodyear Slough. The proposed new one-lane bridge, approximately 16 feet wide and 208 feet long, would be constructed of steel and concrete. A minimum of 8 feet of clearance between the lowest part of the bridge bottom and the MHW level of approximately 5.42 feet North American Vertical Datum of 1988 (NAVD88) (Moyle 2016) would be provided, thus placing the surface elevation of the new bridge's deck at approximately 13.4 feet NAVD88. The new bridge would be slightly higher than the existing one.

The new bridge would be constructed of concrete supported by steel girders, bents, and 36 steel piles, with each pile measuring 16 inches in diameter. An abutment that would include a 30-foot-long, 12-foot-wide concrete friction slab would be installed on both sides of Morrow Lane approaching the bridge. The 16-inch-diameter piles would be arranged in 12 columns and three rows from west to east (Figure 2-6). The piles would be driven through 50–55 feet of the slough bottom into the bedrock at a minimum of 15 feet in depth, to a total depth of approximately 65–70 feet below ground surface (Figure 2-7). The pile columns would be equally spaced 18–20 feet apart, allowing for a 20-foot-wide horizontal clearance for navigation after removal of the existing bridge. The bridge deck/driving surface would be constructed of 7-inch-thick cast-in-place concrete over 1½-inch metal decking.

A galvanic cathodic protection system would be installed to protect the new bridge from corrosion. The system would consist of two anodes comprising approximately 4,000 pounds of Aloline (an alloy of aluminum and zinc, specifically formulated for use in seawater and brackish water). The anodes would be placed on 4 feet by 10 feet steel frame sleds with a height no greater than 2 feet and installed at the mudline at the lowest points of the primary and secondary channels of Goodyear Slough. The system would be oriented perpendicular to the bank and set on center between piles. Cabling, connected to the piles, would extend from the two anodes to a test station located on the bridge's deck.

An area of approximately 0.16 acre, located on both sides of Morrow Lane, would be regraded to create a smooth transition onto the bridge within the new alignment. Morrow Lane west and east of the bridge and the unnamed north-south levee road east of the bridge would remain graveled, compacted dirt. Construction activities for the new bridge would require approximately 188 cubic yards of material to be cut and approximately 144 cubic yard of fill material.

The existing Morrow Lane Bridge would remain open to vehicle traffic during active construction. After completion of the new bridge replacement, the existing bridge would be closed. The bridge would be barricaded with concrete (highway-type) barriers on both approaches. Signage would be posted clearly stating that the existing bridge is closed to all vehicle and pedestrian usage, and no-trespassing ("private property") signage would be installed. The barriers and signage would remain in place until the existing bridge is completely removed during the following year.



Looking west-southwest toward Morrow Lane Bridge (center ground) from an adjacent dirt road. The eastern portion of Morrow Lane Bridge is severely askew near the pavement (foreground).



Looking east toward the north side of Morrow Lane Bridge and the alignment of the proposed new bridge (foreground). The pile caps that support the bridge's deck are failing.

Figure 2-4.

Morrow Lane Bridge Site Photographs

Boat traffic within Goodyear Slough near Morrow Lane Bridge may be temporarily restricted during construction for safety reasons. During construction of the new bridge, temporary closures of Goodyear Slough to small-boat navigation may be required. After construction while both bridges are in place, the horizontal clearance for boat passage would be temporarily reduced from approximately 14.4 feet to a minimum of 8 feet, 4 inches.

During demolition of the existing bridge, all bridge components would be removed, including the existing bridge abutments, bridge deck, and at least 81 wooden pilings, 26 of which are encased in concrete. Minor grading and finishing along the existing roadway may be required after demolition of the existing bridge. After removal of the existing bridge, the horizontal clearance beneath the new bridge would be approximately 20 feet and sufficient for navigation by oar- or motor-propelled small watercraft.

2.5.1 GENERAL CONSTRUCTION METHODS

All construction and demolition methods and activities would be performed in accordance with best management practices (BMPs) described further in Section 2.6, “Environmental Commitments.”

Site Access and Staging: Access to the construction area would be provided by Goodyear Road and Morrow Lane. Construction vehicles, equipment, and building materials would be stored in staging areas at three locations near the construction site. Hazardous materials, such as petroleum, curing compounds, welding gases, and other waste materials would be stored in designated staging areas with proper containment and away from waterways and sensitive habitat areas.

Vegetation Removal: Minor vegetation removal would be required within the construction footprint at the eastern and western portions of the alignments where the new bridge and Morrow Lane would connect, and along the vegetated berm separating Goodyear Slough and the secondary channel. Vegetation would be removed using handheld tools in a manner intended to enable and encourage wildlife to escape from the construction area. Vegetation would be removed only with non-mechanized hand tools (trowel, hoe, rake, and shovel). No motorized equipment, including string trimmers or lawn mowers, would be used to remove this vegetation. Vegetation would be removed to bare ground, to the extent possible with hand tools. After the removal of vegetation, erosion and sediment controls would be installed and maintained until bridge construction commences.

Fencing: Temporary exclusionary fencing (TEF) will be installed around all areas of active construction activity after vegetation removal and before the start of construction activities. The TEF would be made of a heavy plastic sheeting material with the bottom buried to a depth of at least 2 inches. TEF will be at least 12 inches higher than the highest adjacent vegetation up to a maximum height of 4 feet. Fencing supports will be placed on the interior of the construction areas. Fencing installation will be monitored by a qualified biologist. TEF will be removed after all construction activity is complete.

Pile Removal: Old wooden piles present in the construction area would be wrapped with a choker cable or chain and removed by the “direct pull” method using the crane. Broken and damaged pilings that cannot be removed by the direct pull method would be removed by a clamshell bucket approximately 2–3 feet below the mudline. Alternatively, a diver may cut them off using a hydraulic underwater chainsaw approximately 2–3 feet below the mudline. The contractor would determine the locations of all broken and cut piles using a Global Positioning System.

Bridge Construction and Demolition: Bridge construction would initially occur from the west side of the bridge to the east side. All construction work for the proposed new bridge would occur from land using a top-down approach because the channel near the bridge is inaccessible by barge. The new bridge span would be constructed one section at a time. First the contractor would construct the bridge abutment and install the cast-in-place concrete friction slab. Next, the first section of the bridge, comprising three piles and a bent, would be installed to allow for placement of temporary timber mats on top and the construction of the next bridge section. The timber mats would support construction equipment, including the crane and pile driving rig, as it works across the span. Timber mats are portable platforms made from hardwood timbers and are commonly used for temporary roadways, bridge decking, and equipment stabilization. Because mats would be used, construction equipment would not enter Goodyear Slough or the secondary channel. After installation of the bridge piles and bents, the deck framing would be installed in the reverse direction (east to west) and the concrete drive surface would be poured. Concrete curing procedures involving water or chemical applications may be necessary depending on weather conditions.

During construction and demolition activities, debris-catching devices such as netting and covers would be used to protect water bodies from debris and wastes associated with construction in Goodyear Slough. Debris-catching devices would be emptied regularly, and collected debris would be removed and stored away from waterways and protected from run-on and runoff. Booms would also be placed in Goodyear Slough upstream and downstream of the bridge to capture and immediately remove any debris or construction material that may fall into the water.

Materials and Waste Management: Material for construction of the proposed new bridge would be obtained from construction providers in Antioch, approximately 25 miles from the project site. The contractor estimates that approximately 11 truck trips traveling about 550 miles would be required to obtain bridge materials. Approximately 17 truck deliveries¹ of concrete traveling approximately 15 miles to the project site up to 510 miles would also be required.

Removal of existing piles in the new bridge alignment and the demolition of the existing bridge would result in approximately 250 cubic yards of waste material comprising treated and non-treated wood, concrete, and metal. Non-hazardous waste would be hauled and disposed of at the Contra Costa Transfer and Recovery Station in Martinez, approximately 10 miles south of the project site. Treated wood waste and hazardous materials, such as petroleum, would be stored in the designated staging areas. Treated wood wastes, consisting of 94 or more piles, concrete, and bridge decking, would be stored, handled, and disposed of in accordance with applicable regulations at an appropriate licensed Class 1 or composite-lined portion of a solid waste landfill, such as Potrero Hills Landfill in Suisun City, approximately 20 miles northeast of the project site. Disposing of the waste material would result in approximately 15 truck trips traveling about 460 miles.²

2.5.2 CONSTRUCTION LABOR FORCE AND EQUIPMENT

Construction activities would require up to eight employees on peak construction days. One crawler crane, one forklift, one excavator, one pile driver rig, dump trucks, flatbed trucks, and work trucks would be needed to construct the proposed new bridge and demolish the existing bridge. In addition, specialized equipment including

¹ This number of truck trips is based on the contractor requiring approximately 117 cubic yards of concrete and a truck that can haul approximately 10 cubic yards.

² This number of truck trips is based on the contractor using double load dump trucks that can haul approximately 17 cubic yards of material per one-way trip. The mileage assumes seven trips to Contra Costa Transfer and Recovery Station and eight trips to Potrero Hills Landfill.

a clamshell dredge and/or pneumatic or hydraulic saw may be required for pile removal. Concrete for construction of the new bridge would be delivered from a commercial source to the site.

2.5.3 CONSTRUCTION SCHEDULE

Construction of the Proposed Project would be implemented in two phases between December 2016 and October 2018. The first phase would involve constructing the new bridge and the second phase would involve demolishing the existing bridge.

Phase 1 of construction would require a total of 120 calendar days, with approximately 45 calendar days for in-water work. Project construction activities are anticipated to begin in December 1, 2016, and would be completed by October 15, 2017. Between December 1, 2016, and February 1, 2017 (outside of special-status species nesting season), exclusionary fencing would be installed and vegetation would be removed by hand in preparation for construction of the proposed new bridge. Grading and other ground disturbance activities associated with construction of the new bridge would occur between April 15, 2017, and October 15, 2017, in accordance with Solano County requirements. All in-water work would be performed between June 15, 2017, and September 30, 2017.

Phase 2 of construction, which would involve demolishing the existing bridge, would begin during the following year no earlier than April 15, 2018, and would end no later than October 15, 2018. Demolition activities would require a total of 45 days, with approximately 20 days of in-water work. Similar to Phase 1 construction activities, in-water work required for demolition would be performed between June 15, 2018, and September 30, 2018.

All construction work would occur Monday through Friday during daytime working hours (7 a.m. to 5 p.m.).

2.5.4 BRIDGE MAINTENANCE

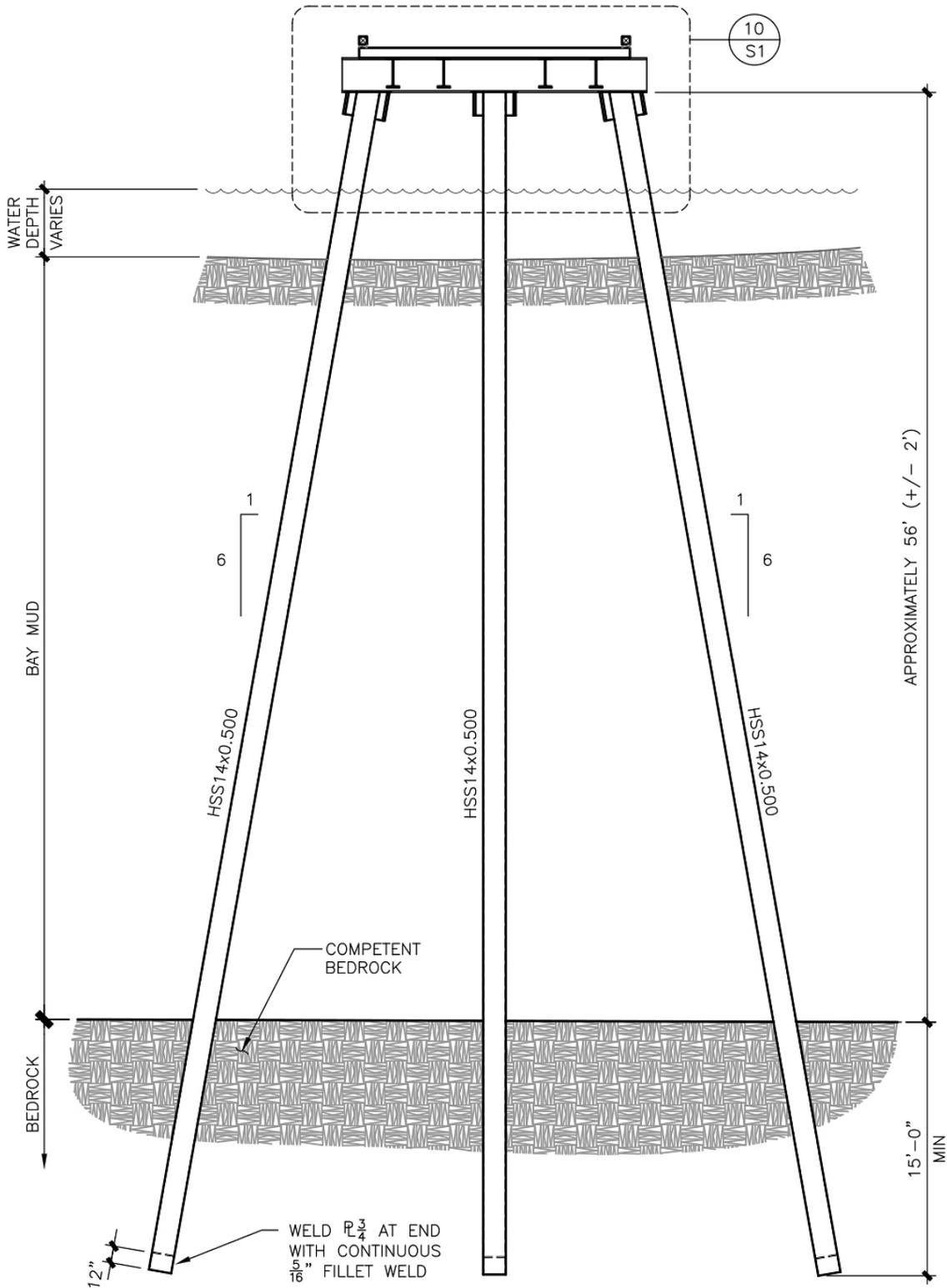
Annual inspection, testing, and maintenance of the newly constructed bridge would be conducted as part of the Proposed Project. Annual inspections would involve evaluating the condition of the bridge's structural components and testing the galvanic cathodic protection system. Post-earthquake inspections would also be performed. Periodic maintenance may include repairing damage or deterioration in various bridge components, removing debris and drift from pilings, performing minor scour repairs, cleaning and repairing abutments, cleaning and painting structural steel, and sealing concrete surfaces. The anodes of the galvanic cathodic protection system would require replacement every 25 years. Bridge maintenance would be consistent with the California Department of Transportation's (Caltrans') *Maintenance Manual* (Caltrans 2014).



Source: Data compiled by AECOM in 2015

Figure 2-5.

Detailed Project Site Map

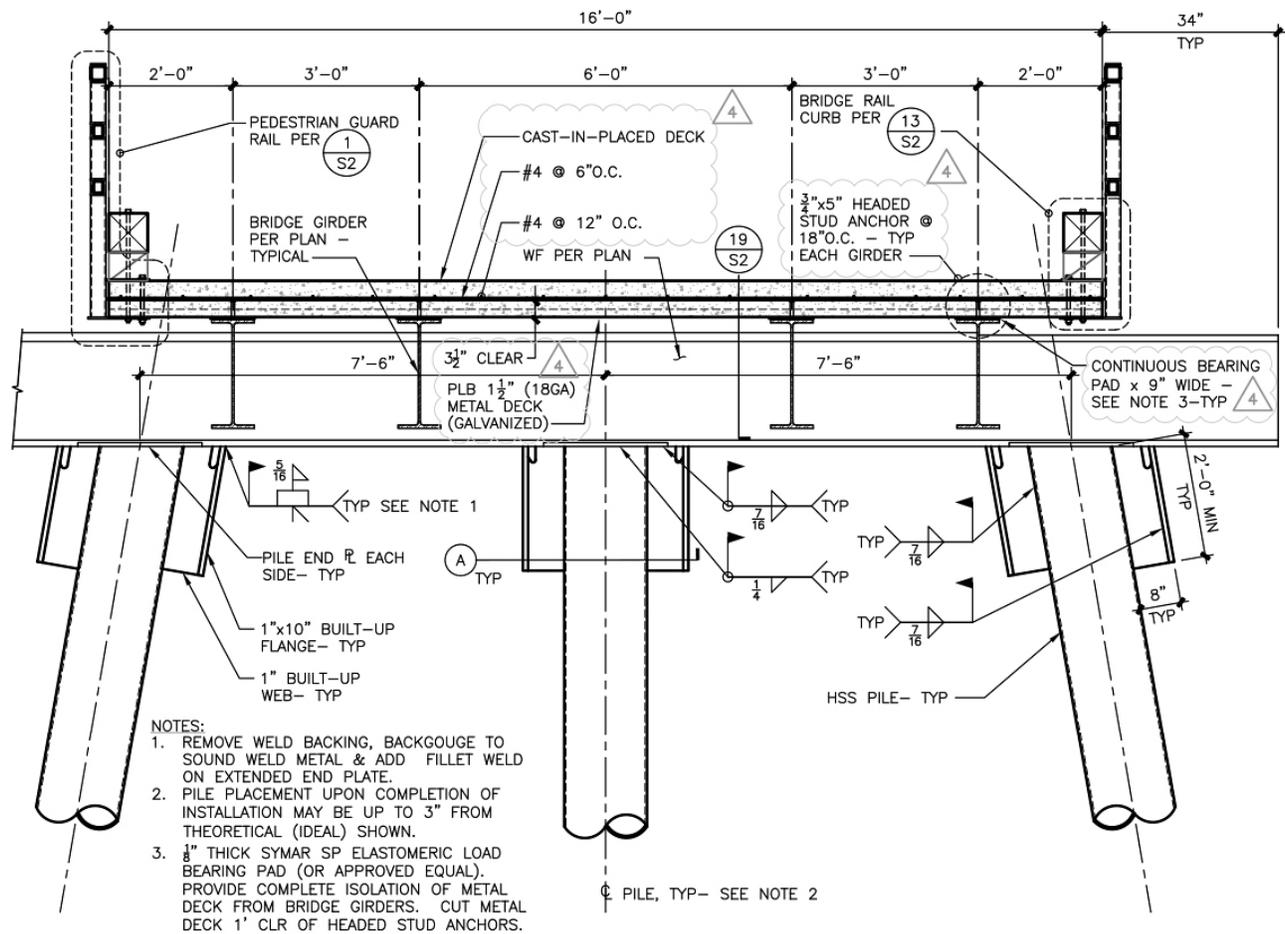


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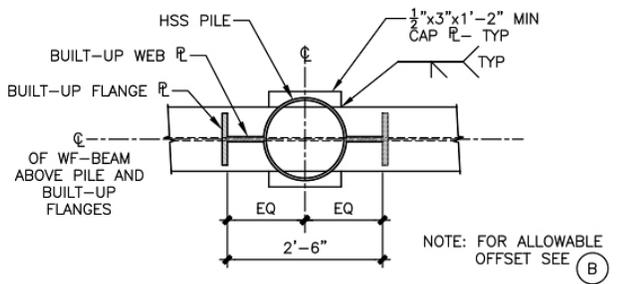
Source: Data provided by MKM and Associates in 2016

Figure 2-7.

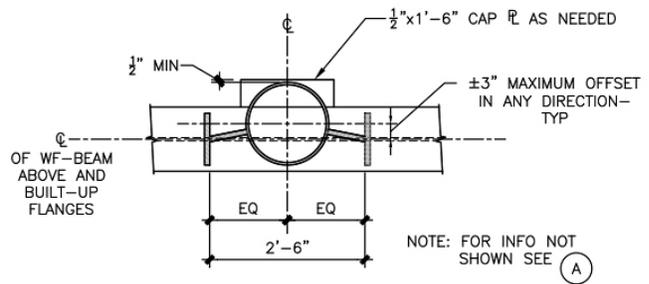
Project Design (Sheet 2 of 3)



- NOTES:
1. REMOVE WELD BACKING, BACKGOUGE TO SOUND WELD METAL & ADD FILLET WELD ON EXTENDED END PLATE.
 2. PILE PLACEMENT UPON COMPLETION OF INSTALLATION MAY BE UP TO 3" FROM THEORETICAL (IDEAL) SHOWN.
 3. 3/8" THICK SYMAR SP ELASTOMERIC LOAD BEARING PAD (OR APPROVED EQUAL). PROVIDE COMPLETE ISOLATION OF METAL DECK FROM BRIDGE GIRDERS. CUT METAL DECK 1' CLR OF HEADED STUD ANCHORS.



(A) IDEAL PILE PLACEMENT



(B) ALLOWABLE PILE OFFSET
 (WHERE PILE PLACEMENT IS OFF OF THEORETICAL LOCATION)

60515069 SAC GRX 002

Source: Data provided by MKM and Associates in 2016

Figure 2-8.

Project Design (Sheet 3 of 3)

2.6 ENVIRONMENTAL COMMITMENTS

The following environmental commitments (ECs) would be implemented as part of the Proposed Project as standard BMPs designed to avoid and minimize potential environmental effects of the project.

2.6.1 PREPARE AND IMPLEMENT A WATER QUALITY CONTROL PROGRAM PLAN

A water quality control program plan will be prepared in accordance with existing regulations before ground-disturbing construction. Site-specific erosion control, sedimentation control, and runoff measures will be included in the plan and implemented during construction activities to minimize the potential for erosion and sedimentation during bridge construction and demolition. The plan will also include best management practices for construction activities occurring over and in water, including concrete pouring and curing and welding activities. The plan will be prepared in accordance with Solano County building and grading permit requirements and other local and regional plans.

As applicable, tightly woven fiber netting (mesh size less than 0.25 inch) or similar material will be used for erosion control and other purposes at the project site and staging area to ensure that wildlife do not become trapped or entangled in the erosion control material. Coconut coir matting is an acceptable erosion control material, but no plastic monofilament matting will be used for erosion control.

2.6.2 PREPARE AND IMPLEMENT A HAZARDOUS MATERIALS AND WASTE MANAGEMENT PROGRAM

A hazardous materials and waste management program will be prepared and implemented in accordance with existing regulations to identify the hazardous materials to be used during construction; describe measures to prevent, control, and minimize the spillage of hazardous substances; and describe transport, storage, and disposal procedures for these substances and other waste materials generated during construction and demolition activities.

The program will require that hazardous or potentially hazardous substances stored on-site be kept in securely closed containers located away from drainage courses, storm drains, and areas where stormwater is allowed to infiltrate. It will also stipulate procedures to minimize hazards during on-site fueling and servicing of construction equipment.

The program will also include BMPs and health and safety procedures for cutting, removing, storing, handling, and transporting treated wood and treated wood waste (i.e., removed piles) in accordance with California Health and Safety Code Section 25143.15 and other applicable regulations. All employees removing piles will be qualified and properly trained on hazards and handling procedures, and will be provided with the appropriate level of personal protective equipment necessary for the work performed.

Treated wood waste (removed piles) will be stored in a leak-proof containment basin that will be constructed to contain all sediment, water, and pile debris and allow for easy waste separation. The treated wood waste will then be cut to size and sediment will be containerized for disposal and scheduled for transport to an appropriate licensed Class 1 or composite-lined portion of a solid waste landfill. If needed, waste material will be tested before being transported off-site.

Construction and demolition activities will adhere to standard BMPs related to hazardous materials and waste management described in the current Caltrans *Construction Site Best Management Practices Manual* (Caltrans 2003).

2.6.3 PREPARE AND IMPLEMENT A SPILL PREVENTION AND CONTROL PROGRAM

A spill prevention and control program will be prepared in accordance with existing regulations before the start of construction to minimize the potential for hazardous, toxic, or petroleum substances to be released at the project site during construction and operation. The program will be implemented during construction. In addition, sandbags, biologs, or other containment features will be placed around areas used for fueling or other hazardous materials potentially used to ensure that these materials do not accidentally leak into nearby wetlands and sloughs. The program will also include notification procedures in accordance with applicable regulations and require that adjacent land users be notified immediately of any substantial spill or release. Construction and demolition activities will adhere to standard BMPs related to spill prevention and controls described in the current Caltrans *Construction Site Best Management Practices Manual* (Caltrans 2003).

2.6.4 PREPARE AND IMPLEMENT A WORKER ENVIRONMENTAL AWARENESS PROGRAM

Construction workers will participate in a worker environmental awareness program that addresses species under the jurisdiction of CDFW, USFWS, and NMFS. Workers will be informed about the potential presence of listed and other protected species and habitats associated with such species, and that unlawful take of the species or destruction of their habitat is a violation of the federal ESA, CESA, and/or MBTA. Before the start of construction activities, a qualified biologist will instruct all construction workers about the life histories of the protected species and the terms and conditions of the regulatory permits that include biological resource protection measures. A copy of the permitting documents will be kept on-site at all times.

2.6.5 PREPARE AND IMPLEMENT DEWATERING PROVISIONS

Dewatering provisions will be developed and implemented before construction and in accordance with local and San Francisco Bay Regional Water Quality Control Board (RWQCB) requirements. Dewatering provisions will be implemented during construction to minimize the potential for adverse water quality impacts on surface water and groundwater. Provisions may include preparing a dewatering plan that details procedures for removing groundwater, methods of temporary water treatment and containment, and water disposal procedures.

2.6.6 MINIMIZE DISTURBANCE DURING CONSTRUCTION

To the extent possible, the construction and staging areas will be limited to the existing right-of-way and previously disturbed areas. Construction area boundaries will be clearly demarcated. Any new disturbance, including grading, will be minimized to the least area necessary.

2.6.7 IMPLEMENT CONSTRUCTION SITE BMPs

The following BMPs construction site BMPs will be implemented during construction to minimize adverse effects on the environment:

- ▶ All equipment will be stored at the GLDC storage yards, in designated staging and containment areas, or along access roads when not in use;
- ▶ Food-related trash items, such as wrappers, cans, bottles, and food scraps, will be disposed of in closed containers and removed from the project site by construction contractors on a daily basis;
- ▶ Any materials or supplies shall be stored in a manner to avoid entrapment of wildlife and will be checked for the presence of wildlife before movement or use;
- ▶ A maximum speed limit of 15 miles per hour will be observed by construction and maintenance vehicles;
- ▶ Temporary septic facilities shall be placed away from watercourses, drainages and sensitive habitats, and
- ▶ Concrete washout activities shall be performed at a designated off-site contractor yard.

2.6.8 IMPLEMENT PILE REMOVAL BMPs.

The following BMPs for pile removal will be implemented during construction to protect aquatic resources and water quality during removal of creosote-treated and concrete-encased wood piles from Goodyear Slough:

- ▶ A vibration removal method will not be used to avoid splintering, crumbling and/or otherwise disintegrating the piles due to their age and existing condition;
- ▶ The removed piles will be temporarily stored on-site within a containment area and transported back to the contractor's staging area where the concrete will be separated from the other materials and recycled or disposed of off-site as appropriate at a permitted facility;
- ▶ The containment area will be designed in such a way as to prohibit sediment or debris from falling back into the water. The work areas will include a containment basin for piles, concrete, and any mud or sediment removed during pulling. Upon removal from substrate, the piles will be moved expeditiously from the water into the containment area;
- ▶ When the removal method selected is expected to generate concrete chips or dust in the water, a special curtain will be deployed around the individual pile so the contractor may capture any concrete pieces for off-site disposal;
- ▶ Intentional breaking of timber piles above the mudline is prohibited;
- ▶ The piles will not be shaken, hosed off, stripped, or scraped off, left hanging to drip, nor will any other action be taken with the intent of cleaning or removing adhering material from the pile;

- ▶ Any sediment accumulated from the pile removal operations will be assumed to contain creosote and will be contained and eventually tested and disposed off-site in an appropriate landfill;
- ▶ Identified broken and damaged piling stubs will be cut off at 2–3 feet below the mudline, if possible;
- ▶ Holes remaining after pile removal will be left to fill in through natural sediment settlement and deposition.

2.6.9 INSTALL SIGNAGE AND BARRICADES

Signage at Morrow Lane will be posted advising motorists and pedestrians about construction activities at Morrow Lane Bridge and the closure of the existing bridge after completion of the new bridge and before its demolition.

Construction areas in the waterway will be barricaded or guarded by readily visible barriers or other effective means to warn boaters of their presence and restrict access. Additional warning devices and signage will be installed after construction of the new bridge and before demolition of the exiting bridge to warn boaters of a reduced horizontal clearance for navigation. Warning devices and signage will be consistent with the United States Aids to Navigation System (USATON) and effective during daytime and nighttime hours and periods of dense fog.

2.6.10 CONDUCT PRECONSTRUCTION SURVEYS FOR SPECIAL-STATUS WILDLIFE

Preconstruction surveys will be implemented to determine if special-status wildlife are breeding or nesting on or immediately adjacent to the project site and staging areas, and to avoid and minimize potential impacts if active nests are found. Preconstruction surveys to be performed are as follows:

- ▶ **Salt Marsh Harvest Mouse, Ridgway’s Rail, and Black Rail.** To ensure that salt marsh harvest mouse and Ridgway’s Rail nest sites are not disturbed by construction from February through July, a qualified biologist will conduct a preconstruction survey according to USFWS protocols during the designated survey period of January 15 through February 1). An additional survey will be conducted within 10 days before the start of activities for the Proposed Project that will occur during the nesting season. If active nests of any species are found during the surveys, USFWS and CDFW will be consulted regarding adequate avoidance measures. A biologist will determine the extent of a fenced construction-free buffer zone to be established around the nest in consultation with USFWS and CDFW. Intensive new disturbances (e.g., heavy-equipment activities associated with construction) that may cause nest abandonment, a reduction in the level of care provided by adults (e.g., duration of brooding, frequency of feeding), or forced fledging will not begin within this buffer zone until the biologist has determined, in coordination with USFWS and CDFW, that the young have fledged and are feeding on their own.
- ▶ **Suisun Shrew:** To ensure that there is no construction disturbance of Suisun shrew, a preconstruction survey will be conducted by a qualified biologist. Surveys will be conducted within 10 days before the start of construction activities according to USFWS and CDFW protocols by a permitted biologist approved by USFWS and CDFW. If active nests are found during the surveys, USFWS and CDFW will be consulted regarding adequate avoidance measures. A qualified biologist will determine the extent of a fenced construction-free buffer zone to be established around the nest in consultation with USFWS and CDFW.

Intensive new disturbances (e.g., heavy equipment activities associated with construction) that may cause nest abandonment, a reduction in the level of care provided by adults (e.g., frequency of feeding), will not be initiated within this buffer zone until it is determined by a qualified biologist in coordination with USFWS and CDFW that the young have weaned.

2.6.11 CONDUCT BIOLOGICAL MONITORING

A qualified biologist will be on-site daily during mobilization, vegetation removal, fencing installation, all ground disturbing activities, and to monitor in-water construction activities. The monitor will be on-site to observe construction activities and advise the constructor, as necessary. Outside of the aforementioned construction activities, the qualified biologist will conduct periodic compliance inspections. The biologist(s) will keep a copy of the permitting documents in their possession when on-site. If any special-status bird or mammal, or any bird or mammal that construction personnel may believe to be a special-status species, is encountered during construction, all construction activities will cease and the foreman and qualified biologist will be immediately notified. As advised by the biologist, activities potentially affecting the species will be ceased. Work will remain stopped until the individual(s) moves out of the work area unassisted, appropriate corrective measures have been completed, or it has been determined by the biologist that the species will not be harmed. The biologist(s) will coordinate with the construction manager to stop work that may result in, or in the event that there is, take of listed species in excess of limits provided by the permitting agencies in any permitting documents. If stop work is required, the, the permitting agencies will be notified by telephone and electronic mail within 1 working day.

2.7 REQUIRED PERMITS AND APPROVALS

The Proposed Project would require review and approval by DWR, and pursuant to Section 15074 of the State CEQA Guidelines, DWR will consider the findings of this IS/Proposed MND together with any comments received during the public review process in its decision on whether to adopt the proposed MND.

The Proposed Project must also comply with the following federal and state regulations and permit requirements:

- ▶ **Section 404 of the federal Clean Water Act (CWA).** Section 404 established a program to regulate the discharge of dredged and fill material into waters of the United States, including wetlands. Responsibility for administering and enforcing Section 404 is shared by the U.S. Army Corps of Engineers (USACE) and the U.S. Environmental Protection Agency. General permits are often issued by USACE for categories of activities that are similar in nature and would have only minimal individual or cumulative adverse environmental effects. General permits can be issued on a nationwide basis (“nationwide permit”) or a regional basis (“regional general permit”). It is anticipated that the Proposed Project’s compliance with Section 404 of the CWA would be authorized under Nationwide Permit No. 14 (Linear Transportation Projects).
- ▶ **Section 7 of the ESA.** Federal agencies must consult with the National Marine Fisheries Service (NMFS) for marine and anadromous species, or with the U.S. Fish and Wildlife Service (USFWS) for non-anadromous fish and upland wildlife, if they are authorizing, funding, or carrying out an action that may affect federally listed species or their designated habitat. Because the Proposed Project would require authorization under Section 404 of the CWA, it is also subject to compliance with Section 7 of the ESA.
- ▶ **Section 106 of the National Historic Preservation Act (NHPA).** Section 106 requires federal agencies to take into account the effects on historic properties resulting from actions they are authorizing, funding, or carrying

out. Because the Proposed Project would require authorization under Section 404 of the CWA, it is subject to compliance with Section 106 of the NHPA, as administered by Caltrans on behalf of the Federal Highway Administration.

- ▶ **Sections 9 and 10 of the Rivers and Harbors Act.** Section 9 of the Rivers and Harbors Act (RHA) requires authorization from the U.S. Coast Guard for the construction of bridges in a navigable waterway. In April 2015, the U.S. Coast Guard issued an Advanced Approval for Goodyear Slough (i.e., navigable by small recreational vessel only), and no individual permit will be required. Section 10 of the RHA requires authorization from USACE for other obstructions, such as dredging and filling operations. It is anticipated that the Proposed Project's compliance with Section 10 of the RHA would be authorized under Nationwide Permit No. 14 (Linear Transportation Projects).
- ▶ **CWA Section 401.** Section 401 of the CWA requires that state water quality standards be met and that construction, including dewatering activities, dredging, and disposal do not cause concentrations of chemicals in the water column to exceed state standards. A Section 401 Water Quality Certification from the San Francisco Bay RWQCB is required for the issuance of a Section 404 permit for the filling of waters of the United States.
- ▶ **Suisun Marsh Preservation Act and Coastal Zone Management Act.** The San Francisco Bay Conservation and Development Commission regulates development (placement or erection of any solid material or structure) in the Suisun Marsh through the Suisun Marsh Preservation Act. Under the Coastal Zone Management Act of 1972, the Commission is also responsible for issuing a certification that the Proposed Project is consistent with the state's approved coastal zone management program for the Suisun Marsh.
- ▶ **Solano County Building Permit.** Solano County's Building and Safety Division issues building permits in accordance with California Building Standards Code requirements for various projects, including the construction, repair, and demolition of a building or structure.
- ▶ **Solano County Grading Permit.** Solano County's Division of Public Works issues two types of grading permits based on project characteristics. A minor grading permit applies to projects that disturb less than 1 acre; will not affect natural vegetation, habitats, or other natural resources; and do not occur on erosion-prone soils or unstable slopes. It is anticipated that the Proposed Project would require a minor grading permit.

2.8 STAKEHOLDER MEETINGS

GLDC has held three stakeholder meetings to date. Attendees included DWR representatives and Morrow Island landowners. GLDC also has a steering committee made up of the same stakeholders. One or more individuals from each landowner organization and DWR regularly participate in meetings and receive regular progress reports via e-mail.

3 ENVIRONMENTAL CHECKLIST

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

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

- | | | |
|--|---|--|
| <input type="checkbox"/> Aesthetics | <input type="checkbox"/> Agriculture & Forestry Resources | <input checked="" type="checkbox"/> Air Quality |
| <input checked="" type="checkbox"/> Biological Resources | <input checked="" type="checkbox"/> Cultural Resources | <input type="checkbox"/> Geology & Soils |
| <input type="checkbox"/> Greenhouse Gas Emissions | <input type="checkbox"/> Hazards & Hazardous Materials | <input checked="" type="checkbox"/> Hydrology & Water Quality |
| <input type="checkbox"/> Land Use & Planning | <input type="checkbox"/> Mineral Resources | <input checked="" type="checkbox"/> Noise |
| <input type="checkbox"/> Population & Housing | <input type="checkbox"/> Public Services | <input type="checkbox"/> Recreation |
| <input type="checkbox"/> Transportation/Traffic | <input type="checkbox"/> Utilities & Service Systems | <input checked="" type="checkbox"/> Mandatory Findings of Significance |

DETERMINATION (To be completed by the Lead Agency)

On the basis of this initial evaluation:

- I find that the proposed project **COULD NOT** have a significant effect on the environment, and a **NEGATIVE DECLARATION** will be prepared.
- I find that although the proposed project **COULD** have a significant effect on the environment, there **WILL NOT** be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A **MITIGATED NEGATIVE DECLARATION** will be prepared.
- I find that the proposed project **MAY** have a significant effect on the environment, and an **ENVIRONMENTAL IMPACT REPORT** is required.
- I find that the proposed project **MAY** have a “potentially significant impact” or “potentially significant unless mitigated” impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An **ENVIRONMENTAL IMPACT REPORT** is required, but it must analyze only the effects that remain to be addressed.
- I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier **EIR** or **NEGATIVE DECLARATION** pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier **EIR** or **NEGATIVE DECLARATION**, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature

Date

Printed Name

Title

California Department of Water Resources

3.1 AESTHETICS

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

3.1.1 ENVIRONMENTAL SETTING

The project site is located in the Suisun Marsh and unincorporated southern Solano County at the western edge of Grizzly and Suisun Bays, approximately 0.3 mile east of I-680. The project site encompasses approximately 0.62 acre, is located just east of the Southern Pacific Railroad tracks along Morrow Lane, and can be accessed via Goodyear Road and I-680. The project site can also be accessed via an unimproved road located off of Lake Herman Road and by boat. A large portion of Suisun Marsh in the surrounding area is actively managed as wetlands and includes public and private waterfowl hunting areas. Goodyear Slough is designated as a publically navigable waterway for oar- or motor-propelled small watercraft. The closest marina to the project site, Pierce Harbor, is approximately 2 miles north of Morrow Lane Bridge.

Morrow Lane Bridge spans Goodyear Slough and provides access to Morrow Island. The bridge was originally constructed in 1931, and was replaced adjacent to the original bridge during the early 1950s. The bridge, approximately 210 feet long and 14 feet wide, is constructed entirely out of wood. A portion of the existing bridge deck can be removed to allow for navigation of large watercraft on Goodyear Slough; however the bridge deck has never been removed to allow for the passage of watercraft. The bridge has been modified several times because of deterioration resulting from aging and regular use. The bridge is used by (1) GLDC and adjacent landowners, (2) DWR for operations and maintenance of a water distribution system and water quality monitoring stations, and (3) private residents and duck clubs on Morrow Island.

3.1.2 DISCUSSION

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

No Impact. The project site is located within Suisun Marsh, and both short- and long-range views to the north, east, and south are of marshlands. Short-range views to the west are of the Southern Pacific Railroad line and cut banks along the west side Goodyear Road. Long-range views to the west of are of rolling hills in the distance and some minor commercial and industrial activity near I-680. Views to the southeast include mothballed U.S. Navy ships in the Suisun Bay Reserve Fleet. The replacement bridge

would not include structural features that would obstruct views of scenic vistas in the Suisun Marsh. Consequently, no impact on scenic vistas would occur.

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

No Impact. There are no officially designated State Scenic Highways in Solano County (Caltrans 2011). Views of Morrow Lane and Morrow Lane Bridge from I-680 are predominately obscured by trees and shrubbery within the right-of-way of the highway. Morrow Lane Bridge is not a noticeable visual feature when viewed from Goodyear Road because the surface of the bridge does not rise above the horizon. There are no visible rock outcroppings or historic buildings in the surrounding area. Replacement of the Morrow Lane Bridge requires the removal of some vegetation adjacent to the existing bridge; however, no trees or other visually distinct features would be removed. No impact on scenic resources would occur.

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

Less-than-Significant Impact. As discussed above, the project site is located within Suisun Marsh and a large portion of the surrounding area is actively managed as wetlands and includes public and private waterfowl hunting areas. The visual character of the project area viewshed includes marsh areas and water channels as well as several dirt roads, power lines, railroad tracks, derelict agricultural equipment, and mothballed U.S. Navy ships anchored in Suisun Bay.

The existing wooden bridge is approximately 210 feet long and 14 feet wide. The bridge spans both marsh and open-water habitat. There are 81 wooden piles supporting the existing bridge; 35 piles are within marsh habitat and 46 piles in open-water habitat. The piles are aligned in rows of three piles, with a few rows of two piles. The rows are typically 6–8 feet apart, except for a 14.4-foot-wide span of open water that allows boaters traversing the Goodyear Slough to pass under the bridge.

As boaters approach and pass under the existing bridge they view the bottom of the wooden main deck span, pier cap beams, bracing members, and wooden piles. Some of the piles are encased in concrete due to the deterioration of the wood. Motorists crossing the bridge have a limited visibility of the bridge piles, cap beams, and bracing members. Since there are few pedestrians in the area, view of the lower portions of the bridge structure is primarily limited to boaters.

The new bridge would be essentially the same length, but would be approximately 2 feet wider (i.e., 16 feet) and slightly taller than the existing bridge. The new bridge would be constructed of 36 steel piles arranged in 12 rows, girders, a pedestrian guardrail and bridge rail curb, with a concrete drive surface.

Adding the new bridge alongside the existing bridge would not substantially alter views of the project site from the surrounding area because the height of the existing and new bridges would be relatively the same and the new bridge would not introduce any structural features that are not present in the existing bridge. Similarly, temporarily doubling the overall width of the bridge decking would not substantially change the visual character of the project area viewshed because the bridge is not a visually prominent feature within the project area viewshed. Other physical features in the project viewshed (e.g., power lines, freight trains on the nearby rail line, and mothballed Navy ships) are dominant visual features in the surrounding area.

There would be a visual contrast between the existing bridge wood piles, some encased in concrete, beams and bracing, and the metal piles and beams of the new bridge. The visual contrast is not considered to be a negative effect because there would be a greater sense of visual openness under the new bridge compared to massiveness of the piles, beams, and bracing of the existing bridge.

The new bridge would not diminish boater's view of the surrounding viewshed nor obstruct views up and down the Goodyear Slough. The most noticeable visual difference would be the increased width of the combined bridge deck and the more open view under the new bridge resulting from fewer piles and smaller beams and bracing. However, these changes would be a minor visual change for boaters transiting the slough.

For the reasons noted above, the Proposed Project would not substantially degrade the existing visual character or quality of the site and its surroundings. Therefore, this impact would be less than significant. No mitigation is required.

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

Less-than-Significant Impact. Existing sources of light and glare in the project area include vehicle head and tail lights, three residences on Morrow Island, and the commercial/industrial development along Goodyear Road. No lighting would be needed for project construction and permanent light fixtures would not be installed as part of the Proposed Project. The new bridge structure would not generate any additional traffic (e.g., additional vehicle headlight) or light or glare.

The existing bridge, primarily composed of non-reflective wood materials, would be replaced by a new bridge primarily constructed of concrete and metal materials. Steel and other metal materials may introduce new reflective surfaces and source of glare. Building materials used in the construction of the new bridge would meet all county requirements for the minimization of glare and reflectance. These requirements would reduce potential impacts associated with reflective building materials and may require that building materials be composed of a minimum of 50% low reflectance unpolished surfaces and all bare metallic surfaces be painted. Therefore, this impact would be less than significant. No mitigation is required.

3.2 AGRICULTURE & FORESTRY RESOURCES

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
II. Agriculture and Forestry Resources.				
<p>In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997, as updated) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state’s inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board.</p> <p>Would the project:</p>				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Conflict with existing zoning for agricultural use or a Williamson Act contract?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Result in the loss of forest land or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

3.2.1 ENVIRONMENTAL SETTING

3.2.1.1 FARMLAND MAPPING AND MONITORING PROGRAM

The California Department of Conservation’s (DOC) Important Farmland classifications—Prime Farmland, Farmland of Statewide Importance, Unique Farmland, and Farmland of Local Importance—recognize land’s suitability for agricultural production by considering physical and chemical characteristics of the soil, such as soil temperature range, depth of the groundwater table, flooding potential, rock fragment content, and rooting depth. The classifications also consider location, growing season, and moisture available to sustain high-yield crops. Together, Important Farmland and Grazing Land are defined by DOC as “Agricultural Land” (Public Resources Code, Sections 21060.1 and 21095).

The Farmland Mapping and Monitoring Program provides the following definitions of these types of Important Farmland:

- ▶ **Prime Farmland**—Land that has the best combination of physical and chemical features able to sustain long-term agricultural production. This land has the soil quality, growing season, and moisture supply needed to produce sustained high yields. The land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.
- ▶ **Farmland of Statewide Importance**—Land similar to Prime Farmland but with minor shortcomings, such as greater slopes or less ability to store soil moisture. The land must have been used for irrigated agricultural production at some time during the 4 years prior to the mapping date.
- ▶ **Farmland of Local Importance**—Land that is of importance to the local agricultural economy, as defined by each county’s local advisory committee and adopted by its board of supervisors. Farmland of Local Importance either is currently producing or has the capability to produce, but does not meet the definition of Prime Farmland, Farmland of Statewide Importance, or Unique Farmland.

According to Solano County Important Farmland maps, published by DOC’s Division of Land Resource Protection, neither the project area nor adjacent lands are designated as Important Farmland (DOC 2016).

3.2.1.2 WILLIAMSON ACT

Under the California Land Conservation Act of 1965, also known as the Williamson Act, local governments can enter into contracts with private property owners to protect land (within agricultural preserves) for agricultural and open space purposes. No Williamson Act lands are located either at or adjacent to the project area. However, the immediate lands surrounding the project area are considered as Williamson Act Non-Prime Agricultural Land (DOC 2013). These are lands which are enrolled under the California Land Conservation Act contract and do not meet any of the criteria for classification as Prime Agricultural Land. Non-Prime land is defined as Open Space Land of Statewide Significance under the California Open Space Subvention Act and may include other open space uses besides grazing or non-irrigated crops.

3.2.1.3 AGRICULTURAL ZONING

According to the Solano County zoning map, the project area and adjoining lands are zoned as Marsh Preservation (MP) (Solano County 2012).

3.2.2 DISCUSSION

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

No Impact. No designated Prime Farmland, Unique Farmland, or Farmland of Statewide Importance is located in the project area. Therefore, no impact would occur.

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

No Impact. Land immediately surrounding the project area is designated as Williamson Act Non-Prime Agricultural Land (DOC 2013). As discussed above, these are lands which are enrolled under the California Land Conservation Act contract and do not meet any of the criteria for classification as Prime Agricultural Land. Implementation of the Proposed Project would include the replacement of the existing Morrow Lane Bridge and the subsequent demolition of the existing bridge once construction of the new bridge is completed. Lands surrounding the project area would not be changed with completion of the Proposed Project. Land use patterns would also remain similar to existing conditions. No impact would occur.

c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?

d) Result in the loss of forest land or conversion of forest land to non-forest use?

No Impact. The county has zoned the project area and adjoining lands for Marsh Preservation (MP) (Solano County 2012). No forest land or timberland production is located at the project site or in the vicinity. No impact would occur.

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

No Impact. See responses to b), c), and d) above. No impact would occur.

3.3 AIR QUALITY

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
III. Air Quality.				
Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied on to make the following determinations.				
Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Expose sensitive receptors to substantial pollutant concentrations?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Create objectionable odors affecting a substantial number of people?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

ENVIRONMENTAL SETTING

The Proposed Project is located in the southern Solano County, which is within the San Francisco Bay Area Air Basin (SFBAAB). The SFBAAB covers approximately 5,540 square miles of complex terrain, consisting of coastal mountain ranges, inland valleys, and the San Francisco Bay. The SFBAAB is generally bounded on the west by the Pacific Ocean, on the north by the Coast Ranges, and on the east and south by the Diablo Range.

Ambient concentrations of air pollutant emissions are determined by the amount of emissions released by pollutant sources and the atmosphere’s ability to transport and dilute such emissions. Natural factors which affect transport and dilution include terrain, wind, atmospheric stability, and the presence of sunlight. Existing air quality conditions in the vicinity of the Proposed Project are determined by such natural factors as topography, meteorology, and climate, in addition to the amount of emissions released by existing air pollutant sources.

The U.S. Environmental Protection Agency (EPA) and the California Air Resources Board (ARB) have identified six air pollutants as being of nationwide and statewide concern: ozone (O₃), carbon monoxide (CO), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), lead, and particulate matter (PM). PM is subdivided into two classes based on particle size: PM equal to or less than 10 micrometers in diameter (PM₁₀) and PM equal to or less than 2.5 micrometers in diameter (PM_{2.5}).

Health-based air quality standards have been established for these pollutants by EPA at the national level and by ARB at the state level. These standards are referred to as the national ambient air quality standards (NAAQS) and

the California ambient air quality standards (CAAQS), respectively. The NAAQS and CAAQS were established to protect the public with a margin of safety from adverse health impacts caused by exposure to air pollution. Both EPA and ARB designate areas of the state as attainment, nonattainment, maintenance, or unclassified for the various pollutant standards according to the federal Clean Air Act (CAA) and the California Clean Air Act (CCAA), respectively. An area is designated nonattainment/transitional to signify that the area is close to attaining the standard for that pollutant. The “unclassified” designation is used in an area that cannot be classified as meeting or not meeting the standards, based on available information.

The SFBAAB is currently designated as a nonattainment for the 8-hour ozone and 24-hour PM_{2.5} NAAQS, and either attainment or unclassified for all other NAAQS. With respect to CAAQS, the Bay Area Air Quality Management District (BAAQMD) is designated as nonattainment for the 8- and 1-hour ozone, 24-hour and annual PM₁₀, and annual PM_{2.5} standards, and attainment or unclassified for all other CAAQS (BAAQMD 2016).

EPA, under the provisions of the CAA, requires each state with regions that have not attained the NAAQS to prepare a state implementation plan (SIP) that details how each local area is to meet these standards. ARB is the lead agency for developing the SIP in California. Local air districts and other agencies prepare air quality attainment plans (AQAPs), or air quality management plans, and submit them to ARB for review, approval, and incorporation into the applicable SIP. The CCAA also requires that each area exceeding the CAAQS develop a plan aimed at achieving those standards (California Health and Safety Code, Section 40911 et seq.).

BAAQMD is the agency responsible for air quality planning and development of the AQAP in the project area. The AQAP establishes the strategies that will be used to achieve compliance with the CAAQS in all areas within BAAQMD’s jurisdiction. All projects within BAAQMD’s jurisdictional area are subject to adopted BAAQMD rules and regulations in effect at the time of construction and operation.

DISCUSSION

THRESHOLDS OF SIGNIFICANCE

The following thresholds of significance are used to evaluate the potential impacts of the Proposed Project.

Criteria Air Pollutants

Regional Significance Criteria:

- ▶ Generate average daily construction emissions of reactive organic gases (ROG), oxides of nitrogen (NOX), and (exhaust) PM_{2.5} that would exceed 54 pounds per day (lb/day) or PM₁₀ exhaust emissions that would exceed 82 lb/day; or
- ▶ Not implement all of BAAQMD’s Best Management Practices for fugitive dust control and the Basic Construction Mitigation Measures during construction; or
- ▶ Generate average daily operational emissions of ROG, NOX, and (exhaust) PM_{2.5} that would exceed 54 lb/day or PM₁₀ exhaust emissions that would exceed 82 lb/day; or
- ▶ Generate annual operational emissions of ROG, NOX, and (exhaust) PM_{2.5} that would exceed 10 tons per year (tpy) or PM₁₀ exhaust emissions that would exceed 15 tpy.

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

Less-than-Significant Impact. As discussed above, BAAQMD is responsible for developing and implementing the AQAP to address the NAAQS and CAAQS. The AQAP presents comprehensive strategies to reduce emissions from stationary, area, mobile, and indirect sources. Projects that are consistent with the assumptions and control measures used in development of the applicable air quality plan are considered to not conflict with or obstruct the attainment of the air quality levels identified in the plan.

Construction of the Proposed Project would involve the use of off-road equipment. Assumptions for off-road equipment emissions in the air quality plans were developed based on hours of activity and equipment population reported to ARB for rule compliance. The Proposed Project would not increase the assumptions for off-road equipment use in the air quality plans.

Implementation of the Proposed Project would replace the existing Morrow Lane Bridge to improve safety, address the currently structurally deficient bridge. The Proposed Project would not increase the lane capacity of the existing bridge and would not construct any land uses that would generate additional vehicle trips beyond existing conditions. Air quality plans are developed using population and vehicle miles traveled (VMT) growth projections for a region. Projects that would result in increased VMT or other operational emissions beyond those estimated used to develop an air quality plan could conflict with or obstruct implementation of the applicable plan, which is developed to demonstrate the region's ability to attain ambient air quality standards. Therefore, because the Proposed Project would not increase lane capacity or generate additional vehicle trips beyond existing conditions, it would not result in a net increase of regional VMT.

Because the Proposed Project would be consistent with the assumptions regarding equipment activity and emissions in the AQAP and existing planning documents, it is expected that the intensity of construction and operational emissions associated with the Proposed Project would have been accounted for in the AQAP. Thus, implementation of the Proposed Project would not conflict with or obstruct implementation of the applicable air quality efforts of BAAQMD. This impact would be less than significant. No mitigation is required.

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

Less-than-Significant Impact with Mitigation Incorporated. Construction-related activities would result in project-generated emissions of criteria air pollutants (e.g., PM₁₀ and PM_{2.5}) and ozone precursors (e.g., ROG and NO_x) from site preparation (e.g., clearing, grading, and excavation); off-road equipment, material transport, and worker-commute exhaust emissions; paving; and other miscellaneous activities. Construction-related emissions are described as “short-term” or temporary in duration and have the potential to represent a significant impact with respect to air quality, especially fugitive PM₁₀ dust emissions. Fugitive PM₁₀ dust emissions are primarily associated with site preparation and vary as a function of such parameters as soil silt content, soil moisture, wind speed, and size of disturbance area. Ozone precursor emissions of ROG and NO_x are associated primarily with gas and diesel equipment exhaust on and off site and paving.

Project-specific construction parameters such as construction schedule, off-road equipment used, and construction workers were provided by the project applicant, GLDC. When project-specific information was not available, default parameters from the California Emissions Estimator Model (CalEEMod) Version 2013.2.2 were used,

which typically result in conservative estimates to avoid underestimating emissions when project-specific information is unknown.

Table 3.3-1 summarizes the Proposed Project’s construction-related emissions and compares them to the applicable BAAQMD thresholds of significance. See Appendix 1 for detailed construction assumptions and modeling outputs.

Table 3.3-1. Summary of Modeled Construction-Related Emissions of Criteria Air Pollutants and Precursors				
Construction Phase/Source	Emissions (tons) ¹			
	ROG	NO _x	PM ₁₀	PM _{2.5}
Bridge Construction (Phase 1)				
Construction Equipment	0.09	0.60	0.03	0.03
On-Road Vehicles	0.00	0.03	0.00	0.00
Total Construction Emissions	0.09	0.64	0.04	0.03
Average Daily Emissions (lb/day) ²	1.54	10.64	0.62	0.57
Bridge Demolition (Phase 2)				
Construction Equipment	0.03	0.36	0.02	0.02
On-Road Vehicles	0.00	0.01	0.00	0.00
Total Construction Emissions	0.03	0.37	0.02	0.02
Average Daily Emissions (lb/day) ²	1.52	16.25	0.88	0.80
Total Project (Phases 1 and 2)				
Total Construction Emissions	0.13	1.00	0.06	0.05
Average Daily Emissions (lb/day) ²	1.53	12.17	0.69	0.63
BAAQMD Threshold (lb/day)	54	54	82	54
Exceeds Thresholds?	No	No	No	No
Notes: lb/day = pounds per day; NO _x = oxides of nitrogen; PM ₁₀ = particulate matter with aerodynamic diameter less than 10 microns; PM _{2.5} = particulate matter with aerodynamic diameter less than 2.5 microns; ROG = reactive organic gases;				
¹ Emissions are shown in units of total tons unless noted otherwise				
² Total emissions are divided by the total number of construction work days to calculate average daily construction emissions.				
Refer to Appendix 1 for detailed modeling input parameters and results.				
Source: Modeling performed by AECOM 2016				

As shown in Table 3.3-1, construction-related activities during both construction phases and over the entire construction period would not exceed any of applicable thresholds. Projects that would not generate emissions that exceed the applicable thresholds of significance would not be considered to violate any air quality standard or contribute substantially to an existing or projected air quality violation. Therefore, the Proposed Project’s construction-related emissions would not violate an air quality standard or contribute substantially to an existing or projected air quality violation.

The Proposed Project would not increase lane capacity or generate additional vehicle trips in the region. Therefore, it is not anticipated that implementation of the Proposed Project would generate a net increase in operational emissions. Accordingly, the Proposed Project’s operational emissions would not violate an air quality standard or contribute substantially to an existing or projected air quality violation.

However, regardless of the level of emissions, BAAQMD requires that all projects within its jurisdiction to implement its Basic Construction Mitigation Measures. Thus, although as shown in Table 3.3-1, the Proposed Project's average daily emissions would be less than BAAQMD's thresholds, basic construction mitigation measures have been imposed to address BAAQMD requirements.

Mitigation Measure 3.3-1: Implement BAAQMD Basic Construction Mitigation Measures.

BAAQMD recommends that all projects, regardless of significance, implement certain basic construction mitigation measures. Because construction of the Proposed Project would create emissions in BAAQMD's service area only when materials are transported to the project site, a subset of the measures that BAAQMD normally recommends to reduce construction emissions will apply to the Proposed Project. Therefore, the following measures will be implemented during project construction:

- ▶ All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) will be watered two times per day.
- ▶ All haul trucks transporting soil, sand, or other loose material off-site will be covered.
- ▶ All visible mud or dirt track-out onto adjacent public roads will be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
- ▶ All vehicle speeds on unpaved roads will be limited to 15 miles per hour.
- ▶ Idling times will be minimized either by shutting equipment off when not in use or by reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of the California Code of Regulations). Clear signage will be provided for construction workers at all access points.
- ▶ All construction equipment will be maintained and properly tuned in accordance with manufacturer's specifications. All equipment will be checked by a certified visible emissions evaluator.
- ▶ A publicly visible sign will be posted at the soil transfer site within BAAQMD, with the telephone number and person to contact at the Solano County and BAAQMD regarding dust complaints. This person will respond and take corrective action within 48 hours. BAAQMD's phone number also will be visible, to ensure compliance with applicable regulations.

Timing: During project construction.

Responsibility: GLDC and construction contractors.

With implementation of Mitigation Measure 3.3-1, the Proposed Project would comply with BAAQMD's requirements for all projects, regardless of the level of emissions. Therefore, with mitigation, the construction-related impact would be less than significant.

c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?

Less-than-Significant Impact with Mitigation Incorporated. As discussed above, the Proposed Project's construction and operational emissions would not exceed any of applicable thresholds of significance. Thus, with implementation of Mitigation Measure 3.3-1, project-generated emissions would not result in a cumulatively considerable net increase of a criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard. This cumulative impact would be cumulatively less than significant with mitigation incorporated.

Mitigation Measure 3.3-2: Implement Mitigation Measure 3.3-1: Implement BAAQMD Basic Construction Mitigation Measures.

d) Expose sensitive receptors to substantial pollutant concentrations?

Less-than-Significant Impact. Construction of the Proposed Project would result in diesel exhaust emissions from use of on-site heavy-duty equipment. Particulate exhaust emitted by diesel-fueled engines (diesel PM) was identified as a TAC by ARB in 1998. Construction of the project would generate diesel PM emissions from the use of off-road diesel equipment required for site grading and earth movement.

The dose to which receptors are exposed is the primary factor used to determine health risk. Dose is a function of the concentration of a substance or substances in the environment and the extent of exposure that a person has with the substance. Dose is positively correlated with time, meaning that a longer exposure period would result in a higher exposure level for the Maximally Exposed Individual. Thus, the risks estimated for the Maximally Exposed Individual are higher if a fixed exposure occurs over a longer period of time.

According to the Office of Environmental Health Hazard Assessment, health risk assessments, which determine the exposure of sensitive receptors to toxic emissions, will be based on a 30-year exposure period for adults or a 9-year exposure period for children; however, such assessments will be limited to the period/duration of activities associated with the project (OEHHA 2015). Thus, an approximate 3-month construction period would constitute less than 3% of the total exposure period for child receptors (9-year) and less than 1% of a typical receptor exposure period.

Because the use of off-road equipment would be temporary and intermittent and the relative short-term construction activities, the Proposed Project's construction-related TAC emissions would not result in the exposure of sensitive receptors to levels that exceed BAAQMD thresholds of significance. This impact would be less than significant. No mitigation is required.

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

Less-than-Significant Impact. The occurrence and severity of odor impacts depend on numerous factors, including the nature, frequency, and intensity of the source; wind speed and direction; and the presence of sensitive receptors. Although offensive odors rarely cause any physical harm, they can be very unpleasant, leading to considerable distress and often generating citizen complaints to local governments and regulatory agencies.

The Proposed Project would result in diesel exhaust emissions from on-site construction equipment at the project site during temporary construction activities, as well as from diesel-powered on-road trucks hauling demolished bridge materials away from the project site and new bridge materials to the project site. The diesel exhaust emissions during construction would be intermittent and temporary and would dissipate rapidly from the source with an increase in distance. The project would not include the long-term operation of any new sources of odor. Thus, the Proposed Project would not create objectionable odors affecting a substantial number of people. This impact would be less than significant. No mitigation is required.

3.4 BIOLOGICAL RESOURCES

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

3.4.1 ENVIRONMENTAL SETTING

3.4.1.1 INTRODUCTION

The project site is located in Solano County, within the southeast portion of Suisun Marsh. Open rolling hills covered with grasslands dominate the landscape to the west while salt marsh is present to the north, east, and south. The climate is Mediterranean in nature with warm, dry summers and rainy winters. Elevations in the project area range from approximately 0 to 10 feet above mean sea level. The Proposed Project is located within Section 17, Township 2 North, Range 2 West of the USGS 7.5-minute Vine Hill Quadrangle.

3.4.1.2 HABITAT TYPES IN THE PROJECT AREA

Terrestrial habitat and land cover within the project area consists primarily of northern coastal salt marsh, some of which is tidally influenced but most of the area is in the form of managed wetlands. A small area of eucalyptus

woodland is present on the west end of the project area adjacent to I-680 and Goodyear Road. Other disturbed and/or developed lands are present around the GLDC storage yard and along the edges of dirt and gravel roads.

Open-water habitat occurs in Goodyear Slough and a small tidally influenced channel, as well as various sloughs and ditches associated with the managed wetlands. Open-water habitat at the project site provides cover and foraging habitat for a variety of aquatic and water-dependent wildlife and native and non-native fish.

The natural channel of Goodyear Slough runs through the project area north to Cordelia Slough, then to Suisun Slough, and into Grizzly Bay. Much of the lands surrounding Goodyear Slough consist of wetlands managed for waterfowl hunting. Goodyear Slough is a tidally influenced channel that historically dead-ended approximately 1.7 miles south of the project area. The Goodyear Slough outfall now connects the slough to Suisun Bay to improve water circulation. The Morrow Island Distribution System provides freshwater from Goodyear Slough to local waterfowl ponds and allows discharge of high-salinity water into Grizzly Bay.

Salt marsh vegetation is naturally distributed in zones corresponding with decreasing depth, duration, and frequency of tidal inundation and is classified as low marsh to high marsh. In addition to this natural variability in composition, three types of salt marsh wetlands are present in the project area: tidal wetlands, managed wetlands, and vegetated swale. Tidal salt marsh wetlands are present in the northwestern portion of the area and along Goodyear Slough where the project area is subject to the ebb and flow of the tide.

Vegetation in the tidal wetlands is dominated by Pacific rush (*Juncus effusus* ssp. *pacificus*), saltmarsh bulrush (*Scirpus robustus*), western goldenrod (*Euthamia occidentalis*), and marsh gumplant (*Grindelia stricta* var. *angustifolia*) with common tule (*Schoenoplectus acutus*) and common reed (*Phragmites australis*) at the edges of deeper water, as well as broad-leaved cattails (*Typha latifolia*) farther inland.

Managed salt marsh wetlands are present in the northeast, southeast, and southwest portions of the project area where water flow is controlled to enhance habitat for waterfowl. Vegetation in the managed wetlands is dominated by pickleweed (*Salicornia* sp.), fat-hen (*Atriplex prostrata*), western sea-purslane (*Sesuvium verrucosum*), knotweed (*Polygonum* sp.), brass-buttons (*Cotula coronopifolia*), Pacific rush, and seacoast bulrush (*Bolboschoenus robustus*), with some saltgrass (*Distichlis spicata*) and alkali heath (*Frankenia salina*). One vegetated swale is present south of Morrow Lane and west of the bridge. This swale supports pickleweed, alkali heath, fat-hen, and saltgrass, similar to the managed wetland areas.

Areas of high marsh are located in the higher elevation portions of the project area surrounding the wetlands and Goodyear Slough and generally abutting the gravel and dirt roads. These areas of salt marsh are generally located above the mean high-water or ordinary high-water mark and have a vegetation composition consistent with the composition in the tidal and managed wetland areas. Vegetation in the high marsh is dominated by marsh gumplant, western goldenrod, non-native perennial pepperweed (*Lepidium latifolium*), marsh baccharis (*Baccharis glutinosa*), alkali heath, saltgrass, and non-native rabbit's-foot grass (*Polypogon monspeliensis*), with well-developed stands of coyote brush (*Baccharis pilularis*) at the peak elevations. Also present in the drier areas are the non-native grasses Mediterranean barley (*Hordeum murinum* ssp. *gussonianum*) and soft chess (*Bromus hordeaceus*), with some non-native wild radish (*Raphanus sativa*) and scattered non-native artichoke thistle (*Cynara cardunculus*).

The project area contains developed/disturbed areas comprising paved, gravel, and dirt roads including the bridge across the Goodyear Slough area, the duck club buildings, and the parking lot staging area. These areas are largely

devoid of vegetation because of soil compaction and disturbance; however, a few landscape species are present around the duck club, primarily eucalyptus trees (*Eucalyptus* sp.), and ruderal species are present at the road edges including yellow star thistle (*Centaurea solstitialis*), prickly ox-tongue (*Helminthotheca echioides*), wild radish, perennial pepperweed, and artichoke thistle.

3.4.1.3 SENSITIVE NATURAL COMMUNITIES

Sensitive natural communities are those communities that are of special concern to resource agencies for a variety of reasons, including their local or regional decline, or because they provide habitat important to common and special-status species. Many of these communities are tracked in the California Department of Fish and Wildlife's (CDFW's) California Natural Diversity Database (CNDDDB), a statewide inventory of the locations and conditions of the state's rarest plant and animal taxa and vegetation types. Elimination or substantial degradation of these communities would constitute a significant impact under CEQA. The northern coastal salt marsh described above qualifies as a sensitive natural community and would also be subject to USACE jurisdiction under Section 404 of the federal Clean Water Act.

3.4.1.4 ESSENTIAL FISH HABITAT

Section 305(b)(2) of the Magnuson-Stevens Fishery Conservation and Management Act, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), requires federal agencies to consult with NMFS on activities that may adversely affect Essential Fish Habitat (EFH) for federally managed fish species. These species include commercial fishes with established fisheries management plans (FMPs) as managed by regional fisheries management councils. With assistance from NMFS, these councils are required to delineate EFH for all managed species in the context of FMPs and their amendments; the Secretary of Commerce (acting through NMFS) approves EFH definitions.

EFH includes those waters and substrate necessary for fish spawning, breeding, feeding, or growth to maturity. In the definition of EFH, waters include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate. Substrate includes sediment, hard bottom, structures underlying the waters, and associated biological communities. "Necessary" means the habitat required to support a sustainable fishery and the managed species contribution to a healthy ecosystem. Spawning, breeding, feeding, or growth to maturity covers a species' full life cycle (NMFS 2004).

The Pacific Fisheries Management Council manages the relevant commercial fisheries that may be affected by the Proposed Project. The project site is located on tidally influenced Goodyear Slough, which flows into Grizzly Bay and Suisun Bay to the east. Therefore, project activities have the potential to affect fish species managed under the Pacific Coast Groundfish, Pacific Coast Salmon, and Coastal Pelagic FMPs. Various life stages of several species managed under these FMPs are likely to occur in the project area. These species include Chinook and Coho Salmon, Starry Flounder, English and Sand Sole, the Northern Anchovy, and Pacific Sardine.

3.4.1.5 CRITICAL FISH HABITAT

The project area is located within the designated critical habitat of the Green Sturgeon Southern Distinct Population Segment (DPS) and Delta Smelt.

Green Sturgeon critical habitat was designated in October 2009 (74 *Federal Register* [FR] 52300). Critical habitat is located in estuarine waters within the project area. The Primary Constituent Elements (PCEs) essential to the conservation of the Green Sturgeon in estuarine habitats include food resources, water flow, water and sediment quality, and migratory corridor.

Critical habitat for the Delta Smelt was designated by USFWS on December 19, 1994, with an effective date of January 18, 1995. The PCEs essential to the conservation of the Delta Smelt are physical habitat, water, river flow, and salinity concentrations required to maintain habitat for spawning, larval and juvenile transport, rearing, and adult migration (59 FR 65259, December 19, 1994).

3.4.1.6 SPECIAL-STATUS SPECIES

During initial screening for special-status species, AECOM biologists developed an initial list of special-status species to be evaluated for their potential to occur on the project site. This was based on a review of the CNDDDB (2016), USFWS (2016), and California Native Plant Society (CNPS) (2016) species lists generated for the USGS 7.5-minute Vine Hill quadrangle in which the project is located, as well as the surrounding eight quadrangles. The majority of species were eliminated from consideration in this document because the project site is outside the current range of the species or because field observations and review of aerial photography indicated that no suitable habitat exists for the species in, or adjacent to, the project area. The remaining species that were not eliminated from consideration are addressed in the discussion below.

Special-Status Plants

Special-status plant species include those listed as endangered, threatened, or rare; and species proposed for listing by USFWS or CDFW. Special-status plant species also include those listed by CNPS on List 1 or 2 of the *Inventory of Rare and Endangered Plants of California* (CNPS 2016). During initial screening for special-status plants with potential to occur in the project area, 84 special-status plants with potential to occur in the vicinity of the project site were identified. Table 3.4-1 presents information on special-status plant species that are state or federally listed and have the potential to occur on the project site.

Special-status plant surveys were conducted in the project area by DWR in 2016 at appropriate times of the year. This occurred during periods when the special-status species with potential to occur in the project area were likely to be detected, generally during the blooming period. Surveys to date have resulted in negative findings for all target species except Delta tule pea; however, Suisun Marsh aster has been previously documented on the project site.

Scientific Name	Fed/State Status ¹	Habitat	Bloom Period	Elevation Range (meters)	Potential for Occurrence
Pappose tarplant <i>Centromadia parryi</i> ssp. <i>parryi</i>	–/CRPR 1B.2	Chaparral, coastal prairie, meadows and seeps, marshes and swamps (coastal salt), valley and foothill grassland (vernally mesic)/often alkaline	May–Nov	0–420	Moderate. Suitable habitat is present and the nearest occurrence is 2.4 miles north.
Soft bird's-beak <i>Chloropyron molle</i> ssp. <i>molle</i>	FE/SR, CRPR 1B.2	Marshes and swamps (coastal salt)	Jul–Nov	0–3	Low. Marginally suitable habitat is present; the tidally influenced portions of the marsh are densely

Table 3.4-1. Special-Status Plant Species with the Potential to Occur in the Project Area					
Scientific Name	Fed/State Status ¹	Habitat	Bloom Period	Elevation Range (meters)	Potential for Occurrence
					vegetated. Nearest occurrence is 4.9 miles south-southeast.
Bolander's water-hemlock <i>Cicuta maculata</i> var. <i>bolanderi</i>	- /CRPR 2B.1	Marshes and swamps, coastal, fresh or brackish water	Jul-Sep	0-200	Moderate. Suitable habitat is present and the nearest occurrence is 3.3 miles north. Herbarium specimen recorded 2 miles south in 1938.
Suisun thistle <i>Cirsium hydrophilum</i> var. <i>hydrophilum</i>	FE/CRPR 1B.1	Marshes and swamps (salt)	Jun-Sep	0-1	Low. Marginally suitable habit is present; the managed wetlands are seasonally dry and the ditches have little to no tidal influence. Nearest occurrence is 7 miles northeast.
Delta tule pea <i>Lathyrus jepsonii</i> var. <i>jepsonii</i>	- /CRPR 1B.2	Marshes and swamps (freshwater and brackish)	May-Jul (Aug), (Sep)	0-5	Present in the project area. Species was detected by DWR in June 2016.
Mason's lilaeopsis <i>Lilaeopsis masonii</i>	- /SR, CRPR 1B.1	Marshes and swamps (brackish or freshwater), riparian scrub	Apr-Nov	0-10	High. Suitable habitat is present and there are >10 occurrences within 3 miles of the project site.
Delta mudwort <i>Limosella australis</i>	- /CRPR 2B.1	Marshes and swamps (freshwater or brackish), riparian scrub/usually mud banks	May-Aug	0-3	Low. Suitable habitat is present and the nearest occurrence is 12 miles east.
Suisun Marsh aster <i>Symphyotrichum lentum</i>	- /CRPR 1B.2	Marshes and swamps (brackish and freshwater)	(Apr), May-Nov	0-3	Present in project area.
Saline clover <i>Trifolium hydrophilum</i>	- /CRPR 1B.2	Marshes and swamps, valley and foothill grassland (mesic, alkaline), vernal pools	Apr-Jun	0-300	Low. Suitable habitat is present and nearest occurrence is 2 miles north; while presumed extant, species was last seen in 1928. Next nearest occurrence in Suisun Marsh is 9 miles north.

Note: DWR = California Department of Water Resources

¹Status:
FE = Federally listed as Endangered
SR = State rare
California Native Plant Society California Rare Plant Ranks
1B = Plants rare, threatened, or endangered in California and elsewhere
2B = Plants rare, threatened, or endangered in California, but more common elsewhere

Extensions:
0.1 = Seriously endangered in California (>80% of occurrences are threatened and/or high degree and immediacy of threat)
0.2 = Fairly endangered in California (20-80% of occurrences are threatened)
- = no status

Sources: USFWS 2016; CNDDDB 2016; CNPS 2016; compiled by AECOM 2016

Special-Status Wildlife

Special-status wildlife species include those listed by USFWS under the federal ESA and by the CDFW under the CESA. Additional species receive federal protection under the Migratory Bird Treaty Act (MBTA) and state

protection under CEQA Section 15380(d) and sections of the California Fish and Game Code related to fully protected species. Based on a literature review and the fauna within the project region, 39 special-status wildlife species were initially considered to have at least some potential to occur within the larger geographic region or have been recorded historically in the project vicinity. This list was reduced based on the results of site reconnaissance survey and habitat types present in the project site and vicinity. Table 3.4-2 below contains information on the status and potential for occurrence of those special-status wildlife species determined to have potential to occur on the project site.

In Spring and Summer of 2016, DWR initiated protocol-level surveys for Ridgway's Rail (formerly California Clapper Rail) and California Black Rail in support of future planned work in Suisun Marsh. In addition, visual surveys along with periodic auditory recording surveys in the vicinity of the project site are performed in conjunction with the habitat monitoring program. Within the last 15 years, no California Black Rails or nests were identified during surveys within the immediate vicinity of the Proposed Project. Additionally, no rails were heard or observed during the 2016 protocol-level surveys performed by DWR and CDFW (Estrella, pers. comm, 2016; Tsao pers. comm, 2016; Overton, pers. comm, 2016). DWR and CDFW will continue to perform protocol-level surveys in the vicinity of the project site through completion of the Proposed Project in 2018.

Table 3.4-2. Special-Status Wildlife Species with the Potential to Occur in the Project Area				
Species Name	Fed/State Status ¹	Habitat	Critical Habitat designated in Suisun Marsh	Potential for Occurrence in the Project Area
Birds				
California Black Rail <i>Laterallus jamaicensis coturniculus</i>	– / ST, CFP	Tidal salt marshes associated with dense growth of vegetation, especially pickleweed (<i>Salicornia</i> sp.) and bulrush (<i>Schoenoplectus americanus</i>). Also found in brackish or freshwater marshes at low elevation.	No.	Low. Suitable habitat is present on-site and there are two occurrences within 3 miles. Within the last 15 years, no California Black Rails or nests were identified during surveys within the immediate vicinity of the Proposed Project and none were detected during protocol-level surveys initiated by DWR in 2016 on the project site.
Northern Harrier <i>Circus cyaneus</i>	– / CSC	Coastal salt and freshwater marsh. Nest and forage in grasslands, on the ground in shrubby vegetation, usually at marsh edge.	No.	Low. Suitable foraging habitat is present, no suitable nesting habitat present.
Ridgway's (California clapper) Rail <i>Rallus longirostris obsoletus</i>	FE / SE, CFP	Saltwater and brackish marshes traversed by tidal sloughs in the vicinity of San Francisco Bay. Associated with abundant growths of pickleweed but feeds at edge of cover on invertebrates from mud-bottomed sloughs.	No.	Low. Suitable habitat is present and there are six occurrences within 3 miles. The closest occurrence is 0.58 mile to the southeast in managed marsh. No rails were detected during protocol-

Table 3.4-2. Special-Status Wildlife Species with the Potential to Occur in the Project Area				
Species Name	Fed/State Status ¹	Habitat	Critical Habitat designated in Suisun Marsh	Potential for Occurrence in the Project Area
				level surveys initiated by DWR in 2016 on the project site.
Saltmarsh Common Yellowthroat <i>Geothlypis trichas sinuosa</i>	- / CSC	Fresh and saltwater marshes in the San Francisco Bay region. Requires thick, continuous cover down to water surface for foraging and tall grasses, tule patches, or willows for nesting.	No.	High. Suitable habitat present, nearest occurrence is 0.75 mile south.
Suisun Song Sparrow <i>Melospiza melodia maxillaris</i>	- / CSC	Brackish marshes surrounding Suisun Bay. Inhabits cattails, tules, sedges, and pickleweed.	No.	High. Suitable habitat present, nearest occurrence is 0.75 mile south.
Short-eared Owl <i>Asio flammeus</i>	- / CSC	Found in both freshwater and salt marshes, lowland meadows, and irrigated alfalfa fields. Needs tule patches or tall grass for nesting and daytime seclusion.	No.	Moderate. Suitable habitat is present and nearest occurrence is 6.7 miles east.
White-tailed Kite <i>Elanus leucurus</i>	- / CP	Rolling foothills and valley margins with scattered oaks and river bottomlands or marshes next to deciduous woodland. Open grasslands, meadows, or marshes for foraging close to isolated, dense-topped trees for nesting and perching.	No.	Low. Suitable foraging habitat is present, no suitable nesting habitat present.
Mammals				
Salt marsh harvest mouse <i>Reithrodontomys raviventris</i>	FE / SE, CFP	Only in saline emergent wetlands of San Francisco Bay and its tributaries. Pickleweed is a primary habitat. Requires higher areas for flood refuge.	No.	High. Suitable habitat is present and there are eight occurrences within 3 miles of the project area. The nearest occurrence is 0.2 mile west.
Suisun shrew <i>Sorex ornatus sinuosus</i>	- / CSC	Tidal marshes of the northern shores of San Pablo and Suisun Bays. Requires dense, low-lying cover and driftwood and other litter above the mean high-tide line for nesting and foraging.	No.	Low. Suitable habitat is present but nearest occurrence is more than 5 miles northeast.
¹ Status: FE = Federally listed as Endangered SE = State endangered ST = State threatened SR = State rare CSC = California species of special concern CFP = California fully protected species - = no status Sources: USFWS 2016; CNDDDB 2016; compiled by AECOM 2016				

Special-Status Fish

A number of special-status fish species occur in Suisun Marsh at some stage of their lives, including several that are federally and/or state-listed as threatened or endangered. Goodyear Slough, the waterway where the bridge would be placed, functions primarily as migration or dispersal corridors for these species. Table 3.4-3 provides a summary of the life history characteristics of special-status fish species that would be likely to occur in the project area. A more detailed discussion of those species that are federally and/or State-listed as threatened or endangered is presented in the Biological Assessment that has been prepared for the Proposed Project (AECOM 2016).

Table 3.4-3. Special-Status Fish Species with the Potential to Occur in the Project Area				
Common Name	Scientific Name	Fed/State Status1	Habitat	Potential for Occurrence in the Project Area
Fishes				
Green Sturgeon	<i>Acipenser medirostris</i>	T/CSC	Spawns in large river systems with well-oxygenated water, with temperatures from 8.0 to 14°C.	Low. Adults and older juveniles/subadults migrate through Suisun Bay, and potentially may occur in the project area. UCD monthly sampling data, collected at sampling point GY2 located approximately 200 meters from the project site, have not identified any fish between 1979 and 2015.
Delta Smelt	<i>Hypomesus transpacificus</i>	T/CE	Occurs in estuary habitat in the Delta where fresh and brackish water mix in the salinity range of 2–7 parts per thousand (Moyle 2002).	Low. Various life stages may be present year round in Suisun Bay, but are likely not present during the proposed construction period within the project area. UCD monthly catch data, collected at sampling point GY2 located approximately 200 meters from the project site, captured only one fish during the proposed work window of June 15 th through September 30 th between 1979 and 2015 during one catch period in July 1980 (Moyle 2016)
Central Valley Steelhead	<i>Oncorhynchus mykiss</i>	T/-	Requires cold, freshwater streams with suitable gravel for spawning; rears seasonally in inundated floodplains, rivers, tributaries, and Delta.	Low. Adults and juveniles migrate through Suisun Bay, and potentially may occur in the project area. UCD monthly sampling data, collected at sampling point GY2 located approximately 200 meters from the project site, have not identified any fish between 1979 and 2015 (Moyle 2016)
Central Valley Spring-run Chinook Salmon	<i>Oncorhynchus tshawytscha</i>	T/CT	Requires cold, freshwater streams with suitable gravel for spawning; rears seasonally in inundated floodplains, rivers, tributaries, and Delta.	Low. Adults and juveniles migrate through Suisun Bay, and potentially may occur in the project area. UCD monthly sampling data, collected at sampling point GY2 located approximately 200 meters from the project site, have not identified any fish between 1979 and 2015 (Moyle 2016).
Sacramento River Winter-run Chinook Salmon	<i>Oncorhynchus tshawytscha</i>	E/CE	Requires cold, freshwater streams with suitable gravel for spawning; rears seasonally in inundated floodplains, rivers, tributaries, and Delta.	Low. Adults and juveniles migrate through Suisun Bay, and potentially may occur in the project area. UCD monthly sampling data, collected at sampling point GY2 located approximately 200 meters from the project site, have not identified any fish between 1979 and 2015 (Moyle 2016).

Table 3.4-3. Special-Status Fish Species with the Potential to Occur in the Project Area

Common Name	Scientific Name	Fed/State Status ¹	Habitat	Potential for Occurrence in the Project Area
Longfin Smelt	<i>Spirinchus thaleichthys</i>	-/CT	Estuarine open waters, mid to lower water column. Prefers relatively high salinity waters, except for spawning and early life stages when freshwater or low salinity is preferred. Spawns over sandy or gravel substrate, rocks, and aquatic plants.	Low. Various life stages may be present year round in Suisun Bay, but are likely not present during the proposed construction period within the project area. UCD monthly catch data, collected at sampling point GY2 located approximately 200 meters from the project site, have identified a total of five fish between 1979 and 2015 during five separate catch periods in July and September 1980, September 1986, August 1999, and May 2000. No fish have been caught since 2000 (Moyle 2016).

Notes: °C = degrees Celsius; Delta = Sacramento–San Joaquin Delta; UCD = University of California, Davis

¹ Status Definitions:

Federally Listed Species:

- FE = federal endangered
- FC = candidate
- FT = federal threatened
- PT = proposed threatened
- FPD = proposed for delisting
- DPS = Distinct Population Segment
- FD = delisted

California State Listed Species:

- CE = California state endangered
- CT = California state threatened
- CR = California state rare
- CSC = California Species of Special Concern
- CFP = California fully protected
- SC = State candidate for listing
- CD = delisted

Sources: Reclamation et al. 2011; AECOM 2016; Moyle 2016

3.4.2 DISCUSSION

The following discussion of project impacts on biological resources is based on the significance criteria in Appendix G of the State CEQA Guidelines as outlined at the beginning of this section. The Proposed Project incorporates several Environmental Commitments (ECs) as standard BMPs designed to avoid and minimize potential environmental effects of the project on biological resources. The ECs that are incorporated into the Proposed Project are described in detail in Chapter 2, “Project Description,” and are referenced in the analysis below, where applicable.

Construction of the new bridge would permanently affect approximately 0.08acre of northern coastal salt marsh, which includes approximately 0.0439 acre of northern costal salt marsh affected by shading from the new bridge deck. Approximately 0.0025 acre of open-water habitat would be permanently affected by placement of piles and corrosion protection system for the new bridge, and approximately 0.0380 acre of open water habitat would be shaded from the new bridge decking.

Following the completion of Phase 2 construction activities, it is anticipated that structure removal would allow for the reestablishment of approximately 0.07 acres of salt marsh and open-water habitat over time. There would be a small net permanent loss of approximately 0.04 acres and an increase of 0.011 acres in shading of salt marsh habitat from the new bridge deck and an overall net gain of 0.0002 acres of salt marsh habitat within Goodyear Slough as a result of pile removal activities.

Similarly, there would be an overall loss of 0.001 acres of open water habitat associated with effects related to the bridge piles and corrosion protection system; however, there would be a net increase of 0.0011 acres of open water that would be shaded from the bridge deck. Over time, it is anticipated that the open water habitat impacts associated with cathode protection system would lessen over time it is anticipated that the cathodes would eventually become buried under the bay mud returning an additional 0.002 acre of open water habitat in the project area.

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

The project site provides suitable habitat for a variety of special-status species as discussed previously. The Proposed Project has been designed to minimize impacts on natural habitat and to avoid impacts on special-status species.

Potential Impacts on Special-Status Plant Species

Less-than-Significant Impact. Special-status plant surveys were conducted in the project area by DWR in 2016 at appropriate times when special-status species with potential to occur in the project area were likely to be detected, generally during the blooming period. Delta tule pea and Suisun Marsh aster are the only special-status plants documented in the project area. Both species grow along the edges of the northern coastal salt marsh and the location and extent of the occurrences were recorded in the field using a Global Positioning System (GPS) data logger. The individual Delta tule pea and potentially Suisun Marsh aster plants found in the project area would be removed during project implementation. However, the total number of plants removed would be small and individuals of both species present are a small part of larger populations that are close enough to the Proposed Project for significant genetic exchange. Therefore, the effects on the Delta tule pea and Suisun Marsh aster in the project area resulting from the proposed project are not likely to affect the health and survival of the overall population in the area. Furthermore, the species will be able to re-colonize the project area following construction. This impact would be less than significant.

Potential Impacts on California Black Rail

No Impact. The northern coastal salt marsh on and near the project site provides suitable breeding habitat for California Black Rail. California Black Rail presence has been documented in Goodyear Slough (AECOM 2016) during surveys conducted by DWR over 9 years in fulfillment of the 1981 Biological Opinion (BO) issued for the Suisun Marsh Management Plan (USFWS 1981); however, the species has not been documented in the immediate vicinity of the Proposed Project. No rails were detected during protocol-level surveys initiated by DWR in 2016 in the vicinity of the project site (Estrella, pers. comm., 2016; Tsao pers. comm.2016; Overton, pers. comm., 2016). There is a low probability of the California Black Rail to be present within the Proposed Project area.

No direct disturbance of occupied habitat is anticipated to occur; loss of individuals could result from disturbance and subsequent abandonment of active nests during project activities. Loss of active nests of California Black Rail could adversely affect local populations of the affected species. However, the Proposed Project has been designed and will be implemented to avoid direct and indirect impacts on California Black Rail. As detailed in Chapter 2, "Project Description," vegetation would be removed outside of breeding season to avoid loss of active nests of

any birds. The Proposed Project is also committed to minimizing disturbance, performing preconstruction surveys for the California Black Rail, implementing construction site BMPs and conducting biological monitoring.

With the implementation of the Proposed Project as detailed in Chapter 2, “Project Description,” any impacts on California Black Rail would be avoided. Therefore, there would be no impact.

Potential Impacts on Ridgway’s (California Clapper) Rail

No Impact. The northern coastal salt marsh on and near the project site provides suitable breeding habitat for Ridgway’s Rail. Surveys conducted by DWR over 9 years in fulfillment of the 1981 BO issued for the Suisun Marsh Management Plan (USFWS 1981) suggest that Ridgway’s Rail densities in the greater Suisun Marsh are very low (AECOM 2016). In addition, no rails were detected during protocol-level surveys initiated by DWR in 2016 in anticipation of planned future work (Estrella, pers. comm., 2016; Tsao pers. comm., 2016; Overton, pers. comm., 2016). Consequently, there is a low probability of the Ridgway’s Rail to be present within the Proposed Project area.

No direct disturbance of occupied habitat is anticipated to occur; loss of individuals could result from disturbance and subsequent abandonment of active nests during project activities. Loss of active nests of Ridgway’s Rail could adversely affect local populations of the affected species. Similar to the potential impacts for the California Black Rail, the Proposed Project was designed and will be implemented to avoid direct and indirect impacts on Ridgway’s Rail. As detailed in Chapter 2, “Project Description,” vegetation would be removed outside of breeding season to avoid loss of active nests of any birds. The Proposed Project is also committed to minimizing disturbance, performing preconstruction surveys for the Ridgway’s Rail, implementing construction site BMPs and environmental awareness training for all construction personnel, and conducting biological monitoring.

With the implementation of the Proposed Project as detailed in Chapter 2, “Project Description,” any impacts on Ridgway’s Rail would be avoided. Therefore, there would be no impact.

Potential Impacts on Special-Status and Common Raptors

Less-than-Significant Impact with Mitigation Incorporated. Suitable nesting and foraging habitat for Northern Harrier, Short-eared Owl, White-tailed Kite, and common raptor species such as Great Horned Owl and Red-tailed Hawk is present in the vicinity of the project site. Potential for adverse effects on foraging habitat would be very minimal and limited to minor disturbance of vegetation in which raptors may forage. However, noise and visual disturbances associated with bridge construction and removal could adversely affect active raptor nests, if present in the vicinity when these construction activities occur. Species that could be affected are considered sensitive because they are either listed as threatened under the CESA, designated as California species of special concern, and/or protected under the California Fish and Game Code and federal MBTA. Adverse effects of sufficient magnitude could result in nest abandonment, a reduction in the level of care provided by adults (e.g., duration of brooding, frequency of feeding), or forced fledging.

Mitigation Measure 3.4-1: Conduct Preconstruction Surveys for Nesting Special-Status and Common Raptors

To ensure that there is no construction disturbance of special-status and raptor nest sites from February 1 through August 31 (the nesting season), a preconstruction survey will be conducted by a qualified biologist in the project area and a minimum 500-foot buffer. If an active nest is found sufficiently close

(as determined by the qualified biologist) to the area to be affected by construction activities, a qualified biologist will determine the extent of a construction-free buffer zone to be established around the nest. Construction-related disturbances that may cause nest abandonment, a reduction in the level of care provided by adults (e.g., duration of brooding, frequency of feeding), or forced fledging will not be initiated within this buffer zone until it is determined by a qualified biologist in coordination with USFWS and/or CDFW that the young have fledged and are feeding on their own. Fencing will be established around the buffer zone and contractor education will be conducted.

Timing: Before project construction.

Responsibility: DWR and construction contractors.

Implementation of Mitigation Measure 3.4-1 as well as ECs would avoid and minimize adverse effects on special-status and common raptors. Therefore, with mitigation, the construction-related impact would be less than significant.

Potential Impacts on Non-raptor Special-Status and Common Migratory Birds

Less-than-Significant Impact with Mitigation Incorporated. Suitable nesting habitat is present in the project site for Saltmarsh Common Yellowthroat, Suisun Song Sparrow, and other common land, shore, marsh, and water birds. Very little suitable nesting habitat would be removed to accommodate bridge construction and demolition because affected areas would be mostly limited to the previously disturbed roads and bridge. As a result, the potential for active migratory bird nests to be present and effected by project activities is low; however, there is still a potential to result in a substantial adverse effect on these non-raptor special-status and migratory bird species, if present.

Mitigation Measure 3.4-2: Conduct Preconstruction Surveys for Non-raptor Special-Status and Common Migratory Birds

To ensure that there is no construction disturbance of non-raptor special-status and migratory bird nest sites from February 1 through August 31 (the nesting season), a preconstruction survey will be conducted by a qualified biologist in and immediately adjacent to the project area within 10 days of the start of project activities. If an active nest is found sufficiently close (as determined by the qualified biologist) to the area to be affected by construction activities, a qualified biologist will determine the extent of a construction-free buffer zone to be established around the nest. Construction-related disturbances that may cause nest abandonment, a reduction in the level of care provided by adults (e.g., duration of brooding, frequency of feeding), or forced fledging will not be initiated within this buffer zone until it is determined by a qualified biologist in coordination with USFWS and/or CDFW that the young have fledged and are feeding on their own. Fencing will be established around the buffer zone and contractor education will be conducted.

Timing: Before project construction.

Responsibility: DWR and construction contractors.

Implementation of Mitigation Measures 3.4-2, as well as ECs would avoid and minimize adverse effects on non-raptor special-status and common migratory nesting birds. Therefore, with mitigation, the construction-related impact would be less than significant.

Potential Impacts on Salt Marsh Harvest Mouse

No Impact. The northern coastal salt marsh on and near the project site provides suitable habitat for salt marsh harvest mouse. Salt marsh harvest mouse is known to occur throughout Suisun Marsh and has been documented near the project site. If present, salt marsh harvest mouse could be adversely affected by project construction. Although no direct disturbance of occupied habitat is anticipated to occur, loss of individuals could result from disturbance and subsequent abandonment of active nests during project activities. Loss of active nests of salt marsh harvest mouse could adversely affect local populations of the species.

However, the Proposed Project has been designed and will be implemented to avoid direct and indirect impacts on the salt marsh harvest mouse. As detailed in Chapter 2, “Project Description,” salt marsh vegetation would be removed by hand under the supervision of a qualified biologist to avoid any adverse effects. Temporary exclusionary fencing used would prohibit salt marsh harvest mice from passing through or climbing over or crawling under fencing and would be installed in a manner to exclude mice from any area of active construction. In addition, commitments as part of the Proposed Project include minimizing disturbance, performing preconstruction surveys for the salt marsh harvest mouse, implementing construction site BMPs and environmental awareness training for all construction personnel, and conducting biological monitoring.

With the implementation of the Proposed Project as detailed in Chapter 2, “Project Description,” any impacts on salt marsh harvest mouse would be avoided. Therefore, there would be no impact.

Potential Impacts on Suisun Shrew

No Impact. The northern coastal salt marsh on and near the project site provides suitable habitat for Suisun shrew. Suisun shrew is known to occur in tidal and brackish marshes along the northern margins of Suisun Bay. If present, Suisun shrew could be adversely affected by project construction. Although no direct disturbance of occupied habitat is anticipated to occur, loss of individuals could result from disturbance and subsequent abandonment of active nests during project activities. Loss of active Suisun shrew nests could adversely affect local populations of the species. However, the Proposed Project has been designed and will be implemented to avoid direct and indirect impacts on the Suisun shrew. As detailed in Chapter 2, “Project Description,” vegetation would be removed outside of breeding season to avoid loss of active nests. The Proposed Project is also committed to minimizing disturbance, performing preconstruction surveys for the Suisun shrew, implementing construction site BMPs and environmental awareness training for all construction personnel, and conducting biological monitoring.

With the implementation of the Proposed Project as detailed in Chapter 2, “Project Description,” any impacts on Suisun shrew would be avoided. Therefore, there would be no impact.

Potential Impacts on Green Sturgeon, Steelhead, Chinook Salmon, Delta Smelt, and Longfin Smelt

The Proposed Project may affect habitat for Central Valley Steelhead ESU, Central Valley Spring-run Chinook Salmon ESU, Sacramento River Winter-run Chinook Salmon ESU, North American Green Sturgeon Southern DPS, and Delta Smelt during installation and removal of piles associated with new bridge construction; however, the likelihood that any special-status fish may be present in Goodyear Slough at the time of construction is low, based on monthly monitoring conducted from 1979 to the present by UC Davis fisheries biologists (Moyle 2016).

Construction activities could temporarily impair water quality in, adjacent to, or downstream of the project area. Sediment mobilization, increased turbidity, and release of contaminants could occur if disturbed and eroded soil or fluids from construction equipment were discharged into receiving waters. Impaired water quality could affect habitats and the physical health of fish and other aquatic life in Goodyear Slough. These waterways host and provide habitat for special-status species, important native species, and important non-native species that occur within the pile-driving area.

Pile removal and driving within the existing bridge and new bridge construction footprint could disturb benthic sediments in Goodyear Slough. Pile removal and driving activities may mobilize sediments and increase turbidity, which could temporarily impair water quality within, adjacent to, and downstream of construction activities. Equipment staging and construction vehicle traffic could contribute to sediment mobilization if such activities cause erosion of streambank soils and these soils enter the waters of Goodyear Slough or other nearby areas. Contaminants such as fuels, lubricants, hydraulic fluids, and other chemicals/compounds used in construction activities could also be introduced into waters adjacent to and downstream of the Proposed Project through spills or through surface runoff from staging areas.

In-water construction activities, including installation of steel piles for the new bridge in Goodyear Slough via impact hammer, could affect fish in the vicinity of the project area. Pile driving can affect underwater sound waves and pressures, which can affect fish.

Sound is defined as small disturbances in a fluid from ambient conditions through which energy is transferred away from a source by progressive fluctuations of pressure or sound waves (Caltrans 2015). Sound waves are produced by vibrating objects such as a pile being driven by a vibratory hammer. As the vibrating surface moves, it compresses the molecules in the adjacent medium, creating a high-pressure region (Caltrans 2015). As the object vibrates back to its original position, the molecules in contact with the vibrating surface produce a low-pressure region (Caltrans 2015). These areas are known as compressions and rarefactions, respectively (Caltrans 2015).

The magnitude of the difference between a paired compression and rarefaction defines the potential effects on fish. Effects on fish can include change in behavior, decreased fitness, increased predation risk, physical injury, and mortality (Caltrans 2015). The severity of effects depends on the intensity and characteristics of the sound, the distance and location of the fish in the water column relative to the sound source, the size and mass of the fish, and the fish's anatomical characteristics (Caltrans 2015).

An interagency working group including NMFS established interim criteria for evaluating underwater noise impacts on fish from impact pile driving. These criteria are defined in the document entitled *Agreement in Principle for Interim Criteria for Injury to Fish from Pile Driving Activities* (Fisheries Hydroacoustic Working

Group 2008). This agreement identifies a peak sound pressure level (SPL) of 206 decibels (dB) and an accumulated sound exposure level (SEL)³ of 187 dB as thresholds for injury to fish greater than or equal to 2 grams (g) (approximately 0.7 ounce). For fish less than 2 g, the accumulated SEL threshold is reduced to 183 dB. Although no formal agreement has been made on a behavioral threshold, NMFS uses the 150 dB root mean square (RMS) as the threshold for adverse behavioral effects (NMFS 2009).

The NMFS criteria used for underwater noise levels were established specifically for impact pile driving. Impact pile driving would be used to install the 16-inch-diameter steel pipe piles used to support the new bridge. To estimate underwater noise levels for construction-related pile-driving activities, measurements from the Caltrans Compendium for 16-inch steel pipe underwater pile driving conducted under similar circumstances (i.e., similar water depths in areas of similar substrate) was reviewed for source-level data at 10 meters (approximately 32.8 feet) (Caltrans 2015; Yomogida, pers. comm., 2016). The analyses assumed that fish would be stationary during pile driving (i.e., would not relocate away from the source) and that all pile strikes would produce noise at the maximum peak SPL and SEL. Therefore, these calculations, as shown in Table 3.4-4, represent the worst-case scenario for accumulated sound effects over a 24-hour period.

Pile Type Installed and Installation Method	Maximum Source Levels (dB)				Distance to Threshold ^{1, 2} (meters [approximate feet])		
	Peak SPL	SEL, Single Strike	RMS	SEL, Cumulative	206 dB Peak SPL	187 dB SEL	183 dB SEL
21 In-Water HSS16"x0.375 Steel Pipe Piles, using Impact Hammer and Hammer Cushion	177	153	162	185	0 (0)	7 (23.0)	13 (42.7)
15 On-Land HSS16"x0.375 Steel Pipe Piles, using Impact Hammer and Hammer Cushion	167	148	158	180	0 (0)	3 (9.8)	6 (19.7)

Notes: dB = decibels; RMS = root mean square; SEL = sound exposure level; SPL = sound pressure level

¹ The distance from the pile over which the effects threshold of 206 dB (peak) SPL and 187 dB/183 dB cumulative SEL would be exceeded. The SEL threshold values apply to fish weighing more than 2 grams (approximately 0.7 ounce) and fish less weighing less than 2 grams, respectively.

² Analysis assumes an attenuation factor of 15 (approximately 4.5 dB per doubling of distance) in the project area. This is a conservative value for attenuation in shallow water (depths of less than 45 feet); the attenuation would likely be greater than 15 (Caltrans 2015).

Sources: Caltrans 2015; NMFS 2009; Yomogida, pers. comm., 2016

The 206 dB (peak) SPL noise criterion for injury to fish would not be exceeded by activities for the Proposed Project, and no physical injury to fish (i.e., barotrauma) would be expected. However, the 187 dB and 183 dB cumulative SEL criterion would be exceeded, but only close to the pile being driven, as shown in Table 3.4-4. The cessation of pile driving at the end of each work day would allow cumulative noise levels to reset before driving continues the following day.

³ Sound exposure level (SEL) is defined as the constant sound level acting for 1 second, which has the same amount of acoustic energy as the original sound. Expressed another way, the sound exposure level is a measure of the sound energy in a single pile driver strike. Accumulated SEL (SEL_{accumulated}) is the cumulative SEL resulting from successive pile strikes. SEL_{accumulated} is based on the number of pile strikes and the SEL per strike; the assumption is made that all pile strikes are of the same SEL.

Depending on the rate at which the piles are installed and removed, pile driving is expected to occur for at least 12 days during the 120-day construction period. In areas where the SEL threshold would be exceeded, fish could experience temporary shifts in hearing thresholds and behavioral effects. These behavioral effects could result in the temporary cessation of feeding or movement out of the area during active pile driving. This would apply to both special-status fish species and EFH species. Fish are expected to resume use of the area after pile driving ceases. Because of the shallow water depths in the vicinity (approximately 10 feet or less), attenuation rates likely would be higher than modeled in this analysis, which would reduce the affected area. However, this impact would be potentially significant.

Although pile driving is expected to be the construction activity with the greatest potential to cause noise impacts, a wide range of other project construction activities, including pile removal, could also cause elevated underwater sound levels. Under the Proposed Project, pile removal would involve the use of a crane; however, if the piles break off (this is anticipated), then a clamshell dredge or a hydraulic underwater chainsaw would be used.

Relatively little information is available about the sound levels produced by underwater construction activities other than pile driving, but a review of the available literature found several studies that can be used to assess potential underwater sound levels from pile cutting using a saw. A saw could be used for both the 2017 and 2018 construction phases. In both years, pile removal would occur for up to 10 days. A standard underwater concrete saw (surrogate for a hydraulic underwater chainsaw) would generate a maximum of approximately 90 dB in air noise at 50 feet (FHWA 2015), about 152⁴ dB peak underwater noise. This level is substantially less than the noise levels expected during pile driving (up to 177 dB peak).

The USACE Dredging Operations and Environmental Research Program (DOER) has issued sound-level data for a variety of dredging techniques and scenarios. The data from the DOER white paper *Characterization of Underwater Sounds Produced by a Backhoe Dredge Excavating Rock and Gravel* (Reine et al. 2012) was used as a conservative estimate of the sound levels that could occur during dredging for the Proposed Project. Note, however, that the sound levels from project dredging are likely to be lower than those reported in the DOER paper, because the dredge that would be used for the Proposed Project would be smaller than the large-scale dredge used in the DOER study. Table 3.4-5 summarizes the data from the DOER paper.

The highest sound levels shown in Table 3.4-5 are for bottom grab sounds associated with a clamshell bucket removing sediment from the bottom of the water body. The sound levels for bottom grabs are estimated to be 164.4 dB peak and 139.4 dB SEL at a distance of 10 meters (32.8 feet). These levels are also substantially less than those expected during pile driving (up to 177 dB peak and 185 dB cumulative SEL).

Noise Source	Recorded Sound Levels		Calculated Sound Levels (dB) ^{1,2}		
	Distance (meters[feet])	Peak (dB)	Peak	SEL	RMS
Engine/Generator	135 (442.91)	134.0	151.0	126.0	136.0
Bottom Grabs	110 (360.9)	148.8	164.4	139.4	149.4
Notes:					

⁴ Sound waves with the same intensities in water and air when measured in watts per square meter have relative intensities that differ by 61.5 dB. This amount must be subtracted from sound levels in water referenced to 1 microPascal (μPa) to obtain the sound levels of sound waves in air referenced to 20 microPascals (μPa) that have the same absolute intensity in watts per square meter. The difference in reference pressures causes 26 dB of the 61.5-dB difference. The differences in densities and sound speeds account for the other 35.5 dB. A 60-dB difference in relative intensity represents a million-fold difference in power. (Reference: <http://www.dosits.org/science/soundsintheseair/water/>)

¹ Sound levels calculated at 10 meters (approximate 32.8 feet)

² Sound levels were back-calculated from the recorded sound levels using the practical spreading loss model and guidance for determining sound exposure level and root mean square from NMFS 2009.

Source: Reine et al. 2012

The sound levels for bottom grabs and all other dredging activities in Table 3.4-5 are also below the threshold for behavioral disturbance (150 dB RMS) and below the level that NMFS considers “effective quiet.” NMFS’s concept of effective quiet establishes a limit on the maximum distance from a noise-producing activity where injury to fishes is expected—the distance at which the single-event SEL attenuates to 150 dB SEL. Because all of the dredging-related sources in Table 8 have RMS sound levels and SELs below the 150-dB threshold, noise from dredging activities is not expected to have significant effects on fish.

Mitigation Measure 3.4-3: Observe In-Water Work Window to Protect Fish

In-water work will be restricted the period of June 15th to September 30th, unless otherwise authorized by NMFS, USFWS and/or other appropriate regulatory agencies.

Timing: During project construction.

Responsibility: GLDC and construction contractors.

Mitigation Measure 3.4-4: Implement Soft-Start Pile-Driving Technique

A soft start to pile driving will be implemented before pile driving begins each day and any time after pile driving ceases for 30 minutes or longer. The contractor will implement an initial set of strikes at a reduced energy followed by a 30-second waiting period, then will repeat this procedure two additional times before initiating continuous pile driving.

Timing: During project construction.

Responsibility: GLDC and construction contractors.

Mitigation Measure 3.4-5: Conduct Underwater Sound Monitoring

Underwater sound monitoring will be conducted by a qualified acoustics expert during all pile-driving and pile removal activities. Underwater sound levels will not exceed peak-pressure, accumulated SEL, or RMS thresholds, as determined using NMFS requirements for the Proposed Project. To the maximum extent possible, underwater sound readings will be collected downstream at a distance determined using NMFS calculations for pile-driving activities and may be adjusted based on site conditions and safety considerations. The monitoring distance is estimated to be 5–10 meters (approximately 16.4 to 32.8 feet) from each pile, depending on the equipment set up on-site each day for each pile, and may vary up to 20 meters (approximately 65.6 feet) from each pile. The impact distance will be determined for fish species with the potential to occur in the project area using NMFS requirements for the project. The impact distance is estimated to be 3–13 feet from each pile.

Timing: During pile-driving and pile removal activities.

Responsibility: GLDC and construction contractors.

Mitigation Measure 3.4-6: Employ Noise Attenuation Measures

If sound thresholds established by NMFS are exceeded, sound-deadening cushions, pile encasings, or air bubble curtains around piles may be employed. Pile-driving activities may also be limited for short time periods during daylight hours or work may be temporarily halted if applicable thresholds are exceeded.

Timing: During pile-driving and pile removal activities.

Responsibility: GLDC, DWR and construction contractors.

Mitigation Measure 3.4-7: Manage Debris

Debris generated during construction activities will be properly managed to avoid adverse impacts to water quality and aquatic environments. Booms and other debris-catching devices, such as netting and covers, will be used by construction contractors to protect water bodies from debris and wastes associated with structure demolition or removal over or adjacent to Goodyear Slough. Debris-catching devices will also be emptied by construction contractors regularly and collected debris will be removed and stored away from waterways and protected from run-on and runoff.

Timing: During project construction.

Responsibility: GLDC and construction contractors.

Mitigation Measure 3.4-8: Monitor Water Quality during Pile-Driving Activities

Water quality monitoring for turbidity, dissolved oxygen, pH, and water temperature will be conducted upstream and downstream of construction work during pile-driving activities to ensure that the Proposed Project complies with mandated thresholds for meeting water quality objectives. Visual observations for turbidity plumes, sheens, or black-colored water will also be performed. If water quality thresholds are exceeded, in-water control measures will be implemented.

Timing: During pile-driving activities.

Responsibility: GLDC, DWR and/or its construction contractors.

Mitigation Measure 3.4-9: Deploy In-Channel Water Quality Controls

If water quality thresholds are exceeded, appropriate turbidity and siltation control measures will be deployed to reduce effects. These measures may include a turbidity barrier, curtain, or diffusion mat. The appropriate controls will be rated according to wind speed, wave height, and the flow velocity of Goodyear Slough. If applicable thresholds are exceeded, pile-driving activities may be limited for short time periods or work may be temporarily halted until ambient water quality conditions return to concentrations below threshold levels. Installing a turbidity barrier would have the added benefit of excluding fish from the immediate area of in-water work (i.e., pile-driving and pile removal).

Timing: During project construction.

Responsibility: GLDC and construction contractors.

The likelihood that special-status fish would be present in Goodyear Slough at the time of construction is low. Additional measures designed to reduce or capture mobilized sediment, minimize polluted runoff and potential releases of fuels and oils, or otherwise cause downstream water quality effects would also be implemented.

Implementation of Mitigation Measures 3.4-3 through 3.4-9 above as well as the proposed ECs would reduce any potential adverse effects of the Proposed Project on special status fish species related to noise and vibration and water quality to a less-than-significant level. Removal of the existing creosote-treated wooden piles would improve water quality in the project area by removing an ongoing source of leaching contaminants. Removing the pilings would have beneficial effects on Green Sturgeon and the species' critical habitat, other special-status species and their habitat, and other aquatic life forms.

Effects on Critical Habitat and Essential Fish Habitat

Activities associated with sediment removal and construction equipment staging and operation could have temporary effects on designated Green Sturgeon and Delta Smelt critical habitat and EFH. Impacts may include changes to local water quality and habitat quality during proposed actions through substrate disturbance, sediment mobilization, increased turbidity, and release of fuels and lubricants. Disturbance during construction activities could affect rearing habitat, food resources, water quality, and sediment quality, and could disrupt migration corridors. Implementing the Proposed Project would result in approximately 0.040 acres of impacts to North American Green Sturgeon Southern DPS or designated critical habitat. Approximately 0.0025 acre of open-water habitat would be permanently affected by placement of piles and corrosion protection system for the new bridge and approximately 0.0380 acre of open water habitat would be shaded from the new bridge decking. There would be an overall permanent net loss of 0.001 acres of open water habitat after the existing bridge is removed. It is anticipated that the open water habitat impacts associated with cathode protection system would lessen over time, and the cathodes would eventually become buried under the bay mud returning an additional 0.002 acre of open water habitat in the project area. There would also be a net increase of 0.0011 acres of open water that would be shaded from the new bridge deck after the existing bridge is removed. Consequently, effects associated with shading of North American Green Sturgeon Southern DPS or Delta Smelt designated critical habitat or EFH from implementation of the Proposed Project are considered to be negligible.

Implementation of Mitigation Measures 3.4-3 through 3.4-9 as well as ECs would reduce potential temporary adverse effects on special-status fish species and associated critical habitat and EFH associated with construction.

Removal of the existing creosote-treated wooden piles would also improve water quality in the project area by removing an ongoing source of leaching contaminants. Consequently removing the pilings would have beneficial effects on Green Sturgeon and the species' critical habitat, other special-status species and their habitat, and other aquatic life forms.

- b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the California Department of Fish and Game or the U.S. Fish and Wildlife Service?**

Less-than-Significant Impact with Mitigation Incorporated. The northern coastal salt marsh habitat on the project site is considered a sensitive natural community by CDFW. Without sufficient protections, construction of the Proposed Project could result in significant temporary impacts on northern coastal salt marsh habitat. As detailed in Chapter 2, “Project Description,” the vegetation would be removed by hand. The Proposed Project is also committed to comply with all applicable water quality regulations, including preparation and implementation of a water quality control plan, a spill prevention and control program, and a hazardous materials and waste management program.

In addition to compliance with applicable water quality regulations, an EC to minimize disturbance during construction has been incorporated into the Proposed Project. This EC requires that construction and staging areas be limited to the existing right-of-way and previously disturbed areas to the extent possible. Construction area boundaries would be clearly demarcated and any new disturbance, including grading, would be minimized to the smallest area necessary. Additional ECs require GLDC and DWR to provide environmental awareness training for all construction personnel, incorporate exclusionary fencing and signage to identify and restrict construction within environmentally sensitive areas, and retain a construction monitor/environmental inspector to confirm the fence’s integrity on a daily basis to protect the area from accidental equipment damage.

During implementation of the Proposed Project, approximately 0.04 acre of northern coastal salt marsh habitat would be permanently removed and an additional 0.04 acres would be shaded from the new bridge decking; therefore, the loss of northern coastal salt marsh would be potentially significant.

Mitigation Measure 3.4-10: Provide Compensatory Mitigation for Loss of Northern Coastal Salt Marsh Habitat

GLDC will provide compensatory mitigation for loss of northern coastal salt marsh habitat at a ratio of 1:1. Appropriate monitoring and success criteria will be determined in consultation with and approved by CDFW.

Timing: Before project construction.

Responsibility: GLDC.

Mitigation Measure 3.4-10, presented above, requires compensatory mitigation for potential loss of northern coastal salt marsh habitat. Furthermore, marsh vegetation is expected to reestablish in the areas where piles are removed and are currently shaded by the existing bridge deck that will be exposed to sun once demolition is completed. Implementation of Mitigation Measure 3.4-10 and compliance with applicable water quality regulations would ensure that direct and indirect impacts on northern coastal salt marsh would be less than significant.

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

Less-than-Significant Impact with Mitigation Incorporated. The northern coastal salt marsh and open waters in the project area are considered jurisdictional waters of the U.S. regulated by USACE and the San Francisco Bay RWQCB under the federal Clean Water Act. The extent and location of northern coastal salt marsh and open waters was delineated by AECOM biologists during site surveys in 2013 (AECOM 2013).

Construction of the new bridge would permanently affect approximately 0.08 acre of northern coastal salt marsh, which includes a permanent net loss of approximately 0.04 acres of salt marsh associated with the placement of the new bridge components and approximately 0.04 acre affected by shading from the new bridge deck. It is anticipated that removal of structures associated with the existing bridge would allow for the reestablishment of salt marsh over time. There would be a small net increase of 0.01 acres in shading of salt marsh habitat from existing conditions with the placement of the new bridge deck; however, there would be an overall net gain of 0.0002 acres of salt marsh habitat in the Goodyear channel as a result of pile removal activities.

Mitigation Measure 3.4-11: Implement Mitigation Measure 3.4-10: Provide Compensatory Mitigation for Loss of Northern Coastal Salt Marsh Habitat

Compliance with applicable water quality regulations and implementation of Mitigation Measure 3.4-11 would ensure that direct and indirect project impacts on federally protected wetlands and waters would be less than significant.

- d) **Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?**

Less-than-Significant Impact. The project site has direct connectivity to natural marsh and aquatic habitat that harbors several special-status plant and wildlife species. Implementation of the Proposed Project would not permanently affect the existing connectivity between habitats on-site and the adjacent natural habitats, as the higher quality habitats on-site would be avoided and connectivity to Suisun Marsh maintained. The project would not impede wildlife movements as it would not include construction of permanent fencing. The bridge approach would be open and at grade, allowing wildlife to cross. Vehicle traffic would not increase, would be limited to local and operation and maintenance traffic, and would not present a new barrier to wildlife movement or result in substantial wildlife losses. During project construction, a portion of the channel would remain open at all times to allow for unimpeded movement of migratory fish. Therefore, this impact would be less than significant. No mitigation is required.

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

Less-than-Significant Impact. Solano County has a tree ordinance; however, because no tree removal would occur, the project would not conflict with an applicable tree preservation policy or ordinance. As described in detail in Section 3.10, "Land Use and Planning," the project site resides within the Solano County component of the Suisun Marsh Local Protection Program, administered by Solano County. The Local Protection Program includes county-specific policies related to land uses, development, and conservation and land management

practices within Suisun Marsh that are consistent with the Suisun Marsh Protection Plan and in accordance with the Suisun Marsh Protection Act. Also, Goodyear Slough and the managed wetlands in the vicinity of the project area are under the jurisdiction of the San Francisco Bay Plan, administered by the San Francisco Bay Conservation and Development Commission and CDFW. The project site is also located within the jurisdiction of the Delta Stewardship Council's Delta Plan, but the Proposed Project is not considered to be a covered action. Implementation of the Proposed Project would be generally consistent with the applicable plans and policies. Therefore, this impact would be less than significant. No mitigation is required.

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

Less-than-Significant Impact. The Proposed Project is located within the planning boundaries of the Suisun Marsh Management Plan. No natural community conservation plans cover the project area. Similarly, the Proposed Project does not include habitat enhancement or a restoration component. However, the Proposed Project, as detailed in Chapter 2, "Project Description," would be generally consistent with applicable policies, ECs, and recommendations in the Suisun Marsh Management Plan. Therefore, this impact would be less than significant. No mitigation is required.

3.5 CULTURAL RESOURCES

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
V. Cultural Resources. Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Disturb any human remains, including those interred outside of formal cemeteries?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3.5.1 ENVIRONMENTAL SETTING

Morrow Lane Bridge was originally constructed in 1931, in the alignment of the proposed new bridge. GLDC replaced the original 1931 bridge with a new bridge and alignment during the early 1950s. Consequently, few remnants of the original 1930’s bridge remains; however, several wooden piles and remnants of roadway from the 1931 bridge are present in the alignment of the proposed new bridge.

A Cultural Resources Study was completed by AECOM for the Proposed Project (see Appendix 2). This study consisted of background research, consultation with potentially interested parties, and a field survey. The information for the following section was based on these studies.

As part of the Cultural Resources Study, a cultural resources records search was performed at the California Historical Resources Information System’s Northwest Information Center (NWIC) in Rohnert Park on August 19, 2015 (NWIC File No. 15-0305). The literature search indicated that there are no significant cultural resources located within or adjacent to the project area.

Two previous pedestrian surveys (WSA 1997; WSA 2000) included portions of the project area. Two potential resources (P-48-000982 and P-48-000987) were documented, including the existing Morrow Lane Bridge and evaluated during these studies. Both resources documented during previous investigations, including Morrow Lane Bridge were determined ineligible for inclusion on the National Register of Historic Places or the California register of Historic Resources by consensus (Appendix 2).

Other sources consulted as part of that study, with negative results, include the:

- ▶ National Register of Historic Places – Historic Properties Directory (2012) and Archaeological Determinations of Eligibility (2012)
- ▶ California Inventory of Historic Resources (1976 and updates)
- ▶ California State Historic Landmarks (1996 and updates)

- ▶ California Points of Historical Interest (1992 and updates)
- ▶ California Place Names (Gudde 1969)
- ▶ Historic Spots in California (Hoover et al. 1966, 1990)
- ▶ Smithsonian Institution's *Handbook of North American Indians*, Volume 8, *California* (Wilson and Towne 1978; Levy 1978)

A pedestrian survey was also conducted of the project area on November 12, 2015. Surface visibility was fair to poor due to grass cover. The transect interval was 15 meters and coverage was completed for the entire project area with the exception of a gated portion of the staging area, which was visually inspected from outside the gate. No prehistoric or historic cultural resources were observed during the survey.

A paleontological resources search was completed on June 5, 2016 on the University of California, Berkeley Museum of Paleontology (UCMP) website for the project area (UCMP 2016). No locations that have sensitive paleontological resources were identified in the project area, or in association with Solano County's delta marshlands. The nearest paleontological locale is associated with inland geologic landforms approximately 20 miles from the project area, and contains Tertiary fossilized foraminifera. Furthermore, the project area is located exclusively in Holocene-age sediments and, therefore is extremely unlikely to contain significant paleontological resources.

3.5.2 DISCUSSION

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

No Impact. One historic-era built environment resource, the Morrow Lane Bridge, was previously identified in the project area; however, the bridge does not meet criteria for inclusion in the NRHP or CRHR and, therefore, is not considered a historical resource for the purposes of CEQA. No historic resources were identified in the project area. Therefore, no impact would occur.

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

Less-than-Significant Impact with Mitigation Incorporated. No historical resources or unique archaeological resources have been identified in the project area. There is no indication that these resources are present, however, there is always a possibility of discovering unanticipated cultural resources during ground disturbance, which may qualify as historical resources or unique archaeological resources. This impact would be potentially significant.

Mitigation Measure 3.5-1: Halt Construction Activities if Cultural Resources Are Discovered.

If potentially significant archaeological or tribal cultural resources are discovered at any time during construction, all earth-disturbing work in the vicinity of the discovery will be temporarily suspended or redirected until a professional archaeologist has evaluated the nature and significance of the discovery. If a potentially significant archaeological or tribal cultural resource is discovered, GLDC, DWR, and any local, state, or federal agency with approval or permitting authority over the project that has requested

such notification will be notified. Impacts on previously unknown significant archaeological or tribal cultural resources will be avoided through preservation in place if feasible. Damaging effects on tribal cultural resources will be avoided or minimized following the measures identified in California Public Resources Code Section 21084.3(b), if feasible, unless other measures that would be more effective are mutually agreed to with the lead archaeologist. If the lead archaeologist believes that damaging effects on significant resources will be avoided or minimized, then work in the area may resume.

Timing: During project construction.

Responsibility: GLDC, DWR and construction contractors.

With implementation of Mitigation Measure 3.5-1, any impacts associated with discovery of archeological resources would be minimized. Therefore, with mitigation, the construction-related impact would be less than significant.

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

No Impact. No paleontological resources were identified in the project vicinity. Furthermore, the project area is located exclusively in Holocene-age sediments and, therefore is extremely unlikely to contain significant paleontological resources. No impact would occur.

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

Less-than-Significant Impact with Mitigation Incorporated. No human remains are known to exist within the project area or vicinity. There is no indication that human remains are present within the project; however, there is always a possibility of discovering unanticipated human remains during ground disturbance. This impact would be potentially significant.

Mitigation Measure 3.5-2: Halt Construction Activities if Any Human Remains Are Discovered.

The procedures for the treatment of discovered human remains are described in Sections 7050.5 and 7052 of the California Health and Safety Code and Section 5097 of the California Public Resources Code. In accordance with the California Health and Safety Code, if human remains are uncovered during ground-disturbing activities, such activities that may affect the remains will be halted within 100 feet, and GLDC or its designated representative will be notified. GLDC will immediately notify the county coroner and a qualified professional archaeologist. If the coroner determines that the remains are those of a Native American, the coroner will contact the Native American Heritage Commission (NAHC) by telephone within 24 hours of making that determination (California Health and Safety Code, Section 7050.5[c]).

Responsibilities for acting on notification of a discovery of Native American human remains are identified in Section 5097.9 of the California Public Resources Code. DWR or its appointed representative and the professional archaeologist will consult with a Most Likely Descendant (MLD), determined by the NAHC, regarding the removal or preservation and avoidance of the remains, and will determine whether additional burials could be present in the vicinity.

Timing: During project construction.

Responsibility: GLDC, DWR, and construction contractors.

With implementation of Mitigation Measure 3.5-2, any impacts associated with discovery of human remains would be minimized. Therefore, with mitigation, the construction-related impact would be less than significant.

3.6 GEOLOGY AND SOILS

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

3.6.1 ENVIRONMENTAL SETTING

The project site is located within the Coast Ranges geomorphic province of California, which includes the San Francisco Bay and the northwest-trending mountains that parallel the coast. The site is underlain by Holocene bay mud, which in turn is underlain at depths, greater than 55 feet below ground surface below the bay muds, by basement rocks of either the Sonoma Volcanics or Cretaceous age Great Valley Sequence (Purcell, Rhoades and Associates 2015).

The U.S. Natural Resources Conservation Service (NRCS) *Soil Survey for Solano County, California*, describes surface soils across the project site as Reyes silty clay. These soils fall under NRCS hydrologic soil group “D,” with generally poor infiltration rates and high surface runoff potential (NRCS 2016). Clay-rich soils are not considered to be highly erodible.

Geotechnical testing indicated corrosive or severely corrosive soil resistivity conditions with high chloride and sulfate soil concentrations with the potential also be detrimental to reinforced concrete structures and cement mortar-coated steel (Purcell, Rhoades and Associates 2015).

The project site is located within a region of high seismic activity; however, it is not located within a State-designated Alquist-Priolo Earthquake Fault Zone or special studies zone for potentially active faults (CGS 2016; DOC 2016). The nearest active fault is the Concord-Green Valley Fault zone, located approximately 0.5 mile west-southwest of the site. A list of active faults, their distance, and expected peak ground acceleration is presented in Table 3.6-1.

Table 3.6-1. Active Faults within the Project Area				
Fault	Maximum Moment Magnitude	Distance (miles)	Peak Ground Acceleration	
Concord-Green Valley	6.7	0.4	0.62	
Cordelia	6.5	6.3	0.19	
W. Napa	6.5	8.9	0.15	
Greenville	6.9	12.2	0.15	
Rodgers Creek	7.1	13.2	0.16	
Hayward	6.9	16.0	0.12	
Calaveras	6.9	17.5	0.08	
Hunting Cr.-Berryessa	7.1	24.5	0.01	
San Andreas	7.9	33.7	0.13	

Source: Purcell, Rhoades and Associates 2015

According to geotechnical investigations, the project site would be susceptible to strong ground shaking during a maximum momentum magnitude earthquake on the Concord-Green Valley, Greenville, Calaveras, and Hayward faults. The project area is not generally susceptible to liquefaction given the clayey composition of soils; however, soils could soften as a result of seismic shaking (Purcell, Rhoades and Associates 2015).

3.6.2 DISCUSSION

- a) **Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:**
- i) **Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? (Refer to California Geological Survey Special Publication 42.)**

Less-than-Significant Impact. Surface rupture occurs when the ground surface is broken due to fault movement during an earthquake. The location of surface rupture generally can be assumed to be along an active or potentially active major fault trace. The Alquist-Priolo Earthquake Fault Zoning Act (Act) requires the State Geologist to delineate “Earthquake Fault Zones” along faults that are “sufficiently active” and “well defined.” The site is not located within a designated Alquist-Priolo Earthquake Fault Zone. No active or potentially active faults have been mapped on the project site; therefore, potential for fault rupture at the site is low. This impact would be less than significant. No mitigation is required.

ii) **Strong seismic ground shaking?**

Less-than-Significant Impact. The project site is located in a seismically active region subject to strong seismic ground shaking. Ground shaking is a general term referring to all aspects of motion of the earth's surface resulting from an earthquake, and is normally the major cause of damage in seismic events. The extent of ground-shaking is controlled by the magnitude and intensity of the earthquake, distance from the epicenter, and local geologic conditions.

According to geotechnical investigations, the project site would be susceptible to strong ground shaking during a maximum momentum magnitude earthquake on the Concord-Green valley, Greenville, Calaveras and Hayward faults. USGS estimates that there is a 63 percent chance of a major earthquake with a magnitude of 6.7 or greater within the San Francisco Bay area within a 30 year time period between 2007 and 2036. In the same time period, the chance for a magnitude 6.7 or greater earthquake on the Concord–Green Valley, Rodgers Creek–Hayward, and San Andreas faults is 3, 31 and 21 percent, respectively (Purcell, Rhoades and Associates 2015).

Although the project site could be exposed to strong seismic ground shaking, the Proposed Project would be designed and constructed consistent with County and Caltrans standards which are required to adhere to State seismic design parameters identified in the California Building Standards Code. Moreover, the existing bridge is structurally deficient and would likely be severely impacted by seismic shaking. The Proposed Project would result in an improvement to the existing structurally deficient bridge. Therefore, this impact would be less than significant. No mitigation is required.

iii) **Seismic-related ground failure, including liquefaction?**

Less-than-Significant Impact. Soil liquefaction is a phenomenon primarily associated with the saturated soil layers located close to the ground surface. These soils lose strength during ground shaking. Due to the loss of strength, the soil acquires “mobility” sufficient to permit both horizontal and vertical movements. Soils that are most susceptible to liquefaction are clean, loose, uniformly graded, saturated, fine-grained sands that lie relatively close to the ground surface. However, loose sands that contain a significant amount of fines (minute silt and clay fraction) may also liquefy.

As previously identified, soils at the site are Reyes silty clay which do not exhibit characteristics of soils most susceptible to liquefaction; however, soils could soften as a result of seismic shaking. As described in (ii) above, the Proposed Project would be designed and constructed consistent in accordance to applicable standards addressing the potential risk of soil softening as a result of seismic activity. Therefore, this impact would be less than significant. No mitigation is required.

iv) **Landslides?**

Less-than-Significant Impact. The Proposed Project site is not located in an area of known landslides or on steep terrain that would be prone to landslide activity. The Proposed Project would not substantially alter slopes within the area in a manner that would increase the risk of landslides. Implementation of the Proposed Project would not adversely impact persons or structures due to landslides. This impact would be less than significant. No mitigation is required.

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

Less-than-Significant Impact. The Proposed Project is located on soils or with soil conditions that are identified as high potential for runoff and low potential for erosion. Although soils have a low potential for erosion, ground disturbing activities during the construction phase have the potential to result in soil erosion.

As detailed in Chapter 2, “Project Description,” ECs for the Proposed Project include the preparation and implementation of a water quality control program plan and the minimization of grading and soil disturbance to the least area necessary. The water quality control program plan will identify best management practices to manage sediment and prevent discharge of sediment from the project site to surface waterways, prevent wind and water erosion from the beginning through conclusion of construction activities. Implementation of these ECs would minimize the potential for soil erosion and the loss of topsoil to a less than significant level. This impact would be less than significant. No mitigation is required.

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

Less-than-Significant Impact. As described above, the potential for hazard from landslide and liquefaction is low. Therefore, the potential for liquefaction induced lateral spreading is also low. Subsidence is the sudden sinking or gradual downward settling of the earth’s surface with little or no horizontal motion. Subsidence is caused by a variety of activities, which include (but is not limited to) microbial oxidation of soil organic carbon, withdrawal of groundwater, extraction of oil and natural gas resources, liquefaction, and hydro-compaction.

Mud underlying the project site may subject to settlement, subsidence or softening during seismic activity. Fills, including the placement of bridge piles could also become unstable or subject to subsidence due to the highly compressive and expansive nature of the Bay mud soils.

Although the project site is located within an geologic unit that could be unstable as a result of the Proposed Project, the Proposed Project would be designed and constructed consistent with County, BCDC, and Caltrans standards, which include design parameters related to the safety of construction and filling within the San Francisco Bay area. Therefore, this impact would be less than significant. No mitigation is required.

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

Less-than-Significant Impact. Expansion and contraction of volume can occur when expansive soils undergo alternating cycles of wetting (swelling) and drying (shrinking) and are generally associated with clayey soils similar to those found on the project site. During these cycles, the volume of the soil changes markedly. Expansive soils can cause damage to foundations and slabs unless properly treated during construction. As described previously, site design and construction techniques would comply with County, BCDC, and Caltrans design standards to address expansive soils. Therefore, this impact would be less than significant. No mitigation is required.

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

No Impact. The Proposed Project would not generate wastewater requiring disposal. No septic tanks are proposed as part of the project. Therefore, implementation of the Proposed Project would not result in impacts to soils associated with the use of such wastewater treatment systems. No impact would occur.

3.7 GREENHOUSE GAS EMISSIONS

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
VII. Greenhouse Gas Emissions. Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

3.7.1 ENVIRONMENTAL SETTING

Certain gases in the earth’s atmosphere, classified as greenhouse gases (GHGs), play a critical role in determining the earth’s surface temperature. A portion of the solar radiation that enters the earth’s atmosphere is absorbed by the earth’s surface, and a smaller portion of this radiation is reflected back towards space. This infrared radiation (i.e., thermal heat) is absorbed by GHGs within the earth’s atmosphere. As a result, infrared radiation released from the earth that otherwise would have escaped back into space is instead “trapped,” resulting in a warming of the atmosphere. This phenomenon, known as the “greenhouse effect,” is responsible for maintaining a habitable climate on the earth.

GHG emissions related to human activities have been determined as “extremely likely” to be responsible (indicating 95% certainty) for intensifying the greenhouse effect and leading to a trend of unnatural warming of the earth’s atmosphere and oceans, with corresponding effects on global circulation patterns and climate (ARB 2014). The quantity of GHGs that it takes to ultimately result in climate change is not precisely known; however, no single project is expected to measurably contribute to a noticeable incremental change in the global average temperature, or to a global, local, or micro climate.

GHGs are present in the atmosphere naturally, are released by natural and anthropogenic sources, and are formed from secondary reactions taking place in the atmosphere. Natural sources of GHGs include the respiration of humans, animals and plants, decomposition of organic matter, and evaporation from the oceans. Anthropogenic sources include the combustion of fossil fuels, waste treatment, and agricultural processes. The following are GHGs that are widely accepted as the principal contributors to human-induced global climate change:

- ▶ Carbon dioxide (CO₂)
- ▶ Methane (CH₄)
- ▶ Nitrous oxide (N₂O)
- ▶ Hydrofluorocarbons (HFCs)
- ▶ Perfluorocarbons (PFCs)
- ▶ Sulfur hexafluoride (SF₆)
- ▶ Nitrogen trifluoride (NF₃)

The majority of CO₂ emissions are byproducts of fossil fuel combustion, which would be the main GHG pollutant generated by the Proposed Project. CH₄ is the main component of natural gas and is associated with agricultural practices and landfills. N₂O is a colorless GHG that results from industrial processes, vehicle emissions, and agricultural practices.

Global warming potential (GWP) is a concept developed to compare the ability of each GHG to trap heat in the atmosphere with that of CO₂. The GWP of a GHG is based on several factors, such as the relative effectiveness of a gas to absorb infrared radiation and the length of time that the gas remains in the atmosphere (its “atmospheric lifetime”). The GWP of each gas is measured relative to CO₂, the most abundant GHG. GHGs with lower emissions rates than CO₂ may still contribute to climate change because they are more effective than CO₂ at absorbing outgoing infrared radiation (i.e., they have a high GWP). The concept of CO₂ equivalent (CO₂e) is used to account for the different GWP potentials of GHGs to absorb infrared radiation.

With the passage of legislation including Senate and Assembly bills and executive orders, California launched an innovative and proactive approach to dealing with GHG emissions and climate change at the state level. The goal of Executive Order S-3-05, signed by former Governor Arnold Schwarzenegger on June 1, 2005, is to reduce California’s GHG emissions to year 2000 levels by 2010, 1990 levels by 2020, and 80% below the 1990 levels by the year 2050. In 2006, this goal was reinforced with the passage of Assembly Bill (AB) 32, the Global Warming Solutions Act. AB 32 further requires that the California Air Resources Board (ARB) create a plan that includes market mechanisms, and implement rules to achieve “real, quantifiable, cost-effective reductions of greenhouse gases.”

3.7.2 DISCUSSION

3.7.2.1 THRESHOLDS OF SIGNIFICANCE

BAAQMD issued CEQA guidelines in May 2012 that include assistance in calculating emissions, obtaining information regarding the health impacts of air pollutants, and identifying potential mitigation measures, but does not include thresholds of significance. In addition to the CEQA Checklist G criteria listed above, in the absence of established thresholds of significance from the lead agency or local air district, CEQA allows the lead agency to consider thresholds previously adopted or recommended by other public agencies or experts. To establish additional context in which to consider the Proposed Project’s GHG emissions, this analysis reviewed guidelines used by other experts and public agencies. The most conservative threshold was included in the California Air Pollution Control Officers Association (CAPCOA) report, *CEQA and Climate Change: Evaluating and Addressing Greenhouse Gas Emissions from Projects Subject to the California Environmental Quality Act*, which recommends a threshold of 900 MT CO₂e per year for any residential, commercial, or industrial project (CAPCOA 2008). The Sacramento Air Quality Management District (SMAQMD) has adopted a significance threshold for GHG emissions of 1,100 MT CO₂e per year that applies to construction and operational emissions (SMAQMD 2015). These significance thresholds were developed to assess consistency of a project’s emissions with the statewide framework for reducing GHG emissions.

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Less-than-Significant Impact. Project construction activities would include construction of a new bridge and demolition of the existing Morrow Lane Bridge. The Proposed Project would generate construction-related GHG emissions resulting from the operation of off-road equipment, haul trucks, concrete trucks, and construction worker commutes. See Section 3.3, “Air Quality,” and Appendix 1 for additional details for construction emissions modeling. Total GHG emissions from construction and demolition of the Proposed Project would be approximately 110 MT CO₂e. The total construction-related GHG emissions would be less than adopted or recommended thresholds of significance. Thus, the Proposed Project’s construction-related GHG emissions would

not be considered to generate a significance impact on the environment. This construction impact would be less than significant. No mitigation is required.

The Proposed Project would involve demolition of the existing Morrow Bridge and construction of a new bridge that would not increase capacity or generate additional vehicles trips. As described in Section 3.3, “Air Quality,” the Proposed Project would not result in a net increase in long-term operational emissions. Therefore, this operational impact would be less than significant. No mitigation is required.

b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Less-than-Significant Impact. In June 2011, the Solano County Board of Supervisors adopted the Solano County Climate Action Plan (Solano County CAP). However, the Solano County CAP was developed to address reducing GHG emissions from land use development and not construction projects such as the Proposed Project. Therefore, for the purposes of this analysis, the applicable GHG reduction plan to evaluate the Proposed Project against is the statewide AB 32 Scoping Plan Update. ARB’s Scoping Plan Update includes measures and strategies established to meet California’s goal of reducing emissions to 1990 levels by 2020 and also reiterates the state’s role in the long-term goal established in Executive Order S-3-05, which is to reduce GHG emissions to 80% below 1990 levels by 2050. Projects that would be consistent with the goals and strategies of the AB 32 Scoping Plan Update would be considered not to conflict with the plan’s GHG reduction target.

The Scoping Plan update did not directly create any regulatory requirements for the Proposed Project. ARB’s Scoping Plan Update includes a summary of actions completed to date that would address the AB 32 goals for 2020. In addition, the Scoping Plan Update includes recommended actions that would indirectly address GHG emissions from construction activities, such as providing expanded markets for clean passenger transportation, advanced technology trucks and construction equipment, low-carbon transportation fuels and energy, and related infrastructure. The Proposed Project would be required to comply with applicable regulations, including those developed as measures in the ARB Scoping Plan.

As discussed previously, the Proposed Project would not generate short-term construction-related GHG emissions that are considered a significant impact on the environment or have a cumulatively considerable incremental contribution to a significant impact on the environment. Furthermore, the Proposed Project would not result in a net increase in long-term operational GHG emissions. Therefore, the project would not be expected to conflict with existing California legislation and GHG reduction plans adopted to reduce statewide GHG emissions. Thus, this impact would be less than significant. No mitigation is required.

3.8 HAZARDS AND HAZARDOUS MATERIALS

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

3.8.1 ENVIRONMENTAL SETTING

The project area consists of an existing bridge crossing the Goodyear Slough near marshland in unincorporated Solano County. The Southern Pacific railroad is located approximately 900 feet west of the Morrow Bridge.

The State Water Resources Control Board (SWRCB) GeoTracker database (SWRCB 2016a), California Department of Toxic Substances Control (DTSC) EnviroStor database (DTSC 2016), and “Cortese List” of hazardous waste and substances (CalEPA 2016) were reviewed for the project site. No existing sites were identified within 2 miles identified by the DTSC Envirostor database and Cortese List for the project site and immediate vicinity.

The SWRCB Geotracker identified one cleanup site, Southern Pacific Pipeline (GeoTracker site T0609500144), located less than a quarter mile west of the proposed bridge location at 2634 Morrow Lane, adjacent to the Southern Pacific Railway line. A gasoline leak at the Southern Pacific Pipeline site was identified in 1987. The contaminated soil was excavated and removed as part of clean-up efforts. A soil and water investigation report on December 20, 2004, determined that there were no detectable concentrations of contamination in groundwater and the site was remediated in accordance with applicable regulations. The site is listed as closed (SWRCB 2016b).

The nearest school to the project site is the Robert Semple Elementary School, located approximately 4.24 miles southwest of the project site. The project site is located approximately 5 miles south of Garibaldi Brothers airstrip. The closest airport to the project site is the Buchanan Field Airport in Contra Costa County, approximately 8.45 miles south of the project site.

3.8.2 DISCUSSION

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

Less-than-Significant Impact. Construction of the Proposed Project would involve the incidental transport and use of common hazardous materials such as oils, lubricants, and fuels, as well as specific materials for bridge construction, such as concrete. Operation of the Proposed Project would include bridge maintenance that could include cleaning and painting structural steel, and sealing concrete surfaces. Project activities would span Goodyear Slough and adjacent sensitive habitats.

DTSC has primary regulatory authority for enforcing hazardous-materials regulations. State hazardous-waste regulations are contained primarily in Title 22 of the California Code of Regulations. The California Occupational Health and Safety Administration has developed rules and regulations regarding worker safety around hazardous and toxic substances. If used and stored properly, these materials would not pose a significant risk to the public or the environment.

In addition, a Spill Prevention and Control Program (SPCP) and a Hazardous Materials Management Program (HMMP) would be implemented for the Proposed Project (ECs in Chapter 2, "Project Description"). The spill prevention and control program would be prepared before the start of construction to minimize the potential for hazardous, toxic, or petroleum substances release at the project site during construction and operation. The HMMP would be prepared and implemented to identify the hazardous materials to be used during construction; describe measures to prevent, control, and minimize the spillage of hazardous substances; handle treated wood waste, describe transport, storage, and disposal procedures for these substances; and outline procedures to be followed in case of a spill of a hazardous material.

The Proposed Project would include using only a limited amount of hazardous materials during construction and potential impacts associated with the routine transport, use, or disposal of hazardous materials would be minimized with the implementation of ECs referenced above. Therefore, this impact would be less than significant. No mitigation is required.

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

Less-than-Significant Impact. Accidental spills or releases of hazardous materials during project construction and operation in areas with recreational use and sensitive habitat could result in the exposure of workers, the recreating public, and the environment to hazardous materials. As noted under Question a) above, Proposed Project activities would require the use of minor amounts of hazardous materials during construction. However, as discussed in Chapter 2, “Project Description,” a Spill Prevention and Control Program, and a HMMP would be prepared before and implemented during all ground-disturbing activities.

The SPCP and HMMP would minimize the potential for hazardous, toxic, or petroleum substances release at the project site during construction and operation. Therefore, this impact would be less than significant. No mitigation is required.

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

No Impact. There are no schools located within one-quarter mile of the project site. The nearest school to the project site is the Robert Semple Elementary School, located approximately 4.24 miles southwest of the project site. No potential exists for Proposed Project–related hazardous emissions or handling of hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school. Therefore, no impact would occur.

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

No Impact. The Hazardous Waste and Substances Sites List (Cortese List) is compiled by the DTSC in accordance with Section 65962.5 of the California Government Code. No existing sites within 2 miles of the project areas were identified on the DTSC EnviroStor database or Cortese List. Based on a review of available information, this site would not pose a hazard to the public or the environment during the construction of the new bridge. Therefore, no impact would occur.

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

No Impact. The Proposed Project is not located within 2 miles of a public airport. The project site is located approximately 5 miles south of Garibaldi Brothers airstrip. The closest airport to the project site is the Buchanan Field Airport in Contra Costa County, approximately 8.45 miles south of the project site. The project site is not located within the airport’s influence area (Contra Costa County ALUCP 2000). Therefore, no impact would occur.

f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?

No Impact. The Proposed Project is not located within 2 miles of a public airport or within the vicinity of a private airstrip. The project site is located approximately 5 miles south of Garibaldi Brothers airstrip. The closest

airport to the project site is the Buchanan Field Airport in Contra Costa County, approximately 8.45 miles south of the project site. The Proposed Project would not create a hazard associated with people residing or working in the area of the Proposed Project. Therefore, no impact would occur.

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

Less-than-Significant Impact. The Proposed Project would not interfere with any adopted emergency response plans or evacuation plans. Increased truck traffic would be minimal. Staging areas would be located along the roadway on both sides of the bridge, but would allow for adequate clearance for emergency response vehicles. During construction activities of the new bridge, the existing bridge would remain accessible to provide emergency access, evacuation, and provide for emergency response for private residents. Implementation of the Proposed Project would not significantly impair or interfere with emergency access to local roads and evacuation routes, or significantly reduce emergency response. Therefore, this impact would be less than significant. No mitigation is required.

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

Less-than-Significant Impact. The California Department of Forestry and Fire Protection (CAL FIRE) classify land in California based on fire hazard severity. An area that is not located within State of California Cal FIRE jurisdiction is designed as a Local Area Authority (LRA) responsibility. CAL FIRE has designated the project sites as “LRA Unzoned” (CAL FIRE 2007). This is considered as an area of low fire risk. The proposed bridge replacement is in a rural area and would not include the development of habitable structures. In the event of the wildfire east of the existing Morrow Lane Bridge, adequate access would be maintained to accommodate firefighting crews and equipment via the existing bridge. Furthermore, all equipment would be located at staging areas that have been previously disturbed or have been cleared of vegetation. Therefore, this impact would be less than significant. No mitigation is required.

3.9 HYDROLOGY AND WATER QUALITY

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

3.9.1 ENVIRONMENTAL SETTING

Suisun Marsh lies on approximately 116,000 acres, of which about 52,000 acres consist of diked baylands and areas operated as duck clubs. Average annual precipitation in Suisun Marsh typically ranges from 16 to 24 inches per year (DWR 2003). Goodyear Slough flows through Suisun Marsh and the Grizzly Island Wildlife Area in Solano County. Goodyear Slough joins Cordelia Slough near its mouth.

The main channel of Goodyear Slough parallels I-680 between Suisun City and Benicia. Roughly 100 feet northeast of Lake Herman Road in Benicia, an arm of Goodyear Slough branches to the southeast and continues southeast until its outfall into Suisun Bay. This arm is known as the Goodyear Slough Outfall (Outfall).

The Outfall was constructed to connect the south end of Goodyear Slough to Suisun Bay. Goodyear Slough was a dead-end slough before construction of the Outfall. The Outfall was designed to increase circulation and reduce salinity in Goodyear Slough to provide higher water quality to the wetland managers who flood their ponds with Goodyear Slough water. Goodyear Slough and the Outfall pass through culverts in the vicinity of Lake Herman Road.

Just north of the existing bridge, the slough begins to narrow and some scouring around bridge piers is visible. Beyond the existing bridge, the volume of floating debris increases until the channel became unnavigable at approximately 0.35 slough mile north of the Outfall because of large, floating mats of vegetative debris (AECOM 2013).

The water in Goodyear Slough is influenced by tides. Water surface elevations at high tide tend to be 6 to 6.5 feet and elevations at low tide generally drop to about 1 to 1.5 feet NAVD88 (CDEC 2016). A net circulation flow within the slough is created by the daily ebb-and-flood tidal action.

Drainage in the project vicinity consists of a variety of features: vegetated swales, wetlands, and a series of unlined drainage ditches. The drainage ditches store and transport the water to various parts of the island for management of wetlands for water fowl, and also provide drainage for stormwater runoff. Stormwater at the project site would flow in the direction of existing topography to lower lying areas, a drainage canal located to the south of the proposed new bridge alignment, and ultimately Goodyear Slough.

3.9.1.1 WATER QUALITY

The project site is located within the jurisdiction of the San Francisco Bay RWQCB under the direction of the State Water Resources Control Board. According to the *San Francisco Bay Basin (Region 2) Water Quality Control Plan (Basin Plan)* (San Francisco Bay RWQCB 2015), existing beneficial uses of Goodyear Slough are ocean, commercial and sport fishing, estuarine habitat, fish migration, preservation of rare and endangered species, wildlife habitat, water contact recreation, and non-contact water recreation. Fresh and brackish wetlands within Suisun Marsh also provide fish spawning beneficial uses in addition to those described specifically for Goodyear Slough.

The Suisun Marsh wetlands are listed on the Clean Water Act Section 303(d) list as being impaired by low dissolved oxygen (DO)/organic enrichment, mercury, nutrients, and salinity (San Francisco Bay RWQCB 2016). Water quality in the marsh is influenced mainly by the flows from the Sacramento–San Joaquin Delta, tidal action, runoff from local watersheds, and effluent from the Fairfield–Suisun Wastewater Treatment Plant, which receives advanced secondary treatment (San Francisco Bay RWQCB 2015).

Impaired water quality has been linked to seasonal operations of ponds and wetlands managed for waterfowl hunting. Vegetation manipulation, in conjunction with flooding of these areas for hunting in the fall, periodically results in discharges of anoxic black water from the diked marshes. The discharges, laden with decaying plant matter, can cause severe DO depletion in the adjoining channels and sloughs, which often leads to fish kills. The

prolonged periods of flooding and drying, together with a buildup of organic carbon in the soils, can also accelerate mercury transformations and enhance methylmercury production (San Francisco Bay RWQCB 2016).

The Basin Plan's water quality objectives (WQO) limit DO concentrations in tidal waters to no less than 7.0 milligrams per liter (mg/L). The WQO pH range is between 6.5 and 8.5. Goodyear Slough has documented low DO concentrations at certain times of the year; however, water quality data are not as available for Goodyear Slough as for other locations of Suisun Marsh (SWRCB 2013). In 2009, fish kills were documented within Goodyear Slough in the vicinity of the Morrow Lane Bridge. At the time of the fish kill, the DO concentrations were less than 1.0 mg/L (San Francisco Bay RWQCB 2015).

DO concentrations typically vary seasonally, with the lowest concentrations occurring in the fall. Controllable water quality factors are not allowed to cause changes greater than 0.5 unit. Where natural turbidity is greater than 50 nephelometric turbidity units, the WQO for increases in turbidity is to be no greater than 10% of the background concentration.

Monthly mean specific conductance measured between 2006 and 2016 at high tide within Goodyear Slough at Morrow Island (Station S-35) ranges between approximately 6 and 18 milliSiemens per centimeter in the fall and winter months and between 1 and 15 milliSiemens per centimeter in the spring and summer months (DWR 2016c).

3.9.1.2 GROUNDWATER

The project site is located within the Suisun-Fairfield Valley Groundwater Basin of the San Francisco Bay hydrologic region (DWR 2003). Groundwater below the project site is expected to be fairly narrow and encountered within surficial soil units at depths between 2 and 4 feet below ground surface (NRCS 2016). Groundwater well monitoring in the immediate vicinity of the project site indicated groundwater at 2.1 feet below ground surface (SWRCB 2016).

3.9.1.3 FLOODING

The project area has been designated by the Federal Emergency Management Agency (FEMA) as being within a 100-year flood zone (FEMA 2009). According to the FEMA Flood Insurance Study Map, the base flood elevation (i.e., the peak flood elevation during a 100-year flood) at the project site is 9 feet NAVD88. The FEMA map also depicts the north-south unimproved road on the east side of Morrow Lane Bridge as an unaccredited levee (FEMA 2009). These unaccredited levees within Suisun Marsh, more commonly known as diked berms, are also visible in the vicinity of the staging area near the Goodyear duck club and storage area.

3.9.2 DISCUSSION

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

Less-than-Significant Impact with Mitigation Incorporated. Construction of the Proposed Project has the potential to cause temporary water quality impacts from grading activities, dewatering, and removal of existing vegetation, and subsequent accelerated erosion. Construction activities, including bridge deck welding and, concrete pouring and curing, and demolition activities would also occur over the waterway and could adversely affect water quality if materials spill into the waterway.

As stated in Chapter 2, the Proposed Project incorporates ECs to avoid or minimize potential water quality impacts. Implementing these ECs, including an water quality control plan, a hazardous materials and waste management program, spill prevention and control program and pile removal BMPs, would require implementation of best management practices during construction to minimize the potential for water quality impacts from leaks of construction equipment; handling and storage of treated wood waste and hazardous materials; concrete pouring and curing activities, and polluted runoff from construction, staging, and soil disturbance areas. In the event that dewatering is required during excavations, dewatering provisions would be also implemented as part of the Proposed Project.

The Proposed Project would involve removing creosote-treated wood piles from Goodyear Slough. The removal of approximately 94 creosote-treated piles would have a long-term beneficial effect on Goodyear Slough water quality. However, creosote-treated piles have the potential to leach various toxic substances into the water column and adversely affect water quality during removal; however, implementation of EC related to pile removal and waste management to reduce these effects.

The new bridge would consist of approximately 4,076 sq. ft. of impervious surface which may increase the volume of stormwater runoff and/or pollutant loading into Goodyear Slough. A high velocity stormwater flow of the bridge deck surface has the potential to erode unpaved areas surrounding the bridge abutments and discharge sediments and pollutants into Goodyear Slough. Such erosion and water quality effects could be potentially significant; however, all projects that create 2,500 square feet or more of impervious surface in unincorporated areas are required to obtain coverage under Solano County's National Pollutant Discharge Elimination System (NPDES) program by obtaining a grading permit and comply with post construction stormwater management program provisions (Provision E.12). Post construction requirements include incorporating design measures to reduce run-off pollution, preparing a stormwater plan and reporting compliance with E.12 provisions. Consequently, the Proposed Project would be designed and implemented to minimize any water quality impacts associated with increased stormwater runoff from new impervious surfaces.

In-water work consisting of pile driving, pile and bridge structure removal, could mobilize sediments and increase turbidity, which could temporarily impair water quality in, adjacent to, and downstream of construction activities in Goodyear Slough. Although temporary, adverse water quality impacts associated with pile driving could be potentially significant.

Mitigation Measure 3.9-1: Implement Mitigation Measure 3.4-7: Manage Debris; Mitigation Measure 3.4-8: Monitor Water Quality during Pile-Driving Activities; Mitigation Measure.4-9: Deploy In-Channel Water Quality Controls

With implementation of Measures 3.9-1, compliance with Solano County's NPDES program E.12 provisions, as well as ECs, as detailed in Chapter 2, "Project Description," water quality impacts from implementation of the Proposed Project would be minimized such that they would not violate any water quality standards or waste discharge requirements. Therefore, impact associated with implementation of the Proposed Project would be less than significant.

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

Less-than-Significant Impact. The Proposed Project would not result in the construction of large areas of impervious surfaces that would prevent water from infiltrating into the groundwater, nor would it result in direct additions to or withdrawals of existing groundwater. The approximate 4,076 sq. ft. of impervious surface associated with the new bridge is considered to be a negligible increase in impervious area. Roadway improvements and the new bridge abutments would remain unpaved, allowing for continued groundwater recharge. Groundwater is expected to be encountered at depths ranging from 2 to 4 feet and could potentially be encountered during construction activities. Because of the small amount of excavation required, if dewatering were required as part of the Proposed Project, it would not result in a substantial depletion of groundwater sources such that there would be a net deficit in aquifer volume at the project site. Therefore, this impact would be less than significant. No mitigation is required.

- c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial on- or off-site erosion or siltation?**

Less-than-Significant Impact with Mitigation Incorporated. The Proposed Project would require minor grading, vegetation removal, and minor cut-and-fill of the streambanks. In-water work would be required for the construction of the new bridge and removal of the existing bridge and would include driving piles for the new bridge and removing old piles.

The Proposed Project would be subject to policies of the Solano County component of the Suisun Marsh Local Protection Program (LPP), including policies related to grading activities within the Primary Zone of Suisun Marsh. As described in Chapter 2, "Project Description," grading would be minimized to the smallest area necessary and grading activities would occur between April 15th, and October 15th, outside of the rainy season. As part of the Proposed Project's ECs, a water quality control program plan and pile removal BMPs would be prepared and implemented to manage sediment and prevent sediment discharge from the project site to surface waterways, prevent wind and water erosion, and prevent pollution of site runoff. These commitments along with adherence with applicable LPP policies would minimize potential on- or off-site erosion or siltation during construction.

The Proposed Project also would remove 94 piles and the old bridge, and place new piles and bridge abutments into the Goodyear Slough channel. Channel and streambed modifications associated with of the construction of the new bridge and demolition of the old bridge could potentially result in changes to the channel banks and sediment movement in the channel. Therefore, this impact would be potentially significant.

Mitigation Measure 3.9-2: Implement Bank Protection and Scour Controls for New Bridge Structure

As part of project design, appropriate bank protection and scour controls will be determined and implemented to minimize the potential for erosion, sedimentation, and/or scour that may occur as a result of the placement of the new bridge structures and/or removal of the existing bridge. Such controls may include bank contouring to minimize steep slopes and placement of riprap or rock slope protection, and/or reestablishing vegetation along the channel banks adjacent to the new bridge abutments.

Timing: During final design.

Responsibility: GLDC and construction contractors.

With implementation of Mitigation Measure 3.9-3, ECs and adherence to applicable Solano County policies, impacts related to modifications to Goodyear Slough and associated on- or off-site erosion or siltation would be reduced to a less-than-significant level.

d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in on- or off-site flooding?

Less-than-Significant Impact. The project site is located entirely within the 100-year flood zone special flood hazard area and would include minor grading, cut-and-fill of the streambanks, and removal of at least 94 piles from Goodyear Slough.

The Proposed Project would be designed to allow drainage patterns to remain largely as they currently are on-site, directing runoff to existing drainage ditches or surrounding vegetated swales. The new bridge would be designed to be constructed at an elevation higher than the base flood elevation, with sufficient freeboard to avoid impeding or redirecting flood flows. The new bridge also would be designed and constructed in accordance with applicable local, state, and federal standards for development and the placement of structures within the floodplain and would not result in a substantial change in the base flood elevation of the 100-year floodplain.

Consequently, development of the Proposed Project would not significantly alter existing drainage patterns, including alteration of the course of a stream or river or a substantial increase in the rate/amount of surface runoff that could lead to on-site or off-site flooding. This impact would be less than significant. No mitigation is required.

e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

Less-than-Significant Impact. As described previously in the response to question (b), the Proposed Project would result in a negligible net increase of impervious surfaces, and therefore, substantial changes in stormwater drainage are not expected. ECs, including the preparation of a water quality control program plan, a hazardous materials and waste management program, and a spill prevention and control program, would require implementing best management practices during construction to minimize the potential for polluted runoff. As a result, the Proposed Project would not cause a permanent increase in runoff and/or pollutant loading. Therefore, this impact would be less than significant. No mitigation is required.

f) Otherwise substantially degrade water quality?

Less-than-Significant Impact. Water quality effects are described above in the response to question (a). The Proposed Project would not degrade water quality beyond conditions described previously. This impact would be less than significant. No mitigation is required.

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

No Impact. The Proposed Project would not involve the construction of housing; therefore, no housing would be placed within a 100-year flood zone. No impact would occur.

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

Less-than-Significant Impact. The Proposed Project is located entirely within the 100-year flood zone special flood hazard area; however, it is located outside of a designated floodway and coastal high hazard area. The anticipated base flood elevation is 9 feet above mean sea level. Construction of the new bridge would include minor grading, cut-and-fill of the streambanks of Goodyear Slough, and placement of encroaching structures within the floodplain.

Solano County regulations prohibit encroachments, including fill, new construction, substantial improvements, and other development, unless a registered civil engineer provides certification demonstrating that the encroachments would not result in any increase in flood levels during the occurrence of a base flood discharge.

Consequently, the Proposed Project would be designed to allow drainage patterns to remain largely as they currently are on-site, directing runoff to existing pervious surfaces or surrounding managed wetlands and vegetated swales. The new bridge would be designed to be constructed at an elevation higher than the base flood elevation, with sufficient freeboard to avoid impeding or redirecting flood flows.

Therefore, this impact would be less than significant. No mitigation is required.

i) Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam?

Less-than-Significant Impact. The project site is not located within a dam inundation area and there are no levee systems within the project area that are certified to provide flood protection. As described above in the response to question (h), the new bridge would be placed within the 100-year floodplain, adjacent to the structurally deficient bridge. The new bridge would be designed and constructed in accordance with applicable local, state, and federal standards for development and the placement of structures within the floodplain.

Because the existing bridge is located within the 100-year floodplain and the new bridge would be designed and constructed in accordance with applicable regulations to minimize exposure risk, there would be no substantial increase in exposure risk following construction of the new bridge. Because the existing bridge is structurally deficient, construction of the new bridge would likely reduce existing flood risk exposure. This impact would be less than significant. No mitigation is required.

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

Less-than-Significant Impact. Earthquakes can cause hazards in relation to open bodies of water by creating seismic sea waves (tsunamis) and seiches. Tsunamis originating in the Pacific Ocean would dissipate in San Francisco Bay, thereby posing a negligible hazard to the project site because of its inland location. Seiches are earthquake-induced oscillations of water that can occur for a few minutes or several hours, in an enclosed or restricted water body such as a basin, river, or lake. The project site is not located adjacent to a hillside area with

soil characteristics that would indicate potential susceptibility to mudslides or mudflows. Seiches could occur in Goodyear Slough; however, based the shallow depths of these water bodies, the risk of a seiche of sufficient magnitude to affect the project site is low. Therefore, this impact would be less than significant. No mitigation is required.

3.10 LAND USE AND PLANNING

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
X. Land Use and Planning. Would the project:				
a) Physically divide an established community?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, a general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

3.10.1 ENVIRONMENTAL SETTING

The project site is located in the Suisun Marsh and unincorporated southern Solano County at the western edge of Grizzly and Suisun Bays, approximately 1 mile northeast of the city limits of Benicia, California. Surrounding land uses in the vicinity of the project site include residential, managed wetlands for recreation and conservation, and a railroad corridor. The area of Solano County immediately to the south of the project site is located within an area designated on the Solano County General Plan within a Resource Conservation Overlay and zoned Marsh Preservation (MP) (Solano County 2009). The overlay indicates the location of priority habitat and provides both opportunities and restrictions regarding the use of the underlying properties.

The project site resides within the Suisun Marsh Protection Plan (SMPP), Primary Management Area, which is administered by the San Francisco Bay Conservation and Development Commission (BCDC) and the California Department of Fish and Wildlife (BCDC 1976). The area in the vicinity of the project site is identified as contained managed wetlands resources under the SMPP. The Solano County component of the Suisun Marsh Local Protection Program (LPP), administered by Solano County, includes county-specific policies related to land uses, development, and conservation and land management practices within Suisun Marsh that are consistent with the SMPP and in accordance with the Suisun Marsh Protection Act (Solano County 2012).

The San Francisco Bay Plan (Bay Plan), also administered by BCDC, includes policies for the development, maintenance and protection of the San Francisco Bay (BCDC 1968). The jurisdiction of the Bay Plan includes the tidally influenced Goodyear Slough and managed wetlands within the vicinity of the project area.

The Delta Plan, a long-term management plan to achieve coequal goals of improving statewide water supply reliability and protecting and restoring the Delta ecosystem, is administered by the Delta Stewardship Council (DSC). Projects determined to be “covered actions” within the planning area of the Delta Plan, which includes the primary management area of Suisun Marsh, must be consistent with the Plan’s policies and recommendations (DSC 2013a, 2013b).

The project area is also within the planning area of the *Suisun Marsh Habitat Management, Preservation, and Restoration Plan* (Suisun Marsh Plan). The Suisun Marsh Plan is a long-term comprehensive plan to restore

ecological health and improve water management for beneficial uses of the Bay-Delta. Seven principal members of the planning group are the U.S. Fish and Wildlife Service, NMFS, U.S. Bureau of Reclamation, CDFW, DWR, DSC, and Suisun Resource Conservation District (Reclamation et al. 2011; CDFW 2014).

3.10.2 DISCUSSION

a) **Physically divide an established community?**

No Impact. The Proposed Project would replace an existing structurally deficient bridge within an existing community that provides the only connection over Goodyear Slough to Morrow Island. The Proposed Project would maintain and improve the safety of the existing connection between Morrow Island and mainland within the San Francisco Bay area. No division of an existing established community would occur. Therefore, no impact would occur.

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

Less-than-Significant Impact. The Proposed Project does not involve a change in land use or zoning; however, it does involve construction and development within the primary zone of Suisun Marsh. As a result, the Proposed Project is subject to applicable plans and policies related to this development, including the Solano County LPP, SMPP, Bay Plan, Delta Plan, and Suisun Marsh Plan.

Delta Plan policies and recommendations only apply to “covered actions” within the planning area. A qualifying covered action is defined in Water Code Section 85057.5 and include a requirement that the project is covered by one or more provisions in the Delta Plan. To determine whether the project is a covered action under the Delta Plan, a covered action determination checklist was completed. Based on the completed checklist, the Proposed Project is not considered to be a covered action (Appendix 3). Consequently, the Proposed Project is not subject to the policies and recommendations of the Delta Plan.

Any other consistency issues between the Proposed Project and policies presented in applicable plans would be issues related to planning regulations and not to a physical environmental consequence of project implementation. Therefore, any such consistency issues would not be considered a significant impact under CEQA, in and of itself. Specific impacts associated with other resource and issue areas are addressed in each resource issue section of Chapter 3, “Environmental Checklist,” where appropriate. These sections provide a detailed analysis of other relevant environmental effects resulting from project implementation and identify applicable planning policies and/or regulatory requirements as applicable. Therefore, this impact would be less than significant. No mitigation is required.

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

Less-than-Significant Impact. The Proposed Project is located within the planning boundaries of the Suisun Marsh Management Plan. There are no natural community conservation plans covering the project area. Similarly, the Proposed Project does not include habitat enhancement or restoration component. However, the proposed ECs, as detailed in Chapter 2, “Project Description,” and other potential mitigation related to biological resources (see Section 3.4, “Biological Resources”) would be generally consistent with applicable policies, ECs and

recommendations in the Suisun Marsh Management Plan. Therefore, this impact would be less than significant. No mitigation is required.

3.11 MINERAL RESOURCES

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XI. Mineral Resources. Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

3.11.1 ENVIRONMENTAL SETTING

There are no mapped mineral resources or regulated mine facilities in the project area. The California Geological Survey classifies the regional significance of mineral resources in accordance with the California Surface Mining and Reclamation Act of 1975 (SMARA). Mineral Resource Zones (MRZs) have been designated to indicate the significance of mineral deposits.

The MRZ categories are as follows:

- ▶ *MRZ-1:* Areas where adequate information indicates that no significant mineral deposits are present or where it is judged that little likelihood exists for their presence.
- ▶ *MRZ-2:* Areas where adequate information indicates significant mineral deposits are present, or where it is judged that a high likelihood exists for their presence.
- ▶ *MRZ-3:* Areas containing mineral deposits, the significance of which cannot be evaluated from available data.
- ▶ *MRZ-4:* Areas where available information is inadequate for assignment to any other MRZ.

The project site is not located within a classified MRZ (Solano County 2008). No MRZ zones are located on adjacent lands.

3.11.2 DISCUSSION

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

No Impact. No mineral resources have been mapped for the project site. The Proposed Project would not affect mineral resources that are important to the region and state residents. Therefore, no impact would occur.

b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?

No Impact. The project site is not located within a classified MRZ (Solano County 2008). Project construction would require using common building materials used to construct a bridge, such as steel, asphalt, and concrete. These materials are widely available throughout California, however it is expected that most materials would be obtained from providers in Antioch, California. Therefore, no impact would occur.

3.12 NOISE

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XII. Noise. Would the project result in:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or in other applicable local, state, or federal standards?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

ENVIRONMENTAL SETTING

SOUND, NOISE, AND ACOUSTICS

Sound is the mechanical energy of a vibrating object transmitted by pressure waves through a liquid or gaseous medium (e.g., air). Noise is defined as sound that is unwanted (i.e., loud, unexpected, or annoying). Acoustics is the physics of sound.

The amplitude of pressure waves generated by a sound source determines the perceived loudness of that source. A logarithmic scale is used to describe sound pressure level in terms of decibels (dB). The threshold of human hearing (near-total silence) is approximately 0 dB. A doubling of sound energy corresponds to an increase of 3 dB. In other words, when two sources at a given location are each producing sound of the same loudness, the resulting sound level at a given distance from that location is approximately 3 dB higher than the sound level produced by only one of the sources. For example, if one automobile produces a sound pressure level of 70 dB when it passes an observer, two cars passing simultaneously do not produce 140 dB; rather, they combine to produce 73 dB.

The perception of loudness can be approximated by filtering frequencies using the standardized A-weighting network. A strong correlation exists between A-weighted sound levels (expressed as dBA) and community response to noise. All noise levels reported in this section are in terms of A-weighting. As discussed above,

doubling sound energy results in a 3-dB increase in sound. In typical noisy environments, noise-level changes of 1 to 2 dB are generally not perceptible by the healthy human ear; however, people can begin to detect 3-dB increases in noise levels. An increase of 5 dB is generally perceived as distinctly noticeable and a 10-dB increase is generally perceived as a doubling of loudness. The following are the sound level descriptors most commonly used in environmental noise analysis:

- ▶ **Equivalent sound level (L_{eq}):** An average of the sound energy occurring over a specified time period. In effect, the L_{eq} is the steady-state sound level containing the same acoustical energy as the time-varying sound that actually occurs during the same period. The 1-hour, A-weighted equivalent sound level ($L_{eq[h]}$) is the energy average of A-weighted sound levels occurring during a 1-hour period.
- ▶ **Maximum sound level (L_{max}):** The highest instantaneous sound level measured during a specified period.
- ▶ **Day-night average level (L_{dn}):** The energy average of A-weighted sound levels occurring over a 24-hour period, with a 10-dB penalty applied to A-weighted sound levels occurring during nighttime hours (10 p.m. to 7 a.m.).

Sound from a localized source (i.e., point source) propagates uniformly outward in a spherical pattern, and the sound level attenuates (decreases) at a rate of 6 dB for each doubling of distance from a point/stationary source. Roadways and highways and, to some extent, moving trains consist of several localized noise sources on a defined path; these are treated as “line” sources, which approximate the effect of several point sources. Sound levels attenuate at a rate of 3 dB for each doubling of distance from a line source. Therefore, noise from a line source attenuates less with distance than noise from a point source with increased distance.

Table 3.12-1 defines noise performance standards for non-transportation noise sources. Daytime noise standards are typically set at noise levels that would not annoy or impede human interaction or function in outdoor activity areas. Nighttime noise standards are typically set to result in acceptable noise levels that would not interfere with sleep for most people inside a building with windows closed. In general, noise standards are designed to prevent annoyance or sleep disruption in sensitive members of the public.

GROUNDBORNE VIBRATION

Groundborne vibration is energy transmitted in waves through the ground. Vibration attenuates at a rate of approximately 50 percent for each doubling of distance from the source. This approach considers only the attenuation from geometric spreading and tends to provide for a conservative assessment of vibration level at the receiver.

Vibration is an oscillatory motion that can be described in terms of the displacement, velocity, or acceleration. Vibration typically is described by its peak and root-mean-square (RMS) amplitudes. The RMS value can be considered an average value over a given time interval. The peak vibration velocity is the same as the “peak particle velocity” (PPV), generally presented in units of inches per second (in/sec). PPV is the maximum instantaneous positive or negative peak of the vibration signal and is generally used to assess the potential for damage to buildings and structures. The RMS amplitude typically is used to assess human annoyance to vibration.

Land Use	Exterior		Interior ²	Notes
	Daytime	Nighttime	Day and Night	
	7 a.m. to 10 p.m.	10 p.m. to 7 a.m.	7 a.m. to 10 p.m.	
Residential	55/70	50/65	35/55	
Transient Lodging	55/75	—	35/55	3
Hospitals and Nursing Homes	55/75	—	35/55	4, 5
Theaters and Auditoriums	—	—	30/50	5
Churches, Meeting Halls, Schools, Libraries, etc.	55/75	—	35/60	5
Office Building	60/75	—	45/65	5
Commercial Buildings	55/75	—	45/65	5
Playgrounds, Parks, etc.	65/75	—	—	5
Industry	60/80	—	50/70	5

Notes: dB = decibels; L_{eq} = equivalent sound level; L_{max} = Highest root-mean-square sound level measured over a given period of time.

¹ The standards shall be reduced by 5 dBA for sounds consisting primarily of speech or music, and for recurring impulsive sounds. If the existing ambient noise level exceeds the standards, then the noise level standards shall be increased at 5 -dBA increments to encompass the ambient.

² Interior-noise-level standards are applied within noise -sensitive areas of the various land uses, with windows and doors in the closed positions.

³ Outdoor activity areas of transient lodging facilities are not commonly used during nighttime hours.

⁴ Hospitals are often noise-generating uses. The exterior-noise-level standards for hospitals are applicable only at clearly identified areas designated for outdoor relaxation by either hospital staff or patients.

⁵ The outdoor activity areas of these uses (if any) are not typically utilized during nighttime hours.

Source: Solano County 2015:Table HS-5

The California Department of Transportation (Caltrans) has developed guidelines for assessing the significance of vibration produced by transportation and construction sources (Table 3.12-2). These thresholds address the subjective reactions of people to both short-term vibration (e.g., from temporary construction activities) and long-term/permanent vibration (e.g., from transit operations).

Human Response	Impact Levels, VdB re: 1 μin/sec (PPV, in/sec)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Barely perceptible	80 (0.040)	68 (0.010)
Distinctly perceptible	96 (0.250)	80 (0.040)
Strongly perceptible	107 (0.900)	88 (0.100)
Severe	114 (2.000)	100 (0.400)

Notes: μin/sec = microinches per second; in/sec = inches per second; PPV = peak particle velocity; VdB = vibration decibels

Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

Source: Caltrans 2013

EXISTING NOISE CONDITIONS

AECOM measured ambient noise levels near existing noise-sensitive uses in the project area. Table 3.12-3 summarizes the results of the ambient noise-level measurements. Two short-term measurements of ambient noise levels were conducted on Monday, March 21, 2016, in the project area (Figure 3.12-1). The existing noise environment in the project vicinity was dominated by local and distant traffic sources, railroad noise, and industrial sources. As shown in Table 3.12-3, measured ambient noise levels at the noise-sensitive land uses closest to the project area range between 60 and 61 dBA L_{eq} .

Receiver	Location	Measured Sound Level, dB	
		L_{eq}	L_{max}
ST-01	2668 Morrow Lane	60.3	75
ST-02	Closest sensitive use to the north of the project site, east of railroad line	61.3	87
ST-03	2634 Morrow Lane	60.9	83

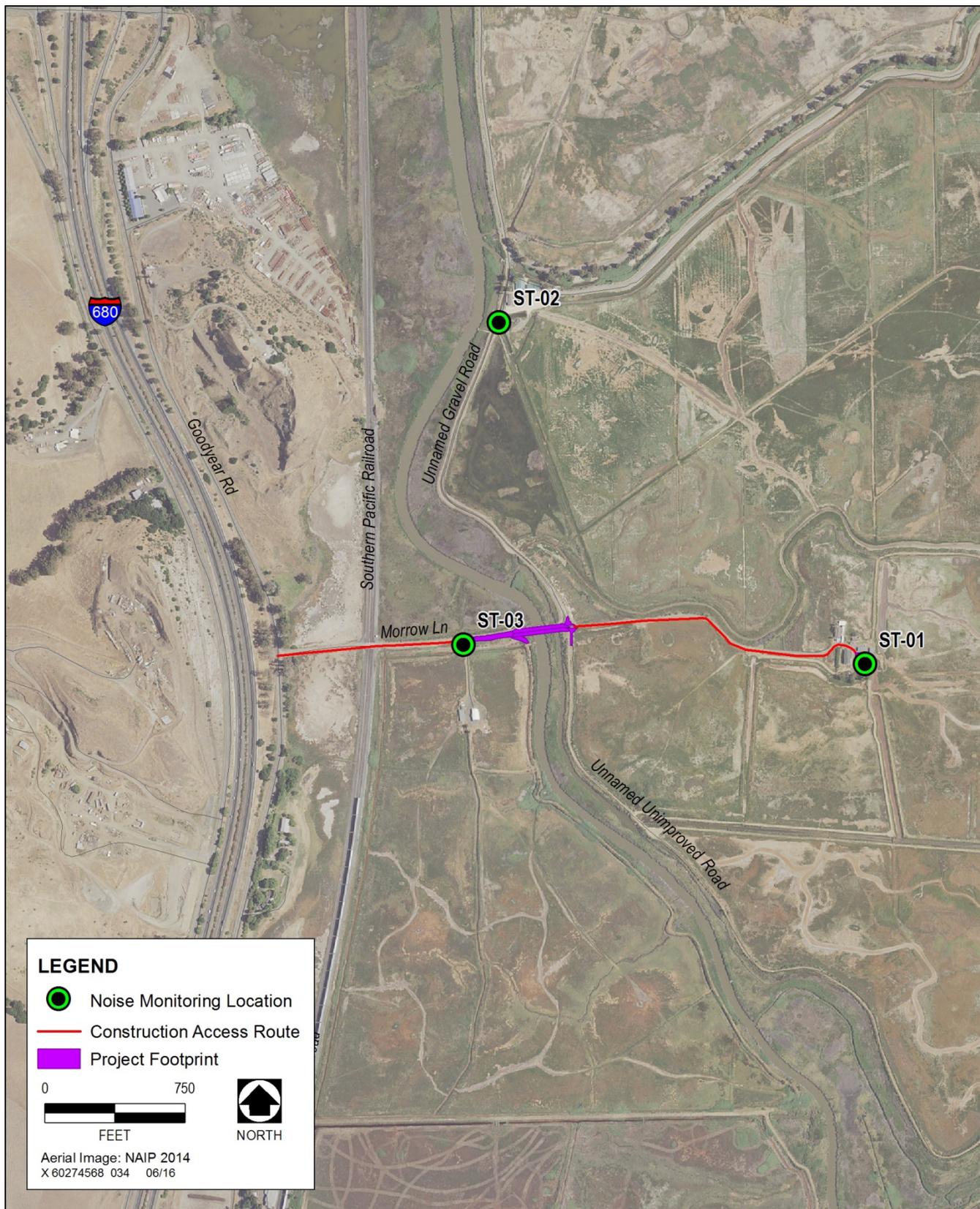
Notes: dB = decibels; L_{eq} = equivalent sound level (the sound energy averaged over a continuous 15-minute to 1-hour period); L_{max} = maximum sound level.
 Noise-level measurements were completed on Monday, March 21, 2016 using a Larson Davis Laboratories Model 824 precision integrating sound-level meter.
 The meter was calibrated before the measurements using an LDL Model CAL200 acoustical calibrator.
 The meter was programmed to record A-weighted sound levels using a "slow" response.
 The equipment complied with all pertinent requirements of the American National Standards Institute for Class 1 sound-level meters.
 Source: Data compiled by AECOM in 2016

DISCUSSION

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

Less-than-Significant Impact with Mitigation Incorporated. Construction noise would be short-term and temporary, and operation of heavy-duty construction equipment would be intermittent throughout the day during construction. No operational increase in ambient noise levels would result, as the Proposed Project would involve only construction, which would be completed in 120 days in 2017 and would include up to 45 days of in-water work (pile driving). Demolition of the existing bridge would occur in 2018 and would take up to 45 days, including up to 10 days of using a hydraulic underwater chainsaw if needed.

Project construction noise was estimated using the Federal Highway Administration's Roadway Construction Noise Model (FHWA 2006). The unmitigated noise level produced by the combinations of equipment during project construction phases (bridge removal and bridge construction) would be approximately 79–94 dBA as measured at a distance of 50 feet (Table 3.12-4). Assuming standard spherical spreading loss (-6 dB per doubling of distance), the noise levels at the nearest noise-sensitive uses, were estimated to be 41–53 dBA L_{eq} and 58–68 dBA L_{eq} during the bridge removal phase and the bridge construction phase, respectively (Table 3.12-5).



Source: Adapted by AECOM in 2016

Figure 3.12-1.

Noise-Monitoring Locations

Construction Activity	Noise Level at 50 feet, dB
	L _{eq}
Bridge Removal	79
Bridge Construction	94

Notes: dB = decibels; L_{eq} = equivalent sound level.
Source: Data compiled by AECOM in 2016

Receiver	Location	Shortest Distance (feet) Between Noise-Sensitive Uses and Proposed Construction Areas	Noise Level, dB L _{eq}			
			Exterior		Interior	
			Ambient Noise	Maximum Project Construction Noise	Project Noise, Doors/Windows Open ¹	Project Noise, Doors/Windows Closed ²
Bridge Removal Phase						
ST-01	2668 Morrow Lane	1,700	60	41	26	16
ST-02	Closest sensitive use to the north of the project site, east of railroad line	1,500	61	42	27	17
ST-03	2634 Morrow Lane	530	61	53	38	28
Bridge Construction Phase						
ST-01	2668 Morrow Lane	1,700	60	56	41	31
ST-02	Closest sensitive use to the north of the project site, east of railroad line	1,500	61	57	42	32
ST-03	2634 Morrow Lane	530	61	68	53	43

Notes: dB = decibels; L_{eq} = equivalent sound level; ST = short-term.
¹ 15 dB reduction for doors/windows open (EPA 1974).
² 25 dB reduction for doors/windows closed (EPA 1974).
Source: Data compiled by AECOM in 2016

The project-related construction noise level during pile driving would exceed the County’s threshold of 55 dBA L_{eq} (Table 3.12-1) by 1–13 dB. However, the ambient noise levels at the project vicinity ranged between 60 and 61 dBA L_{eq} during the daytime hours (7 a.m. to 10 p.m.) (Table 3.12-3). The ambient noise levels exceed the threshold of 55 dBA L_{eq} (Table 3.12-1). Therefore, the standard becomes ambient level plus 5 dB. The estimated construction-related noise levels of 58–68 dBA L_{eq} during the bridge construction phase at the nearest noise-sensitive uses would exceed the standards of 65 and 66 dBA L_{eq} (ambient levels plus 5 dB), by up to 3 dB. Implementation of Mitigation Measure 3.12-1 would further reduce this impact to a less-than-significant level.

As discussed in Section 3.16, “Transportation and Traffic,” a total of 28 truck trips, about one to two truck trips per day, would occur during the construction period, and a total of 15 truck trips, about one truck trip per day, would occur during the demolition period. Construction activities associated with the Proposed Project would

require about six workers, which would result in 12 passenger car trips per day (six workers entering the project site in the morning and leaving the project site at the end of the day). This number of construction traffic would not exceed any established thresholds or cause any increase above the existing traffic noise along the roadways.

Typically, when the average daily traffic (ADT) volume doubles on a roadway segment compared to existing conditions, the resultant increase is approximately 3 dB. Project construction-related traffic volume (one to two trucks per day and up to 12 workers trip per day) would not double the existing traffic volumes along the local roadway and the freeway segments that would be used by project-related construction traffic. Therefore, this impact would be less than significant. No mitigation is required.

With respect to interior noise impacts, typical residential structures (i.e., wood siding or two-coat stucco, STC 30-31 windows, door weatherstripping and thresholds, exterior wall insulation, composition plywood roof) would be expected to provide an exterior-to-interior noise level reduction of no less than 25 dB with exterior doors and windows closed (EPA 1974).

Therefore, construction noise levels of 60 dB L_{eq} or more at residential building facades would exceed the interior noise level standard of 35 dB (see Table 3.12-3 above). The closest noise-sensitive uses would be located approximately 530 feet from the project site (Table 3.12-5). Average construction-related exterior noise levels in all three locations under the Proposed Project would range from approximately 79 dB L_{eq} to 94 dB L_{eq} at 50 feet (Table 3.12-5).

Assuming a standard reduction of 6 dB per doubling of distance, the project-related construction noise level at the interior uses of the nearest sensitive receptors would be at or below 43 dB with doors and windows closed (Table 3.12-5). The project construction noise under bridge construction and during pile driving would cause interior noise levels at the nearest noise-sensitive use to increase by 3 dB. Therefore, this impact would be potentially significant.

Mitigation Measure 3.12-1: Implement Construction Noise Reduction Measures.

GLDC will implement the following measures to minimize noise impacts of construction:

- Written notification of heavy construction activities will be provided to all noise-sensitive receptors located adjacent to the project site and heavy construction activities, or within 500 feet of such activities. Notification will include the dates and hours when construction activities are anticipated to occur, and contact information, including a daytime telephone number, for the project representative to be contacted if noise levels are deemed excessive. Recommendations to assist noise-sensitive land uses in reducing interior noise levels (e.g., closing windows and doors) will be included in the notification.
- Construction activities will not occur on weekends or federal holidays and will not occur on weekdays between 7 p.m. of one day and 7 a.m. of the following day.
- Fixed/stationary equipment (e.g., generators, compressors) will be located as far as possible from noise-sensitive receptors. All impact tools will be shrouded or shielded, and all intake and exhaust ports on powered construction equipment will be muffled or shielded.

- All construction equipment will be properly maintained and equipped with noise-reduction intake and exhaust mufflers and engine shrouds, in accordance with manufacturers' recommendations. Equipment engine shrouds will be closed during equipment operation.
- All motorized construction equipment will be shut down when not in use, to prevent excessive idling noise.
- All construction equipment powered by gasoline or diesel engines will have sound control devices that are at least as effective as those originally provided by the manufacturer, and all equipment will be operated and maintained to minimize noise generation. Noise-reducing enclosures will be used around noise-generating equipment, and temporary barriers (e.g., plywood, sound attenuation blankets) will be used between noise sources and noise-sensitive land uses, where feasible and when noise levels would exceed the threshold of 10 dB above ambient noise levels.

Timing: During project construction.

Responsibility: GLDC and construction contractors.

Implementation of Mitigation Measure 3.12-1 would reduce noise-related construction impacts to a less-than-significant level.

Operation of the Proposed Project would not result in substantial changes in traffic during project operations compared to existing conditions; therefore, project operation would not have any noise impacts.

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

Less-than-Significant Impact. Caltrans guidelines recommend that a standard of 0.2 in/sec PPV not be exceeded for the protection of normal residential buildings (Table 3.12-2). With respect to human response in residential uses (i.e., annoyance, sleep disruption), the Federal Transit Administration recommends a maximum acceptable vibration standard of 80 vibration decibels (VdB) (FTA 2006).

No permanent increase in groundborne vibration would result from the Proposed Project. However, project-related construction activities may cause varying degrees of temporary ground vibration, depending on the equipment used and activities. Table 3.12-6 summarizes the groundborne vibration levels caused by various types of equipment.

Table 3.12-6. Typical Construction Equipment Vibration Levels		
Equipment	PPV at 25 feet (in/sec)	Approximate VdB at 25 feet
Haul trucks	0.076	86
Large bulldozer	0.089	87
Pile driver (upper range)	1.518	112
Pile driver (typical)	0.644	104
Notes: in/sec = inches per second; VdB = velocity level in decibels referenced to 1 microinch per second and based on the root mean square velocity amplitude; PPV = peak particle velocity		
Source: FTA 2006		

Construction-related vibration would result from the use of heavy construction equipment (demolition of the existing bridge and construction of the new bridge). These activities would produce vibration levels of approximately 87 VdB (0.089 in/sec PPV) during the use of heavy equipment and up to 112 VdB (1.518 in/sec PPV) during pile driving, as measured at a distance of 25 feet (the reference vibration level for operation of a large bulldozer [FTA 2006; Caltrans 2013]). The distance between proposed construction activities and the closest acoustically sensitive receptors would be approximately 530 feet.

Based a standard reduction of 9 VdB per doubling of distance, the project-related construction vibration level for the nearest sensitive receiver would be approximately 47 VdB (0.0009 in/sec PPV) during the use of heavy equipment. During pile driving, the project-related construction vibration level for the nearest sensitive receiver would be approximately 72 VdB (0.016 in/sec PPV). This level of vibration is below the threshold of perception (80 VdB) as shown in Table 3.12-2. Therefore, this impact would be less than significant. No mitigation is required.

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

No Impact. As discussed in the response to question a) above, the Proposed Project would not result in substantial changes in traffic during project operations as compared to existing conditions; therefore, project operation would not have any noise impacts. Therefore, the ambient noise levels would not increase as a result of operation of the Proposed Project. Thus, no impact would occur.

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

Less-than-Significant Impact with Mitigation Incorporated. Equipment operating on the project site would generate construction noise. The unmitigated noise level produced by the combinations of equipment during the project construction phases (bridge removal and bridge construction) would be approximately 79–94 dBA at a distance of 50 feet (Table 3.12-4). Based on the standard spherical spreading loss (-6 dB per doubling of distance), the noise levels at the nearest noise-sensitive uses were estimated to be 41–53 dBA L_{eq} and 58–68 dBA L_{eq} during the bridge removal phase and the bridge construction phase, respectively.

Ambient noise levels at the project vicinity ranged between 60 and 61 dBA L_{eq} during the daytime hours (7 a.m. to 10 p.m.) (Table 3.12-1). The estimated project-related construction noise levels of 58–68 dBA L_{eq} during bridge construction (mainly from pile driving) at the residences closest to the project site would increase the exterior ambient noise level of 60–61 dBA L_{eq} by up to 7 dB. Therefore, this impact would be potentially significant. Implementation of Mitigation Measure 3.12-1 (above) would reduce this impact to a less-than-significant level.

Furthermore, with respect to the interior noise levels, as discussed above under question a), the noise during project construction and pile driving would cause interior noise levels at the nearest noise-sensitive use to increase by 3 dB. Therefore, this impact would be potentially significant. Implementation of Mitigation Measure 3.12-1 (above) would reduce this impact to a less-than-significant level.

With respect to construction traffic, when the ADT volume doubles on a roadway segment compared to existing conditions, typically the resultant increase is approximately 3 dB. As discussed above under question a), project

construction-related traffic volumes (one to two trucks per day and up to 12 workers trip per day) would not double the existing traffic volumes along the local roadways and the freeway segments that would be used by project-related construction traffic. Therefore, this impact would be less than significant. No mitigation is required.

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

No Impact. The project site is not located within 2 miles of a public airport. The nearest airport, the Napa County Airport, is located approximately 12 miles northwest of the project site. Because all project activities would be located outside the Airport Comprehensive Land Use Plan areas, and because the Proposed Project would not include any aircraft uses for construction or operations, it would not affect any airport operations. Because the Proposed Project would not expose people on- or off-site to excessive noise levels, no impact would occur.

- f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?**

No Impact. The project site is not located within 2 miles of a private airstrip. The nearest airstrip, the Garibaldi Brothers airstrip, is located approximately 5 miles north of the project site. The Proposed Project would not affect any airstrip operations. Also, the Proposed Project would not expose people on- or off-site to excessive aircraft noise levels. Therefore, no impact would occur.

3.13 POPULATION AND HOUSING

3.13.1 THRESHOLDS OF SIGNIFICANCE

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

3.13.2 ENVIRONMENTAL SETTING

The project site is located on Morrow Island in the Suisun Marsh and unincorporated southern Solano County at the western edge of Grizzly and Suisun Bays, approximately 1 mile northeast of the city limits of Benicia, California. The project site is zoned Marsh Preservation (MP) under the Solano County Zoning Map (Solano County 2012) and is surrounded by wetlands that are primarily managed for waterfowl. There are several private duck clubs, one seasonal and three permanent residences on Morrow Island, all of which are accessed via Morrow Lane Bridge.

3.13.3 DISCUSSION

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

No Impact. Population growth can be associated with the construction of new housing in an area or by the installation of infrastructure that could support the development of additional housing in an area. The Proposed Project would result in the replacement of the existing structurally deficient Morrow Lane Bridge. The Proposed Project would not include any new housing, businesses, or other development that would increase population growth. The new bridge would be essentially the same length and height as the existing bridge, but would be approximately 2 feet wider (i.e., 16 feet) and include a pedestrian guardrail and bridge rail curb. The new bridge would not be expected to accommodate or generate more traffic than currently or historically experienced by the existing bridge. Therefore, implementation of the Proposed Project is not expected to contribute to growth in the surrounding area. No impact would occur.

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

No Impact. The Proposed Project would not displace existing homes located east of the Morrow Lane Bridge during the duration of construction activities. The Morrow Lane Bridge would remain open during active construction. Because no travel routes would be disrupted and the Proposed Project would not require the construction of replacement housing, no impact would occur.

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

No Impact. As discussed under response b) above, the Proposed Project would not displace residents east of the Morrow Lane Bridge during the duration of construction activities required to complete the Proposed Project. Residents that use the existing Morrow Lane Bridge would continue to be able to utilize the existing bridge until the new bridge is completed. Because no travel routes would be disrupted and the Proposed Project would not require the construction of replacement housing, no impact would occur.

3.14 PUBLIC SERVICES

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

3.14.1 ENVIRONMENTAL SETTING

The Proposed Project consists of the replacement of the existing Morrow Lane Bridge. No schools, parks, or other public services are located in the immediate vicinity of the project site. Therefore, the following discussion provides an overview of fire protection and police protection services for the project site.

3.14.1.1 FIRE PROTECTION SERVICES

Fire protection services for the project site would be provided by Cordelia Fire Protection District (CFPD) Station #31 (Martin, pers. comm. 2016). CFPD Station #31 is located at 2155 Cordelia Road in Fairfield, approximately 8.5 miles north of the project site. CFPD is staffed by 32 paid and volunteer firefighters (CFPD 2016). CFPD is serviced by two Type 1 engines, one Type 2 engine, two Type 3 engines, one water tender, and one air support vehicle (Solano County 2008).

3.14.1.2 POLICE PROTECTION SERVICES

Law enforcement services would be provided to the project site by the Solano County Sheriff’s Office (SCSO). SCSO provides law enforcement services to the unincorporated portion of the county. SCSO is located at 530 Union Avenue #100 in Fairfield, approximately 14.4 miles from the project site. SCSO provides safety patrol services, dispatch, holding custody of adult law offenders, and operations of the two jails in in Solano County, the Fairfield Main Facility and the Claybank Facility (Solano County 2008). SCSO includes several special teams as well, including a defensive tactics team, dive-rescue team, search and rescue, honor guard, K-9 unit, marine patrol, and SWAT (SCSO 2016a). As of August 2015, SCSO included a staff with 12 sworn officers and 13 administrative staffing positions (SCSO 2016b).

3.14.2 DISCUSSION

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

Fire protection?

No Impact. Fire protection services for the project site would be provided by CFPD Station #31. The Proposed Project would not increase demand nor would it include construction of any structures that would require additional fire protection services. Existing access to the project site and nearby properties (via the existing Morrow Lane Bridge) would be maintained during construction activities. Existing access roads would remain open to accommodate emergency vehicles in the event their use is needed. The existing bridge can only safely support vehicles weighing 36,000 pounds. According to the California Fire Code, the standard weight capacity minimum for fire equipment is 70,000 pounds (CBSC 2013). The Proposed Project would improve fire protection and safety by improving the structural integrity of the existing bridge by construction a new bridge with a weight capacity of 196,000 pounds. This would improve the ability of CFPD to provide adequate fire protection on Morrow Island. No impact would occur.

Police protection?

No Impact. SCSO would provide law enforcement services to the project site. The Proposed Project would not increase demand for police protection, nor degrade the quality of existing services. Existing access to the project site would be maintained during construction activities, and in the event of the need for police protection services, existing access roads would remain open. No impact would occur.

Schools?

No Impact. The Proposed Project would not result in the construction of any new housing that would generate new students in the community. Therefore, implementation of the Proposed Project would not increase the demand for school services and facilities. No impact would occur.

Parks?

No Impact. The Proposed Project would not result in the construction of any new housing that would generate new residents who would require new or expanded park facilities. No impact would occur.

Other public facilities?

No Impact. No other public facilities exist in the vicinity of the project would be affected by project implementation. No impact would occur.

3.15 RECREATION

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XV. Recreation. Would the project:				
a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

3.15.1 ENVIRONMENTAL SETTING

The project area is located within the 116,000-acre Suisun Marsh, the largest contiguous brackish water marsh on the west coast of North America. Suisun Marsh is utilized for water sports, game hunting, hiking, and wildlife observation (Solano County 2008).

Recreational activities within the project area and vicinity fall within the jurisdiction of the CDFW Grizzly Island Wildlife Area (CDFW 2016a). CDFW manages the Grizzly Island Wildlife Area for hunting and fishing opportunities. Several private duck clubs are located on Morrow Island east of the existing Morrow Lane Bridge. Duck hunting season is permitted in the Grizzly Island Wildlife Area each hunting season between October 24 and January 31 (CDFW 2016b).

The existing Morrow Lane Bridge spans the Goodyear Slough, which is subject to a public navigational easement. The waterway is deemed navigable by the state by oar or motor-propelled small craft. Recreational uses on the slough include but are not limited to boating, rafting, sailing, rowing, fishing, bird hunting, swimming, and water-skiing (CSLC 2013).

3.15.2 DISCUSSION

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

Less-than-Significant Impact. The Morrow Lane Bridge provides access to several private duck hunting clubs located on Morrow Island. Goodyear Slough provides public recreational opportunities, including boating, rafting, sailing, rowing, fishing, bird hunting, swimming, and water-skiing. Project construction would be scheduled to avoid any impacts on duck hunting recreational activities. During project construction, boat traffic within Goodyear Slough in the vicinity of Morrow Lane Bridge may be temporarily restricted for safety reasons. Recreational users of Goodyear Slough may be required to use other waterways or facilities for certain activities during project construction. Any increase in public use of nearby recreation facilities due to project construction would be short-term, temporary and would not result in substantial or accelerated physical deterioration. The impact would be less than significant. No mitigation is required.

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

Less-than-Significant Impact. The Proposed Project would replace a structurally deficient bridge. The new bridge will be slightly wider and include additional safety features including a pedestrian guardrail and bridge rail curb. The new bridge would also be constructed to provide an 8 feet vertical navigational clearance similar to the existing bridge and would have a slightly wider horizontal clearance for oar and motor-propelled small craft. Morrow Island does not provide public recreation facilities and the maximum membership for the private duck hunting clubs located on Morrow Island is capped. With the implementation of the Proposed Project, the nature and extent of recreational opportunities within Goodyear Slough and Morrow Island would remain the same. No substantial increase in recreational use is expected with the implementation of the Proposed Project; therefore, this impact would be less than significant. No mitigation is required.

3.16 TRANSPORTATION/TRAFFIC

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

ENVIRONMENTAL SETTING

Roads in the vicinity of the project site include Morrow Lane, Goodyear Road, and an unnamed gravel road around Morrow Island. I-680 is also located about 2,000 feet west of the bridge site.

STATE HIGHWAYS

I-680 is a north-south four-lane interstate freeway located on the eastern edge of the City of Benicia, interconnecting with Interstate 80 to the north and Interstate 580 near Walnut Creek and the San Francisco East Bay Area to the south and west.

LOCAL ROADWAYS

The project site is located just east of the Southern Pacific Railroad tracks along Morrow Lane and can be accessed via Goodyear Road and I-680. Main access to the project site would be from Goodyear Road to Morrow Lane. Goodyear Road is a two-lane frontage road that runs along the east side of I-680. It extends from Marshview Road to the north to Lake Herman Road to the south. Morrow Lane, approximately 0.6 mile long, is

aligned east-west from Morrow Island to Goodyear Road. An unnamed north-south gravel road, which intersects Morrow Lane just east of the bridge, parallels Goodyear Slough and provides access to northern Morrow Island.

RAILROADS

The Southern Pacific Railroad operates a rail line located east of Goodyear Road, approximately 900 feet to the west of the project site.

BICYCLE FACILITIES, PUBLIC TRANSIT FACILITIES, AND AIRPORTS

No bicycle or public transit facilities or airports are located in the vicinity of the project site.

NAVIGATION

Goodyear Slough joins Cordelia Slough at its northern mouth and extends to its terminus at the Goodyear Slough outfall near Lake Herman Road. Goodyear Slough is subject to a public navigational easement requiring members of the public the right to navigation by oar or motor propelled small craft. Such navigational uses may include boating, rafting, sailing, rowing, fishing, fowling, bathing skiing and other water related public uses (CSLC 2013). Pierce Harbor Marina is located approximately 2 miles to the north of Morrow Lane Bridge.

Navigational charts show the existing Morrow Lane Bridge as a fixed bridge with a horizon clearance of 26 feet and a vertical clearance of 8 feet above the mean lower low water (MLLW) North American Datum of 1983 (NAD83) (NOAA 2016). Because of needed structural improvements to the bridge, the current horizontal span is currently approximately 14.4 feet (Jeu, pers. comm., 2016). The depth of Goodyear Slough is approximately 13 feet as measured at MLLW NAD 83 (NOAA 2016). A 2013 study of the navigability of Goodyear Slough indicated that large vessels upwards of 30 feet in length were observed operating from the mouth of Goodyear Slough to Pierce Harbor and are able to navigate up to Morrow Lane Bridge where the slough begins to narrow and becomes passible only by smaller boats.

Beyond the existing bridge, the volume of floating debris increases until the channel became impassible due to large, floating mats of bulrush and common reed debris at approximately 0.35 slough mile north of the Goodyear Slough Outfall (AECOM 2013).

DISCUSSION

This analysis used the recommended screening criterion from the Institute of Transportation Engineers (ITE) (ITE Transportation Planners Council 1988) for assessing the effects of construction projects that create temporary traffic increases. To account for the large percentage of heavy trucks associated with typical construction projects, ITE recommends a threshold level of 50 or more new peak-direction (one-way) trips during the peak hour. Operations after completion of the Proposed Project would not change compared to existing conditions. Therefore, project-related traffic impacts were not analyzed using level of service (LOS) or vehicle miles traveled (VMT) because LOS and/or VMT are used primarily to analyze long-term effects of projects on traffic flow.

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

Less-than-Significant Impact. The Proposed Project would not result in substantial changes in traffic during project operations as compared to existing conditions; therefore, long-term, project-related traffic impacts were not analyzed using LOS and VMT. LOS and VMT are used primarily to analyze long-term project-related effects on traffic flow.

Construction activities for the Proposed Project are not expected to adversely affect road traffic or transportation patterns. Because of the limited size of the Proposed Project, transport of materials and heavy equipment for construction would require a minimal number of truck trips. The minimal hauling would be up to two truck trips per day to transport construction materials and equipment. It is expected that material for construction of the new bridge would be obtained from construction providers from Antioch, approximately 25 miles from the project site. To obtain bridge materials, the contractor estimates approximately 11 truck trips traveling about 550 miles. Approximately 17 truck deliveries⁵ of concrete traveling approximately 15 miles to the project site up to 510 miles would also be required. This would result in a total of 28 truck trips for the duration of project construction, or up to two truck trips per day.

Demolition of the existing bridge would result in approximately 250 cubic yards of waste material. Non-hazardous waste would be disposed of at the Contra Costa Transfer and Recovery Station in Martinez, approximately 10 miles south of the project site. Disposing of the waste material would result in approximately 15 truck trips and 460 total miles traveled.⁶ This would result in approximately one truck trip per day for the duration of demolition under the Proposed Project.

Construction and demolition activities for the Proposed Project would require about six workers. All workers would commute in passenger vehicles from their places of residence to the project site, which would result in 12 passenger car trips per day (six workers entering the project site in the morning and leaving the project site at the end of the day).

Equipment and workers would use existing roads to travel to the project area. No new access roads would be required. Therefore, this impact would be less than significant. No mitigation is required.

Boat traffic on Goodyear Slough in the vicinity of Morrow Lane Bridge may be temporarily restricted during construction for safety reasons. During the construction of the new bridge, temporary closures of Goodyear Slough to small-boat navigation may be required. While both bridges are still in place after construction, the horizontal clearance for boat passage would be temporarily reduced from approximately 14.4 feet to a minimum width of 8 feet, 4 inches for approximately 1 year. Although the horizontal clearance for navigation would be temporarily constrained, the clearance would remain adequate for oar and motor-propelled small craft navigation.

⁵ This number of truck trips is based on the contractor requiring approximately 117 cubic yards of concrete and a truck that can haul approximately 10 cubic yards.

⁶ This number of truck trips is based on the contractor using double load dump trucks that can haul approximately 17 cubic yards of material per trip. The mileage assumes six trips to Contra Costa Transfer and Recovery Station and six trips to Potrero Hills Landfill.

Before construction, the U.S. Coast Guard would be notified of construction activities and issue a Notice to Mariners about navigational restrictions within Goodyear Slough. Boat traffic that normally uses Goodyear Slough may be required to use other waterways during the construction activities. As detailed in Chapter 2, “Project Description,” ECs require that construction areas in the waterway be barricaded or guarded by readily visible barriers or other effective means to warn boaters of their presence and restrict access. Warning devices and signage will be consistent with USATON and effective during daytime and nighttime hours and periods of dense fog. Because of the temporary nature of the project, implementation of ECs, and the limited navigability of Goodyear Slough, the impact of restricted navigation during construction would be less than significant. No mitigation is required.

The current bridge provides a horizontal clearance of approximately 14.4 feet with remaining piles spaced 5–8 feet apart and vertical clearance of approximately 8 feet. The new bridge would be constructed with equally spaced piles of 18-20 feet apart, providing a horizontal clearance of 20 feet and vertical clearance of 8 feet from the lowest point of the bridge and the MHW.

The galvanic cathodic protection system would be installed parallel to the channel bank and set in between piles where adequate space is available. Because the channel is reported to have a depth of 13 feet as measured at MLLW, the installation of the two-foot high cathodic protection system would not interfere with navigation by craft similar to those observed using the channel (NOAA 2016). Overtime, it is anticipated that the 4,000 pound system would sink into bay mud in the channel and become buried. The new bridge would also expand the existing horizontal clearance for navigation within Goodyear Slough, thus improving navigation safety.

Upon construction completion, an information report that would document vertical and horizontal clearance of the bridge would be submitted to the U.S. Coast Guard to issue a Notice to Mariners regarding change to the horizontal clearance of the bridge. The impact of a change on the navigational characteristics of the waterway during project operation would be beneficial; there would be no adverse impacts. No mitigation is required.

b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?

Less-than-Significant Impact. The Proposed Project would not add sufficient trips to degrade LOS and would not conflict with an applicable congestion management program.

The traffic resulting from project construction and demolition would be minimal, short-term, and temporary. As discussed under item a) above, the project-related increase in traffic volumes along affected roadways would be up to 28 truck trips during construction of the new bridge in 2017 and up to 15 truck trips during demolition of the existing bridge in 2018. Therefore, hauling of material during construction and demolition would not result in more than one to two truck trips per day. Also, construction activities for the Proposed Project would require about six workers, which would result in 12 passenger car trips per day (six workers entering the project site in the morning and leaving the project site at the end of the day). This level of traffic activity would not degrade traffic operations along the roadways used by project-related construction vehicles and would be below the applicable threshold.

No new access roads would be built as part of the Proposed Project, and only existing transportation infrastructure would be used as haul routes. Most major travel/haul routes would be paved roads, and access to construction

sites would occur via paved roads. Unpaved maintenance roads could be used during construction. After project construction is complete, access routes would be similar to those present before project construction.

Levels of traffic associated with operation of the Proposed Project would not substantially change from existing conditions. Therefore, project operation would not result in conflicts with applicable congestion management program, including but not limited to LOS standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways.

Therefore, this impact would be less than significant. No mitigation is required.

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

No Impact. The project site is located approximately 5 miles south of Garibaldi Brothers airstrip. Implementing the Proposed Project would not require the use of helicopters or any other equipment that would result in any safety risks by increasing air traffic levels or changing the location of air traffic. The Proposed Project would not interfere with air traffic patterns. Therefore, no impact would occur.

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

Less-than-Significant Impact. Project-related construction worker commute traffic would enter and exit the project site along Morrow Lane periodically, using local roadways. However, the traffic resulting from project construction would be minimal, short-term, and temporary. The project would not pose any hazards. Pavement sections on the area roadways are designed to carry high volumes of heavy-duty vehicles. Also, the number of passenger vehicles (worker trips) to and from the site would be minimal (as discussed above under [a] and [b]) and construction equipment would be staged on-site. Material hauling associated with the project would be only one to two deliveries per day.

The Proposed Project would not include any substantial change to the existing roadway design in the vicinity of the Proposed Project or introduce incompatible uses. The existing road alignment would be slightly modified for the new bridge; however, the modification would not introduce traffic hazards. Thus, the safety of the local transportation network would not be affected. The new bridge would also be wider and would include additional safety features, including a pedestrian guardrail and bridge rail curb. Project operation would not result in any changes in land uses and would not alter the compatibility of uses served by the roadway network. Therefore, this impact would be less than significant. No mitigation is required.

e) Result in inadequate emergency access?

No Impact. Implementation of the Proposed Project would not require any road closures. The majority of construction activities for the Proposed Project would occur in the river area; therefore, traffic flow would not be significantly interrupted on any roadway. Construction-related traffic increases would be minimal relative to roadway capacity, would be temporary, and would occur in an area with low levels of existing traffic. During construction activities for the new bridge, the existing bridge would remain accessible to provide emergency access. Therefore, the Proposed Project would not impair or interfere with emergency access to local roads, and would not result in traffic delays that could substantially increase emergency response times or reduce emergency vehicle access. Therefore, no impact would occur.

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

No Impact. No public transit, bicycle, or pedestrian facilities are available in the vicinity of the project site. Truck trips off-site would be limited to those needed at the start and conclusion of construction, and other trips would be limited to commute trips by up to six construction workers throughout construction. Construction-related traffic would be minimal and would not interfere with any transit routes or service, or with operation of public transit, bicycle, or pedestrian facilities. Therefore, the Proposed Project would not conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, nor would it otherwise decrease the performance of such facilities. Therefore, no impact would occur.

3.17 UTILITIES AND SERVICE SYSTEMS

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

3.17.1 ENVIRONMENTAL SETTING

Most utility services in Solano County are provided by a variety of special districts. Many of these districts provide multiple services (e.g., water supply, wastewater collection, wastewater treatment). Solid waste landfills in Solano County are the Recology Hay Road and Potrero Hills Landfills.

The Recology Hay Road Landfill has an annual average solid waste throughput of 250,000–374,999 tons/year (CalRecycle 2016a). The Potrero Hills Landfill has an annual average throughput of 750,000–999,999 tons per year (CalRecycle 2016b). The Contra Costa Transfer and Recovery Station in Contra Costa County also serves Solano County and has an annual average throughput of 250,000–499,999 tons/year (CalRecycle 2016c).

As discussed in Chapter 2, “Project Description,” demolition of the existing bridge would result in approximately 250 cubic yards of waste material. Non-hazardous waste would be disposed of at the Contra Costa Transfer and Recovery Station in Martinez, which is located approximately 10 miles south of the project site. A portion of the waste may contain wood treated with creosote. Treated wood wastes would be stored, handled, and disposed of in accordance with California Health and Safety Code Section 25143.15 at an appropriate licensed Class 1 or composite-lined portion of a solid waste landfill, such as Potrero Hills Landfill in Suisun City, which is located approximately 20 miles northeast of the project site.

3.17.2 DISCUSSION

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

Less-than-Significant Impact. The Proposed Project includes replacement of the existing Morrow Bridge and associated roadway improvements. Operation of the Proposed Project would not generate any wastewater. Construction activities could generate a very minor amount of wastewater, primarily associated with worker hygiene. Porta-Potty units would be available on-site for worker use. The small amount of wastewater that would temporarily be generated during construction would not exceed San Francisco Bay RWQCB wastewater treatment requirements. Therefore, this impact would be less than significant. No mitigation is required.

b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

Less-than-Significant Impact. Construction activities would require potable or reclaimed water for dust suppression and housekeeping. However, the amount of water needed would be minimal and would be supplied by water trucks and obtained at a nearby municipal source. Operation of the Proposed Project would not generate a demand for water or wastewater treatment. Because construction and operation of the Proposed Project would not require new or expanded water or wastewater facilities, this impact would be less than significant. No mitigation is required.

c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

Less-than-Significant Impact. The Proposed Project involves constructing a new bridge, demolition of the existing bridge, and associated roadway improvements. As part of the project, a water quality control program plan would be prepared. This plan would address possible stormwater run-on and runoff and best management practices for stormwater management during construction. Project implementation would result in a small amount of additional impervious surfaces, though this amount would be negligible compared to existing conditions on the project site. Because the Proposed Project would not require new or expanded stormwater drainage facilities, this impact would be less than significant. No mitigation is required.

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

Less-than-Significant Impact. See response b) above. This impact would be less than significant. No mitigation is required.

e) Result in a determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the project's projected demand, in addition to the provider's existing commitments?

Less-than-Significant Impact. See response b) above. This impact would be less than significant. No mitigation is required.

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

Less-than-Significant Impact. Project construction would generate approximately 250 cubic yards of solid waste, including roadway materials, bridge materials (including wood waste), and general waste (concrete and metal). All non-hazardous waste would be transported to the Contra Costa Transfer and Recovery Station in Martinez, California. Treated wood waste, consisting of 94, concrete, and bridge decking, would be disposed at an appropriate licensed Class 1 solid waste landfill or the Potrero Hills Landfill located near the project site. Given the small quantity of waste material, the capacity of the landfills would not be exceeded. If grading of roadway areas generate materials that need to be exported from the project site, the materials would be transported to a County-approved disposal site. Therefore, this impact would be less than significant. No mitigation is required.

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

Less-than-Significant Impact. As discussed above, the Proposed Project would generate solid waste during construction, but would not generate any solid waste during operation. Construction solid waste would be disposed of in compliance with federal, state, and local statutes and regulation. Therefore, this impact would be less than significant. No mitigation is required.

3.18 MANDATORY FINDINGS OF SIGNIFICANCE

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XVIII. Mandatory Findings of Significance.				
a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of an endangered, rare, or threatened species, or eliminate important examples of the major periods of California history or prehistory?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Does the project have impacts that are individually limited, but cumulatively considerable? (“Cumulatively considerable” means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Authority: Public Resources Code Sections 21083, 21083.5.

Reference: Government Code Sections 65088.4. Public Resources Code Sections 21080, 21083.5, 21095; *Eureka Citizens for Responsible Govt. v. City of Eureka* (2007) 147 Cal.App.4th 357; *Protect the Historic Amador Waterways v. Amador Water Agency* (2004) 116 Cal.App.4th at 1109; *San Franciscans Upholding the Downtown Plan v. City and County of San Francisco* (2002) 102 Cal.App.4th 656.

3.18.1 DISCUSSION

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

Less-than-Significant Impact with Mitigation Incorporated. The Proposed Project involves the replacement of the Morrow Lane Bridge over Goodyear Slough. As described in this Initial Study, implementation of the Proposed Project has the potential to adversely affect sensitive natural communities, special-status animals, and previously undiscovered cultural resources and/or human remains. With implementation of the mitigation measures recommended in this Initial Study, compliance with County requirements, and application of standard practices, development of the Proposed Project would not (1) degrade the quality of the environment; (2) substantially reduce the habitat of fish or wildlife species; (3) cause a fish or wildlife population to drop below self-sustaining levels; (4) threaten to eliminate a plant or animal community; (5) reduce the number or restrict the range of a rare or endangered plant or animal; or (6) eliminate important examples of the major periods of California history.

- b) Does the project have impacts that are individually limited, but cumulatively considerable? (“Cumulatively considerable” means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)**

Less-than-Significant Impact with Mitigation Incorporated. The impacts of the Proposed Project are individually limited and not cumulatively considerable. The Proposed Project would entail the replacement of an existing structurally deficient bridge. All environmental impacts that could occur as a result of the Proposed Project would be reduced to a less than significant level through implementation of the mitigation measures recommended in this Initial Study and, when viewed in conjunction with other closely related past, present or reasonably foreseeable future projects, would not substantially contribute to a cumulative effect on the environment.

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

Less-than-Significant Impact with Mitigation Incorporated. The purpose of the project is to improve overall safety by replacing the existing, structurally deficient bridge to meet current State, County, and Caltrans design standards. As described in this Initial Study, implementation of the Proposed Project could result in temporary air quality, hazardous materials, and noise impacts during the construction period. Implementation of the mitigation measures recommended in this Initial Study, compliance with County regulations, and application of standard construction practices would ensure that the Proposed Project would result in no environmental effects that would cause substantial direct or indirect adverse effects on human beings.

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APPENDIX 1

Air Quality and GHG Technical Appendix

Morrow Bridge
 Construction Emission Summary

Construction Phase/Emissions Source	Emissions (tons)				Metric Tons
	ROG	NO _x	PM ₁₀	PM _{2.5}	CO ₂ e
Bridge Construction (120 days)					
Construction Equipment	0.09	0.60	0.03	0.03	56.23
On-Road Vehicles	0.00	0.03	0.00	0.00	18.55
Total Construction Emissions	0.09	0.64	0.04	0.03	74.79
Average Daily Emissions (lbs/day)	1.54	10.64	0.62	0.57	
Bridge Removal (45 days)					
Construction Equipment	0.03	0.36	0.02	0.02	29.76
On-Road Vehicles	0.00	0.01	0.00	0.00	5.47
Total Construction Emissions	0.03	0.37	0.02	0.02	35.23
Average Daily Emissions (lbs/day)	1.52	16.25	0.88	0.80	
Total Project (165 days)					
Total Construction Emissions (tons)	0.13	1.00	0.06	0.05	110.02
Average Daily Emissions (lbs/day)	1.53	12.17	0.69	0.63	

Department of Water Resources
Morrow Bridge Off- and On-Road Emissions

Construction Year

2016							Emissions Factors (g/bhp-hr)					Emissions (tons)					MT
Project Component/Construction Equipment	Number	Total Hours	Horsepower	Lookup Row	Load Factor	ROG	NO _x	PM ₁₀	PM _{2.5}	CO ₂ e	ROG	NO _x	PM ₁₀	PM _{2.5}	CO ₂ e		
Bridge Construction											<i>0.09</i>	<i>0.60</i>	<i>0.03</i>	<i>0.03</i>	<i>56.23</i>		
318 Crawler Crane	Cranes	1	360	226	724	0.29	0.62	7.38	0.33	0.31	510.98	0.02	0.19	0.01	0.01	12.06	
Forklift	Forklifts	1	360	89	1344	0.2	0.72	6.22	0.52	0.48	509.40	0.01	0.04	0.00	0.00	3.26	
Pile Hammer	Other Construction Equipment	1	360	268	2013	0.42	0.31	4.09	0.15	0.14	513.55	0.01	0.18	0.01	0.01	20.81	
Compressor	Air Compressors	1	80	140	214	0.48	0.52	4.05	0.22	0.22	569.47	0.00	0.02	0.00	0.00	3.06	
Welding Machine	Welders	1	1440	46	4508	0.45	1.54	4.94	0.39	0.39	571.75	0.05	0.16	0.01	0.01	17.04	
Bridge Removal											<i>0.03</i>	<i>0.36</i>	<i>0.02</i>	<i>0.02</i>	<i>29.76</i>		
RTC-8035 crane	Cranes	1	360	226	724	0.29	0.62	7.38	0.33	0.31	510.98	0.02	0.19	0.01	0.01	12.06	
Excavator	Excavators	1	360	163	1208	0.38	0.36	4.08	0.20	0.18	510.32	0.01	0.10	0.00	0.00	11.38	
Compressor	Air Compressors	1	80	140	214	0.48	0.52	4.05	0.22	0.22	569.47	0.00	0.02	0.00	0.00	3.06	
Forklift	Forklifts	1	360	89	1344	0.2	0.72	6.22	0.52	0.48	509.40	0.01	0.04	0.00	0.00	3.26	

Notes: Pile Hammer horsepower was conservatively assumed to be a "middle-sized" rig (200 kW, 268 hp).

					Emissions Factors (g/ml)					Emissions (tons)					MT
Project Component/On-Road Vehicles	Days	Trips/Day	Trip Distance (one-way)	Total VMT	ROG	NO _x	PM ₁₀	PM _{2.5}	CO ₂ e	ROG	NO _x	PM ₁₀	PM _{2.5}	CO ₂ e	
Bridge Construction										<i>0.00</i>	<i>0.03</i>	<i>0.00</i>	<i>0.00</i>	<i>18.55</i>	
Construction Workers	120	8	20	38,400	0.06	0.34	0.08	0.05	380.04	0.00	0.01	0.00	0.00	14.59	
Haul Trucks (Cut/Fill)	10	2	20	800	0.29	7.98	0.21	0.15	1,799.22	0.00	0.01	0.00	0.00	1.44	
Haul Trucks (Material Delivery)	14	2	25	1,400	0.29	7.98	0.21	0.15	1,799.22	0.00	0.01	0.00	0.00	2.52	
Bridge Removal										<i>0.00</i>	<i>0.01</i>	<i>0.00</i>	<i>0.00</i>	<i>6.97</i>	
Construction Workers	45	8	20	14,400	0.06	0.34	0.08	0.05	380.04	0.00	0.01	0.00	0.00	5.47	
Haul Trucks (Material Hauling)	10	2	20	800	0.29	7.98	0.21	0.15	1,799.22	0.00	0.01	0.00	0.00	1.44	

Notes:

Truck trips include 11 trips for bridge materials and 17 concrete truck trips.

Disposal trips include 250 cubic yards of waste material.

APPENDIX 2

Final Cultural Resources Technical Memorandum

Memorandum

To: Elaine Jeu, Environmental Scientist, Department of Water Resources
From: Jay Rehor, Senior Archaeologist, AECOM
Date: September 16, 2016
Subject: Morrow Bridge Replacement Project–Phase 2 Cultural Resources Study.

INTRODUCTION

Goodyear Land and Development Company (GLDC) and the Department of Water Resources (DWR) are proposing to replace the Morrow Lane Bridge spanning Goodyear Slough in Solano County, California (Proposed Project). The purpose of the Proposed Project is to improve public safety, address the structurally deficient Morrow Lane Bridge, and ensure that the bridge meets current regulatory requirements and safety standards. The Proposed Project seeks state and federal permitting, and is thus subject to the California Environmental Quality Act (CEQA) and Section 106 of the National Historic Preservation Act (NHPA). DWR is the lead state agency, and the U.S. Army Corps of Engineers is the lead federal agency.

AECOM completed a cultural resources analysis for the Proposed Project including cultural records research and a field survey. This memorandum provides the project description, methodology, findings, and recommendations that constitute the cultural resources analysis. Based on this analysis, the project will not adversely affect historic properties, tribal cultural resources, or unique archaeological resources.

This document contains information on the nature and location of cultural resources. In accordance with Section 304 of the National Historic Preservation Act of 1966 (Title 16 of the U.S. Code, Section 470w-3), this information is privileged and is intended for limited distribution only.

PROJECT DESCRIPTION AND AREA OF POTENTIAL EFFECT

The Proposed Project is located in Suisun Marsh at the western edge of Grizzly and Suisun Bays in unincorporated southern Solano County. The Proposed Project is located on Morrow Lane, approximately 0.24 mile east of Goodyear Road. The Proposed Project encompasses approximately 0.62 acres on county assessor's parcel 0090-270-440. Additionally, the Proposed Project is located on the Vine Hill, California U.S. Geological Survey (USGS) 7.5-minute series topographic quadrangle map in an unsectioned part of Township 2N/ Range 2W (Appendix A).

The Proposed Project may be accessed from the west via Morrow Lane at Goodyear Road; from the east via Morrow Lane at an unimproved road accessed from Lake Herman Road to the south; and by boat via existing wetland channels. The closest marina to the Proposed Project, Pierce Harbor, is located approximately 2 miles north of Morrow Lane Bridge.

Morrow Lane Bridge spans Goodyear Slough and provides access to Morrow Island from the mainland. The island is located in Suisun Marsh, provides managed wetland for public and private waterfowl hunting areas.

Morrow Lane Bridge was originally constructed in 1931, in the alignment of the proposed new bridge. GLDC replaced the original 1931 bridge with a new bridge and alignment during the early 1950s. Several wooden piles and remnants of roadway from the 1931 bridge are present in the alignment of the proposed new bridge.

The bridge is owned by the GLDC and has required frequent maintenance and repairs through the years due to deterioration. The bridge is used by GLDC to access their holdings, by DWR for wetlands management purposes, by the public for recreational access to the island and wetlands, and by the island's private residential landowners.

The project site is approximately 0.62 acres, encompasses the new and existing bridge footprints and staging areas (Appendix B). The construction footprint includes the existing bridge and new bridge. Potential staging areas, approximately 0.36 acres, would be located 1) along the southern side of Morrow Lane adjacent to both the east and west sides of the bridge and 2) within a storage yard adjacent to GLDC's buildings at the eastern end of Morrow Lane.

Construction of the Proposed Project would be phased over a 2-year period. The first phase would involve removing approximately 13 wooden piles, vegetation, and constructing the new bridge alongside the existing one within the 1930s bridge alignment. The second phase, involving the demolition and removal of the existing bridge, would be implemented during the following year. The new bridge would be constructed of concrete supported by steel girders, bents, and 36 steel piles, with each pile measuring 16 inches in diameter. A 30-foot-long, 12-foot-wide friction slab would be installed on both sides of Morrow Lane approaching the bridge, which would require excavations up to 4 feet in depth. The piles would be driven through 50–55 feet of the slough bottom into the bedrock at a minimum of 15 feet in depth, to a total depth of approximately 65–70 feet below ground surface.

Treated wood waste and hazardous material, such as petroleum, would be stored within the designated staging areas. Upon completion of the bridge construction, both sides of Morrow Lane would be regraded to create a smooth transition onto the bridge. Morrow Lane west and east of the bridge and the unnamed north-south levee road to the east of the bridge will remain graveled, compacted dirt.

AREA OF POTENTIAL EFFECT

The Area of Potential Effect (APE) for cultural resources is defined as the limits of construction and construction-related activities where ground disturbance will occur, both horizontally and vertically. Such activities may include equipment staging and transport, subsurface excavation, and project-related changes to the built environment and visual landscape. The horizontal APE includes all areas of construction and staging. The vertical APE for subsurface excavation is anticipated to be a maximum of approximately 15 feet. The vertical APE for driven piles is anticipated to be up to 70 feet below ground surface. The Built Environment APE is defined as the limits of the existing Morrow Bridge. See Appendix A for the project Cultural APE Map.

REGULATORY CONTEXT

FEDERAL REGULATIONS

The project would seek permitting through the U.S. Army Corps of Engineers (USACE); thus, it is considered an Undertaking and subject to the requirements of Section 106 of the NHPA and its implementing regulations (Title 36 Code of Federal Regulations [CFR], Part 800 [36 CFR 800], as amended). USACE is the lead federal agency for the Proposed Project.

Section 106 of the National Historic Preservation Act of 1966

Section 106 requires federal agencies to consider the effects of their undertakings, or those they fund or permit, on properties that may be eligible for listing, or that are listed in the National Register of Historic Places (NRHP). The 36 CFR 60.4 regulations describe the criteria to evaluate cultural resources for inclusion in the NRHP. Cultural resources can be significant on the federal, state, or local level. Such resources are required to retain integrity and must exhibit an association with broad patterns of our history, be associated with an important person, embody a distinctive characteristic, or yield information important to prehistory or history.

The NRHP is a register maintained by the Secretary of the Interior that includes districts, sites, buildings, structures, and objects of significance in American history, architecture, archaeology, engineering, and culture. A property may be listed in the NRHP if it meets criteria for evaluation defined in 36 CFR 60.4:

The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and:

- A. That are associated with events that have made a significant contribution to the broad patterns of our history; or
- B. That are associated with the lives of persons significant in our past; or
- C. That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- D. That have yielded, or may be likely to yield, information important in prehistory or history.

The 36 CFR 800 regulations, implementing Section 106, call for considerable consultation with the State Historic Preservation Officer (SHPO), Indian tribes, and interested members of the public throughout the process. The four principal steps are as follows:

1. Initiate the Section 106 process (36 CFR 800.3).
2. Identify historic properties, resources eligible for inclusion in the NRHP (36 CFR 800.4).
3. Assess the effects of the undertaking to historic properties in the API (36 CFR 800.5).
4. Resolve adverse effects (36 CFR Part 800.6).

Adverse effects on historic properties often are resolved through mitigation measures defined in a memorandum of agreement (MOA) or a programmatic agreement, developed in consultation with the lead federal agency, the SHPO, Indian tribes, and interested members of the public. The Advisory Council on Historic Preservation (ACHP) is also invited to participate.

STATE REGULATIONS***California Environmental Quality Act Statute and Guidelines***

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

CEQA states that if a project would have significant impacts on Historical Resources, Unique Archaeological Resources, or Tribal Cultural Resources (defined below), then alternative plans or mitigation measures must be considered. The CEQA Guidelines define a historical resource as a resource listed or eligible for listing on the California Register of Historical Resources (CRHR) (Public Resources Code Section 5024.1). A resource may be eligible for inclusion in the CRHR if it:

1. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
2. Is associated with the lives of persons important in our past;
3. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
4. Has yielded, or may be likely to yield, information important in prehistory or history.

The CEQA Guidelines also require consideration of unique archaeological resources (Section 15064.5). As used in the Public Resources Code (Section 21083.2), the term "unique archaeological resource" means an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

1. Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information,
2. Has a special and particular quality such as being the oldest of its type or the best available example of its type, or
3. Is directly associated with a scientifically recognized important prehistoric or historic event or person.

In addition to meeting one or more of the above criteria, resources eligible for listing in the CRHR must retain enough of their historic character or appearance to be recognizable as historical resources and to convey the reasons for their significance. Integrity is evaluated with regard to the retention of location, design, setting, materials, workmanship, feeling, and association (Office of Historic Preservation 1999:71)

Assembly Bill 52

AB 52 applies to all projects initiated and publically posted after July 1, 2015. AB 52 mandates that California Native American Tribes are invited to consult on any project that is subject to CEQA compliance or Public Notice. California Native American Tribes include tribes with federal or state recognition. To facilitate AB 52 compliance, the California Native American Heritage Commission

(NAHC) is charged with maintaining a database of California Native American Tribes and culturally affiliated geographic areas. California Native American Tribes must notify CEQA lead agencies of their desire to be consulted under AB52, for all projects for which that agency is the CEQA lead.

SETTING

ENVIRONMENTAL CONTEXT

The project is located between Fairfield and Martinez in the Suisun Marsh, part of the San Francisco Bay tidal estuary. About one-third of the marsh is tidally influenced, with the remainder serving as diked wetlands managed to attract waterfowl. The marsh receives seasonal tidal inflow through sloughs and from the Sacramento and San Joaquin rivers and a number of local tributaries, with highly seasonal water derived from winter rain and spring and early summer snowmelt. Water movement through the marsh is regulated by tidal gates. The marsh, as the largest contiguous brackish water on the west coast, serves as a major resting and feeding ground for migrating and resident waterfowl; provides habitat for hundreds of bird, mammal, reptile, amphibian, and fish species; and provides important tidal-rearing areas for juvenile salmon. In addition, public enjoyment of the marsh includes abundant wildlife- and recreation-associated activities. The extensive levee system in the marsh helps manage salinity in the Sacramento-San Joaquin River Delta area (Meyer et al. 2013).

PREHISTORIC CONTEXT

Five time periods are used to order the local archaeological record (Meyer et al. 2013): Lower Archaic (10,000-6000 BP), Early Middle Archaic (7000-4500 BP), Terminal Middle Archaic/Early Period (4500-2500 BP), Upper Archaic/Middle Period (2500-1300 BP), and the Emergent Period (1300-200 BP). The following summary describes this chronological sequence relative to Solano County and the project area.

Lower Archaic (10,000-6000 BP)

The oldest archeological component found so far in the Bay-Delta region derives from the Los Vaqueros Reservoir area in eastern Contra Costa County. Two sites at the reservoir (CCO-637, -696) have produced artifact assemblages and human burials dating between 9,870 and 6,600 years ago. These deposits were buried at depths ranging from two to four meters below the surface in alluvial fan/floodplain sediments along Kellogg Creek.

Early Middle Archaic (7000-4500 BP)

Extensive early Middle Archaic deposits are rare in central California, and no sites with components from this time period are known in Solano County. Site CA-CCO-637 in neighboring Contra Costa County included deeply buried components found in an alluvial fan adjacent to Kellogg Creek, and a diverse assortment of habitation debris, several human burials, and residential and processing features.

Terminal Middle Archaic (4500-2500 BP)

Artifacts related to this time period include Side-notched and Stemmed projectile points, rectangular Haliotis (abalone) ornaments, shaped and unshaped mortars and pestles, and rectangular Olivella shell beads. In Solano County, obsidian from a source in northern Napa Valley was used almost exclusively. Nut and berry crops (i.e., acorn, manzanita, and pine nut) appear to have been the primary plant resources targeted during this time period. Along the bayshore, marine shellfish species were an important subsistence resource, as were marine fishes and mammals. All of the Terminal Middle Archaic sites in Solano county have produced human remains, and most contain intact burials;

however, none of these sites have expressed the Windmill Pattern seen in burials elsewhere in the region.

Upper Archaic (2500-1300 BP)

Upper Archaic deposits are found throughout the lowland valleys of the Coast Ranges and along the shores of San Francisco and Suisun bays, including components of sites in Green Valley (SOL-11, SOL-355/H). Upper Archaic sites are typically composed of well-developed midden deposits containing hundreds of human burials and habitation features, representing long-term residential villages. Subsistence remains indicate that acorns and other large nut and seed crops were an important part of the diet, with a growing emphasis on small-seeded resources. Faunal assemblages continue to reflect either marine or terrestrial taxa, depending on the location of the site.

Assemblages reflect well-developed bone tool and ornament industries, including numerous saucer- and saddle-shaped Olivella shell beads, steatite disk beads, Haliotis ornaments and pendants, and both unshaped and well-shaped mortars and pestles. Projectile points are typically shouldered Lanceolate forms, although Side-notched and Stemmed points also occur. Well-made charmstones from various types of stone as well as baked clay are frequently found at sites in Solano County. Human interments are typically placed in a flexed position with distinct burial postures and orientations identified at different sites.

Emergent (1300-200 BP)

Emergent Period sites have been excavated at several locations in Solano County, including SOL-356 in Green Valley, SOL-30 in Lagoon Valley, the Nakamura and Glasshoff sites in Suisun Valley, the Peterson Mounds (SOL-1, -2 and -3) west of Vacaville, and the Glenn Cove site (SOL-236) near the Carquinez Bridge. Typically these sites are well-developed midden deposits containing both human cremations and standard burials. Residential features such as house floors are common. Assemblages are marked by the appearance of small arrow-sized projectile points, beautifully trimmed "show" mortars, flanged pestles, flanged steatite pipes, and chevron-designed bird-bone tubes.

Bedrock mortar milling stations were established, beginning in the east bay area around 1,300 years ago. Portable mortars and pestles continued to be used, although smaller specimens were preferred.

Large mammals appear to have taken a more prominent role in the diet during this period. Marine shellfish and marine fishes were moved inland in much larger quantities during the Emergent Period.

ETHNOGRAPHIC CONTEXT

The Ethnographic Period in California's Bay Area is defined as the beginning of written descriptions of native life, beginning with records of early Spanish, English and Russian exploration and colonization. The project APE is located in the traditional territory of the ethnographic Southern Patwin, a socio-linguistic group belonging to the California Penutian language family (Kroeber 1932; Johnson 1978). Politically, the Patwin were organized in small tribes or tribelets, each consisting of a primary village with satellite villages. Territories were vaguely defined, but included marshland fishing, hunting and resource gathering areas. In the hills, Patwin settled in the small riverine valleys, particularly along Putah and Cache Creeks. However, the river delta plains were less hospitable, and villages were sparse due to expansive marshlands and seasonal flooding (Johnson 1978). No ethnographic village sites have been documented within the project APE.

HISTORIC CONTEXT

Solano County is one of California's original 27 counties and has retained its original boundaries. Early Solano County settlers operated cattle ranches, cultivated grains and, to a lesser extent, cultivated fruits and vegetables. In these early years the transport of agricultural goods depended on access to navigable marshes and sloughs. By the twentieth century, the railroad and automobiles were primarily responsible for transporting local products throughout the region (Kyle 1990; 463).

Suisun Marsh

Suisun Marsh covers 52,000 acres of managed wetlands along the northern edge of Suisun Bay and is the largest contiguous brackish wetland in the western United States. Water control and reclamation, associated agriculture, transportation, and recreational activities have affected the marsh over the years (JRP Historical Consulting, LLC 2013: 6).

Throughout its history Suisun Marsh has had a diverse system of transportation based on land and water vehicles. Boats provided the first means of travel in the marsh, and were relied upon for socioeconomic subsistence. Land transport followed, which included construction of roads, bridges, and railroads (JRP Historical Consulting, LLC 2013: 20).

While watercraft continued to dominate transport methods, a system of roads was constructed in Suisun Marsh circa 1890s in tandem with levee construction and other reclamation efforts. Farmers developed rough roads on levees, and seasonal roads with small bridges crossed the marsh. In 1919, wealthy philanthropist Annie Alexander built and donated to the county a ferry capable of carrying vehicles, and the County constructed Grizzly Island Road to support its use.

Reclamation District 2032 continued to manage the wetlands and levees east of Goodyear Slough. As the district surrounded the area with levees by 1925, it constructed a private road from the main road along the western edge of the marsh directly eastward to the reclaimed land. As a part of this construction, the landowners built a bridge over Goodyear Slough in 1931. To support marshland access, the Morrow Bridge was constructed as a single lane bridge on piers with sloping approaches and ends, with a flat central removable deck. Subsequent landholders have made multiple modifications to this bridge, increasing the number of piers to carry it over a wider channel, and adding multiple stringers. Additional piers in the channel to the south point to a possible reconstruction. The bridge remains in use today (JRP Historical Consulting, LLC 2013: 24).

METHODOLOGY

Efforts to locate cultural resources within the project APE and study area consisted of a CHRIS records search, research in AECOM's cultural library, Native American consultation, and a field survey of the APE.

RECORDS SEARCH

A cultural records search of the project APE and vicinity was conducted at the California Historical Resources Information System's Northwest Information Center (CHRIS NWIC) on August 19, 2015 (NWIC File No. 15-0305). The records search was conducted in order to determine whether previous resources or studies had been reported within the project APE and study area, and to obtain existing information that may contribute to the project's cultural sensitivity assessment. Documentation of the cultural records search results are contained in Appendix C.

The cultural records search identified a total of 6 resources previously reported in the project APE and study area, including a prehistoric bedrock mortar feature and historic-era buildings, structures and objects. A total of ten studies have been conducted previously in the project APE and study area, including work related to marshland infrastructure and development projects along the Interstate 680 corridor near Benicia.

The following two resources have been documented in the project APE:

Primary Number	Trinomial	Description
P-48-000982	none	Historic-era Suisun Marsh Bridges, including the Montezuma Slough Bridge, Joice Island Bridge, and Morrow Island Bridge
P-48-000987	none	Historic-era features associated with the Suisun Marsh Duck Clubs

The following four resources have been documented in the vicinity of the project APE:

Primary Number	Trinomial	Description
P-48-000180	CA-SOL-393H	Historic-era (circa 1850s) stone building
P-48-000696	none	Historic-era paved road under modern Lopes Road
P-48-000990	none	Historic Era Facilities, including the Roaring River Distribution System, Morrow Island Distribution system, and Goodyear Outfall
P-48-000030	CA-SOL-22	Prehistoric Bedrock mortar features

The following two studies have been reported in the project APE:

Report Number	Year	Author(s)	Report Title
22577	2000	William Self Associates	Inspection of Line Section 47, north of Bahia, Solano County, CA
20035	1997	William Self Associates	Cultural Resources Inventory of Proposed Anomaly Excavation Areas in Line Section 25, Solano County, CA

The following eight studies have been reported in the vicinity of the project APE:

Report Number	Year	Author(s)	Report Title
5150		Ecumene Associates	Draft Focused Environmental Impact Report for the KTW Partnership Property Pre-Zoning in Benicia, California
5994	1983	Anthropological Studies Center	An Archaeological Study for the Reconstruction of lake Herman County Road, Solano County, California
7986	1986	Orlins, R.	A Cultural Resource Evaluation of the International Technology Corporation Panoche Facility, Benicia, Solano County, California
12744	1991	Farber, A.	Archaeological Survey of the International Technology Corporation, Panoche Facility Closure Project Area, Solano County, CA
17993	unknown	unknown	Study associated with I680 corridor
25311	unknown	unknown	Study associated with I680 corridor
28438	2004	Jones and Stokes	Benicia Intermodal Transportation Station Project
33553	2007	LSA Associates	Cultural and Paleontological resources Study for the Benicia Business Park Project, Benicia, Solano, County, CA

NATIVE AMERICAN CONSULTATION

In support of compliance with AB52, AECOM submitted a request to the NAHC on November 12, 2015. This request included a search of their Sacred Lands Files and other information regarding the presence of cultural resources in the project area, as well as a list of tribal representatives who may have information or concerns about traditional, religious, or cultural resources in the project area. A response dated December 15, 2015 was received from the NAHC indicating that the Sacred Lands File search failed to identify any specific sites or locations of tribal interest. The response also included a list of tribes and individuals who may have interest in the project, including the Yocha Dehe Wintun Nation in Brooks, and the Cortina Band of Indians in Williams.

DWR sent project notification letters to all parties on the NAHC list in May 2016. On July 12, 2016, the Yocha Dehe Wintun Nation Tribe responded with a letter to the initial requesting a site visit (Appendix D). The timing of the site visit has yet to be determined and consultation with the tribe is ongoing. Tribal consultation under Section 106 is the responsibility of USACE, and therefore not included in this report.

FIELD SURVEY

On November 12, 2015, AECOM archaeologists Kerry Boutte and Jenifer Rogers conducted archaeological survey of the project APE (Appendix A). The project area is a marshland slough with few raised ground surfaces for travel. The roadways and southwestern embankment within the project APE were surveyed using intensive 5-meter to 10-meter transects. The deep-water slough areas on the north side of the roads and bridge footings were not surveyed. The existing, gated work yard at the eastern end of the project area was visually inspected from outside of the chain-link fence. The historic-era Morrow Bridge was investigated, and used during the survey to cross the slough. Large amounts of modern debris, including discarded utility poles and railroad ties, were observed piled along the southern side of Morrow Lane west of the bridge. Features associated with the historic-era Suisun Marsh Duck Clubs (P-48-987) were not observed during the survey. No archaeological resources were encountered during the survey.

FINDINGS**ARCHAEOLOGY**

A cultural records search at the CHRIS-NWIC identified two historic-era resources located in the project APE (Appendix E). Resource P-48-000982 includes the Morrow Lane Bridge and Resource P-48-000987 is a collection of features associated with the Suisun Marsh Duck Clubs. The Morrow Lane Bridge is discussed in the Built Environment assessments of this report. No features associated with the Suisun Marsh Duck Club are documented within the project APE, and no features associated with the resources were encountered during the pedestrian survey. OHP concurred in 2014 that the Suisun Marsh landscape was not eligible for inclusion on the National Register of Historic Places.

Although the marsh was likely used for procurement of resources throughout prehistory and history, no prehistoric or historic features associated with these activities have been identified in the project APE.

BUILT ENVIRONMENT

Morrow Lane Bridge was constructed in 1931 to access local farms and duck clubs. The wood bridge is approximately 210 feet long and 14 feet wide. Over time, the bridge has undergone periodic

maintenance and upkeep. JRP Historical Consulting inventoried and evaluated the bridge in 2013 and recommended it ineligible for NRHP/CRHR listing because of a lack of integrity and historical significance (JRP Historical Consulting, LLC 2013). The State Historic Preservation Officer (SHPO) concurred with the finding in 2014. See Appendix F for the 2013 Morrow Bridge Department of Parks and Recreation (DPR) 523 form and Appendix G for the SHPO concurrence letter.

CONCLUSION AND RECOMMENDATIONS

One historic-era built environment resource, the Morrow Bridge, has been identified in the project area. The bridge does not meet criteria for inclusion in the NRHP or CRHR and, therefore, is not considered a historical resource for the purposes of CEQA. No additional treatment of this resource is required. It has also been determined that no known archaeological resources will be impacted as a result of project-related activities. Because project excavations would be limited to areas with hydric marsh soils or fill material with little likelihood for human habitation, the potential for encountering buried archeological resources is considered low. Similarly, because the new bridge would be constructed in the same location as the 1930s bridge and has been previously disturbed, it is unlikely that any significant intact archeological resources would be present. While the potential for encountering unanticipated buried archaeological resources is considered low, the possibility cannot be completely discounted. If any cultural resources are located during project activities, all work in the vicinity of the discovery will stop, the project proponent will contact a qualified archaeologist to assess the find and make recommendations regarding its significance and possible treatment, and any local, state, or federal agency with approval or permitting authority over the project that has requested such notification will be notified. In the event that human remains are discovered, all work will stop within 100 feet and the county coroner will be contacted immediately.

REFERENCES

Johnson, P. J. 1978. Patwin. Handbook of North American Indians Volume 8: California, R. F. Heizer, editor. Smithsonian Institute; Washington D.C.

JRP Historical Consulting, LLC. 2013. Suisun Marsh Cultural Resources Contextual Report: Volume 2 - Built Environment. Prepared for U.S. Bureau of Reclamation, Sacramento.

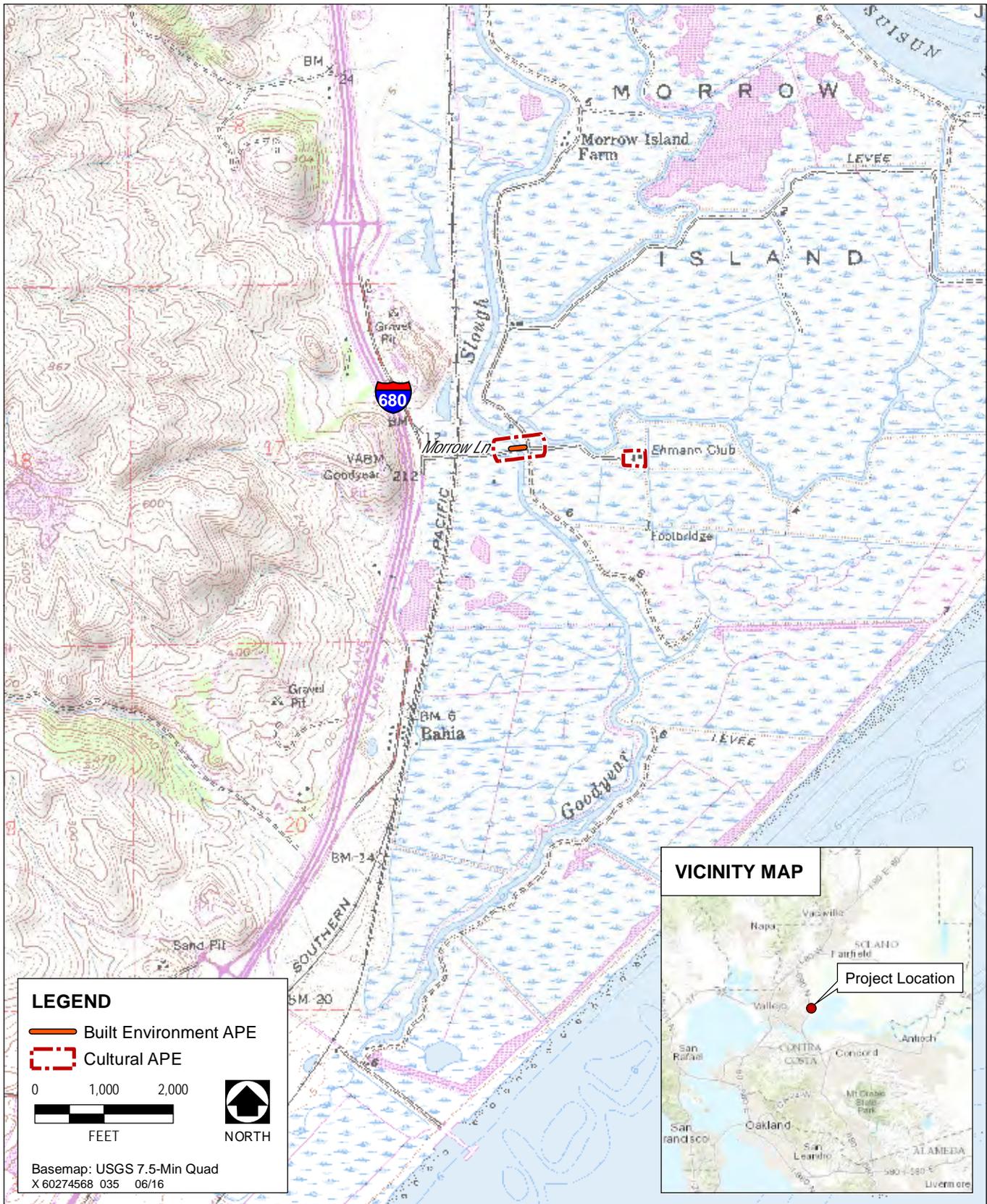
Kroeber, A. L. 1932. The Patwin and Their Neighbors. University of California Publications in Archaeology and Ethnology 29:4. University of California Press; Berkeley.

Kyle, D.E. 1990. Historic Spots in California. Stanford University Press, Stanford.

Meyer, J. et al. 2013. Suisun Marsh Habitat Management, Preservation, and Restoration Plan Cultural Resources Contextual Report: Volume I - Archaeological Resources.

APPENDIX A

APE Map



Area of Potential Effects (APE) Map

APPENDIX B

Detailed Project Site Map



Detailed Project Site Map

APPENDIX C

Native American Consultation

DEPARTMENT OF WATER RESOURCES

DIVISION OF ENVIRONMENTAL SERVICES
3500 INDUSTRIAL BOULEVARD
WEST SACRAMENTO, CA 95691



June 6, 2016

Charlie Wright, Chairperson
Cortina Band of Indians
Post Office Box 1630
Williams, California 95987

Morrow Lane Bridge Project

Dear Chairperson Wright,

The Goodyear Land Development Company (GLDC) and California Department of Water Resources (DWR) are proposing to build a new one-lane bridge to replace the existing structurally deficient Morrow Lane Bridge crossing Goodyear Slough on Morrow Lane, a private road owned by GLDC. The project is located in Solano County, California in an unsectioned part of Township 2N, Range 2W, Mount Diablo Base Meridian (see attached map). Morrow Lane Bridge spans both Goodyear Slough and a secondary channel of Goodyear Slough, and also provides access to Morrow Island, which is part of the Suisun Marsh Primary Management Area. The project requires California Environmental Quality Act (CEQA) review. DWR is the Lead Agency under CEQA.

The Native American Heritage Commission (NAHC) has identified you as a member of a California Native American tribe that is traditionally and culturally affiliated with the geographic area. You or your tribe may have concerns regarding tribal cultural resources in the project footprint, and you are invited to consult with DWR in support of Assembly Bill 52 (Public Resources Code Section 21080.3.1). Please respond in writing via letter within 30 days of receipt of this notification. If you do not respond within 30 days, DWR will consider consultation with you and your tribe complete, pursuant to Public Resources Code Section 21082.3(d)(3).

Please send written notification to:

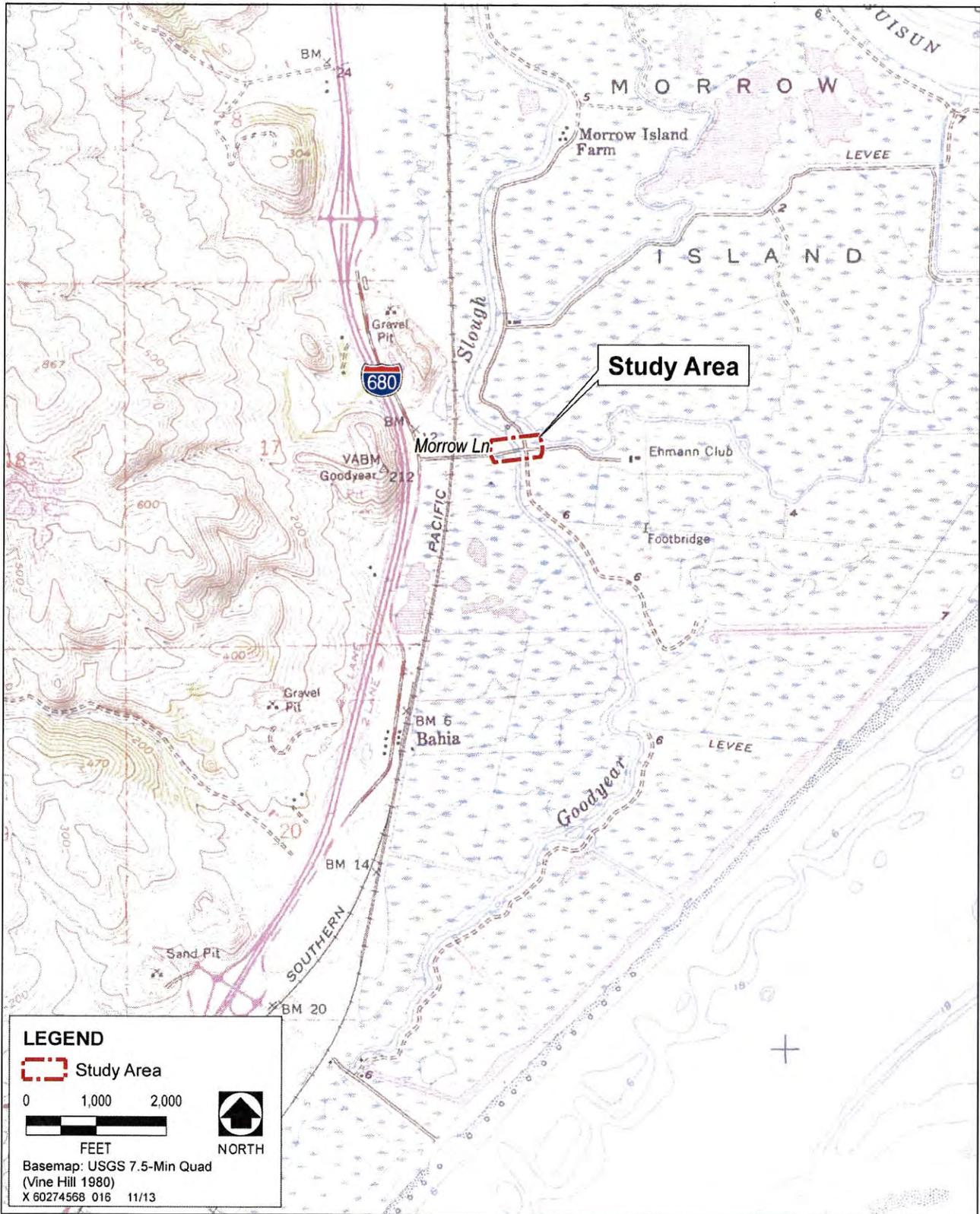
Rhiannon Klingonsmith
California Department of Water Resources
3500 Industrial Blvd
West Sacramento, CA 95691
Rhiannon.Klingonsmith@water.ca.gov
(916) 376-9843

Sincerely,

A handwritten signature in blue ink that reads "Rhiannon Klingonsmith" with a stylized flourish at the end.

Rhiannon Klingonsmith, Chief
Suisun Marsh Compliance and Monitoring
Division of Environmental Services
Department of Water Resources

Enclosure



Source: Data compiled by AECOM in 2013

Exhibit 2

Site and Vicinity

DEPARTMENT OF WATER RESOURCES

DIVISION OF ENVIRONMENTAL SERVICES
3500 INDUSTRIAL BOULEVARD
WEST SACRAMENTO, CA 95691



June 6, 2016

Leland Kinter, Chairperson
Yocha Dehe Wintun Nation
Post Office Box 18
Brooks, California 95606

Morrow Lane Bridge Project

Dear Chairperson Kinter,

The Goodyear Land Development Company (GLDC) and California Department of Water Resources (DWR) are proposing to build a new one-lane bridge to replace the existing structurally deficient Morrow Lane Bridge crossing Goodyear Slough on Morrow Lane, a private road owned by GLDC. The project is located in Solano County, California in an unsectioned part of Township 2N, Range 2W, Mount Diablo Base Meridian (see attached map). Morrow Lane Bridge spans both Goodyear Slough and a secondary channel of Goodyear Slough, and also provides access to Morrow Island, which is part of the Suisun Marsh Primary Management Area. The project requires California Environmental Quality Act (CEQA) review. DWR is the Lead Agency under CEQA.

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Please send written notification to:

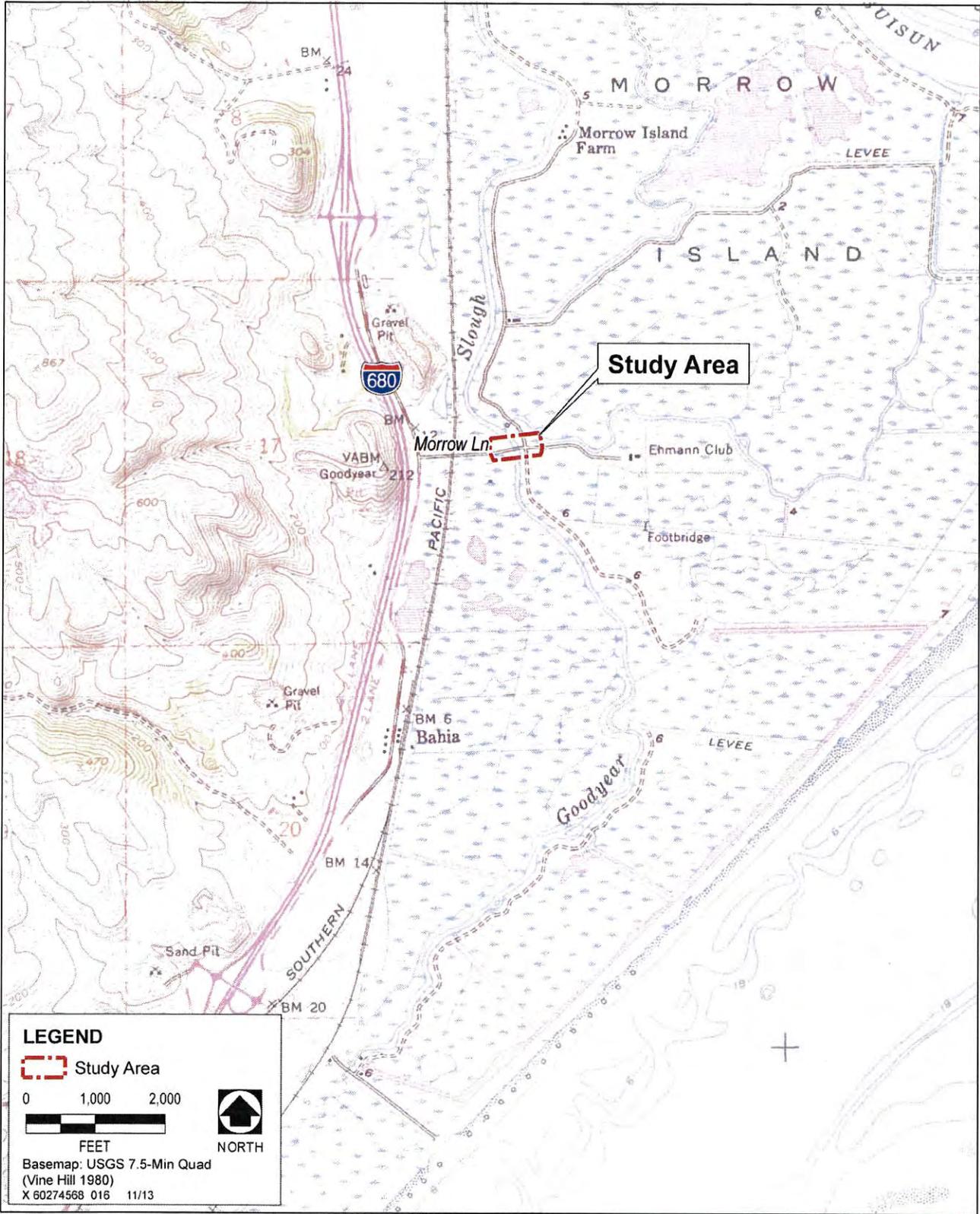
Rhiannon Klingonsmith
California Department of Water Resources
3500 Industrial Blvd
West Sacramento, CA 95691
Rhiannon.Klingonsmith@water.ca.gov
(916) 376-9843

Sincerely,

A handwritten signature in blue ink that reads "Rhiannon Klingonsmith".

Rhiannon Klingonsmith, Chief
Suisun Marsh Compliance and Monitoring
Division of Environmental Services
Department of Water Resources

Enclosure



Source: Data compiled by AECOM in 2013

Exhibit 2

Site and Vicinity

APPENDIX D

Native American Response Letter (Yocha Dehe Wintun Nation)



YOCHA DEHE
CULTURAL RESOURCES

July 12, 2016

Rhiannon Klingonmith
California Department of Water Resources
3500 Industrial Blvd
West Sacramento, CA 95691

RE: Morrow Lane Bridge Project

Dear Rhiannon Klingonsmith:

Thank you for your project notification letter dated, June 6, 2016, regarding cultural information on or near the proposed Morrow Lane Bridge project, Solano County, CA. We appreciate your effort to contact us and wish to respond.

The Cultural Resources Department has reviewed the project and concluded that it is within the aboriginal territories of the Yocha Dehe Wintun Nation. Therefore, we have a cultural interest and authority in the proposed project area.

Based on the information provided, the Tribe has concerns that the project could impact undiscovered archaeological deposits. Additionally, Yocha Dehe Wintun Nation requests a site visit to the project area to evaluate our cultural concerns. Please send us the cultural resource study for this project.

Please contact the following individual to coordinate a date and time for the site visit.

Mr. James Sarmiento
Cultural Resources Manager
Yocha Dehe Wintun Nation
Office: (530) 723-0452, Email: jsarmiento@yochadehe-nsn.gov

Please refer to identification number YD - 07062016-06 in any correspondence concerning this project.

Thank you for providing us with this notice and the opportunity to comment.

Sincerely,

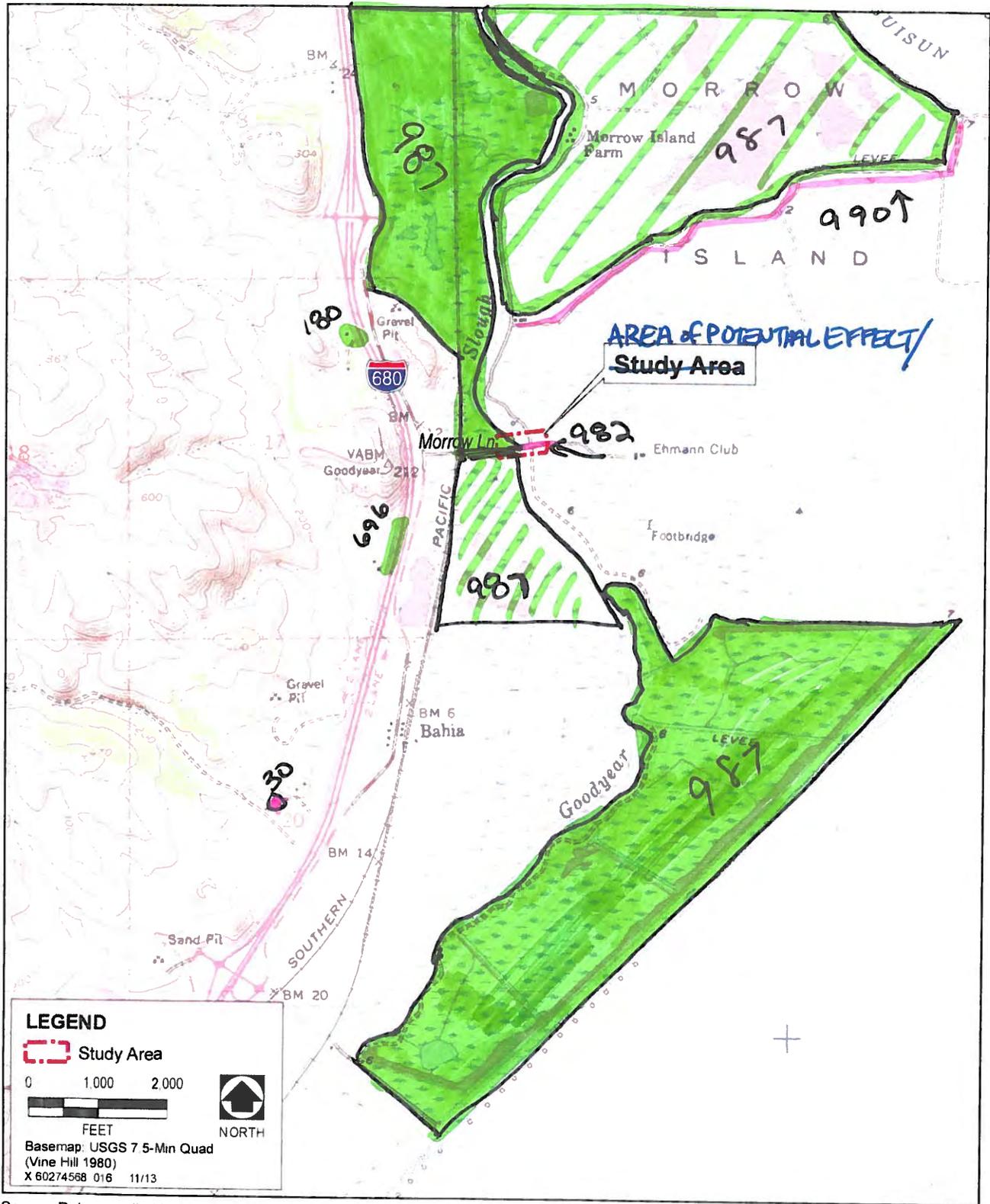
James Kinter
Tribal Secretary
Tribal Historic Preservation Officer

Yocha Dehe Wintun Nation

PO Box 18 Brooks, California 95606 p) 530.796.3400 f) 530.796.2143 www.yochadehe.org

APPENDIX E

CHRIS Records Search



987
 (not
 water)
 990
 180
 (structure)
 982*
 696
 (line)

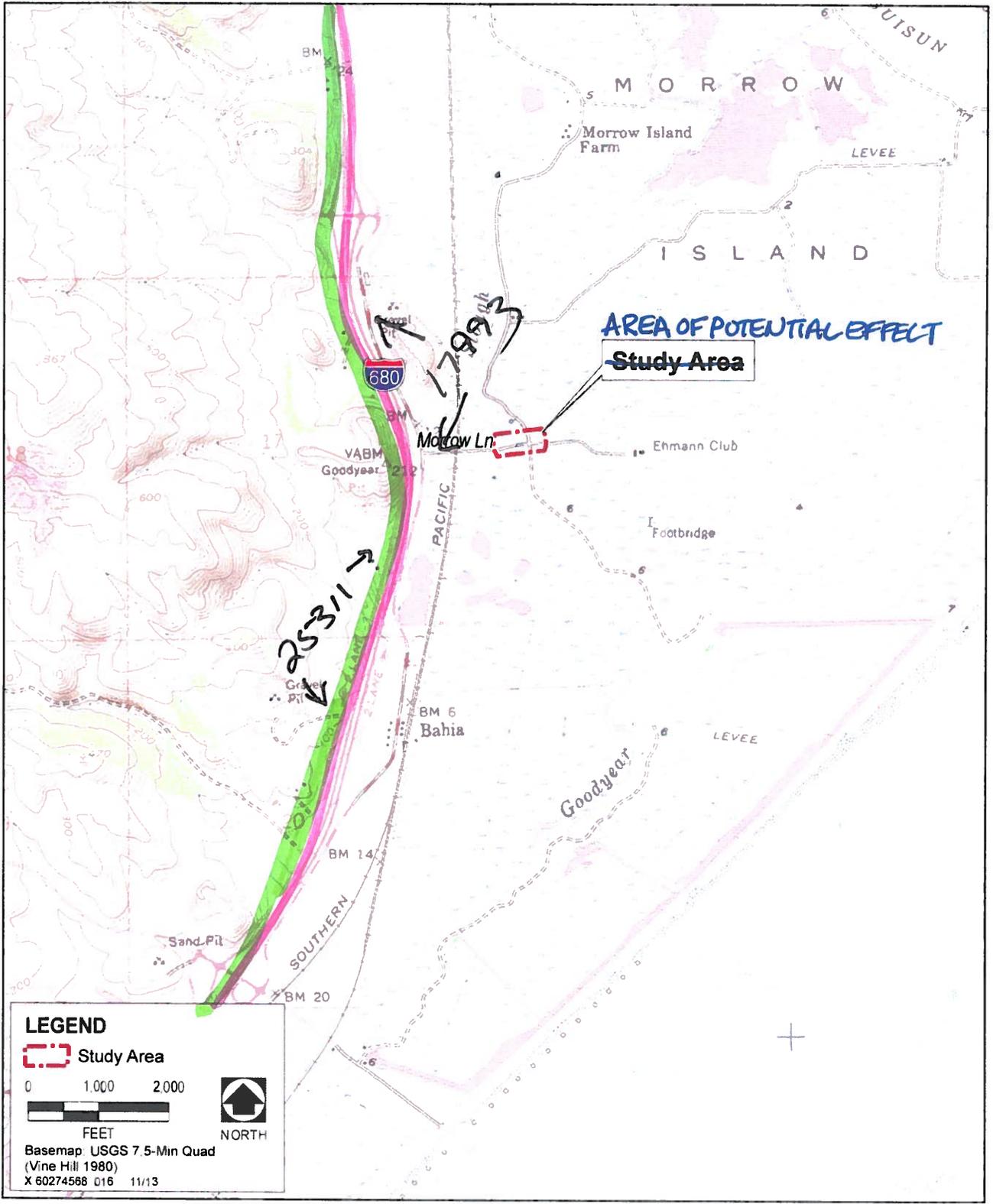
030

Source: Data compiled by AECOM in 2013

Exhibit 2

Site and Vicinity

Sites = 6



Source: Data compiled by AECOM in 2013

Exhibit 2

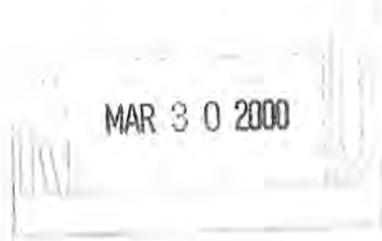
Site and Vicinity

Studies -

See maps for locations



522577



March 8, 2000

Ms. Kim Adkins
Kinder Morgan Energy Partners
1100 Town & Country Road
Orange, CA 92868

RE: Inspection of Line Section 47, north of Bahia, Solano County, CA

Dear Kim:

In accordance with our agreement with Kinder Morgan Energy Partners, WSA has implemented an archaeological field survey of the proposed Line Section 47 valve installation project area in Solano County, California (Figure 1). Given the negative findings, this response will be in a letter format rather than a stand-alone assessment report, subsequently, general background information on the cultural setting of the area will be included by reference only.

Project Description and Location

The project area for Valve Site-1, measuring approximately 50 feet long by 5 feet wide, is located approximately 2/10 of a mile east of Highway 680 and north of the settlement of Bahia, in Solano County, CA. It is situated in Township 3 North, Range 2 West, in an unsectioned portion as shown on the Vine Hill 7.5' USGS quadrangle (Figure 2). The proposed project consists of installing a main line block valve at the intersection of Morrow Lane and the Southern Pacific Railroad tracks along the Line Section 47 pipeline route.

The project area for Valve Site-2, measuring approximately 50 feet long and 5 feet wide, is located approximately 4.5 miles SE of Highway 80 and south of the town of Suisun City, in Solano County, CA. It is situated in Township 4 North, Range 2 West, in an unsectioned portion as shown on the Fairfield South 7.5' USGS Quadrangle (Figure 3). The proposed project consists of installing a main line block in the ditch approximately 10 feet NE of the intersection of Chadbourne Road and the Southern Pacific Railroad tracks along the existing Line Section 47 pipeline route. An optional site for the Chadbourne Road main line block valve was surveyed at the NE intersection of Jacksnipe Road and the Southern Pacific Railroad tracks, approximately 3/4 mile north of the Chadbourne site.

Cultural Setting

This part of Solano County is known to have been occupied, at least intermittently, for the past 6,000 years or more based upon evidence gathered from archaeological sites in this portion of the county (Moratto 1984). The ethnographic inhabitants of the area were the Patwin Indians who are known to have established villages in the Fairfield vicinity (Johnson 1978; Kroeber 1925). The area has been used for seasonal duck hunting over the past several decades and as a year-round wildlife refuge.

Results of the Record Search

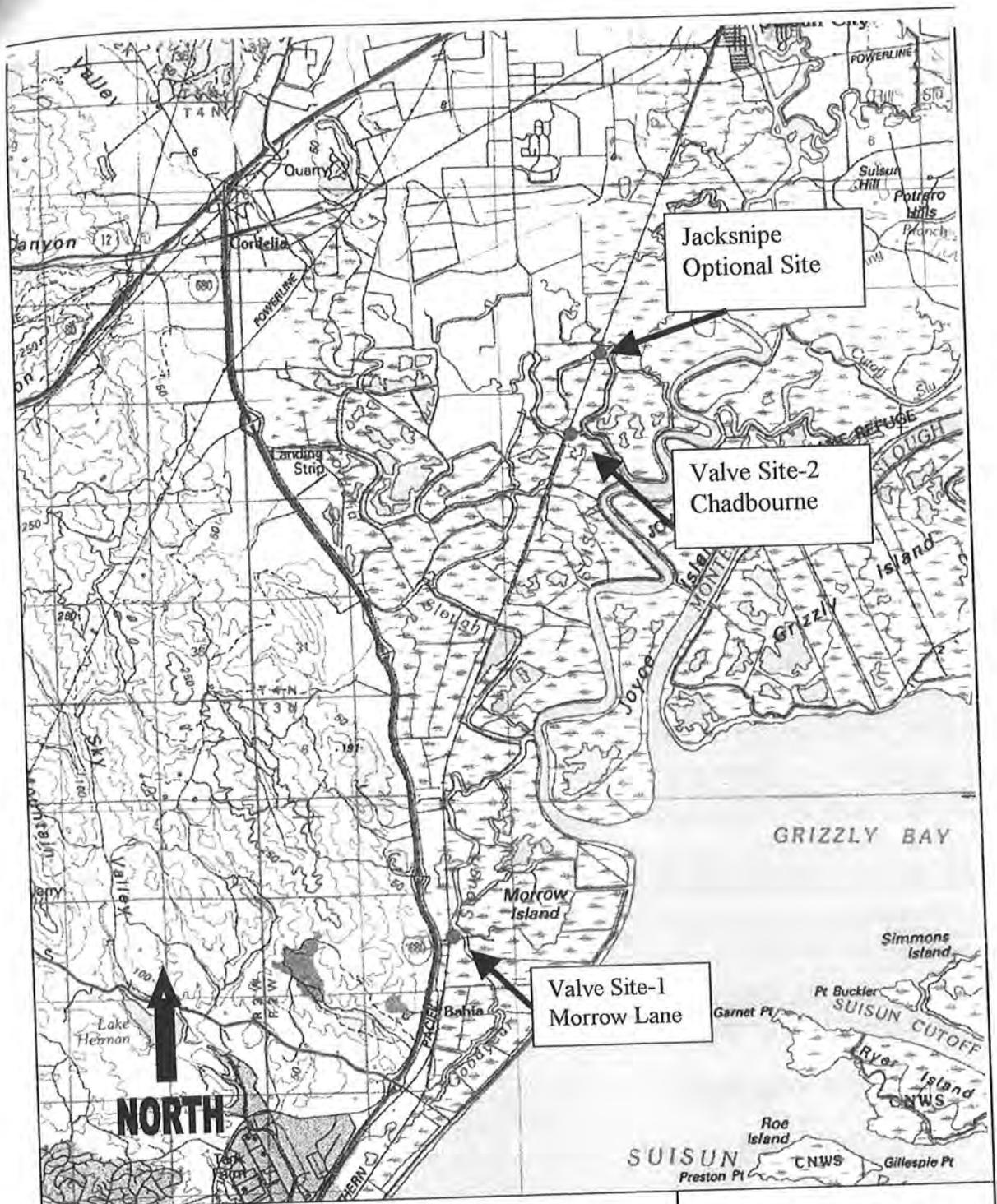
A previous record search (#60800-97-482) of the area was conducted on October 30, 1997 by WSA Senior Associate Mr. Jim Allan at the Northwest Information Center, Rohnert Park, California. The search included a review of all recorded historic and prehistoric archaeological sites within a linear half-mile of the project area as well as a review of all known cultural resource surveys and excavation reports. One survey was previously conducted in 1988 in the area of the potential Jacksnipe valve site; the results of which were negative in terms of observed cultural resources. Two nearby archaeological sites, CA-SOL-392-H, and CA-SOL-393-H were recorded in 1993 by Far Western Anthropological Research Group. These historical sites are located approximately 2500 feet northwest and southwest respectively, of Valve Site-1 in the Morrow Lane survey area and will incur no impact from the proposed project.

Results of the Field Survey

WSA staff archaeologist, Ms. Leigh A. Martin conducted a pedestrian survey of the project area on March 2, 2000. Ground visibility was fair to poor due to railroad fill material, asphalt, marsh vegetation, and weeds. All visible ground surface was examined for the presence of historic or prehistoric archaeological site indicators – none were observed.

Recommendations

Although no cultural resources were observed during the survey of the parcels, there is always a possibility that such resources may become visible once vegetation is removed or during construction excavation. Indicators of prehistoric site activity include charcoal, obsidian or chert flakes, grinding bowls, shell fragments, bone, and pockets of dark, friable soils. Historic resources include glass, metal, ceramics, wood and similar debris. Should any previously undiscovered historic or prehistoric resources be found during construction, work should stop, in accordance with CEQA regulations, until such time that the resource can be evaluated and appropriate mitigative action taken as determined necessary by the City or County Lead Agency.



Morrow Lane, Chadbourne Road and Jacksnipe

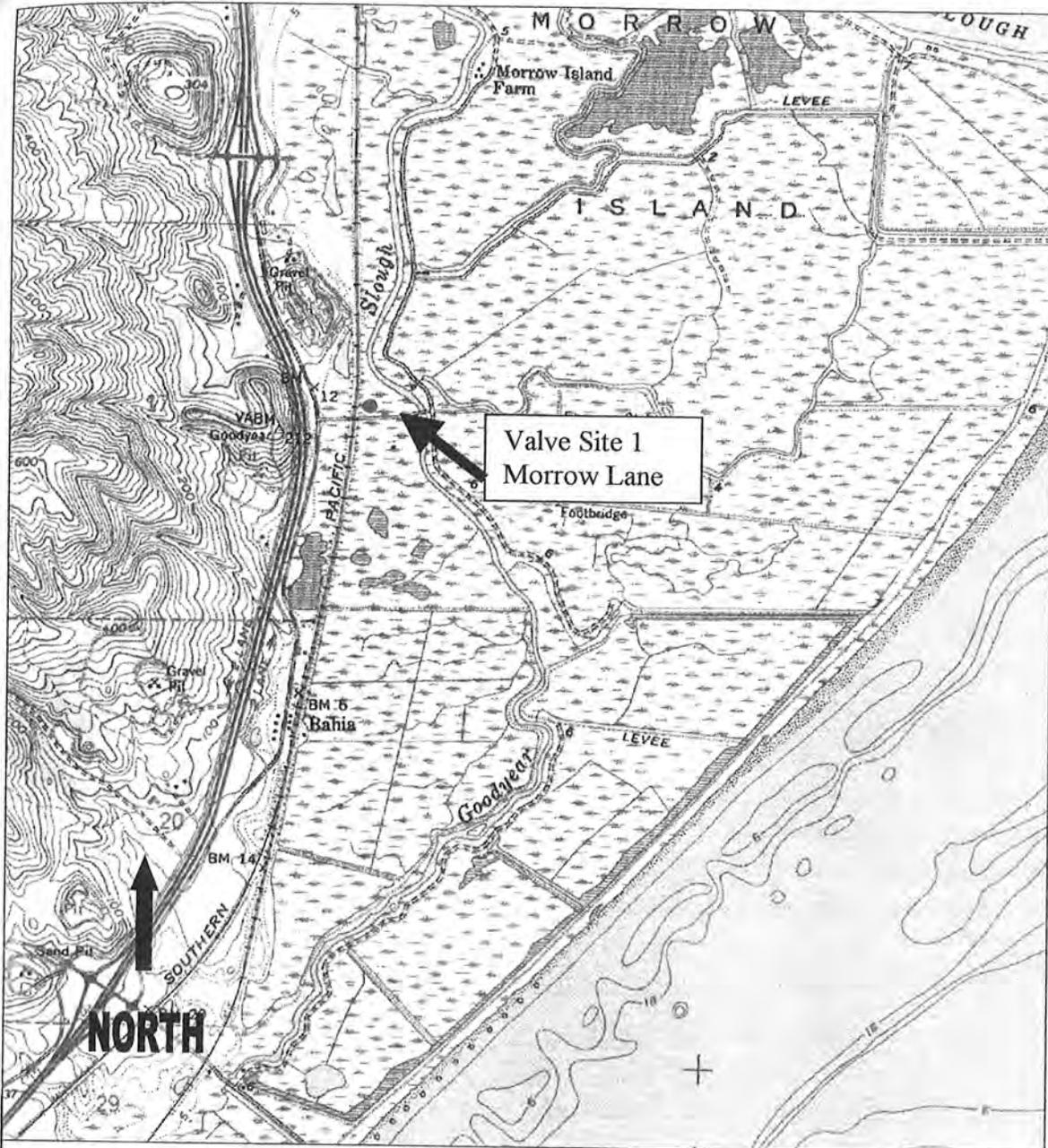
Main Line Valve Potential Site Locations

Scale 1:100,000

VICINITY LOCATION
MAP

Figure 1

SFPP Line Section 47



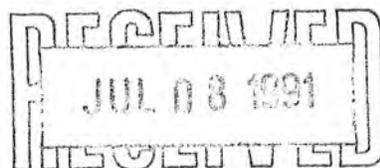
Morrow Lane Main Line Valve Site

Scale 1: 24,000

**PROJECT LOCATION
MAP
Figure 2**

SFPP Line Section 47

5-12744



**ARCHAEOLOGICAL SURVEY OF THE
INTERNATIONAL TECHNOLOGY
CORPORATION, PANOCHE FACILITY
CLOSURE PROJECT AREA
SOLANO COUNTY, CALIFORNIA**

JULY 1991

Prepared by:

Alfred Farber

Prepared for:

**International Technology Corporation
4585 Pacheco Boulevard
Martinez, California 94553**

EXECUTIVE SUMMARY

Introduction

International Technology Corporation (IT) is in the process of closing its Panoche hazardous waste management facility. Pursuant to the requirements of Appendix K to the Guidelines of the California Environmental Quality Act (CEQA), a review of cultural (i.e., archaeological and historical) resources was undertaken to determine whether the closure would have any negative affect on significant cultural resources. This investigation, along with earlier archaeological investigations of portions of IT property within and surrounding the Panoche facility (Chavez 1982; Orlins 1986), supports the cultural resources element of the closure environmental impact report (EIR).

The scope of work included a record search, literature review, and a complete, mixed strategy archaeological survey of the project area.

The purpose of this Executive Summary is to abstract those portions of this report that will comprise the cultural resource element of the Panoche Facility closure EIR.

Cultural Background

The project vicinity was formerly occupied by the Hill Patwin Indians, who spoke dialects related to the Nomlaki and Wintu Indians to the north. Together, these three cultural groups comprised the Wintuan language family of the California Penutian linguistic stock. The Hill Patwin and closely related River Patwin, who occupied the Sacramento Valley, were hunters and gatherers who relied heavily on exploitation of acorns, deer, and salmon as staples, which were supplemented by a vast array of other food resources.

Fur trappers may have been the first Europeans to visit Solano County in the late 1820s and throughout the 1830s. The first Euro-Americans in the area were missionaries along with Mexicans and Americans who had received Mexican land grants. The presence of these people soon disrupted native cultures, which never recovered.

Benicia is the closest modern-day community to the project area. It was originally included in a land grant to General Vallejo, and was later acquired by Dr. Robert Semple, who planned the city in 1847. Benicia has enjoyed a distinguished and varied history.

Existing Cultural Resource Conditions

Despite the three cultural resource investigations of various portions of IT property that may be affected by the proposed closure, no cultural resources have been

identified in the project area. The nearest cultural resource, a relatively insignificant prehistoric site, lies about one mile to the east of the project area. It has been concluded by all three archaeologists who investigated the property that the archaeological sensitivity of the project area is very low.

Potential Impacts to Cultural Resources

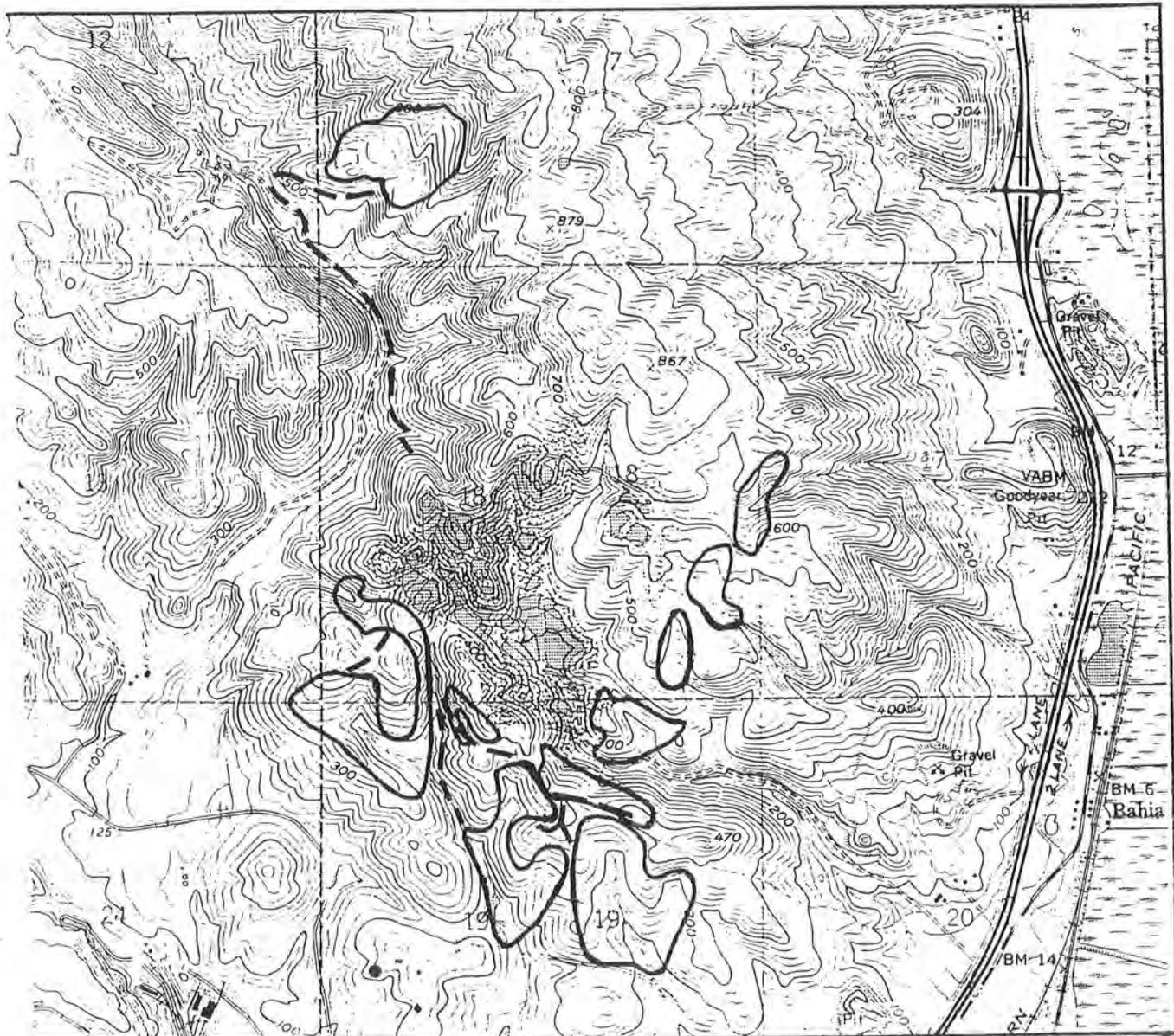
Due to the apparent absence of significant cultural resources within the project area, it was concluded that the project will have no effect on cultural resources.

Recommended Mitigation Measures for Cultural Resources

As a consequence of the apparent absence of cultural resources within the closure project area, no *specific* mitigation measures are indicated, and archaeological clearance is recommended.

However, due to the dense ground cover over most of the project area and as a standard precaution, the following *general* mitigation recommendation is offered. In the event that activities associated with the proposed undertaking subsequently reveal the presence of cultural resources (i.e. artifact concentrations, structural remnants, human skeletal remains) that were not observed during the surface survey, work on that locus should cease immediately until a qualified archaeologist can be consulted to evaluate the remains and recommend appropriate mitigative treatment.

FIGURE 1
PROJECT LOCATION



SOURCES: VINE HILL 7.5' USGS (1959, 1980) TOPOGRAPHIC QUADRANGLE.
BENICIA 7.5' USGS (1959, 1980) TOPOGRAPHIC QUADRANGLE.



LEGEND

— — ACCESS ROADS



0' SCALE 2000'

S33553

CULTURAL AND PALEONTOLOGICAL
RESOURCES STUDY FOR THE BENICIA
BUSINESS PARK PROJECT

BENICIA, SOLANO COUNTY, CALIFORNIA

LSA

June 1, 2007

INTRODUCTION

Commercial and limited industrial development is proposed in a new business park (project) on approximately 530 acres in the low hills northeast of downtown Benicia, Solano County, California (Figures 1 and 2). LSA Associates, Inc. (LSA), prepared this cultural and paleontological resources report in support of an Environmental Impact Report (EIR) being prepared by LSA for the proposed Project.

The purpose of this study is to (1) identify cultural resources that may be significant by meeting the California Environmental Quality Act (CEQA) definition of a historical resource or unique archaeological resource and that may be affected by the proposed Project; (2) identify paleontological resources (fossils) that may be significant and may be affected by the proposed Project; and (3) recommend procedures for avoidance or mitigation of impacts to resources that may be significant.

Cultural Resources

This report presents the results of two cultural resource investigations of the project area. The first investigation, conducted by LSA in 2005, consisted of background research, consultation with potentially interested parties, and a preliminary field reconnaissance to identify cultural resources in the project area. The methods, results, and recommendations of LSA's investigation are described in this report. The second investigation, conducted by Ric Windmiller, Consulting Archaeologist, in 2006, consisted of background research, consultation with potentially interested parties, a field resource inventory, and California Register of Historical Resources (California Register) eligibility evaluations of the resources identified by Windmiller's field inventory and LSA's field reconnaissance. The results of Windmiller's California Register eligibility evaluations are summarized in this report, and Windmiller's entire report is included as Appendix A to document his investigation's methods, results, and recommendations.

LSA's and Windmiller's investigations identified a total of 14 cultural resources in the project area consisting of abandoned ranch buildings, former ranch building locations, debris scatters, numerous depressions, a sand mine pit, rock alignments, several dams, a eucalyptus grove, and a dairy ranch district. Windmiller evaluated the California Register eligibility of each of these 14 resources and found that only one is eligible for listing in the California Register, and therefore is a historical resource under CEQA. This eligible cultural resource, field designation BBP-2, consists of two depressions and a scatter of historical archaeological materials corresponding to the location of a house shown on historical maps. Should BBP-2 contain subsurface archaeological deposits that possess integrity, it is Windmiller's opinion that such deposits would be eligible for listing in the California Register under Criterion D for their ability to yield information about the history of Benicia and Solano County.

Project construction has the potential to impact subsurface deposits that may exist at BBP-2. Should such impacts occur, the Project may result in significant impacts to historical resources under CEQA. LSA recommends that such impacts be avoided by (1) placing BBP-2 in deeded open space where ground disturbing construction will not occur; or (2) capping the site deposit at BBP-2 to prevent inadvertent damage during project construction. Regardless of which option is selected, the recorded site area of BBP-2 and a 25-foot buffer should be fenced during construction to exclude activity. If the open space or capping options are not feasible, LSA concurs with Windmiller's recommendations that archaeological excavation should be done to investigate BBP-2. If significant subsurface

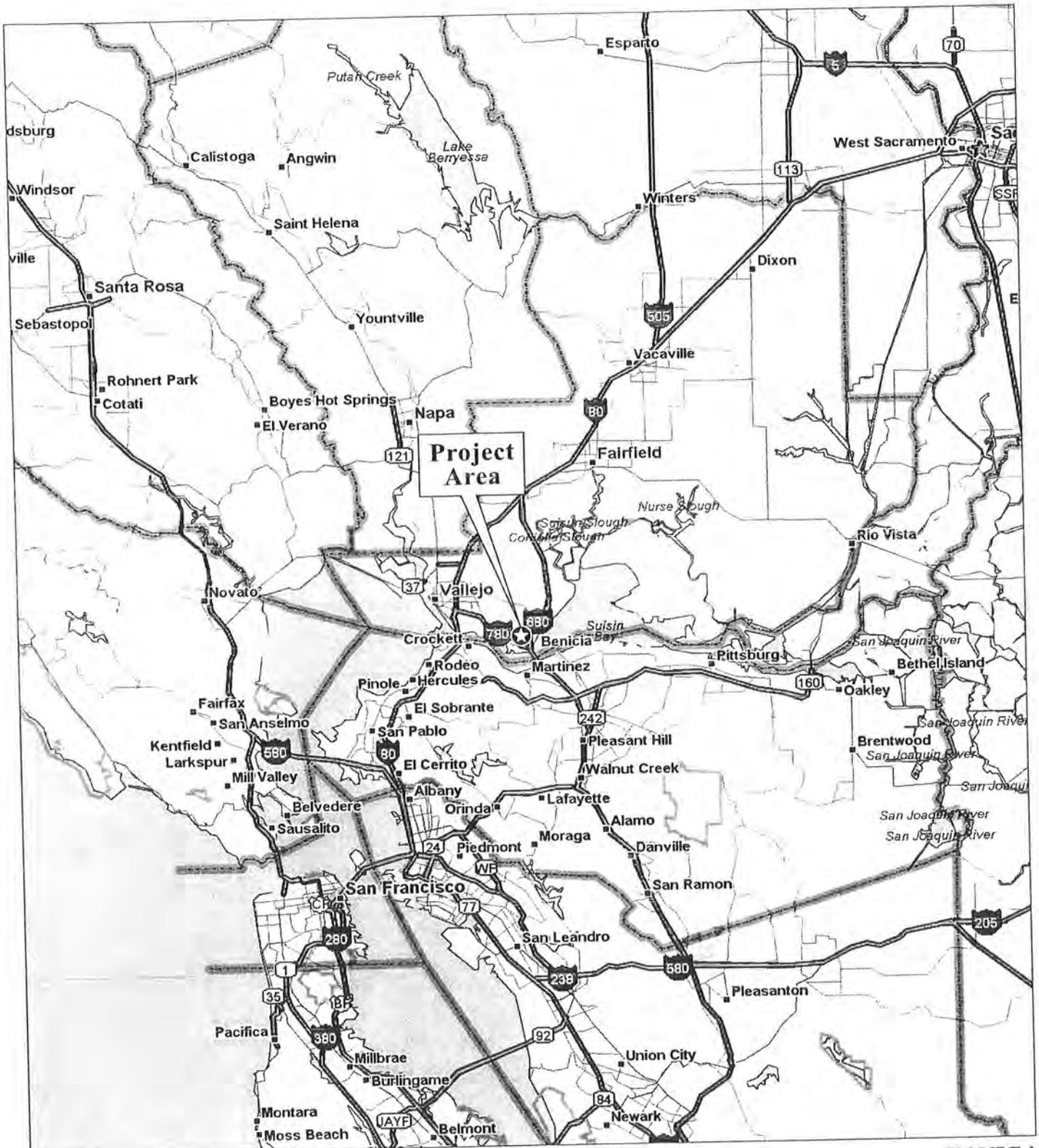
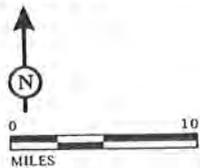


FIGURE 1

*Benicia Business Park
Benicia, Solano County, California
Regional Location*

LSA



SOURCE: ©2002 DeLORME. STREET ATLAS USA®2003.

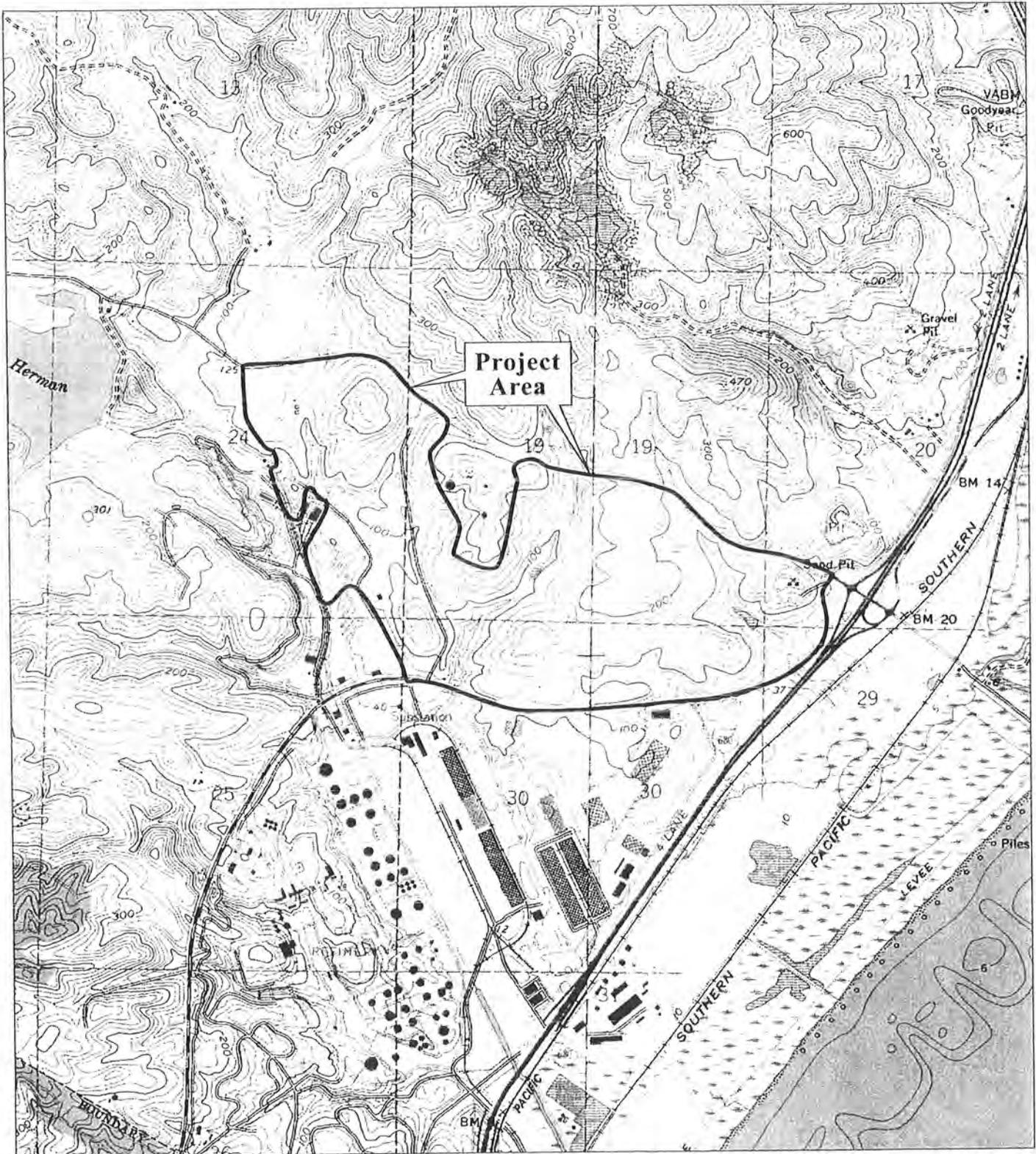
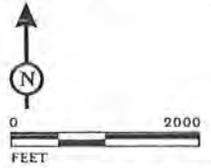


FIGURE 2

Benicia Business Park
 Benicia, Solano County, California
 Project Area

LSA



SOURCE: USGS 7.5' QUADS - BENICIA, CALIF. 1959 PR (1980) AND VINE HILL, CALIF. 1959 PR (1980)

architectural features or archaeological deposits are encountered during the exploratory excavation, a representative sample of the data that justify the California Register eligibility of BBP-2 should be recovered, analyzed, and documented to mitigate for their loss. Please see the Recommendations section for additional details.

Paleontological Resources

The paleontological resources study consisted of a fossil locality search, literature review, and a field reconnaissance. No previously recorded paleontological resources were identified within the project area. There are, however, paleontologically sensitive geologic units and therefore a possibility to impact paleontological resources within the project area. Please refer to the Study Results and Recommendations sections for details.

LEGISLATIVE CONTEXT

California Environmental Quality Act (CEQA)

CEQA applies to all discretionary projects undertaken or subject to approval by the state's public agencies (California Code of Regulations [CCR] Title 14(3) §15002(i)). CEQA states that it is the policy of the State of California to "take all action necessary to provide the people of this state with... historic environmental qualities... and preserve for future generations examples of the major periods of California history" (Public Resources Code [PRC] §21001(b), (c)). Under the provisions of CEQA, "A project with an effect that may cause a substantial adverse change in the significance of a historical resource is a project that may have a significant effect on the environment" (CCR Title 14(3) §15064.5(b)).

CEQA defines a "historical resource" as a resource which meets one or more of the following criteria:

- Listed in, or eligible for listing in, the California Register;
- Listed in a local register of historical resources (as defined at PRC §5020.1(k));
- Identified as significant in a historical resource survey meeting the requirements of §5024.1(g) of the Public Resources Code; or
- Determined to be a historical resource by a project's lead agency (CCR Title 14(3) §15064.5(a)).

A historical resource consists of "Any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California... Generally, a resource shall be considered by the lead agency to be 'historically significant' if the resource meets the criteria for listing in the California Register of Historical Resources" (CCR Title 14(3) §15064.5(a)(3)).

CEQA requires that historical resources and unique archaeological resources be taken into consideration during the CEQA planning process (CCR Title 14(3) §15064.5; PRC §21083.2). If feasible, adverse effects to the significance of historical resources must be avoided, or the effects mitigated (CCR Title 14(3) §15064.5(b)(4)). The significance of an historical resource is impaired when a project demolishes or materially alters in an adverse manner those physical characteristics of a historical resource that convey its historical significance and that justify its eligibility for the California Register of Historical Resources. If there is a substantial adverse change in the significance

S-5994 A1K2

Sonoma State University Academic Foundation, Inc.



ANTHROPOLOGICAL STUDIES CENTER
CULTURAL RESOURCES FACILITY
707 664-2381

An Archaeological Study for the Reconstruction of Lake Herman County
Road, Solano County, California.

Allan G. Bramlette
Allan G. Bramlette, B.A.
Project Coordinator

5501/1568

8 June 1983

This project was completed under the supervision of Dr. David A. Fredrickson (Member, Society of Professional Archaeologists), certified in teaching and field research, Department of Anthropology, Sonoma State University.

INTRODUCTION

This report presents the results of an archaeological study of Lake Herman County Road located near Vallejo in Solano County, California.

This study was requested by Al Beckham, Associate Civil Engineer, Solano County Public Works Department. It is intended to document compliance with Federal legislation and rules and regulations regarding

archaeological resources (Section 106 of the National Historic Preservation Act of 1966, Executive Order 11593, 36 CFR 800). The purposes of this investigation were: (1) to identify and record all prehistoric and historic-period archaeological resources within the project limits; (2) to evaluate the potential eligibility of such resources for nomination to the National Register of Historic Places; (3) to assess the effects of this project on potentially eligible properties; and (4) to formulate recommendations aimed at reduction or elimination of adverse effects through project redesign or further scientific study. These goals were achieved through an archaeological

records search, contact with the Native American Heritage Commission and the State Historic Preservation Officer, and a field reconnaissance.

No archaeological resources were identified within the project limits; consequently, the project is not anticipated to have an effect on National Register quality properties. Response from the Native American Heritage Commission and the State Historic Preservation Office are pending, and their comments could necessitate further study. A historic-period farming or ranching complex, which may be historically significant, was noted near the proposed road right-of-way. In addition, buried archaeological materials may exist along the project route. Refer to the RECOMMENDATIONS section for precautions that should be taken in order to avoid the historic complex and procedures that should be followed if archaeological materials are encountered during construction.

STUDY AREA AND PROJECT DESCRIPTION

Lake Herman Road, located east of the city of Vallejo, extends approximately 7.25 km (4.5 miles), from Columbus Parkway (formerly Springs Road) on the west to Lopes Road on the east. Lopes Road serves as a frontage road to Interstate 680. Lake Herman Road passes, in order from west to east, through sections 9, 10, 15, 14, 23, and 24 of T3N/R3W and sections 19 and 20 of T3N/R2W, MDB&B, as determined from the 1959 (photorevised 1968) editions of the Benicia, Calif., and Port Chicago, Calif., USGS 7.5 minute series topographic quadrangles. Plans for road

reconstruction include widening the present roadway and straightening horizontal and vertical curves. Some additional property beyond the existing right-of-way will be acquired to accomodate planned construction. Maps 1 and 2 depict the route of the existing road and the archaeological survey corridor.

Lake Herman Road winds across grassland hills that are over 400 feet in elevation and through the southern end of Sky Valley and smaller valleys as low as 80 feet in elevation. Its route crosses Sulphur Springs Creek, which fills Lake Herman, a man-made reservoir, and several lesser unnamed, intermittent drainages. These drainages are bordered by riparian flora, including willows, cottonwood, tules, sedges, and rushes, as well as buckeye, blackberries, poison oak, and forbs. Manzanita, oak, and poison oak grow in various places along the roadside. Grazing cattle, rabbits, and quail were present in the fields bordering the road. Soils in the general area vary slightly, but primarily they consist of sandy clay loams with weathered sandstone and shale outcrops. Dairy farms, cattle ranches, private residences, and stone quarries are located adjacent to the County right-of-way.

STUDY METHODS

The archaeological study consisted of a records and literature search of archaeological, ethnographic, and historic information, contact with the Native American Heritage Commission and the State Historic Preservation Officer, and a field reconnaissance.

Prior to the archaeological field survey, a records and literature search for the area was conducted at the Northwest Information Center of the California Archaeological Inventory, an adjunct of the Anthropological Studies Center, Sonoma State University. Archaeological base maps were examined to discern the locations of known sites in relation to the project area. Historic inventories (Heritage Conservation and Recreation Service 1979, 1980, 1981; National Park Service 1982, 1983) and historical information contained in cultural resources studies of nearby areas (Chavez 1982; Dietz and Jackson 1973; Eisenman et al. 1979; Fredrickson 1977; Holman 1981; Peak and Associates 1977) as well as the Historical Atlas Map of Solano County, California (Thompson and West 1878) was examined to identify historic properties that might be within or directly adjacent to the study corridor. Ethnographic sources (Barrett 1908; Johnson 1978; Kroeber 1925) and reports containing summaries of ethnographic information (Chavez 1982; Dietz and Jackson 1973; Eisenman et al. 1979; Fredrickson 1977; Holman 1981; Jones and Fredrickson 1980) were consulted to determine whether Indian villages or campsites had been identified in or near the project area.

Following the records search, an archaeological field investigation was conducted on 19 May 1983 by the author and one assistant, Lisa C. Hagel. The existing County right-of-way, as well as the proposed right-of-way, was walked in a zigzag fashion in corridors ranging from 5 to 10 meters wide parallel to the roadway. Ground visibility was good along road cuts

and fair to poor along the roadsides where vegetation hampered a good view of the ground surface; short-handled hoes were used regularly to clear small patches of vegetation averaging 25 cm x 25 cm in these areas. The field survey methods conformed with the definition of an intensive field reconnaissance (King et al. 1973). Maps 1 and 2 portray the area covered by the survey team. Photographs were taken at several points along the project route. They are on file at the Cultural Resources Facility.

The state of California Native American Heritage Commission and the State Historic Preservation Officer were queried for comment to insure that resources of historic importance or of concern to local Native Americans (e.g., spiritual areas, cemeteries, etc.) were not overlooked. Appendix 1 contains copies of these letters.

STUDY RESULTS

The records search revealed that no archaeological or ethnographic sites or other historic properties have been formally recorded within $\frac{1}{4}$ mile of Lake Herman Road. It was also noted that no cultural resource studies of any part of Lake Herman Road were on file at the Northwest Information Center.

According to the ethnographic literature reviewed, the project area was within territory controlled by the Patwin before Euroamerican settlement (Barrett 1908:286-289; Johnson 1978:350; Kroeber 1925:354). Their

villages were located in the valleys. Typically, the Patwin people moved into the hills and mountains during the summer to collect food resources such as bulbs, berries, grass seeds, and acorns and to hunt deer, elk, and bear, and quail, rabbits, and other small game. Tules, willows, sedges, and other plant resources were used in the manufacture of utilitarian items such as boats and baskets.

Previous cultural resource studies a few miles to the north of Lake Herman Road resulted in the discovery of several prehistoric rockshelters, middens, and stone flake scatters (Dietz and Jackson 1973; Holman 1981). A few of these sites were located in Sky Valley. In addition to sites recorded during formal studies, a bedrock mortar and petroglyph site had been recorded less than $\frac{1}{2}$ mile north of the eastern terminus of the road.

Nearly all the previous studies within a few miles resulted in the recording of historic sites, including quarries, houses, barns, and refuse deposits. The historical atlas in Thompson and West (1878) portrayed a road which extended from Sulphur Spring Creek Road (now named Columbus Parkway) to Suisun Bay. The road depicted in the atlas was probably an old route of what is now Lake Herman Road. The copy of the historic map, a recent USGS topographic map, and blueprints of construction plans were compared; it was concluded that the present-day right-of-way for Lake Herman Road, as well as its planned route, deviated from the older route in places. None of the structures depicted

in the 1878 atlas appeared to be within the present or proposed right-of-way.

In view of the records search results, it was concluded that the region had been used prehistorically for collecting, hunting, food-processing, and camping. It was predicted that prehistoric archaeological sites, such as those previously recorded in the area, are present. Early historic-period use of the immediate area had been documented; it was therefore considered likely that historic archaeological sites would be located near the road, possibly within the present right-of-way in areas presently planned for realignment.

Despite the favorable environmental settings for prehistoric and historic-period use traversed by Lake Herman Road, no cultural materials other than modern-day (less than 50-year-old), refuse were encountered during the field reconnaissance within the present or proposed right-of-way. Therefore, no effect to archaeological resources is anticipated. An historic-period farming or ranching complex which consists of at least two wooden buildings, was noted less than 300 feet south of Lake Herman Road, on the north bank of Sulphur Springs Creek, and on the east and west banks of an unnamed tributary of the creek, at their confluence. The residence of the Lake Herman caretaker lies approximately 200 feet west of the historic complex, on top of a knoll that serves as the northern abutment of Lake Herman dam. Map 2 shows the location of the historic complex.

Since the historic complex is on private property outside the project area, the complex was viewed from a distance and photographed. Because an on-site investigation was not appropriate, the possibility that the complex was historically significant could not be confirmed.

RECOMMENDATIONS

Although no archaeological deposits were encountered, the possibility exists that buried archaeological materials associated with the prehistoric or historic period are present within the planned development. Prehistoric materials include, but are not limited to, obsidian, chert, or basalt stone chippings or artifacts; stone bowl mortars, pestles, or flat milling slabs; fire-cracked rocks or ash and charcoal deposits; mammal bones and freshwater or marine shells; locally darkened soil (midden); and human bones or burials. Important historic archaeological deposits include, but are not limited to, concentrations of old cans, bottles, ceramics, square nails, and other refuse; and the remains of structural foundations.

If concentrations of archaeological materials are encountered during the construction phases of this project, all land-disturbing work in the immediate vicinity of the finds should be promptly halted and shifted to another area. Work near archaeological finds should not be resumed until a qualified archaeologist has identified and evaluated the finds and offered recommendations that provide for the protection and preservation

of significant finds, if warranted. If human remains are encountered, the coroner should also be contacted.

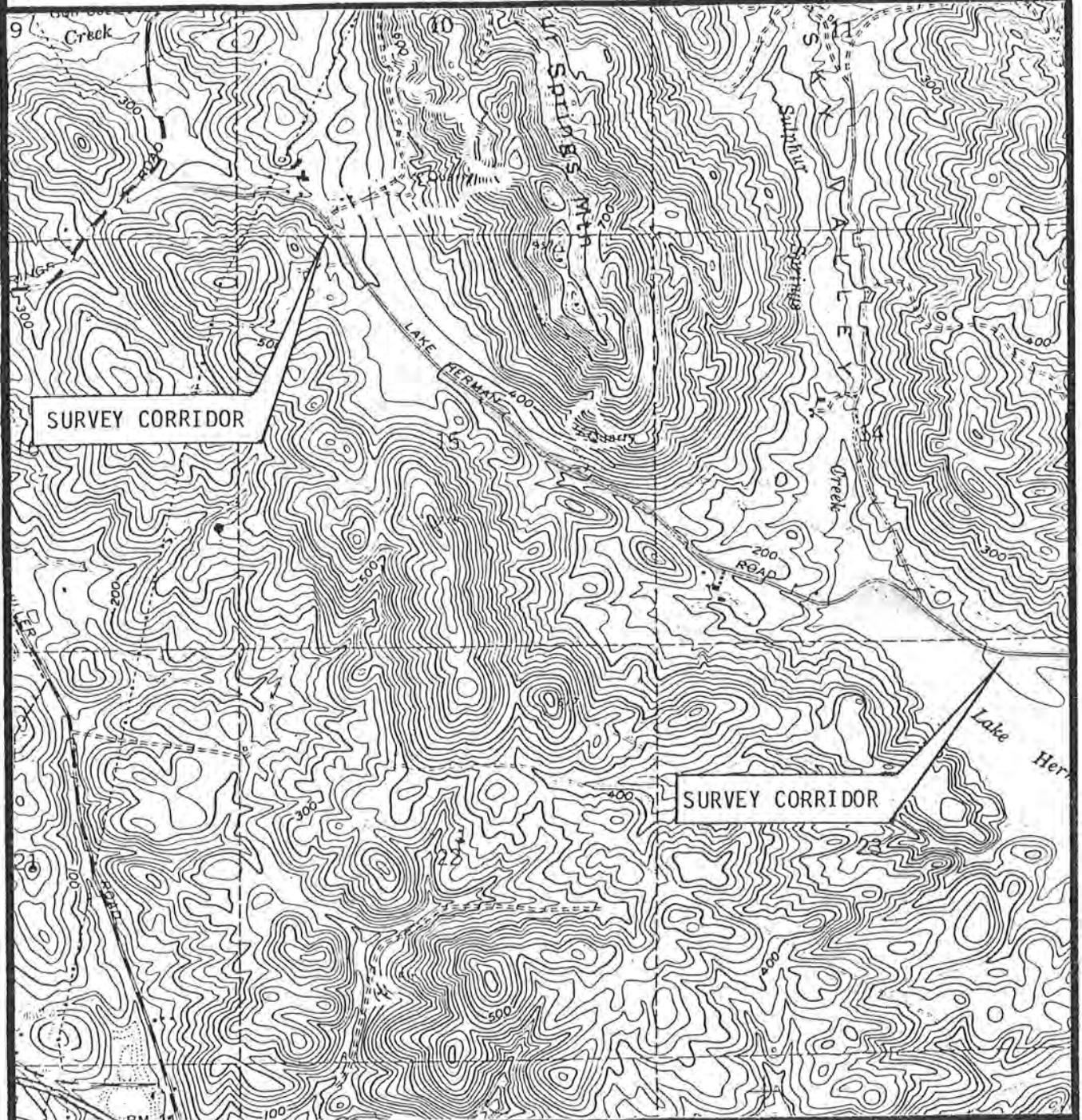
The historic complex, which may be historically significant, should be protected from negative impact. The area described and mapped in this report should not be used for parking vehicles, storing construction materials, borrowing for fill, or for any other purpose which may result in disturbance to the land. In this way, any foreseeable indirect effects to the historic complex will be avoided. If such activities cannot be avoided, an on-site investigation should be made of the historic complex.

The Native American Heritage Commission and the State Historic Preservation Officer have not, as yet, offered their comments. If either agency communicates concern regarding this project, additional study may be required. Their comments, if any, will be referred to Solano County Public Works Department.

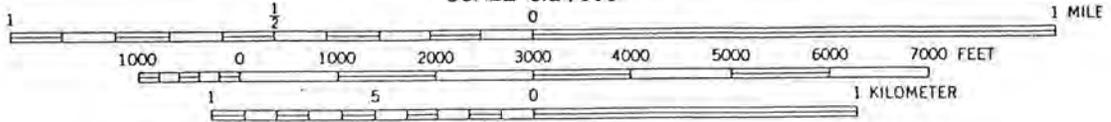
STATEMENT OF CONFIDENTIALITY

Archaeological site locational information is considered confidential. In order to prevent the spread of information which may lead to vandalism, specific site locational information should not be made accessible to the general public. Such information should be made available only to qualified archaeologist, agency officials, and authorized personnel associated with this project.

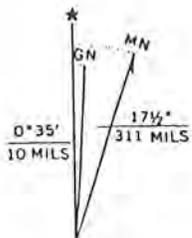
MAP I: Western Project Area



SCALE 1:24 000



CONTOUR INTERVAL 20 FEET



BENICIA, CALIF.

SW/4 CARQUINEZ STRAIT 15' QUADRANGLE
N3800—W12207.5/7.5

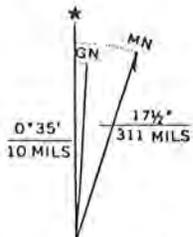
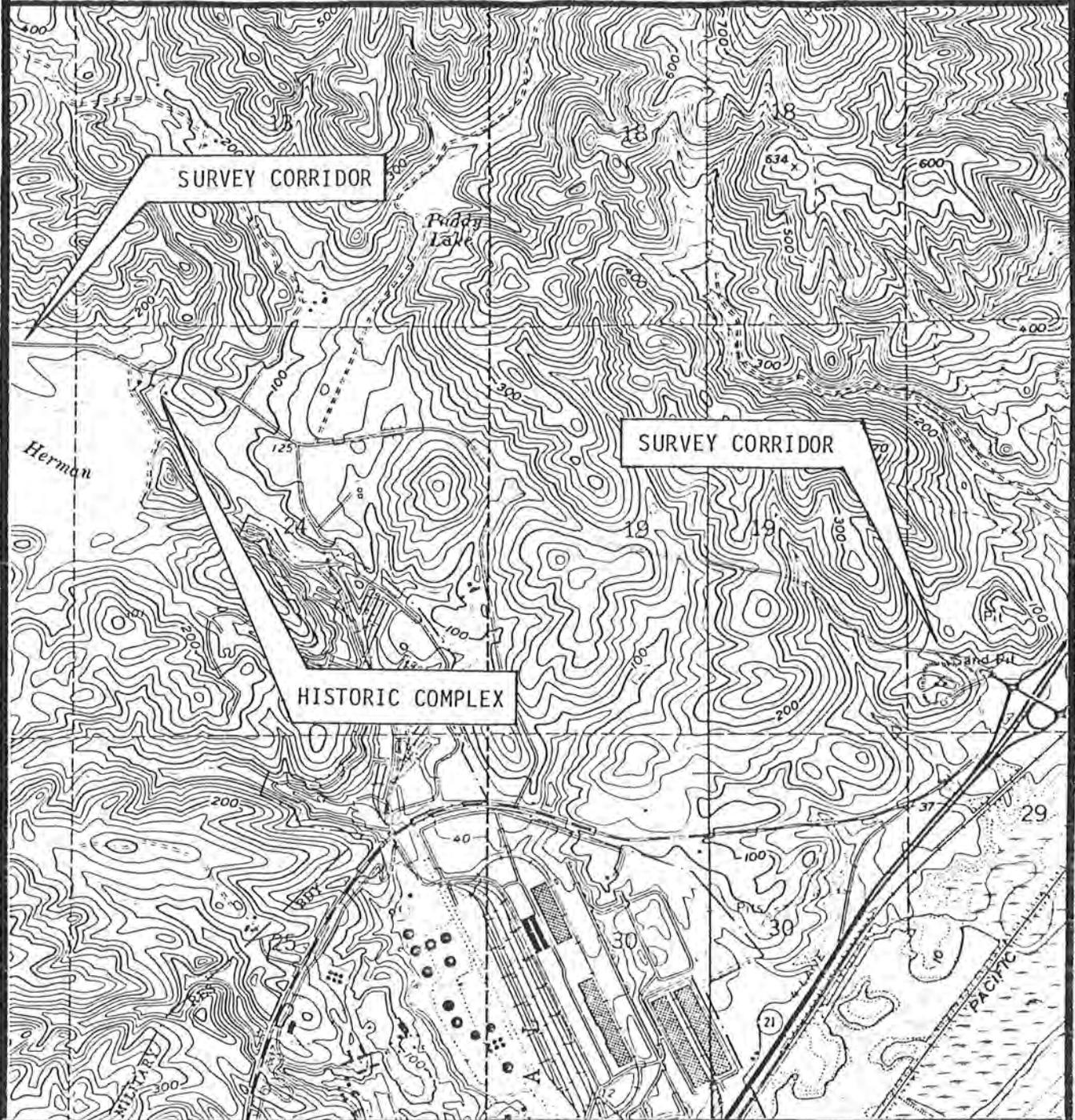
1959

U.S. GEOLOGICAL SURVEY



QUADRANGLE LOCATION

MAP 2: Eastern Project Area



BENICIA, CALIF.

SW/4 CARQUINEZ STRAIT 15' QUADRANGLE
N3800—W12207.5/7.5

1959

PHOTO REVISION 1963

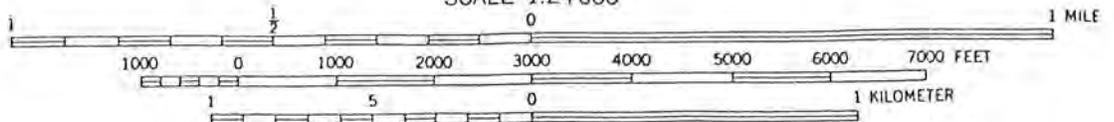
PORT CHICAGO, CALIF.

SE/4 CARQUINEZ STRAIT 15' QUADRANGLE
N3800—W12200/7.5

1959

PHOTO REVISION 1963

SCALE 1:24000



CONTOUR INTERVAL 20 FEET



CALIFORNIA ARCHAEOLOGICAL CONSULTANTS, INC.

- PETER BANKS • 5916 DOVER ST. • OAKLAND, CA 94609 • (415) 658-6550
 ROBERT ORLINS • P.O. BOX 1932 • WOODLAND, CA 95695 • (916) 662-0979

RECEIVED 2 MAY 1986

A CULTURAL RESOURCE EVALUATION OF THE
INTERNATIONAL TECHNOLOGY CORPORATION PANOCHE FACILITY,
BENECIA, SOLANO COUNTY, CALIFORNIA

ROBERT I. ORLINS

MARCH 3, 1986

ABSTRACT

An archaeological site record search and field reconnaissance has been completed for the International Technology Corporation Panoche facility, a hazardous waste disposal landfill site, near Benecia, California.

This cultural resource evaluation was undertaken to satisfy land-use permit requirements in order to continue operations and to expand the landfill areas.

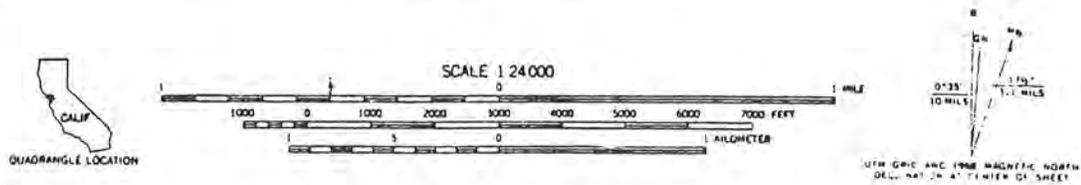
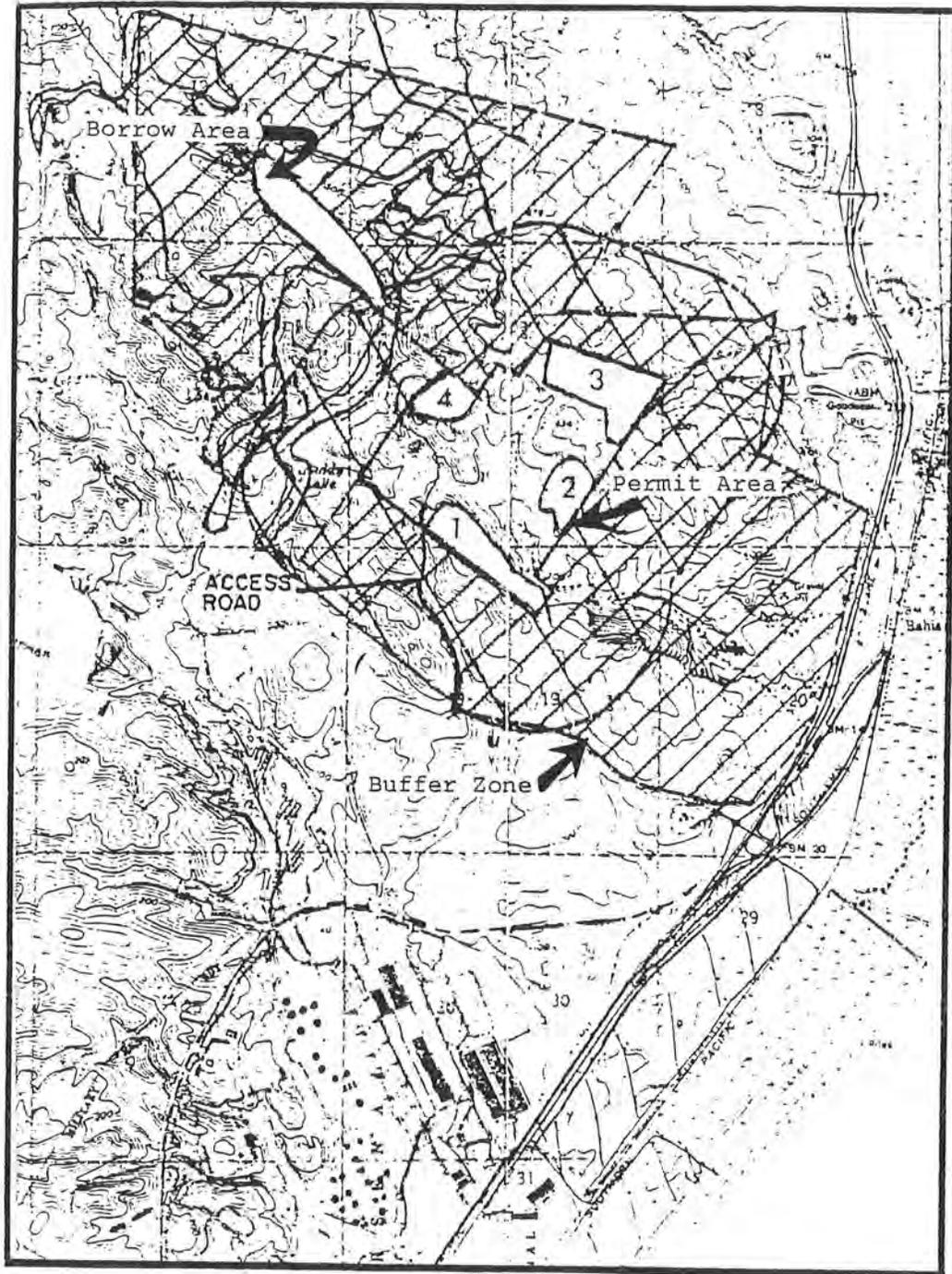
No cultural resources were identified as a result of the record search or were found during the field reconnaissance. The potential for finding cultural resources is low and the study area is judged to have low archaeological sensitivity.

INTRODUCTION

The International Technology Corporation (IT) is in the process of applying to Solano County for a land-use permit to continue operations and expand the landfill at its Panoche facility (Map 1). This facility is a Class I, EPA approved, hazardous waste disposal area which has been used as a landfill site since the 1960s. As part of the application process, IT must provide an inventory of the resources of the facility, including the cultural resources, which is the subject of the investigation carried out by California Archaeological Consultants, Inc. (CAC), and described in this document.

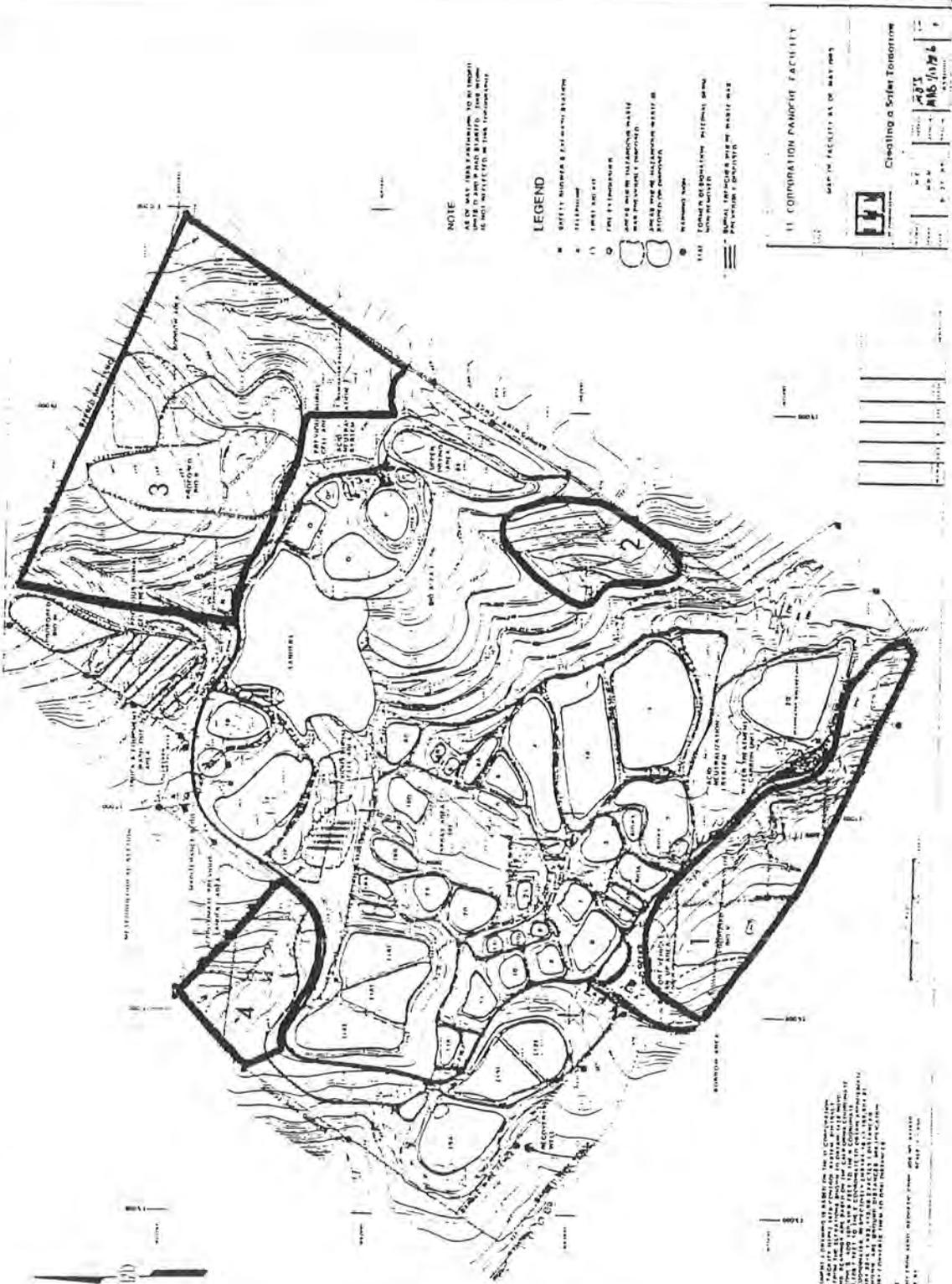
The areas that were accessible and that were examined for this survey consisted of the permit area and a proposed borrow area (Map 2). The permit area is the actual disposal locale and for the purpose of this study consisted of four separate parcels within the boundaries of the facility. The borrow site was about 500 yards northwest of the permit area and will provide a source of clay which will be used to line the base of the proposed expanded landfill. These parcels constitute the study area of this cultural resources survey.

The purpose of this investigation was: 1) to determine if any known archaeological resources were located on study area lands; 2) to evaluate the potential for finding archaeological resources; and 3) to make recommendations for additional studies if required.



Map 1. Map of Study Area. Benecia and Vine Hill 7.5' USGS Sheets.

97474 859000 - 325
D.M.V.



WILLIAM SELF ASSOCIATES

5-20035

HISTORIC & PREHISTORIC ARCHEOLOGY ■ CULTURAL RESOURCE MANAGEMENT ■ STATE AND FEDERAL HISTORIC PRESERVATION COMPLIANCE

Mr. Dave Cornman
Santa Fe Pacific Pipeline Partners, L.P.
1100 Town & Country Rd.
Orange, CA 92868



September 25, 1997

RE: Cultural Resources Inventory of Proposed Anomaly Excavation Areas in Line Section 25,
Solano County, Ca.

Dear Dave:

In accordance with our Work Directive with Santa Fe Pacific Pipeline (SFPP), WSA has implemented a record search and cultural resources inventory of the eleven proposed pipeline anomaly excavation areas along Line Section 25 in Solano County, Ca. At your request, this response will be in a letter-format rather than an assessment report, subsequently, general background information on the cultural setting of the area will be included by reference only.

Project Description and Location

The eleven proposed anomaly excavation areas occur on the existing SFPP pipeline in Line Section 25 between the Benicia Bridge and Suisun City in Solano County. They are situated in unsectioned portions of Townships 3 and 4 North, Range 2 West, as shown on the Vine Hill and Fairfield South, California 7.5' USGS quadrangles. The proposed project consists of the excavation of an area of about 20 feet by 20 feet to expose the existing SFPP petroleum products pipeline for purpose of anomaly evaluation and repair. The entire project area occurs within the Suisun Marsh, and as such, the majority of the project area was covered with dense tule and other riparian vegetation which often hampered ground visibility. Standing water was encountered in one location, precluding survey to some extent.

Cultural Setting

The project region is known to have been occupied, at least intermittently, for the past 6,000 years or more based upon evidence gathered from archeological sites in this portion of Solano County¹. The ethnographic inhabitants of the area were the Patwin Indians, who are known to have established villages in the Fairfield vicinity². The area has been used for seasonal duck hunting over the past several decades and as a year-round wildlife refuge.

¹ Moratto 1984.

² Johnson 1978; Kroeber 1925

Mr. Dave Cornman
Santa Fe Pacific Pipeline
September 25, 1997
Page 2

Results of the Record Search

WSA staff conducted a record search of the project area at the California Historic Resources File System, Northwest Information Center at Sonoma State University on September 5, 1997 (File No. 97-395). We noted previous archeological surveys and recorded sites within a 1/2 mile radius of the project area(s). Although a few small block surveys have been conducted adjacent to highway 680, including some parts of the existing pipeline alignment, none of the proposed anomaly excavation areas had been surveyed previously for the presence of archeological resources, nor were there any known resources (historic or prehistoric) located within or immediately adjacent to the parcels. One prehistoric site (CA-SOL-22) and two historic sites (CA-SOL 392H and 393H) are known to be located approximately 2,000 feet or more from the project locations; these will not be affected by the proposed work.

Results of the Field Survey

Senior Associate Carrie Wills of WSA conducted a survey of the project areas, utilizing a survey transect interval of 10 meters or less, on September 15 and 16, 1997 (Figures 2-4). With two exceptions, an area of 50 by 50 feet was surveyed at each location, always on the south side of the east-west trending Southern Pacific rail tracks adjacent to the pipeline corridor. Four of the eleven proposed excavation areas were located within a 2,400 foot-long area - this area was surveyed as a 50-foot wide block from the southernmost to easternmost excavation area (comprising anomaly # 95219.29, 96273.53, 97206.79, and 97542.75). Additionally, locations 58323.99 and 58333.92 are located less than 10 feet apart; a survey area of about 50 by 100 feet was examined at this location. No evidence of historic or prehistoric archaeological resources was observed.

Recommendations

The anomaly excavation areas along Line Section 25 were surveyed for the presence of cultural resources and none were observed. The southernmost three locations (refer to Figure 1) that are adjacent to upland soils had a higher potential to yield evidence of archaeological deposits, as such deposits are known to occur in this marshland/upland boundary. The remaining eight locations possess a low potential to contain significant cultural resources owing to the tidal marsh environment within which the area exists.

Mr. Dave Cornman
Santa Fe Pacific Pipeline
September 25, 1997
Page 3

Even though no cultural resources were observed as a result of the survey, or found to exist within the area based on the record search, there remains the possibility that such resources could be unearthed during excavation. In accordance with applicable state and federal laws, should previously undiscovered resources be found during construction, work in the immediate area should cease until an archaeologist can evaluate the find and make recommendations for mitigation, if required.

Please don't hesitate to give me a call if we can be of further assistance or answer any questions you may have on the work.

Sincerely,

WILLIAM SELF ASSOCIATES

A handwritten signature in black ink, appearing to read "William Self". The signature is written in a cursive, flowing style.

William Self
Principal

Attachments

WILLIAM SELF ASSOCIATES

1918 Rolls Way
Carmichael, CA 95608
916-481-1846
wmddawson@comcast.net
March 25, 2010

Ms. Leigh Jordan
Northwest Information Center
1303 Maurice Avenue
Rohnert Park, CA 94928

Dear Leigh,

Several months ago you indicated an interest in having high resolution images of the sandstone building at 1745 Lopes Road that I had earlier inquired about. I promised to get digital copies of the photographs to you, and I apologize here for delaying so long in doing so. Enclosed here is an archival CD with the two photos described below in high resolution. The Northwest Information Center is authorized, and my copyright is released to the Northwest Information Center to allow reproduction and use of these photographs for any non-profit purpose, such as education, government, philanthropic, etc. The photographs are not authorized to be reproduced and my copyright is not released for use of the photographs for any private profit-making purpose. Any inquiries about the photographs for such purposes may be directed to me at the address above.

With appreciation for the valuable services that you provide, and hope that you and the Northwest Information Center are thriving.

Sincerely,

David Dawson

Photograph #1: On disk as: Benicia Building.jpg
Sandstone Building and Eucalyptus Tree
1745 Lopes Road, near Benicia
October 23, 2009, 9:46 AM
Width: 4,388 pixels
Height: 3,488 pixels
Camera: Canon 5D Mk II
Aperture: f18
Shutter Speed: 1/100 sec.
Focal Length: 24mm
Photographer: ©David Dawson, Carmichael, California, 2009

Photograph #2: On disk as: Benicia Building-2.jpg
Sandstone Building
1745 Lopes Road, near Benicia
October 23, 2009, 9:47 AM

1918 Rolls Way
Carmichael, CA 95608
916-481-1846
wmddawson@comcast.net
March 25, 2010

Width: 4,765 pixels

Height: 3,744 pixels

Camera: Canon 5D Mk II

Aperture: f18

Shutter Speed: 1/100 sec.

Focal Length: 90mm

Photographer: ©David Dawson, Carmichael, California, 2009





**CALIFORNIA DEPARTMENT OF TRANSPORTATION
ARCHITECTURAL INVENTORY/EVALUATION FORM**

Benicia-Martinez Bridge System Improvement Project
County - Route - Postmile: Sol-680

P-48-000180

Prop# 107442

MAP REFERENCE NO. 69

WA890809A

() LISTED () DETERMINED ELIGIBLE
() APPEARS ELIGIBLE (X) APPEARS INELIGIBLE 6/2
Hist. RES. DVE - 48-89-0053-0000

IDENTIFICATION

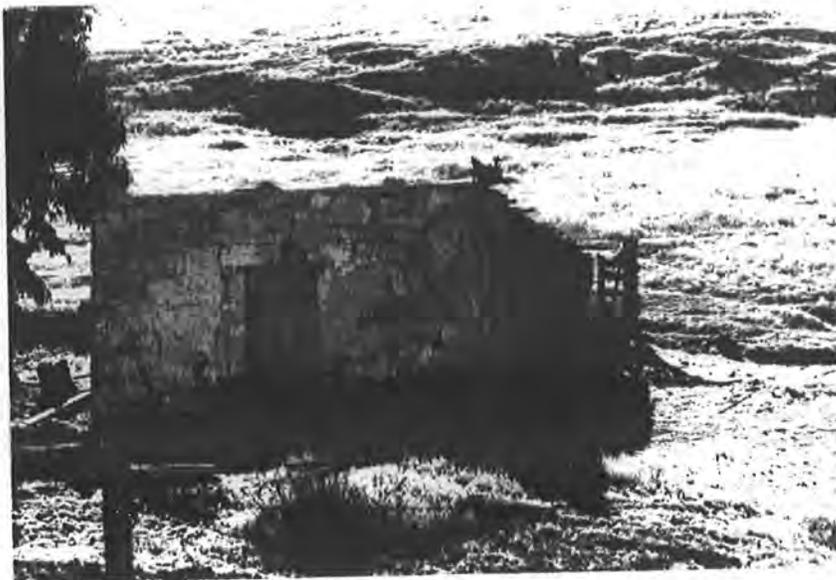
1. Common Name: Outbuilding
2. Historic Name: N/A
3. Street or rural address: 1745 (E. side) Lopes Rd., .3 miles south of Parish Rd.
City: Benicia Zip Code: 94510 County: Solano
4. Parcel Number: 181-250-01 Present Owner: Barbara P. Corrigan, Trustee, c/o Bagshaw Martinelli
Address: 950 Northgate Dr., Suite 303 City: San Rafael, CA Zip Code: 94585
5. Ownership is: () Public (X) Private
6. Present Use: Abandoned Original Use: Root cellar

DESCRIPTION

7a. Architectural Style: Vernacular

7b. Physical Condition: (The present condition of the site or structure and any major alterations from its original condition.)

This structure is a deteriorated, partially collapsed small rectangular stone structure built into an embankment. The wooden roof is collapsed into the structure. There is one small entrance on the east elevation and no other openings. Other small outbuildings, a corral and a c.1946 house are located nearby to the southwest. Buildings listed by the county appraiser as existing on the property in the 1960s include sheds (18'x14') and barns (46'x40') with wood foundations, shed or gable roofs and board-and-batten siding (most likely the "corral" in the trees south of the stone outbuilding, which was used when the Bettencourt family leased the property out as grazing land), a small frame house built in 1946, and an "old brick house" (18'x27'), which may have been the old schoolhouse that the owner said burned down several years ago.



8. Construction date
Estimated: (1855) Factual: ()
9. Architect: Unknown
10. Builder: Unknown
11. Approx. property size
Acreage: 267.15
12. Date(s) of enclosed photograph(s):
July 1988

13. Condition: Excellent () Good () Fair () Deteriorated (X)
14. Alterations: None noted.
15. Surroundings: (Check more than one if necessary)
 Densely built-up () Residential () Industrial () Open land (X) Scattered buildings (X)
 Commercial () Other:
16. Threats to site: None known () Private Development () Zoning (X) Vandalism ()
 Public Works Project (X) Other: Continued deterioration.
17. Is the structure: On its original site? (X) Moved? () Unknown? ()
18. Related features: Several small outbuildings are located nearby to the southwest.

SIGNIFICANCE

19. Historical and/or Architectural Importance: (Dates, events, and persons associated with the site.)

For many years, the property has been owned by the Parish family (Estate of Maxson P. Parish, Harold O. Parish, et al). According to one of the Parish family members, it was an old dairy, most likely predating ownership by the Bettencourt family from whom the Parish family purchased the property in the early 1940s. Containing 267 acres, the parcel now is primarily undeveloped range land which includes a mid-20th century quarry (outside of the study area). At one time the "corral" buildings in the trees south of the stone outbuilding were used when the Bettencourt family leased the property out as grazing land. In 1914, the property, which was put to grain, was owned by Joseph Hoyt whose family owned the quarry across the road. Based on the method of construction, massing and materials used, the inventoried structure, appears to be a small outbuilding from the 1850s on property that was historically pasture land.

Location sketch map: (Draw & label site and surrounding streets, roads, and prominent landmarks.) See Study Area Map No. 69

20. Main theme of the historic resource: (If more than one is checked, number in order of importance.)

- Architecture (X) Arts & Leisure ()
 Economic/Industrial () Exploration/Settlement (X)
 Government () Military () Religion ()
 Social/Education ()

21. Sources (List books, documents, surveys, personal interviews and their dates.)

- State of California, Department of Engineering. 1914 As-Built Plans for State Route 74 between Benicia and Cordelia.
- U.S. Geological Survey Topographic Maps for area: 1896, 1901, 1902, 1949, 1951, 1959, 1968.
- Solano County Assessor, Appraiser and Recorder files.
- Mr. Ed Parish, owner.

22. Date form prepared: September 27, 1988
By: (name) Gloria Scott
Organization: Caltrans
Address: 650 Howe Ave.
City: Sacramento **Zip Code:** 95825
Phone: (916) 920-7679

MAP REFERENCE NO. 69

7b. Physical Condition: (Continued.)

Other buildings included barns (48'x81'), milk house (18'x26'), milk barns (48'x81') with concrete foundations and composition or corrugated metal roofs. These buildings, the old dairy, were removed when I-680 was re-aligned. A c.1960 photograph contained in the file depicts a small, frame, gabled 4-bay house with 6/6 windows, four-panel entrance door, and a one-story wing. The house is gone, but the wing may be the remnants that are just to the south of the inventoried structure. The appraiser's file listed 1857 as the construction date of the house, a date which is corroborated by the architecture and massing of the house, and which is important in evaluating the extant stone outbuilding.

19. Historical and/or Architectural Importance: (Continued.)

The integrity of what was once an intact dairy farm along the 1850s Benicia-to-Cordelia stage road, has been compromised by the removal of older buildings, construction in 1946 of a modest single family residence and the deterioration of the extant older buildings. While the outbuilding is an interesting and scenic relic that is visible from the freeway, the advanced state of its deterioration has compromised its integrity, it lacks stylistic or construction distinction, and has no apparent association with significant events or people. It does not appear to meet the criteria for inclusion in the National Register of Historic Places.



Below: 1946 House.
View looking west.
Map Reference No. 69.

Above: Corral & outbuildings
View looking south.
Map Reference No. 69.





d.



Information About Historic Building

Subject: Information About Historic Building
From: wmddawson <wmddawson@comcast.net>
Date: Tue, 17 Nov 2009 15:37:52 -0800
To: leigh.jordan@sonoma.edu

Dear Ms. Black,

Thank you for taking my telephone call a few moments ago. You'll see my original email below. I'll appreciate any information you may be able to share with me!

Sincerely,

David Dawson

Begin forwarded message:

From: wmddawson <wmddawson@comcast.net>
Date: November 6, 2009 3:27:53 PM PST
To: leigh.jordan@sonoma.edu
Subject: Information About Historic Building

Ms. Leigh Jordan, Coordinator
Northwest Information Center
Sonoma State University
1303 Maurice Avenue
Rohnert Park, CA 94928

Dear Ms. Jordan,

I am an amateur photographer with a primary interest in photographing little-known historic buildings. You may see examples of my work in the Sonoma State University North Bay Digital Collection at: <http://northbaydigital.sonoma.edu/cdm4/browse.php?CISOROOT=%2Flimekiln>. An original gelatin-silver print portfolio and a digital file of the lime kiln photographs at that site was donated to Sonoma State University, with a release of copyright to the University for use of the photographs for educational or non-profit purposes. Other portfolios of my work are in the Special Collections of the California State Library.

My current interest is to obtain information that would enable me to correctly title photographs that I have made of an old Solano County building located at 1745 Lopes Road, near Benicia. I believe the building may have an historic property file number: 107442. Two of the photographs that I wish to title correctly are attached below. The information that would be most useful is: When was the building constructed? Who owned the property when the structure was built? What was the primary use of the building? Of course, any other readily available historic information would be much appreciated.

Thank you for considering this request.

With appreciation,

David Dawson
1918 Rolls Way
Carmichael, CA 95608
916-481-1846

107442 out building

DOE-48-89-0053

FHWA-890809A

107442 out building

d
11/17/2009 3:42 PM

CA-SOL-393H

CA-SOL-393H

The records for this resource have been moved to the Primary Files. Please see the following file number:

P-48-000180 ✓

9 March 2006
Leigh Jordan
Coordinator NWIC

C.

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD
(SUPPLEMENTAL UPDATE)

Primary # P-48-000180
HRI # DOE-48-89-0053-0000
Trinomial CA-SOL-393H
NRHP Status Code _____

Other Listings _____ Reviewer _____ Date _____
Review code _____

Page 1 of 3

*Resource Name or #: (Assigned by recorder): Stone House

P1. Other Identifier: MNM-9H. Previously recorded in 1993 by Far Western Anthropological Research Group, Inc. This record serves as a supplemental update and includes additional information and a photo.

P2. Location: Not for Publication Unrestricted
and (P2b and P2c or P2d. Attach a Location Map as necessary.)

*a. County Solano
*b. USGS 7.5' Quad Vine Hill Date 1959 PR 1980 T 3N; R 2E; _____ 1/4 of _____ 1/4 Sec 17; Mt. Diablo
B.M.

c. Address 1701 Lopes Road City Benicia Zip 94510

d. UTM: (Give more than one for large and/or linear resources) Zone mE/0578446 mN/4218312

Other Locational Data (e.g., parcel #, legal description, directions to resource, elevation, etc., as appropriate): APN 0181-250-060. The cultural resource is located on the west side of Lopes Road approximately 1750 feet south of the Parish Road Exit from Hwy. 680, and approximately 3 miles north of the city of Benicia. Elev. 60' asl.

*P3a. Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries): The remains of a structure constructed of irregular cut block sandstone. This resource was recorded from the fence line along Lopes Road as the owner would not permit anyone on his property (cattle and guard dogs in the area). The structure appears to be a one-story, rectangular shaped house built into the slope of a hill. A wood door is present on the east elevation and a wood frame window opening with an arched inset of brick above the window is present on the north elevation. The south and west elevations were not visible from the road. Several large eucalyptus trees lie adjacent to the south elevation of the structure. The roof has collapsed, but cross beams remain in place and protrude approximately 1-2' beyond the exterior wall the north elevation. It appears that the sandstone block exterior was once plastered as evidenced from the whitewash effect visible on the east elevation (front) of the structure. The upper 1-3' of exterior wall under the roofline is covered in green moss. The stone house structure is situated on an east-facing slope overlooking the Grizzly Bay marsh and approximately 80' west of Lopes Road. It is similar in construction to the remnants of a sandstone cut block structure located approximately 1.4 miles south and 125' west of Lopes Road (recorded as Quarry House).

P5. Photo or Drawing (Photo required for buildings, structures, and objects.)



*P3b. Resource Attributes: (List attributes and codes) AH15

*P4. Resources Present: Building Structure Object Site District Element of District Other (Isolates, etc).

*P5b. Description of Photo (view, date, accession. View southwest. 2/20/02)

*P6. Date Constructed/Age and Sources:
 Historic Prehistoric Both

*P7. Owner and Address: Bernardo Villarreal
*P8. Recorded by (Name, affiliation, and address: Leigh Martin, William Self Associates, PO Box 2192, Orinda, CA 94563)

*P9. Date Recorded: 2/20/02

*P10. Survey Type: (Describe) Reconnaissance
P11. Report Citation (Cite survey report and other sources, or enter none.)

Cultural Resources Assessment Report SFPP, L.P. Proposed Concord to Sacramento Pipeline Project. 2002 William Self Associates.
Attachments: NONE Location Map

Sketch Map Continuation Sheet Building, Structure, and Object Record Archaeological Record District Record
Linear Resource Record Milling Station Record Rock Art Record Artifact Record Photograph Record Other

*REQUIRED INFORMATION

BUILDING, STRUCTURE, AND OBJECT RECORD

*NRHP Status Code

Page 2 of 3

*Resource Name or # (Assigned by recorder) Stone House (Previously designated as MNM-9H)

B1. Historic Name:

B2. Common Name:

B3. Original Use: Dwelling

B4. Present Use: Abandoned

*B5. Architectural Style: Vernacular

*B6. Construction History: (Construction date, alterations, and date of alterations) The resource is believed to date from the late 1800s when the use of quarried sandstone block buildings was common in the area.

*B7. Moved? No Yes Unknown Date:

Original Location:

*B8. Related Features:

b. Builder: Unknown
Area Benicia, California

B9a. Architect: Unknown

*B10. Significance: Theme Early American Pioneer Farming

Period of Significance 1850-1930

Property Type Agriculture

Applicable Criteria N/A

(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographical scope. Also address integrity.)

The stone building is located on the Bernardo Villarreal property located at 1701 Lopes Road in Benicia, CA. The resource was recorded from the fence line along Lopes Road as the owner would not permit anyone on his property (cattle and dogs in the area). Archival research failed to yield information pertaining to this feature and the owner refused to provide any information. It is known that in 1854 John Gomo constructed the sandstone block buildings at the Benicia arsenal that currently house the Camel Barn Museum and office.

Although part of the historic rural landscape, the stone house/building is in a state of deterioration. The roof has collapsed and moss is growing on the exterior under the roofline. It appears that the structure has undergone alterations and repairs over the years resulting in the temporal mix of construction materials that may be interpreted as a lack of integrity. It can be argued that this characteristic increases the research potential of the site, even though it may reduce its value architecturally. The site appears to lack the necessary integrity to be considered eligible for inclusion on the National Register of Historic Places, but further investigation is necessary.

B11. Additional Resource Attributes: (List attributes and codes)

*B12. References:

B13. Remarks:

*B14. Evaluator: Leigh Martin

*Date of Evaluation: January 9, 2002

(This space reserved for official comments.)

(Sketch Map with north arrow required.)

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
LOCATION MAP

Primary# P-48-000180

HRI# _____

Trinomial CA-SOL-393H

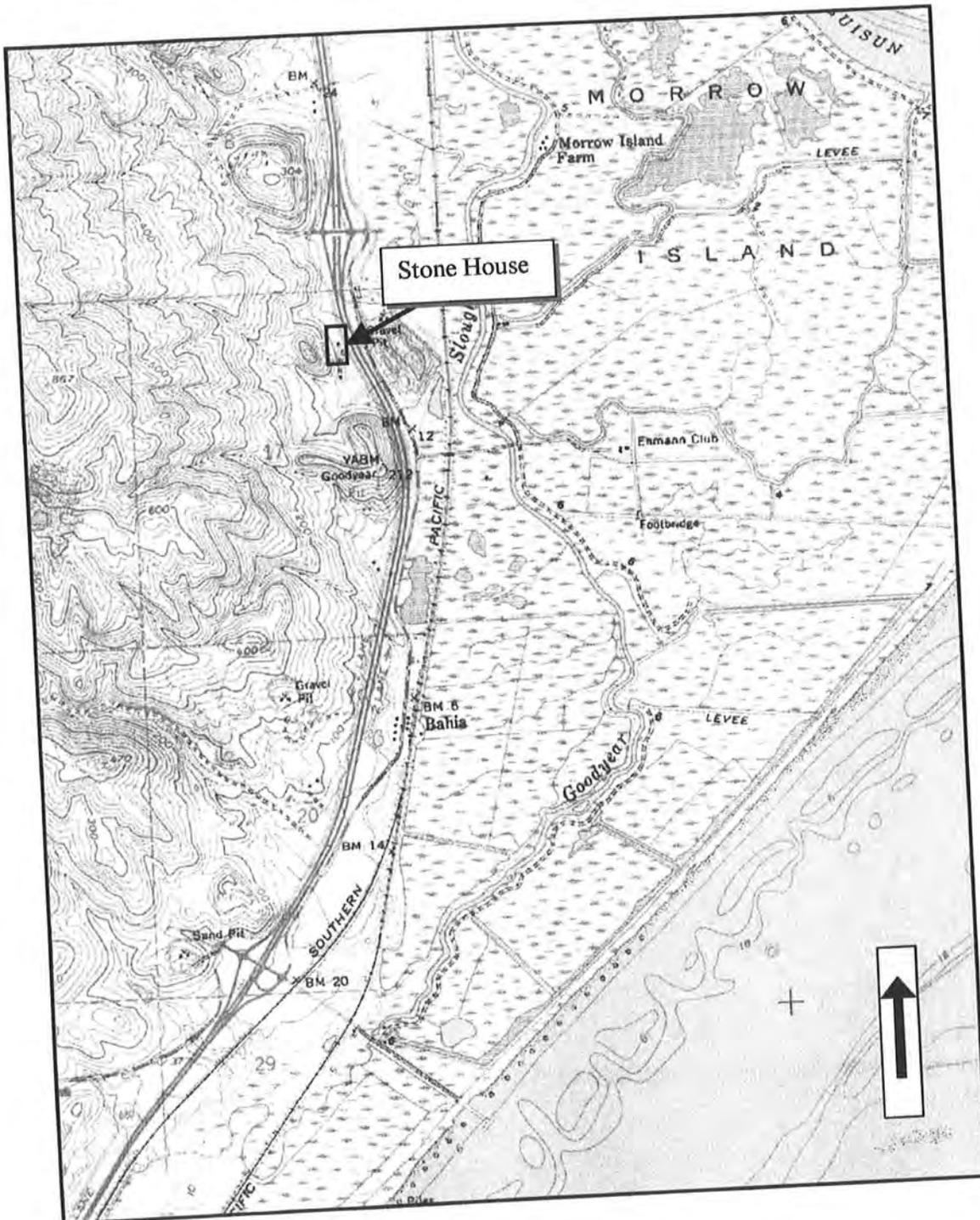
Page 3 of 3

*Map Name : Vine Hill, CA

*Scale: 1:24,000

*Resource Name or # (Assigned by recorder): Stone House

*Date of Map: 1959, Photo Revised 1980



ARCHAEOLOGICAL SITE RECORD

Permanent Trinomial: CA-P-48-000180

Page 1 of 4

Other Designations: MNM-9HCA-SOL-393 H
HRI RES#P-48-89-0053-0000

1. County: Solano
2. USGS Quad: Vine Hill (4824) (7.5') 1959 Photorevised 1980
3. UTM Coordinates: Zone 10 578440 m Easting 4218330 m Northing
4. Township: 3N Range: 2W Base Meridian. MDM
NE 1/4 of SW 1/4 of NW 1/4 of NE 1/4 Section: 17
5. Map Coordinates: 64 mmS 72 mmE 6. Elevation: 110 ft
7. Location: On west side of Lopes Rd., approx. 0.3 mi. south of Parish Rd.,
off of highway 680 south. Approx. 3.7 mi north of the town of Benicia.
8. Site Type: Historic
9. Site Description: Standing stone and brick structure with no associated
features, built partially into a slope above the edge of a marsh.
10. Area: 5.5 m N/S x 8.5 m E/W - ~47 m² How determined: Measuring
tape.
11. Depth: unknown Method of Determination: N/A
12. Features: Mortared stone and brick 1-room structure with wooden door,
wood-framed windows, interior vertical-board paneling, 4 X 4 beams as
floor supports. Door has overhead transom.
13. Artifacts: Square nails, round nails, window glass, pipe, galvanized
metal sheets.
14. Non-Artifactual Constituents:
15. Date Recorded: 5-12-93 16. Recorded by: S. Waechter, K. Taite,
P. Strader, D. Wheeler
17. Affiliation and Address: Far Western Anthropological Research Group, Inc.
P.O. Box 413, Davis, California 95617
18. Human Remains: None noted.

APR 13 1995

a.

19. Site Disturbance: Area surrounding structure currently used as horse pen for 2 horses. Structure walls are mostly intact, but roof is gone (collapsed inward) and most of interior paneling gone. Windows have no glass.
20. Nearest Water (type, distance, and direction): Ephemeral creek runs in front of structure.
21. Vegetation Community (site vicinity): Scattered oak/grassland
22. Vegetation (on site): Eucalyptus, grasses
23. Site Soil: Alluvium
24. Surrounding Soil: Same
25. Geology: Quaternary alluvium.
26. Landform: Hill slope at west edge of Suisun Bay and Marshlands
27. Slope: 0°-45°
28. Exposure: Open to east, sheltered by hillside to west
29. Landowner and Address:
30. Remarks: Identical construction to structure at MNM-9H, ~ 0.7 mi south, except that this one has interior paneling, and some "stone" blocks in the walls appear to be adobe. Walls may have been plastered (white residue in some places). Fences and private homes kept us from examining surrounding area.
31. References: "Class III Cultural Resources Report for the Mojave Northward Expansion Project." Report prepared for Mojave Pipeline Co., Bakersfield. Woodward-Clyde Consultants, Oakland, 1993.
32. Name of Project: Mojave Northward Expansion Cultural Resources Survey
33. Type of Investigation: Linear surface survey
34. Site Accession Number: N/A Curated At: N/A
35. Photos: Roll #2, frames 7-14

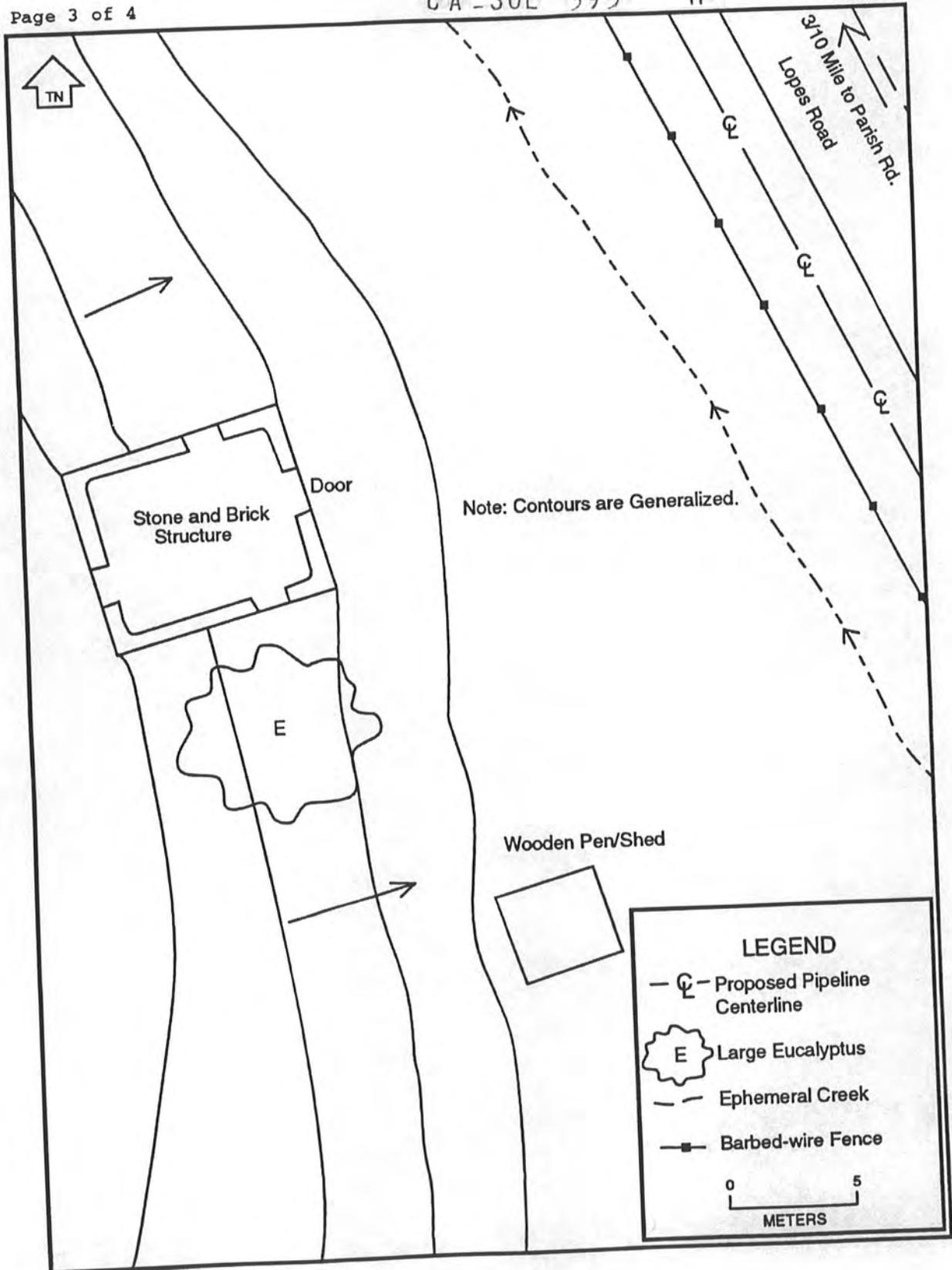
P-48-000180

CA-SOL-393

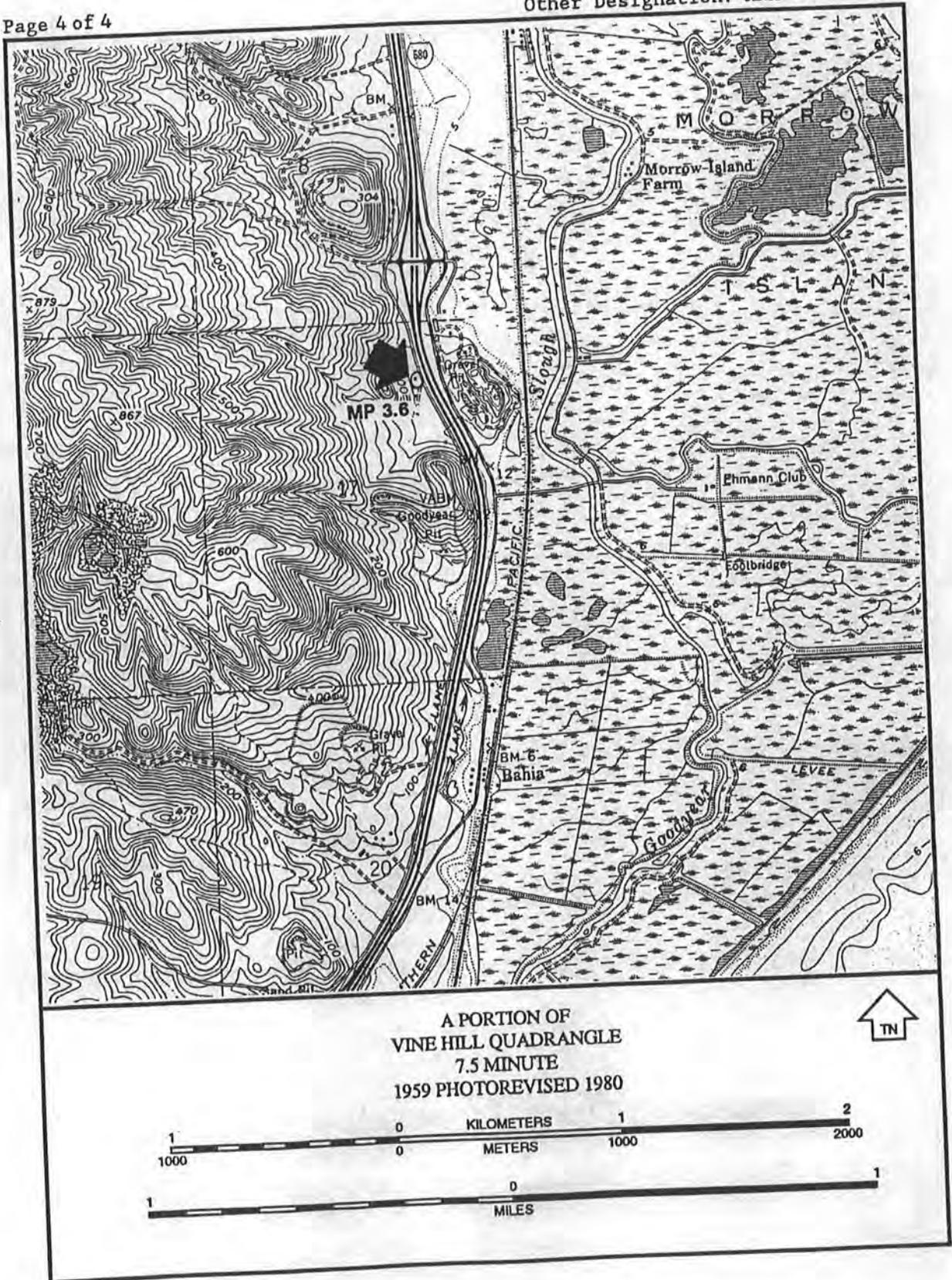
H

MNM-9H

Page 3 of 4



a.



a.

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary # P-48-000696
HRI # _____
Trinomial _____
NRHP Status Code _____

Other Listings _____
Review code _____ Reviewer _____ Date _____

Page 1 of 2

Resource Name or #: (Assigned by recorder); Historic Road under Lopes Road

P1. Other Identifier:

P2. Location: Not for Publication Unrestricted

*a. County Solano County

and (P2b and P2c or P2d. Attach a Location Map as necessary.) (Map# 4824)
*b. USGS 7.5' Quad Vine Hill Date 1959 (Rev. 1980) T 3N; R 2W; NW $\frac{1}{4}$ of NW $\frac{1}{4}$ of Sec 17; MD B.M.
c. Address _____ City _____ Zip _____ (578600E/4217280N to 578670E/4217560)
d. UTM: (Give more than one for large and/or linear resources) Zone 10, 578564E/4217645N (Start); 578517E/4217456N (Finish)
e. Other Locational Data (e.g., parcel #, legal description, directions to resource, elevation, etc., as appropriate): The historic road bed is below Lopes Road and runs parallel to it.

*P3a. Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries):
Portion of paved historic road consisting of a layer of asphalt (4-5 inches thick) overlying a layer of concrete base (4-5 inches thick). Road surface is 2 1/2 - 3 1/2 feet below present surface and partially underlies Lopes Road.

*P3b. Resource Attributes: (List attributes and codes)
HP 37 Highway/Trail

*P4. Resources Present: Building Structure Object Site District Element of District Other (Isolates, etc).

P5. Photo or Drawing (Photo required for buildings, structures, and objects.)



*P5b. Description of Photo (view, date, accession #) Road profile in trench sidewalk, view E.

*P6. Date Constructed/Age and Sources: Historic Prehistoric
 Both

*P7. Owner and Address: Unknown

*P8. Recorded by (Name, affiliation, and address): Allen Estes and Tom Young, William Self Associates, PO Box 2192, Orinda, CA 94563

*P9. Date Recorded: 10/21/2004

*P10. Survey Type: (Describe)
Construction Monitoring

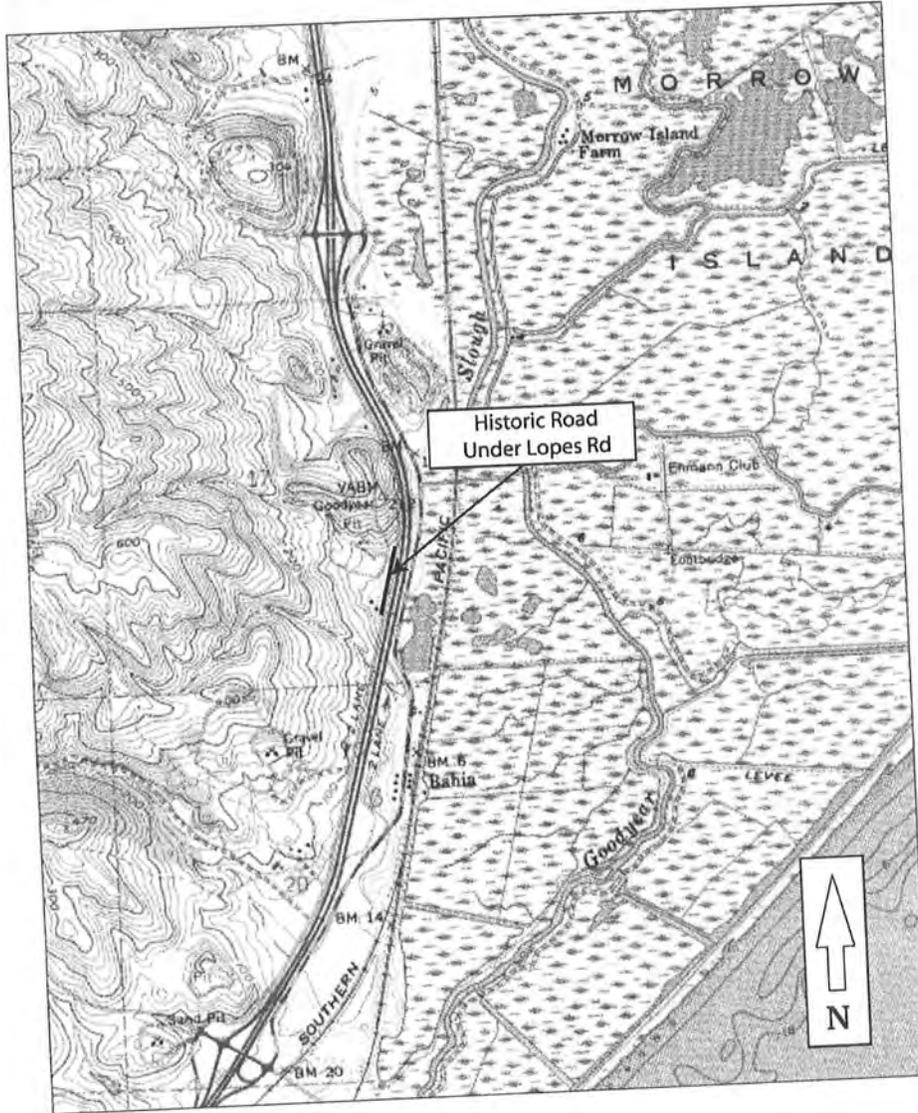
*P11. Report Citation (Cite survey report and other sources, or enter "none."): None To be incl. in Final mont. Rpt

*Attachments: NONE Location Map Sketch Map Continuation Sheet Building, Structure, and Object Record
 Archaeological Record District Record Linear Resource Record Milling Station Record Rock Art Record
 Artifact Record Photograph Record Other (List):

DPR 523A (1/95)

*Required Information
JAN 7 2005

A



State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary # P-48-000982

HRI # _____

Trinomial _____

NRHP Status Code 6Z

Other Listings
Review Code _____

Reviewer _____

Date _____

*Resource Name or # (Assigned by recorder) Suisun Marsh Bridges

Page 1 of 8

P1. Other Identifier: Montezuma Slough Bridge (No. 23C0030), Joice Island Bridge, Morrow Island Bridge

*a. County Solano

*P2. Location: Not for Publication Unrestricted
and (P2b and P2c or P2d. Attach a Location Map as necessary.)

*b. USGS 7.5' Quad See Table 1 Date _____

c. Address _____ City Suisun Zip _____ mE/ _____ mN

d. UTM: (give more than one for large and/or linear resources) Zone _____;

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)
Montezuma Slough Bridge is located southwest of Suisun City and carries Grizzly Island Road over the slough south to Grizzly Island. Joice Island Bridge carries Joice Island Road connecting Joice Island State Game Refuge to Grizzly Island Road. The turn off for Joice Island Road along Grizzly Island Road is west of Montezuma Slough Bridge. Morrow Island Bridge carries Morrow Lane over a thin arm of Goodyear Slough. The bridge sits to the east of Highway 580 off of Goodyear Road between the Lake Herman Road and Parish Road exits.

*P3a. Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

Three vehicular bridges cross sloughs within the marsh. The Montezuma Slough Bridge (Bridge Number 23C0030) is a county maintained bridge constructed in 1958. Joice Island Bridge and Morrow Island Bridge are independently maintained. Montezuma Slough Bridge rises to a center height of 21 feet. The two lane bridge has a concrete deck supported on pre-stressed concrete piles driven into the slough bed. The piles create a set of 36 piers spanning 283 feet with a 51 foot clear span in the middle of the bridge. Each pier consists of four piles driven in a line perpendicular to the bridge. The outer two piles angle slightly inwards. Approximately every fourth pier has additional piles bracing the piers in a north south direction. The two ends slope upwards to the center span which is removable. The center span sits on steel girders. A standard metal railing flanks the deck. (See Continuation Sheet.)

*P3b. Resource Attributes: (List attributes and codes) HP19 - Bridge

*P4. Resources Present: Building Structure Object Site District Element of District Other (Isolates, etc.)

P5a. Photo or Drawing (Photo required for buildings, structures, and objects.)



*P5b. Description of Photo: (View, date, accession #) Photograph 1. Montezuma Slough Bridge, camera facing southeast, February 5, 2013

*P6. Date Constructed/Age and Sources:
 Historic Prehistoric Both
See Table 1.

*P7. Owner and Address:
See Table 1

*P8. Recorded by: (Name, affiliation, address)
Cheryl Brookshear and Ann Roberts
JRP Historical Consulting, LLC 2850
Spafford Street
Davis, CA 95618

*P9. Date Recorded: February 2013

*P10. Survey Type: (Describe) Intensive

*P11. Report Citation: (Cite survey report and other sources, or enter "none.") JRP Historical Consulting LLC, Suisun Marsh Cultural Resources Contextual Report, 2013.

*Attachments: None Location Map Sketch Map Continuation Sheet Building, Structure, and Object Record Archaeological Record
 District Record Linear Feature Record Milling Station Record Rock Art Record Artifact Record Photograph Record

Other (list) _____
DPR 523A (1/95)

*Required Information

S-043268

BUILDING, STRUCTURE, AND OBJECT RECORD

*NRHP Status Code 6Z

*Resource Name or # (Assigned by recorder) Suisun Marsh Bridges

B1. Historic Name: Montezuma Slough Bridge; Joice Island Bridge; Morrow Island Bridge

B2. Common Name: Montezuma Slough Road Bridge; Joice Island Bridge; Morrow Island Bridge

B3. Original Use: Bridge B4. Present Use: Bridge

*B5. Architectural Style: Functional

*B6. Construction History: (Construction date, alteration, and date of alterations) Montezuma Slough Bridge constructed 1958; Joice Island Bridge constructed c.1940s; Morrow Island Bridge constructed 1931, bridge lengthened and additional bent, girders and deck added by 1977.

*B7. Moved? No Yes Unknown Date: _____ Original Location: _____

*B8. Related Features: _____

B9. Architect: Unknown b. Builder: Unknown

*B10. Significance: Theme n/a Area n/a Property Type n/a Applicable Criteria n/a
Period of Significance n/a

(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

The bridges within Suisun Marsh over 50 years old do not appear to meet the criteria for listing in the National Register of Historic Places (NRHP) or the California Register of Historical Resources (CRHR). These properties have been evaluated in accordance with Section 15064.5(a)(2)-(3) of the CEQA Guidelines, using the criteria outlined in Section 5024.1 of the California Public Resources Code, and do not appear to be a historical resource for the purposes of CEQA.

Historic Context

By the early twentieth century, reclamation was sufficiently advanced to support a permanent population within the marsh. Along with the use of watercraft to visit landings, a new form of transportation was added to the marsh. Roads and ferries made it possible to transport goods through the marsh using land based transport. Between 1891 and 1908 a system of roads was constructed in the eastern marsh.¹ Farmers developed rough roads on levees, and seasonal roads crossed the marsh without the benefit of raised road beds. Small bridges crossed sloughs in the areas protected by levees.² For example, O.H. Hastings, who owned land in the eastern Potrero Hills and Bradmoor Island, constructed a simple ferry to connect his holdings.³ (See Continuation Sheet.)

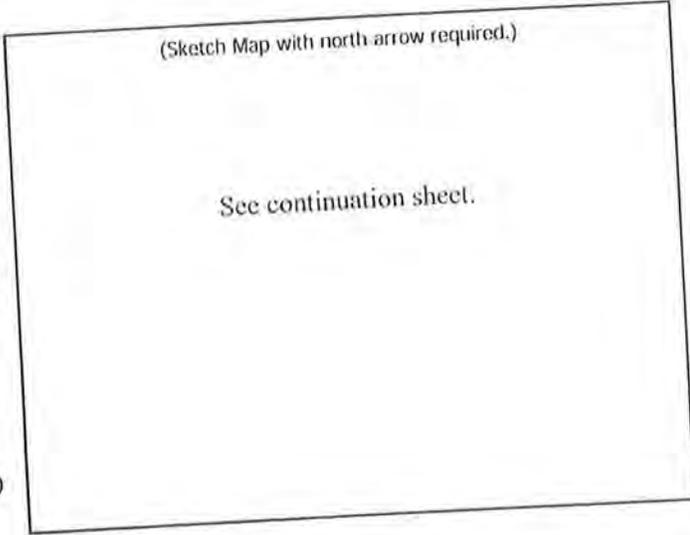
B11. Additional Resource Attributes: (List attributes and codes) _____
*B12. References: E.N. Eager, *Official Map of the County of Solano* (San Francisco: Britton & Rey, 1891); USGS, *Antioch 15' Quadrangle* (Washington, D.C.: USGS, 1908 reprinted 1943); DFG, Game Management Branch, Chronology Montezuma Slough Bridge (Grizzly Island Access) Problem, August 21, 1959, F3498:685, Administrative Officer - Administrative Division, Installations - Grizzly Island, Montezuma Slough Bridge, 1950-1957, Department of Fish and Game Records, California State Archives, Sacramento, California; (See Footnotes.)

B13. Remarks:

*B14. Evaluator: Cheryl Brookshear

*Date of Evaluation: February 2013

(This space reserved for official comments.)



¹ E.N. Eager, *Official Map of the County of Solano* (San Francisco: Britton & Rey, 1891); USGS, *Antioch 15' Quadrangle* (Washington, D.C.: USGS, 1908 reprinted 1943).
² USGS, *Antioch 15' Quadrangle*, 1908 reprinted 1943.
³ Eager, *Official Map of the County of Solano*, 1909; USGS, *Antioch 15' Quadrangle*, 1908 reprinted 1943.

*Required Information

P3a. Description (continued):

The Joice Island and Morrow Island Bridges are similar in construction to the Montezuma Slough Bridge. Pilings support the ends of the bridges which rise above the channel and a central clear span provides an open channel for boats to pass under them. These bridges, however, are constructed using wooden pilings and single lane wood decks. The Joice Island Bridge provides a clear span 75 feet wide and nine feet above water (**Photograph 2**). Concrete headers support the steel girders underlying the removable central span. Lateral diagonal bracing connects the piers to stabilize the structure.

The Morrow Island Bridge has an irregular piling system suggesting that it underwent numerous alterations since its construction in 1931 (**Photograph 3**). Currently the bridge has 28 bents or piers constructed of at least three configurations of pilings. The piers or bents include two pilings at each side of the road bed, three pilings, and three pilings across the road bed with diagonal bracing. Spacing between the pilings which compose the piers is highly variable. A center clearance of 18 feet is connected with a removable span.

Table 1. Suisun Marsh Bridges

Bridge Name	Date Constructed	Quadrangle	Owner
Montezuma Slough (23C0030)	1958	Denverton	Solano County Division of Public Works 675 Texas Street, Suite 55000 Fairfield, CA 94533-6341
Joice Island Bridge	1948-1953	Denverton	DFG, Volanti Duck Club, Joice Island Mallard Club
Morrow Island Bridge	1931	Port Chicago	DWR, Mulberry Land Co, Goodyear Land Development.

B10. Significance (continued):

The first county road approached Grizzly Island from the east, south of Bird's Landing, by 1909. County Road 456 skirted the western edge of Grizzly Island; a fork crossed Grizzly Slough and traversed Hammond and Wheeler islands to reach Dutton's Landing. The other fork continued along the western edge of the island turning to follow the edge of Grizzly Bay nearly to the western mouth of Montezuma Slough.⁴ The road crossed to Grizzly Island via a small hand-pulled system known as Dutton's Ferry, operated by the county into the 1950s.⁵ Access to both water and land transportation routes made the location of Dutton's Ferry more popular than the landing, and several buildings were moved from the landing on Honker Bay to the ferry on Montezuma Slough.⁶ Residents gradually straightened the road through Grizzly Island as the tide lands on the western edge the island were leveed and reclaimed. It became the route for the first electrical line to the island, and is now commonly called "power line road."⁷ However, as most of the residents traded locally at Suisun this road did not provide convenient access for local trade.⁸

A private road through the Portero Hills provided a more direct route from the Suisun area. The road approached Montezuma Slough from the north. An informal system operated for years, as residents of Grizzly Island took the private road over the hills and a private launch across the slough to the island. In 1911, wealthy philanthropist Annie Alexander purchased a farm on Grizzly Island. After making substantial improvements to the farm, she built and donated to the county

⁴ Eager, *Official Map of the County of Solano*, 1909.

⁵ DFG, Game Management Branch, Chronology Montezuma Slough Bridge (Grizzly Island Access) Problem, August 21, 1959, F3498:685, Administrative Officer – Administrative Division, Installations – Grizzly Island, Montezuma Slough Bridge, 1950-1957, Department of Fish and Game Records, California State Archives, Sacramento, California.

⁶ Joan Frost, *A Brief Pictorial History of Grizzly Island* (San Francisco: The Trade Pressroom, 1978).

⁷ E.N. Eager, *Official Map of the County of Solano*, (San Francisco: Britton & Rey, 1919).

⁸ Frost, *A Brief Pictorial History of Grizzly Island*.

*Recorded by Cheryl Brookshear *Date February 2013

a ferry capable of carrying vehicles. In 1919, when she made this donation, the county established County Road 578 around the hills to the ferry.⁹ This road became Grizzly Island Road and is still in use today.

The Grizzly Island ferry became a key transportation route for residents and hunters to access the central marsh. When the California Department of Fish and Game purchased a portion of Grizzly Island as a Waterfowl Management Area in 1949, it faced a challenge in transporting the many hunters to the area during the hunting season.

The ferry, capable of carrying six cars, became a choke point for travel to and from the marsh during the hunting season. The ferry faced serving the needs of island residents, private duck clubs, and beginning in 1950, public hunters. In 1938, a local entrepreneur established Belden's Landing on the north side of the ferry crossing. The landing featured a restaurant, bar and boat rental. The boat rental business thrived as hunters independent of private clubs sought to access the marsh, and seasonal hunters sought faster access to the marsh through rented boats. Despite the amenities, wait times for crossing were long.¹⁰

The ferry, capable of carrying six cars, became a choke point for travel to and from the marsh during the hunting season. The ferry faced serving the needs of island residents, private duck clubs, and beginning in 1950, public hunters. Recognizing the problem would be exacerbated by the new Waterfowl Management Area which offered hunting to the general public, the Department of Fish and Game immediately began planning for installation of a bridge. The existing ferries were operated by the county, so the Department of Fish and Game entered into a plan with Solano County to share the expense of a new bridge. While planning began, the county discontinued service at Dutton's Ferry in 1952, leaving Grizzly Island ferry as the sole vehicular access to the island. Several factors slowed the planning for a bridge over Montezuma Slough. The Corps was investigating a potential for a Potrero Hills Ammunition Loading Depot, and could either incorporate the bridge into the project or request it be relocated. The Corps dropped the project in 1955, but then the bridge design became contentious. A pivot or other movable bridge was very costly, and the state and county preferred a lower cost, mid-height bridge with removable span that would allow for large vessels to pass by removing the bridge's center. Yachting groups, however, opposed this bridge type as it would restrict recreational watercraft through Montezuma Slough to those boats small enough to fit under the span. These groups lobbied the legislature for a movable bridge, and when that failed, filed for an injunction in the courts. This suit was finally dropped. In the end, the bridge was designed as a mid-rise removable span bridge, paid for by the Department of Fish and Game and Solano County. The agencies finally commenced construction of the two lane bridge in 1960.¹¹

The main artery for motor vehicle access into the marsh remains Grizzly Island Road and Montezuma Slough Bridge, however, smaller private roads are still in use. These roads use internal and external levees for their grades. Landowners have installed bridges on two private roads, providing access to otherwise water locked areas. Hunters have been the dominant force in the western marsh limiting reclamation and year round habitation of the marsh. Without reclamation, construction of roads has not been feasible as most private marsh roads utilize levees as their beds. Morrow Island was an unusual exception. In 1919, Reclamation District 2032 continued its work on the island east of Goodyear Slough and south of Suisun Slough. As the district surrounded the area with levees by 1925, it constructed a private road from the main road along the western edge of the marsh directly eastward to the reclaimed land. As a part of this construction, the landowners

⁹ E.N. Eager, *Official Map of the County of Solano*, (San Francisco: Britton & Rey, 1925); Frost, *A Brief Pictorial History of Grizzly Island*.

¹⁰ Kristin Delaplaine, "Grizzly Island Slowly Evolves to Preserve." Historical Articles of Solano County, 1996 June 30, Vacaville Historical Commission Database, <http://www.vacavilleheritagecouncil.org/collection/>, Accessed October 10, 2012.

¹¹ "Ralph W. Scott Deputy Attorney General to Louis J. Heinzler Department of Finance," 1960 April 21, Administrative Division, Installations Grizzly Island - Montezuma Slough Bridge 1957-1960, Department of Fish and Game Records, California State Archives, Sacramento, California.; Department of Fish and Game, Game Management Branch, Chronology Montezuma Slough Bridge (Grizzly Island Access) Problem, 1959 August 21, F3498: 685, Administrative Office - Administrative Division, Installations, Grizzly Island, Montezuma Slough Bridge 1950-1957, Department of Fish and Game Records, California State Archives, Sacramento, California.; Department of Fish and Game, "Report on Types of Bridges Which Might Be Built Across Montezuma Slough Solano County," 1958, Administrative Division, Installations Grizzly Island - Montezuma Slough Bridge 1957-1960, Department of Fish and Game Records, California State Archives, Sacramento, California.

built a bridge over Goodyear Slough in 1931.¹² The Morrow Island bridge was a single lane bridge on piers with sloping approaches and ends, with a flat central removable deck. Subsequent landholders have made multiple modifications to this bridge, increasing the number of piers to carry it over a wider channel, and adding multiple stringers. Very little of the original bridge remains, but the design is much the same plan used decades later on a larger scale for the construction of the Montezuma Slough Bridge. Similarly, landowners constructed the Joice Island Bridge between 1948 and 1953 as part of a private road to upper Joice Island and the Volanti Club in the late 1940s.¹³

Evaluation

The Montezuma Slough Bridge (23C0030) is included in the Caltrans local bridge inventory and is listed as a non-eligible bridge. Nothing in this survey contradicts that finding or identifies the bridge as a contributor to a rural historic landscape. The Morrow Island Bridge and Joice Island Bridge, privately-owned and maintained, share similar construction methodology and design. These private bridges were constructed to access existing farms and duck clubs, and operate as a standard part of the marsh's infrastructure. They are not associated with the development of agriculture or recreational use of the marsh (NRIIP Criterion A/ CRHR Criterion 1). The bridges are not associated with individuals significant to the past (NRHP Criterion B/ CRHR Criterion 2).

None of the bridges are significant for their period, type, or method of construction (NRHP Criterion C/ CRHR Criterion 3). The bridges utilize standard bridge design available at the time of their construction and do not illustrate significant engineering achievements.

In rare instances buildings or structures may yield historical information about historic construction materials and technologies not available through other sources (NRHP Criterion D/ CRHR Criterion 4). These bridges do not appear significant in this regard. The building technologies, method and materials are typical for their period and are documented through other means.

Montezuma Slough Bridge and Joice Island Bridge appear to retain integrity, but are not historically significant. The irregular piling plan for the Morrow Island Bridge indicates numerous alterations. Bent 5 appears to follow the 1931 plans for construction, but other bents follow different design patterns. The bridge also spans a wider channel than the original 1931 bridge. The alterations have resulted in a loss of integrity relating to design, materials, and workmanship. In addition to lacking integrity the bridge also lacks historical significance.

¹² USCGS, *Suisun Bay Chart 5534*, 1925.; USDA, *Solano County Aerial Photographs* 1937.; US Coast Guard, J.S. Blackett Commander Chief, Aids to Navigation Branch, 12th Coast Guard District to Keskue S. Mayne and James F. Eggert, et al. 1978, November 20, provided by Bill Burkhardt, Department of Water Resources.

¹³ USDA, *Solano County Aerial Photographs*, 1937; USGS, *South Fairfield* (Washington, D.C.: USGS, 1949); USGS, Aerial photographs Solano County, 1948, Earth Resources Observation and Science Center, Eros.usgs.gov/#/Find_Data/Products_and_Data_Available/Aerial_Products, accessed April 5, 2013; USACE, *Denverton Quadrangle* (Washington, D.C.: Army Map Service, 1953); DWR, *Morrow Island Distribution System, Specification No. 80-13*, Sheet 13, Specifications, Drawings and As Built, Department of Water Resources Files, Sacramento, California.

Photographs (continued):

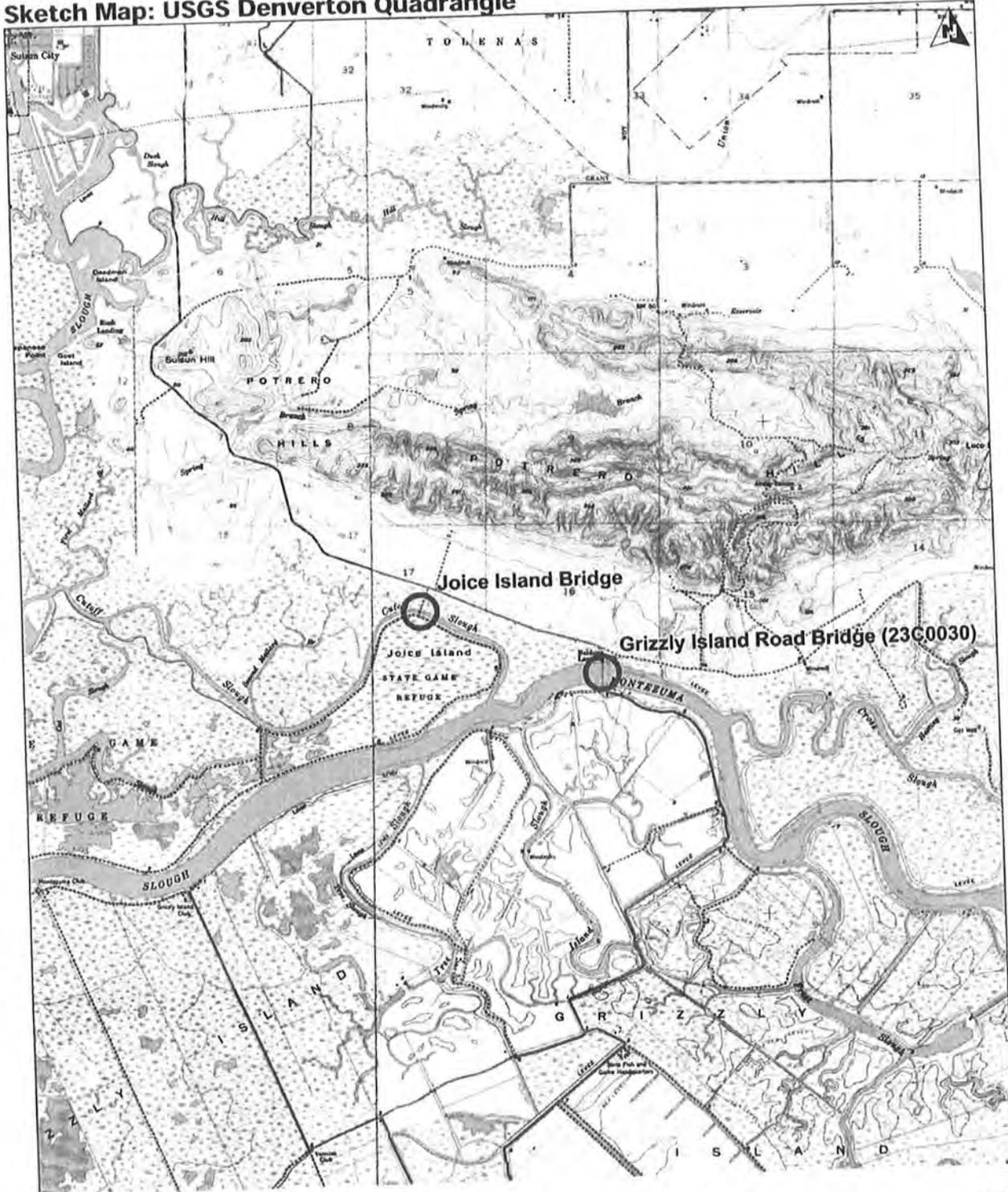


Photograph 2. Joice Island bridge, camera facing southeast.



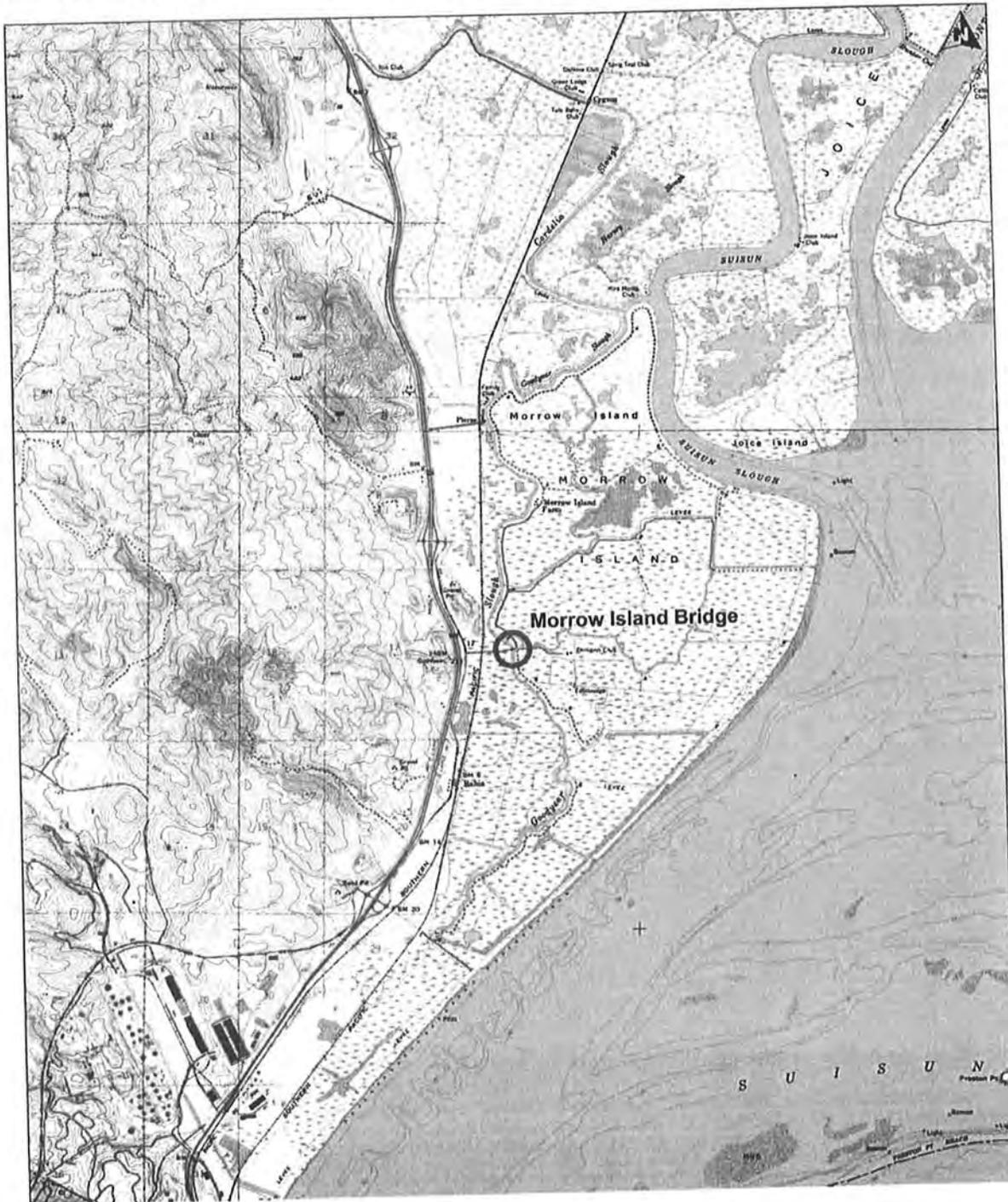
Photograph 3. Morrow Island Bridge, camera facing southeast.

Sketch Map: USGS Denverton Quadrangle



*Required Information

Sketch Map: USGS Port Chicago Quadrangle



State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary # P-48-000990

HRI # _____

Trinomial _____

NRHP Status Code 6Z

Other Listings
Review Code _____

Reviewer _____

Date _____

*Resource Name or # (Assigned by recorder) Initial Facilities

Page 1 of 13

P1. Other Identifier: Roaring River Distribution System, Morrow Island Distribution System, Goodyear Outfall,

***P2. Location:** Not for Publication Unrestricted

*a. County Solano

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

*b. USGS 7.5' Quad Port Chicago (Vine Hill)/ Honker Bay Date 1980

c. Address _____ City Suisun Zip _____

d. UTM: (give more than one for large and/or linear resources) Zone _____; _____ mE/ _____ mN

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

(See Continuation Sheet)

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

The Initial Facilities were authorized in 1978 as the first steps to protect the Suisun Marsh from encroaching salinity. The facilities consist of three structures: Roaring River Distribution System, Morrow Island Distribution System and Goodyear Outfall. The facilities were designed to distribute higher quality, lower salinity water from the internal sloughs to ponds used to raise plants preferred by waterfowl, and subsequently drain the ponds and leach salts out of the marsh and into Suisun Bay. The structures required no special design attributes, but rather are based upon typical water conveyance and distribution systems usually associated with irrigation systems and contain head gates, channels and distribution gates. (See Continuation Sheet.)

***P3b. Resource Attributes:** (List attributes and codes) HP11 – Engineering Structure

***P4. Resources Present:** Building Structure Object Site District Element of District Other (Isolates, etc.)

P5a. Photo or Drawing (Photo required for buildings, structures, and objects.)



P5b. Description of Photo: (View, date, accession #) Photograph 1. Roaring River Intake showing slide gate controls (right) and tops of the flap gates (left), camera facing north, October 24, 2012.

***P6. Date Constructed/Age and Sources:**
 Historic Prehistoric Both
1979-1980 DWR

***P7. Owner and Address:**
Department of Water Resources
1416 9th St.
Sacramento, CA 95814

***P8. Recorded by:** (Name, affiliation, address)
Cheryl Brookshear
JRP Historical Consulting, LLC 2850
Spafford Street
Davis, CA 95618

***P9. Date Recorded:** February 5, 2013

***P10. Survey Type:** (Describe) Intensive

***P11. Report Citation:** (Cite survey report and other sources, or enter "none.") JRP Historical Consulting LLC, Suisun Marsh Cultural Resources Contextual Report, 2013.

***Attachments:** None Location Map Sketch Map Continuation Sheet Building, Structure, and Object Record Archaeological Record District Record Linear Feature Record Milling Station Record Rock Art Record Artifact Record Photograph Record Other (list) _____

DPR 523A (1/95)

*Required Information
S-43268

BUILDING, STRUCTURE, AND OBJECT RECORD

*NRHP Status Code 6Z

*Resource Name or # (Assigned by recorder) Initial Facilities

- B1. Historic Name: Roaring River Distribution System, Morrow Island Distribution System, Goodyear Outfall
- B2. Common Name: Roaring River Distribution System, Morrow Island Distribution System, Goodyear Outfall
- B3. Original Use: Water Management Facilities B4. Present Use: Water Management Facilities

*B5. Architectural Style: Utilitarian

*B6. Construction History: (Construction date, alteration, and date of alterations) Roaring River Distribution Facilities constructed 1979, repair levees and remove and add turnouts 1980; construct fish screen 1980; levee repairs 1981, 1982, 1983, second phase of fish screen 1983; fish screen modifications 1995, 1998, levee repair 1998, 1999, 2009. Morrow Island Distribution System constructed 1980, levee repairs 1983, sediment removal 1997, levee repair 1998, 1999, reconstruct intake 2002. Goodyear Outfall constructed 1979, repair damage 1981.

*B7. Moved? No Yes Unknown Date: _____ Original Location: _____

*B8. Related Features: _____

- B9. Architect: California Department of Water Resources b. Builder: Roaring River - R&D Watson, Inc and R&D Watson Equipment Company And Dutra Construction Co. Goodyear Outfall - Luhr Brothers Morrow Island - unknown

*B10. Significance: Theme n/a Area n/a Period of Significance n/a Property Type n/a Applicable Criteria n/a
(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

The Initial Facilities are not over 50 years old, and do not appear to meet the criteria consideration of exceptional significance required for listing in the National Register of Historic Places (NRHP) or the California Register of Historical Resources (CRHR). These properties have been evaluated in accordance with Section 15064.5(a)(2)-(3) of the CEQA Guidelines, using the criteria outlined in Section 5024.1 of the California Public Resources Code, and do not appear to be a historical resource for the purposes of CEQA. (See Continuation Sheet.)

B11. Additional Resource Attributes: (List attributes and codes) _____

*B12. References: Jackson, W. Turrettine and Alan M. Paterson. "The Sacramento-San Joaquin Delta the Evolution and Implementation of Water Policy: An Historical Perspective." Davis, CA: California Water Resources Center, 1977; Department of Water Resources. *Plan of Protection for the Suisun Marsh including Draft Environmental Impact Report*. Sacramento: DWR Central District, September 1980; DWR. Specifications, Drawings and As Builts. Department of Water Resources Files, Sacramento, California; US Bureau of Reclamation. *Suisun Marsh Four Agency Study: Summary of Water Quality Monitoring Program and Present Salinity Conditions*. Sacramento: US Bureau of Reclamation, 1972 (See Footnotes)

B13. Remarks:

*B14. Evaluator: Cheryl Brookshear

*Date of Evaluation: February 2013

(This space reserved for official comments.)

(Sketch Map with north arrow required.)

See continuation sheet.

P2e. Location:

The Roaring River Distribution System is located along the western side of Montezuma Slough at the southern end of Grizzly Island just north of Roaring River Slough. West of the gates the distribution system follows the slough on a meandering path westward to Grizzly Bay. The Morrow Island Distribution System is located in the southwestern portion of the marsh. The intake is located on Goodyear Slough between the Parish Road exit on I-689 and Morrow Lane. The Distribution system follows a modified natural channel east to Suisun Bay. The Goodyear Outfall is located just north of Lake Herman Road and Goodyear Slough.

P3a. Description (continued):

Roaring River Distribution System

The Roaring River Distribution System includes an intake gate with fish screen, a reservoir, and improved channel with distribution gates along the channel (**Photograph 1**). The intake gate crosses the exterior levee on the east side of Grizzly Island just above Roaring River Slough. The intake gates consist of eight 60 inch circular culverts. The eight intake gates are aligned next to each other, occupying approximately 100 feet of the levee. Rock rip rap covers the gates and supports the road which crosses them. At the western edge of the road, vertical pipes provide access to slide gates located in each culvert pipe. The vertical tube also contains the mechanical equipment to operate the slide gates. The pipes are covered and electric motors are mounted on the staff attached to each slide gate cover. These motors control the intake facility. Each pipe extends into the western reservoir by about ten feet and is capped with a flap gate. An electrical locker sits in a fenced area to the southwest of the gate structure. The fish screen was added to the intake in 1980 and sits approximately 30 to 40 feet east of the intake in Montezuma Slough. Visible at the surface is a concrete walkway supported on a metal frame and pilings. The frame rises above the walkway creating a safety railing. Along the north and eastern edge of the fish screen is a metal frame rising approximately one story above the walkway. Small frames and a motorized tramway at the top of the frame allow operators to raise the screens below the water line to the walkway for cleaning.

The reservoir to the west contains 40 acres with levees along the edges 200 feet near the southwest corner that have been removed, allowing water unrestricted flow into Roaring River Slough. The slough has levees on both banks. The levees are 24-34 feet wide and at an elevation of four feet above standard grade. The slopes are standardized at a ratio of four to one. Twenty-five common slide gates with a diameter 24-36" distribute water from the slough to surrounding lands in compliance with individual management plans. The excess and drain water from the system discharges into Grizzly Bay at the western end after following the irregular path of the slough.

Morrow Island Distribution System

The Morrow Island Distribution System consists of a control gate along Goodyear Slough north of Morrow Lane and a channel transporting water northeast to be discharged into Suisun Slough and Suisun Bay (**Photograph 2**). The control gate is a larger version of typical water control gates found throughout the marsh. The gate consists of three 48 inch culverts set in the eastern levee of Goodyear Slough. The culverts extend into the channel on each side of the levee. A wooden T-shaped dock-like structure extends over the culverts in the channel and across the three screw controls. Vertical wooden posts support the dock and wooden walkway. A wooden railing surrounds the walkway. The walkway structure is assembled with angle irons for reinforcement. These structures extend from the gravel topped levee in which the gates are installed. The gates are set within a levee with a 15 foot gravel roadbed on its crown. The distribution channel follows a modified natural eastward running slough which had been leveed in the early twentieth century. The approximately 20 foot wide channel has five foot levees on each side with crown roads. Near the eastern end the channel divides; one portion turns north to empty into Suisun Slough the other heads south before turning directly east and emptying into Suisun Bay. Distribution gates and drains are located along the channel allowing flooding and drainage through the distribution system. Twenty-three drains and gates were constructed as a part of the system.

Goodyear Outfall

The Goodyear Outfall is located at the southeastern corner of the marsh the outfall, and consists of a gate and dredged ditch allowing the release of water in Goodyear Slough into the Suisun Bay from the southern end of the slough (**Photograph 3**). The gate is located just north of Lake Herman Road and consists of four 48 inch culverts connecting the slough to the

*Recorded by Cheryl Brookshear *Date February 2013

dredged outfall channel under a twelve foot wide levee. Six foot tall levees with three to one slopes flank the three foot deep channel.

B10. Significance (continued):

Historic Context

Development of early water control systems in the marsh provided for limited uses of the marsh including small scale agriculture and duck hunting. This development was piecemeal and did not result in focus on a single use, or plan for the marsh. Nor did the piecemeal development follow a standard pattern throughout the marsh similar to the agricultural development of the Delta region. Creation of plans that encompassed the entire marsh evolved as mitigation for impacts that the Central Valley Project (CVP) and State Water Plan (SWP) had on the marsh's water quality.

Development of water quality standards and local involvement resulted in state and federal water agencies developing a comprehensive plan for the Suisun Marsh as compensation for the effects of the CVP and SWP. Post war development placed pressures on California's environment, pressures that affected Suisun Marsh. Plans to develop industrial sites on the northern edge of Suisun Bay threatened the marsh, as did the City of Suisun's growth. As a result, Suisun Marsh duck clubs, now the marsh's dominant land use, banded together to form the Suisun Soil Conservation District (since renamed the Suisun Resource Conservation District, SRCD) in 1963. The soil conservation district framework provided a platform for the marsh's landowners to be represented in the planning and management of the marsh in subsequent decades. Rather than outright opposition to the SWP, the SRCD decided to advocate for the marsh within the SWP.¹

Higher water quality standards and more strict environmental law in the following years bolstered SRCD efforts. Congress passed the Federal Water Pollution Control Act in 1965, which required states to set coastal water standards by 1967. The act defined coastal land as all tidally influenced waters. As a result, the state created baseline standards for the Delta and Suisun Marsh impacted by the CVP and SWP.² California followed the Federal Water Pollution Control act with the Porter-Cologne Act in 1969. This created regional water control plans mirroring standards sent to the Environmental Protection Agency under the federal act. The regional nature of the Porter-Cologne Act required preparation of water quality control plans for the marsh.³

With water quality goals under development and monitoring by organized advocates, the marsh took its place among interests within California water development. In light of the continuing debate about the best way to transport water between the Sacramento River and San Joaquin River basins while retaining new water quality standards, the USBR established the Suisun Marsh Research and Testing Program in 1963.⁴ As a part of this effort, the Department of Water Resources installed nine salinity monitoring stations within the Marsh in 1965.⁵ At the same time, SRCD commissioned two studies of the marsh: the first traced the history and ecology of the marsh; the second provided model management plans for the duck clubs. However, these plans required a basic level of water quality within the marsh that could only be controlled by agencies managing outflows of the Sacramento and San Joaquin Rivers. As a result, the SRCD used their studies to advocate for improved federal and state involvement regarding water quality in the marsh. These studies, along

¹ Arnold, *Suisun Marsh History: Hunting and Saving a Wetland*, 106-107; Department of Water Resources, *Suisun Marsh Monitoring Program Reference Guide*, Department of Water Resources, November 1999, 29.

² Jackson et al., "The Sacramento-San Joaquin Delta the Evolution and Implementation of Water Policy: An Historical Perspective," 102.

³ Jackson et al., "The Sacramento-San Joaquin Delta the Evolution and Implementation of Water Policy: An Historical Perspective," 114.

⁴ USBR, *Suisun Marsh Four Agency Study: Summary of Water Quality Monitoring Program and Present Salinity Conditions* (Sacramento: US Bureau of Reclamation, 1972) 1.

⁵ Department of Water Resources, *Plan of Protection for the Suisun Marsh including Draft Environmental Impact Report* (Sacramento: DWR Central District, September 1980) III-6.

with studies on duck feed preferences and their production conducted through the auspices of DFG beginning in the 1950s, formed the basis for future marsh planning.⁶

Federal and state agencies, responding to water quality legislation and the SRCD, began to develop a common vision for the marsh and incorporate the marsh into their planning. In 1970 the USBR, US Fish and Wildlife Service, DWR and California Department of Fish and Game signed a Memorandum of Agreement that conceded that the CVP and SWP were contributing to fish and wildlife decline in the Delta and Suisun Marsh, and agreed that the agencies would work together to identify means of water quality control for the marsh and manage the marsh to enhance waterfowl habitat. In this way Suisun Marsh became linked to the CVP and SWP. Today, funding for mitigation within the marsh comes from these water transfer programs and the marsh has been incorporated into the CVP and SWP, although largely separated from other units by time and geographic location. The agencies spent subsequent years understanding the ecology of the marsh, its variable salinity, and determining appropriate water quality standards.⁷ In 1971, initial standards for water quality within the marsh were set in the State Water Resources Control Board (SWRCB) Decision 1379, which covered both the Delta region and Suisun Marsh. All parties understood these to be interim standards while agencies conducted necessary research on the marsh, and that they would later be replaced with refined standards.⁸

Concerns regarding land use within the marsh and preserving the marsh environment led to passage of the Nejedly Bagley-Z'berg Suisun Marsh Preservation Act in 1974 that limited marsh development to existing agriculture and wildlife habitat. While not directly linked to salinity control efforts, the act's limited uses for the marsh assisted state and federal agencies developing refined water quality standards to support approved uses. These agencies were still determining the best means of water quality control within the Delta and subsequent flows to the Suisun Marsh.⁹

While protection of marsh lands had moved forward, a variety of road blocks confronted plans to meet the water quality standards. A court order stayed SWRCB Decision 1379, but the regional water control board adopted identical standards to meet the Federal Water Pollution Control Act. As a part of the stay for Decision 1379, USBR claimed that the SWRCB had no power over USBR projects and that participation in water quality projects was not within the scope of the CVP. Despite these objections, the USBR had already become a signatory to the 1970 Memorandum of Agreement to develop water quality plans for the marsh.¹⁰ Under the memorandum, the four agencies continued to move forwards in identifying a means of providing sufficient fresh water to Suisun Marsh to support management plans of duck clubs and fish and wildlife in the marshlands. The consensus among the agencies was that the entire marsh needed fresher water in order to lower soil salinity.¹¹

Despite calls for action beginning in the 1960s and continued studies and experiments, no permanent salinity control had occurred in the marsh when a severe drought struck California in 1976-1977. Its effects resulted in rapid action in both physical developments and regulation to reduce its impacts and attendant increase in salinity on the marsh.¹² In response to the drought the four agencies agreed to build interim facilities. Prior to the drought, SRCD devised a model duck club management plan to provide sufficient levels of fresh and saline water for seasonal flooding which provided necessary brackish water for waterfowl food plants. These plants require seasonal flooding and leaching of land to provide the correct levels of water and salinity during their life cycle. The preferred water management plan, still in operation with some

⁶ Department of Water Resources, *Suisun Marsh Monitoring Program Reference Guide*, 29; Arnold, *Suisun Marsh History: Hunting and Saving a Wetland*, 106-107; Garrone, "The Fall and Rise of the Wetlands of California's Great Central Valley," 337.

⁷ Department of Water Resources, *Suisun Marsh Monitoring Program Reference Guide*, 29; USBR, *Suisun Marsh Four Agency Study* (Sacramento: USBR, March 1972) 2; US Bureau of Reclamation, et al., *Report on the Suisun Marsh Interim Facilities*, by California Department of Water Resources (Suisun Marsh Technical Committee, May 1978) 5.1.

⁸ US Bureau of Reclamation, et al., *Report on the Suisun Marsh Interim Facilities*, 6.1-6.2.

⁹ Deborah Cameron Hoard, "Water Supply and Quality in the Suisun Marsh," Supplement to Suisun Marsh Protection Plan, BCDC Environmental Planner for San Francisco Bay Conservation and Development Commission, May 1976, 11-12, 15, 42-43.

¹⁰ US Bureau of Reclamation, et al., *Report on the Suisun Marsh Interim Facilities*, 6.2.

¹¹ Personal communication Kamyar Guivetchi, March 20, 2013.

¹² US Bureau of Reclamation, et al., *Report on the Suisun Marsh Interim Facilities*, 1.2, 6.4.

modifications, called for flooding in October for hunting purposes. As soon as the season concluded, a series of leaching floods of fresh water was needed to remove salts deposited from the hunting flood. Marsh management then flooded the land with fresh water by April which was allowed to circulate, supporting early growth of waterfowl preferred plants. The clubs then drained the marsh to allow it to dry through the summer before hunting began again. Each phase of the management process had different salinity requirements.¹³ During the 1970s the SRCD assisted each club in development of water management plans using this cycle to improve vegetative quality.¹⁴

During the drought years, water restrictions meant no releases from the SWP or CVP were available to assist with cyclical water management for waterfowl vegetation. The "bay-side clubs," those clubs drawing water directly from Suisun Bay, Honker Bay, and Grizzly Bay where saline intrusion was the greatest, suffered the most. These clubs were unable to tap into the fresher water available in the channels and could not complete the fresh water flushing portion of the water management strategy successfully.¹⁵

Seeking an expeditious solution for the bay side clubs, the four agencies created a set of interim facilities to assist regulated Delta salinity control outflows in May of 1978. Meanwhile they continued their work on a comprehensive permanent plan, including tapping additional sources of fresh water, of which the interim facilities would be a part.¹⁶ The interim facilities built on existing features within the marsh to allow bay side clubs access to the better quality inner channel water. They included four projects distributing water from the interior sloughs to diked land near the bay, and providing outlets for the distributed water. These were the Roaring River Distribution System, King Cut, Morrow Island Distribution System and the Goodyear Outfall (Map 1). King Cut, while proposed, would only be constructed if the agencies could determine whether it would be a portion of the permanent construction in time to include it with the other systems.¹⁷ The agencies constructed the Roaring River Distribution System, Morrow Island Distribution System and Goodyear Outfall, although they modified plans for the facilities as need during construction. The Kings Cut portion of the proposal did not reach consensus and was never constructed.



Map 1. Proposed Interim Facilities in 1978.¹⁸

¹³ US Bureau of Reclamation, et al., *Report on the Suisun Marsh Interim Facilities*, 6.5-6.6.

¹⁴ DWR, *Suisun Marsh Monitoring Program Reference Guide Version 1* (Sacramento, CA: DWR, 1999) 27.

¹⁵ US Bureau of Reclamation, et al., *Report on the Suisun Marsh Interim Facilities*, 7.1-7.2.

¹⁶ US Bureau of Reclamation, et al., *Report on the Suisun Marsh Interim Facilities*, 1.2, 6.4-6.6.

¹⁷ US Bureau of Reclamation, et al., *Report on the Suisun Marsh Interim Facilities*, 7.1-7.2.

¹⁸ US Bureau of Reclamation, et al., *Report on the Suisun Marsh Interim Facilities*, 1.4.

The largest of the interim facilities the agencies constructed was the Roaring River Distribution System. The project modified a natural channel which had been subject to levees and dredging to improve water flow from Montezuma Slough to 5,000 acres on Van Sickle, Wheeler, Dutton and Simmons islands that had been receiving water from Grizzly, Suisun, and Honker bays. The system required a new intake gate, channel improvements, and distribution gates. The intake gates at Montezuma Slough were constructed by R&D Watson, Inc. and R&D Watson Equipment Company, Inc. The gates included eight 60 inch corrugated metal pipe culverts. Slide gates in a concrete headwall allowed the entry of water which spilled into Roaring River through flap gates installed at the upstream (eastern) end. The intake led to a leveed reservoir which fed the main channel. Dutra Construction Company Inc. dredged the channel and placed four foot levees on either side of the channel approximately 185 feet apart. The southern levee was new and the existing northern levee needed to be raised in areas. Improving the channel involved removing one road crossing and reconstruction of others as the dredger cut through and then replaced them. The project added twenty-five corrugated metal pipe gates 24 to 36 inches wide along the channel to distribute the water to the adjoining duck clubs. A few existing gates were retained.¹⁹

Goodyear Slough and Morrow Island, on the west side of the marsh, also required improved water supply. In this area, duck clubs discharged low quality water to Goodyear Slough, and because the slough came to a dead end, the water was not replaced with fresher water for subsequent leaching. Consequently, the agencies, through DWR, hired Luhr Brothers Incorporated to dredge a 20 foot wide Goodyear Outfall at the southern end of the slough, connecting it with Suisun Bay. A tidal gate consisting of four 48 inch corrugated metal pipe with flap gates at the bay side and slide gates on the land side allowed the poorer quality water to discharge into the bay and better quality water to flow into the slough from Suisun Slough to the north. Minor dredging of the slough was anticipated along with a circulation channel through Morrow Island. These last elements developed into their own project.²⁰

Between proposing a plan and signing a contract between agencies to support construction, the agencies added Morrow Island Distribution System to the project while discarding Kings Cut. Morrow Island Distribution System used an existing channel with minor improvements to the channel depth and flanking levees to improve water quality in the Goodyear Slough area. At its western intake, three 48 inch slide gates directed Goodyear Slough Water into the system. Along the route across Morrow Island, ten turnouts let higher quality water into adjoining lands. Eleven drains removed water from the ponds and sent water further down the system, where it exited through an outlet structure with three 48 inch slide gates facing the channel and three flap gates to the east, discharging into Suisun Slough near Suisun Bay.²¹

The Initial Facilities were integrated into the full project prepared in response to SWRCB Water Quality Decision 1485. The board based the standards on research conducted in previous years and limited land uses permitted under the Suisun Marsh Preservation Act. The standards sought to support cyclical water management plans through provision of additional fresh water sources, but incorporated seasonal variation in support of the plans. This decision was compatible with the interim facilities, but required the agencies to complete additional planning in order to meet the criteria. The decision required the four agencies to develop full plans to meet the standards by July 1979, and to implement the plan by 1984.²²

In order to meet the requirements of Decision 1485, the DWR issued its *Plan of Protection for the Suisun Marsh* in 1980, containing plans and phased implementation for additional components necessary to meet decision standards.²³ The participating agencies agreed that DWR would design and construct the major facilities, with USBR providing 40 percent of

¹⁹ US Bureau of Reclamation, et al., *Report on the Suisun Marsh Interim Facilities*, 7.3-7.5; DWR, *Roaring River Slough Dredging, Specification No. 79-15*, DWR Files; DWR, *Roaring River Slough Intake, Specification No. 79-21*, DWR Files; DWR, DWR File Manual, California Water Development Program, California Water Development Program Suisun Marsh 635.1, 1979, DWR, California State Archives, Sacramento, California.

²⁰ US Bureau of Reclamation, et al., *Report on the Suisun Marsh Interim Facilities*, 7.8-7.9.

²¹ DWR, *Morrow Island Distribution System, Specification No. 80-13*, DWR Files.

²² SWRCB, *Water Right Decision 1485* (Sacramento: State Water Resources Control Board, 1978) 5, 14-15, 26-27.

²³ Due to similarities in naming, this document is easily confused with the 1976 *Suisun Marsh Protection Plan* which documents general planning for the marsh including land use. The *Suisun Marsh Plan of Protection* issued in 1980 responds to Decision 1485.

the funding in the 1987 Suisun Marsh Preservation Agreement.²⁴ The long-standing obstacle to improving water quality within Suisun Marsh had been securing sufficient sources of fresh water. Studies included water from numerous sources, but options proposed were either too expensive or diverted water from other needs without demonstrating substantial benefit. The answer proposed in 1980 was to use higher quality water at Collinsville at the eastern edge of the marsh. Diverting this water into the marsh through natural means required too much water from the CVP and SWP that could be used to greater benefit elsewhere. However, using established engineering concepts and methods, available water could be diverted into the marsh and used to refresh the interior channels. This water could be circulated through the system through the established interim facilities and phased construction of additional channels.²⁵

The 1987 agreement between the agencies and the SRCD laid out phased construction for the rest of the system. The main structure in the *Plan of Protection* was the Suisun Marsh Salinity Control Gate, but the plan included additional features to circulate fresher water supplied by gate operations through the marsh. Circulation structures included completed Initial Facilities and added more ditches with associated control gates. Construction of the circulation elements was dependent upon the monitoring and management practices established in the plan.²⁶

Monitoring salinity levels and management of flows directed the future of marsh water quality management. Monitoring required the study of water and soil salinities and subsequent impacts upon desired vegetation for waterfowl management in areas covered -- and not covered -- by the initial facilities.

Following completion of the salinity gate, the monitoring program and individual management plans resulted in a new period of research and evaluation in the marsh, and revealed flaws within the premise of the *Plan of Protection*. The plan anticipated that improved channel water quality would reduce soil salinity and improve production of waterfowl preferred vegetation. The salinity control gate improved channel water quality more than anticipated, but did not result in a commensurate decrease in soil salinity or increased waterfowl preferred vegetation. Instead, what did improve soil salinity and waterfowl habitat was properly implemented individual water management plans. Environmental studies undertaken by the Suisun Ecological Work Group also enhanced understanding of brackish marsh ecology. The *Plan of Protection* posited that water quality should be consistent through the marsh. Improved understanding of marsh ecology, however, indicated the system needed a gradient through the marsh from saline to fresh.²⁷

Based upon these results, and increased emphasis on ecological management in the 1995 Bay-Delta Plan which resulted in formal establishment of increased fresh water flows along with updated water quality standards, the participating agencies halted construction of additional facilities proposed in the *Plan of Protection*.²⁸ The USBR, DFG, DWR and SRCD altered their agreement in 1994 as it became clear that improved conditions in the marsh would result from improved individual management. The Suisun Marsh Preservation Agreement was revised in 2005. In keeping with greater understanding of the marsh, the revised agreement continued growing support for individual management plans. DRW and USBR provided additional funding to the SRCD to develop and implement such plans, which they dubbed Individual Ownership Adaptive Management Habitat Plans. CALFED also called for restoration of 5,000 to 7,000 acres of tidal marsh from existing managed marsh within Suisun Marsh.²⁹

²⁴ USBR, DWR, SRCD, DFG, Suisun Marsh Preservation Agreement, 1987: 14.

²⁵ Personal communication Kamyar Guivetchi, March 20, 2013; DWR, *Plan of Protection for the Suisun Marsh including Draft Environmental Impact Report* (Sacramento: DWR Central District, 1980) IV.5-IV.19.

²⁶ DWR, *Plan of Protection for the Suisun Marsh including Draft Environmental Impact Report*, S.1-S.3; USBR, et al, Suisun Marsh Preservation Agreement, 1987, 11 and Attachment A.

²⁷ Personal communication Kamyar Guivetchi, March 20, 2013; SWRCB, *Water Right Decision 1641* (Sacramento: State Water Resources Control Board, 1999) 51-53.

²⁸ SWRCB, *Water Right Decision 1641*, 51.

²⁹ USBR, DWR, DFG, SRCD, Revised Suisun Marsh Preservation Agreement, 2005.

Evaluation

The Initial Facilities and Suisun Marsh Salinity Control Gate need to be evaluated within the context of CVP and SWP operations and the development of water quality control (NRHP Criterion A/ CRHR Criterion 1). SWCB pushed for the addition of the Initial Facilities and the salinity control gate to the CVP and SWP during a period of rising environmental awareness in the 1970s. Beginning in the 1960s, the country became aware of the environmental costs of development. By 1978 when the four agencies proposed the Initial Facilities, lawmakers had established environmental laws and regulations protecting water quality. USBR and DWR developed the Initial Facilities and salinity gate solely to conform to these regulations. These facilities were not critical to the operation of the CVP or SWP. Indeed, major components of the CVP had been operational for several decades prior to the installation of the Initial Facilities and the later salinity gate. Consequently, the initial facilities and salinity gate are not significant within the context of CVP and SWP operations.

As features of the SWP developed, environmental concerns grew, especially those regarding the ecology of the delta region. Salinity within the delta has been a concern since the 1920s and been a major force shaping the development of the CVP and SWP. Interestingly, while major environmental battles have surrounded the delta, water flow through the delta, and delta fish species, structural solutions to water quality problems have been limited. The Delta Cross Channel built in 1951 as a component of the CVP is the sole salinity control structure within the delta, and is recognized for its water conveyance role within the CVP. More comprehensive salinity control in the form of a peripheral canal has been widely debated, but never constructed. As a result, the Initial Facilities and Suisun Marsh Salinity Control Gate remain the major salinity control features of the CVP and SWP. These structures have not yet reached 50 years of age. Salinity control planning within the marsh has undergone serious revision, altering the base premise of the project with Decision 1641 in 1999. The initial facilities and salinity control gate were built under the premise that improving water quality would decrease soil salinity in the marsh. Subsequent study has proven that management practices have a greater impact upon soil salinity, and brackish marshes benefit from a saline gradient. As a result, the emphasis on water quality has declined in favor of overall habitat improvement. This is in addition to increased delta flows to support fisheries. This shift in the rationale behind the salinity control features in the marsh complicates attempts to evaluate their historical significance, as the original project for which they were constructed has been largely abandoned. Currently, the features do not meet the exacting requirements of exceptional significance criteria consideration G. Additional time is needed to assess the historical role of the Initial Facilities and Suisun Marsh Salinity Control Gate in addressing the complexities of salinity control within Suisun Marsh and the CVP and SWP. Their future significance will depend upon the future development, direction, and success of salinity control within the marsh.

The Suisun Marsh initial facilities and Suisun Marsh Salinity Control Gate are the result of the efforts of numerous individuals and are not associated with any single individual (NRHP Criterion B/ CRHR Criterion 2). The Division of Engineers within the DWR designed the initial facilities and salinity control gate to fulfill needs identified through DWR, DFG, SRCD, USF&G, and USBR studies and to meet the requirements established by the State Water Resources Board. DWR operates and maintains the Initial Facilities and Suisun Marsh Salinity Control Gate with continuing input from partnering agencies. As a result the facilities are collaborative in nature.

The Division of Engineering within the DWR devised the plans for the Initial Facilities. The plans are specific to the problem of salinity intrusion within the marsh, and use simple well understood structures. The originality of the plan comes from the placement of the structures within the marsh and the resultant water flow. Research into the development of the Initial Facilities does not indicate that placement and engineering of the facilities illustrate significant new hydrologic engineering concepts, but rather rely upon known models applied to the marsh (NRHP Criterion C/ CRHR Criterion 3). As a project completed by the Division of Engineering within the DWR multiple individuals contributed to the design of the facilities, and they do not qualify as the work of a master. Similarly, multiple companies contributed to the construction of the facilities.

DWR also designed the Suisun Marsh Salinity Control Gate. The design of the gate applied known technologies such as Tainter gates and flashboards to meet the specific needs of the project and are not important examples of this type of construction (NRHP Criterion C/ CRHR Criterion 3). The boat lock system was also chosen for ease of operation and

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*Recorded by Cheryl Brookshear *Date February 2013

*Resource Name or # (Assigned by recorder) Initial Facilities

Continuation Update

maintenance. Overall the gate is a simple and modest application of existing techniques and materials. Float in construction was still developing during this period, but the salinity gate does not illustrate significant developments within that process.

The Initial Facilities and Suisun Marsh Salinity Control Gate are well documented and the structures themselves are unlikely to provide additional information (NRHP Criterion D/ CRHR Criterion 4).

Photographs (continued):

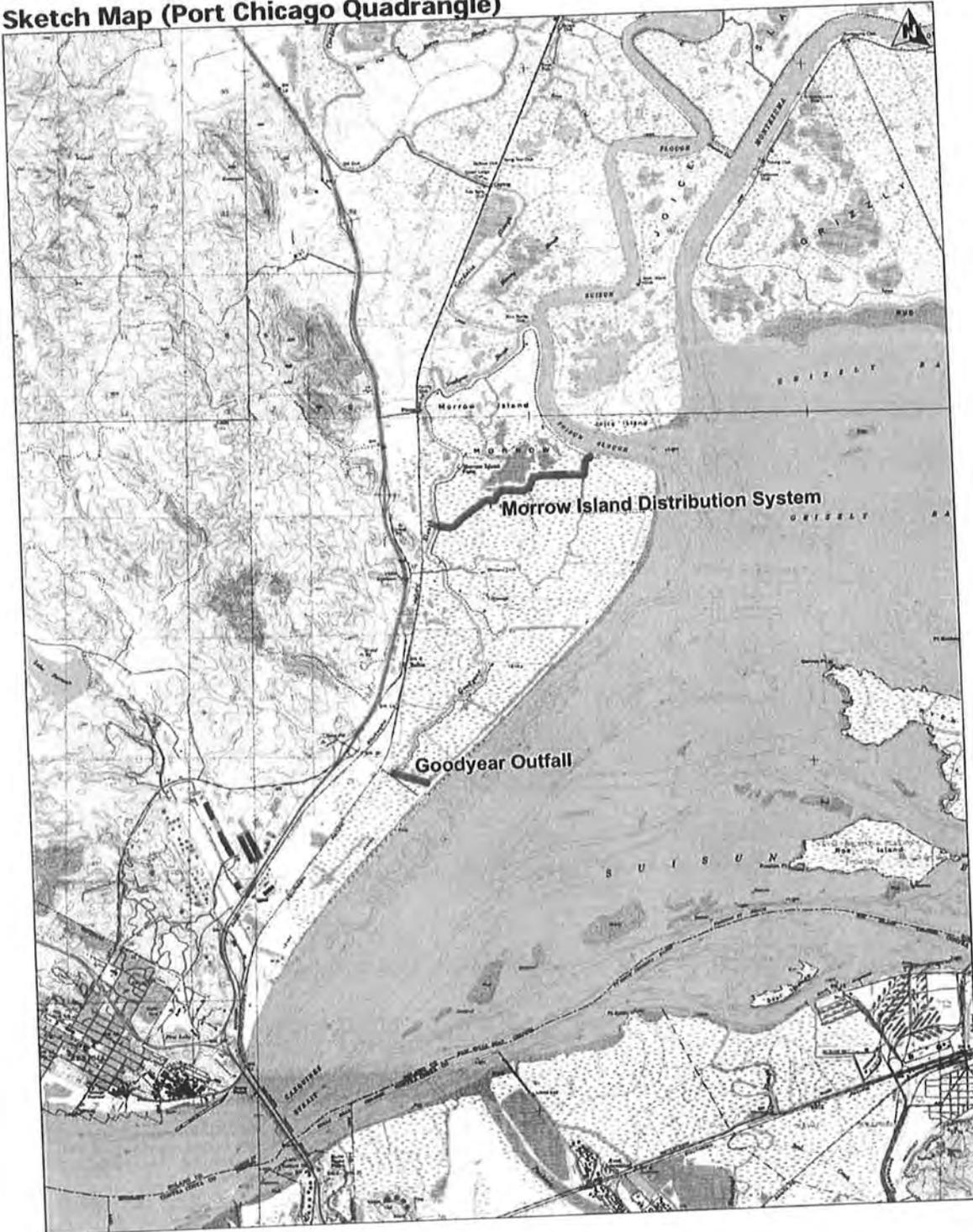


Photograph 2: Morrow Island Distribution System, camera facing northwest, October 25, 2012.

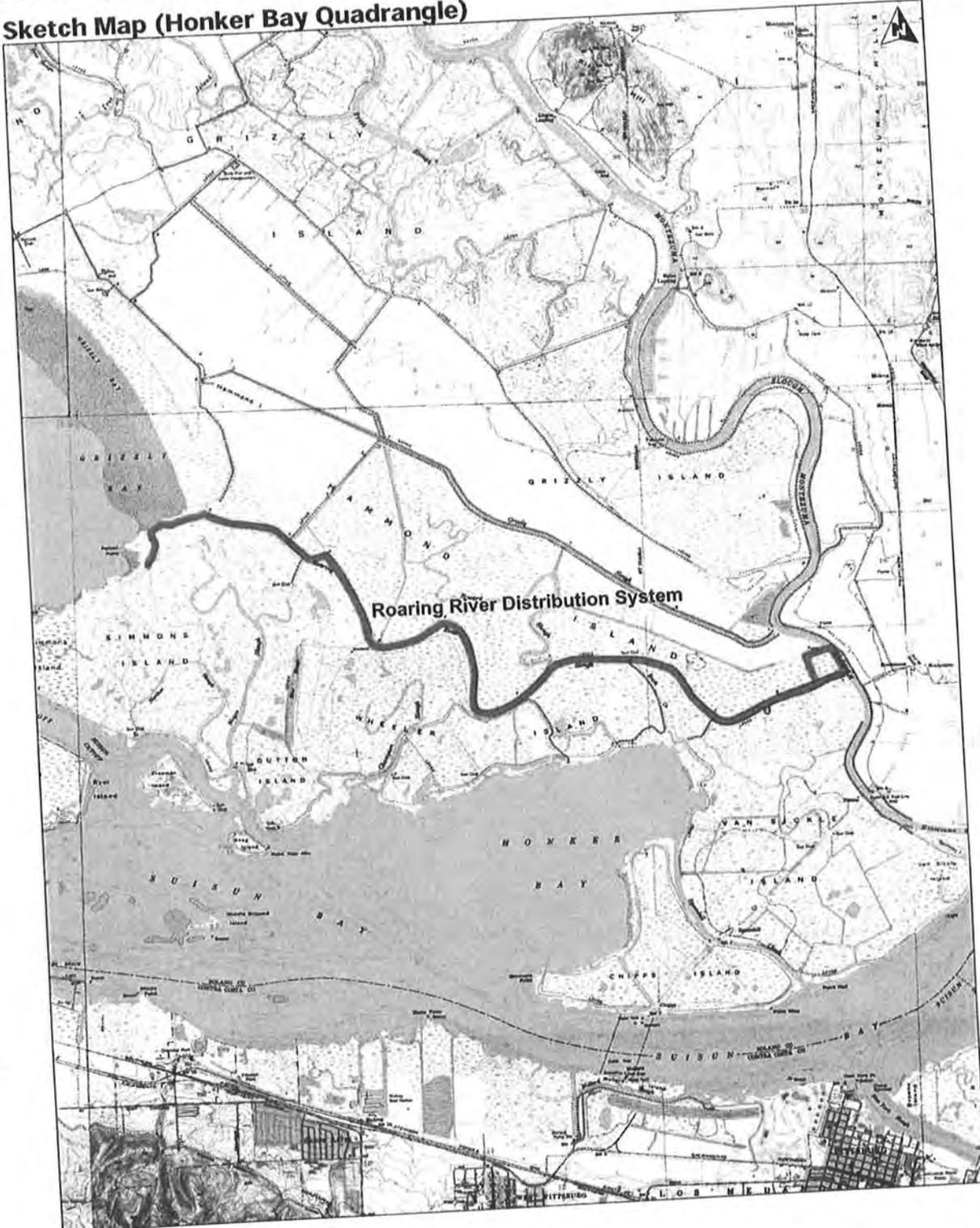


Photograph 3: Goodyear Outfall, camera facing north, February 5, 2013.

Sketch Map (Port Chicago Quadrangle)



Sketch Map (Honker Bay Quadrangle)



ARCHAEOLOGICAL SITE SURVEY RECORD

CA SOL - 22

1. Site Sol-22 2. Map ^{Nine Hill} Port Chicago 7.5' 3. County Solano
4. Twp. 3 N Range 2 W; SE $\frac{1}{4}$ of NW $\frac{1}{4}$ of Sec. 20
5. Location 300 ft. N of barn on farm 1/4 mi. SW on highway 21 from Bahia
(Benecia Junction; Goodyear Station) EST. VTM:110/
6. On contour elevation 100
7. Previous designation(s) for site _____
8. Owner(s) Tony Azevedo 9. Address _____
10. Previous owner(s), date(s) _____
11. Present tenant Tony Azevedo
12. Attitude toward excavation _____
13. Description of site Bedrock mortars in Sandstone estimated to be about 40
14. Area 15 x 50 15. Depth _____ 16. Height _____
17. Vegetation grass 18. Nearest water 400 ft. SW
19. Soil of site Sandstone 20. Surrounding soil type sand
21. Previous excavation none
22. Cultivation none 23. Erosion severe
24. Buildings, roads, etc. Barn to SE 300 ft. SE road 50 to SW
25. Possibility of destruction none
26. House pits _____
27. Other features Petroglyphs ? On slope to N.
28. Burials _____
29. Artifacts _____
30. Remarks _____
31. Published references _____
32. Accession No. _____ 33. Sketch map _____
34. Date Dec. 24, 1951 35. Recorded by The Brothers 36. Photos _____
Shkurkin

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary # P-48-000987
HRI # _____
Trinomial _____
NRHP Status Code 6Z

Other Listings _____
Review Code _____ Reviewer _____ Date _____

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*Resource Name or # (Assigned by recorder) Suisun Marsh Duck Clubs

P1. Other Identifier:

*P2. Location: Not for Publication Unrestricted
and (P2b and P2c or P2d. Attach a Location Map as necessary.)

*a. County Solano

*b. USGS 7.5' Quad Honker Bay, Calif Date 1953, Photorevised 1980 T3N; R 1E; 1/4 of Sec _____; M.D., B.M.

c. Address _____ City Suisun Zip _____

d. UTM: (give more than one for large and/or linear resources) Zone _____; _____ mE/ _____ mN

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

Duck Clubs are scattered throughout the marsh. Club properties are noted on the attached sketch map.

*P3a. Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

General Description

Currently Suisun Marsh contains 153 privately owned duck hunting clubs in addition to the state maintained hunting areas. Duck clubs contain levees, water control structures, ponds and sloughs. Duck clubs often contain a variety of buildings including residential type buildings, storage buildings, boat houses, and docks and piers. Because of the large number of duck clubs and their nature as private property without public access routes, survey of this resource is generalized. Description of the duck clubs is further hampered by the diverse periods represented. Duck hunting in the form of clubs has been popular within the marsh since the late nineteenth century and now represents the major activity within the marsh. Approximately 30 percent of the clubs contain one or more buildings constructed before 1948; approximately 10 percent between 1948 and 1969; 40 percent were built after 1968; 30 percent of the club parcels remain vacant. (See Continuation Sheet.)

*P3b. Resource Attributes: (List attributes and codes) HP39 – Other

*P4. Resources Present: Building Structure Object Site District Element of District Other (Isolates, etc.)

P5a. Photo or Drawing (Photo required for buildings, structures, and objects.)



*P5b. Description of Photo: Photograph 1: Cluster of unidentified club houses on Van Sickle Island (934), clusters serve clubs with land unsuitable for buildings, camera facing southeast, Oct. 25, 2012.

*P6. Date Constructed/Age and Sources:
 Historic Prehistoric Both
Please see attached map for general period of construction based upon aerial photograph and USGS mapping.

*P7. Owner and Address:
Suisun Marsh contains approximately 153 duck clubs each with separate ownership. Suisun Resource Conservation District maintains the most comprehensive list of active clubs.

*P8. Recorded by: (Name, affiliation, address)
Cheryl Brookshear
JRP Historical Consulting, LLC 2850
Spafford Street
Davis, CA 95618

*P9. Date Recorded: October 2012, February and April 2013.

*P10. Survey Type: (Describe) General

*P11. Report Citation: (Cite survey report and other sources, or enter "none.") JRP Historical Consulting LLC, Suisun Marsh Cultural Resources Contextual Report, 2013.

*Attachments: None Location Map Sketch Map Continuation Sheet Building, Structure, and Object Record Archaeological Record
 District Record Linear Feature Record Milling Station Record Rock Art Record Artifact Record Photograph Record
 Other (list) _____

DPR 523A (1/95)

*Required Information
S-043268

BUILDING, STRUCTURE, AND OBJECT RECORD

Page 2 of 31

*NRHP Status Code 6Z

*Resource Name or # (Assigned by recorder) Suisun Marsh Duck Clubs

B1. Historic Name:

B2. Common Name:

B3. Original Use: Duck Club B4. Present Use: Duck Club

*B5. Architectural Style: Utilitarian

*B6. Construction History: (Construction date, alteration, and date of alterations) _____

*B7. Moved? No Yes Unknown Date: _____ Original Location: _____

*B8. Related Features: _____

B9. Architect: Unknown b. Builder: Unknown

*B10. Significance: Theme n/a Area n/a
Period of Significance n/a Property Type n/a Applicable Criteria n/a

(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

The duck clubs within Suisun Marsh over 50 years old do not appear to meet the criteria for listing in the National Register of Historic Places (NRHP) or the California Register of Historical Resources (CRHR). These properties has been evaluated in accordance with Section 15064.5(a)(2)-(3) of the CEQA Guidelines, using the criteria outlined in Section 5024.1 of the California Public Resources Code, and do not appear to be a historical resource for the purposes of CEQA

Historic Context

Duck hunting has become the major use of Suisun Marsh. Prior to transfer of marsh lands to private ownership in the mid-1800s, hunters prowled the marsh. The most prolific were market hunters using large gauge shotguns capable of bringing down multiple ducks at a time. The hunters then took their kills to San Francisco for sale. These market hunters staked out territory in the marsh and their favorite hunting ponds were often named after them. Once the land was transferred to private ownership, hunters were obliged to lease hunting rights from owners. The influence of private ownership of the marsh began to shift the hunting culture. Market hunters like Jim Payne began to act as guides for recreational hunters from San Francisco. Preferred ponds for early hunters were located between Suisun and Cordelia Sloughs in the western portion of the marsh, as the waterways of the eastern marsh was already being affected by increased sedimentation from hydraulic mining.¹ (See Continuation Sheet)

B11. Additional Resource Attributes: (List attributes and codes)

*B12. References: Arnold, Anthony. *Suisun Marsh History: Hunting and Saving a Wetland*. Marina, CA : Monterey Pacific Publishing Co., 1997; Division of Water Resources. *Bulletin No. 28: Economic Aspects of a Salt Water Barrier Below Confluence of Sacramento and San Joaquin Rivers*. Sacramento: California Department of Public Works, 1930; Garone, Philip Frank. "The Fall and Rise of the Wetlands of California's Great Central Valley: A Historical and Ecological Study of an Endangered Resource of the Pacific Flyway." PhD Dissertation University of California, Davis, 2006, (See Footnotes.)

B13. Remarks:

*B14. Evaluator: Cheryl Brookshear

*Date of Evaluation: February 2013

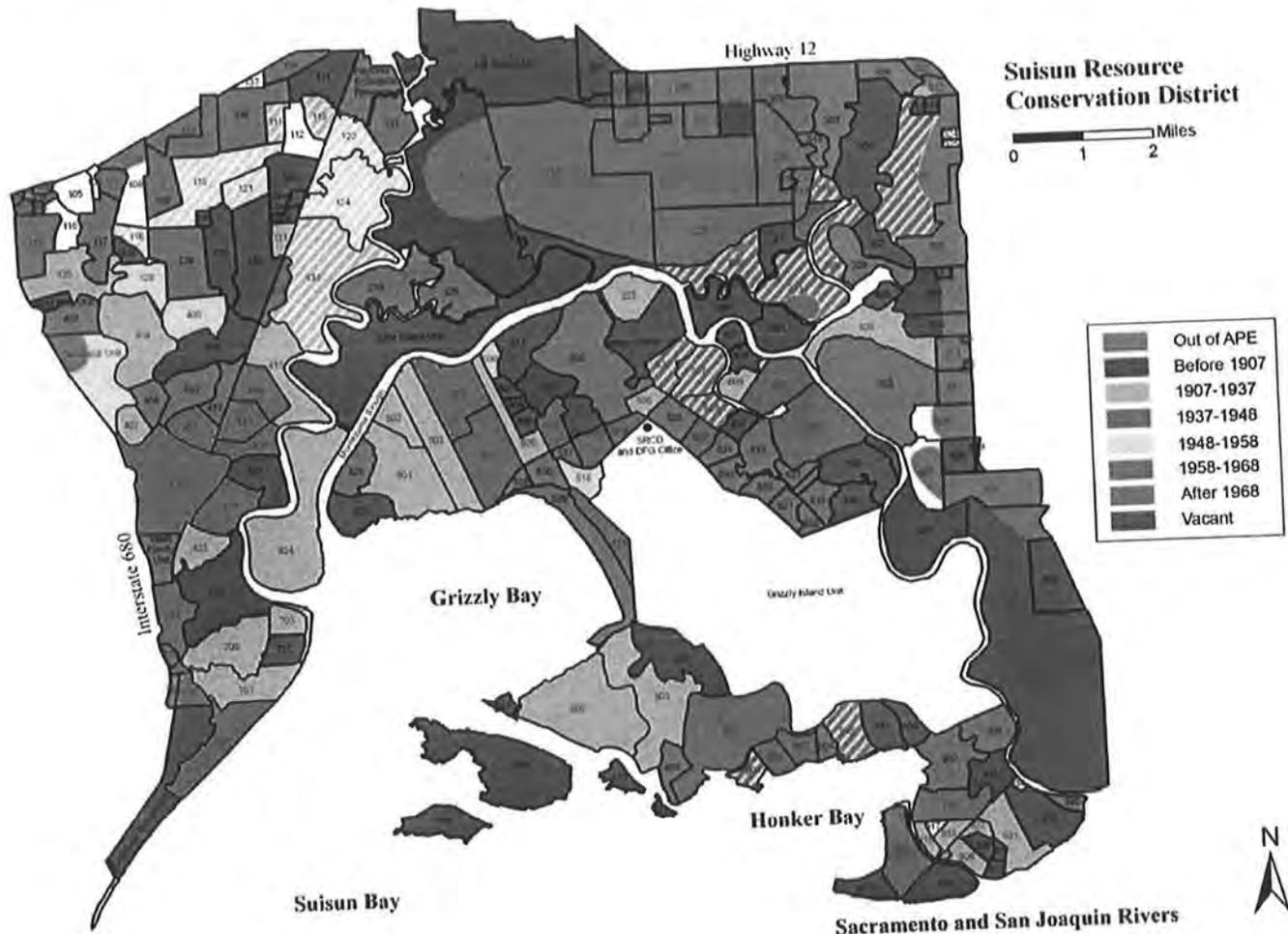
(This space reserved for official comments.)

(Sketch Map with north arrow required.)

See continuation sheet.

¹ Arnold, *Suisun Marsh History: Hunting and Saving a Wetland*, 19-20.
DPR 523B (1/95)

P6. Date Constructed:



P3a. Description (continued):

The existing buildings' locations provide little insight to the geographic development of duck clubs, and clubs from a variety of periods are scattered throughout the marsh. The oldest clubs originated along the Central Pacific Tracts between Suisun and Cordelia Sloughs. Historic-era clubs remain in this area including Teal Club, Ibis Club, Shell Drake Duck Club, Roos Duck Club, and Tule Bell. Subdivision of club lands, however, has interspersed new clubs with these early clubs and reduced over-all club acreage. Clubs replaced early temporary quarters with permanent club structures as needed. Changing condition of structures and the harsh environment has resulted in construction of replacement buildings and significant additions to duck club facilities.

Duck hunting buildings are built for limited seasonal use, and clubs seem to have paid little attention to the architectural effect of these buildings. Constructed over more than a century, duck clubs represent a wide range of simple vernacular construction. Those from the early twentieth century utilize simple gable forms constructed in wood. These examples often resemble typical farmhouse and rural construction of the period with minimal or no ornament beyond the inclusion of

porches or open eaves. Later examples often use prefabricated construction in the marsh, including mobile homes, which provide housing in multiple duck clubs. The Suisun Marsh Preservation Act has limited duck club construction in the marsh since its passage, although some clubs have managed major construction by complying with the act's requirements for new work. Substantial permanent construction is limited and tends to modest interpretations of popular residential forms.

Fieldwork permitted limited access to clubs, real estate listings and aerial photographs provided additional photographs of more remote clubs. The available data is summarized in the table below.

Property Number	Club Name	Date Earliest Building Constructed	Building Types	Visible Alterations
110	SM Hunting Preserve	1949-1968	Long gable, and manufactured homes	Addition, and relocation of mobile homes to parcel
121	DBI/ Forest Pond	1949-1968	Barn and corral	
402	Golden Gate	1987-1993	Mobile home	
406	Teal	1882	Barge, long gable building	Additions in the 1920s, partial window replacement, partial siding replacement
407	Ibis	1907-1937	Long gable roof	No clear view
415	Arnold Ranch	1937	Two small gable bldgs	Connected buildings in 1950s
416	Tule Belle	1937-1948	Pyramidal folk, two gable fronts with full porches	New boat/storage building
501	The Island Club	1907-1937	Manufactured building in to parts	Constructed in two phases
502	Grizzly Duck Club	1907-1937	Steep gable roof with multiple additions	Additions and replacement windows
503	Montezuma Gun Club	1907-1937	Multiple mobile homes	Mobile homes have replaced earlier buildings
504	Gum Tree Farms	1937-1948	Two story club house and one story barracks	Replacement windows
505	DUXRUS	1907-1937	Pyramidal, mobile home	Entry addition, replacement windows, converted outbuilding
506-509	Four Winds Duck Club, Grizz/Fizz Club, Little West Wind Duck, Garben Ranch	1948-1958	Manufactured and accretive	Additions on accretive plan
510	The Honkers Club	Post 1968	Manufactured buildings	
513	Grizzly King	1965-1969	Wood gable bldgs	Garage built 2003
516	Bent Barrel Duck	1948-1958	Side gable	Multiple siding

Property Number	Club Name	Date Earliest Building Constructed	Building Types	Visible Alterations
	Club			types indicating additions, replacement windows
517	Wild Turkey	Post - 1968	Cross gable	
520	Grizzly Ranch	1990s	Cantilevered building and two gable buildings	May incorporate early building from 1910s but was substantially rebuilt in 1990s
525	Balboa Farms	1937-1953	Mobile homes	
528	Grizzly Fair View Farms	After 1968	Mobile home and gable building	
530	Bul-Rush Farms	1953-1968	Manufactured	
531	Gang Bang Duck Club	Post-1968	Plywood flat roofed building	
532	Windmill Club	Post- 1968	Manufactured	
536	Marsh Club	1907-1937	Small gable buildings collapsing, mobile homes	
538	Merganser Farms	Post-1968	Contemporary	Has second story addition
611	The Sleeping Pintail		Manufactured	
612		Post 1968	Cluster of mobile homes	
619	Schafer Farms	Post 1968	Small accretive building	
623	Frost Slough	Post-1968	Two part gable building	
632	Sheriff Pond	1965-1969	Small contemporary single room buildings	
633	Boles Pond	c. 1987	Mobile home, end gable,	
701	Goodyear	1953-1968	Gable	Replacement windows
702	Morrow Island Land Co.	Pre-1907	2story hip roof building	Additions
706	Mallard Haven	1937-1948	Mobile home, prefabricated,	
715	Fleetside	1950s	Ranch	
908	Montezuma Ranch	1974-1981	Accretive	
912	Honker Bay Farms	1953-1868	Contemporary	

B10. Significance (continued):

Construction of the Central Pacific Railroad through the marsh beginning in 1878 and continuing through 1879 opened this area to more San Francisco Bay area hunters, most of who hunted recreationally. Two stops were created within the marsh at Cygnus and Teal. Improved access led San Francisco hunters, at first in cooperation with the early market hunters, and then on their own, to pool together to secure hunting leases along the railroad. These groups of San Francisco businessmen collaborated to form the first duck hunting clubs in California. The first private duck clubs were formed in eastern states in the 1810s in response to increasing urbanization and shrinking public land open for hunting. The practice spread across the east and plains. Duck clubs, unique to North America, controlled hunting lands termed "preserves" and allowed limited access only to members.² The earliest California club was the Hardland Club formed in 1879, which evolved into the Ibis club. The Cordelia Club formed in 1880 (and was previously thought to be the oldest remaining club until the evolution from the Hardland Club into the Ibis Club was understood). Several former Hardland Club members formed the String of Ponds Club to the north in 1881.³

The Teal Club grew from a group of amateur San Francisco hunters led by market hunter Jim Payne prior to construction of the railroad. Anticipating the railroad, Payne moored his "ark" at the proposed Teal stop. In 1882 Payne was convinced to turn his hunting lease over to his San Francisco clients. They took over the lease, purchased his equipment and improved the facilities adding more "arks" or barges for living quarters, more boats and other comforts. Portions of the 1882 arks are still contained within the current clubhouse. Payne was retained as manager with a \$100 monthly salary. The Tule Belle Club moved to Suisun Marsh in 1885 from their former hunting grounds near San Mateo and Sherman Island. At first leasing their hunting grounds from the owners, they were able to purchase 400 acres in 1886, which they expanded to 1,000 acres by the end of the century. The Tule Belle club is the first hunting club to own its hunting grounds rather than leasing hunting rights.⁴



Illustration 1. Cordelia Club 1883, the quarters on the left is built on a ship deck, the mast and bow can be seen projecting from the 'clubhouse.' (OAC)

² Garone, "The Fall and Rise of the Wetlands of California's Great Central Valley," 219; Mike Resetch, "Illinois Valley Duck Clubs," *Outdoor Illinois* October 2007, 2.; Ralph E. Eshelman and Patricia A. Russell, "Waterfowl Hunting Camps and Related Properties within Assateague Island National Seashore, Maryland and Virginia," Eshelman & Associates, Assateague Island National Seashore, National Park Service, 2004, 9.

³ Arnold, *Suisun Marsh History: Hunting and Saving a Wetland*, 23, 25-27.

⁴ Arnold, *Suisun Marsh History: Hunting and Saving a Wetland*, 25-29.

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*Resource Name or # (Assigned by recorder) Suisun Duck Clubs

Continuation Update

*Recorded by Cheryl Brookshear *Date February 2013

These "duck clubs" were not static organizations. In these early years, members moved between clubs; some might break off and form new associations, later returning to previous organizations. The clubs themselves moved. When clubs leased hunting rights, they would relocate as better leases became available. Consequently, clubs established temporary quarters often in the form of a barge or ark with quarters on the deck (Illustration 1). Racing yawls owned by hunters were also brought into the marsh and temporary quarters built on the decks.⁵

Hunting has a long tradition in the United States, and the increasing use of formalized leases for clubs closed many areas easily accessible from California's major cities to many hunters. Casual agreements between landowners and hunters still prevail in some western states where landowners allow specific hunters to hunt on their property in what is termed a "trespass hunt." By the 1890s the amount of public land available for hunting in California was shrinking fast, and hunters of more moderate means objected to the formal, long term leases of the wealthy clubs. Sentiment of local hunters and the Sportsmen's Association of California had been turning against the wealthy club leases. In 1893 a Sportsmen's Convention in San Francisco stated, "Every citizen of this State contributes directly or indirectly to the cost of protecting the game and fish, which are the common property of all, and every citizen has an equal right to that game wherever it may happen to be. We regard the attempt to monopolize the privileges of the field by a few wealthy shooting and fishing clubs and land-holders as subversive of our rights."⁶

It was becoming clear that the rules and traditions for hunting needed codification in order to maintain the sport. In addition to the decline in available hunting grounds, unregulated hunting was depleting once-flourishing waterfowl populations.⁷ The passage of the Emeric Bill in 1893 sought to address both concerns. It increased enforcement of the hunting season, and limited the types of guns used for waterfowl; at the same time it opened additional hunting grounds. Passage of the Emeric Bill in March of 1893 and souring of relations between the Cordelia and Teal clubs set off a battle over Suisun Marsh hunting that lasted from 1893-1896.

The Emeric Bill established comprehensive game laws, and its section describing what land was to be open to public hunting had a powerful impact upon Suisun Marsh. According to the law, all land which was not posted "enclosed cultivated grounds" was open to public hunting. None of the clubs had fenced their leases, nor had cultivation been actively pursued in the prime hunting grounds of the northwestern marsh. The Cordelia Club and Teal Club had fallen out over renewal of hunting leases. Cordelia Club edged out Teal Club in renewal of Teal Club's long held lease of a significant portion of the Chamberlain estate. In retaliation, Teal Club attempted to block Cordelia Club's access to the marsh via the Teal railroad stop, and initially supported local hunters and others wishing to encroach upon Cordelia Club's newly won territory through use of the Emeric Bill. So when the season opened with a new early date of September 1, local hunters and city residents flocked to the marsh. Hunters disregarded the Cordelia Club lease and the former Teal Club offered accommodations to non-club members wishing to hunt in the marsh on the Cordelia Club leased lands. Shots were fired on both sides to deter hunters or ruin their hunting, and hostilities grew between hunters operating under the Emeric Bill and the clubs seeking to protect their leased hunting grounds. The influx of hunters across the marsh and resultant poor hunting encouraged Cordelia Club and Teal Club to come to terms to repel outside hunters from the clubs' traditional territory in subsequent years.⁸

A new group of city dwellers, supporting opening hunting territory, formed the Mallard Club in the winter of 1893 to take advantage of the newly open territory. While they held their own lease on land to the north, between Cordelia and Suisun, they regularly trespassed upon other clubs' leases. In 1894 they set up their own hunting headquarters 200 yards from the Teal clubhouse, thus infuriating Teal Club members. The Ibis, Cordelia, and Teal Clubs fought the interlopers in the courts, securing injunctions upon the Mallard Club and local hunters, and fenced their territory to conform with the Emeric Bill. However, public sentiment was against the clubs, and they were vilified as "aristocratic," "despotic," and "autocratic" in local papers. In 1895 the clubs tried more direct methods of preventing non-club hunting on their leases, and built barriers

⁵ Arnold, *Suisun Marsh History: Hunting and Saving a Wetland*, 27.

⁶ *Sacramento Daily Record-Union*, "Changes in Game Law," 1893 February 9; 4 (col1); Arnold, *Suisun Marsh History: Hunting and Saving a Wetland*, 31.

⁷ Arnold, *Suisun Marsh History: Hunting and Saving a Wetland*, 31.

⁸ Arnold, *Suisun Marsh History: Hunting and Saving a Wetland*, 37-39.

with guard houses across several sloughs leading to their hunting leases. The Ibis Club went as far as to incorporate in Colorado enabling federal involvement. At the same time, local hunters and members of the Mallard Club felt even more entitled to hunt this territory, as an amendment to the game laws in early 1895 exempted salt marshes from protection through fencing or cultivation. The situation turned ugly with each group attempting to spoil the other's hunting, suspected cases of arson, and physical threats. This, along with accounts of immoral activity and racketeering at the clubhouse, began to turn public opinion away from the Mallard Club. While local courts settled a trespassing case in favor of local hunters and the Mallard Club in 1895, the California Supreme Court overturned the suit 1896. The Supreme Court even went as far as to throw out the salt water marsh exemption in the Emric Bill, allowing the clubs to regain control over their leased hunting grounds. Following the decision, attempts to hunt the Suisun Marsh lands by non-club members began to wane. Outside support for non-club hunting and trespassing on others leases also dissipated as unscrupulous and unaffiliated hunters targeted cattle on Joice Island.⁹

The conflicts between duck clubs with hunting leases, local hunters and clubs without leases or land finally resolved, in formation of new clubs, to accommodate more hunters in the marsh. At the same time, hunters formed clubs in the Sacramento and San Joaquin Valleys. Local hunters formed the Suisun Gun Club in 1897, although like the clubs of San Francisco businessmen, it was composed of successful local businessmen. Additional clubs formed prior to the end of the century were the Pringle Gun Club, Potrero Club, Olympic Gun Club (later Field and Tule Club), Canvasback Club (later Family Club) and the San Francisco Club. These new clubs spread across the marsh, including land around Denverton and as far south as Goodyear Slough.¹⁰ Continued agricultural use of Grizzly Island, however, limited duck club formation in that area.

The other boon to club development was a significant change in marsh ownership. In 1905, a group of unlikely associates purchased the 5,332 acre Chamberlain tract. This tract was the heart of western Suisun Marsh hunting leases. Local newspaper-man Edward Dinkelspiel, San Francisco candy maker Frank Maskey, and gambler Joseph Harvey were the main investors in the property. The syndicate slowly sold off their holdings in smaller parcels to existing organizations and those forming hunting clubs. Louis Titus, a San Francisco businessman and member of the Teal Club, followed the syndicate's example and purchased other valuable tracts within the marsh; these were later sold for hunting purposes. As the clubs began owning property, property ownership changed among members of the clubs. Holdings passed between generations of hunters, sometimes remaining within families, or going to entirely new groups of hunters as members aged or their interests changed.¹¹

As hunters purchased marshland for clubs in the early twentieth century, they bestowed economic value upon the natural marsh habitat. As noted above, throughout California the first decades of the twentieth century people saw reclamation of vast tracts of wetland as valuable for agricultural purposes. A booming market for agricultural products in Europe, improved techniques and technology for dredging and constructing levees, and statewide plan for flood control drove reclamation of wetlands. Hunters were able to preserve and protect portions of wetlands through establishment of private clubs. This alternate economic value insured at least some wetlands would be retained. In the Suisun Marsh the difficulties posed by brackish water tilted the economic advantage to private club ownership. By 1930 when the DWR studied the marsh, it recognized duck hunting as an important economic factor in the marsh. Prevailing economics, available land, improved transportation, and general acceptance of the club hunting model resulted in a golden age of club development and construction in the marsh from 1896-1935. Expansion of duck clubs in this period helped retard the expansion of reclamation-based agriculture in Suisun Marsh. By 1930, hunters and sportsmen used 60% of the leveed acreage for duck clubs and operated as waterfowl habitat.¹²

⁹ Arnold, *Suisun Marsh History: Hunting and Saving a Wetland*, 43-52.

¹⁰ Arnold, *Suisun Marsh History: Hunting and Saving a Wetland*, 54-55.

¹¹ Arnold, *Suisun Marsh History: Hunting and Saving a Wetland*, 60-63, 70-71, 73.

¹² DWR, *Bulletin No. 28: Economic Aspects of a Salt Water Barrier Below Confluence of Sacramento and San Joaquin Rivers*, 99; Arnold, *Suisun Marsh History: Hunting and Saving a Wetland*, 72, 74, 91; Garrone, "The Fall and Rise of the Wetlands of California's Great Central Valley," 215, 219-221.

Club ownership of land also led to alterations in club quarters. With the advent of club-owned property, clubs began constructing permanent quarters. Cordelia Club built its permanent clubhouse in 1908. The Roos Club established an elaborate clubhouse with stained glass windows and gardens.¹³ Tule Belle was another club which constructed an elaborate clubhouse.¹⁴ Grizzly Island was largely out of reach because of transportation and agricultural usage at the height of duck club formation between 1900 and 1935. However, as the automobile grew in popularity, hunting grounds on the eastern edge of the marsh became more accessible. The first eastern-side gun clubs established themselves on edges of the marsh used for cattle pasture. New clubs included the previously-mentioned Potrero Gun Club, King Shooting Club, Redhead Club, Stewart Club (now Duck & R Club), and Pickleweed Ponds. Most of these were established in the area known as the Stewart Ponds, located between Nurse's Slough and Denverton Slough, north of Bradmoor Island. Black Jack Club, Montezuma Club, Gadwall Club, and Youemace Club were all established north of Collinsville within the first decade of the twentieth century.¹⁵

With the peripheral marsh land full of duck clubs, the islands were the last areas in which they were established. Howard Vennick, an experimental asparagus farmer on Grizzly Island, decided to lease his land to hunters in the agricultural fallow season in 1909. His tract west of Tree Slough on the island became the first offered for hunting. As salinity levels continued to be a problem through the twentieth century, agriculturalists began to pull out, providing more territory for gun clubs.

Two events in the 1910s provided the largest changes to hunting in the southeastern islands of the marsh. First in 1910, John W. Dutton sold 5,500 acres constituting Wheeler, Hammond, and Rich Islands. While this land was intended for agricultural development, gun clubs quickly established themselves. Second, construction of the Oakland Antioch & Eastern Railroad (OA&E) (forerunner of Sacramento Northern) across Chipps and Van Sickle Islands, provided access to the western portion of the marsh to groups of moneyed hunters from San Francisco, and thus aided club growth in the eastern marsh. As discussed earlier, the railroad suffered difficulties with its marshland route sinking into the muck in the early years, but was soon able to stabilize its track. As hunting clubs established themselves in the southeastern marsh lands, the railroad catered to their needs. In addition to offering special service and stops for hunters before and after shooting days, the railroad also provided a steam launch. The launch connected duck clubs located on the more northerly islands with the railroad stops on Chipps and Van Sickle Islands. During the 1920s the railroad actively courted the hunters as clients.¹⁶

While a significant portion of the marsh passed into the hands of private hunting clubs in the early decades of the twentieth century, the state purchased a portion of Joice Island in 1931 to form a game refuge closed to hunting. Hunting in the last half of the nineteenth century had taken a toll on California wildlife. In 1870, with large game severely depleted, the state established the Board of Fish Commissioners, which was expanded in 1878 to cover game. This board became the Department of Fish and Game (DFG). The state began establishing game refuges in 1917 amid the general rise of conservationism. Waterfowl refuges followed ten years later, after the state doubled waterfowl hunting permit prices to fund such refuges. The duck population noticeably declined because of overhunting and loss of habitat by the 1920s.¹⁷

At this time clubs became an important force in the continued movement for conservation and management of the declining duck population. Club hunting, first established in Suisun Marsh, spread to other areas of the state, with additional concentrations near Sutter Butte and in the Los Banos area of the San Joaquin Valley. These clubs managed their own land for hunting or developed leases for seasonal use of grazing and farm land. In many ways these were the first waterfowl refuges. In 1930, hunters across the nation concerned with declining populations of waterfowl, formed More Game Birds in America, now known as Ducks Unlimited. The organization recognized a need for national and international cooperation in selecting and establishing refuges for breeding, resting and wintering. It also called for active management of these grounds through manipulation of water levels to support appropriate vegetation. In 1937 through Ducks Unlimited hunters began

¹³ This club burned in the 1950s and is no longer extant. Delaplane, "Hunters Flock to Solano County for Ducks."

¹⁴ Arnold, *Suisun Marsh History: Hunting and Saving a Wetland*, 70.

¹⁵ Arnold, Anthony. *Suisun Marsh History: Hunting and Saving a Wetland*, 75, 84-87.

¹⁶ Arnold, *Suisun Marsh History: Hunting and Saving a Wetland*, 89, 91-93.

¹⁷ Garone, "The Fall and Rise of the Wetlands of California's Great Central Valley," 212-213, 308-312.

funding purchase, restoration, and protection of breeding grounds in Canada. Increased scientific understanding of waterfowl migration and habitat needs, along with lobbying from interest groups like Ducks Unlimited and local clubs, supported establishment of refuges.¹⁸

The depression of the 1930s slowed growth of hunting clubs in the marsh, as both money to purchase club land, and ducks to shoot, were scarce. Growth of clubs remained slow through World War II, as resources were diverted for the war.¹⁹ Yet, planners came to understand that duck hunting provided the most economically beneficial use of the marsh. The expense of levees required for reclamation and salinity levels of the marsh water required too much capital investment for the further development of agriculture. By this time, duck hunting clubs occupied 28,000 acres of the marsh, approximately 60% of the acreage. The Joice Island Waterfowl Refuge added another 1,100 acres. Some club owned areas remained in combined usage with cattle grazing or other agricultural activity, but that activity was also in steady decline.²⁰ Operation of the CVP in 1944 practically ended further agricultural growth as the influence of saline water grew. This served to open the door for additional private hunting clubs and new reserve programs.

Private clubs encountered several transitions following World War II, and evolved into a powerful partner in the management of the marsh. First, the Sacramento Northern ceased operations, ending a public transportation in the marsh. Second, a transition in club ownership because of generational progression occurred within the late 1940s and early 1950s. During this transition owners also subdivided club hunting grounds, creating room for new clubs. Many clubs of the early era were quite comfortable and well appointed. The new clubs often utilized pre-fabricated building practices developed during World War II. Mobile homes, trailers, Quonset huts, and other simple building types went up for sleeping quarters and clubhouses. Lastly, the clubs faced increasing governmental involvement in the marsh through the management area, new water quality measures, and development planning.²¹

In response to state and federal involvement in the marsh, private duck clubs formed the Suisun Soil Conservation District in 1963. The district, renamed the Suisun Resource Conservation District (SRCD), has provided an important liaison between private clubs and numerous government agencies with interest in the marsh. With the help of the SRCD, clubs have built upon state and federal studies of duck feeding habits to develop management plans for flooding, leaching, and draining club property. These individual management plans are an important component of both wildlife management and water quality efforts maintenance within the marsh. Passage of the Suisun Marsh Protection Act in 1974 limited development within the marsh insuring duck hunting will remain the primary activity. However, development restrictions also limit further development of duck clubs within the marsh. As a result, regulations maintain the current status for the foreseeable future.²²

Evaluation

Duck clubs are a common built environment resource in Suisun Marsh, with approximately 153 currently in operation. Examples of early duck hunting clubs in the marsh that have retained integrity to their period of significance may be significant at the state level for their association with history of private recreational duck hunting in California (NRHP Criterion A or CRHR Criterion 1). Suisun Marsh clubs have a period of significance based on the establishment of private club hunting in California which occurred between 1879 and 1896.

Private club hunting in California began in the marsh in 1879, as groups of individuals leased portions of the marsh for recreational hunting. The first private duck clubs were formed in the eastern states in the 1810s in response to increasing urbanization and shrinking public land open for hunting. The practice spread across the east and plains. Duck clubs, unique to North America, controlled hunting lands termed "preserves" and limited access to members. The restriction raised the ire of other hunters, who felt wildlife was common property and restricting hunting grounds denied their rights. The issue came

¹⁸ Garrone, "The Fall and Rise of the Wetlands of California's Great Central Valley," 287-288, 293-295.

¹⁹ Arnold, *Suisun Marsh History: Hunting and Saving a Wetland*, 96-97, 99.

²⁰ DWR, *Bulletin No. 28: Economic Aspects of a Salt Water Barrier Below Confluence of Sacramento and San Joaquin Rivers*, 99.

²¹ Arnold, *Suisun Marsh History: Hunting and Saving a Wetland*, 100-103.

²² Arnold, *Suisun Marsh History: Hunting and Saving a Wetland*, 100-103.

to a head in 1893 when the state legislature passed the Emric Bill. While the bill did limit hunting through possession limits and gun types, it opened the marsh to hunting by non-club members. According to the law, all land which was not posted "enclosed cultivated grounds" was open to public hunting. None of the clubs had fenced their leases, nor had cultivation been actively pursued in the prime hunting grounds of the northwestern marsh. The subsequent battles over hunting rights between non-affiliated hunters and club members occurred within the marsh, in the courts, and in the hunting press. The issue was finally settled in the California Supreme Court, which ruled that clubs leasing land can prohibit other hunters from entering the property, and that the common ownership of wild animals does not override private ownership of property on which the animals may alight. The clarification of the situation encouraged the foundation of duck clubs throughout California.

Only a few clubs are associated with this development, those established between 1879 when club hunting was introduced to California through the Suisun Marsh Clubs to 1896 when the California Supreme Court upheld the ability of clubs throughout the state to restrict hunting access to their land, which allowed club-based hunting to become accepted practice. The owners and members of Teal, Ibis, Cordelia, and Mallard clubs in Suisun Marsh were most active in this process, although the Tule Belle Club and String of Ponds Club operated at the same time. During this period, all but the Tule Belle Club leased property. All of the clubs used temporary headquarters established on floating 'arks' or barges, boats, and other temporary facilities, so only one property survives from this period – the Teal Club. Its main club house contains the original barge and staterooms, but several additions were made to the original barge facility after 1896. A kitchen and two wings of sleeping quarters expanded the early barge into the modern club seen today. Because of these alterations, the clubhouse lacks integrity to the 1879-1896 period of significance.

Following the survival of club hunting in the courts, Suisun Marsh hunting scholar Anthony Arnold has used the term "golden age" to describe the growth of clubs from 1896 to 1935. Locally development was fueled primarily by general economic prosperity, available land, and improved transportation. This growth mirrored national growth of duck clubs. Club formation from this period established some of the earliest habitat preserves for waterfowl amid land undergoing reclamation for agricultural uses. While game on the lands was subject to intensive hunting, the clubs protected "loafing" grounds where migrating birds could rest and stay for the winter and enhanced their food supply, a practice that continues today. This privatized protection bridged the decades between pre-reclamation or natural wetlands and society's eventual recognition of the need for conservation and preservation of wetland habitat. While California established small preserves in the late 1920s, hunting clubs provided the greatest preservation of wetlands until the federal and state government established larger waterfowl areas in 1950. Approximately 24 extant clubs within the Suisun Marsh were constructed in this period, but none appear to have significant associations with this context.

Duck clubs began as the private hunting grounds to the wealthy and elite of San Francisco and Oakland society. Prominent individuals such as Frank Maskey, Joseph Harvey, and Louis Titus participated in the development of duck clubs. By their nature, however, clubs are a collaborative effort and are not associated with a single individual. In addition, duck hunting was a recreational activity for these individuals and the clubs do not represent their contributions to history (NRHP Criterion B or CRHR Criterion 2).

Duck hunting clubhouses, boathouses, storage sheds and other buildings are built for limited seasonal use and are vernacular and utilitarian in nature. These buildings do not embody characteristics of type, period or method of construction (NRHP Criterion C/ CRHR Criterion 3). Early twentieth century buildings are simple gable roofed structures with little ornament or decorative architectural elements. Mid twentieth century buildings follow this tradition and include common pre-fabricated construction. As might be expected, these buildings are modest in nature.

The buildings and structures of the duck clubs are not likely to yield historical information about historic construction materials and technologies not available through other sources (NRHP Criterion D/ CRHR Criterion 4). Techniques and technology used to construct these buildings is documented in other sources. The sensitivity for potential historic archaeological sites associated with the clubs is addressed in the accompanying archaeological study.

Most duck hunting clubs have regularly maintained and updated their facilities and thus few retain integrity to their period of construction or either period of significance discussed above. The marsh environment deteriorates materials rapidly. Clubs

Page 12 of 31

*Resource Name or # (Assigned by recorder) Suisun Duck Clubs

Continuation Update

*Recorded by Cheryl Brookshear *Date February 2013

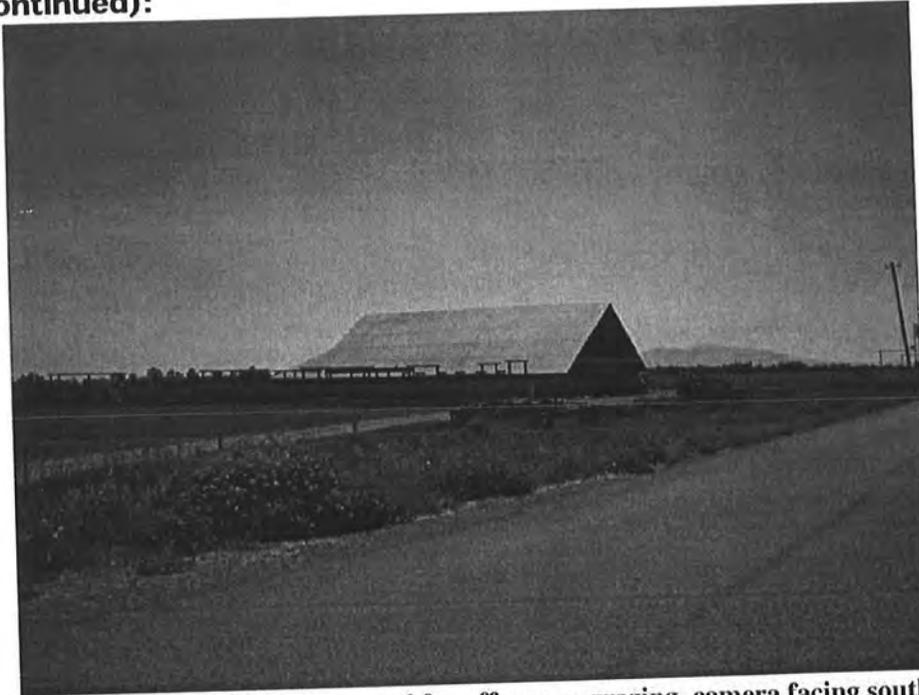
have frequently had to replace windows and wood siding with more modern materials. Wooden foundation piers are also often subject to replacement owing to deterioration. Changes in common window sizes often result in alterations to design during replacement. Clubs are also prone to increasing membership and corresponding changes to clubhouse size to provide for new members. Additions are accretive and affect the design, materials and workmanship of the original clubhouse. Consequently, integrity of materials, design, and workmanship is often poor; most retain integrity of location, feeling, setting, and association.

Photographs (continued):



Photograph 2. SM Hunting Preserve main clubhouse, modern building is surrounded by mobile homes and RVs., camera facing northwest, May 28, 2013.

Photographs (continued):



Photograph 3. DBI/ Forest Pond (121), barn used for off season grazing, camera facing southeast, April 2013.

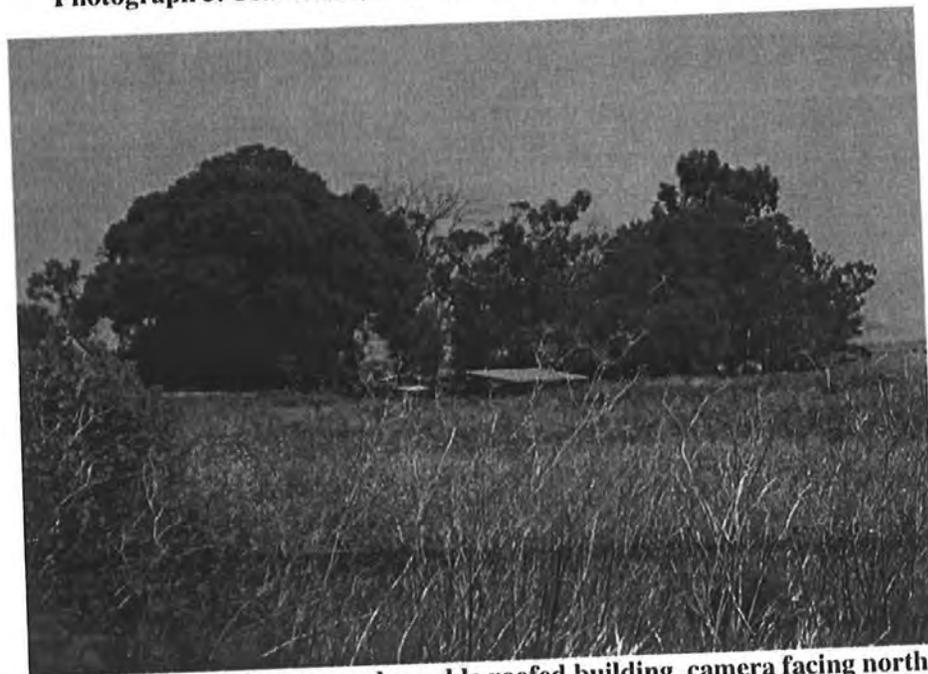


Photograph 4. Golden Gate Club (402) with mobile home, camera facing east, October 2012.

Photographs (continued):

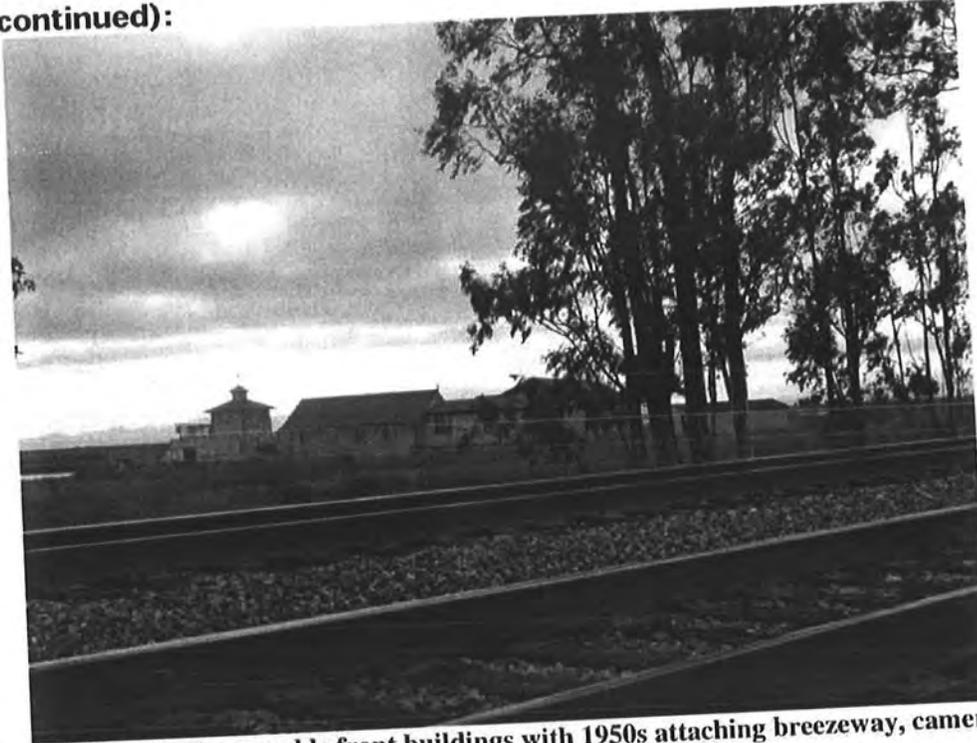


Photograph 5. Teal Club (406) camera facing north, February 2013.

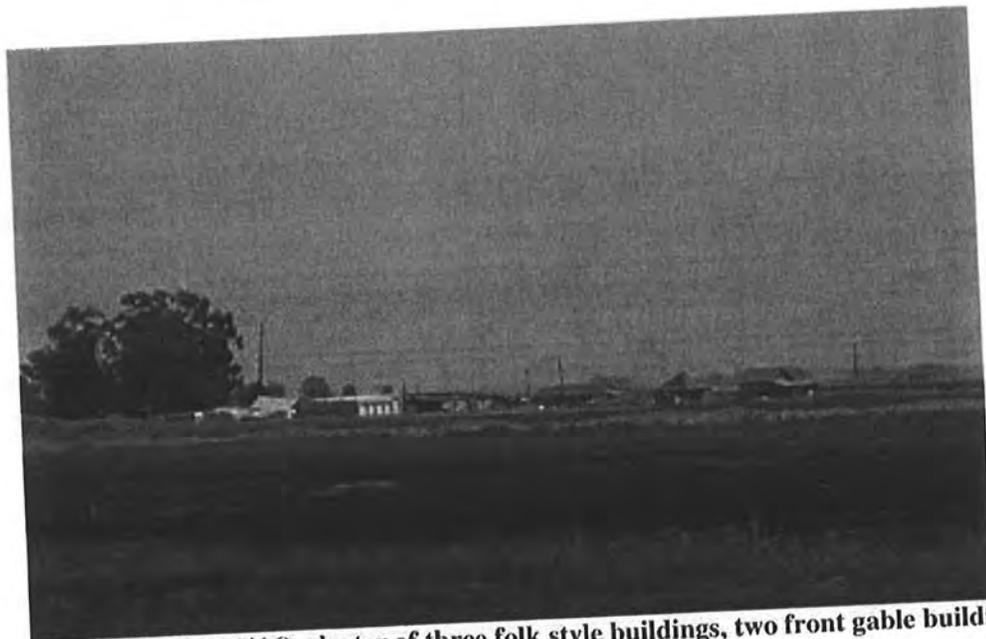


Photograph 6. Ibis Club (407), long rectangular gable roofed building, camera facing northeast, April 2013.

Photographs (continued):

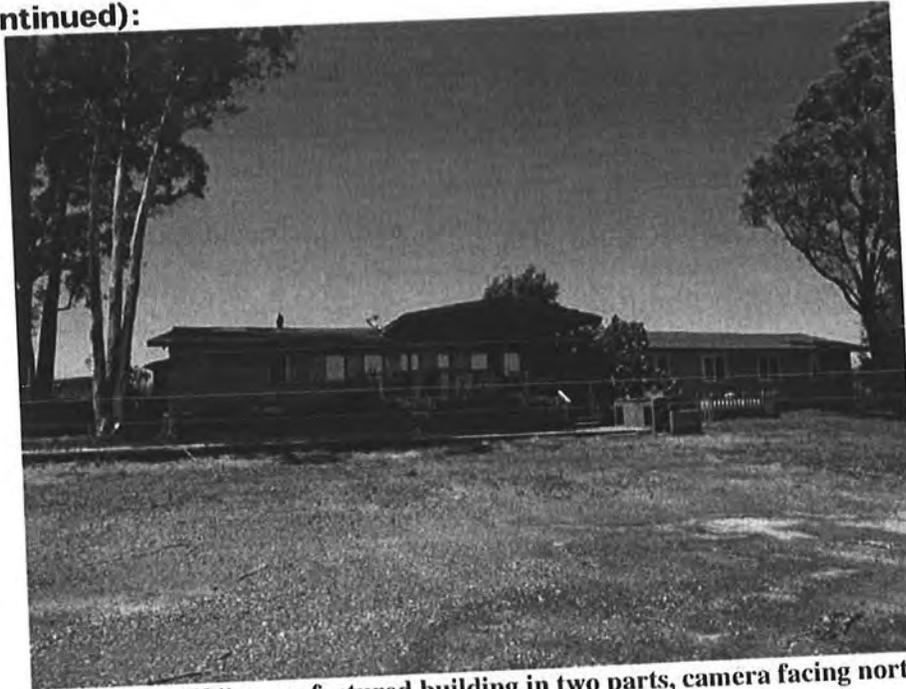


Photograph 7. Arnold Club (415) two gable front buildings with 1950s attaching breezeway, camera facing southeast, February 2013.

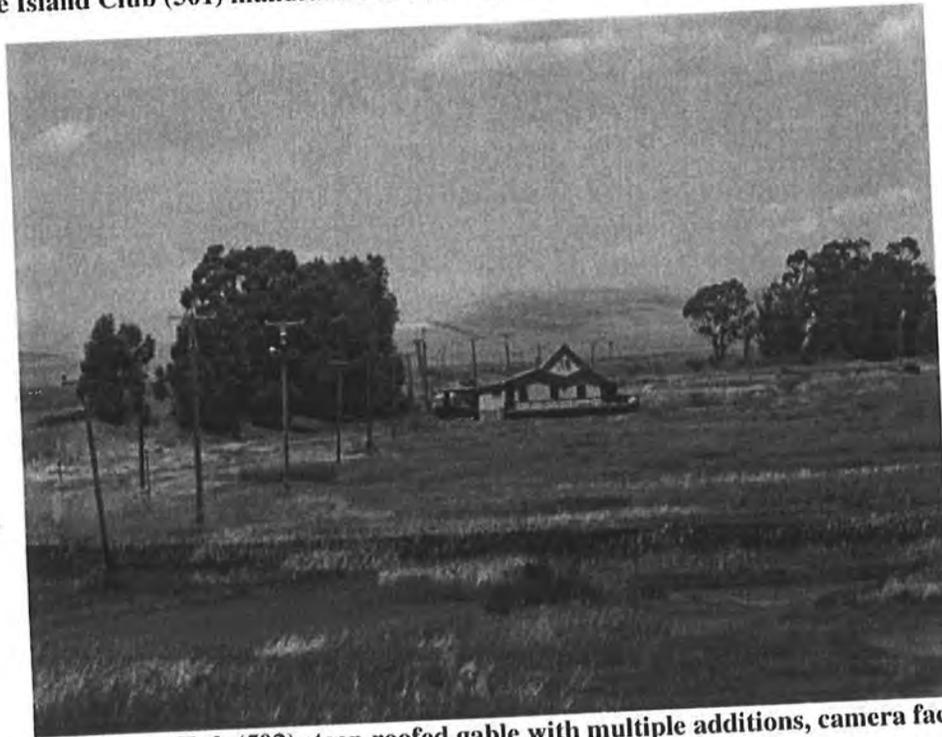


Photograph 8. Tule Belle Club (416), cluster of three folk style buildings, two front gable buildings and a folk pyramidal style, camera facing northeast, April 2013.

Photographs (continued):

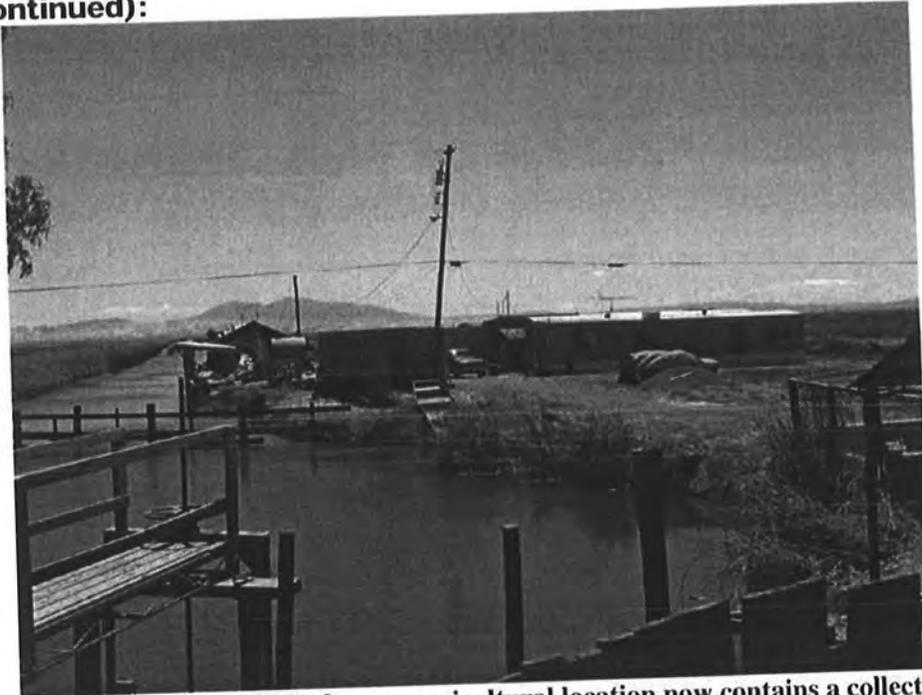


Photograph 9. The Island Club (501) manufactured building in two parts, camera facing northwest, May 28, 2013



Photograph 10. Grizzly Duck Club (502) steep roofed gable with multiple additions, camera facing northeast, May 28, 2013.

Photographs (continued):

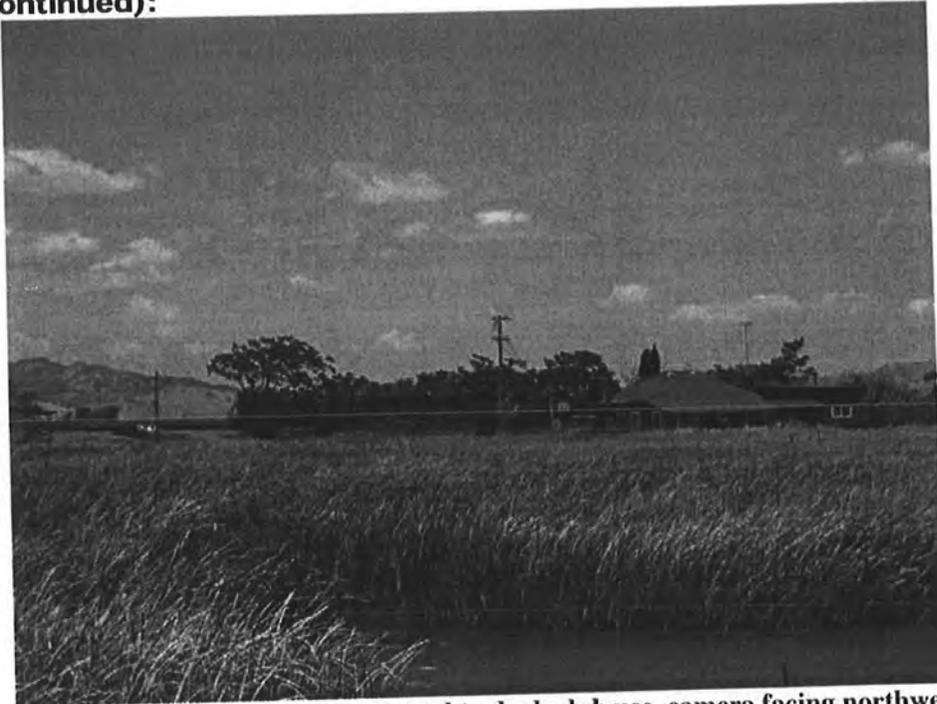


Photograph 11. Montezuma Gun Club (503), former agricultural location now contains a collection of mobile homes, camera facing southeast, May 28, 2013.



Photograph 12. Gum Tree Club (504), two story main club house and one story sleeping quarters with associated storage buildings, camera facing northwest, May 28, 2013.

Photographs (continued):

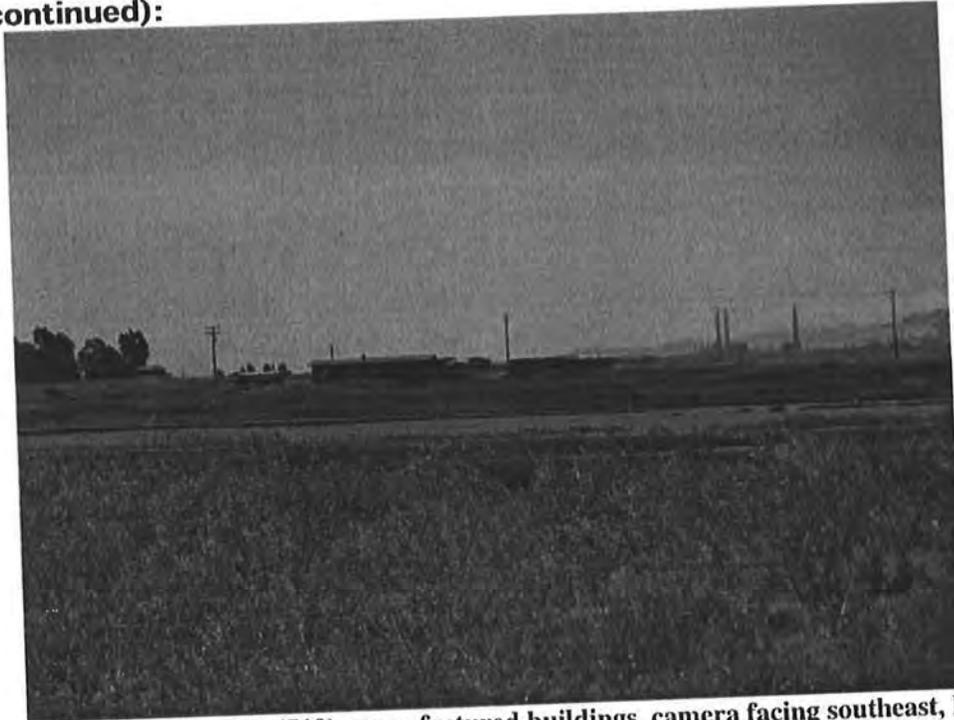


Photograph 13 DUXRUS (505); farmhouse converted to duck club use, camera facing northwest, May 28, 2013.



Photograph 14. Cluster of Clubs (506-509) along Montezuma Slough, contain manufacture buildings and accretive plan buildings, camera facing northwest, May 28, 2013.

Photographs (continued):

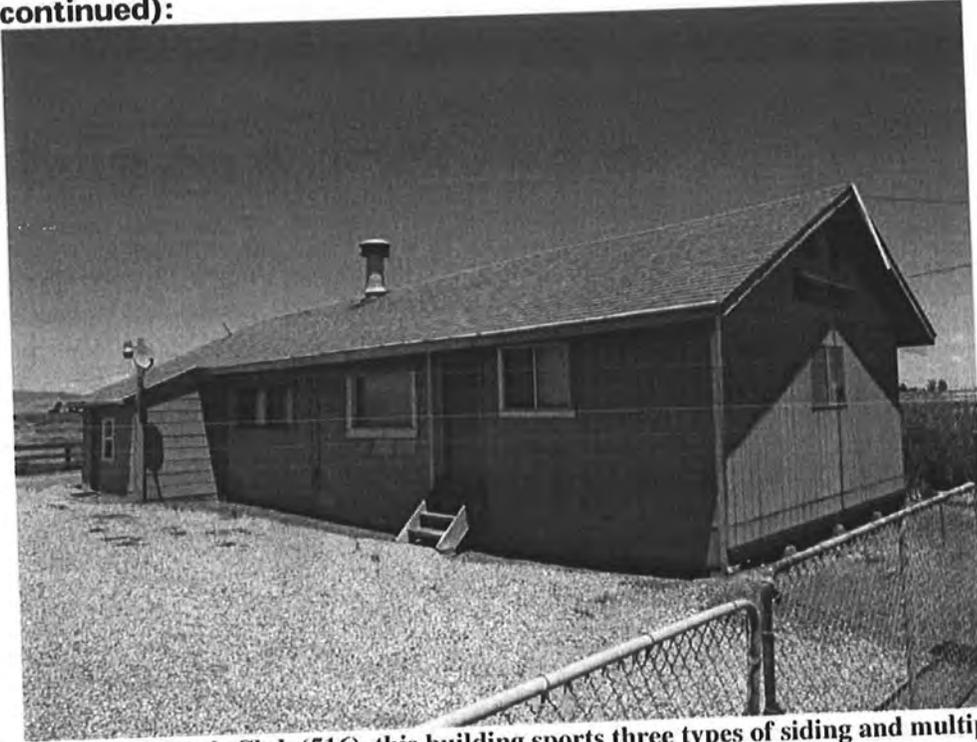


Photograph 15 The Honkers club (510), manufactured buildings, camera facing southeast, May 28, 2013.

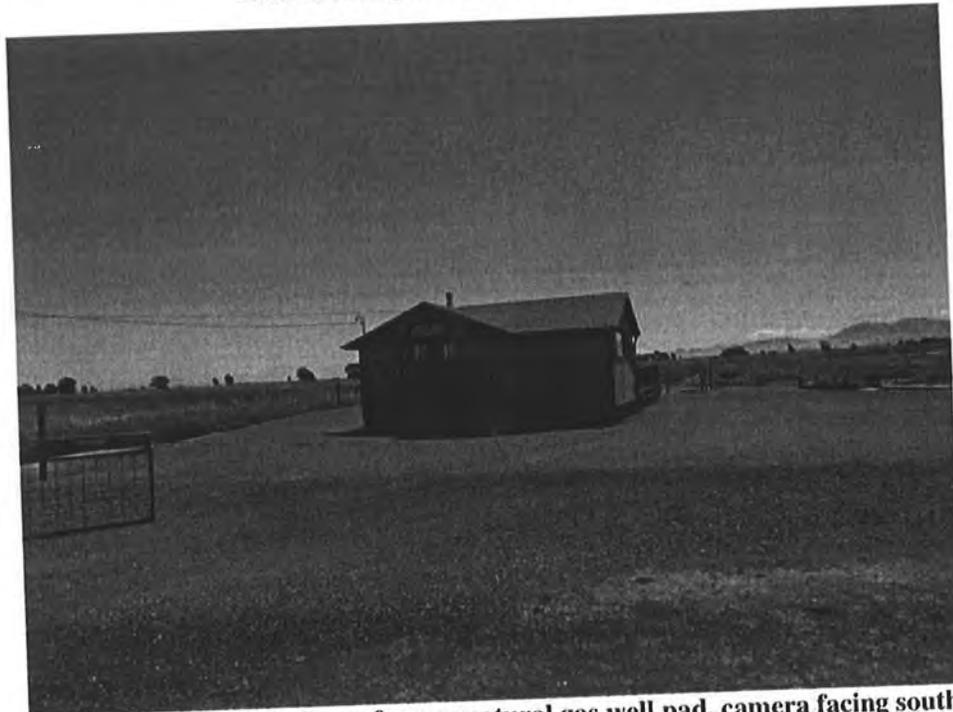


Photograph 16. Grizzly King (513), gable roofed rectangular building, camera facing southwest, October 2012.

Photographs (continued):



Photograph 17. Bent Barrel Duck Club (516), this building sports three types of siding and multiple window types, camera facing northeast, May 28, 2013.



Photograph 18. Wild Turkey Club (517) sits on former natural gas well pad, camera facing southeast, May 28, 2013.

Primary # P-48-000987

HRI # _____

Trinomial _____

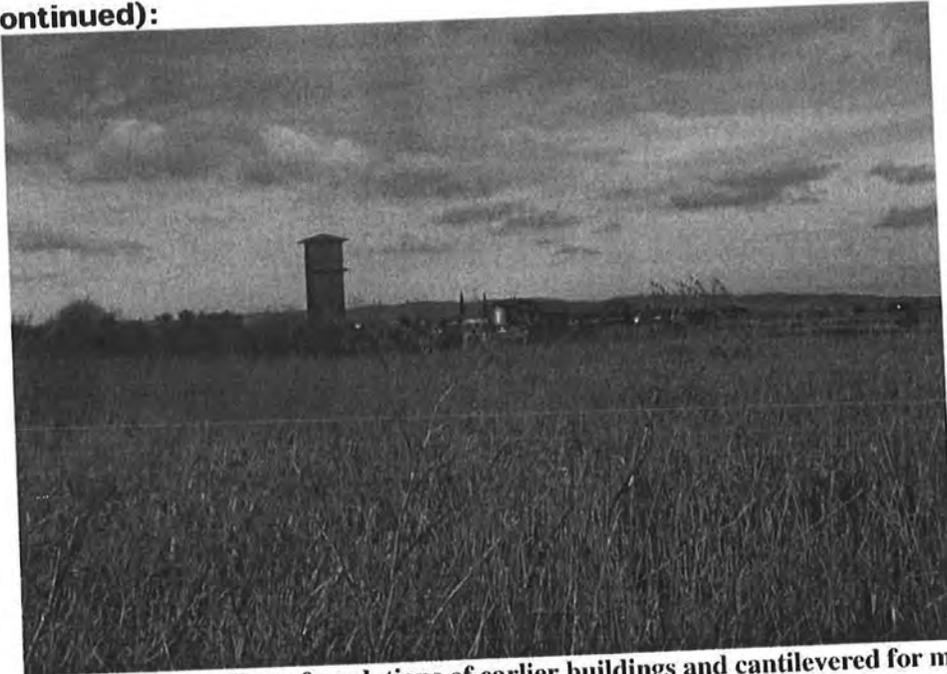
Page 21 of 31

*Resource Name or # (Assigned by recorder) Suisun Duck Clubs

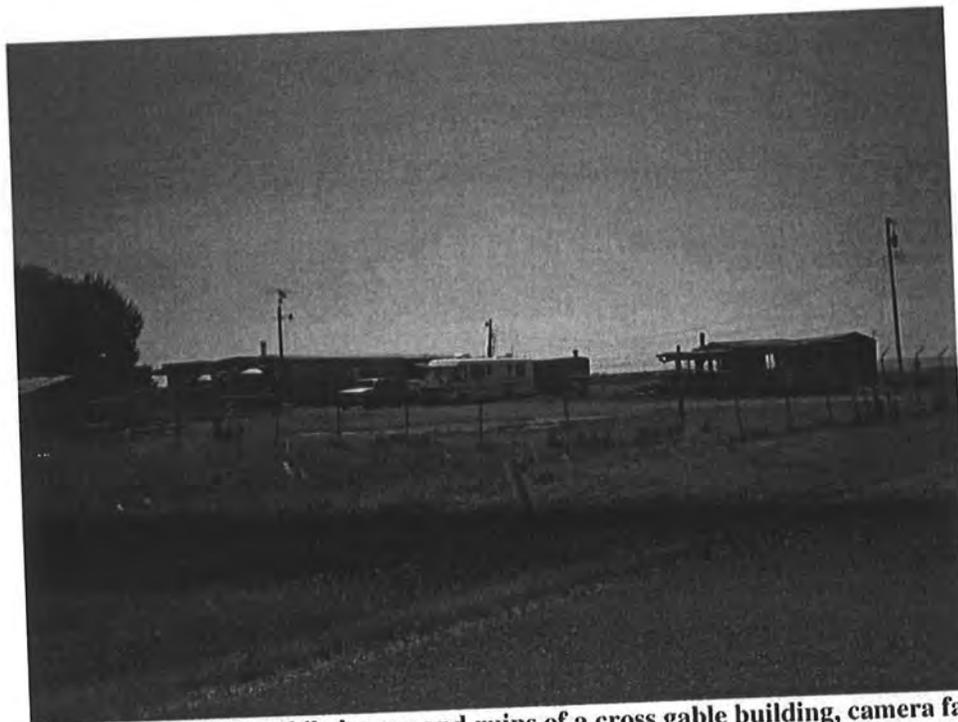
Continuation Update

*Recorded by Cheryl Brookshear *Date February 2013

Photographs (continued):

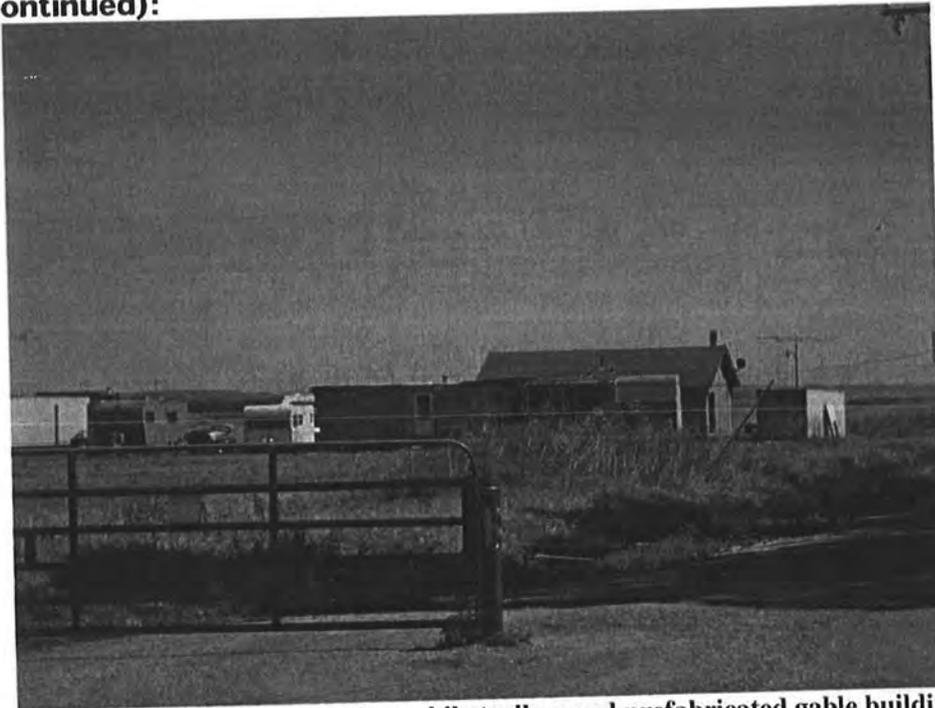


Photograph 19. Grizzly Ranch, rebuilt on foundations of earlier buildings and cantilevered for more square footage, camera facing east, February 2013.

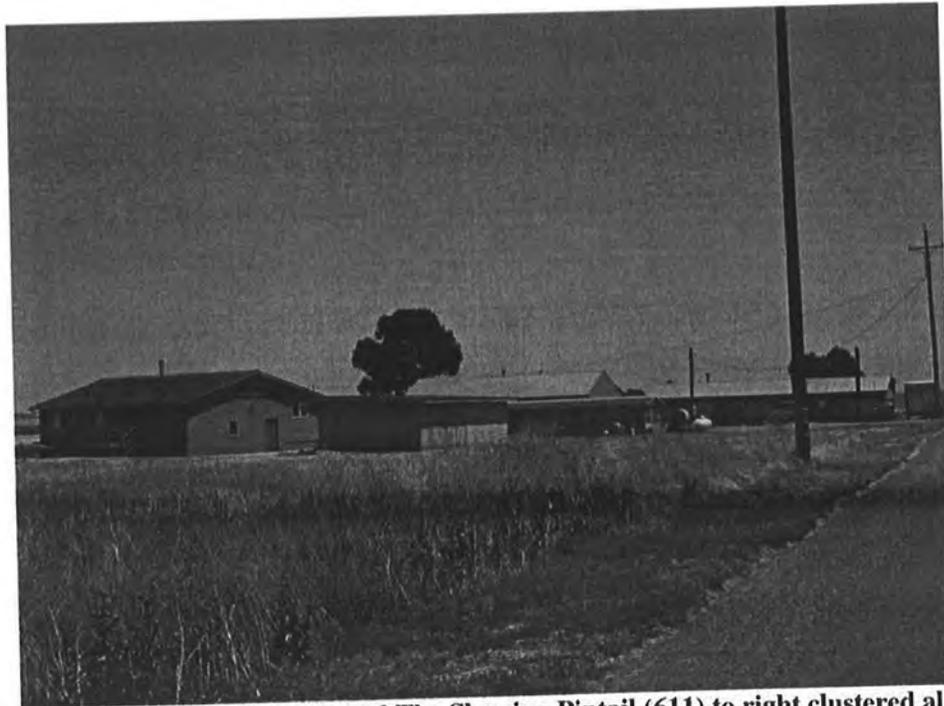


Photograph 20. Balboa Farms (525) mobile homes and ruins of a cross gable building, camera facings south, April 2013.

Photographs (continued):

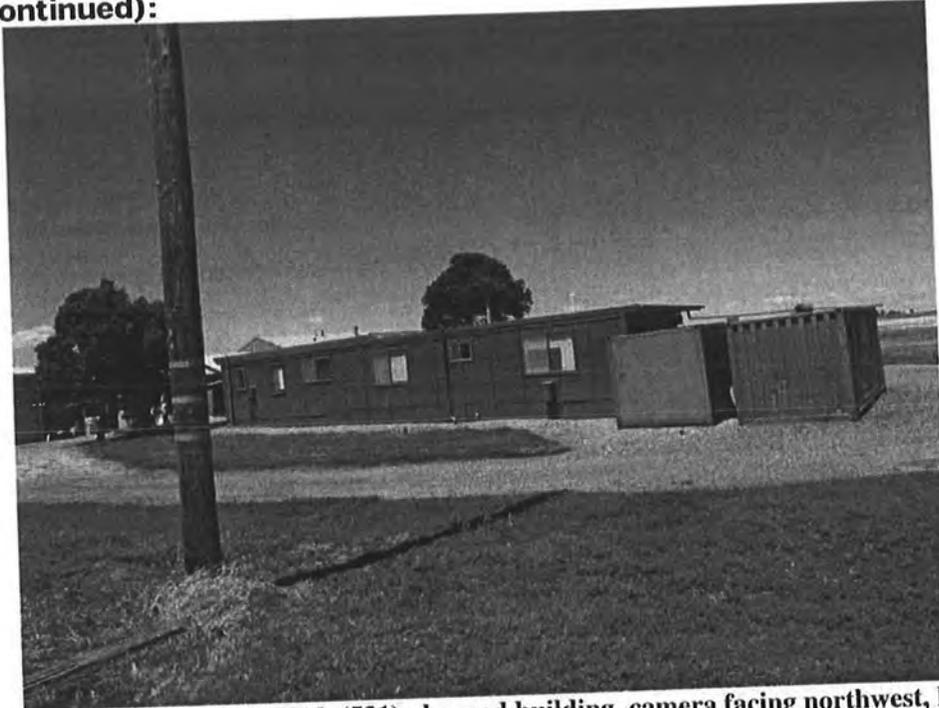


Photograph 21. Grizzly Fair View Farms (528), mobile trailers and prefabricated gable building, camera facing southeast, April 2013.

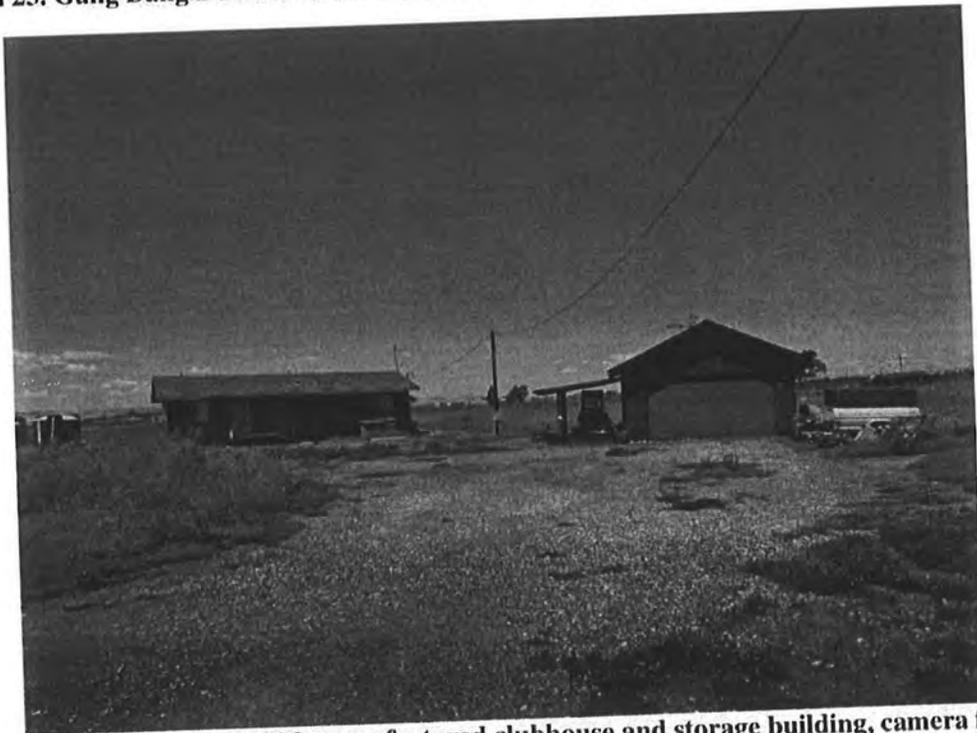


Photograph 22 Bul-Rush Farms (530) to left and The Sleeping Pintail (611) to right clustered along former county road, camera facing southeast, May 28, 2013.

Photographs (continued):

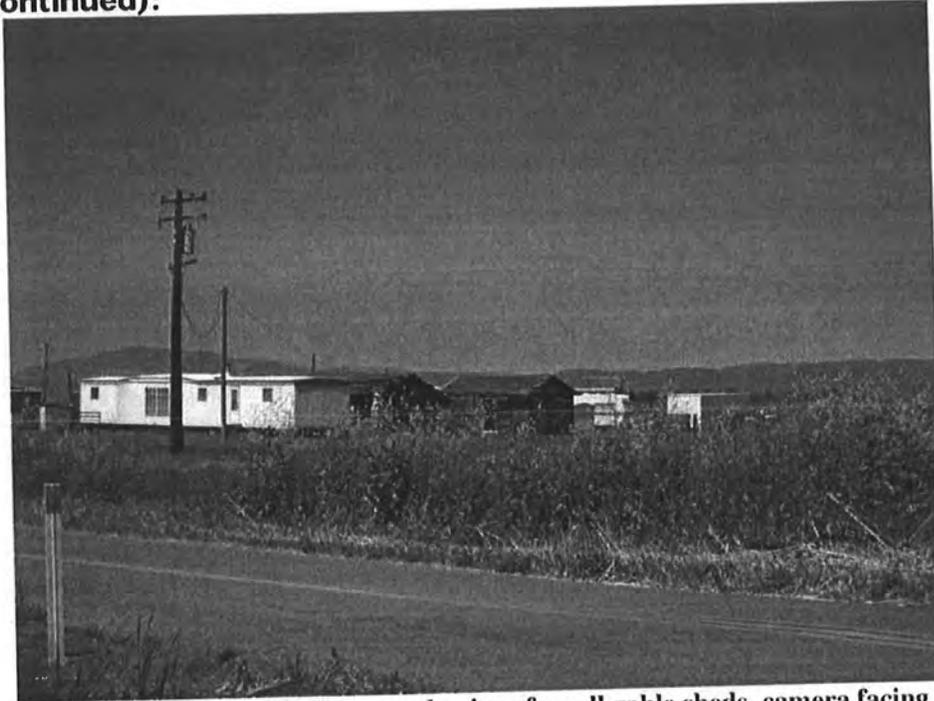


Photograph 23. Gang Bang Duck Club (531) plywood building, camera facing northwest, May 28, 2013.



Photograph 24 Windmill Club (532) with manufactured clubhouse and storage building, camera facing north, May 28, 2013.

Photographs (continued):

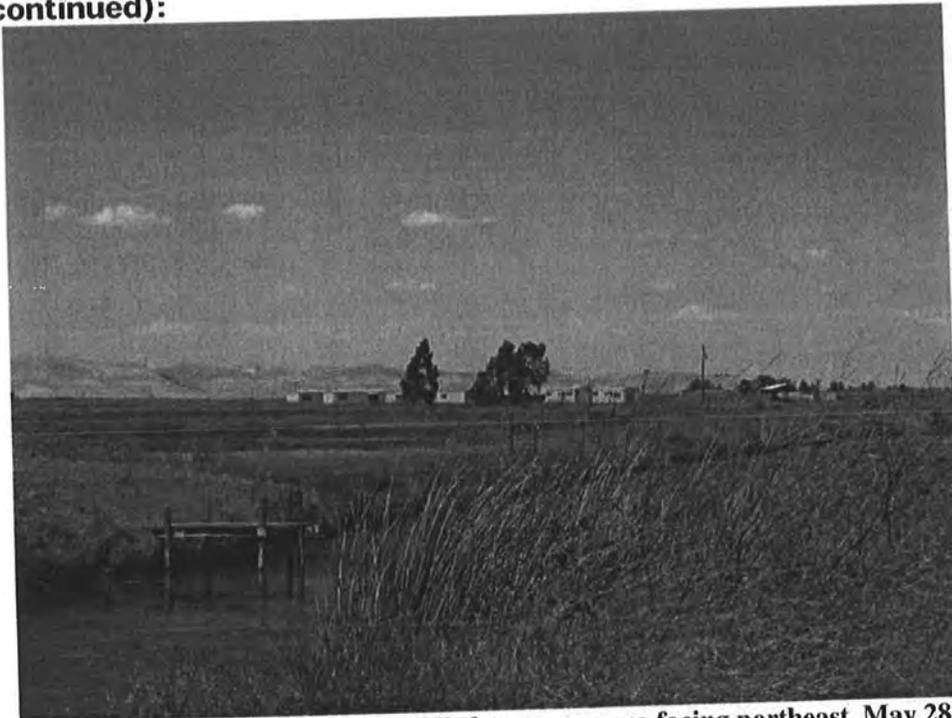


Photograph 25. Marsh Club (536), mobile home and ruins of small gable sheds, camera facing north, April 2013.

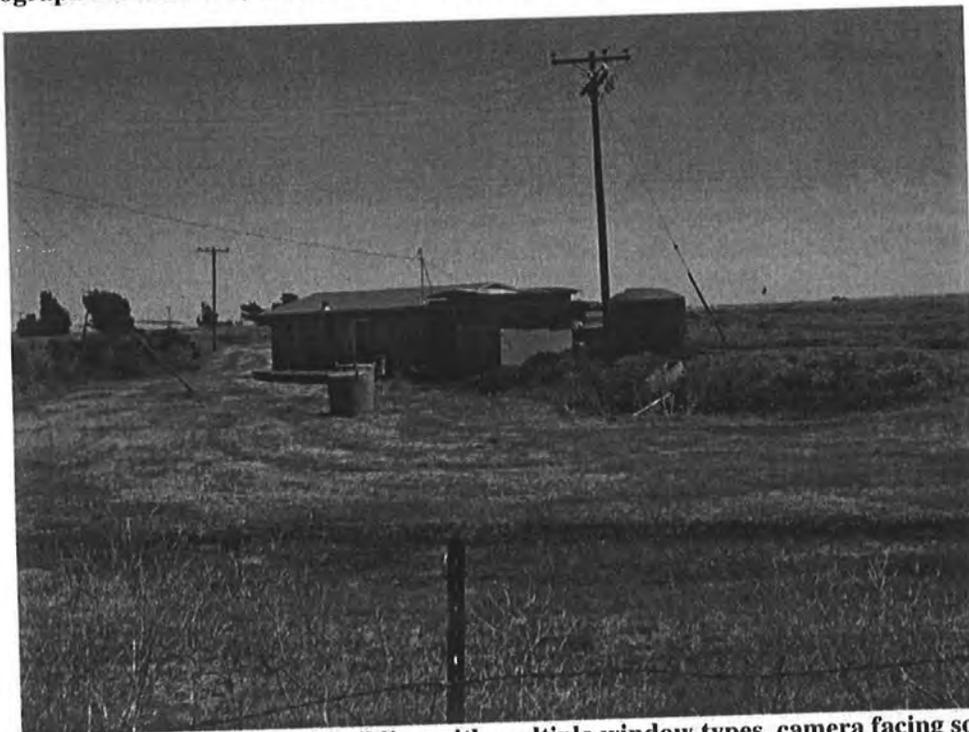


Photograph 26, Merganser Farms (538), two story portion is the clubhouse, with one story shed in foreground, camera facing southwest, May 28, 2013.

Photographs (continued):

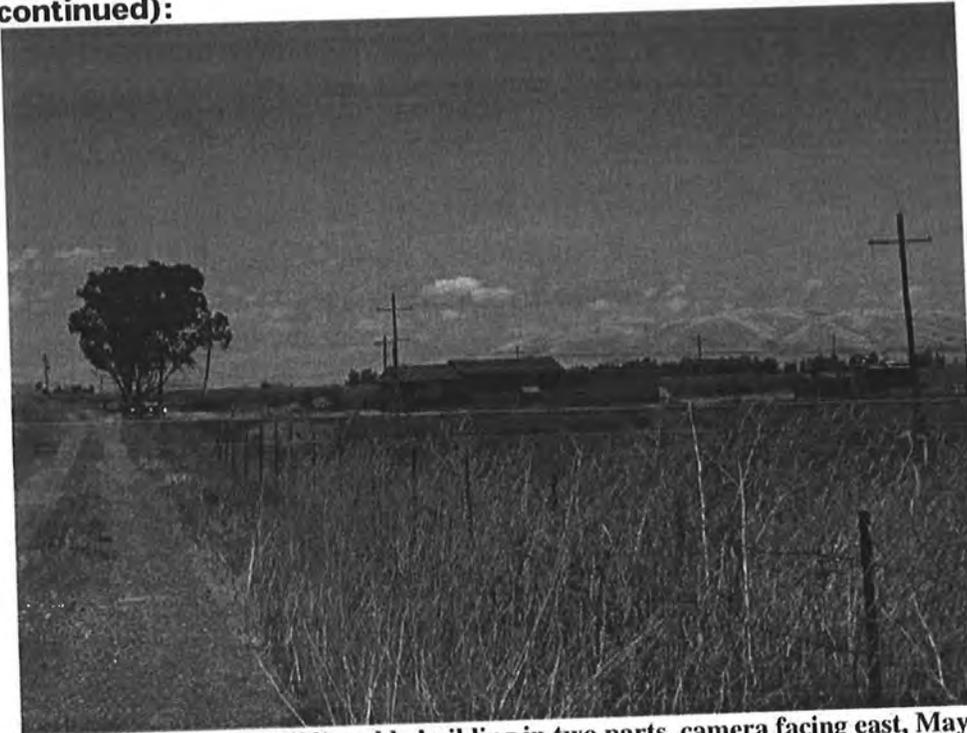


Photograph 27. Club 612, cluster of mobile homes, camera facing northeast, May 28, 2013.



Photograph 28. Schafer Farms (619), small building with multiple window types, camera facing south, May 28, 2013.

Photographs (continued):

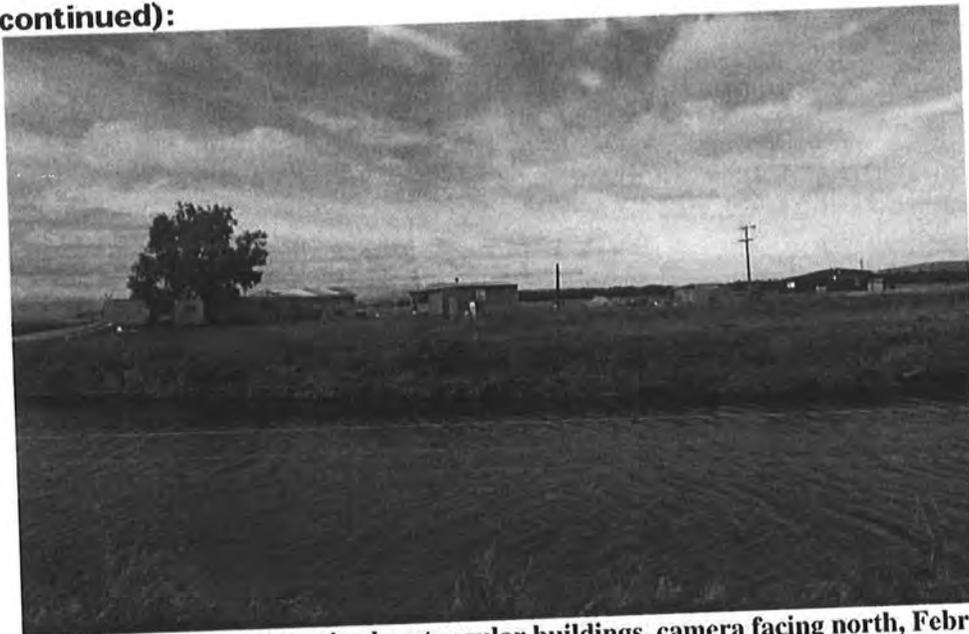


Photograph 29. Frost Slough (632), gable building in two parts, camera facing east, May 28, 2013.

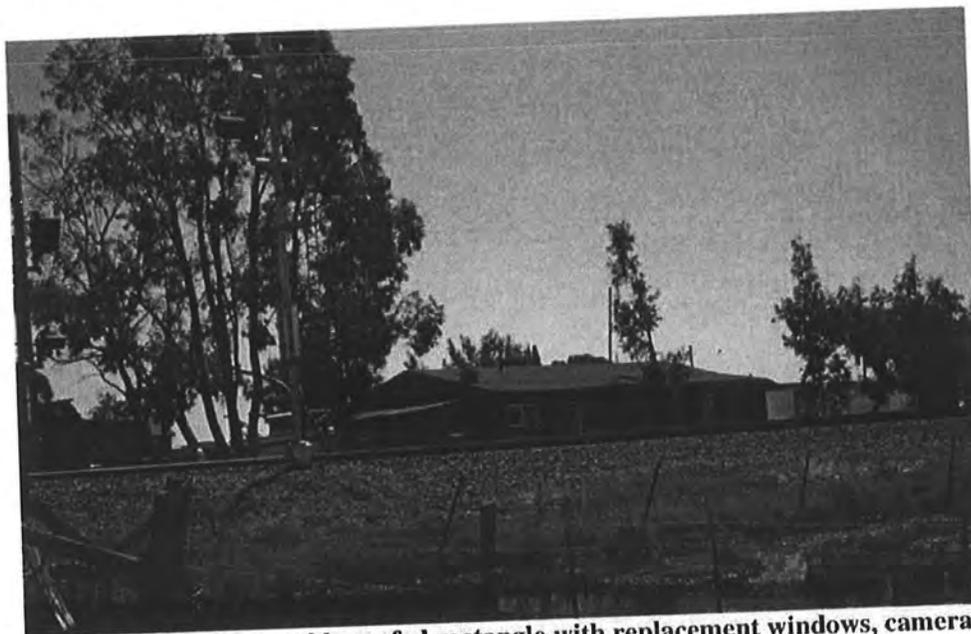


Photograph 30. Sheriff Pond (632), medium shed roofed rectangle, camera facing north, February 2013.

Photographs (continued):

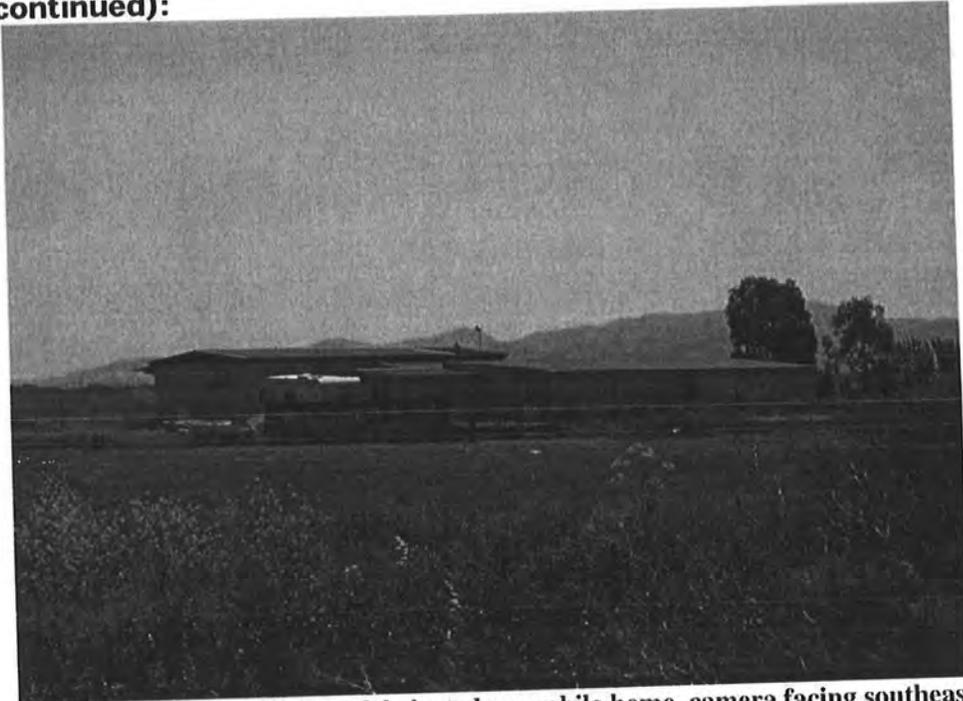


Photograph 31. Boles Pond (633) mixed rectangular buildings, camera facing north, February 2013.

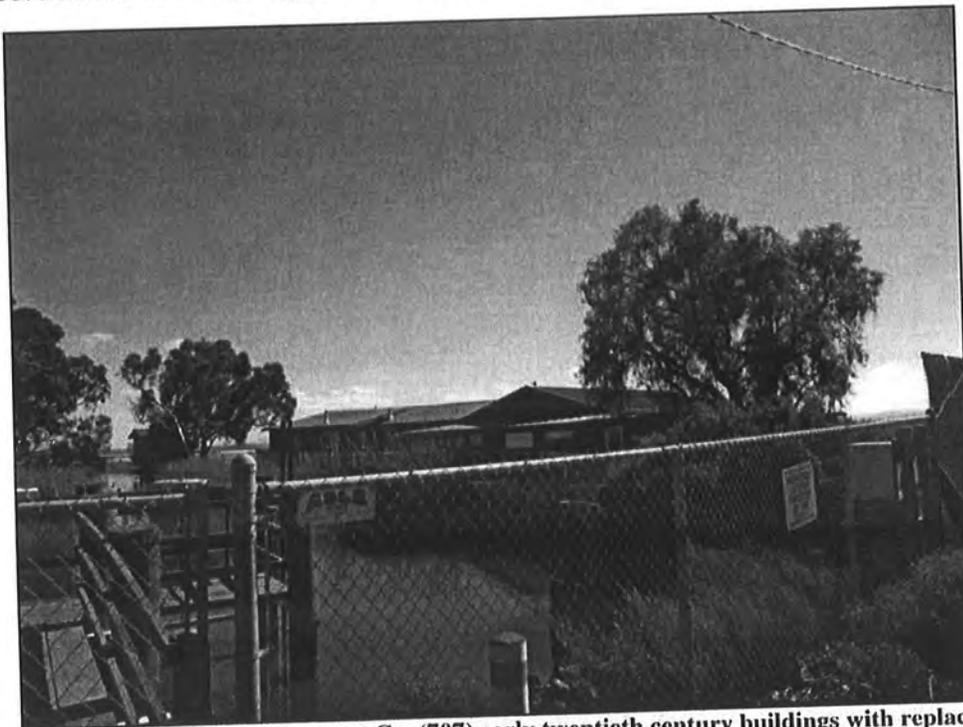


Photograph 32. Goodyear (701), long gable roofed rectangle with replacement windows, camera facing southeast, April 2013.

Photographs (continued):



Photograph 33. Mallard Haven (706), prefabricated or mobile home, camera facing southeast, April 2013.

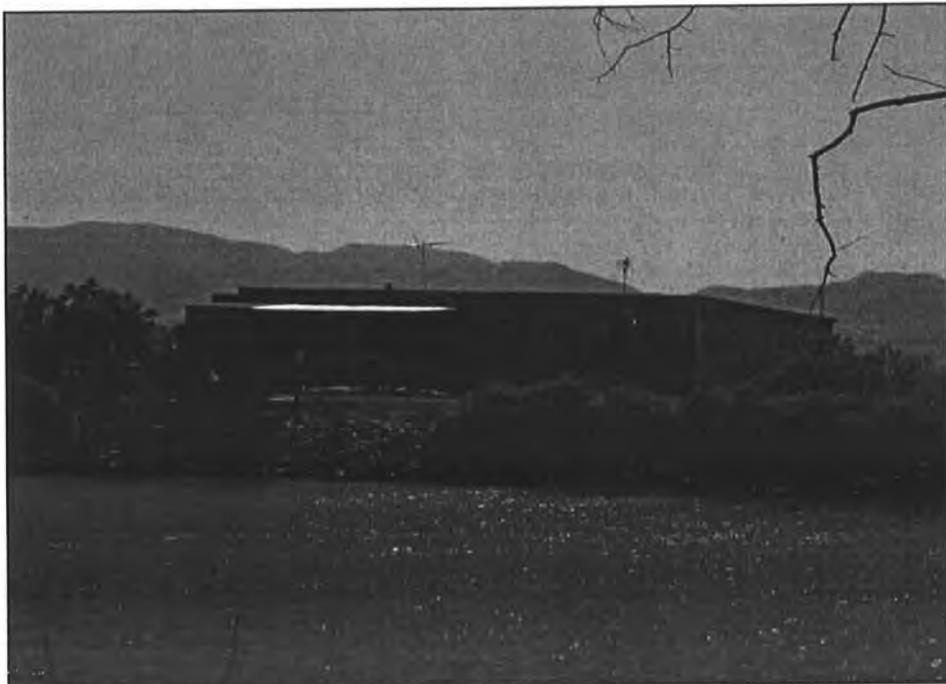


Photograph 34. Morrow Island Land Development Co. (707) early twentieth century buildings with replacement windows and siding alterations, camera facing southeast, October 25, 2012.

Photographs (continued):

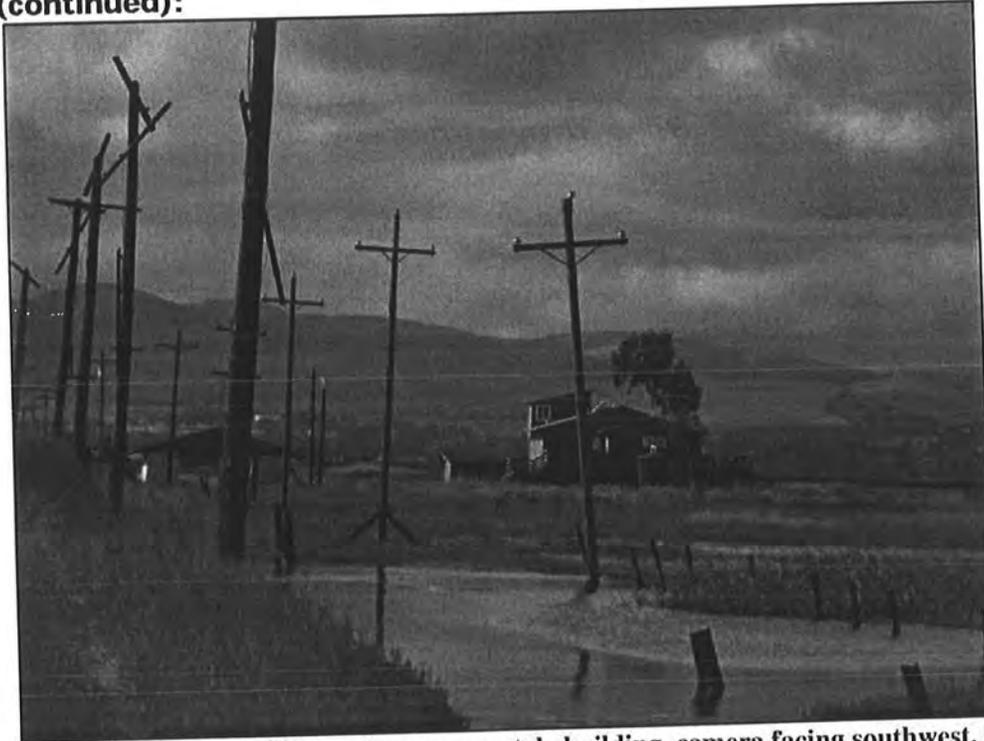


Photograph 35. Fleetside (715) proto-ranch type building side gable with front porch, camera facing northwest, February 5, 2013.



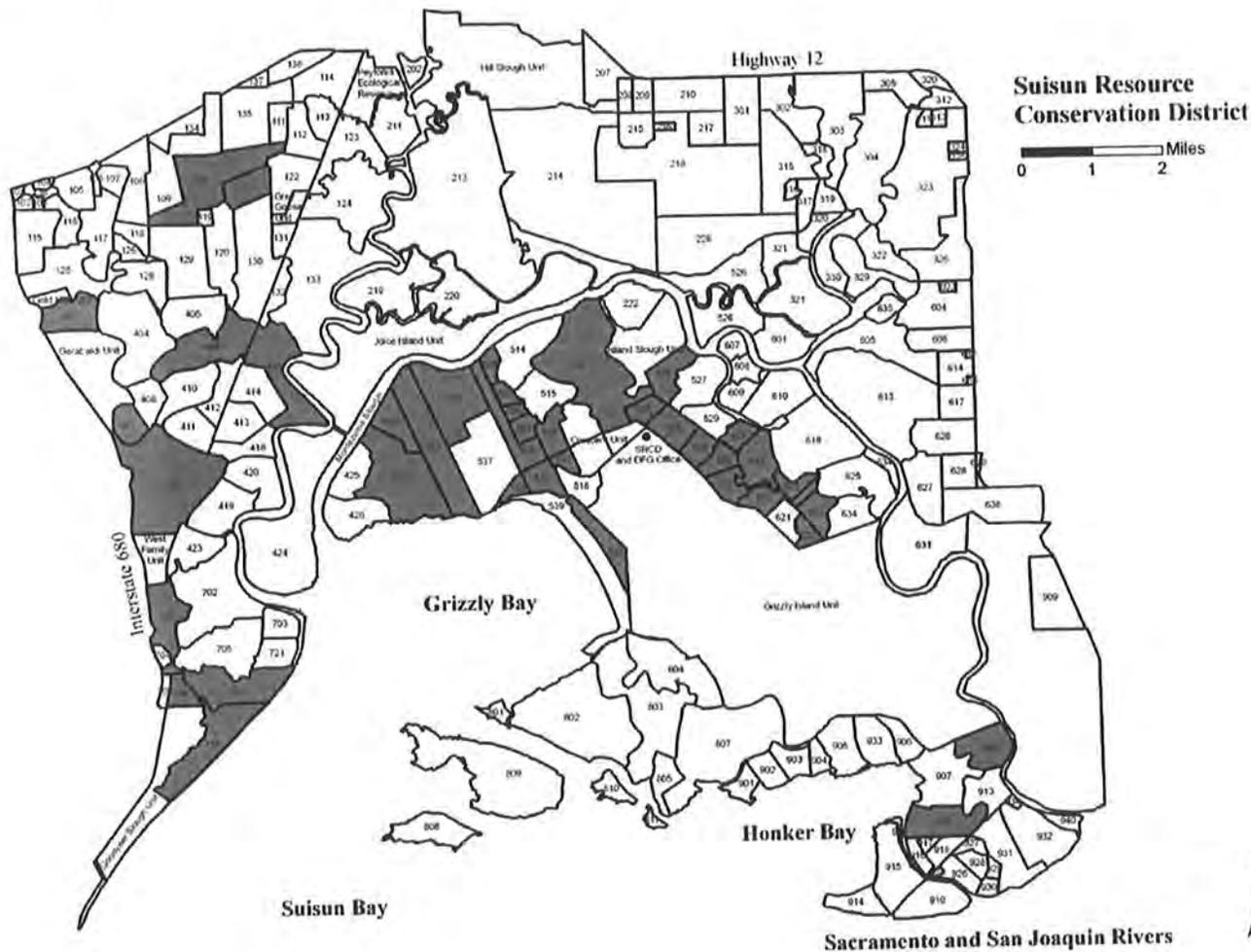
Photograph 36. Montezuma Ranch (908), accretive plan building, camera facing southwest, April 2013.

Photographs (continued):



Photograph 37. Honker Bay Farms (912), contemporary style building, camera facing southwest, October 25, 2012.

Sketch Map

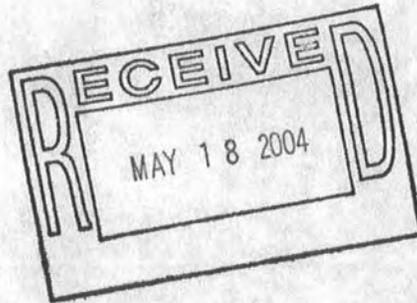




5-28438

May 13, 2004

Leigh Jordan, Coordinator
Northwest Information Center
1303 Maurice Avenue
Rohnert Park, CA 94928



Dear Leigh,

I am writing this letter to inform you that Madeline Bowen and I conducted field surveys at the location shown on the attached copy of the Vine Hill 7.5' USGS Quad map, for both historic architectural and archaeological resources. The Benicia Intermodal Transportation Station project has been cancelled and no cultural resources report will be forthcoming.

No archaeological resources were identified during the survey conducted September 2003. A total of five historic architectural resources (three culverts, two railroad alignments, and a building complex) were recorded during a field survey conducted in February 2004. Due to the cancellation of the project, these resources were not evaluated for the NRHP or the CRHR.

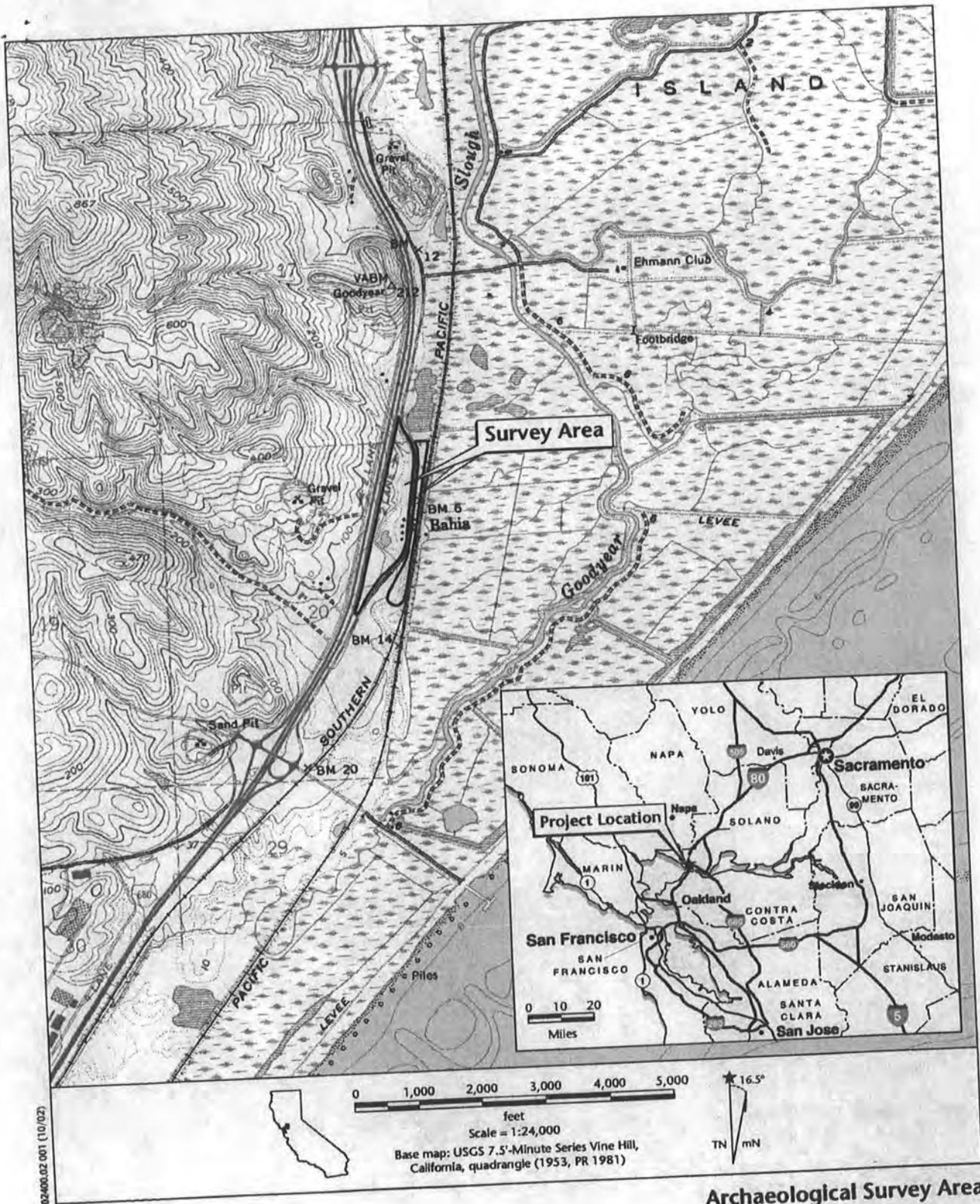
Thank you for incorporating this information into your database.

Sincerely,

Barbra Siskin
Archaeologist

Attachment: Survey Coverage Map

cc: Michael Throne, Project Manager, City of Benicia
Debra Jones, Project Manager, Jones & Stokes



024000.02.001 (11/0/02)

 Jones & Stokes

Archaeological Survey Area

S-5150
(Sol 642)

DRAFT FOCUSED ENVIRONMENTAL
IMPACT REPORT
FOR KTW PARTNERSHIP
PROPERTY PREZONING
IN BENICIA, CALIFORNIA

Prepared for the
City of Benicia

by

ECUMENE ASSOCIATES
Environmental Research
Hayward, California
(415) 582-6824

November 1980

RECEIVED BY:

DATE: Nov 1-26-81

INITIAL: MR Pused

REGIONAL OFFICE
CALIFORNIA ARCHEOLOGICAL SITES SURVEY
— SACRAMENTO —

APPENDIX F

Department of Parks and Recreation (DPR) 523 Forms

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary # _____
HRI # _____
Trinomial _____
NRHP Status Code 6Z

Other Listings _____
Review Code _____ Reviewer _____ Date _____

Page 1 of 8

*Resource Name or # (Assigned by recorder) Suisun Marsh Bridges

P1. Other Identifier: Montezuma Slough Bridge (No. 23C0030), Joice Island Bridge, Morrow Island Bridge

*P2. Location: Not for Publication Unrestricted
and (P2b and P2c or P2d. Attach a Location Map as necessary.)

*a. County Solano

*b. USGS 7.5' Quad _____ See Table 1 _____ Date _____

c. Address _____ City Suisun Zip _____

d. UTM: (give more than one for large and/or linear resources) Zone _____; _____ mE/ _____ mN

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

Montezuma Slough Bridge is located southwest of Suisun City and carries Grizzly Island Road over the slough south to Grizzly Island. Joice Island Bridge carries Joice Island Road connecting Joice Island State Game Refuge to Grizzly Island Road. The turn off for Joice Island Road along Grizzly Island Road is west of Montezuma Slough Bridge. Morrow Island Bridge carries Morrow Lane over a thin arm of Goodyear Slough. The bridge sits to the east of Highway 580 off of Goodyear Road between the Lake Herman Road and Parish Road exits.

*P3a. Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

Three pre-1963 vehicular bridges cross sloughs within Suisun Marsh. The Montezuma Slough Bridge (Bridge Number 23C0030) is a county maintained bridge constructed in 1958 (**Photograph 1**). Joice Island Bridge and Morrow Island Bridge are independently maintained. Montezuma Slough Bridge rises to a center height of 21 feet. The two lane bridge has a concrete deck supported on prestressed concrete piles driven into the slough bed. The piles create a set of 36 piers spanning 283 feet with a 51 foot clear span in the middle of the bridge. Each pier consists of four piles driven in a line perpendicular to the bridge. The outer two piles angle slightly inwards. Approximately every fourth pier has additional piles bracing the piers in a north south direction. The two ends slope upwards to the center span which is removable. The center span sits on steel girders. A standard metal railing flanks the deck. (See Continuation Sheet.)

*P3b. Resource Attributes: (List attributes and codes) HP19 - Bridge

*P4. Resources Present: Building Structure Object Site District Element of District Other (Isolates, etc.)

P5a. Photo or Drawing (Photo required for buildings, structures, and objects.)



P5b. Description of Photo: (View, date, accession #) Photograph 1. Montezuma Slough Bridge, camera facing southeast, February 5, 2013

*P6. Date Constructed/Age and Sources:
 Historic Prehistoric Both
See Table 1.

*P7. Owner and Address:
See Table 1

*P8. Recorded by: (Name, affiliation, address)
Cheryl Brookshear and Ann Roberts
JRP Historical Consulting, LLC 2850
Spafford Street
Davis, CA 95618

*P9. Date Recorded: February 2013

*P10. Survey Type: (Describe) Intensive

*P11. Report Citation: (Cite survey report and other sources, or enter "none.") JRP Historical Consulting LLC, Suisun Marsh Cultural Resources Contextual Report, 2013.

*Attachments: None Location Map Sketch Map Continuation Sheet Building, Structure, and Object Record Archaeological Record
 District Record Linear Feature Record Milling Station Record Rock Art Record Artifact Record Photograph Record
 Other (list) _____

BUILDING, STRUCTURE, AND OBJECT RECORD

B1. Historic Name: Montezuma Slough Bridge; Joice Island Bridge; Morrow Island Bridge

B2. Common Name: Montezuma Slough Road Bridge; Joice Island Bridge; Morrow Island Bridge

B3. Original Use: Bridge B4. Present Use: Bridge

*B5. Architectural Style: Functional

*B6. Construction History: (Construction date, alteration, and date of alterations) Montezuma Slough Bridge constructed 1958; Joice Island Bridge constructed c.1940s; Morrow Island Bridge constructed 1931, bridge lengthened and additional bent, girders and deck added by 1977.

*B7. Moved? No Yes Unknown Date: _____ Original Location: _____

*B8. Related Features: _____

B9. Architect: Unknown b. Builder: Unknown

*B10. Significance: Theme n/a Area n/a
Period of Significance n/a Property Type n/a Applicable Criteria n/a

(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

The bridges within Suisun Marsh over 50 years old do not appear to meet the criteria for listing in the National Register of Historic Places (NRHP) or the California Register of Historical Resources (CRHR). These properties have been evaluated in accordance with Section 15064.5(a)(2)-(3) of the CEQA Guidelines, using the criteria outlined in Section 5024.1 of the California Public Resources Code, and do not appear to be a historical resource for the purposes of CEQA

Historic Context

By the early twentieth century, reclamation was sufficiently advanced to support a permanent population within the marsh. Along with the use of watercraft to visit landings, a new form of transportation was added to the marsh. Roads and ferries made it possible to transport goods through the marsh using land based transport. Between 1891 and 1908 a system of roads was constructed in the eastern marsh.¹ Farmers developed rough roads on levees, and seasonal roads crossed the marsh without the benefit of raised road beds. Small bridges crossed sloughs in the areas protected by levees.² For example, O.H. Hastings, who owned land in the eastern Potrero Hills and Bradmoor Island, constructed a simple ferry to connect his holdings.³ (See Continuation Sheet.)

B11. Additional Resource Attributes: (List attributes and codes) _____

*B12. References: E.N. Eager, *Official Map of the County of Solano* (San Francisco: Britton & Rey, 1891); USGS, *Antioch 15' Quadrangle* (Washington, D.C.: USGS, 1908 reprinted 1943); DFG, Game Management Branch, Chronology Montezuma Slough Bridge (Grizzly Island Access) Problem, August 21, 1959, F3498:685, Administrative Officer – Administrative Division, Installations – Grizzly Island, Montezuma Slough Bridge, 1950-1957, Department of Fish and Game Records, California State Archives, Sacramento, California; (See Footnotes.)

B13. Remarks:

*B14. Evaluator: Cheryl Brookshear

*Date of Evaluation: February 2013

(This space reserved for official comments.)

(Sketch Map with north arrow required.)

See continuation sheet.

¹ E.N. Eager, *Official Map of the County of Solano* (San Francisco: Britton & Rey, 1891); USGS, *Antioch 15' Quadrangle* (Washington, D.C.: USGS, 1908 reprinted 1943).

² USGS, *Antioch 15' Quadrangle*, 1908 reprinted 1943.

³ Eager, *Official Map of the County of Solano*, 1909; USGS, *Antioch 15' Quadrangle*, 1908 reprinted 1943.

P3a. Description (continued):

The Joice Island and Morrow Island Bridges are similar in construction to the Montezuma Slough Bridge. Pilings support the ends of the bridges which rise above the channel and a central clear span provides an open channel for boats to pass under them. These bridges, however, are constructed using wooden pilings and single lane wood decks. The Joice Island Bridge provides a clear span 75 feet wide and nine feet above water (**Photograph 2**). Concrete headers support the steel girders underlying the removable central span. Lateral diagonal bracing connects the piers to stabilize the structure.

The Morrow Island Bridge has an irregular piling system indicating numerous alterations since construction in 1931 (**Photograph 3**). Currently the bridge has 28 bents or piers constructed of at least three configurations of pilings. The piers or bents include two pilings at each side of the road bed, three pilings, and three pilings across the road bed with diagonal bracing. Spacing between the pilings which compose the piers is highly variable. A center clearance of 18 feet is connected with a removable span.

Table 1. Suisun Marsh Bridges

Bridge Name	Date Constructed	Quadrangle	Owner
Montezuma Slough (23C0030)	1958	Denverton	Solano County Division of Public Works 675 Texas Street, Suite 55000 Fairfield, CA 94533-6341
Joice Island Bridge	1948-1953	Denverton	DFG, Volanti Duck Club, Joice Island Mallard Club
Morrow Island Bridge	1931	Port Chicago	DWR, Mulberry Land Co, Goodyear Land Development.

B10. Significance (continued):

The first county road approached Grizzly Island from the east, south of Bird’s Landing, by 1909. County Road 456 skirted the western edge of Grizzly Island; a fork crossed Grizzly Slough and traversed Hammond and Wheeler islands to reach Dutton’s Landing. The other fork continued along the western edge of the island turning to follow the edge of Grizzly Bay nearly to the western mouth of Montezuma Slough.⁴ The road crossed to Grizzly Island via a small hand-pulled system known as Dutton’s Ferry, operated by the county into the 1950s.⁵ Access to both water and land transportation routes made the location of Dutton’s Ferry more popular than the landing, and several buildings were moved from the landing on Honker Bay to the ferry on Montezuma Slough.⁶ Residents gradually straightened the road through Grizzly Island as the tide lands on the western edge the island were leveed and reclaimed. It became the route for the first electrical line to the island, and is now commonly called “power line road.”⁷ However, as most of the residents traded locally at Suisun this road did not provide convenient access for local trade.⁸

A private road through the Portero Hills provided a more direct route from the Suisun area. The road approached Montezuma Slough from the north. An informal system operated for years, as residents of Grizzly Island took the private road over the hills and a private launch across the slough to the island. In 1911, wealthy philanthropist Annie Alexander purchased a farm on Grizzly Island. After making substantial improvements to the farm, she built and donated to the county

⁴ Eager, *Official Map of the County of Solano*, 1909.

⁵ DFG, Game Management Branch, Chronology Montezuma Slough Bridge (Grizzly Island Access) Problem, August 21, 1959, F3498:685, Administrative Officer – Administrative Division, Installations – Grizzly Island, Montezuma Slough Bridge, 1950-1957, Department of Fish and Game Records, California State Archives, Sacramento, California.

⁶ Joan Frost, *A Brief Pictorial History of Grizzly Island* (San Francisco: The Trade Pressroom, 1978).

⁷ E.N. Eager, *Official Map of the County of Solano*, (San Francisco: Britton & Rey, 1919).

⁸ Frost, *A Brief Pictorial History of Grizzly Island*.

a ferry capable of carrying vehicles. In 1919, when she made this donation, the county established County Road 578 around the hills to the ferry.⁹ This road became Grizzly Island Road and is still in use today.

The Grizzly Island ferry became a key transportation route for residents and hunters to access the central marsh. When the California Department of Fish and Game purchased a portion of Grizzly Island as a Waterfowl Management Area in 1949, it faced a challenge in transporting the many hunters to the area during the hunting season.

The ferry, capable of carrying six cars, became a choke point for travel to and from the marsh during the hunting season. The ferry faced serving the needs of island residents, private duck clubs, and beginning in 1950, public hunters. In 1938, a local entrepreneur established Belden's Landing on the north side of the ferry crossing. The landing featured a restaurant, bar and boat rental. The boat rental business thrived as hunters independent of private clubs sought to access the marsh, and seasonal hunters sought faster access to the marsh through rented boats. Despite the amenities, wait times for crossing were long.¹⁰

Recognizing the problem would be exacerbated by the new Waterfowl Management Area which offered hunting to the general public, the Department of Fish and Game immediately began planning for installation of a bridge. The existing ferries were operated by the county, so the Department of Fish and Game entered into a plan with Solano County to share the expense of a new bridge. While planning began, the county discontinued service at Dutton's Ferry in 1952, leaving Grizzly Island ferry as the sole vehicular access to the island. Several factors slowed the planning for a bridge over Montezuma Slough. The Corps was investigating a potential for a Potrero Hills Ammunition Loading Depot, and could either incorporate the bridge into the project or request it be relocated. The Corps dropped the project in 1955, but then the bridge design became contentious. A pivot or other movable bridge was very costly, and the state and county preferred a lower cost, mid-height bridge with removable span that would allow for large vessels to pass by removing the bridge's center. Yachting groups, however, opposed this bridge type as it would restrict recreational watercraft through Montezuma Slough to those boats small enough to fit under the span. These groups lobbied the legislature for a movable bridge, and when that failed, filed for an injunction in the courts. This suit was finally dropped. In the end, the bridge was designed as a mid-rise removable span bridge, paid for by the Department of Fish and Game and Solano County. The agencies finally commenced construction of the two lane bridge in 1960.¹¹

The main artery for motor vehicle access into the marsh remains Grizzly Island Road and Montezuma Slough Bridge, however, smaller private roads are still in use. These roads use internal and external levees for their grades. Landowners have installed bridges on two private roads, providing access to otherwise water locked areas. Hunters have been the dominant force in the western marsh limiting reclamation and year round habitation of the marsh. Without reclamation, construction of roads has not been feasible as most private marsh roads utilize levees as their beds. Morrow Island was an unusual exception. In 1919, Reclamation District 2032 continued its work on the island east of Goodyear Slough and south of Suisun Slough. As the district surrounded the area with levees by 1925, it constructed a private road from the main road along the western edge of the marsh directly eastward to the reclaimed land. As a part of this construction, the landowners

⁹ E.N. Eager, *Official Map of the County of Solano*, (San Francisco: Britton & Rey, 1925); Frost, *A Brief Pictorial History of Grizzly Island*.

¹⁰ Kristin Delaplane, "Grizzly Island Slowly Evolves to Preserve." Historical Articles of Solano County, 1996 June 30. Vacaville Historical Commission Database, <http://www.vacavilleheritagecouncil.org/collection/>, Accessed October 10, 2012.

¹¹ "Ralph W. Scott Deputy Attorney General to Louis J. Heinzer Department of Finance," 1960 April 21, Administrative Division, Installations Grizzly Island – Montezuma Slough Bridge 1957-1960, Department of Fish and Game Records, California State Archives, Sacramento, California.; Department of Fish and Game, Game Management Branch, Chronology Montezuma Slough Bridge (Grizzly Island Access) Problem, 1959 August 21, F3498: 685, Administrative Office – Administrative Division, Installations, Grizzly Island, Montezuma Slough Bridge 1950-1957, Department of Fish and Game Records, California State Archives, Sacramento, California.; Department of Fish and Game, "Report on Types of Bridges Which Might Be Built Across Montezuma Slough Solano County," 1958, Administrative Division, Installations Grizzly Island – Montezuma Slough Bridge 1957-1960, Department of Fish and Game Records, California State Archives, Sacramento, California.

built a bridge over Goodyear Slough in 1931.¹² The Morrow Island bridge was a single lane bridge on piers with sloping approaches and ends, with a flat central removable deck. Subsequent landholders have made multiple modifications to this bridge, increasing the number of piers to carry it over a wider channel, and adding multiple stringers. Additional piers in the channel to the south point to a possible reconstruction, however, the approach to the road has jogged north since 1948. Very little of the original bridge remains, but the design is much the same plan used decades later on a larger scale for the construction of the Montezuma Slough Bridge. Similarly, landowners constructed the Joice Island Bridge between 1948 and 1953 as part of a private road to upper Joice Island and the Volanti Club in the late 1940s.¹³

Evaluation

The Montezuma Slough Bridge (23C0030) is included in the Caltrans local bridge inventory and is listed as a non-eligible bridge. Nothing in this survey contradicts that finding or identifies the bridge as a contributor to a rural historic landscape. The Morrow Island Bridge and Joice Island Bridge, privately owned and maintained, share similar construction methodology and design. These private bridges were constructed to access existing farms and duck clubs, and operate as a standard part of the marsh's infrastructure. They are not associated with the development of agriculture or recreational use of the marsh (NRHP Criterion A/ CRHR Criterion 1). The bridges are not associated with individuals significant to the past (NRHP Criterion B/ CRHR Criterion 2).

None of the bridges are significant for their period, type, or method of construction (NRHP Criterion C/ CRHR Criterion 3). The bridges utilize standard bridge design available at the time of their construction and do not illustrate significant engineering achievements.

In rare instances buildings or structures may yield historical information about historic construction materials and technologies not available through other sources (NRHP Criterion D/ CRHR Criterion 4). These bridges do not appear significant in this regard. The building technologies, method and materials are typical for their period and are documented through other means.

Montezuma Slough Bridge and Joice Island Bridge appear to retain integrity, but are not historically significant. The irregular piling plan for the Morrow Island Bridge indicates numerous alterations. Bent 5 appears to follow the 1931 plans for construction, but other bents follow other design patterns. The bridge also spans a wider channel than the original 1931 bridge. The alterations have resulted in a loss of integrity relating to design, materials, and workmanship. In addition to lacking integrity the bridge also lacks historical significance.

¹² USCGS, *Suisun Bay Chart 5534*, (Washington, D.C.: USCGS, 1925); USDA, *Solano County Aerial Photographs* (Fresno, CA: Laval Company, Inc., 1937); US Coast Guard, J.S. Blackett Commander Chief, Aids to Navigation Branch, 12th Coast Guard District to Keskue S. Mayne and James F. Eggert, et al, 1978, November 20, provided by Bill Burkhardt, Department of Water Resources.

¹³ USDA, *Solano County Aerial Photographs*, 1937; USGS, *South Fairfield* (Washington, D.C.: USGS, 1949); USGS, Aerial photographs Solano County, 1948, Earth Resources Observation and Science Center, eros.usgs.gov/#/Find_Data/Products_and_Data_Available/Aerial_Products, accessed April 5, 2013; USACE, *Denverton Quadrangle* (Washington, D.C.: Army Map Service, 1953); DWR, *Morrow Island Distribution System, Specification No. 80-13*, Sheet 13, Specifications, Drawings and As Built, Department of Water Resources Files, Sacramento, California.

Photographs (continued):



Photograph 2. Joice Island bridge, camera facing southeast.

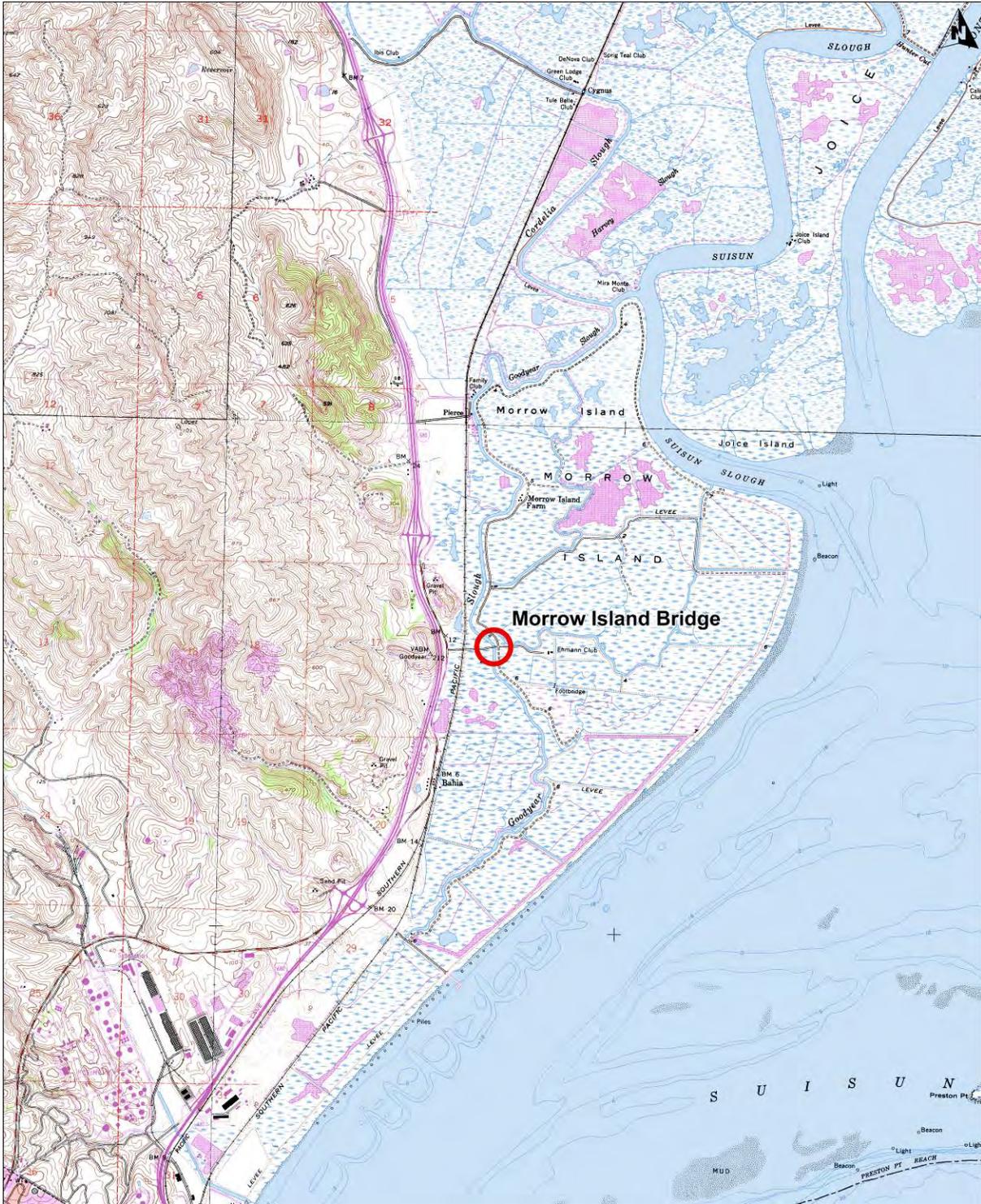


Photograph 3. Morrow Island Bridge, camera facing southeast.

Sketch Map: USGS Denverton Quadrangle



Sketch Map: USGS Port Chicago Quadrangle



APPENDIX G

SHPO Correspondence

OFFICE OF HISTORIC PRESERVATION
DEPARTMENT OF PARKS AND RECREATION
1725 23rd Street, Suite 100
SACRAMENTO, CA 95816-7100
(916) 445-7000 Fax: (916) 445-7053
calshpo@parks.ca.gov
www.ohp.parks.ca.gov

BUREAU OF RECLAMATION		
RECEIVED		
APR 25 2014		
CODE	ACTION	SURNAME & DATE

April 23, 2014

Reply in Reference To: BUR110607A

Anastasia T. Leigh, Regional Environmental Officer
Bureau of Reclamation
Mid-Pacific Regional Office
2800 Cottage Way
Sacramento, CA 95816

RE: Selected Activities Within the Suisun Marsh Habitat Management, Preservation, and Restoration Plan (SMP), Solano County, California (08-SCAO-099) (BUR110607A)

Dear Ms. Leigh:

Thank you for continuing consultation regarding the above noted undertaking. The Bureau of Reclamation (Reclamation) proposes to provide one-time funding to the Suisun Marsh Preservation Agreement Implementation Fund for selected maintenance activities involved in implementing the Suisun Marsh Habitat Management, Preservation, and Restoration Plan (SMP). This fund is managed by the Suisun Resource Conservation District who receives and approves requests from land owners within the marsh to conduct maintenance activities. On June 17, 2011, Reclamation initiated consultation with me and invited comments on the delineation of the area of potential effects (APE) and the appropriateness of the proposed historic properties identification methods. I commented on the appropriateness of the APE and found the proposed level of effort for identifying historic properties with use of a proactive contextual approach, predictive model, and Native American consultation appropriate for the undertaking. With this submission Reclamation is consulting on and asking for my concurrence on the results of the identification efforts, eligibility determinations, and a *Finding of No Adverse Effect* pursuant to 36 CFR Part 800 (as amended 8-05-04) regulations implementing Section 106 of the National Historic Preservation Act (NHPA) for the SMP.

The Bureau of Reclamation is proposing to fund 16 specific activities:

1. Repairing levees;
2. Coring existing interior levees;
3. Grading pond bottoms for water circulation;
4. Creating pond bottom spreader V-ditches;
5. Repairing existing interior water control structures;
6. Replacing pipe for existing water control structures or installing new interior water control structures;
7. Installing drain pumps and platforms;
8. Repairing exterior water control structures (gates, couplers, and risers);
9. Installing or replacing pipe for existing exterior flood or dual-purpose gates;
10. Installing, repairing, or re-installing water control bulkheads;
11. Suisun Marsh Salinity Control Gate repair and maintenance;
12. Roaring River Distribution System fish screen cleaning;

ORIGINAL

DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

1. The purpose of this report is to provide a detailed description of the land area described in the title of this report. The information contained herein is based on a field inspection of the land area on or about the date indicated in the title of this report.

2. The land area described in this report is situated in the State of Utah, County of Kane, and is more particularly described as follows:

Section 1, Township 12 North, Range 10 East, T12N, R10E, N.M.P.

3. The land area described in this report is owned by the United States of America, and is more particularly described as follows:

4. The land area described in this report is situated in the State of Utah, County of Kane, and is more particularly described as follows: Section 1, Township 12 North, Range 10 East, T12N, R10E, N.M.P. The land area described in this report is situated in the State of Utah, County of Kane, and is more particularly described as follows: Section 1, Township 12 North, Range 10 East, T12N, R10E, N.M.P. The land area described in this report is situated in the State of Utah, County of Kane, and is more particularly described as follows: Section 1, Township 12 North, Range 10 East, T12N, R10E, N.M.P.

BUREAU OF RECLAMATION
MP-REGION
2014 APR 25 AM 10:49

5. The land area described in this report is situated in the State of Utah, County of Kane, and is more particularly described as follows: Section 1, Township 12 North, Range 10 East, T12N, R10E, N.M.P. The land area described in this report is situated in the State of Utah, County of Kane, and is more particularly described as follows: Section 1, Township 12 North, Range 10 East, T12N, R10E, N.M.P. The land area described in this report is situated in the State of Utah, County of Kane, and is more particularly described as follows: Section 1, Township 12 North, Range 10 East, T12N, R10E, N.M.P.

13. Salinity monitoring station maintenance, repair, and replacement;
14. Salinity station relocation, installation, and removal;
15. Clearing existing interior ditches and intake areas;
16. Constructing new interior ditches.

Estimated depths of disturbance include two feet below the ground surface for grading pond bottoms for water circulation, and three feet below the ground surface for constructing new interior ditches. Implementation of the above activities is phased and will occur with incremental annual repairs, maintenance, and replacement. Reclamation evaluated the potential effects of each of the activities and concluded that thirteen of the activities listed above would not affect historic properties due to the nature and locations of these activities. The following three involve possible new ground disturbance and a restriction will be placed on these activities for additional consultation under Section 106 of the NHPA should they be proposed to occur in the exclusion areas for this undertaking.

- (3.) Grading pond bottoms for water circulation;
- (4.) Creating pond bottom spreader V-ditches;
- (16.) Constructing new interior ditches.

This restriction will be integrated into the Suisun Marsh Preservation Agreement (SMPA) which is being revised to include the Preservation Agreement Implementation Fund. The revised SMPA will be agreed upon and signed by Reclamation, the California Department of Water Resources, the California Department of Fish and Wildlife, and the Suisun Resource Conservation District prior to implementation of this undertaking, providing accountability to these commitments.

Reclamation has submitted contextual documents which includes archaeological studies, Native American consultation efforts, geo-archaeological sensitivity model, a land use history, an evaluation of classes of architectural features, an evaluation of Suisun Marsh as a historic landscape and Finding of Effect (Volume 1-Archaeological Resources by Meyer et al. [2013]; Volume 2-Built Environment by Brookshear and Herbert [2013]; Williams and Bruce [2014]). Through these investigations, Reclamation identified two prehistoric sites, 13 historic architectural sites, eight classes of architectural features, and areas of cultural resource sensitivity within the APE.

Reclamation has determined:

- Dutton's Landing: Per correspondence of 4/7/14, Dutton's Landing is not eligible due to lack of integrity;
- The eight classes of architectural features in Suisun Marsh do not meet any of the criteria for eligibility for listing on the National Register;
- Suisun Marsh was evaluated as a historic cultural landscape and found it not eligible due to a lack of a cohesive theme, a lack of association with significant historic events or contribution to history of the region, and a lack of integrity for types of characteristic features;
- The two prehistoric sites identified within the APE, CA-SOL-34 (P-48-000042) and CA-SOL-346 (P-48-000185), are assumed eligible for the purposes of this undertaking and the surrounding areas are identified as highly sensitive;
- The Episcopal Church and cemetery in Collinsville is assumed eligible, for purposes of this project, and identified as a highly sensitive area;
- The highly sensitive areas are bound by a 30-meter buffer around each site, identified as "exclusion areas."

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- Thirteen of the sixteen proposed maintenance activities listed above will not affect historic properties;
- Three activities listed above would only affect historic properties if conducted within the exclusion areas. Should any of the three activities be proposed within an exclusion area, additional Section 106 consultations will be conducted prior to approval of that specific activity, as identified in SMPA.

With the above provisions in place, Reclamation has determined a *Finding of No Adverse Effect* to historic properties from our proposed action to provide partial funding for maintenance activities in support of the SMP.

I concur with the following:

- Dutton's Landing is not eligible to the NRHP;
- Sacramento Northern Railway HD: portion within the APE non-contributing, no adverse effect;
- Eight classes of architectural features in Suisun Marsh are not eligible to the NRHP;
- Suisun Marsh as a landscape is not eligible to the NRHP;
- Archaeological sites CA-SOL-34 (P-48-000042) and CA-SOL-346 (P-48-000185), are assumed eligible for the purposes of this undertaking and the surrounding areas are identified as highly sensitive;
- Thirteen of the sixteen proposed maintenance activities listed above will not affect historic properties;
- The following three maintenance activities involve possible new ground disturbance and a restriction will be placed on these activities for additional consultation under Section 106 of the NHPA should they be proposed to occur in the exclusion areas for this undertaking. However, in addition to the exclusion areas, restrictions need also be placed on these activities in areas of High or Very High sensitivity based on the sensitivity model provided.
 1. (3.) Grading pond bottoms for water circulation;
 2. (4.) Creating pond bottom spreader V-ditches;
 3. (16.) Constructing new interior ditches.
- Identification efforts are sufficient;
- The archaeological sensitivity modeling is sufficient;
- I have no objection to the delineation of the APE;
- I concur with a *Finding of No Adverse Effect* for the project;

Your letter mentioned that restrictions concerning cultural resources will be integrated into the Suisun Marsh Preservation Agreement (SMPA) which is being revised to include the Preservation Agreement Implementation Fund. The revised SMPA will be agreed upon and signed by Reclamation, the California Department of Water Resources, the California Department of Fish and Wildlife, and the Suisun Resource Conservation District prior to implementation of this undertaking, providing accountability to these commitments. Please include me in review of the draft SMPA in regard to cultural resources.

Be advised that under certain circumstances, such as unanticipated discovery or a change in project description, Reclamation may have additional future responsibilities for this undertaking under 36 CFR Part 800. Thank you for seeking my comments and considering historic properties as part of your project planning. If you have any questions or concerns regarding archaeological resources,

please contact Associate State Archaeologist, Kim Tanksley at (916) 445-7035 or by email at kim.tanksley@parks.ca.gov. Any questions concerning the built environment should be directed to State Historian, Kathleen Forrest at (916)445-7022 or by email at kathleen.forest@parks.ca.gov.

Sincerely,

A handwritten signature in black ink that reads "Carol Roland-Nawi, Ph.D." The signature is written in a cursive style with a large initial 'C'.

Carol Roland-Nawi, PhD
State Historic Preservation Officer

APPENDIX 3

Delta Plan Covered Action Determination Checklist

Covered Action Checklist

This checklist is a discretionary tool for state and local agencies to use in determining whether a plan, program, or project is a "Covered Action" ([Delta Plan Chapter 2](#)), as defined in the Delta Reform Act ([Water Code section 85057.5\(a\)](#)).

Note: the responsibility for making this determination rests with the State and local agencies, subject to judicial review.

Covered Action Title: _____

STEP 1: Determine if the plan, program, or project is exempt from the definition of a "covered action".

THE PLAN, PROGRAM OR PROJECT:	YES	NO
1. Is exempt from the definition of a covered action. <i>For specific details on what is statutorily exempt from regulation as a "covered action" refer to: (Water Code section 85057.5 (b.)), included in (Appendix F of the Delta Plan) and (Chapter 2 of the Delta Plan)</i>		

If "YES", the plan, program, or project is exempt from the Council's regulatory authority – **NO FURTHER STEPS REQUIRED.**

If "NO", the plan, program or project is not exempt from the definition of a covered action – **PROCEED TO STEP 2.**

STEP 2: Determine if the plan, program, or project meets all four "Screening Criteria" listed below.

THE PLAN, PROGRAM OR PROJECT:	YES	NO
1. Is "... a plan, program, or project as defined pursuant to Public Resources Code section 21065; <i>This criteria would be met if the plan, program, or project meets the definition of a project under the California Environmental Quality Act (CEQA) Public Resources Code section 21065 that defines the term "project" for purposes of potential CEQA review.</i>		
2. Will occur, in whole or in part, within the boundaries of the Delta or Suisun Marsh; <i>This criteria would be met if, for example, water intended for use upstream of the statutory Delta or Suisun Marsh were transferred through the statutory Delta or Suisun Marsh (pursuant for example, to a water transfer longer than 1 year in duration).</i>		
3. Will be carried out, approved, or funded by the State or a local public agency; <i>This criteria would be met if the plan, program, or project is (a) an activity directly undertaken by any state or local public agency, (b) An activity undertaken by a person which is supported, in whole or in part, through contracts, grants, subsidies, loans, or other forms of assistance from one or more state or local public agencies, or (c) An activity that involves the issuance to a person of lease, permit, license, certificate, or other entitlement for use by one or more state or local public agencies.</i>		
4. Will have a significant impact on the achievement of one or both of the coequal goals or the implementation of a government-sponsored flood control program to reduce risks to people, property, and State interests in the Delta; <i>"Significant Impact" means a substantial positive or negative impact on the achievement of one or both of the coequal goals or the implementation of a government-sponsored flood control program to reduce risks to people, property, and state interests in the Delta, that is directly or indirectly caused by a project on its own or when the project's incremental effect is considered together with the impacts of other closely-related past, present, or reasonably foreseeable future projects. The coequal goals and government-sponsored flood control programs are further defined in Chapters 3, 4, and 7.</i> <i>The following categories of projects will not have a significant impact for this purpose:</i> <ul style="list-style-type: none"> • "Ministerial" projects exempted from CEQA, pursuant to Public Resources Code Section 21080(b)(1); • "Emergency" projects exempted from CEQA, pursuant to Public Resources Code Section 21080(b)(2)-(4); • Temporary water transfers of up to one year in duration. This provision shall remain in effect only through December 31, 2016, and as of January 1, 2017, is repealed, unless the Council acts to extend the provision prior to that date.; • Other projects exempted from CEQA, unless there are unusual circumstances indicating a reasonable possibility that the project will have a significant impact under Water Code Section 85057.5(a)(4). Examples of unusual circumstances could arise in connection with, among other things: <ul style="list-style-type: none"> • Local government general plan amendments for the purpose of achieving consistency with the Delta Protection Commission's Land Use and Resource Management Plan; and, • Small-scale habitat restoration projects, as referred to in CEQA Guidelines 15333, proposed in important restoration areas, but which are inconsistent with the Delta Plan's policy related to appropriate habitat restoration for a given land elevation. 		

If "NO" to any in step 2 above, the plan, program, or project, for purposes of the Delta Plan, does not meet the definition of Covered Action, **NO FURTHER STEPS REQUIRED.**

If "YES" to all four in step 2 above, then the plan, program or project is considered, for purposes of the Delta Plan, a Proposed Action – **PROCEED TO STEP 3.**

STEP 3: Determine if the Proposed Action is covered by one or more Delta Plan regulatory policies below - *the final Screening Criteria.*

THE PROPOSED ACTION:	YES	NO
<p>1. Is covered by one or more of the regulatory policies contained in Chapters 3, 4, 5, and 7;</p> <p>DELTA PLAN CHAPTER 3 - WR P1 / 23 CCR SECTION 5003: This policy covers all Proposed Actions that would export water from, transfer water through, or use water in the Delta, but does not cover any such action unless one or more water suppliers would receive water as a result of the proposed action. WR P2 / 23 CCR SECTION 5004: This policy covers all Proposed Actions that involve water supply or water transfer contracts from the State Water Project (SWP) and/or the Central Valley Project (CVP).</p> <p>DELTA PLAN CHAPTER 4 – ER P1 / 23 CCR SECTION 5005: This policy covers all Proposed Actions that could significantly affect flow in the Delta. ER P2 / 23 CCR SECTION 5006: This policy covers all Proposed Actions that include habitat restoration. ER P3 / 23 CCR SECTION 5007: This policy covers all Proposed Actions in the priority habitat restoration areas depicted in Appendix 5. It does not cover actions outside those areas. ER P4 / 23 CCR SECTION 5008: This policy covers all Proposed Actions that would construct new levees or substantially rehabilitate or reconstruct existing levees. ER P5 / 23 CCR SECTION 5009: This policy covers all Proposed Actions that have the reasonable probability of introducing, or improving habitat conditions for nonnative invasive species.</p> <p>DELTA PLAN CHAPTER 5 - DP P1 / 23 CCR SECTION 5010: This policy covers all Proposed Actions that involve new residential, commercial, and industrial development that is not located within the areas described in Appendix 6 and Appendix 7. In addition, this policy covers any such action on Bethel Island that is inconsistent with the Contra Costa County general plan effective as of the date of the Delta Plan’s adoption. This policy does not cover commercial recreational visitor-serving uses or facilities for processing of local crops or that provide essential services to local farms, which are otherwise consistent with this chapter. DP P2 / 23 CCR SECTION 5011: This policy covers all Proposed Actions that involve the siting of water management facilities, ecosystem restoration, and flood management infrastructure.</p> <p>DELTA PLAN CHAPTER 7 – RR P1 / 23 CCR SECTION 5012: This policy covers all Proposed Actions that involve discretionary State investments in Delta flood risk management, including levee operations, maintenance, and improvements. RR P2 / 23 CCR SECTION 5013: This policy covers all Proposed Actions that involve new residential development of five or more parcels that are not located within the following areas: (1) Areas that city or county general plans, as of the date of the Delta Plan’s adoption, designate for development in cities or their spheres of influence; (2) Areas within Contra Costa County’s 2006 voter-approved urban limit line, except Bethel Island; (3) Areas within the Mountain House General Plan Community Boundary in San Joaquin County; or (4) The unincorporated Delta towns of Clarksburg, Courtland, Hood, Locke, Ryde, and Walnut Grove, as shown in Appendix 7. RR P3 / 23 CCR SECTION 5014: This policy covers all Proposed Actions that would encroach in a floodway that is not either a designated floodway or regulated stream. RR P4 / 23 CCR SECTION 5015: This policy covers all Proposed Actions that would encroach in any of the floodplain areas described below: (1) The Yolo Bypass within the Delta; (2) The Cosumnes River-Mokelumne River Confluence, as defined by the North Delta Flood Control and Ecosystem Restoration Project (McCormack-Williamson), or as modified in the future by the Department of Water Resources or the U.S. Army Corps of Engineers (Department of Water Resources 2010a); and, (3) The Lower San Joaquin River Floodplain Bypass area, located on the Lower San Joaquin river upstream of Stockton immediately southwest of Paradise Cut on lands both upstream and downstream of the Interstate 5 crossing. This area is described in the Lower San Joaquin River Floodplain Bypass Proposal, submitted to the Department of Water Resources by the partnership of the South Delta Water Agency, the River Islands Development Company, Reclamation District 2062, San Joaquin Resource Conservation District, American Rivers, the American Lands Conservancy, and the Natural Resources Defense Council, March 2011. This area may be modified in the future through the completion of this project.</p>		

If “NO” to Step 3 above, the “proposed action” is not covered by any of the Delta Plan regulatory policies above and therefore exempt from the Council’s regulatory authority - **NO FURTHER STEPS ARE REQUIRED.**

If “YES” to Step 3 above, the “proposed action” is covered by one or more of the Delta Plan regulatory policies above and therefore referred to as a “Covered Action”. A Certification of Consistency must be filed with the DSC - **PROCEED TO FINAL STEP.**

FINAL STEP: File a Certification of Consistency with detailed findings demonstrating consistency with the Delta Plan.

1. Click [here](#) to file a Certification of Consistency with the Delta Stewardship Council, with detailed findings, demonstrating that the covered action is consistent with the Delta Plan.

The State or local agency that proposes to undertake a covered action, prior to initiating the implementation of that covered action, is required to file a Certification of Consistency with the Delta Stewardship Council using the online form found on the Delta Stewardship Council's website. Detailed findings must be included to demonstrate how the covered action is consistent with all relevant policies of the Delta Plan. The online form prompts the agency for the requirements to be included and may be uploaded to the form. Typically, the lead agency, for purposes of CEQA compliance, will file the Certification of Consistency with the Delta Stewardship Council.

ADDITIONAL CONSIDERATIONS:

- **Have the project proponent and/or the lead agency consulted with the Delta Stewardship Council on the covered action? (Not required, but recommended)**

Working with the Delta Stewardship Council staff during the early development phases of the covered action and prior to filing a Certification of Consistency is a valuable tool to maximize the consistency between the covered action and the Delta Plan.

- **Statutory Exemptions**

Certain actions are statutorily excluded from the definition of covered action and are exempt from the Council's regulatory authority ([Water Code section 85057.5\(b\)](#)). A complete list is included in [Appendix F](#) of the Delta Plan.

- **Was the DRAFT Certification of Consistency posted on the Agency website for public review and comment and notifications sent prior to submission to the Delta Stewardship Council?**

At least 10 days prior to the submission of a Certification of Consistency to the Council, agencies whose actions are not subject to open meeting laws (Bagley-Keene Open Meeting Act [[Gov. Code sec 11120 et seq.](#)] or the Brown Act [[Gov. Code sec 54950 et seq.](#)]) with regard to its certification must post for public review and comment, their draft certification on their website and in their office, mail to all persons requesting notice, and include any public comments received in the record submitted to the council in the case of an appeal.

Any state or local public agency that is subject to open meeting laws with regard to its certification is encouraged to take those actions.

- **Has CEQA been completed at the time of filing a Certification of Consistency with the Delta Stewardship Council?**

Filing the Certification of Consistency with the Delta Stewardship Council should occur at the same time of filing of the Notice of Determination where applicable. Filing a Certification of Consistency too early may result in an originally proposed covered action that is significantly altered through the CEQA process or otherwise. If, after filing a certificate of consistency, the project is significantly changed, a new Certification of Consistency will need to be filed with the Delta Stewardship Council.

- **Implementation of the covered action may not proceed until the appeals process is complete.**

*Once the State or local agency has filed a Certification of Consistency for a covered action, the Certification of Consistency is displayed on the Delta Stewardship Council's website for public view. [Water Code 85225.10. \(a\)](#): Any person who claims that a proposed covered action is inconsistent with the Delta Plan and, as a result of that inconsistency, the action will have a significant adverse impact on the achievement of one or both of the coequal goals or implementation of government-sponsored flood control programs to reduce risks to people and property in the Delta, may file an appeal **within 30 calendar days of Filing** with regard to a Certification of Consistency submitted to the Delta Stewardship Council .*

*The Delta Stewardship Council has developed **Administrative Procedures Governing Appeals** ([Appendix D](#)). If a valid appeal is filed with the Delta Stewardship Council **within 30 calendar days of Certification Filing**, the Council will hear the appeal within 60 days of the filing of the appeal. The Council will adopt written findings, either upholding the appeal or denying it, within 60 days of the hearing. If multiple appeals are filed on the same covered action, the Council will consolidate, to the extent practicable, all the appeals into a single hearing.*

- **Has the state or local agency prepared the "record" upon which the certification of consistency is based?**

If the Certification of Consistency is appealed, the State or local agency must submit the record to the Delta Stewardship Council within 10 days of being notified of the appeal. The Delta Stewardship Council encourages the agency to submit the record that was before the lead agency at the time it made its certification as part of the certificate of consistency. Failure to submit the record in a timely manner is grounds for the council to affirm the appeal.

**THANK YOU FOR USING THE COVERED ACTIONS CHECKLIST.
YOU MAY SAVE THE CHECKLIST TO YOUR COMPUTER OR PRINT FOR YOUR RECORDS.**

