Rush Ranch Habitat Restoration, Facility Improvements, and Site Utilization Project

Minor Revision No. 2 to Conditional Use Permit & Marsh Development Permit

U-90-20 & MD-90-05

Draft Initial Study and Mitigated Negative Declaration

August 2015

Department of Resource Management
County of Solano

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DEPARTMENT OF RESOURCE MANAGEMENT

PART II OF INITIAL STUDY OF ENVIRONMENTAL IMPACTS

2 EXECUTIVE SUMMARY

Proposed Project

The Rush Ranch Habitat Restoration, Facility Improvements and Site Utilization project (herein referred to as the "Project" or "Proposed Projects") would restore native habitats, improve public access facilities and enhance the visitor experience at Rush Ranch. *Environmental Setting.* Rush Ranch Open Space Preserve is a 2,070-acre property in the Suisun Marsh, in Solano County, in northern California. The property is surrounded by sloughs to the north, west, and south, with private hunting clubs and state run wildlife reserves across the channel. The property is bounded by private rangeland to the east.

Project Description. The Project proposes the continuation of existing uses and land management procedures on the property and also a number of new or expanded facilities/projects, and uses. The site is located within the Suisun Marsh Protection Program and the projects encompass both the Primary and Secondary Management Zone. The Facility and Site Utilization Improvements projects, Suisun Hollow and Upper Spring Branch Creek Restoration Projects are located within the Secondary Management Zone; however, Goat Island Marsh and Lower Spring Branch Creek Restoration projects are located within the Primary Management Zone. The projects are as summarized below:

New Infrastructure and Facility Improvements. The Project includes a number of facility improvement projects to be implemented concurrent with these habitat restoration projects. These projects aim to provide high-quality public access with opportunities for environmental education within a limited footprint of the preserve, while improving access for people with disabilities, ensuring public health and safety, supporting scientific research, and facilitating removal of berms and trails that currently constrain habitat restoration and adaptation to sea level rise. These projects include:

- New Storm Water Management System for the Rush Ranch Headquarters
- Public Access and Safety Improvements at the Rush Ranch Headquarters, including:
  - Visitor kiosk, arena seating area, walkways and platforms, work safety areas, upgraded utilities, kitchen upgrades, and permitted overnight quarters
  - Accessory structures in the Ranch Headquarters
- New roads, trails, and circulation infrastructure, including:
  - Parking area expansion and improvements
  - Interpretive Nature Trail and Public Access Improvements at the Headquarters and along Goat Island Marsh
  - Staging Area and Footpath Expansion in the East Hills
- Scientific Equipment Installation to Support Estuarine Research

Proposed Changes to Site Uses. The Project includes the following changes in site use to facilitate existing and anticipated changes in use:

- Establishes visitor use targets
- Establishes new management procedures for routine, medium, and infrequent large events, including:
  - Public safety measures
  - Traffic control and parking measures
  - Sanitation and public health facilities and procedures

Habitat Restoration and Enhancement Projects. The Proposed Project includes four habitat enhancement/ wetland restoration projects (Associated Projects) intended to restore natural fluvial and tidal processes within the two primary watersheds at Rush Ranch:

- *Goat Island Marsh Tidal Restoration Project.* This project would restore unrestricted tidal flows to Goat Island Marsh, currently a diked, muted marsh with broken tide gates. Proposed actions include excavating a breach in the levee and constructing a tidal channel, lowering the remainder of the perimeter levee, closing the levee portion of the Marsh Trail, expanding marsh ponds, and revegetating the levee excavation site and marsh-terrestrial ecotone. A boardwalk would be constructed concurrently with the project to provide alternate public acces*s.*

- *Suisun Hill Hollow Enhancement Project.* This project would restore hydrologic connectivity between upland, fluvial, and estuarine habitats in Suisun Hill Hollow and Goat Island Marsh, enhance seasonal wetland habitats and reconnect ecological processes between the tidal and fluvial system. Proposed actions include installing off-channel stock water facilities and gates for livestock, installing exclusion fences to protect seasonal wetlands, lowering artificial berms and re-grading impoundments sites to restore seasonal wetland complexes, vegetation management actions to encourage native wetland plants and discourage weeds, boardwalks to maintain public access across the site, and working with Solano County to enlarge the culverts under Grizzly Island Road.

- *Lower Spring Branch Creek Tidal Marsh and Seasonal Wetland Enhancement Project.* This project would improve hydrologic connectivity between upland, fluvial, and estuarine habitats along the seasonal creek system and facilitate landward tidal marsh migration as sea level rises. Proposed actions include removing the berm and culverts at the distal end of Spring Branch Creek, regrading channels, berms, and ditches within the project site, grading weed patches to create seasonal wetland depressions, restoring native vegetation, realigning trails and installing a boardwalk to maintain public access, installing a livestock crossing area, and designating service roads to provide vehicle access to the South Pasture from Grizzly Island Road.

- *Upper Spring Branch Creek Seasonal Wetland Enhancement Project.* This project would include the erection of additional livestock fences to control livestock access, additional water source development for cattle outside the wetlands area, and the

maintenance/repair of the existing spillway and pond to provide sufficient water for wetlands, maintain open water and the existing emergent vegetation suitable to support the existing breeding colony of tri-colored blackbirds and future colonization by California Tiger Salamander breeding populations. The Upper Spring Branch project would include only repairs and maintenance activities to existing features without any grading for wetland creation anywhere in the Secondary Marsh Zone.

Permits and Approvals Required

The Proposed Project is subject to a Use Permit and Marsh Development Permit amendment, as well as possible permits or approvals from the following agencies:

The agencies listed below may have jurisdiction over portions of the Project:

Federal Agencies

- US Army Corps of Engineers (Corps)
- US Fish And Wildlife Service (USFWS)
- National Oceanic and Atmospheric Administration (NOAA)
- US Coast Guard (USCG)
- US Bureau of Reclamation (USBR)
- National Marine Fisheries Service (NMFS)

State Agencies

- California Department of Fish and Wildlife (CDFW)
- California Department of Public Health (CDPH)
- California State Lands Commission (CSLC)
- State Historical Preservation Office (SHPO)
- State Water Resources Control Board (SWRCB)

Regional Agencies

- San Francisco Bay Conservation and Development Commission (BCDC)
- Regional Water Quality Control Board -- San Francisco Bay Region (SFBRWQCB)
- Bay Area Air Quality Management District (BAAQMD)
- Delta Stewardship Council

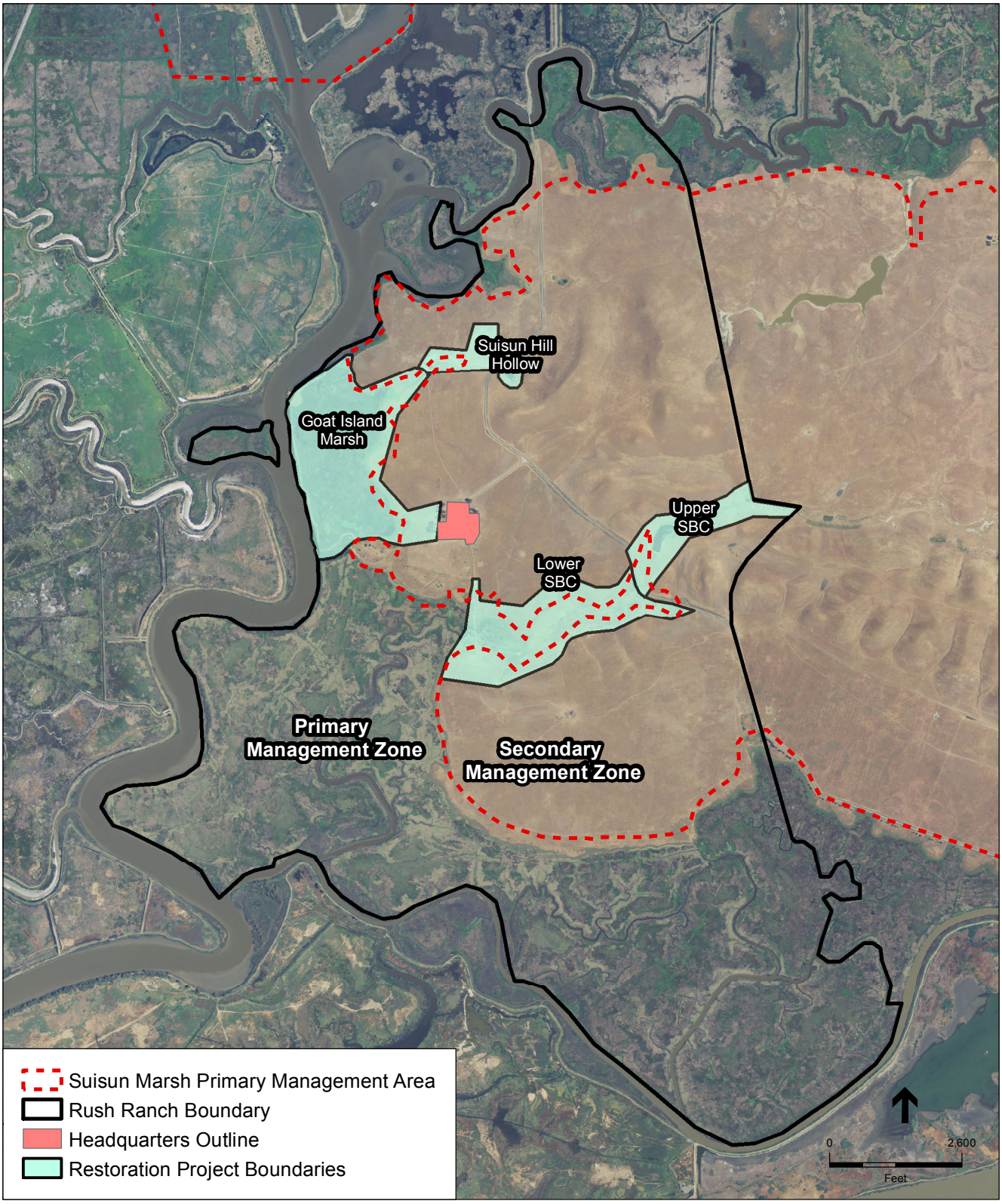
Environmental Impacts

This Initial Study identified a number of potentially significant impacts, all of which can be reduced to less-than-significant levels by incorporation of mitigation measures identified in this Initial Study. These include:

- Changes to agricultural uses
- Impacts to wetlands habitats

- Potential effects to archaeological and historic resources
- Possible soil erosion
- Possible soil contamination in the Ranch Headquarters area
- Potential reduction in water quality during and after construction
- Changes to site drainage patterns
- Potential conflict with land use plans
- Impacts associated with temporary construction noise
- Impacts to recreational facilities
- Impacts to special status species
- Impacts to movement of species

Upon approval of the Project, a Mitigation Monitoring and Reporting Program (see Appendix C: Draft Mitigation Monitoring and Reporting Program) would be adopted by the County to assure implementation of mitigation measures identified in this Initial Study.



SOURCE: SLT, Solano County- Suisun Management Area, 2009 NAIP imagery

Rush Ranch Restoration Designs.120660

ESA PWA

Figure IS-12

Proposed Habitat Restoration Sites and Suisun Marsh Primary Management Area

3 INTRODUCTION

The following analysis is provided by the Solano County Department of Resource Management as a review of and supplement to the applicant's completed "Part I of Initial Study". These two documents, Part I and II, comprise the Initial Study prepared in accordance with the State CEQA Guidelines, Section 15063.

Project Title:	Rush Ranch Habitat Restoration, Facility Improvements, and Site Utilization Project
Application Number:	U-90-29 & MD -90-05 Minor Revision No. 2
Project Location:	Suisun Marsh, Solano County
Assessor Parcel No.(s):	0046-140-040, 0046-140-050, 0046-140-060, 0046-140-070, 0046-150-010, 0046-150-030, 0046-160-080
Project Sponsor's Name and Address:	Solano Land Trust 1001 Texas St., Suite C Fairfield, CA 94533

3.1 General Information

This document discusses the proposed Project and Associated Projects, the environmental setting for the proposed Project and Associated Projects, and the impacts on the environment from the Proposed Project and Associated Projects and any measures incorporated which will minimize, avoid and/or provide mitigation measures for the impacts of the projects on the environment.

- ❑ Please review this Initial Study. You may order additional copies of this document from the Planning Services Division, Resource Management Department, County of Solano County at 675 Texas Street, Fairfield, CA, 94533.
- ❑ We welcome your comments. If you have any comments regarding the Proposed Project please send your written comments to this Department by the deadline listed below.
- ❑ Submit comments via postal mail to

  Planning Services Division
  Resource Management Department
  Attn: Nedzlene Ferrario, Senior Planner
  675 Texas Street, Suite 5500
  Fairfield, CA 94533
- ❑ Submit comments via fax to: (707) 784-4805
- ❑ Submit comments via email to: nnferrario@solanocounty.com
- ❑ Submit comments by the deadline of: September 30, 2015

3.2 Next Steps

After comments are received from the public and any reviewing agencies, the Department may recommend that the environmental review is adequate and that a Negative Declaration be adopted or that the environmental review is not adequate and that further environmental review is required.

3.3 Environmental Determination

On the basis of this initial study:

☐ I find 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 the project proponent has agreed to revise the project to avoid any significant effect. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find the Proposed Project could have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT (EIR) is required.

☐ I find the Proposed Project could have a significant effect on the environment, but at least one effect has been (1) adequately analyzed in a previous document pursuant to applicable legal standards, and (2) addressed by mitigation measures based on the previous analysis as described in the attached initial study.
An EIR is required that analyzes only the effects that were not adequately addressed in a previous document.

☐ I find that although the Proposed Project could have a significant effect on the environment, no further environmental analysis is required because all potentially significant effects have been (1) adequately analyzed in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (2) avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are included in the project, and further analysis is not required.

_____ _____

Date Nedzlene Ferrario, Senior Planner

INCORPORATION OF MITIGATION MEASURES INTO THE PROPOSED PROJECT

By signature of this document, the project proponent amends the project description to include the mitigation measures as set forth in Section 2.

_____ _____

Date Nicole Byrd, Solano Land Trust

3.4 Environmental Setting and Project Description

The Rush Ranch Open Space Preserve is a 2,070-acre property in the Suisun Marsh, in Solano County, in northern California **(Figure IS-1. Regional Map**). Suisun Marsh is a brackish marsh north of Suisun Bay, situated between the Sacramento - San Joaquin River Delta to the east and Carquinez Strait and San Pablo Bay to the west. The property is surrounded by sloughs to the north, west, and south, with private hunting clubs and state run wildlife reserves across the channel. The property is bounded by private rangeland to the east. The site is within two County Zoning Districts, Limited Agriculture (AL -160) and Marsh Preservation (MP) **(Figure IS-2. Assessors Parcels, Zoning, and Public Land Survey and within the Suisun Marsh Protection Program.**

Rush Ranch includes 1,050 acres of tidal brackish marsh and seasonal creeks with active alluvial fans, 80 acres of diked muted-tidal wetlands, and 940 acres of upland grasslands **(Figure IS-3, Ecogeomorphic Types**). The tidal wetlands at Rush Ranch are the largest remnant tidal marsh within Suisun Marsh. The uplands are characterized by rolling hills and older alluvial terraces dominated by California annual grassland. Connectivity between slough, tidal marsh, seasonal creek, and rolling uplands, with relatively few artificial barriers, is one of the most distinguishing features of Rush Ranch.

The preserve headquarters contains a 12-acre developed area with numerous facilities to support public access and site maintenance.

The following project description contains a summary of existing conditions and proposed changes to Solano Land Trust's Rush Ranch Preserve in the coming years. Proposed changes are contingent on obtaining funding, technical assistance, and in-kind support from other entities, and may not be implemented if these resources are not available. Likewise, the timeline for implementation is dependent on resource availability. The project description contains the following sections:

Existing Infrastructure

- Existing Structures and Facilities
- Existing Streets, Circulation, and Parking
- Existing Water, Sewer, and Power
- Existing Drainage
- Existing Site Utilization

Proposed Changes to Site

- New Infrastructure and Facility Improvements
- New Roads, Traffic, and Circulation Patterns
- New Water, Sewer, and Power
- New Drainage Features
- New Habitat Restoration and Enhancement Projects
- New Land Stewardship Actions

Proposed Site Utilization

New Event Management Procedures

3.4.1 Existing Infrastructure

Existing Structures and Facilities.

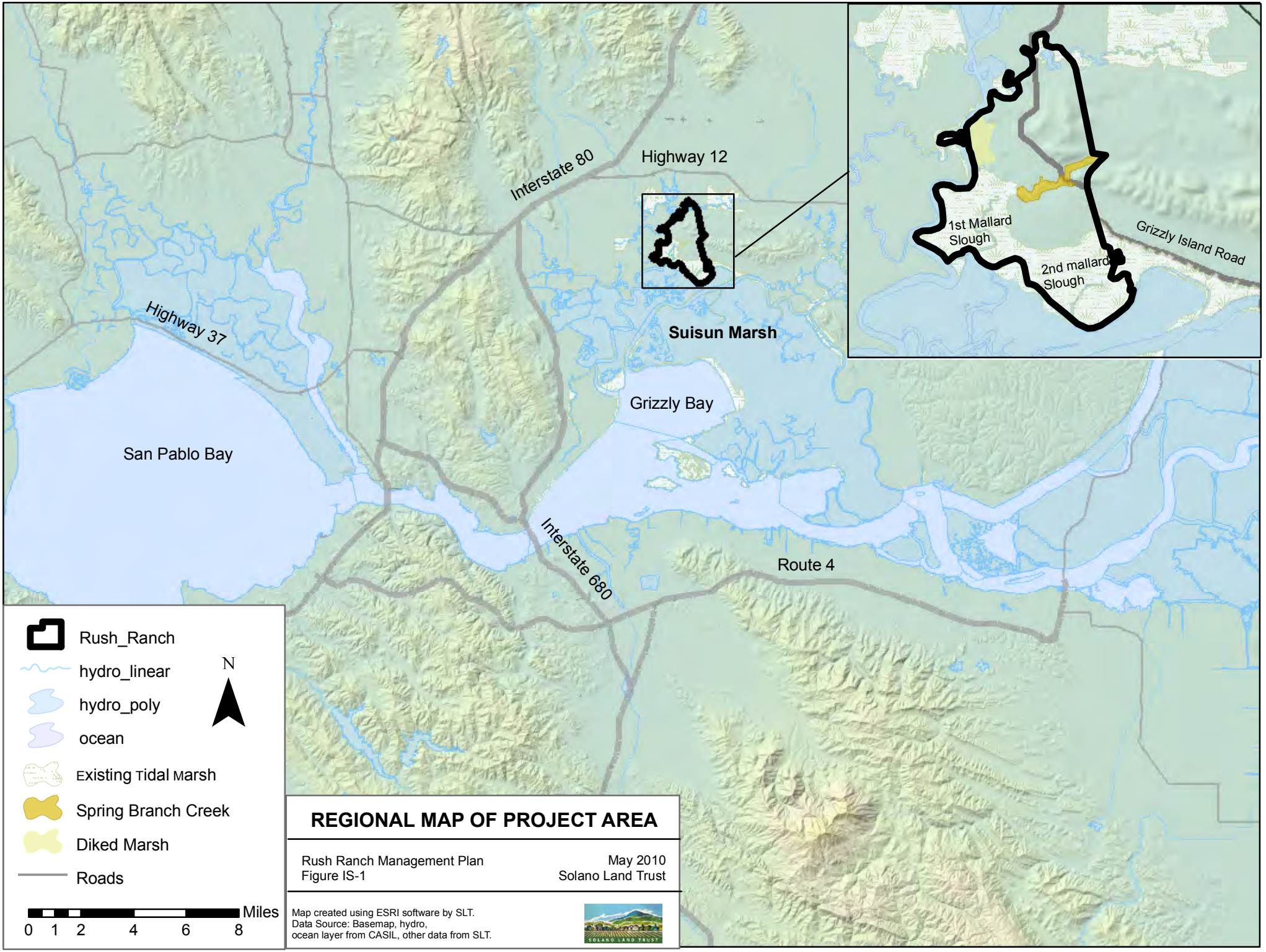
The 12-acre preserve headquarters at Rush Ranch is centered on the Rush Ranch Nature Center, a multi-use building available for public use, with an attached caretaker residence, overnight quarters, scientific laboratory, office, exterior breezeway and courtyard, and landscaped garden. Older structures include a former hay barn, blacksmith shop, and kit house. Livestock facilities include corrals, a stallion barn and carriage shed, hitch and rail, equestrian arena, and a manure bin. Other buildings include a tractor shed for storage of SLT materials and equipment. Utilities include a drinking water well and wooden windmill, livestock water well and wooden windmill, drinking water tanks, an alternative septic system, and an off-grid energy system, including a wind turbine, solar array, and propane generator. The grounds include a picnic area shaded by eucalyptus trees, a small corporation (equipment) yard, and a small native plant garden. The headquarters also contains a small all-weather gravel parking lot, gravel multi-use area, and a supplemental parking area on native soil adjacent to the picnic area (see **Figure IS-4 and Table 1-1)**.

Existing Streets, Circulation, and Parking

Existing Public Roadways. Grizzly Island Road runs through the center of Rush Ranch. Solano County holds a right-of-way for the road and road edge, and is responsible for road maintenance. Small gravel turnouts are located at various locations within the County right-of-way.

Existing Driveway and Parking. Rush Ranch has a single public entrance point located on the west side of Grizzly Island Road. The driveway includes a 1200-foot long concrete apron connecting to the public roadway. The remainder of the driveway and all weather parking areas are gravel. Current parking facilities are summarized below and shown on **Figure IS-4**:

- *All-Weather Parking.* A gravel parking lot of approximately 17,000 SF accommodates approximately 20 standard sized vehicles, and is available for public use year-round. An ADA-approved parking pad is available next to the Hitch and Rail in the all-weather parking area.
- *Reserved Parking.* A gravel lot west of the white barn provides four parking spaces reserved for SLT work vehicles and the Rush Ranch caretaker and two ADA approved parking pads to access the Nature Center.
- *Supplemental Parking.* A 2-acre supplemental parking area accommodating approximately 175 standard-sized vehicles is available in the grasslands adjacent to the entrance road. The supplemental parking area is only available during dry conditions.

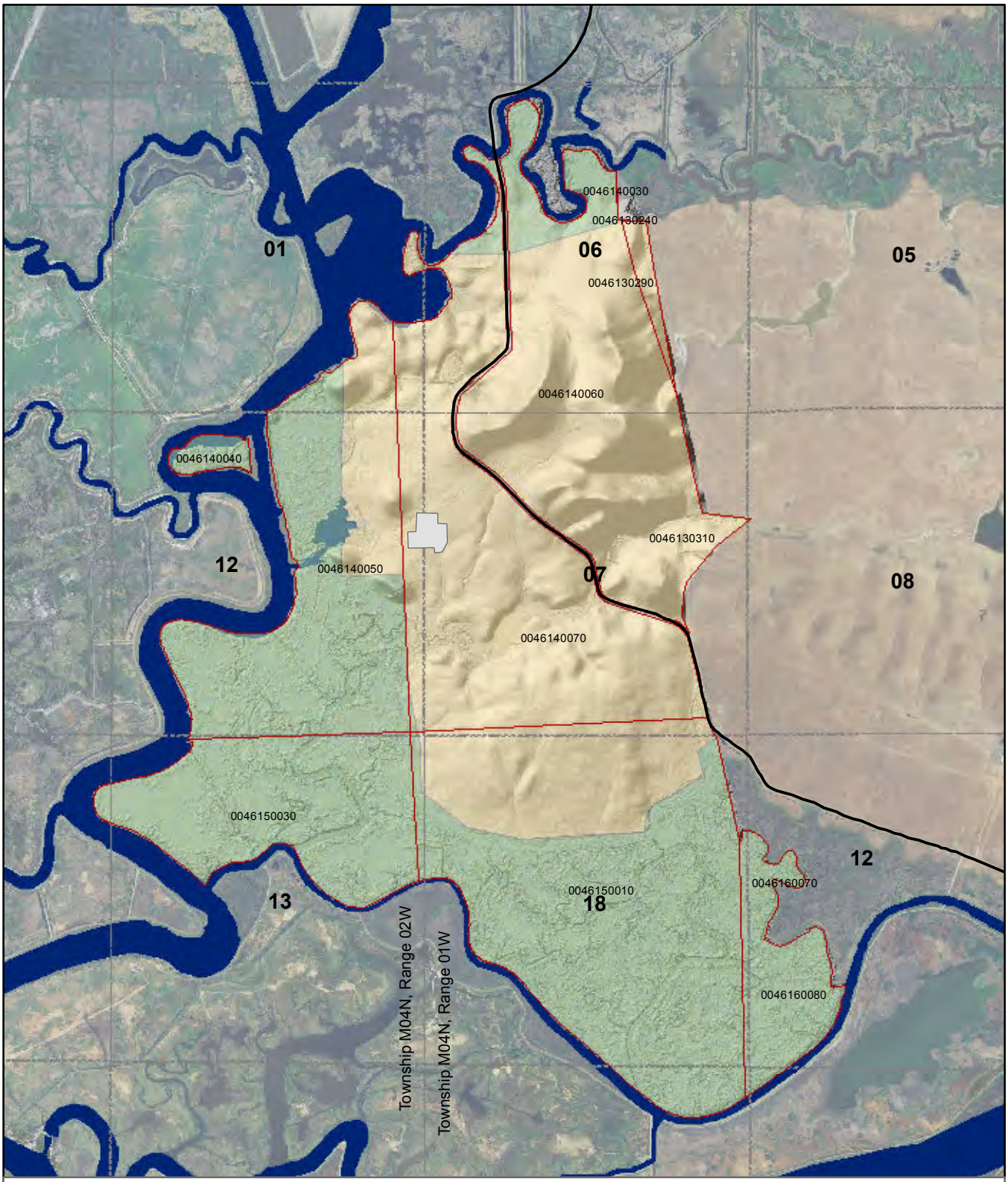


REGIONAL MAP OF PROJECT AREA

Rush Ranch Management Plan
Figure IS-1

May 2010
Solano Land Trust

Map created using ESRI software by SLT.
Data Source: Basemap, hydro,
ocean layer from CASIL, other data from SLT.



Features

- Headquarters
- Grizzly Island Road
- Sloughs

County Zoning Districts

- Ag Limited (AL-160)
- Marsh Preservation (MP)

Public Lands Survey

- Section

RR Assessor's Parcels

- Assessor's Parcels

0 100 200 400 600 800 Meters
0 320 640 1,280 1,920 2,560 Feet

Notes: Map created by Solano Land Trust using ESRI software.
Data Source(s): Parcels, Zoning, & PLS: Solano County. 2008.
Aerial Imagery: USDA-NAIP. 2009.
All other data: Solano Land Trust.

N W E S

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Assessors Parcels, Zoning, & Public Land Survey

Rush Ranch, Solano County, California

December 2012		Figure IS-2

Features

- Cultural Site
- Levee
- Headquarters Outline
- All Gates
- Fences
- Trails
- Grizzly Island Road
- All_Culverts

Ecogeomorphic Units

- alluvial, active channel
- bluff scarp - grassland
- bluff scarp - riparian
- high marsh/turf pan
- subtidal channel
- Hillslopes
- Older Alluvial Fans
- borrow pit
- Younger Alluvial Fans
- Impoundments
- Tidal Marsh Ecotone
- Diked Marsh Ecotone
- Fringing Marsh Ecotone
- Subtidal Channels
- Ponds

0 87.5 175 350 525 700 Meters

0 385 770 1,540 2,310 3,080 Feet

N W E S

Map created using ESRI software by Solano Land Trust.
Ecogeomorphic units created by WWR, updated by Jessie Olson.
Draped over LiDAR derrived hillshade and 2009 NAIP imagery. All other data from SLT.

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Ecogeomorphic Units

Rush Ranch, Solano County, California

July 2012

Figure IS-3

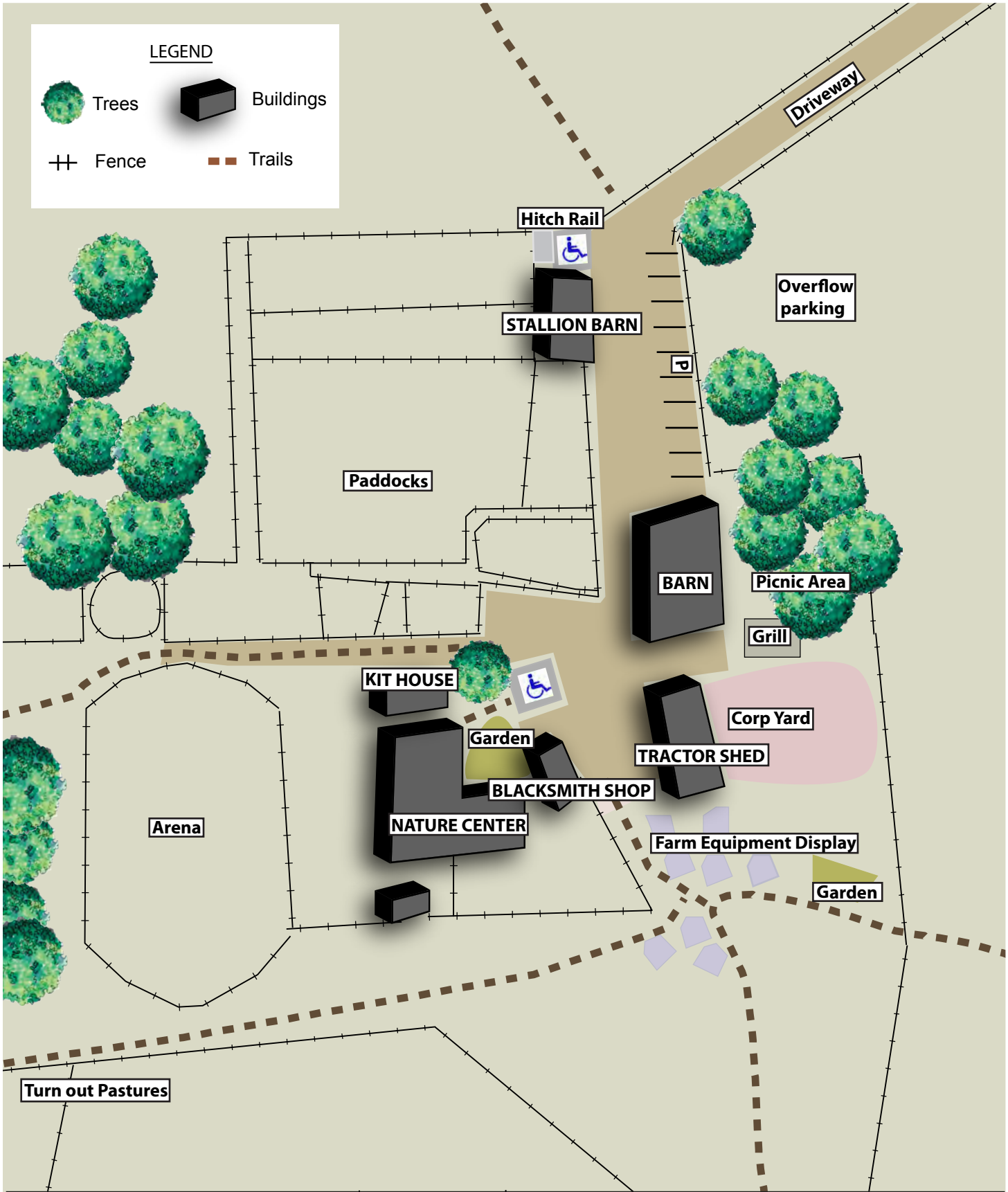
- *Overflow Parking.* The adjoining pasture south of the Supplemental Parking area has the potential to accommodate between 300-500 additional vehicles for temporary use during large events. The overflow parking is only available during dry conditions. Overflow parking is infrequently used, and rarely used to full capacity, if ever.

Estimated parking lot size and number of parking spaces are based on GIS area calculations prepared by SLT and on-site experience managing parking and Rush Ranch.

Table 1-1. Existing Footprint of Facilities in the Rush Ranch Preserve Headquarters

FEATURES	Surface	Area (SF)*	Area (acres)*
Visitor Services Area	**Variable**	**522,720**	**12.00**
Buildings	**Hardscape**	**20,050**	**0.46**
White Barn		6,400	0.15
Stallion Barn		2,500	0.06
Manure Bin		144	0.00
Livestock Loading Chute		36	0.00
Tractor Shed		1,500	0.03
Blacksmith Shop		600	0.01
Nature Center & Covered Breezeway		5,500	0.13
Kit House		850	0.02
Power Shed		320	0.01
Quarters		2,200	0.05
Grounds	**Variable**	**112,000**	**2.57**
Patio and ADA Pad	Concrete & Brick	4,000	0.09
Entrance Road	Gravel	27,000	0.62
All Weather Parking	Gravel	37,000	0.85
Reserved Parking & Multi-Use Area	Gravel	22,000	0.51
Picnic Area	Soil (Compacted)	22,000	0.51
Corporation (Equipment) Yard	Soil (Compacted)	4,000	0.09
Headquarters Livestock Facilities		119,790	2.75
Corrals	Soil (Compacted)	87,120	2.00
Arena	Soil (Compacted)	32,670	0.75
Supplemental Parking	**Soil (Compacted)**	**87,120**	**2.00**

Source: GIS estimates by SLT based on 2009 USDA-NAIP imagery.
**Figures show estimated total coverage; figures do not represent interior dimensions.*



10 5 0 10 Meters

0 15 30 60 90 120 Feet

N W E S

Map created using ESRI and Adobe Illustrator software by Jessie Olson. Data from Solano Land Trust.

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EXISTING HQ IMPROVEMENTS

Rush Ranch, Solano County, California
Solano Land Trust

June 2011		Figure IS-4

Existing Water, Sewer and Power

Existing Drinking Water. Drinking water at Rush Ranch is pumped from an on-site well into two 8000-gallon tanks, with 5000 gallons held in reserve for fire and emergencies. SLT's Land Steward estimates that the average groundwater level in the well is approximately 15 feet below the surface based on on-site experience placing and managing groundwater pumps. Drinking water is purified with a multi-tiered purification process with an ozone generator, reverse osmosis through a filtration system, and ultraviolet irradiation. SLT operates the system under Domestic Water Supply Permit # 02-04-12P-4810035 from the California Department of Public Health, obtained on July 25, 2012. Current drinking water use at Rush Ranch includes a year-round residential caretaker facility (1-3 people), year-round day use by a small staff and volunteers (3-10 people), and short-term daily drop-in use by visitors. Current annual visitation is estimated at approximately 15,000 people.

Existing Irrigation Water. Irrigation water at Rush Ranch is primarily used in the preserve headquarters for landscaping and occasionally for re-vegetation at habitat restoration project sites. Irrigation water is sourced from existing groundwater wells at the preserve headquarters.

Existing Stock Water. Stock water at Rush Ranch is currently sourced from existing stock ponds and groundwater wells in the preserve headquarters and South Pasture. Groundwater wells providing stock water are segregated from the drinking water well.

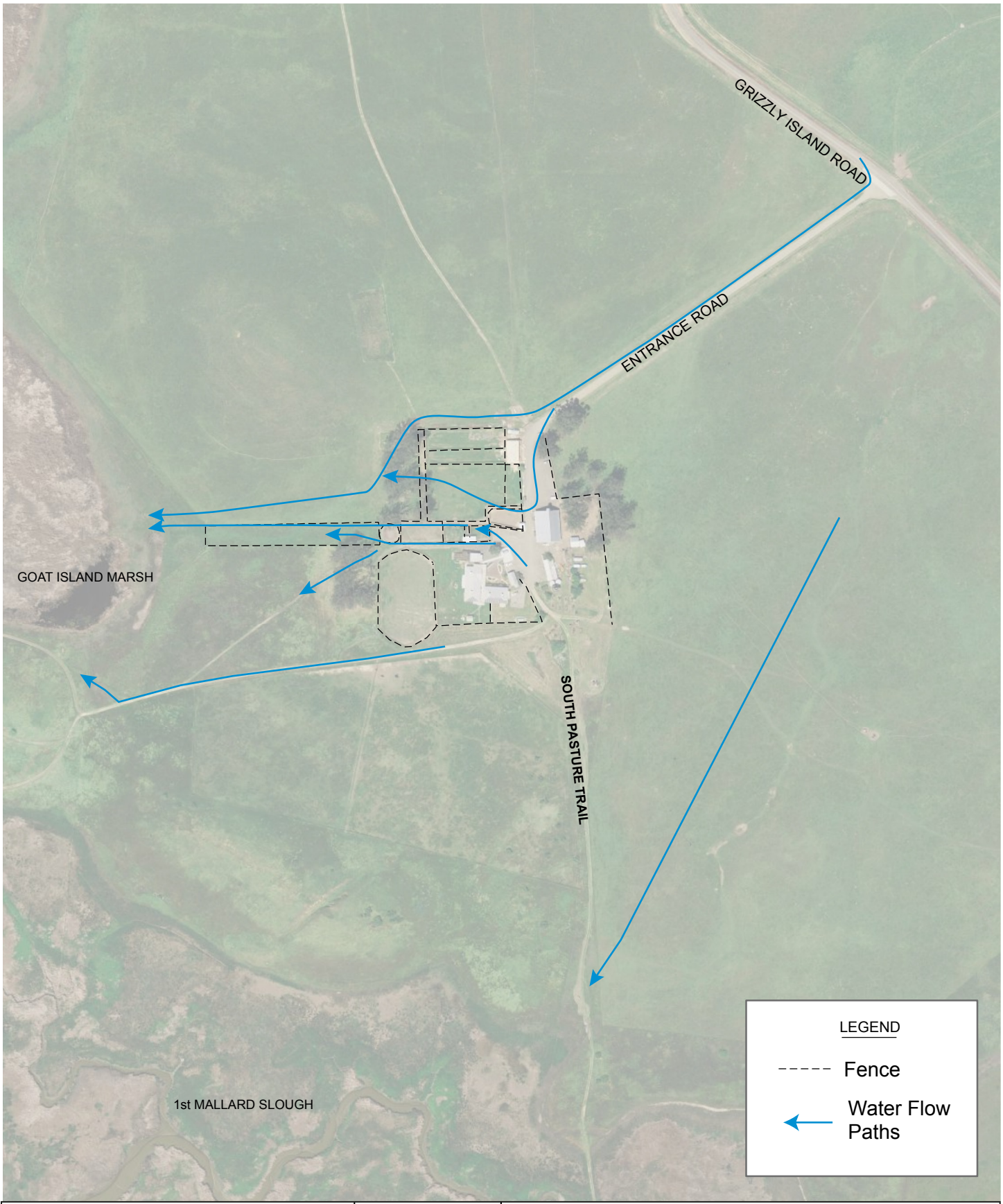
Existing Alternative Septic System. Rush Ranch has an alternative septic system installed in 2007 concurrent with the construction of the Rush Ranch Nature Center. The design flow is 1,200 gal/day. The system includes a 3,000-gallon concrete, watertight septic tank, and pretreatment accessories.

Off-Grid Energy System. The Nature Center and headquarters area are powered by a 10 kW solar array, 2.5 kW wind turbine, with a 48 kW propane powered backup generator. The facility is not connected to the PG&E power grid.

Existing Drainage System

Surface run-off at Rush Ranch includes drainage features and overland flow across grazed and ungrazed pastures as shown on Figure IS-5 showing Existing flow paths. Specific features include:

- *Roadside Ditches.* Roadside ditches and berms consisting of native soils occur within the County right-of-way on both sides of Grizzly Island Road, which crosses the preserve for about 1.9 miles, and approximately 1400’ on the sides of the Rush Ranch entrance road.
- *Culverts.* Culverts below Grizzly Island Road occur within the County right-of-way at Spring Branch Creek, Suisun Hill Hollow, and other unnamed swales. Culverts are also located under berms at the distal end of Spring Branch Creek and Suisun Hill Hollow and at various locations within the grasslands.



50 25 0 50 Meters

0 62.5 125 250 375 500 Feet

N W E S

Map created using ESRI and Adobe Illustrator software by Jessie Olson. Data from Solano Land Trust and URS Corporation. Imagery source: DigitalGlobe ImageConnect Service, 4/1/2009

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WATER FLOW PATHS- EXISITING

Rush Ranch, Solano County, California
Solano Land Trust

Revised April 2015

Figure IS- 5

Within the Headquarters area surface runoff takes multiple flow paths through the areas before draining westward through a vegetated pasture and eucalyptus grove at least 500 feet and into Goat Island Marsh.

- *Entrance Road.* Partial flow from Grizzly Island Road along the entrance road ditch flow along the north side of horse paddocks and into and through the gravel parking area.
- *Parking Area.* Flow from the gravel parking area by the barn and adjacent picnic area flows through paddocks and westward through the vegetated pasture and eucalyptus grove at least 500 feet and into Goat Island Marsh, as shown on Figure IS-5 showing Existing flow paths.
- *South Headquarters.* Flow from the southern portion of headquarters is minimal into and through vegetated pasture and unimproved natural surface ranch roads.
- *Pasture runoff.* Pasture runoff is minimal into the headquarters and generally flows overland through the grassland and westward.

Table 1-2. Surface Permeability in the Rush Ranch Preserve Headquarters

Surface	Surface	Foot^2	Acreage
Impervious Surfaces	Hardscape	24,050	0.55
Semi-permeable Surfaces	Gravel	86,000	1.97
Normal Permeability	Soil, Compacted	232,910	5.35
	Soil, Uncompacted	179,760	4.13

Source: GIS estimates by SLT based on 2009 USDA-NAIP imagery.

Existing Site Use

Rush Ranch is currently used for habitat conservation, livestock grazing, environmental education, outdoor recreation, and scientific research. Rush Ranch is open seven days a week from sunrise to sunset.

Grazing. The grasslands at Rush Ranch are licensed to a private rancher for commercial livestock production and for habitat maintenance. Grazing utilization between 1990 and present has fluctuated between approximately 650 acres and 950 acres under commercial license, depending on site conservation objectives. Livestock grazing is expected to continue within this range.

Land Management. SLT conducts routine and ongoing land management actions including weed control in tidal marsh, seasonal creek, and terrestrial grassland areas, implementation of small restoration projects (e.g. marsh fencing and revegetation), feral pig depredation and other pest management activities.

Recreation. SLT opened Rush Ranch for public access in the early 1990s after completion of a management plan and construction of trails. The site is used for numerous outdoor recreation activities including hiking, picnicking, on leash dog walking on limited areas, and other activities. Rush Ranch hosts numerous organized activities and events, including activities organized by SLT and its partners, and private event rentals.

Environmental Education. Rush Ranch hosts numerous environmental education programs run by nonprofit and agency partners including the Rush Ranch Educational Council (RREC), San Francisco Bay National Estuarine Research Reserve System (SF Bay NERR), Access Adventure, Solano Resource Conservation District (Solano RCD), and Suisun Resource Conservation District (Suisun RCD). SLT provides periodic training programs for docents and other volunteer opportunities.

Scientific Research. Scientific research on the ranch is conducted under the auspices of the SF Bay NERR, a partnership between the National Oceanographic and Atmospheric Administration and coastal states to study and protect vital coastal and estuarine resources, as well as other researchers.

3.4.2 Proposed Changes to the Site

The following changes are proposed for the infrastructure, circulation, utilities, drainage, and environmental resources of the site in the coming years. As indicated above, implementation of proposed site changes and are contingent on resource availability.

Table 1-3. Events at Rush Ranch, July 2011 - June 2012

Event Types	SLT/Partners	Private
Events Routine <100	138	50
Events Medium 100-300	1	11
Events Large 300-1500	1	0
All Events	140	61

New Infrastructure and Facility Improvements

Access Facilities and Safety Improvements at the Rush Ranch Headquarters

SLT proposes the following improvements at the preserve headquarters (see **Figure IS-6, Proposed HQ Improvements**):

- *Visitor Kiosk*. Construct a small kiosk along the entrance road for greeting and orientation of visitors.
- *Arena Seating Area and Landscaping*. Install a walkway, grass seating area, and landscaping between the Nature Center and arena to improve viewing of events in the arena.
- *Walkways and Platforms*. Install walkways and picnicking/camping platform consisting of native hard-packed clay, decomposed granite, or another surface determined to provide suitable access for people with disabilities to the picnic area and arena viewing area. A camping platform accessible to people with disabilities will be added to the picnic area for multiple use as a dance floor during cultural events, and to provide disability access for overnight group camping. Accessible walkways will connect with an interpretive nature trail described below.
- *Work Safety Areas*. Expand the toolshed and fence the of corporation (equipment) yard to support ranch maintenance and to segregate hazardous work areas from public use areas.

Within the work safety area, establish a mixing area for safe use of agricultural and land management materials, and a designated area for storage of hazardous material.

- *Utility Upgrades*. Maintenance and upgrades to off-grid drinking water, septic, wind power, and solar-power utilities, as needed.
- *Commercial Kitchen*. Upgrade the existing kitchen in the Rush Ranch Nature Center to a licensed commercial kitchen.
- *Overnight Quarters*. Work with the County to obtain approval for general-purpose usage of the overnight quarters in the preserve headquarters to allow rental of the facility to the general public for overnight stays.

Accessory Structures in the Ranch Headquarters

SLT and its partners may install accessory structures for visitor services, facility operations, and equipment storage in the preserve headquarters of Rush Ranch. Permanent and temporary structures may include upgrades to existing off-grid drinking water, stock water, septic, and power generation facilities, and installation of sheds, portable corrals, and other small buildings not requiring a foundation. SLT would obtain the appropriate permits as required under Solano County Code at the time of construction or installation.

Accessory structures would not exceed the height of existing structures and will be located within the fenced area of the existing headquarters area depicted in Figure IS-4. Under existing conditions, total surface area of hardscape, i.e. buildings and other impervious surfaces, within the headquarters area is approximately 24,050 ft.² (Table 1-2). The total surface area of hardscape within the headquarters area are not anticipated to exceed 30,000 ft.²—an increase of approximately 25%—for the cumulative actions proposed in this Use Permit application.

Scientific Equipment to Support Estuarine Research

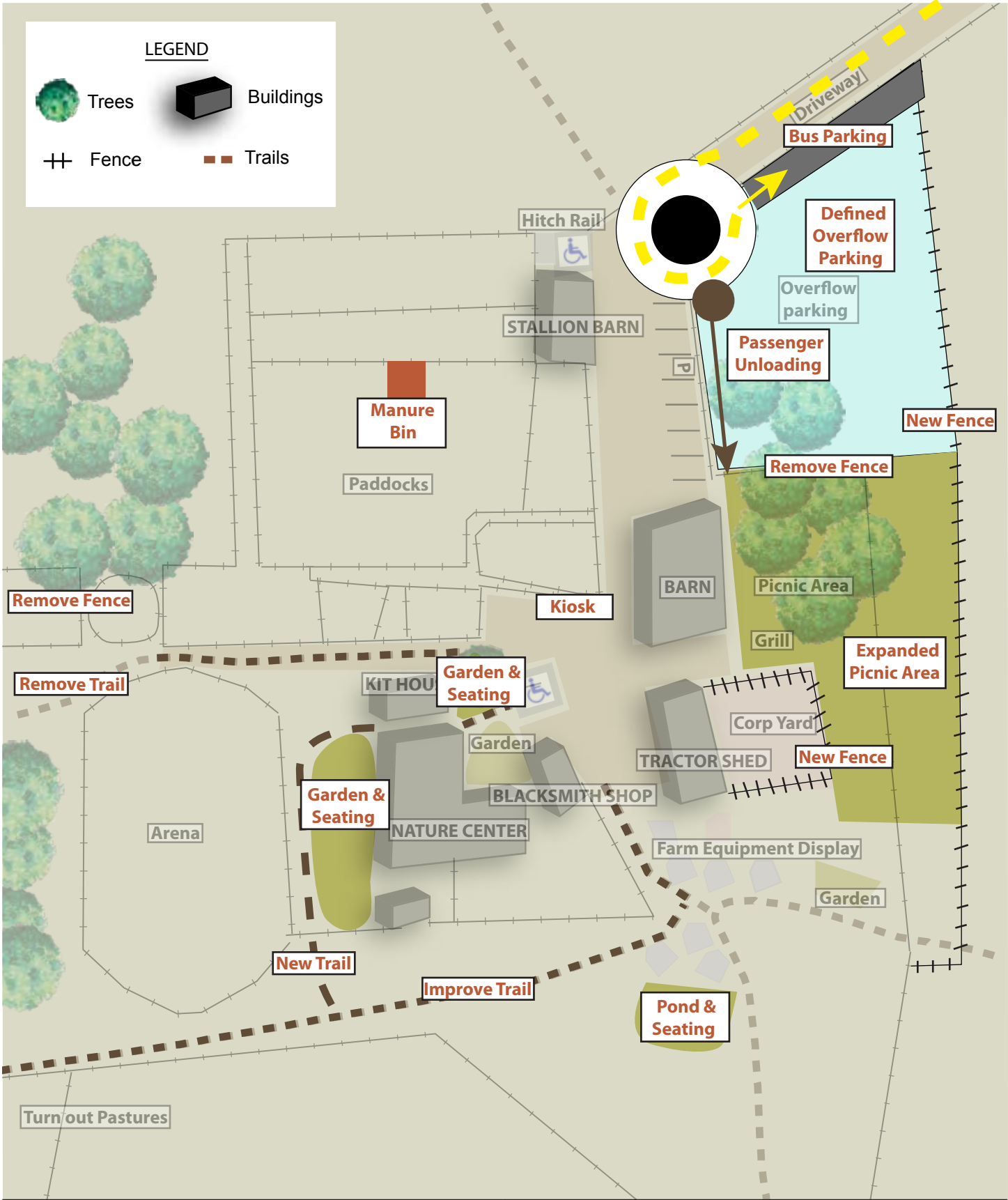
SLT and San Francisco Bay National Estuarine Research Reserve (SF Bay NERR), or scientific researchers with permission to use Rush Ranch as a research site, may periodically want to install equipment within the tidal marsh, tidal sloughs or other sensitive areas at Rush Ranch. SLT would work with SF Bay NERR to ensure that equipment installation sites minimize impacts on sensitive habitat. SLT and SF Bay NERR may seek a programmatic permit or Memorandum of Understanding with the US Fish and Wildlife Service (USFWS) and/or California Department of Fish and Wildlife (CDFW) to facilitate temporary equipment installation for research at Rush Ranch.

New Roads, Trails and Circulation Patterns

Access Facilities and Safety Improvements at the Rush Ranch Headquarters - Circulation

SLT proposes to install the following improvements to vehicle and pedestrian access and circulation patterns:

- *All Weather Parking and Bus Roundabout.* Expand the gravel parking area, and construct a bus roundabout to increase all weather vehicle capacity to a total of 30-40 vehicles, and improve vehicle and pedestrian circulation at the ranch headquarters (**Figure IS-7. Parking Capacity Schematic**). The increase in all-weather parking spaces would be accomplished by converting some of the existing supplemental parking spaces to all weather spaces. Existing trees would be maintained where possible, except individual eucalyptus trees



10 5 0 10 Meters

0 15 30 60 90 120 Feet

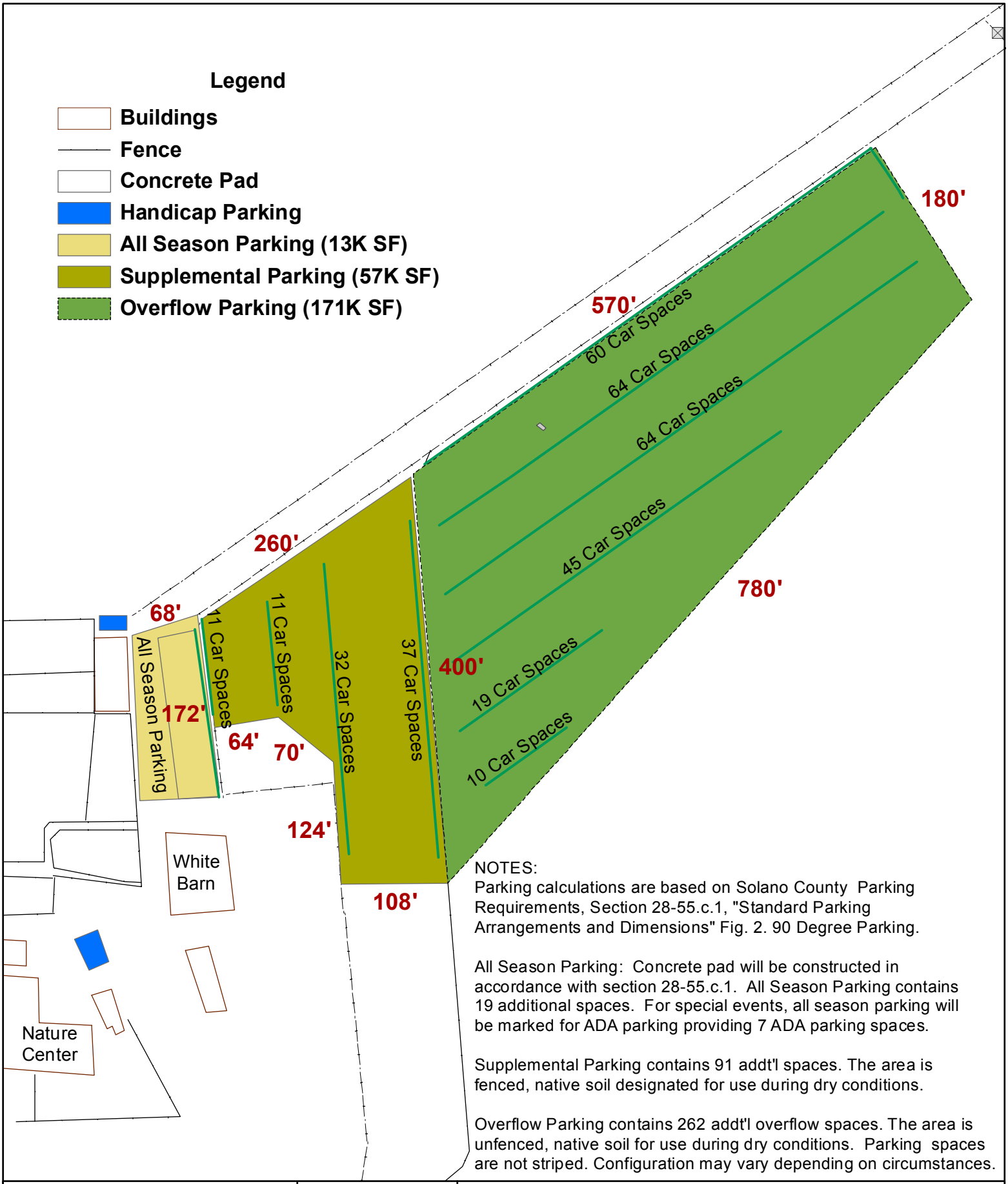
N W E S

M Hap created using ESRI and Adobe Illustrator software by Jessie Olson. Data from Solano Land Trust.

PROPOSED HQ IMPROVEMENTS

Rush Ranch, Solano County, California
Solano Land Trust

June 2011 | Figure IS-6



NOTES:
Parking calculations are based on Solano County Parking Requirements, Section 28-55.c.1, "Standard Parking Arrangements and Dimensions" Fig. 2. 90 Degree Parking.

All Season Parking: Concrete pad will be constructed in accordance with section 28-55.c.1. All Season Parking contains 19 additional spaces. For special events, all season parking will be marked for ADA parking providing 7 ADA parking spaces.

Supplemental Parking contains 91 addt'l spaces. The area is fenced, native soil designated for use during dry conditions.

Overflow Parking contains 262 addt'l overflow spaces. The area is unfenced, native soil for use during dry conditions. Parking spaces are not striped. Configuration may vary depending on circumstances.

0 5 10 20 30 40 Meters
0 15 30 60 90 120 Feet

N W E S

Map created using ESRI software by Solano Land Trust.
Dimensions estimated using ESRI software.

SOLANO LAND TRUST

Parking Capacity Schematic

Rush Ranch
Solano County, California

January 2013 | Figure IS-7

that are determined to pose a potential safety hazard may be replaced with more suitable species or at a more suitable location.

Interpretive Nature Trail and Boardwalk

SLT proposes to construct an interpretive nature trail and public access facilities. The improvements will be implemented in conjunction with tidal marsh restoration projects proposed below. The purpose of these improvements is to provide a safe and attractive visitor experience for users in close proximity to the preserve headquarters, create gathering areas to facilitate instructional and recreational use, concentrate visitor use for the purpose of resource protection, and offset the loss of public access resulting from closure of the levee-portion of the Marsh Trail around Goat Island Marsh and closure of the berm crossing over Spring Branch Creek. The project would be installed in phases in accordance with the implementation of the habitat restoration projects described below.

Phase I. Interpretive Nature Trail and Boardwalk at Goat Island Marsh. The proposed interpretive nature trail and facilities at Goat Island Marsh would provide concentrated public access to the lower portion of Goat Island Marsh to reduce dispersed recreation impacts elsewhere at the restoration site (see **Figure IS-8. Goat Island Marsh Restoration Design**). The trail would require realignment of existing fence lines and footpaths in upland habitats between the headquarters and Goat Island Marsh and would include construction of the following facilities:

Interpretive Nature Trail. Upgrade approximately 2600 feet of existing upland trail (approximately 36 inch width) to improve accessibility to public access features at Goat Island Marsh.

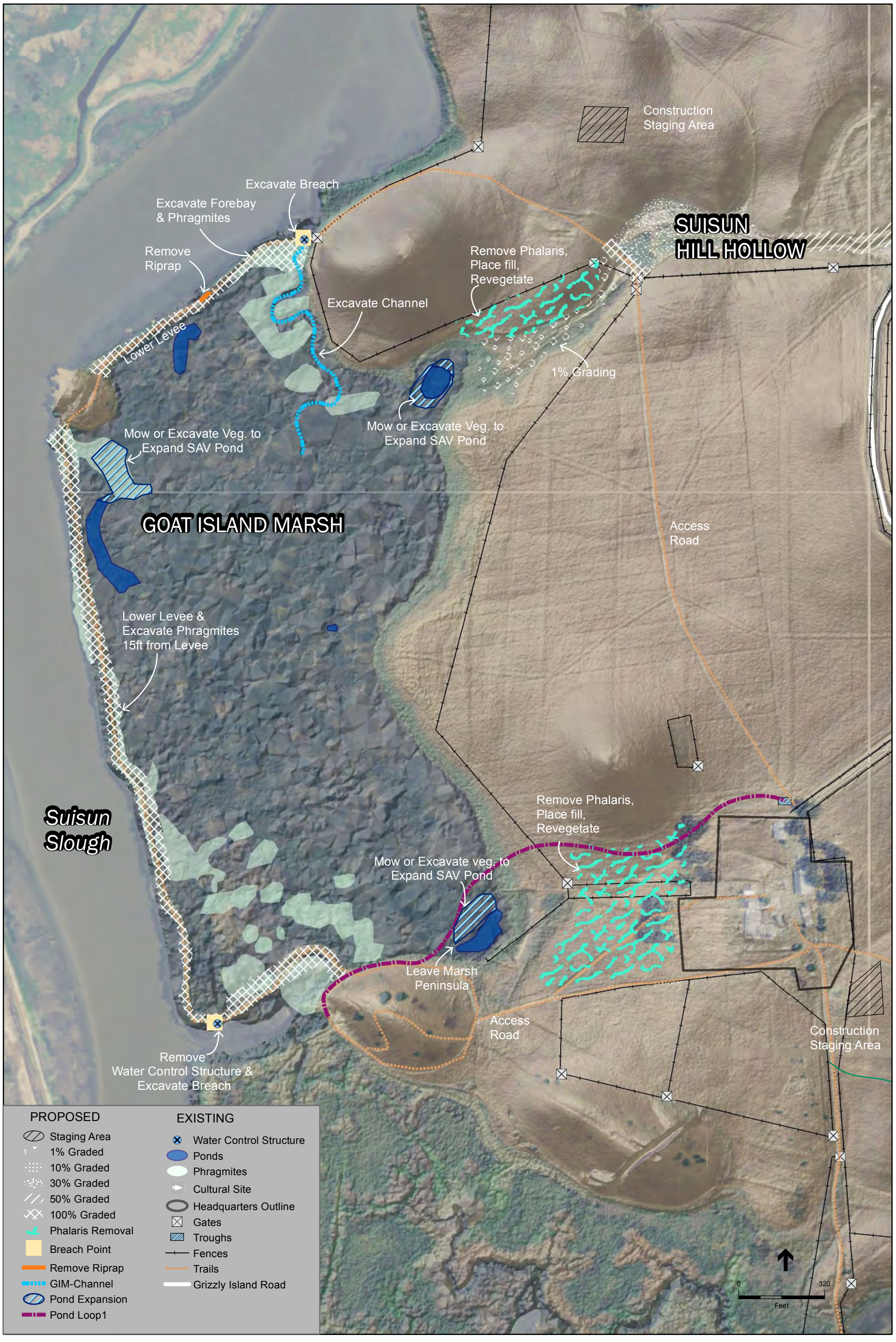
Boardwalk and Viewing Platform. Construct a boardwalk (approximate width of 6 feet, length of 600 feet) in the southeast corner of Goat Island Marsh with a viewing platform and wildlife blind (approximate area of 144 square feet). The boardwalk would be primarily routed through emergent marsh vegetation with a small segment crossing shallow open water habitat.

Spur Trail and Platform. Construct a spur trail approximately 150 feet to an interpretive sign and 12 x 8 foot platform (96 SF) in grasslands above a patch of newly restored soft bird's beak at Goat Island Marsh for public educational access. Existing, established populations of soft bird's beak would be avoided.

Interpretive Signs. Install interpretive signs along the trail and boardwalk.

Closure of Marsh Trail on Outer Levee. Permanently close a one-mile levee-portion of Marsh Trail beginning at the levee breach and channel excavation on the south end of Goat Island Marsh to Rush Landing Hill at the northeast corner.

Alternative Configurations for Trail and Boardwalk at Goat Island Marsh. SLT would consult with stakeholders prior to design and construction of these features to obtain feedback on alternate configurations for the boardwalk and trail. Additional alternatives under consideration include i) an interpretive trail route east of Goat Island Marsh leading to spur trails and viewing platforms at the north and east edge of the project site, or ii) a



SOURCE:

Solano Land Trust and ESA-PWA 2012. Overlaid on NAIP 2009 imagery. Hillshade derived from 2007 DWR LiDAR.

Rush Ranch Restoration Designs . 120660

Figure IS-8

Goat Island Marsh Restoration Design

ESA PWA

boardwalk above the marsh-terrestrial ecotone. The footprint of public access features within wetlands or sensitive species habitats at Goat Island Marsh will not exceed those reported in **Table 1-4a**.

During the final design and construction permitting phase, if SLT determines that public safety concerns, constructability issues, mitigation measures, maintenance costs, sea level rise, or other constraints would make it infeasible to construct a boardwalk that provides a high quality experience for the visiting public, SLT may:

- eliminate the levee lowering design feature from the project description (Exhibit A-1),
- remove the proposed boardwalk and viewing platform at Goat Island Marsh from the project description, and
- revise the project description to include footbridges spanning the levee breaches in the Goat Island Marsh Habitat Restoration Project, with pilings and reinforced footings within the excavation site where the levees are to be breached.

Installation of footbridges at the levee breach site may require a reduction in the width of the proposed by the breaches, which, combined with the elimination of levee lowering, would reduce cut and fill amounts described in Table 1-7.

The purpose of these changes would be to keep the existing Marsh Trail open and available for public access with improved public safety.

Phase II. Interpretive Nature Trail, Boardwalk, and Platform at Spring Branch Creek. Additional public access features will be constructed concurrently with habitat restoration on Lower Spring Branch Creek. Features will include:

- *Interpretive Nature Trail.* Construct approximately 2000 feet of interpretive trail (approximately 36-inch width) consisting of hard packed native soil in the grassland between the preserve headquarters and Spring Branch Creek (**Figure IS-9. Lower Spring Branch Creek Restoration Design**).
- *Boardwalk.* Construct a boardwalk (approximate width 6 feet, length 350 feet) or low water crossing across lower Spring Branch Creek to replace the trail segment eliminated by the berm removal at the distal end of Spring Branch Creek. The structure will be sited to avoid existing populations of soft bird's beak and to minimize its footprint within potential soft bird's beak colonization zones.
- *Interpretive Signs.* Install interpretive signs along the interpretive trail in the grasslands portion of the South Pasture Trail north and south of Spring Branch Creek.

Table 1-4a. Proposed Public Access at Goat Island Marsh

	Distance Linear FT	Pilings #	Area SQ FT	Shade SQ FT	Pilings #	Area SQ FT	Shade SQ FT
	Boardwalk				Marsh Viewing Platform		
Open Water	60	25	360	600	4	72	72
Diked Marsh	540	125	3,240	3000	5	72	72
Grassland (Ecotone)	32	8	192	0	0	0	0
TOTAL	6,166	150	36,056	3792	9	144	144
	Footpath				SBB Viewing Platform		
Grassland (Ecotone)	1,000	0	4,308	0	0	0	0
Grassland (Upland)	4,000	0	24,000	0	6	80	80
TOTAL	5,000	0	28,308	3792	6	80	80

- *Source: Area calculations based on GIS estimates by SLT using 2009 USDA-NAIP imagery. Pilings assumed to be 10" diameter, placed at approximately 8' intervals.*

Table 1-4b. Proposed Public Access at Lower Spring Branch Creek

	Distance L. FT	Pilings #	Area SQ FT	Shade SQ FT
	Boardwalk			
Muted Marsh/Ecotone	350	2,100	80	80
	Footpath			
Grassland (Upland & Existing)	2,150	13,128	0	0
TOTAL	2,500	15,128	80	80

- *Source: Area calculations based on GIS estimates by SLT using 2009 USDA-NAIP imagery. Pilings assumed to be 10" diameter, placed at approximately 8' intervals.*

Staging Area and Footpath Expansion in the East Hills

SLT proposes to construct a staging area and footpath to expand opportunities for hiking in the East Hills, provide safe access for visitor use, and facilitate loading and unloading of livestock and agricultural equipment **(Figure IS-10. East Hills Trail Expansion and Staging Area)**.

The primary facility improvements within this project element include:

- *East Hills Staging Area.* Construct a staging area approximately 100 x 40 feet (4,000 SF) on the east side of Grizzly Island Road across from the main gate of Rush Ranch or in an alternative location providing safe access to the East Hills.
- *Trail Expansion.* Expand the footpath up to two miles in the East Hills to provide longer hiking opportunities. Footpaths may include small boardwalks at seasonal wetland crossings within upper Spring Branch Creek and gated access to crosswalks on Grizzly Island Road to connect with trails in the Terrace Pastures.

- *Public Safety.* Install signage and other traffic safety features as directed by Solano County to protect the safety of pedestrians and vehicle occupants.
- *Scenic Overlooks.* Install benches and interpretive signage at scenic overlooks and other areas of interest.

Table 1-5, below, summarizes changes to trails, staging, and parking areas.

Table 1-5. Summary of Changes to Trails, Staging, and Parking Areas

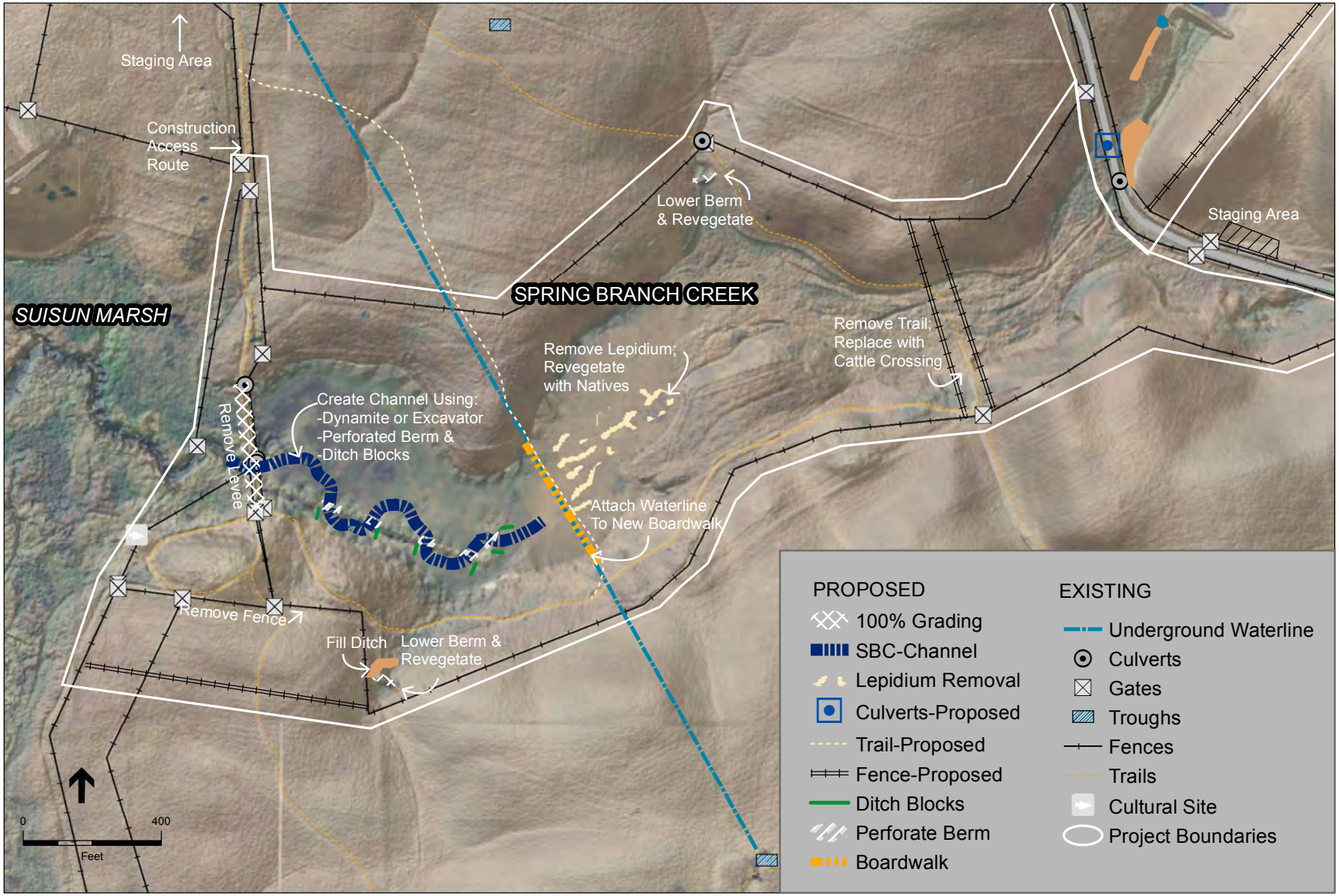
Feature	Existing Conditions	6-yr Post-Implementation	12-yr Post-Implementation
Total Trail Length (miles)	6.0	5.0	6.0
Disability Access Trails (miles)	0.0	0.5-1.5	0.5-1.5
Disability Access to Picnic Area	No	Yes	Yes
Disability Access Group Campsite (#)	0	1	1
Parking Spaces (#) – All Weather	20	20	30
ADA Accessible Parking Spaces (#)	3	3-5	3-5
Public Access Staging Areas (#)	1	2	2
Parking Spaces at New Staging Area	0	8-10	8-10
Temporary Construction Staging Areas	0	Up to 4	0
Boardwalks (linear feet)	0	700-1000	700-1500
Interpretive Nature Trail (miles)	0.0	Approx 0.5	Approx 0.7

Source: GIS estimates by SLT based on 2009 USDA-NAIP imagery.

New Water Supply Facilities

New Irrigation Water: The project proposes temporary seasonal pumping of brackish water from Suisun Slough and First Mallard Slough to irrigate revegetation sites at the Goat Island Marsh and Lower Spring Branch Creek habitat restoration project sites.

New Stock Water: The project proposes to install new upland stock water facilities to reduce livestock use of seasonal wetlands and ponds. Stock water locations will be determined in consultation with the livestock operator. Stock water will be obtained from i) existing riparian water rights vested in State Water Resources Control Board, License Application 24496, Permit 16955, and License 11397, ii) existing groundwater wells, and iii) installation of new groundwater wells, as needed.



Rush Ranch Restoration Designs . 120660

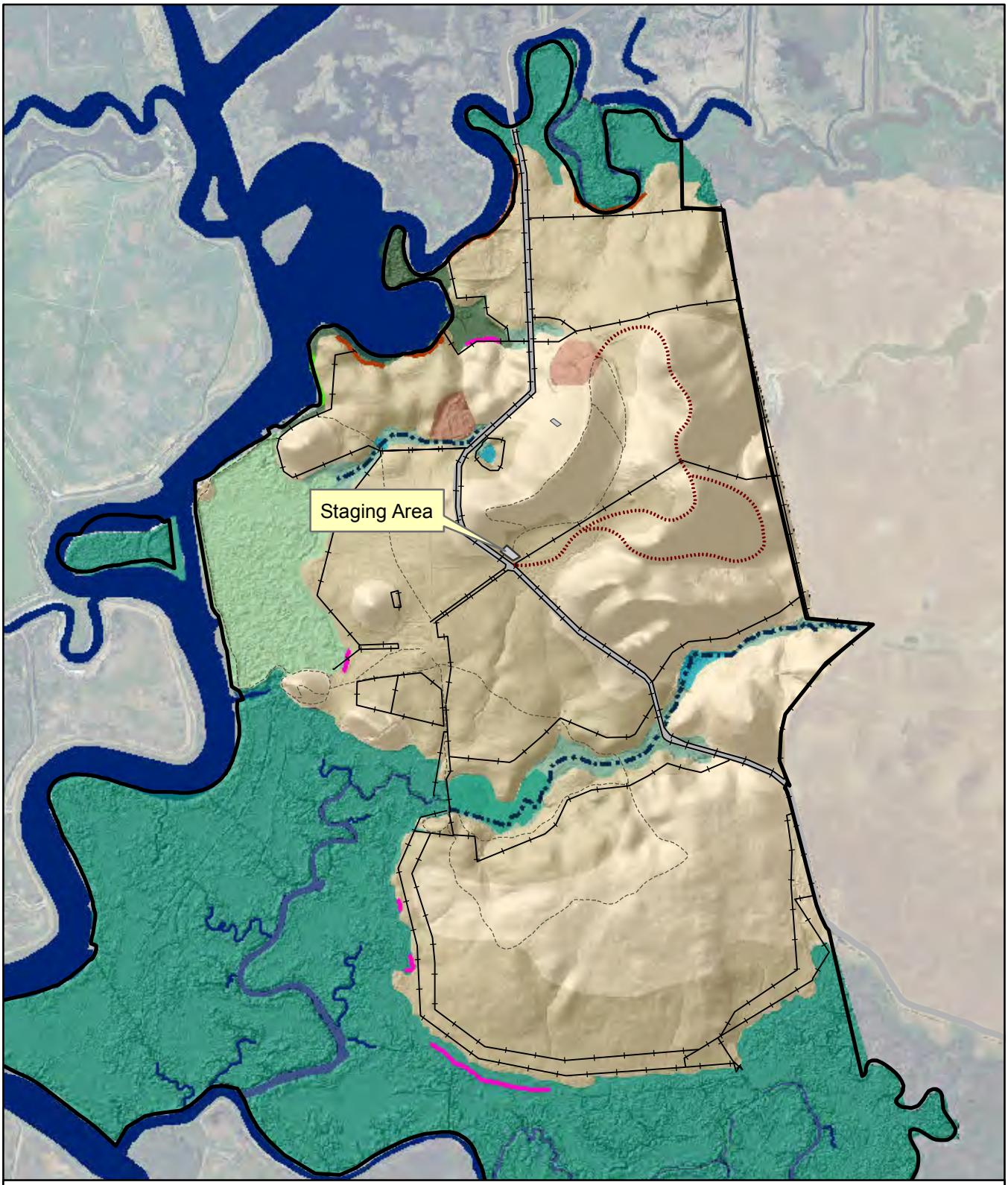
SOURCE:

Solano Land Trust and ESA-PWA 2012. Overlaid on NAIP 2009 imagery. Hillshade derived from 2007 DWR LiDAR.

Figure IS-9

Lower Spring Branch Creek Restoration Design

ESA PWA



Trail Expansion | Rush Ranch Boundary | Grizzly Island Road | Fences

0 55 110 220 330 440 Meters

0 240 480 960 1,440 1,920 Feet

N W E S

Map created using ESRI software by Solano Land Trust.
Aerial Imagery: USDA-NAIP, 2009. Hillshade: CalAtlas.
Roads: Solano County. 2009. Hydro. Solano HCP. 2006.
Ecogeo Units: WWR. 2010. All other data from SLT.

SOLANO LAND TRUST

East Hills Trail Expansion & Staging Area

Rush Ranch, Solano County, California

October 2012

Figure IS-10

New Storm-Water Management Improvements.

SLT proposes to install storm water management improvements in and around the headquarters to reduce water accumulation and soil saturation in areas of moderate to heavy public use and to minimize the potential for pollutant discharge into sensitive marsh habitats (**Figure IS-11. Proposed Storm Water Management and Figure IS-12. Proposed Water Flow Paths**). Improvements would be implemented in three phases, with subsequent phases implemented as needed, depending on the results of the previous phase:

- *Redirect Source Flows (Phase I).* Reduce the volume of storm water flows that enter the Rush Ranch headquarters by (i) installing notches in the roadside berm north of the entrance gate on the west edge of Grizzly Island Road to re-direct flow into the adjoining pasture, and/or (ii) installing a small, grated box culvert across the entrance road or comparable measures to re-direct flows into the Middle Pasture (as needed).

- *Realign Drainage Ditches (Phase II)*. Construct rock or grass swale along the entrance road and west of the corrals to direct flow away from heavy use area, reduce storm water accumulation within public access areas, travel corridors and work areas, and minimize potential for discharge of pollutants.

- *Buffer Strip/Infiltration Area and Pretreatment Constructed Wetland (Phase III).* Develop a vegetated buffer strip/infiltration basin to capture and filter surface water flows from the corrals. Downslope from the buffer strip construct a small pre-treatment wetland to filter flows from the drainage ditches described in phase II. The design aims to separate surface runoff from the entrance road and gravel areas from nutrient enriched runoff from the corrals.

Earth movement for storm drain projects is shown on Table1-6.

Table 1-6. Estimated Area and Volume for Storm Water Management Projects

FEATURE	Phase	Excavation Area, SF[1]	Excavation Volume, CY[!]	Fill Placement Volume, CY[1]
EXISTING FEATURES				
Unimproved Ditches (approx. 2500 LF)	-	n/a	n/a	n/a
Manure Bin, 12x12 (144 SF)	-	n/a	n/a	n/a
PROPOSED FEATURES				
1. Notch Berms on Road Edge	I	1,307	97	97
2. Rainwater Storage Cistern(s)	I	144	40	40
3. Rock or Grass Swale, Entry Road[2]	II	10,000	222	222

[1] No grading permit required with < 5000 SF area of impact or < 50 CY excavation or fill.

[2] Swale volumes based on preliminary design specifications from URS Corps, May 2010.

4. Grade Gravel Lot to Redirect Flow[3]	II	0	0	0
5. Subsurface Drain	II	900	100	100
6. Rock or Grass Swale, W of Corral[2]	II	2,500	56	56
7. Buffer Strip/Infiltration Area[4]	III	0	0	0
8. Constructed Pretreatment Wetland[5]	III	TBD*	TBD*	TBD*
Subtotal Proposed (Features# 1-7)		14,851	515	515
Contingency (10%)[6]		1,485	52	52
TOTAL PROPOSED (1-7)		16,336	567	567

Source: Area calculations based on GIS estimates by SLT using 2009 USDA-NAIP imagery. Volume based on non-engineered excavation estimates by SLT, unless otherwise noted. NOTES. SF: square feet, LF: Linear feet, CY: cubic yards.

Habitat Restoration and Enhancement Projects

SLT proposes to implement a suite of habitat restoration projects at Rush Ranch to improve connectivity between tidal marsh, active alluvial fan, and terrestrial habitats, and facilitate landward transgression of marsh habitat in response to sea level rise**.** Cut and fill volumes are summarized in **Table 1-7** below. Complete conceptual restoration designs are presented in **Figure IS-8** and **IS-9**.

Table 1-7. Estimated Cut and Fill Volumes for Habitat Restoration Projects

LOCATION	Excavation - Volume (CY)	Fill Placement - On-Site (CY)[7]	Fill Placement - Off-Site (CY)
Goat Island Marsh	17,200	10,100	3,400
Suisun Hill Hollow	4,200	7,900	0
Lower Spring Branch Creek	7,300	1,800	5,500
Upper Spring Branch Creek	0	6	0
TOTAL	28,700	19,800	8,900

Source: ESA-PWA, September 2012, SLT.

Insert Figure IS-11. Proposed Storm Water Management

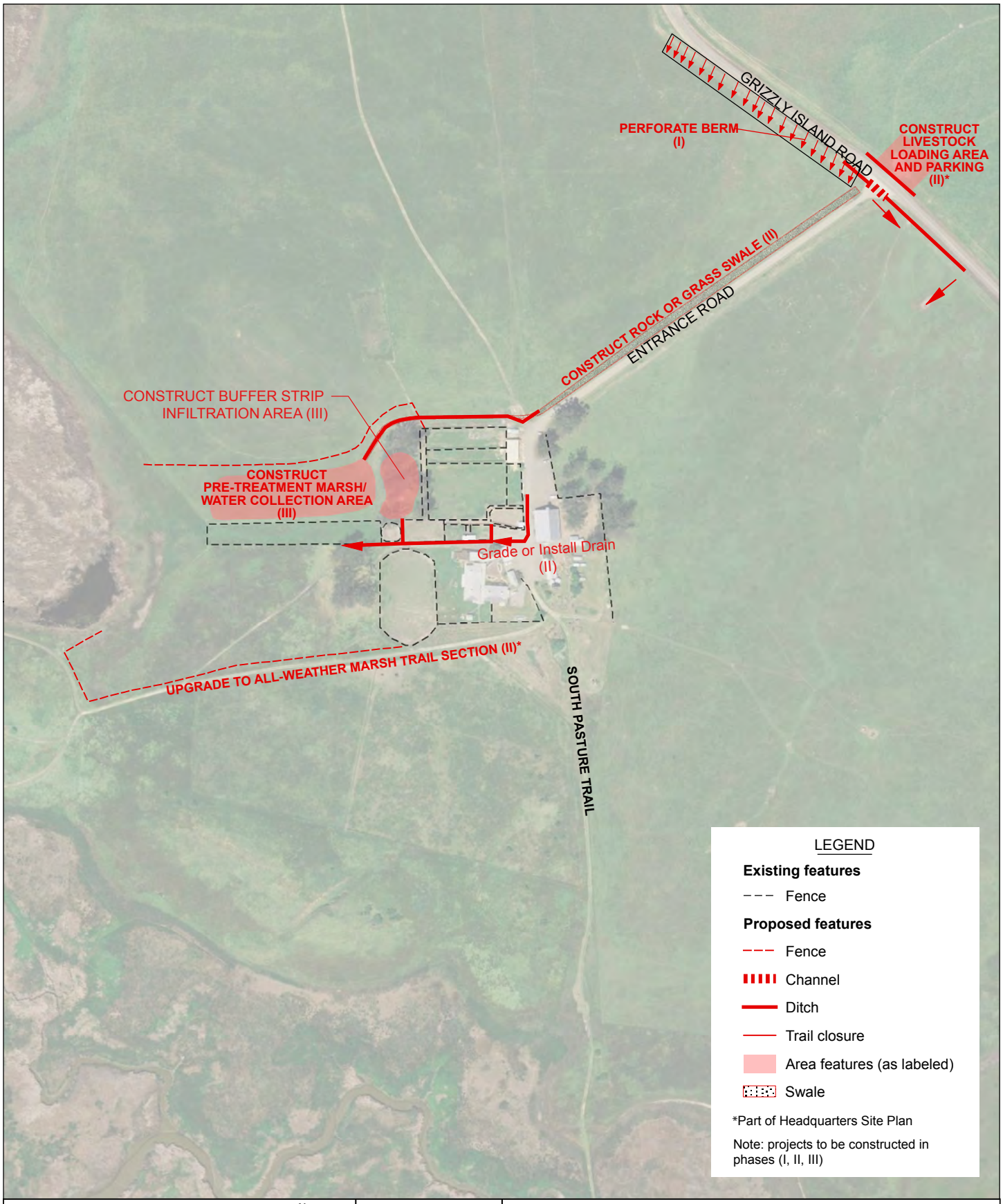
[3] Surface grading of All Weather Parking and Multi-Use Area (approximately 59,000 SF/1.35 acres).

[4] Soil preparation, re-vegetation, & management on approximately 15,000 SF/0.34 acres.

[5] To be designed according to flow volume after phases I & II, as needed.

[6] Contingency factor to account for adjustments in final design of various components.

[7] 3,700 yd.³ from Goat Island Marsh will be disposed on-site at Suisun Hill Hollow



50 25 0 50 Meters

0 62.5 125 250 375 500 Feet

N W E S

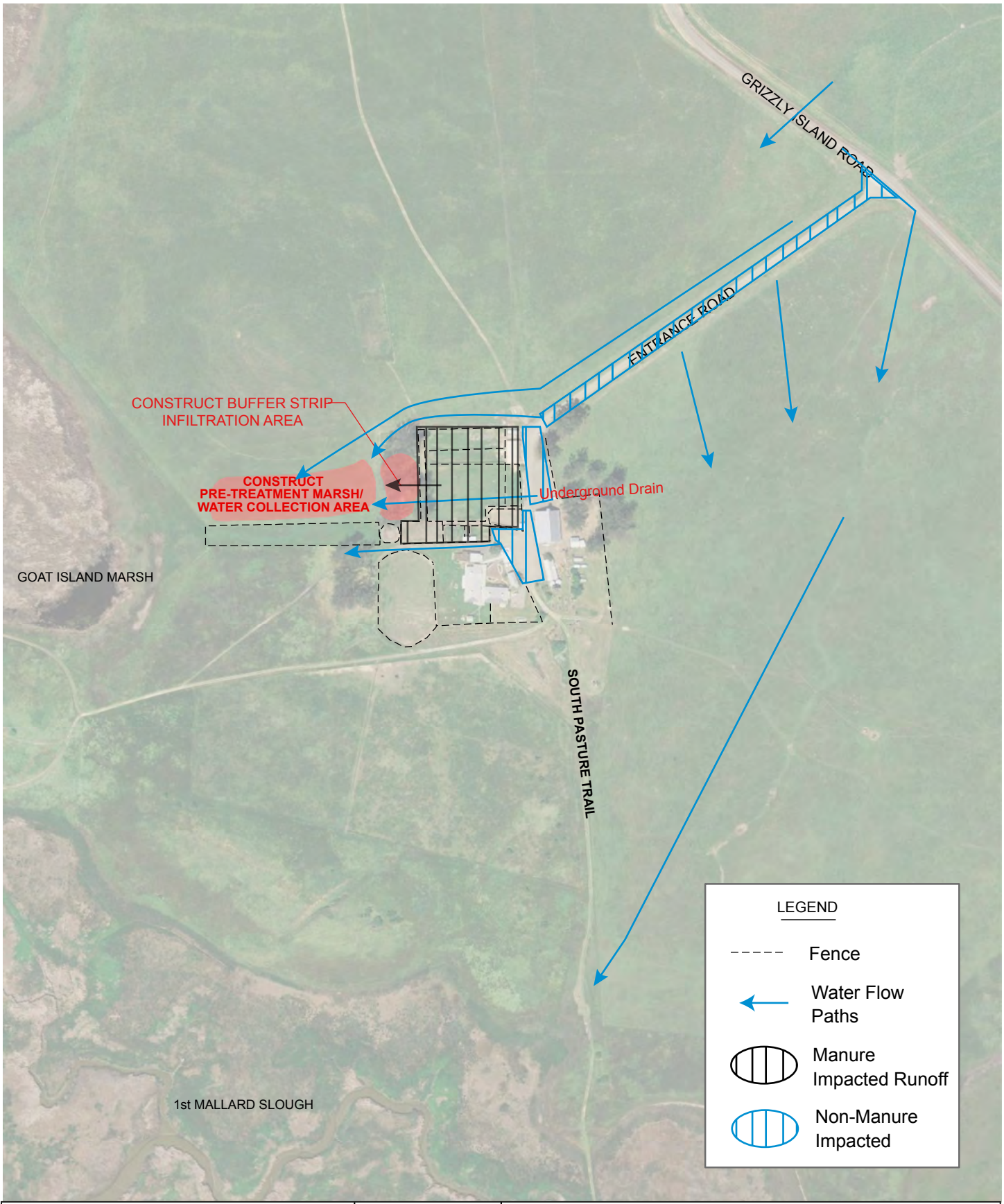
Map created using ESRI and Adobe Illustrator software by URS Corporation, modified by Jessie Olson. Data from Solano Land Trust and URS Corporation. Imagery source: DigitalGlobe ImageConnect Service, 4/1/2009

SOLANO LAND TRUST

PROPOSED STORM WATER MANAGEMENT

Rush Ranch, Solano County, California
Solano Land Trust

July 2011		Figure IS-11



50 25 0 50 Meters

0 62.5 125 250 375 500 Feet

N W E S

Map created using ESRI and Adobe Illustrator software by Jessie Olson. Data from Solano Land Trust and URS Corporation. Imagery source: DigitalGlobe ImageConnect Service, 4/1/2009

SOLANO LAND TRUST

PROPOSED WATER FLOW PATHS

Rush Ranch, Solano County, California
Solano Land Trust

July 2011		Figure IS-12

Goat Island Marsh Tidal Restoration Project. The Proposed Project will restore unrestricted tidal flows to Goat Island Marsh, currently a diked, muted marsh with broken tide gates. Proposed actions include excavating a breach in the levee and constructing a tidal channel, lowering the remainder of the perimeter levee, closing the levee portion of the Marsh Trail, expanding marsh ponds, and revegetating the levee excavation site and marsh-terrestrial ecotone (**Figure IS-8**). A boardwalk would be constructed concurrently with the project to provide alternate public access, as specified above.

Suisun Hill Hollow Enhancement Project. This project would restore hydrologic and hydraulic connectivity between upland, fluvial, and estuarine habitats in Suisun Hill Hollow and Goat Island Marsh, enhance seasonal wetland habitats and reconnect ecological processes between the tidal and fluvial system. Proposed actions include installing off-channel stock water facilities and gates for livestock, installing exclusion fences to protect seasonal wetlands, lowering artificial berms and re-grading impoundments sites to create seasonal wetland complexes, vegetation management actions to encourage native wetland plants and discourage weeds, boardwalks to maintain public access across the site, and working with Solano County to enlarge the culverts under Grizzly Island Road.

Lower Spring Branch Creek Tidal Marsh and Seasonal Wetland Enhancement Project. This project would improve hydrologic and hydraulic connectivity between upland, fluvial, and estuarine habitats along the seasonal creek system and facilitate landward tidal marsh migration as sea level rises. Proposed actions include removing the berm and culverts at the distal end of Spring Branch Creek, regrading channels, berms, and ditches within the project site, grading weed patches to create seasonal wetland depressions, restoring native vegetation, realigning trails and installing a boardwalk to maintain public access, installing a livestock crossing area, and designating service roads to provide vehicle access to the South Pasture from Grizzly Island Road (**Figure IS-9)**.

Upper Spring Branch Creek Seasonal Wetland Enhancement Project. This project will include the erection of additional livestock fences to control livestock access, additional water source development for cattle outside the wetlands area, and the maintenance/repair of the existing spillway and pond to provide sufficient water for wetlands, maintain open water and the existing emergent vegetation suitable to support the currently existing breeding colony of tri-colored blackbirds and future colonization by California Tiger Salamander breeding populations. The Upper Spring Branch project will include only repairs and maintenance activities to existing impoundment features without any grading for wetland creation anywhere in the Secondary Marsh Zone.

SLT will adapt Environmental Commitments and Best Management Practices from the Suisun Marsh Plan Environmental Impact Report, December 2011 during project implementation where appropriate.

New Land Stewardship Actions

Prescribed Fire

Implement prescribed burning in grassland pastures to reduce yellow star thistle, medusahead, and other weeds, decrease RDM and thatch, and reduce competition by non-native species with

native forbs and grasses, and reduce wildfire risk. Prescribed burns will be timed to occur after seed set of native forbs and purple needlegrass and prior to seed set of yellow star thistle and medusahead (generally May).

Proposed Site Uses

The following changes are proposed for site utilization in the coming years. As indicated above, implementation of proposed changes and are contingent on resource availability.

Public Access. Rush Ranch was first opened to the public in 1991. Visitation during the last 20 years has increased steadily from approximately 2,000 annual visitors in 1991 to more than 15,000 in 2010. SLT aims to maintain the volume of visitor use within manageable levels and to minimize visitor use impacts on the sensitive resources at Rush Ranch.

Use Targets. This plan establishes the following target use levels to provide guidelines for SLT to manage the volumes of use, maintain safe and attractive facilities, and adapt to future changes in demand. SLT aims to maintain use levels at events and other visitor activities within the levels indicated on **Table 1-8** below. These levels assume a continuation or small increase over current use levels.

Table 1-8. Anticipated Public Use

Public Use	Facility	Max. #	Frequency	Days	Season
Tours, Classes, & Workshops	Outdoor	< 50	50 d/yr	Any	Year-round
Events, Routine	Multiple	<100	24 d/yr	Any	Year-round
Events, Medium	Multiple	100-300	10 d/yr	W/E	Sp, Su, Fa
Events, Large	Multiple	300-1500	1 d/yr	W/E	Sp, Su, Fa
Multipurpose Room Rental	Nature Ctr.	83	100 d/yr	Any	Year-round
Overnight Quarters Rental	Quarters	4	48 d/yr	Any	Year-round
Picnic Rental	Picnic Area	300	48 d/yr	W/E	Year-round
Overnight Camping (tent)	Picnic Area	40	12 d/yr	W/E	Sp, Su, Fa
Overnight Camping (RV, no hook-up)	Picnic Area	10 RVs	12 d/yr	W/E	Sp, Su, Fa
Staff Use	Facility	Max. #	Frequency	Days	Season
Office Use (staff & volunteers)	Nature Ctr.	3	300 d/yr	Any	Year-round
Laboratory Use (SF Bay NERR)	Nature Ctr.	4	100 d/yr	Any	Year-round
Long-Term Rental/Lease	Facility	Max. #	Frequency	Days	Season
Caretaker Lease	Quarters	3	365 d/yr	Any	Year-round
Commercial Grazing License	Grasslands	~150 AU	Ongoing	Any	Year-round
Corrals, Stallion Barn, & Arena Lease	Corrals etc	10 AUs	Ongoing	Any	Year-round

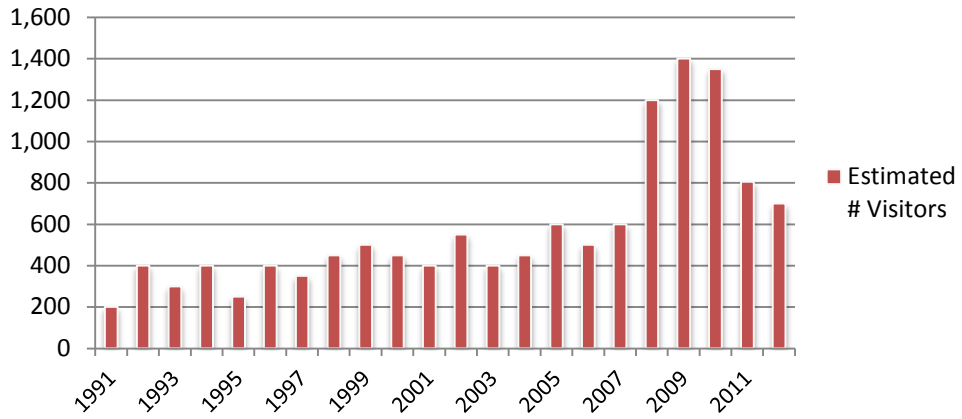
The largest public event held at the site is the annual Rush Ranch Open House, sponsored by the Rush Ranch Educational Council with the support of SLT, SF Bay NERR, Access Adventure, and numerous other community organizations. SLT works with its partners to ensure all event management practices are implemented during the Rush Ranch Open House. As a community event open to the public, the event is subject to the year-to-year fluctuations in size **(Figure IS-13)**. Maximum attendance peaked at 1400 people in 2010, and has since subsided back to historic levels of between 500-1000 people. SLT anticipates that attendance at the Rush Ranch Open

House will remain within a similar range going forward, and will not exceed 1500 people on a given day. During larger events, participants generally come and go throughout the day, consequently, peak utilization of the ranch during larger events is not likely to exceed 800 people at any one time.

Vehicle traffic for this one-day, day-long event exceeds all other days at Rush Ranch by a wide margin. A well-known family event, many vehicles arrive with multiple occupants. Assuming peak utilization of 800 people at any given time, and using County standards of 4 occupants per vehicle, the estimated maximum vehicle traffic for this event would be 200 vehicles at any given time.

However, as shown below, attendance has stabilized and returned to historic levels in recent years, therefore, vehicle traffic is not likely to attain this level in the foreseeable future, and would rarely if ever be expected to exceed it.

Figure IS-13. Estimated Attendance at Annual Rush Ranch Open House, 1992-2012



New Event Management Procedures

SLT aims to maintain a safe condition for the public at all activities and events. Events at Rush Ranch may require supplemental measures to ensure public health and safety, depending on the duration and size of the event. The present management plan establishes three categories of events at Rush Ranch, based on the anticipated attendance at the event and the existing capacity of the visitor use facilities:

- *Events, Routine*. Estimated attendance 100 people or less. Routine public safety measures and the existing supplemental parking lot and sanitary facilities at Rush Ranch will generally be adequate for events of this size.
- *Events, Medium*. Estimated attendance between 100-300 people. Medium events will generally not require overflow parking in the adjoining pasture nor supplemental sanitary facilities. Supplementary sanitary facilities and public safety measures may be required depending on the event's duration and intensity.

- *Events, Large*. Estimated attendance between 300-1500 people, with peak utilization of approximately 800 people at any given time. Events of this size will generally use all of the available visitor facilities and require special public safety measures, supplemental sanitary facilities, full use of the supplemental parking area, as well as overflow parking in the adjoining pasture.

Public Safety Measures and Supplemental Facilities during Events. SLT would use the following guidelines to protect public health and safety during SLT-sponsored events at Rush Ranch. SLT will require program partners, and individuals or groups renting facilities at Rush Ranch, to adhere to these guidelines as well. Applicable measures are described below and summarized in Table 1-10.

Table 1-10. Special Measures for Activities and Events

Category (# Attendees)	Notification	Parking Mgmt	Chemical Toilets	Hand-wash Stations	Recycling & Garbage
Tours, Classes, & Workshops (<100)	Not Req'd	Not Req'd	Not Req'd	Not Req'd	Not Req'd
Events, Routine (<100)	Not Req'd	Not Req'd	Not Req'd	Not Req'd	Not Req'd
Events, Medium-Size (100-300)	Not Req'd	1-2 Parking Attendants	up to 4	up to 2	As Needed
Events, Large (300-1500)	Suisun Fire Protection District	3-4 Parking Attendants	TBD*	TBD*	As Needed

**For Large Events, SLT will work with Solano County to determine chemical toilet requirements will be determined on a case-by-case basis when applying for event permits.*

Table 1-11. Parking Attendants by Size of Event

Anticipated Attendance	# Parking Attendants Provided
100-200	1
200-300	2
300-1000	4
1000-1500	5

Traffic and Public Safety

Notification of Public Safety Officials. SLT or the event sponsor would notify Suisun Fire Protection District prior to Large Events.

Overflow Parking. Parking attendants would generally be required only for Medium and Large Events, in accordance with the guidelines in Table 1-11 below.

Traffic Controls on Grizzly Island Road. SLT does not anticipate the need to take traffic control measures (e.g. temporary signs, signals, cones, flaggers) for events proposed herein. Traffic control measures were implemented only once during a combined Travis and Solano County Office of Emergency Services exercise about ten years ago, on account of large vehicles coming and going. Traffic controls were provided in-kind by participating agencies. Additional directional signage and parking cones are also placed as needed.

Sanitation and Public Health

- *Permanent Restroom Facilities.* The Nature Center's Women's restroom consists of one normal and one ADA compliant stall and two hand-washing sinks. The Nature Center's Men's restroom consists of one ADA compliant stall, one urinal, and one hand-washing sink. These facilities will generally have provided sufficient sanitation services for Routine events (i.e. up to 100 people).

- *Chemical Toilets.* SLT will coordinate with Solano County to determine whether additional chemical toilets are needed for Medium Events. Additional supplemental chemical toilets will be provided in coordination with County requirements during Large Events. Additional chemical toilets may also be needed for events that are widely dispersed. The supplemental toilets are normally placed within the picnic area.

- *Hand-washing Stations.* In addition to the Nature Center's permanent restroom facilities, a double hand-washing sink is located in the picnic area. Another hand-washing sink is available to staff and designated volunteers within the equipment yard. Hands can also be rinsed with faucets below the drinking fountains at the two potable drinking water stations in the picnic area. These hand-washing stations are expected to provide sufficient sanitation for Routine and most Medium Events. SLT will coordinate with Solano County to determine whether additional hand-washing stations are needed for Large Events.

- *Recycling and Garbage.* Two large garbage and two large recycling toters are permanently located near the equipment yard. They are emptied weekly by the local garbage company. Large trash and recycling bins are located in the garden, outside the Nature Center, and within the picnic area. Additional trash and recycling bins are added as necessary for Medium and Large Events. These are emptied to the toters by staff or volunteers during and after Events. Trash generated beyond the toters' capacity is bagged and taken to SLT's main office dumpster.

- *Drinking Water.* Two potable drinking water fountains are located in the picnic area and one is located in the garden. Five-gallon water jugs are distributed as needed for

Large Events, which is normally one for every additional 300 people over the 300-person Large Event threshold.

- *Food Preparation and Service.* SLT or event sponsors will obtain required permits and follow Solano County regulations when providing and/or preparing food for events.
- *Alcoholic Beverages.* SLT or event sponsors will obtain required permits and follow appropriate regulations when providing alcoholic beverages during events.
- *Smoking.* Smoking is always restricted at Rush Ranch and only permitted within ten feet of the picnic area fire pit or under the olive tree in front of the Nature Center.
- *Fire Pit.* The picnic area fire pit is only used by groups that have reserved the picnic area. It is not used during red-flag days or days or times restricted by the Suisun Fire Protection District or SLT staff.
- *Large Tents.* The Suisun Fire Protection District Fire Marshall shall be notified, and permits obtained, for large event tents.
- *Noise*. Activities generating music or noise will maintain noise levels at or below 90 dB within the Visitor Services Area, as measured no more than 100 feet from the source. Noise generating activities will cease by 10 pm.

3.4.3 Consistency With Existing General Plan, Zoning, and Other Applicable Land Use Controls

General Plan and Zoning

General Plan Designations. Rush Ranch is located within the 2008 Solano County General Plan (Figure LU-1), Land Use Designation Areas, as specified below.

- Agricultural Designations: Agriculture.
- Natural Resource Designations: Marsh.

The entire property is located within a designated "Resource Conservation Overlay."

Zoning. Rush Ranch is subject to the following zoning districts:

- Agriculture – Suisun Marsh - 160 (A- SM -160). Terrestrial portions of Rush Ranch.
- Marsh Preservation District (MP). Tidal marsh portions of Rush Ranch.

Current regulations associated with these districts are specified in Suisun Marsh Local Protection Plan Appendix 6, June 15, 2010. Zoning districts are specified in **Figure IS-2. Assessors Parcels, Zoning, and Public Land Survey**.

Surrounding Properties Zoning and General Plan Designations

Zoning and general plan designations for surrounding properties are shown in **Table 1-12** below.

Table 1-12. Zoning And General Plan Designations - Surrounding Areas.

Property	General Plan	Zoning	Land Use
North	Marsh & Agriculture, RCO	Marsh & A-SM 160	Habitat reserve, rangeland, public access
South	Marsh & Agriculture, RCO	Marsh & A-SM 160	Habitat reserve, rangeland, public access
East	Agriculture, RCO	A-SM 160	Habitat reserve, rangeland, public access
West	Marsh, RCO	Marsh	Habitat reserve, rangeland, public access

Source: Solano County General Plan and Zoning Ordinance
* RCO: Resource Conservation Overlay.

The site is located within the Suisun Marsh Protection Program and the projects encompass both the Primary and Secondary Management Zone. The Facility and Site Utilization Improvements projects, Suisun Hollow and Upper Spring Branch Creek Restoration Projects are located within the Secondary Management Zone; however, Goat Island Marsh and Lower Spring Branch Creek Restoration projects are located within the Primary Management Zone.

3.4.4 Responsible, Trustee And Agencies With Jurisdiction Over Portions of The Project

The agencies listed below may have jurisdiction over portions of the Project:

Federal Agencies

- US Army Corps of Engineers (Corps)
- US Fish And Wildlife Service (USFWS)
- National Oceanic and Atmospheric Administration (NOAA)
- US Coast Guard (USCG)
- US Bureau of Reclamation (USBR)
- National Marine Fisheries Service (NMFS)

State Agencies

- California Department of Fish and Wildlife (CDFW)
- California Department of Public Health (CDPH)
- California State Lands Commission (CSLC)
- State Historical Preservation Office (SHPO)
- State Water Resources Control Board (SWRCB)

Regional Agencies

- San Francisco Bay Conservation and Development Commission (BCDC)
- Regional Water Quality Control Board -- San Francisco Bay Region (SFBRWQCB)

- Bay Area Air Quality Management District (BAAQMD)
- Delta Stewardship Council

Local Agencies

- Solano County Department of Resource Management,
- Building and Safety Services Division
- Environmental Health Services Division
- Parks and Recreation Division
- Planning Services Division
- Public Works Division
- Solano County Agricultural Commissioner
- Solano County Mosquito Abatement District (SCMAD)
- Suisun Fire Protection District
- Suisun Resource Conservation District (Suisun RCD)

4 AFFECTED ENVIRONMENT, ENVIRONMENTAL CONSEQUENCES AND AVOIDANCE, MINIMIZATION AND/OR PROTECTION MEASURES

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This chapter discusses the potential for adverse impacts on the environment. Where the potential for adverse impacts exist, the report discusses the affected environment, the level of potential impact on the affected environment and methods to avoid, minimize or mitigate for potential impacts to the affected environment.

Findings of SIGNIFICANT IMPACT

Based on the Initial Study, Part I as well as other information reviewed by the Department of Resource Management, the project does not have the potential for significant impacts to any environmental resources.

Findings of LESS THAN SIGNIFICANT IMPACT Due to Mitigation Measures Incorporated Into the Project

Based on the Initial Study, Part I as well as other information reviewed by the Department of Resource Management, the following environmental resources were considered and the potential for significant impacts were reduced to less than significant due to mitigation measures incorporated into the project. A detailed discussion of the potential adverse effects on environmental resources is provided below:

- ❑ Biological Resources
- ❑ Cultural Resources
- ❑ Geology & Soil
- ❑ Hazards & Hazardous Materials
- ❑ Recreation
- ❑ Hydrology & Water Quality
- ❑ Noise
- ❑ Public Service

Findings of LESS THAN SIGNIFICANT IMPACT

Based on the Initial Study, Part I as well as the review of the Proposed Project by the Department of Resource Management, the following environmental resources were considered and the potential for impact is considered to be less than significant. A detailed discussion of the potential adverse effects on environmental resources is provided below:

- ❑ Aesthetics
- ❑ Mineral Resources
- ❑ Utilities & Service System
- ❑ Air Quality
- ❑ Transporation & Traffic

Findings of NO IMPACT

Based on the Initial Study, Part I as well as the review of the Proposed Project by the Department of Resource Management, the following environmental resources were considered but no potential for adverse impacts to these resources were identified. A discussion of the no impact finding on environmental resources is provided below:

- ❑ Agriculture & Forest Resource
- ❑ Population & Housing

4.1 Aesthetics

Would the project		Significant Impact	Less Than Significant Impact With Mitigation	Less Than Significant Impact	No Impact
a.	Have a substantial adverse effect on a scenic vista?	☐	☐	■	☐
b.	Substantially damage scenic resources, including, but not limited to, trees, rock out-croppings, and historic buildings within a state scenic highway?	☐	☐	■	☐
c.	Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	■	☐
d.	Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?	☐	☐	☐	■
e.	Increase the amount of shading on public open space (e.g. parks, plazas, and/or school yards)?	☐	☐	☐	■

4.1.1 Setting

The existing Rush Ranch Open Space Preserve is located in a rural area of unincorporated Solano County, approximately 1.5 miles south of Suisun City along Grizzly Island Road. The Solano County General Plan (November 2008) includes a policy designed to protect the visual character of designated scenic roadways in the County.[8] According to the General Plan, Grizzly Island Road is

[8] County of Solano, *Solano County General Plan*, November 2008, Chapter 4 Resources, Policy RS.P-37, page RS-37.

designated as a county Scenic Roadway.[9] According to the State's Scenic Highways and Historic Parkways, there are no officially designated State Scenic Highways in Solano County, and no eligible scenic highways in the project vicinity.[10]

The positive or negative value attached to changes in visual character is largely subjective. Rather than placing a judgment that the change is positive or negative, the analysis focuses on the extent to which change would occur, and whether the resulting views and visual character would be substantially different from the views and visual character that exist currently.

4.1.2 Discussion

a. The Proposed Project would involve habitat restoration, weed management, trails, improvements to the existing headquarters, and event management. Weed management methods would include prescribed burning, which would generally occur in May. This would temporarily alter the appearance of burned areas until the next growing season, starting in the following autumn. Improvements at headquarters would involve construction of several structures, but these project structures would be small, and none would exceed the height of the existing structures on the site, which include windmills and a wind turbine. None of the project structures would be visually obtrusive or appear to be bulkier or more massive than existing structures. The project structures would set back approximately 1,000 feet or more from Grizzly Island Road, and none of the project structures would substantially intrude into scenic vistas.

The habitat restoration and enhancement projects would not substantially alter the naturalistic, water-oriented visual character of the restoration areas, and would not substantially adversely affect scenic vistas. Upon completion of restoration, the appearance of the restoration sites would be enhanced and more natural looking than under existing conditions. The Goat Island and Lower Spring Branch projects involve tidal marsh habitat restoration, and would therefore incorporate the Visual and Aesthetic BMPs described in the SMP EIR Environmental Commitments (Appendix B) during project construction. This impact would be ***less than significant***.

b. There are no designated or eligible State Scenic Highways in the Project vicinity, although Grizzly Island Road is designated as a county Scenic Roadway. No rock outcroppings that would be adversely impacted by the Proposed Project. It is possible that one large eucalyptus tree would be removed for the expanded parking in the headquarters area. A number of similar trees would remain and these trees are not prominent in views from the road, therefore this loss would be considered less than significant. The habitat restoration and enhancement projects would not alter the scenic resources of the site and may increase the scenic value of the site by returning the

[9] County of Solano, *Solano County General Plan*, November 2008, Chapter 4 Resources, Figure RS-5, Scenic Roadways, page RS-39.

[10] California Scenic Highway Mapping System website, accessed 17 December 2012. Available on the internet at: http://www.dot.ca.gov/hq/LandArch/scenic_highways/index.htm.

restored/enhanced areas to a more natural setting. The project site has scenic value, and this would not be substantially affected by any of the components of the Proposed Project. Thus, the Proposed Project would not damage scenic resources within a state scenic highway. Therefore, the impact would be ***less than significant.***

c. The project site is surrounded by sloughs on the north, west, and south boundary, with private hunting clubs and state run wildlife reserves across the channel. The site is bounded by private rangeland to the east. The Proposed Project would conduct prescribed burning that would temporarily alter the appearance of upland areas, and construct structures including windmills and temporary sheds. The additional structures would be at the existing headquarters area. The habitat restoration and enhancement projects would restore marshes and creeks, which would not adversely affect visual quality. The Goat Island and Lower Spring Branch projects involve tidal marsh habitat restoration, and would therefore incorporate the Visual and Aesthetic BMPs described in the SMP EIR Environmental Commitments (Appendix B) during project construction. None of these Project components would substantially alter the existing rural visual character of the project site or its surroundings. Therefore, the Project would not substantially degrade the existing visual character or quality of the site and its surroundings. The impact on visual character would be ***less than significant***.

d. None of the Proposed Project components would create substantial sources of light or glare. Night lighting at the headquarters area after construction of Project additions would not be different than existing night lighting. There would be ***no impact*** on light and glare.

e. The project structures would be constructed at the existing headquarters, and none of the project structures would be large or cast substantial amounts of shade. The Project would not increase shading on public open space or on adjacent properties. There would be ***no impact*** of shading on public open space.

4.2 Agricultural and Forest Resources

Checklist Items: In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. 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 Forestry Legacy Assessment Project, and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:		Significant Impact	Less Than Significant Impact With Mitigation	Less Than Significant Impact	No Impact
a.	Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	■
b.	Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	■
c.	Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined in 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 a non-forest use?	☐	☐	☐	■
e.	Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?	☐	■	☐	☐

4.2.1 Setting

The property is designated "Other Land or Grazing Land" pursuant to the Department of Conservation Farmland and Mapping Program. The grasslands at the Rush Ranch Open Space Preserve are licensed to a private rancher for commercial livestock production and for habitat maintenance.

The property is enrolled in the Williamson Act under Land Conservation Agreement Active Contract #00001221. None of the property is designated Prime Farmland, Farmland of Statewide Importance or Unique Farmland according to the Department of Conservation Farmland Mapping Program. There are no forest resources on the project site, and the site is not zoned as forest land or timberland.

4.2.2 Discussion

a. The Proposed Project would not convert lands designated Prime Farmland, Statewide Importance or Unique Farmland according to the Department of Conservation Farmland Mapping Program. ***No impacts*** are anticipated. The Proposed Project would continue the grazing use of the grassland portion

b. Rush Ranch has obtained a land use permit in 1990. As noted above, the upland portion of the project site is in the Agriculture - Suisun Marsh -160 (A-SM-160) use district. The entire site is subject to a Williamson Act contract. As discussed in 2.10.b Land Use and Planning, the various components of the Proposed Project are consistent with the agricultural zoning of the upland portion of the site. None of the project components would conflict with the existing Williamson Act contract, which requires that the site be maintained in agricultural use. Therefore, there would be ***no impact*** on agricultural zoning and Williamson Act contracts.

c. The Project site is not zoned as forest land or timberland, and there would be no conflict with forest or timberland zoning. There would be ***no impact***.

d. There is no forest land on the Project site, and the Project would not result in the loss or conversion of forest land. There would be ***no impact***.

e. Suisun Hill Hollow and Upper Spring Branch Creek currently contain impoundments used for providing stock water to cattle. The proposed habitat restoration projects at Suisun Hill Hollow and Upper Spring Branch Creek call for the exclusion of livestock grazing and stock water use within the habitat restoration project sites. The total exclusion area would be less than 1% of the area currently licensed for livestock grazing, therefore, the projects would have a minimal impact on grazing land availability. However, the use of surrounding uplands depends on the availability of reliable stock water. The conceptual designs for the habitat restoration projects currently include features to facilitate the provision of stock water from within the project sites to the surrounding upland areas. These features need to be maintained in a functional and reliable state throughout the life of the habitat restoration projects in order for grazing to remain viable in the surrounding uplands pastures. **Mitigation measure AG-1** would prevent the conversion of existing grazing land to nonagricultural use. With this mitigation measure in place, the impact to agricultural land would be ***less than significant with mitigation incorporated.***

Mitigation Measure AG-1

Prior to construction of habitat restoration projects at Suisun Hill Hollow and Upper Spring Branch Creek, stock water improvements shall be installed and tested for reliability to provide for livestock grazing in the surrounding upland pastures. Stock water improvements shall be kept in a functional condition throughout the life of the project as needed for maintenance of a viable grazing operation. Source water for the stock water improvements may be obtained from within the project sites. At Suisun Hill Hollow, stock water improvements shall be implemented in accordance with **Mitigation Measure Bio-3**.

Lower Spring Branch Creek is currently fenced and livestock grazing is generally excluded. The proposed habitat restoration project at Lower Spring Branch Creek calls for the removal of a berm and unpaved ranch road currently used for transporting cattle between upland pastures. The conceptual design for the habitat restoration project includes features for transporting cattle across the restored project site. Livestock use of these upland pastures would require ongoing maintenance of livestock corridors throughout the life of the project. Mitigation Measure AG-2 would prevent the loss of livestock transport across the project site and resulting conversion of existing grazing land to nonagricultural use. With this mitigation measure in place, the impact to agricultural land would be ***less than significant with mitigation incorporated.***

Mitigation Measure AG-2

Habitat restoration at Lower Spring Branch Creek shall include a safe and reliable corridor for the efficient transport of livestock across the project site that is compatible with the proposed restoration goals, which shall be maintained throughout the life of the project.

4.3 Air Quality

Checklist Items: Would the project		Significant Impact	Less Than Significant Impact With Mitigation	Less Than Significant Impact	No Impact
a.	Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	■	☐
b.	Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☐	■	☐
c.	Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is classified as non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors)?	☐	☐	■	☐
d.	Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	■	☐
e.	Create objectionable odors affecting a substantial number of people?	☐	☐	■	☐

4.3.1 Setting

The Proposed Project is located in the San Francisco Bay Area Air Basin (Air Basin). Air quality in the Air Basin is regulated by the Bay Area Air Quality Management District (BAAQMD), in conjunction with the U.S. Environmental Protection Agency and the California Air Resources Board.

Air pollution is directly related to a region's topography, climate, and meteorology. These attributes of the Air Basin and the project area are described below.

Topography

The San Francisco Bay and Pacific Ocean lie to the west of the Air Basin and to the east are the Sacramento and Central valleys. The Air Basin consists of varying terrain, including coastal mountain ranges, inland valleys, and bays. In its efforts to understand more completely the

varying climatological and topographical conditions that affect air pollution potential, the BAAQMD has identified 11 climatological subregions within the Air Basin. The project site is located within the Carquinez Strait subregion that contains the only sea-level gap between the San Francisco Bay and the Central Valley. The subregion includes the lowlands bordering the strait to the north and south, and includes the area adjoining Suisun Bay and the western part of the Sacramento-San Joaquin Delta as far east as Bethel Island. The subregion extends from Rodeo in the southwest and Vallejo in the northwest to Fairfield in the northeast and Brentwood in the southeast.

Climate and Meteorology

In general, the climate in the project area includes hot, dry summers and cool, rainy winters.

Wind Speed and Direction

Wind speed and direction play an important role in dispersion and transport of air pollutants. Wind at the surface and aloft can disperse pollution by vertical mixing of an air mass and by transporting it to other locations.

Westerly winds prevail in the Carquinez Strait, particularly during the summer and fall months when offshore high pressure coupled with low pressure in the Central Valley causes marine air to flow eastward. The wind is strongest in the afternoon, with speeds of 15 to 20 miles per hour (mph). Annual average wind speeds in the subregion are 8 to 10 mph. Occasionally, in the summer and fall months, atmospheric conditions cause easterly winds. Airflow from the east usually contains more pollutants than the cleaner marine air from the west. This can cause elevated pollutant levels in the central Bay Area via the Carquinez Strait. These high-pressure periods are usually accompanied by low wind speeds, shallow mixing depths, higher temperatures, and little or no rainfall.

Many industrial facilities (e.g., chemical plants and refineries) are located along the Carquinez Strait. While the strong afternoon winds typically mitigate the potential for pollution in this area, certain atmospheric and industrial conditions can result in short-term pollution episodes and emissions of unpleasant odors. Receptors downwind of these facilities could suffer more long-term exposure to air contaminants than individuals elsewhere.

Areas of the subregion that are traversed by major roadways (e.g., Interstate 80) also may be subject to higher local concentrations of carbon monoxide and particulate matter and to certain toxic air contaminants.

Temperatures

Temperature and solar radiation are particularly important in the chemistry of ozone formation. Ozone is formed in a photochemical reaction requiring sunlight. Generally, the higher the temperature, the more ozone formed, since reaction rates increase with temperature. However, extremely hot temperatures can “lift” or “break” the inversion layer, which is discussed in the next section.

In the project area, the average maximum temperature is around 90 degrees Fahrenheit during the summer, and the average minimum temperature is around 40 degrees Fahrenheit during the winter.

Pollutants

Criteria Pollutants

Criteria pollutants are air pollutants regulated by the Federal Clean Air Act and the California Clean Air Act. Below are descriptions of criteria pollutants of concern in the Air Basin.

Ozone (O_3)

Ozone, the main component of photochemical smog, is primarily a summer and fall pollution problem. Ozone is not emitted directly into the air, but is formed through a complex series of chemical reactions involving other compounds that are directly emitted. These directly emitted pollutants (also known as ozone precursors) include reactive organic gases (ROG) and nitrogen oxides (NOX). The principal sources of ROG and NOX are the combustion of fuels and the evaporation of solvents, paints, and fuels. Motor vehicles are often the major generator of ozone precursors. The time required for ozone formation allows the reacting compounds to spread over a large area, producing a regional pollution problem. Ozone problems are the cumulative result of regional development patterns rather than the result of a few significant emission sources. Depending on meteorological conditions, ozone precursors can be transported well away from the source area before ozone concentrations peak.

While ozone in the upper atmosphere protects the earth from harmful ultraviolet radiation, high concentrations of ground-level ozone can adversely affect the human respiratory system. Many respiratory ailments, as well as cardiovascular disease, are aggravated by exposure to high ozone levels. Ozone also damages natural ecosystems such as forests and foothill communities, and damages agricultural crops and some man-made materials, such as rubber, paint, and plastics. Short-term exposure to ozone can irritate the eyes and cause constriction of the airways. In addition to causing shortness of breath, ozone can aggravate existing respiratory diseases such as asthma, bronchitis, and emphysema. The Air Basin is nonattainment for federal and state ozone standards.

Carbon Monoxide (CO)

Carbon monoxide (CO) is an odorless, colorless gas that is formed by the incomplete combustion of fuels. Ambient carbon monoxide concentrations normally are considered a local effect and typically correspond closely to the spatial and temporal distributions of vehicular traffic. Wind speed and atmospheric mixing influence carbon monoxide concentrations. Under inversion conditions, carbon monoxide concentrations may be distributed more uniformly over an area, out some distance from vehicular sources.

Carbon monoxide binds strongly to hemoglobin, the oxygen-carrying protein in blood, and thus reduces the blood's capacity for carrying oxygen to the heart, brain, and other parts of the body. At high concentrations, CO can cause heart difficulties, impair mental abilities, and result in death.

Carbon monoxide concentrations have declined dramatically in California because of cleaner burning motor vehicles and motor vehicle fuels. Carbon monoxide concentrations are expected to continue declining because of the steady retirement of older, more polluting vehicles from the mix of vehicles on the road network. The Air Basin is in attainment for federal and state CO standards.

Nitrogen Dioxide (NO_2)

The major sources of nitrogen dioxide (NO^2), essential to the formation of photochemical smog, are vehicular, residential, and industrial fuel combustion. NO_2 is the "whiskey brown" colored gas evident during periods of heavy air pollution. NO_2 increases respiratory disease and irritation and may reduce resistance to certain infections. The standard for NO_2 is being met in the Bay Area Air Basin, and BAAQMD does not expect that the standard will be exceeded in the near future.

Suspended Particulate Matter (PM_{10} and $PM_{2.5}$)

PM_{10} and $PM_{2.5}$ consist of particulate matter that is 10 microns or less in diameter and 2.5 microns or less in diameter, respectively. (A micron is one-millionth of a meter.) $PM_{2.5}$ is a subset of PM_{10} and, therefore, is incorporated by reference in any mention of PM_{10}. One common source of PM_{10} is diesel emissions. Traffic generates PM_{10} and $PM_{2.5}$ emissions through entrainment of dust and dirt particles that settle onto roadways and parking lots. PM_{10} also is emitted by burning wood in residential wood stoves and fireplaces, and from open agricultural burning. PM_{10} can remain in the atmosphere for up to seven days before gravitational settling, rainout, and washout remove it.

Acute and chronic health effects associated with high particulate levels include the aggravation of chronic respiratory diseases; heart and lung disease; and coughing, bronchitis, and respiratory illnesses in children. Recent mortality studies have shown a statistically significant, direct association between mortality and daily concentrations of particulate matter in the air. Additional effects include reduced visibility and soiling of buildings. State standards for PM_{10} and $PM_{2.5}$ are periodically exceeded in the Air Basin.

Sulfur Dioxide (SO_2)

Sulfur dioxide is a colorless acid gas with a strong odor. It can damage materials and it can produce adverse health effects at high concentrations. It is produced by the combustion of sulfur-containing fuels, such as oil, coal, and diesel. Sulfur dioxide can irritate lung tissue and increase the risk of acute and chronic respiratory disease. The standard for SO_2 is being met in the Air Basin; BAAQMD does not expect that the standard will be exceeded in the near future.

Air Quality Monitoring Data

The BAAQMD operates a regional monitoring network for ambient concentrations of criteria air pollutants. Criteria air pollutants are regulated by developing human health-based and/or environmentally based criteria (science-based guidelines) for setting permissible levels (National Ambient Air Quality Standards). The criteria pollutants are particle pollution (often referred to as particulate matter), ground-level ozone, carbon monoxide, sulfur oxides, nitrogen oxides, and lead. These pollutants can harm your health and the environment, and cause property damage. California also regulates criteria air pollutants with California Ambient Air Quality Standards, which are generally equal to, but in some cases are more restrictive than, the national standards.

Currently, the criteria pollutants of most concern in the San Francisco Bay Area are ozone and particulate matter. Nearby monitoring stations closest to the project site include the Chadbourne Road Station in Fairfield for ozone, the Merchant Street Station in Vacaville for PM10 and the 304 Tuolumne Street Station in Vallejo for $PM_{2.5}$, CO and NO_2. **Table AQ-1** summarizes violations for the most recent three years of data for these air-monitoring stations. The data show a limited

number of daily violations related to State and federal ozone standards, and the federal $PM_{2.5}$ standard.

Table Aq–1: Air Quality Data Summary, Suisun, Ca, 2009 – 2011

Pollutant	Standard	Days Standard Exceeded		
		2009	2010	2011
Ozone	State 1–Hour	2	1	0
Ozone	Federal 8–Hour	2	2	1
Ozone	State 8–Hour	5	3	3
PM_{10}	Federal 24–Hour	0	0	0
PM_{10}	State 24–Hour	0	ID*	0
$PM_{2.5}$	Federal 24–Hour	5	0	6
Carbon Monoxide	State/Federal 8–Hour	0	0	0
Nitrogen Dioxide	State 1–Hour	0	0	0

Source: California Air Resources Board, Aerometric Data Analysis and Management (ADAM), 2013.

Notes: PM10 data are from the Merchant Street Station in Vacaville, ozone data are from the Chadbourne Road Station in Fairfield, and PM2.5, NO_2, and CO data are from the 304 Tuolumne Street Station in Vallejo.

** Insufficient Data*

The Bay Area is currently designated "nonattainment" for the State and federal 8-hour ozone standards, the federal 24-hour PM2.5 standard, and the state standards for PM10, annual PM2.5, and 1-hour ozone. The Bay Area is designated "attainment" or "unclassified" with respect to the other ambient air quality standards.

Sensitive Receptors

People that are more susceptible to the effects of air pollution than the general population at large include children, elderly, and those that suffer from certain illnesses or disabilities. Therefore, schools, convalescent homes, and hospitals are considered to be sensitive receptors to air pollution. Residential areas are considered sensitive to poor air quality because people usually stay home for extended periods of time, which results in greater exposure to localized air pollutants. There are no residences or other sensitive receptors in close proximity to the construction areas for the Proposed Project. Project construction would be at least 6,000 feet from the nearest residences.

Regulatory Framework

Criteria Pollutants

The BAAQMD monitors and regulates air quality pursuant to the Federal Clean Air Act, as amended, and the 1988 California Clean Air Act. The BAAQMD adopts and enforces controls on stationary sources of air pollutants through its permit and inspection programs. Other District

responsibilities include monitoring air quality, preparation of clean air plans, and responding to citizen air quality complaints.

Air Quality Significance Criteria

In 1999, the BAAQMD adopted the BAAQMD CEQA Guidelines to assist lead agencies with CEQA impact analyses (BAAQMD, 1999). The guidelines were revised in 2010, and included new impact significance thresholds; however, the BAAQMD's 2010 significance thresholds were challenged in a lawsuit, and are still in litigation as of May 2014.

In May 2012, the BAAQMD updated its CEQA Air Quality Guidelines to include no reference of the BAAQMD's adopted 2010 thresholds to comply with the court's order (BAAQMD, 2012). The revised 2012 guidelines indicate that lead agencies should examine substantial evidence in determining appropriate air quality thresholds, and identify the BAAQMD's 1999 Thresholds of Significance (BAAQMD, 1999) as a source of information for thresholds of significance. In reviewing the basis for the BAAQMD 1999 Thresholds, the lead agency has found that the BAAQMD daily thresholds were based on the federal limits in the New Source Review (NSR) standards. Congress established the New Source Review (NSR) permitting program as part of the 1977 Clean Air Act Amendments. NSR is a preconstruction permitting program that serves two important purposes.

- First, it ensures that air quality is not significantly degraded from the addition of new and modified factories, industrial boilers and power plants. In areas with unhealthy air, NSR assures that new emissions do not slow progress toward cleaner air. In areas with clean air, especially pristine areas like national parks, NSR assures that new emissions do not significantly worsen air quality.
- Second, the NSR program assures people that any large new or modified industrial source in their neighborhoods will be as clean as possible, and that advances in pollution control occur concurrently with industrial expansion.

Thus, the BAAQMD 1999 Thresholds were based on New Source Review levels appropriate for the background air quality in the air basin and they have been used for more than a decade on a variety of projects without any major controversy about their appropriateness. Given this information, the lead agency has determined that the BAAQMD's 1999 Thresholds of Significance are supported by substantial evidence and therefore can be used as significance thresholds for this project. The 1999 BAAQMD CEQA Guidelines do not require quantification of construction emissions and comparison to thresholds, but instead rely upon inclusion of feasible control measures for PM10 (fugitive dust). Operational impacts will be compared to the 1999 BAAQMD significance thresholds for operational impacts.

4.3.2 Discussion

a. The Bay Area is currently designated as a nonattainment area for State and federal ozone standards, for the State particulate matter (PM10 and PM2.5) standards, and the national 24-hour PM2.5 standard. As required by federal and State air quality laws, the Bay Area 2010 Clean Air Plan (2010 CAP) has been prepared to address ozone and particulate matter (mainly PM2.5) nonattainment issues, air toxics, and GHG. The 2010 CAP includes stationary and mobile source control strategies, transportation control measures, land use and local impact measures, and

energy and climate measures to be implemented through BAAQMD regulations incentive programs, and programs in cooperation with the Metropolitan Transportation Commission (MTC), local governments, transit agencies, and others. The BAAQMD implements a number of regulations and programs to reduce PM10 emissions; however, no PM10 plan has been prepared nor is one currently required under State air quality planning law.

A project would be judged to conflict with or obstruct implementation of the regional air quality plan if it would be inconsistent with the growth assumptions, in terms of population, employment, or regional growth in vehicle miles traveled. While the Proposed Project would result in minor increase in use of Rush Ranch, the increase in vehicle miles travelled would not be substantial. Thus, the Proposed Project would not be a conflict with the growth assumptions made in the preparation of these air quality plans nor obstruct implementation of any of the proposed control measures contained in these air quality plans. Therefore this impact would be ***Less than Significant***.

b, c. Air quality impacts are generally associated with both construction and operation of a project. BAAQMD regulations applicable to the construction of the project relate to portable equipment (e.g., gasoline- or diesel-powered engines used for power generation, pumps, compressors, and cranes), architectural coatings, fugitive dust, and paving materials. Project operations would need to comply with BAAQMD regulations and allowed prescription burn days, including agricultural burning regulations (for the proposed prescribed burns of the grassland pastures to eliminate non-native species. Therefore this impact would be ***Less than Significant***.

Construction Impacts

The main Project-related construction activities affecting air quality would include excavation of 34,000 cubic yards (CY) for the restoration projects and 567 CY of excavation for the storm water management construction. Site preparation includes activities such as general land clearing and grubbing. Trenching activities include cut and fill operations, soil compaction, and grading. The emissions generated from these construction activities include dust (including PM10 and PM2.5), primarily from “fugitive” sources. Fugitive dust could cause or contribute to exceedances of the State PM10 standard during project construction.

Construction of the Project would generate short-term emissions of criteria pollutants, including particulate matter and equipment exhaust emissions. The 2012 BAAQMD CEQA air quality guidelines identify basic construction mitigation measures. Implementation of Mitigation Measure AQ-1, which includes the basic mitigation measures identified in the 2012 BAAQMD CEQA air quality guidelines, would ensure that short-term construction impacts of both the Project and the associated wetlands projects would be reduced to ***less than significant*** levels.

Mitigation Measure AQ-1

The Applicant shall require its construction contractor to implement a dust control plan that shall include the following Basic Construction Mitigation Measures as recommended by the BAAQMD:

- All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
- All haul trucks transporting soil, sand, or other loose material off-site shall be covered.

- All visible mud or dirt track-out onto adjacent public roads shall 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 shall be limited to 15 mph.
- All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
- Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.
- All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified visible emissions evaluator.
- A sign with the telephone number and person to contact at the lead agency regarding dust complaints shall be posted in a publically visible location. This person shall respond and take corrective action within 48 hours. The BAAQMD's phone number shall also be visible to ensure compliance with applicable regulations.

Implementation of Mitigation Measure AQ-1 identified above would ensure that construction impacts would be less than significant.

The 1999 BAAQMD CEQA Guidelines state that for any project that does not individually have significant air quality impacts, the determination of a significant cumulative impact can be determined based on consistency of the project with the local general plan and of the general plan with the regional air quality plan. As disclosed in this air quality analysis, with mitigation, the Proposed Project would not result in individual significant air quality impacts. Therefore, the Project would not generate cumulatively considerable air emissions and the cumulative impact would be ***less than significant***.

Operational Impacts

With respect to the operational-phase of the project, increased emissions would be generated primarily from vehicle trips to the project site. A conservative scenario was developed to estimate the increase in project trips on an average day and year. The scenario estimated an increase of up to 468 vehicles per day and 17,079 vehicles per year, based on existing levels of 15,000 visitors per year and the maximum public use and frequency for each of the anticipated public uses identified in Table 1-8 of the project description. The actual daily maximum would not increase because the once a year large event would continue to attract 300 to 1,500 visitors as it has in past years. The BAAQMD generally recommends a detailed air quality analysis for projects generating more than 2,000 vehicle trips per day. Regardless, an air quality analysis has been conducted (the results are presented below) to determine whether the Proposed Project would exceed the significance criteria identified in the *BAAQMD CEQA Guidelines*.

The Thresholds of Significance from the *1999 BAAQMD CEQA Guidelines* for project operations are:

- Reactive Organic Gases (ROG) - 80 lbs/day
- Nitrogen Oxides (NOX) - 80 lbs/day
- Respirable Particulates (PM10) - 80 lbs/day

Table AQ-2 shows project related emissions from maximum average operations as described above. No substantial increases in area source emissions are included in the project description so increases in area emissions are not included in the estimates in Table AQ-2. Because the Proposed Project would not exceed BAAQMD thresholds for daily vehicular, operational impacts would be considered ***less than significant***.

Table AQ-2: Criteria Air Pollutant Emissions from Maximum Average Operations

Emissions	Criteria Air Pollutants (Pounds Per Day)			
	ROG	CO	NO_X	PM_{10}
Operational (Vehicular) Emission Estimates	3	90	10	<1
Total Project Emissions - Year 2014	3	90	10	<1
BAAQMD Thresholds	80	550	80	80
Significant Impact?	No	No	No	No
Assumptions included an average of 468 new vehicles per day (maximum users and frequency for all anticipated public uses). EMFAC 2011 2013 emission rates were conservatively used with a roundtrip distance of 60 miles. Source: RCH Group 2013				

d. Given the proposed use of the site, operation of the Proposed Project would not expose sensitive receptors to substantial concentrations of pollutants. Toxic air contaminants (TACs) would be generated by the use of diesel fueled construction equipment. Diesel emissions can be carcinogenic over long exposure durations (generally 30-year and 70-year timeframes are modeled). However, the nearest residences would be at least 6,000 feet from the construction emissions and the construction period would only be approximately two months. Therefore, impacts on sensitive receptors would be ***less than significant***.

The Proposed Project also would include prescribed burning in grassland pastures for the biological reasons discussed in the project description. BAAQMD approval would be required for any prescribed burning proposed by the project. No prescribed burning would be allowed without the approval of BAAQMD. The Project would be required to comply with BAAQMD Regulation 5 Open Burning, Section 401.15 Wildlife Vegetation Management. These regulations require the development of a Smoke Management Plan (including an acreage allocation that can be burned) that must be approved by the BAAQMD Air Pollution Control Officer (APCO). All details of the prescribed burn require coordination with the BAAQMD meteorologists on the days immediately prior to the prescribed burn and on the day of the prescribed burn. Prescribed burning is only allowed on a permissive burn day. Compliance with BAAQMD regulations and coordination of the burn day and the acreage allowed for burning would reduce the impact of prescribed burning (proposed by the project) to a level that is **less than significant**.

e. The BAAQMD defines public exposure to offensive odors as a potentially significant impact. Potential odor impacts are based on a list of specific types of facilities, such as wastewater treatment plants, landfills, refineries, etc. (BAAQMD, 1999). During construction of the Proposed Project, various diesel-powered vehicles and equipment in use on the site would create odors. These odors would be temporary and not likely to be noticeable beyond the project boundaries. The operation of the project would not result in generation of offensive odors. Burning of grasses and the use of portable toilets at special events may generate minor odors, but these would be temporary and small scale. The impact of the project with regard to odors would be ***less than significant***.

4.4 Biological Resources

Checklist Items: Would the project		Significant Impact	Less Than Significant Impact With Mitigation	Less Than Significant Impact	No Impact
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 Wildlife or U.S. Fish and Wildlife Service?	☐	■	☐	☐
b.	Have a substantial adverse effect on any aquatic, wetland, or riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	■	☐	☐
c.	Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act including, but not limited to, marsh, vernal pool, coastal, etc., through direct removal, filling, hydrological interruption, or other means?	☐	☐	■	☐
d.	Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	■	☐

Checklist Items: Would the project		Significant Impact	Less Than Significant Impact With Mitigation	Less Than Significant Impact	No Impact
e.	Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	■
f.	Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	■

4.4.1 Setting

Habitats within the headquarters area and the associated projects sites can be characterized into a series of ecogeomorphic/landscape units and subunits that attempt to unify the dynamic geomorphology, hydrology and vegetation of the site. These units are summarized below. Additional detail about these units can be found in the 2010 Rush Ranch Existing Conditions Report (Wetlands and Water Resources [WWR], 2010).

Upland Units

Upland ecogeomorphic units at Rush Ranch include all areas upslope of estuarine influence, and include three subunits: hillslopes, older alluvial fans, and historic quarry. The headquarters are primarily located on hillslopes and older alluvial fans.

Hillslopes. The terrestrial plant communities in the hillslopes are heavily dominated by introduced annual (e.g. soft chess, *Bromus hordeaceus,* Italian rye, *Lolium multiflorum*) and/or perennial grasses (e.g. purple needlegrass, *Nasella pulchra*) with a low cover (typical range of 0-5%) of native grasses and forbs during most years. There are small stands of coyote brush (*Baccharis pilularis*) near the marsh boundary south and southwest of the site headquarters, mostly in areas excluded from grazing. There are no other shrubs or trees within the terrestrial landscape except eucalyptus (*Eucalyptus globulus*) and various horticultural and native plantings around the headquarters and a few planted valley oaks (*Quercus lobata*) along the entry road leading to the headquarters. Overall, the upland terrestrial plant communities have a low to moderate ecological function based on the relatively low cover of native species and the relatively high cover of undesirable invasive weeds such as yellow star-thistle (*Centaurea solstitialis*) and Italian thistle (*Carduus pycnocephalus*). Special-status species supported by the hillslopes include raptors (e.g. northern harrier, *Circus cyaneus,* white-tailed kite, *Elanus caeruleus*, golden eagle, *Aquila*

chrysaetos), songbirds (e.g. loggerhead shrike, *Lanius ludovicianus*, California horned lark, *Eremophila alpestris actia*), and western burrowing owls (*Athene cunicularia hypugea*).

Older Alluvial Fans. The older (Pleistocene age) alluvial fans sit at the base of the hillslopes and extend down to the edge of the estuarine and fluvial landscape units. The fans were formed in alluvium from sedimentary rocks; dominant soils are loam and sandy loams that are moderately alkaline below about 12 inches in most areas. Vegetation is similar to the hillslopes, dominated by a mix of introduced perennial and annual grasses with a subdominant component of invasive weedy forbs grasses. The older alluvial fans have very low cover and limited distribution of purple needlegrass and native wildflowers, an intermittent band of creeping wildrye (*Leymus triticoides*) along the immediate marsh edge, and saltgrass (*Distichlis spicata*) in scattered areas with alkaline to subalkaline soils. Special-status wildlife species are similar to those found in the hillslopes (above).

Historic Quarry. The historic quarry near Suisun Hill Hollow includes approximately 12 man-made basins that support seasonal wetland vegetation with a mix of vernal pool indicator plants (e.g. stalked popcornflower, *Plagiobothrys stipitatus* var. *micranthus,* coyote thistle, *Eryngium vaseyi*), generalist seasonal wetland plants (e.g. common spikerush, *Eleocharis macrostachya,* smooth goldfields, *Lasthenia glaberrima*), and some halophytic seasonal wetland plants (e.g. saltgrass*,* alkali-heath, *Frankenia salina*). No special-status plant species have been found within the pools and are unlikely to occur based on the results of past surveys and the artificial origin of the pools (Vollmar et al. 2006). Special-status species with low potential to occur include Contra Costa goldfields (*Lasthenia conjugens*), saline clover (*Trifolium depauperatum* var. *hydrophilum*) and alkali milk-vetch (*Astragalus tener* var. *tener*).

Alluvial Units

Alluvial units at Rush Ranch include two subunits: younger alluvial fans and impoundments. Both the Suisun Hill Hollow and Spring Branch Creek project sites are comprised of younger alluvial fans with impoundments.

Younger Alluvial Fans. These areas are often dominated or prone to be dominated by invasive Harding grass (*Phalaris aquatica*). The understory often includes a mix of soft chess, ripgut (*Bromus diandrus*) and medusahead (*Taeniatherum caput-medusae*), with saltgrass often present and creeping wildrye sometimes intermixed along the lowest edge of the fan near the marsh-terrestrial ecotone. The younger alluvial fans include subhabitats that support an exceptional insect fauna (see below).

Impoundments. The alluvial fans feature multiple artificially deep ponds impounded by steep berms (dams) for use as cattle watering ponds. The ponds feature persistent standing water or mud in summer and are usually heavily trampled, with disturbed silt and clay. Typical plant species include freshwater marsh species such as cattail (*Typha* spp.), water-plantain (*Ranunculus alismifolius*), and pondweed (*Potamogeton* spp.). Tricolored blackbird (*Agelaius tricolor*), a special-status species, is known to consistently nest in the impoundment at Upper Spring Branch Creek (WWR 2010).

Estuarine Units

Estuarine units at Rush Ranch include four sub-units: tidal marsh, diked marsh, fringing marsh, and subtidal channels. The only estuarine units subject to change (due to the associated habitat restoration and enhancement projects) are the diked marsh at Goat Island Marsh and the tidal marsh-lower alluvial fan ecotone at Lower Spring Branch Creek; the existing tidal marsh, fringing marsh, and subtidal channels currently present at Rush Ranch are unaffected by the Proposed Projects.

Diked Marsh. Goat Island Marsh has a relatively "natural" upland edge along its eastern boundary; its northern, eastern, and southern boundaries are comprised of an artificial levee with steep side slopes. The marsh supports dense stands of native cattails (*Typha* spp.) and bulrushes (*Schoenoplectus* spp.). The eastern diked marsh – upland ecotone supports robust communities of pickleweed (*Sarcocornia pacifica*) and saltgrass. *Phragmites australis* has colonized the more disturbed areas along the south edge of the marsh, with observed spread into the more interior regions. The levee is dominated by weedy, ruderal species such as invasive perennial pepperweed (*Lepidium latifolium*), Himalayan blackberry (*Rubus armeniacus*), fennel (*Foeniculum vulgare*), as well as *Phragmites* extending from the diked marsh plain. Open water ponds in the NE and SE corners of the diked marsh support stands of pondweed. The diked marsh at Rush Ranch is known to support the federally endangered salt marsh harvest mouse (*Reithrodontomys raviventris*).

Tidal Marsh – Lower Alluvial Fan Ecotone. Tidal action within Lower Spring Branch Creek is largely prevented by a berm and culvert that restrict most upstream tidal flows with the exception of large spring high tide events. Tidal marsh downstream of the culvert is typical of the mature brackish tidal marsh within the First Mallard Slough system, featuring a Holocene marsh plain bisected by a sinuous subtidal channel network. Dominant vegetation downstream of the culvert is typical of mature brackish tidal marshes, with lower marsh dominated by bulrushes and cattails and mid- to high-marsh dominated by pickleweed (*Sarcocornia pacifica*), gumplant (*Grindelia stricta*), saltgrass, and the invasive perennial pepperweed. Additional information about vegetation zonation in the tidal marsh plain at Rish Ranch can be found in WWR 2010 and Baye 2012. Upstream of the culvert, areas with irregular tidal inundation feature are characterized by the dwarfed vegetation of turf pans (e.g. annual graminoids Mediterranean barley, *Hordeum gussoneanum*, perennial ryegrass, *Lolium perenne*, and toad rush, *Juncus bufonius*, with sparse low patches of *Sarcocornia pacifica*). Perrenial pepperweed is also present in a patch upstream of the culvert.

Special-Status Species

Rush Ranch provides habitat for a broad range of special-status species, particularly those that are dependent on the site's regionally unique brackish tidal marsh and estuarine-terrestrial ecotone communities. The species that could potentially occur near the headquarters and within the four restoration project areas are listed in Appendix A and summarized below. Tidal marsh species are listed herein due to (1) the proximity of the Lower Spring Branch Creek site to tidal marsh, and (2) certain species (e.g. salt marsh harvest mouse, black rail, Suisun song sparrow) are known to utilize diked marsh habitats such as those at Goat Island Marsh.

Estuarine Special-Status Plants

All of the special-status plants species currently known from the site occur within the tidal marsh or tidal marsh-terrestrial ecotone (estuarine landscape) outside the footprint of the Proposed Project areas. The only species with the potential to be impacted by project activities is soft bird's-beak. No special-status vernal pool species were detected during recent surveys (Vollmar et al. 2006) and are not expected to occur based on the lack of detection and the man-made nature of the habitat. The remaining habitats within the terrestrial and fluvial landscape are not particularly specialized and special-status species are not likely to occur.

Soft bird's-beak. Soft bird's-beak, *Chloropyron molle* (A. Gray) A. Heller ssp. *molle* (syn. *Cordylanthus mollis* A. Gray ssp. *mollis*), is an annual hemiparasitic forb that historically ranged the northern San Francisco Bay estuary from Marin County to the vicinity of Antioch, inhabiting upper intertidal marsh habitats at both terrestrial edge and tidal slough bank positions in tidal marsh ecosystems (USFWS 2009). Rush Ranch currently supports an extensive population of soft bird's-beak that was expanded by an experimental seeding project in 2000 (Grewell *et al*. 2003, 2005). Approximately 546 acres of potential habitat have been surveyed at Rush Ranch. Most of the population occurs along the terrestrial margins of high tidal marsh (terrestrial soils inundated by highest tides) along the north end of lower Spring Branch Creek (terrestrial edge high marsh), with most plants occurring in the artificially seeded population (Grewell 2005). Extensive flowering and seed-producing populations of soft bird's-beak persisted at Spring Branch Creek upper tidal marsh edges in 2009 and 2010 (P. Baye, pers. obs.), but quantitative estimates of population size are not available. Populations remain restricted to sparsely vegetated upper tidal marsh edges (particularly near or in high brackish marsh turf pans), and are absent in dense, continuously vegetation of adjacent high tidal marsh west of the berm at the mouth of Spring Branch Creek.

Estuarine Special-Status Wildlife

California clapper rail. The federally endangered California clapper rail (*Rallus longirostris obsoletus*) is a secretive, hen-like waterbird, indigenous to estuarine marshlands in the San Francisco Bay (Goals Project 2000). California clapper rails occur almost exclusively in tidal salt and brackish marshes with unrestricted daily tidal flows, adequate invertebrate prey food supply, well developed tidal channel networks, and suitable nesting and escape cover during extreme high tides. Since most marshes in Suisun Marsh are diked, clapper rail presence in the Marsh is concentrated around the remaining tidal marsh habitats at Rush Ranch. Tidal marshes within Rush Ranch that are designated critical habitat for the rail include marshes in the Spring Branch area, and around First and Second Mallard Sloughs (CDFG 2009). The rail has not been observed at Rush Ranch since 2003 (WWR 2010).

California black rail. The California black (*Laterallus jamaicensis coturniculus*) rail is listed as "threatened" by the state of California and is a federal species of concern. They occur almost exclusively in tidal marsh habitat, and the majority of the local species population is currently found in the historical marshes of San Pablo Bay, Suisun Bay, and the Carquinez Strait. Within Suisun Marsh, black rails are found in both tidal and diked/muted tidal marshes. Surveys by PRBO, USGS, and CDFW have all found significantly high densities of California black rails in tidal marshes within Rush Ranch, especially near First and Second Mallards Sloughs.

Yellow rail. The yellow rail (*Coturnicops noveboracensis*) is a small, reclusive rail that is currently a California species of special concern. Due to its secretive nature, its habitat preferences are not well documented, though it is known to inhabit wet meadows and coastal tidal marshes in winter. Though the species is extremely rare in California, recent surveys indicate that the species may be a regular winter visitor to Suisun Marsh. Surveys by the USGS in April of 2009 encountered two separate individuals in tidal *Scirpus/Bolboschoenus* marsh at Rush Ranch, southwest of the ranch complex near the tidal portion of Spring Branch Creek.

Suisun song sparrow. The Suisun song sparrow (*Melospiza melodia maxillaries*) is currently a federal species of concern. The Suisun song sparrow is a distinct subspecies of song sparrows completely endemic to Suisun Bay. Previous literature suggested that these birds are confined to undiked tidal marshes. However, field surveys by CDFW and DWR have observed Suisun song sparrows along distribution ditches, permanent ponds, and other areas in diked wetlands of Suisun Marsh where required plant assemblages and brackish water conditions exist (Collins et al. 1994). The reproductive success of the Suisun song sparrow was monitored at Rush Ranch and calculated to be approximately 27 percent. The density of Suisun song sparrows was estimated to be 11 birds per acre, with a total population estimated to be 22,000 to 53,000 (Nur et al. 1997).

Salt marsh common yellowthroat. The salt marsh common yellowthroat (*Geothylpis trichas sinuosa*) is a state species of special concern. It is a winter resident of tidal marshes but occurs in other habitats (often wetland ecotones) such as riparian thickets, freshwater marshes, marshy coastal forb vegetation, and brush or scrub near wetlands. Most breeding (60 percent in the San Francisco Bay region) occurs in brackish marsh, about 5 percent in salt marsh, and the remainder in other wetland or peripheral wetland habitats. 2005 surveys by PRBO Conservation Science indicated that habitats at Rush Ranch support some of the largest populations of salt marsh common yellowthroat within the San Francisco Estuary; that same year Rush Ranch also supported one successful common yellowthroat nest. It is presumed that Rush Ranch continues to support salt marsh common yellowthroat breeding into the present-day.

Salt marsh harvest mouse. Federally endangered salt marsh harvest mice (*Reithrodontomys raviventris*) are small, native rodents endemic to the salt marshes and adjacent diked wetlands of the San Francisco Bay (Goals Project 2000). They are generally restricted to saline or subsaline marsh habitats around the San Francisco Bay estuary and mixed saline/brackish areas in the Suisun Bay area. The salt marsh harvest mouse has been found throughout the Marsh in a variety of habitats. Current studies demonstrate that pickleweed is not necessarily the most "preferred" habitat as defined by the USFWS Draft Recovery Plan for Tidal Marsh Ecosystems of Northern and Central California (USFWS 2010; DFG, DWR unpublished data) and their distribution is not restricted to pickleweed habitat. In the diked marshes of Suisun, trapping evidence indicates that tule/cattail habitat is marginal for the mouse; it can be found in much greater numbers in diked marsh dominated by *S. americanus*.

Suisun shrew. The Suisun shrew (*Sorex ornatus sinuosus*) is a federal and state species of special concern with exceptionally narrow habitat requirements, primarily the ecotone between tidal wetlands and grassland uplands along Grizzly Island and the northern extremes of Suisun Marsh. Adjacent upland habitats are utilized by a close relative, *Sorex ornatus californicus* (Brown and Rudd 1981, Williams 1983). Due to its strict habitat requirements, Rush Ranch is one of the most

important habitat epicenters for this small insectivore. Protection of adequate grassland and wetland habitat at Rush Ranch and similar areas is likely necessary to prevent interbreeding between Suisun shrew and its cousin *S. o. californicus*. (WWR 2010).

River otter. The southwestern river otter (*Lutra canadensis sonora*) is a state species of special concern that utilizes a broad range of freshwater and estuarine habitats such as sloughs, streams, rivers, ponds, and lakes. River otters are known to utilize habitat in Suisun Slough along the Goat Island Marsh perimeter levee, and could potentially utilize habitat in Hill, First Mallard, Second Mallard, and Cutoff Sloughs.

Western pond turtle. The western pond turtle (*Clemmys marmorata*) is a state species of special concern that utilizes a broad range of freshwater to brackish habitats such as ponds, streams, and sloughs throughout California. They favor habitats with ample opportunities for basking, such as emergent boulders, logs, or channel banks. Western pond turtle habitat exists within existing Goat Island Marsh, and western pond turtles are known to occur in adjacent Suisun Slough tidal marsh banks.

Fish. Several special-status fish species, including Delta smelt (*Hypomesus transpacificus*; federally endangered), longfin smelt (*Spirinchus thaleichthys*; state species of concern), Sacramento splittail (*Pogonichthys macrolepidotus*; federally threatened), Chinook salmon (*Oncorhynchus tshawytscha*; federally endangered, threatened, and state species of concern – depending on run), and steelhead (*Oncorhynchus mykiss*; federally threatened) may occasionally utilize subtidal channel habitats in the tidal sloughs surrounding Rush Ranch in the vicinity of the Goat Island marsh restoration project.

Terrestrial Special-Status Wildlife

Terrestrial wildlife includes those species that primarily inhabit or utilize the terrestrial or fluvial landscapes on the site rather than the estuarine landscape. Appendix A contains an annotated list of special-status terrestrial wildlife species known or expected to occur on the site. As shown, all of the known or likely special-status terrestrial wildlife species are birds including seven raptor species and three songbird species. The site also supports a unique assemblage of invertebrates, which are summarized below.

Raptors and Owls. The site is considered to be a regionally important nesting site for northern harrier and short-eared owl. These species nest primarily within tall grassland or marsh vegetation within the lower portions of the older alluvial fans and adjacent tidal marsh-terrestrial ecotone. Past nesting surveys conducted on the site found a high density of nests for both species within these habitats. Short-eared owls currently have fairly limited nesting areas within California, heightening the value of Rush Ranch for the species (WWR 2010). The site is also considered to be an important foraging site for a broad range of special-status raptors and other, more common raptors. The intact grassland-marsh matrix provides a substantial prey base of the small mammals, birds and terrestrial invertebrates that are hunted by these species (see Appendix A). More than a dozen different raptors have been documented on the site including seven special-status species (Appendix A).

In the early 1990s, approximately 25 burrowing owls were released at Rush Ranch as part of a mitigation project; artificial burrows were constructed in and around the quarry area to house

them. The burrows still exist, although there is little evidence of occupancy. Nonetheless, burrowing owls are observed almost every year on the property at locations including the quarry, the stock pond east of the quarry, the NE corner of the ranch, and the stock pond along Spring Branch Creek, all during the non-breeding season (B. Wallace, pers. comm. 2010). In 2010, a single adult western burrowing owl was observed on the site near the entrance road to the headquarters. The owl was at a burrow and the sighting was in mid-June, well within the breeding season (WWR 2010). However, only one owl was observed, so it is not clear if the owl was actually breeding on sight.

Songbirds. The other special-status birds of note are songbirds. California horned lark (*Eremophila alpestris actia*) is a ground nesting bird that nests and forages in primarily in grasslands. Loggerhead shrike (*Lanius ludovicianus*) nests in shrubs (which are mostly absent from the site) and forages in grasslands and scrub habitats. Both of these species have been observed on or in the immediate vicinity of the site. Tricolored blackbird (*Agelaius tricolor*) is a colonial nester in emergent marsh and riparian scrub habitat that forages in surrounding marsh and terrestrial habitats, including grasslands. Data from the UC-Davis Tricolored Blackbird Working Group indicates that tricolored blackbirds have been consistently observed nesting on Rush Ranch (Upper Spring Branch Creek impoundment) from 2004-2008 (WWR 2010).

Invertebrates. The lower alluvial fan at Spring Branch Creek, and probably other Rush Ranch drainages with similar features, supports alkali flats with sparse vegetation and relatively unconsolidated sediments, as well as cohesive unvegetated low scarps of intermittently active distributary channels. These features provide specialized sub-habitats for an exceptionally rich, localized and distinctive (including possibly endemic species and undescribed species; WWR 2010) insect fauna at Rush Ranch. The alkali flats, meadows, seasonal pools, and erosion scars are sub-habitats that support the largest populations and diversity of Hymenoptera (wasps) and Cicindelidae (tiger beetles), particularly in bare or sparse sediment areas.

4.4.2 Discussion

a. The habitat restoration and enhancement projects generally would result in a net improvement in habitat conditions for special status plant and wildlife species. However, these projects could cause construction-related impacts to certain special status species. These impacts and mitigation measures are descried for each of the individual wetlands projects below.

- **Goat Island Marsh –** Proposed construction activities at Goat Island Marsh, as well as the proposed boardwalk/trail in the marsh's southeast corner, could potentially impact sensitive habitats, plants, and fish and wildlife. As this project involves the restoration of tidal marsh habitat, in addition to the project-specific mitigation measures described below, it also incorporates the applicable and appropriate Environmental Commitments from the SMP EIR (Appendix B), including general biological BMPs:
  - Worker training program
  - Special status mammal protections
  - Special status plant protection measures
  - General bird protections

- Biological monitoring

The exact nature of these environmental commitments for this specific Project will be specified in the Project permits.

Impacts on soft bird's-beak habitat. Trail construction could potentially impact populations of soft bird's beak. No bird's beak plants have been identified in the Goat Island Marsh. However, depending on alignment, construction of permanent trails in the high tidal marsh-terrestrial transition zone in Goat Island Marsh may adversely impact existing potential suitable habitat for soft bird's beak, and impair the ability of undetected populations of soft bird's-beak to survive by migrating landward and upslope with rising sea level, or tidal restoration (viz. Goat Island Marsh). This may significantly degrade the habitat quality of a portion of the marsh for recovery of soft bird's-beak. Therefore overall impacts on bird's beak habitat in the marsh are potentially significant but can be reduced to ***less than significant with mitigation incorporated*** (Mitigation Measure BIO-1).

Mitigation Measure BIO-1

Structural trails bordering or within the high tidal marsh-terrestrial transition zone (Figure IS-3)shall be aligned to minimize shore-parallel alignments that would degrade existing suitable habitat of soft bird's-beak and impair its long-term viability by precluding continuous landward and vertical migration in response to rising sea level within the expected life of the trail. The transition zone is at the boundary between the upland ecogeomorphic units of "hillslopes, Older Alluvial Fans and Younger Alluvial Fans" and Tidal, Diked and Fringing Marsh Ecotones shown on Figure IS-3. The transition is variable in size and defined by plant community as well as geomorphology.

Impacts to Suisun song sparrow and salt marsh common yellowthroat. Suisun song sparrows and salt marsh common yellowthroat are likely to forage or nest in tall broadleaf forb vegetation along tidal channel banks, high tide lines, terrestrial transition zones, or artificial levees and berms of Rush Ranch tidal marshes. Grading activities along the outer levee of Goat Island Marsh would occur outside of the breeding season for these species, but would likely cause short-term loss of foraging or nesting habitat. This loss would be offset in the long-term by proposed revegetation and irrigation measures, and would result in less-than significant short-term impacts to these species because abundant habitat is available for a large population throughout Rush Ranch tidal marshes and edges; Goat Island Marsh levee devegetation would represent a short-term ***and less than significant*** loss of a very small proportion of the available habitat.

Impacts to California clapper rail, California black rail, and yellow rail. California clapper rail, California black rail, and yellow rail could potentially forage or nest in emergent-diked marsh habitat within Goat Island Marsh, particularly near open water areas. Grading activities within the marsh would occur outside of the breeding season for these species, but could cause temporary disturbance to foraging habitat. This disturbance would be offset in the short-term and long-term by restoration of tidal marsh with a fully tidal channel network (the preferred habitats for these species), and would result in a ***less than significant*** temporary impact to these species because abundant habitat is available throughout Rush Ranch tidal marshes.

Impacts to salt marsh harvest mouse. One of the goals of Goat Island Marsh restoration is to increase the acreage of high brackish tidal marsh connected to terrestrial ecotones - a primary habitat for SMHM recovery. However, if present locally within the work areas (culvert and berm removal), SMHM could be injured or killed by construction equipment. Goat Island Marsh interior generally contains permanently flooded emergent marsh (tule, reed, cattail dominant), which is unsuitable habitat for SMHM. The marsh's terrestrial margins, in contrast, support upland ecotone. The areas within the marsh to be excavated (pond expansion areas and tidal channel restoration areas) are dominated by permanently flooded tules and cattails, which is considered "marginal and incidental" habitat for the mouse (USFWS 2010). The perimeter levee is dominated by invasive Himalayan blackberry and reed, which favors mouse competitors like house mice (*Mus musculus*) and Norway rat (*Rattus norvegicus*). Mixed halophyte vegetation favorable for competition by SMHM is negligible on the levee, and confined to the mown central footpath of saltgrass and alkali-heath between "hedges" of blackberry and reed. Though the prevalence of marginal/insuitable habitat for SMHM within and bordering Goat Island Marsh implies that the likelihood of direct or indirect take of SMHM is low to nil, the mouse's status as a fully protected species would raise any potential take to the level of ***potentially significant.*** Adverse significant impacts to SMHM can be reduced to ***less than significant with mitigation incorporated*** (Mitigation Measure BIO-2). Restoration of Goat Island Marsh is expected to expand suitable tidal SMHM habitat (brackish marsh to alkali grassland ecotone transition zone, MHHW-EHW) from zero (no current tidal influence) to 5 acres.

Mitigation Measure BIO-2

Prior to issuance of a grading permit, a qualified biologist shall inspect all proposed construction areas and access routes and shall flag all suitable SMHM habitat areas for avoidance. The Biologist shall prepare a report and submit the findings to the County. If these areas cannot be avoided, the following measures shall be performed under the supervision of the biologist:

- The biologist shall be on-site during all construction activities occurring within wetland areas
- In excavation/construction areas, all wetland vegetation shall be removed with hand tools or, (if the area is large enough) scraped with an excavator. The upper six inches of excavated soil shall be stockpiled separately and replaced on top of backfilled material.
- In vegetation disturbance areas (i.e., access and staging areas), all vegetation must be cleared to bare ground or stubble < one inch.
- To prevent SMHM from moving through construction areas, temporary exclusion fencing shall be installed around the defined work area before construction activities start and immediately after vegetation removal. Prior to the start of daily construction activities during initial ground disturbance, the biologist shall inspect the fencing to ensure there are no holes or other openings and that no mice are trapped within.
- If a SMHM is discovered in the construction area, work activities shall cease in the immediate vicinity until the individual has left the work area.

Impacts to western pond turtles. Western pond turtle habitat exists within existing Goat Island Marsh, and western pond turtles are known to occur in adjacent Suisun Slough tidal marsh banks. Grading, excavation, and dredging activities in Goat Island Marsh restoration sub-habitats with

channel banks, channels, and open water pools may cause short-term risks of disturbance, injury or mortality of western pond turtles if they occur within construction areas during construction. This would be a potentially significant short-term impact that can be reduced to ***less than significant with mitigation incorporated*** (Mitigation Measure BIO-3).

Long-term effects of Goat Island Marsh restoration, including full tidal restoration that increases tidal emergence of channel banks, placement of large woody debris in intertidal areas, and expansion of unvegetated channel banks, would provide long-term benefits for western pond turtles and would partially offset short-term adverse construction impacts.

Mitigation Measure BIO-3

Short-term construction impacts to western pond turtles at Goat Island Marsh shall be minimized by (a) conducting pre-construction surveys for western pond turtles in areas designated for fill, dredging, or excavation; (b) providing an on-site wildlife biologist supervisor working with construction equipment operators to detect western pond turtles and prevent direct impacts; (c) hazing (flushing) or trapping and removal of western pond turtles from excavation/dredge and grading areas prior to earthmoving, with permission from CDFW; and (d) constructing all breaches outside of the breeding season (April - July). The biologist shall provide a pre-construction survey report to CDFW and County upon request and shall maintain records of all western pond turtle detections, hazing and removal activities.

Impacts to waterfowl and wading birds. The open water brackish pond with submerged aquatic vegetation within Goat Island Marsh is one of the few perennial open shallow estuarine aquatic habitats at Rush Ranch. Dredging or excavation of the Goat Island Marsh pond is likely to cause short-term disturbance to wading birds and waterfowl during construction. Temporary hypoxia impacts to fish (prey base for wading birds) due to suspension of anoxic, sulfidic organic bottom muck may cause short-term degradation to wading bird habitat quality, persisting no longer than one season. These impacts would be ***less than significant***.

Construction of boardwalks and trails with visual access to the Goat Island Marsh pond (human entry to pond or its edge, causing visible and audible predator cues to birds) may cause both short-term and long-term recurrent impacts to foraging habitat of wading birds and waterfowl. Marsh trail proximity to open water habitat may increase the frequency of disturbance, depending on the continuity and density of tule marsh fringing the pond, forming a visual barrier to the new trail. Marsh and pond trail improvements to basic proposed trail features, such as viewing platforms or boardwalk ramps to blinds, may reduce waterbird activity directly in the footprint of the platform and on the side of the pond where waterbirds can see or hear visitors crossing open water. The potential long-term (permanent) and short-term impacts of constructing structural access to open water and marsh habitats of waterbirds could be potentially significant and can be reduced to ***less than significant with mitigation incorporated*** (Mitigation Measure BIO-4).

Mitigation Measure BIO-4

A peninsula of existing marsh shall be retained during the expansion of the existing Goat Island Marsh pond shown on Figure IS-8 in the southern portion of Goat Island Marsh just west of the headquarters. This peninsula will be located just north of the existing pond shall be of sufficient

width and length to screen a substantial (>40%) portion of the expanded pond from marsh trails. The exact location and shape shall be determined after surveying topography and finalizing the wetland design for the project. Additionally, a pond of equivalent size (approximately ½-acre) to the Goat Island Marsh pond shall be constructed in the northwest portion of the restoration that is currently infested with invasive Phragmites, as shown on Figure IS-8 just west of Suisun Hill Hollow. The exact size, shape, and location of this pond shall be determined by an expert in wetland design. These actions would provide a net benefit from the creation of additional habitat for waterfowl and wading birds. Prior to the issuance of a grading permit, SLT will develop a site plan, identifying specific location, size and dimension of the peninsula to be retained and the pond.

Increase in mesopredator populations. Adult and juvenile coyotes (*Canis latrans*) were detected in dense tule and threesquare bulrush marsh vegetation of northeastern Goat Island Marsh in 2011. Coyotes are important predators of mesopredators (e.g., fox, raccoon) that may adversely affect resident marsh-nesting birds such as California black rails, Virginia rails, and clapper rails. Dredging and increased tidal range of Goat Island Marsh due to tidal restoration would change marsh vegetation structure, which may adversely affect potential breeding, foraging, or cover habitat for coyotes with home ranges that include Rush Ranch tidal marshes. Reduction of coyote activity in the marshes may indirectly increase mesopredator populations which, in turn, could adversely affect resident marsh birds. This impact would be potentially significant and can be reduced to ***less than significant with mitigation incorporated*** (Mitigation Measure BIO-5).

Mitigation Measure BIO-5

During the Goat Island Marsh construction period, provide brush and large woody debris cover structures at intervals along Goat Island Marsh edges within the upper marsh and upland transition zone to provide alternate cover for coyotes with access to brackish marsh. Monitor coyote activity and coyote sign around the marsh prior to and immediately following completion of Goat Island Marsh construction activities.

Impacts to river otter. River otter sign (scat) is present along the Goat Island Marsh perimeter levee near channels, indicating their presence. River otters are likely to forage in tidal channels and emerge along high channel banks and levees. Grading activities along the outer levee of Goat Island Marsh would likely cause short-term disturbance of river otters and degrade foraging habitat within individual home ranges. This impact is likely to be ***less than significant*** because of the short-term duration and widespread availability of alternative habitats in Rush Ranch and its vicinity tidal and diked marshes.

Impacts to special-status fish. Special status fish species including Delta smelt, longfin smelt, Chinook salmon, and steelhead may be present in the tidal sloughs adjacent to Goat Island Marsh at certain times of the year. While the restoration of tidal marsh habitat is expected to be a net benefit to these species by increasing habitat and food availability, there could be potentially significant short-term, temporary impacts to these and other fish species from construction-related activities. These impacts would be reduced to ***less than significant with mitigation incorporated (****Mitigation Measures HYDRO-1 and HYDRO-2****).***

Suisun Hill Hollow – Proposed construction at Suisun Hill Hollow, including improvements to cattle watering facilities, could potentially impact sensitive habitats, plants, and wildlife, as follows:

Impacts to spring-head marsh*.** The restoration plans for Suisun Hill Hollow assume that "off-channel" (outside of drainage area, including seasonal seep and perennial spring head/headwater marsh zones of the drainage, which lacks a defined channel above Grizzly Island Road). Cattle watering improvements other than impoundments (shallow wells, surface spring boxes) constructed directly into existing spring-head slope marsh would eliminate uncommon perennial slope marsh patches with persistent fresh-brackish summer seeps. The existing perennial slope marsh patch at the Suisun Hill Hollow springhead is dominated by the only non-estuarine stand of threesquare bulrush (*Schoenoplectus americanus;* heavily grazed but perennial population) within a geologically constrained (groundwater discharge) location. Freshwater and fresh-brackish seeps are biological diversity "hotspots" supporting low-salinity refuges for insects, amphibians, and wildlife, especially during droughts when estuarine channel salinity is relatively high. The elimination of the only springhead perennial slope marsh known at Rush Ranch would be a potentially significant impact that can be reduced to ***less than significant with mitigation incorporated (Mitigation Measure BIO-6)

Mitigation Measure BIO-6

Cattle water supplies from groundwater associated with the spring in Suisun Hill Hollow shall be provided such that the spring-head vegetation is not adversely affected. This shall be done in one of the following approaches:

1. If feasible, install a well for cattle watering trough above the existing spring-head slope marsh. The well would supply a trough to be located in an upland slope outside of the spring-head area. If trough location slopes are over 5%, the area immediately around the trough should be armored to minimize soil trampling and erosion. The well shall provide water to the off-site trough either via gravity or via a solar-powered pump. The spring-head slope marsh shall be protected from cattle activity by cattle exclusion fencing. Well drilling or excavation activities shall include temporary slope stabilization measures (set-backs, geotextile fence) to ensure that slip-outs of excavated soil or slope failure do not fill slope marsh. Well pumping rates shall be adjusted to minimize rare dewatering and desiccation events (threshold for perennial marsh dieback) of the springhead marsh below during drought years.

or,

2. If the off-wetland well approach is determined not to be feasible by SLT and/or the rancher leasing the property, install an in-spring well or spring box at the spring diverting some of the spring flow via a pipe to a separate trough outside of the spring marsh area. The spring-head slope marsh shall be protected from cattle activity by cattle exclusion fencing. The area immediately around the trough should be armored to minimize soil trampling and erosion. Diversion rates shall be adjusted to prevent dewatering and desiccation events (threshold for perennial marsh dieback) of the springhead marsh during drought years.

Impacts to vernal pool vegetation. Vernal pools located in past quarry (fill borrow sites) in the plateau above the north side of Suisun Hill Hollow below Grizzly Island Road may potentially be adversely affected by accidental fill placement or tire ruts during construction (fill placement activities) that establish new drainage outlet pathways or spill elevations for pools or swales that drain pools. This potentially significant adverse significant impact to vernal pools can be reduced to ***less than significant with mitigation incorporated*** (Mitigation Measure BIO-7).

Mitigation Measure BIO-7

During the wet season prior to construction on the Suisun Hill Hollow Restoration Project, delineate and flag (or otherwise mark for practical visibility to construction crews) all vernal pool depressions and swales with indicator vegetation, saturated soils, standing water, or surface sheetflow connected to vernal pools. Construction vehicle and equipment access shall be aligned to avoid vernal pool drainages, and fill placement in vernal pools, swales, and seasonally saturated flats supporting native seasonal wetland (alkali grassland/vernal pool) vegetation shall be prohibited. A qualified field botanist shall supervise vernal pool habitat and hydrology delineation (not federal Section 404 Clean Water Act wetland jurisdictional delineation) for impact avoidance.

Impacts to rare or uncommon invertebrates of alkali seasonal wetlands. Many regionally rare, uncommon, and possible endemic invertebrates occur in unvegetated to sparsely vegetated alkali flats, dried, mud, and bare soil of Suisun Hill Hollow. The invertebrate fauna of Suisun Hill Hollow has not been comprehensively surveyed, and is incompletely known in terms of composition, taxonomy, local distribution, life-history, population biology, and abundance. The invertebrate community is likely to differ in composition and abundance from that of the less sandy and less alkali/saline lower Spring Branch Creek. Some local and uncommon to rare invertebrate species may have life-histories including long-lived resting stages in soil. Larval stages, eggs, and cysts are likely to occur within areas designated for grading to implement the restoration plan for Suisun Hill Hollow. Grading of the entire area in a single year would potentially cause severe declines or eliminate resident populations of invertebrates with larval or resting (dormant) stages (such as beetle larvae) during the dry season, but would likely have limited impacts on resistant cysts in the soil. Significant reduction or local extirpation of local populations of uncommon, rare or endemic invertebrates of alkali seasonal wetlands would be potentially significant, because there is little or no potential for recolonization from nearby alternative habitats. This impact and can be reduced to ***less than significant with mitigation incorporated*** (Mitigation Measure BIO-8).

Mitigation Measure BIO-8

To conserve potential effective refugia for undetected larval or resting-stage populations of uncommon, rare, or endemic invertebrates of Suisun Hill Hollow in the absence of comprehensive multi-year surveys (which may be infeasible or impractical due to constraints in available invertebrate taxonomic expertise and survey time available), approximately 20 patches of designated grading refuges, each 3 meters in diameter, shall be distributed over the lower Suisun Hill Hollow flats, using either stratified random or selective dispersion patterns to minimize sampling error or bias that may under-represent topographic or hydrologic environmental variability.

Upper Spring Branch Creek – Proposed maintenance activities at Upper Spring Branch Creek could potentially impact sensitive wildlife, as follows:

Impacts to tricolored blackbirds. Repairs to the impoundment berm (dam) on upper Spring Branch Creek may require temporarily reducing the depth and duration of impounded pond area; this may potentially adversely affect habitat quality for seasonal breeding colony of tricolored blackbirds, an itinerant colonial breeding species that inhabits seasonally flooded wetlands of grassland and riparian thickets bordering grasslands and cultivated fields. Their nests are built within tall emergent cattail, bulrush marsh vegetation or woody riparian thickets high above water surface levels. Tricolored blackbirds have been reported from this site by Solano Land Trust during the species' breeding season in recent years. Population size, site fidelity, and reproductive success are not known, but are presumed to be significant because of reports of more than one year of occurrence. Suitable breeding habitat for tricolored blackbirds depends on the extent of tall emergent marsh or scrub cover (cattail, bulrush, willow, blackberry) and at least shallow flooding during the spring. The extent of suitable breeding habitat at upper Spring Branch Creek is likely constrained under existing conditions by multiple factors, including the extent of cattail suppression by cattle trampling, suppression of woody vegetation by cattle grazing and trampling, and annual variability in rainfall and runoff. The degradation of tricolored blackbird habitat quality or site abandonment due to restoration activities could be a significant impact if not adequately considered in the project design.

Since the overall pool impoundment will not be eliminated, all impacts to water levels are seasonal and will occur outside the breeding, nesting and fledging period. The exclusion of cattle grazing from the pool area, in combination with revegetation measures including bulrush species, should significantly increase the extent and structure of suitable breeding habitat within seasonal pool areas suitable for tricolored blackbirds. Overall, maintenance impacts to tricolored blackbirds in the short-term and long-term would be ***less than significant.***

Impacts to California tiger salamander breeding habitat. The California tiger salamander (CTS) has the potential to use the impounded area of the Upper Spring Branch Creek as breeding sites, although no recent tiger salamander observations have been recorded. The proposed maintenance activity will occur in the non-breeding season when California tiger salamanders and their larvae are not present in the water. Prior to any maintenance activity within the pond, a biologist with the appropriate state and federal permit will conduct a survey of the pond using a long-handled dip net (see **Mitigation Measure Bio-9**) If larvae are found, maintenance activities will be postponed to allow tiger salamanders to complete their metamorphosis. Overall, maintenance impacts to California tiger salamander in the short-term and long-term would be ***less than significant.***

Lower Spring Branch Creek – Proposed construction activities at Lower Spring Branch Creek could potentially impact sensitive habitats, plants, and wildlife. As this project involves the restoration of tidal marsh habitat, in addition to the project-specific mitigation measures identified below, it also incorporates the applicable and appropriate Environmental Commitments for avoiding impacts to special-status species from the SMP EIR (Appendix B), including:

- General biological BMPs
  - Worker training program
  - Special status mammal protections

- Special status plant protections
- General bird protections
- Biological monitoring

The exact nature of these environmental commitments for this specific project will be specified in the project permits.

Impacts to salt marsh harvest mouse and Suisun shrew*.* One of the goals of Goat Island Marsh restoration is to increase the acreage of high brackish tidal marsh connected to terrestrial ecotones - a primary habitat for SMHM recovery and conservation of Suisun shrew. Special-status mammals, including salt marsh harvest mouse and Suisun shrew, have the potential to occur within the project area, and could therefore be locally impacted by construction activities within construction and vehicle footprints (culvert and berm removal). If present within the work areas, mammals could be injured or killed by construction equipment. Most of the equipment movement within mouse/shrew habitats would be on the cross-levee and L-shaped berm within lower Spring Branch Creek, and in limited portions of the muted marsh upstream of the cross-levee that is designated for conversion to a tidal channel. This potentially significant adverse impact to SMHM and Suisun shrew can be reduced to ***less than significant with mitigation incorporated*** (Mitigation Measures BIO-9 and BIO-10). Restoration of lower Spring Branch Creek is expected to expand suitable SMHM and Suisun shrew habitat (brackish marsh to alkali grassland ecotone transition zone, MHHW-EHW) from approximately 7 acres to 10 acres.

Mitigation Measure BIO-9

Prior to initiation of construction, a qualified wildlife biologist shall inspect the proposed work areas for any habitat that could potentially support SMHM, Suisun shrew and CTS. Potential SMHM/shrew habitat shall be flagged so that it can be avoided during construction. Avoidance measures identified for SMHM and Suisun shrew in BIO-2 would be implemented as necessary.

Mitigation Measure BIO-10

Excavation of the cross-levee and L-shaped berm shall be initiated from upland areas, and avoid areas of mixed halophytes that could potentially support SMHM and Suisun shrew.

Impacts to California clapper rail, California black rail, and yellow rail. California clapper rail, California black rail, and yellow rail could potentially forage or nest in emergent marsh habitat in lower Spring Branch Creek along tidal channel banks. Grading activities within marsh areas would occur outside of the breeding season for these species, but could cause temporary disturbance to foraging habitat. This disturbance would be offset in the short-term and long-term by restoration of tidal marsh with a fully tidal channel network (the preferred habitats for these species), and would result in a ***less than significant*** temporary impact to these species because abundant habitat is available throughout Rush Ranch tidal marshes.

b. There are no aquatic, wetland, or riparian habitats or other sensitive communities at the ranch headquarters area. The habitat restoration and enhancement projects would, in some cases, convert upland areas to wetland (e.g., conversion of upland berm/levee to tidal marsh), or in other cases convert one type of wetland to another (e.g. conversion of diked marsh to tidal marsh). In all cases, these conversions would results in ***less than significant*** impacts, because the

projects will convert habitats of lower ecological value (e.g. anthropogenically impacted and degraded habitats such as degraded younger alluvial fan, impoundments, and historic quarry) to habitats with higher ecological value (e.g. tidal marsh, older alluvial fan, stabilized younger alluvial fan/seasonal wetland). Estimates of likely habitat change at the four restoration sites are described below in Table BIO-1. The Goat Island Marsh and Lower Spring Branch projects involve tidal marsh habitat restoration, and incorporate the Environmental Commitments found in the SMP EIR for avoiding impacts to wetland habitats and native vegetation, including the standard design features and construction practices and non-native plan control measures (Appendix B).

At Goat Island Marsh, 79 acres of diked marsh would be converted to tidal marsh and subtidal (channel/forebay) habitats. This impact is ***less than significant*** because diked marsh is and would remain an abundant habitat throughout Suisun Marsh, and because tidal marsh has higher ecological value than diked marsh for the target species for habitat enhancement (e.g. California clapper rail, estuarine fish, etc.).

At Suisun Hill Hollow, 5.3 acres of degraded younger alluvial fan/seasonal wetland, impoundments, and historic quarry would be converted to stabilized younger alluvial fan/seasonal wetland. This impact is ***less than significant*** because stabilized younger alluvial fan habitat has higher ecological value than degraded younger alluvial fan/seasonal wetland, impoundment, and historic quarry habitat for the target species for habitat enhancement (e.g. seasonal wetland plants, rare invertebrates). Potentially significant impacts to spring-head marsh from the construction of cattle watering improvements are discussed in (a) above and would be mitigated to ***less than significant with mitigation*** by incorporation of Mitigation Measure BIO-6. Potentially significant impacts to vernal pool vegetation are discussed in (a) above and mitigated to less than significant with mitigation by incorporation of Mitigation Measure BIO-7.

Table BIO-1. Proposed Habitat Conversions

Location	Current Habitat Unit	Future Habitat Unit	Area (acres)
Goat Island Marsh	Diked Marsh	Tidal Brackish Marsh	75.5
	Diked Marsh	High Brackish Marsh	2
	Diked Marsh	Subtidal Channel	1
	Diked Marsh	Subtidal Channel Forebay	.5
	Upland Levee	High Brackish Marsh	2
Total			81
Suisun Hill Hollow	Degraded Younger Alluvial Fan/Seasonal Wetland	Stabilized Younger Alluvial Fan/ Seasonal Wetland	4
	Impoundments	Stabilized Younger Alluvial Fan/ Seasonal Wetland	1
	Historic Quarry	Stabilized Younger Alluvial Fan/ Seasonal Wetland	.3
	Historic Quarry	Historic Quarry	5
	Older Alluvial Fans	Older Alluvial Fans	5
Total			15.3
Lower Spring Branch	Younger Alluvial Fan / Seasonal Wetland	Younger Alluvial Fan / Seasonal Wetland	10

	Younger Alluvial Fan / Seasonal Wetland	Tidal Brackish Marsh	3
	Partially Muted Tidal Marsh	Tidal Marsh	11
	Partially Muted Tidal Marsh	Tidal Channel	.4
	Older Alluvial Fan	Tidal Marsh	.3
	Impoundment	Older Alluvial Fan	1
	Older Alluvial Fan	Older Alluvial Fan	30
Total			55.7
Upper Spring Branch Creek	Degraded Younger Alluvial Fan/Seasonal Wetland	Stabilized Younger Alluvial Fan/ Seasonal Wetland	7.8
	Impoundment	Stabilized Impoundment	1.8
	Older Alluvial Fan	Older Alluvial Fan	10.3
Total			19.9

At Lower Spring Branch Creek, 14.7 acres of younger alluvial fan/seasonal wetland, partially muted tidal marsh, and older alluvial fan would be converted to tidal marsh and tidal channel habitats. One acre of impoundment is being converted to older alluvial fan. This impact is ***less than significant*** because alluvial fan and muted marsh habitats are abundant throughout Suisun Marsh, and because tidal marsh has higher ecological value than diked marsh for the target species for habitat enhancement (e.g. California clapper rail, estuarine fish, etc.).

At Upper Spring Branch Creek, less than 2 acres of impoundment and degraded younger alluvial fan/seasonal wetland will be managed to ensure the structural integrity of the impoundment and continued storage of water. This impact is ***less than significant*** because maintenance activities will not substantially change or remove any of the impoundment habitat for the target (e.g. seasonal wetland plants, rare invertebrates).

c. See discussion in (b) above. The habitat restoration and enhancement projects would in some cases convert areas of one wetland type (e.g. diked marsh) to another wetland type (e.g. tidal marsh). In other cases, non-wetland areas (e.g. quarry) would be converted to wetlands (e.g. seasonal wetlands). No federally jurisdictional wetlands would be converted to non-jurisdictional wetland. The species-specific gains and losses would not correspond acre-for-acre with wetland type conversion, because few of the species affected occur in only one habitat. Most wildlife species move around a lot and use multiple habitats. Suisun shrews, Clapper rails and black rails are the exception, however those species would not be adversely impacted by Goat Island marsh tidal conversion. They are indirectly impacted by disturbances (trails, helicopters, spray crews, etc.). The actual vegetation type in Goat Island Marsh would experience minor change in the short term; it currently is composed primarily of tule and cattail and reed, and will remain so. The project would replace some reed (invasive) with shallow submerged native vegetation (positive change, part of the plan). The conversions would not adversely affect special-status plants (except positively in long-term, not CEQA impact/mitigation). As described in item c, the tidal marsh restoration projects (Goat Island and Lower Spring Branch) would incorporate applicable Environmental Commitments from the SMP EIR to avoid any project-related impacts to wetland habitats and plant communities. The project would result in a net increase of wetland habitats. Therefore this impact would be ***less than significant***.

d. The Proposed Project work at the headquarters would not impact the movement or migration of resident or migratory wildlife. The habitat restoration and enhancement projects will improve connectivity between estuarine, seasonal wetland, and upland habitats. Construction activities may temporarily inhibit the movement of resident or migratory wildlife during the construction period, but wildlife would be able to once again move freely once construction is complete. Therefore, this impact is ***less than significant.***

e. Plan and policy compliance is described in detail in Section 2.10, Land Use. As described in that section, the proposed Project would comply with all applicable local resource protection policies and ordinances. Therefore, it would have ***no impact.***

f. The Proposed Project would comply with the BCDC Bay Plan and the Suisun Marsh Plan and would therefore have ***no impact***.

4.5 Cultural Resources

Checklist Items: Would the project		Significant Impact	Less Than Significant Impact With Mitigation	Less Than Significant Impact	No Impact
a.	Cause a substantial adverse change in the significance of an historical resource as defined in CEQA Guidelines §15064.5?	☐	■	☐	☐
b.	Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines §15064.5?	☐	■	☐	☐
c.	Directly or indirectly destroy a unique paleontological resource or site, or unique geologic feature?	☐	■	☐	☐
d.	Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	■	☐

4.5.1 Setting

The Central Valley is rich with prehistoric resources and prehistoric sites have been discovered throughout the county including shell mounds, milling sites, pottery, and worked stone artifacts. The majority of Solano County was inhabited by a loosely associated group who referred to themselves as the Patwin. A small area of the eastern portion of the County may have been inhabited by the Plains Miwok.[11]

Archaeological Resource Service (ARS 1989) conducted an archaeological assessment in February 1989 to evaluate the potential significance of cultural resources at Rush Ranch for the preparation of the 1990 Rush Ranch Enhancement and Management Plan.[12] Potentially significant cultural sites/artifacts reported by ARS include the following:

[11] County of Solano, *Solano County General Plan*, November 2008, page RS-41.

[12] Katherine Flynn, William Roop, Dennis Gosser, Archaeological Resource Service, *An Archaeological Evaluation of Rush Ranch, Solano County, California (ARS 88-98),* February 1989.

- Site 1 (88-98-1) is located near Spring Branch Creek, at the base of what is presently colloquially referred to as Indian Grinding Rock Hill. The site consists of a series of five or six low bedrock outcrops with at least 24 mortar depressions, with additional depressions suspected to be buried beneath soil flow or obscured by thick marsh vegetation. These outcrops are located at the western end of the lensatic Tehama formation where it surfaces at the upland/marsh boundary. The outcrops are surrounded by dark colored, charcoal stained middens that contain both freshwater and marine shellfish remains. In the middens, ARS also observed chipped stone waste flakes and tools. Flicks of obsidian, basalt, petrified wood, Franciscan chert, and quartzite, some bearing use wear, were found, as well as a nearly complete, late-prehistoric corner-notched projectile point.

- Site 2 (88-98-2) consists of a large grouping of Domengine Sandstone outcrops located upslope from Grizzly Island Road east of the bowl formed at the base of Suisun Hill. While more than seven separate boulders are present, only one boulder outcrop contains two natural vesicles which have been modified by human grinding into mortars. The size and shape of these mortar depressions is different from that seen at Site 1. No stone artifacts or discolored soil deposits were seen here.

Rush Ranch is associated with locally significant figures Hiram Rush, an early pioneer in the Suisun City/Fairfield area, and his son Benjamin Rush.[13] None of the buildings associated with Hiram Rush are extant today. Buildings at the headquarters area of the project site formerly included the Rush Ranch main house. This structure, which was determined to be ineligible for the California Register of Historical Resources and the National Register of Historic Places, was demolished in 2007 prior to the construction of the existing Nature Center. Extant ranch buildings at the headquarters area associated with Benjamin Rush and his ranching activities from 1875 to 1920 include the hay barn, vehicle shed, blacksmith shop, and a small “mail-order” house known as the “kit” house. These buildings have not been evaluated for eligibility for the California or National Registers.

Paleontological resources are fossilized remains of plants and animals, and associated deposits. The geologic characteristics of an area help to determine its sensitivity for paleontological resources.

4.5.2 Discussion

a. As discussed above, the Rush Ranch main house, which was determined to be ineligible for the California Register of Historical Resources and the National Register of Historic Places, was demolished in 2007. The horse stable was replaced shortly thereafter. The existing hay barn, blacksmith shop and “kit” house on the project site date from the era of Benjamin Rush and are

[13] Ward Hill, Architectural Historian, Historic Architecture Survey Report of the Rush Ranch House, 3521 Grizzly Island Road, Suisun City, CA 94585, Solano County, California, February 2006.

potentially of historic significance, but these buildings would not be affected by the proposed Project.

b. As discussed above, there are two known archaeological sites at the Rush Ranch Open Space Preserve. Neither of these archaeological sites would be affected by the project.

However, the project site is located in Suisun Marsh and surrounded by sloughs on three sides, the type of water-oriented setting that often has evidence prehistoric activity. The evaluation by Archaeological Resource Service states that the potential for prehistoric settlements on the site is high, and found two archaeological sites. Therefore, it is likely that undiscovered subsurface archaeological resources exist on the project site. Some project components would involve earth disturbance, which could affect subsurface archaeological resources. Solano County requires the following mitigation be implemented to address the potential for any subsurface resources that may be exposed during excavation. With implementation of this measure, any archaeological resources of significance would be properly managed to reduce the impact to a level of less than significant. Therefore, the impact would be ***less than significant with mitigation incorporated***.

Mitigation Measure CR-1

For each component of the project that would involve earth disturbance to previously undisturbed areas, the project proponent shall either conduct a pre-excavation archaeological testing program as described in this paragraph, or shall provide an on-site cultural monitor during excavation activities as described in the following paragraph. All pre-excavation testing shall be performed by a qualified archaeological consultant, and shall meet the Secretary of the Interior Standards. The proponent shall submit a copy of the pre-excavation report or demonstrate that a monitor has been retained.

For all components of the project that have not been the subject of a pre-excavation testing program, during excavation activities an on-site cultural monitor that meets the Secretary of the Interior Standards shall be retained by the project proponent in the event that subsurface cultural resources are encountered during approved construction activity. If any subsurface resources are uncovered, work in the immediate vicinity shall be stopped and the County's Resource Management Department notified.

In the case of both pre-excavation archaeological studies and on-site monitoring during construction, the project proponent shall seek to avoid damaging effects on the resource. Preservation in place to maintain the relationship between the artifact(s) and the archaeological context is the preferred manner of mitigating impacts on an archaeological site, if feasible. However, if in-place mitigation or avoidance of the resource is determined by the County to be infeasible, a data recovery plan, which makes provisions for adequate recovery of culturally or historically consequential information about the site, shall be prepared and adopted prior to any additional excavation being undertaken. Such studies shall be submitted to the California Historical Records Information System (CHRIS). If Native American artifacts are indicated, the studies shall also be submitted to the Native American Heritage Commission.

c. No paleontological survey of the site was conducted. The proposed Project involves excavation at various locations, which could encounter older alluvium. Therefore, the following

mitigation measure shall be implemented to reduce potentially significant impacts to paleontological resources to a ***less-than-significant impact level with mitigation*** incorporated**.**

Mitigation Measure CR-2

If subsurface paleontological resources are encountered during project excavation, excavation shall halt in the vicinity of the resources and the County Department of Resource Management contacted. A paleontologist shall be contacted to evaluate the resource and its stratigraphic context if deemed necessary by the county. If potentially significant paleontological resources are found, "standard" samples shall be collected and processed by a qualified paleontologist to recover micro vertebrate fossils. If significant fossils are found and collected, they shall be prepared to a reasonable point of identification. Any significant fossils collected, along with an itemized inventory of these specimens, shall be deposited in a museum repository for permanent curation and storage. A report documenting the results of the monitoring and salvage activities, and the significance of the fossils, if any, shall be prepared. The report and inventory, when submitted to the lead agency, shall signify the completion of the program to mitigate impacts on paleontological resources.

d. There are no formal cemeteries known to occur on or near the Project site. It is considered a low probability that human remains would be discovered during construction. In the unlikely event that human remains should be encountered during excavation of proposed Project elements, all excavation activity must cease and the Solano County Coroner's Office must be contacted immediately. State Health and Safety Code 7050.5 requires that no further disturbance shall occur until the county coroner has made a determination of origin and disposition pursuant to Public Resources Code Section 5097.98. If the coroner determines that the burial is prehistoric, the Native American Heritage Commission must be contacted and appropriate disposition of the human remains determined. Compliance with this requirement would ensure the impact is reduced to a ***less-than-significant level***.

4.6 Geology and Soils

Checklist Items: Would the project		Significant Impact	Less Than Significant Impact With Mitigation	Less Than Significant Impact	No Impact
a.					
1)	Rupture of a known earthquake fault, as described 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 Division of Mines and	☐	☐	☐	■

	Geology Special Publication 42.)				
2)	Strong seismic ground shaking?	☐	☐	■	☐
3)	Seismic-related ground failure, including liquefaction?	☐	☐	■	☐
4)	Landslides?	☐	☐	■	☐
b.	Result in substantial soil erosion or the loss of topsoil?	☐	■	☐	☐
c.	Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, differential settlement, liquefaction or collapse?	☐	☐	■	☐
d.	Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	■	☐
e.	Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	■

4.6.1 Setting

Site Soils

Site soils include upland, alluvial fan, and marsh soils. These soils are summarized in Table GEO-1, below. The headquarters area is located on upland and alluvial fan soils. The proposed stream restoration areas are located on alluvial fan soils. The Goat Island Marsh is located in marsh soils. Marsh soils include both mineral and peat soils.

Geotechnical Conditions

Existing Studies. A geotechnical investigation was performed for the construction of the Nature Center at Rush Ranch in November 2005 by KC Engineering (KC Engineering Consultants 2006). Four exploratory borings were drilled in the vicinity of the proposed Nature Center for the purpose of determining surface and subsurface soil conditions for construction purposes. The

maximum depth of the borings was 31.5 feet below ground surface. "Based on our field exploration and laboratory investigation, the surface and subsurface soil conditions vary across the site. Generally, the subsurface soils consist of 1 to 4 feet of gray brown to red brown soft to firm sand clay overlying red brown, very dense clayey sand to a depth of 13 feet below ground surface. Further underlying the site is yellow brown, firm to stiff clay to a depth of 23.5 feet overlying dark yellow brown, medium dense clayey sand to the maximum depths explored of 31.5 feet." (KC Engineering, 2006)

Ground water was encountered in these borings at a depth of 23.5 feet. The KC Engineering report recommendations are discussed in that document. It concluded the site was feasible for the Nature Center Construction. The report provided recommendations for all of the design elements of the structure. Construction of the Rush Ranch Nature Center was completed in 2007.

Table GEO-1. Rush Ranch Soils and Characteristics

NRCS Soil Classification:	Erosion Hazard	Runoff
Terrestrial Soils – Uplands		
Millsholm loam (MmE, 15-30% slopes)	Moderate	Medium
Millsholm loam, moderately deep variant (MnC, 2-9% slopes;)	Slight	Medium
Millsholm loam, moderately deep variant (MnE, 9-30% slopes)	Moderate	Medium
Gaviota sandy loam (GaG2, 30-75% slopes, eroded)	High to Very High	Rapid to Very Rapid
Altamont clay (AcC, 2-9% slopes)	Slight	Slow to Medium
Altamont clay (AcE, 9-30% slopes)	Moderate	Medium
Altamont clay (AcF2, 30-50% slopes, eroded)	Moderate	Medium to Rapid
Clear Lake clay (CeB, 2-5% slopes)		
Antioch-San Ysidro complex (AoC,2-9% slopes)	Slight	Slow
Antioch-San Ysidro complex, thick surface (AsC, 2-9% slopes)	Slight	Medium
Borrow Pit (B.P.)	Slight	Medium
Terrestrial Soils – Active Alluvial Fans		
Solano loam, dark surface variant (Sm, nearly level)	None	Very Slow
Marsh Soils		
Joice muck (Ja, nearly level)	Slight	Ponded
Tamba mucky clay (Ta, nearly level)	Slight	Ponded
Reyes silty clay (Re, nearly level)	Slight	Ponded

Source: US Department of Agriculture, Soil Conservation Service, Soil Survey of Solano County, California, May 1977.

4.6.2 Discussion

a, c.

1) No portion of the Project site is located in an Alquist Priolo Special Studies Zone (USGS 1993) therefore the site is not considered to be subject to fault rupture hazards. ***no impact*** would occur.

2) The upland areas of the Project site, including the headquarters area, are subject to low intensity seismic shaking. Any new or restored structures subject to human occupancy located in the headquarters area would be designed to current building codes, which incorporate seismic resistant design standards. The wetland areas of the Project site are subject to strong seismic shaking (ABAG Earthquake Shaking Potential Map, accessed online, January 21, 2013 - http://gis.abag.ca.gov/Website/ShakingPotential/index.html). However, no habitable structures are proposed for those areas. Therefore, impacts associated with strong seismic ground shaking would be ***less than significant***.

3) The upland areas of the Project site, including the headquarters area, are subject to low to very low liquefaction hazards. Any new or restored structures subject to human occupancy would be located in the headquarters area and designed to current building codes, which incorporate foundation engineering design standards. The wetland areas of the Projects site are subject to moderate liquefaction hazards (ABAG Earthquake Shaking Potential Map, accessed online, January 21, 2013 - http://gis.abag.ca.gov/website/liquefactionsusceptibility/index.htm). However, no habitable structures are proposed for those areas. Therefore, the impacts of liquefaction to Project elements would be ***less than significant***.

4) The hillslopes may be subject to landslide hazards but have not been mapped for landslides hazards (http://gis.abag.ca.gov/website/LandslideCGS/index.html). The headquarters area is located on alluvial fans separated from the steeper slopes by Grizzly Island Road and a long gently sloping area some distance from the steeper slopes, and all existing, new, or restored structures subject to human occupancy would be located in the headquarters area. The marsh wetland areas of the Project site are not subject to landslide hazards. Therefore, the impact of potential landslides to Project elements would be ***less than significant***.

b. Construction of the site drainage improvements and habitat restoration and enhancement projects would involve grading that could result in erosion. This impact is addressed in the Hydrology discussion, and **Mitigation Measure HYDRO-1**, also applies to this impact. ***This impact is less than significant with mitigation incorporated.***

d. Some of the clay slopes in the headquarters area may be expansive. Standard foundation engineering would include measures to eliminate any effects of expansive soils to any new buildings. Therefore this impact would ***be less than significant***.

e. The headquarters area is already served by a septic system. As described in Section 2.16 of this Initial Study, that system is functioning properly. Therefore there would be ***no impact*** with respect to soils septic treatment capabilities.

4.7 Greenhouse Gas Emissions

Checklist Items: Would the project		Significant Impact	Less Than Significant Impact With Mitigation	Less Than Significant Impact	No Impact
a.	Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☐	■
b.	Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☐	■

4.7.1 Setting

Gases that trap heat in the atmosphere are referred to as greenhouse gas (GHG) emissions because they capture heat radiated from the sun as it is reflected back into the atmosphere, similar to a greenhouse. The accumulation of GHG emissions has been implicated as a driving force for Global Climate Change. Definitions of climate change vary between and across regulatory authorities and the scientific community, but in general can be described as the changing of the earth's climate caused by natural fluctuations and the impact of human activities that alter the composition of the global atmosphere. Both natural processes and human activities result in the generation of GHG emissions.

The major concern is that increases in GHG emissions are causing Global Climate Change. Global Climate Change is a change in the average weather on earth that can be measured by wind patterns, storms, precipitation, and temperature. Although there is disagreement as to the speed of global warming and the extent of the impacts attributable to human activities, the vast majority of the scientific community now agrees that there is a direct link between increased GHG emissions and long term global temperature increases. Potential global warming impacts in California may include, but are not limited to, loss in snow pack, sea level rise, more extreme heat days per year, more high ozone days, more large forest fires, more drought years, impacts to agriculture, changes in disease vectors, and changes in habitat and biodiversity.

In California, GHGs are defined to include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), sulfur hexafluoride (SF_6), perfluorocarbons (PFCs), nitrogen trifluoride (NF_3), and hydrofluorocarbons. To account for the warming potential of GHGs, GHG emissions are quantified

and reported as CO_2 equivalents (CO2e). The effects of GHG emission sources (i.e., individual projects) are reported in metric tons per year of CO2e.

Regulatory Framework

In 2006, California passed the California Global Warming Solutions Act of 2006 (Assembly Bill No. 32; California Health and Safety Code Division 25.5, Sections 38500, et seq., also known as AB 32), which requires the California Air Resources Board (CARB) to design and implement emission limits, regulations, and other measures, such that statewide GHG emissions will be reduced to 1990 levels by 2020.

In June, 2008, CARB published its Climate Change Draft Scoping Plan (CARB, 2008a). The Climate Change Draft Scoping Plan reported that CARB met the first milestones set by AB 32 in 2007: developing a list of early actions to begin sharply reducing GHG emissions; assembling an inventory of historic emissions; and establishing the 2020 emissions limit. After consideration of public comment and further analysis, CARB released the Climate Change Proposed Scoping Plan in October 2008 and adopted the plan in December (CARB, 2008b and 2008c).

The Climate Change Proposed Scoping Plan included recommended actions that were developed to reduce GHG emissions from key sources and activities while improving public health, promoting a cleaner environment, preserving our natural resources, and ensuring that the impacts of the reductions are equitable and do not disproportionately impact low-income and minority communities. These measures, shown below in Table GHG-1 by sector, also put the State on a path to meet the long-term 2050 goal of reducing California's GHG emissions to 80 percent below 1990 levels. These measures were presented to and approved by CARB on December 11, 2008.

Table GHG-1. List of Recommended Actions by Sector

Measure No.	Measure Description	GHG Reductions (Annual Million Metric Tons CO_2e)
Transportation		
T-1	Pavley I and II – Light Duty Vehicle Greenhouse Gas Standards	31.7
T-2	Low Carbon Fuel Standard (Discrete Early Action)	15
T-3[1]	Regional Transportation-Related Greenhouse Gas Targets	5
T-4	Vehicle Efficiency Measures	4.5
T-5	Ship Electrification at Ports (Discrete Early Action)	0.2
T-6	Goods Movement Efficiency Measures. Ship Electrification at Ports System-Wide Efficiency Improvements	3.5
T-7	Heavy-Duty Vehicle Greenhouse Gas Emission Reduction Measure – Aerodynamic Efficiency (Discrete Early Action)	0.93

Measure No.	Measure Description	GHG Reductions (Annual Million Metric Tons CO_2e)
T-8	Medium- and Heavy-Duty Vehicle Hybridization	0.5
T-9	High Speed Rail	1
Electricity and Natural Gas		
E-1	Energy Efficiency (32,000 GWh of Reduced Demand) Increased Utility Energy Efficiency Programs More Stringent Building & Appliance Standards Additional Efficiency and Conservation Programs	15.2
E-2	Increase Combined Heat and Power Use by 30,000 GWh (Net reductions include avoided transmission line loss)	6.7
E-3	Renewables Portfolio Standard (33% by 2020)	21.3
E-4	Million Solar Roofs (including California Solar Initiative, New Solar Homes Partnership and solar programs of publicly owned utilities) Target of 3000 MW Total Installation by 2020	2.1
CR-1	Energy Efficiency (800 Million Therms Reduced Consumptions) Utility Energy Efficiency Programs Building and Appliance Standards Additional Efficiency and Conservation Programs	4.3
CR-2	Solar Water Heating (AB 1470 goal)	0.1
Green Buildings		
GB-1	Green Buildings	26
Water		
W-1	Water Use Efficiency	1.4†
W-2	Water Recycling	0.3†
W-3	Water System Energy Efficiency	2.0†
W-4	Reuse Urban Runoff	0.2†
W-5	Increase Renewable Energy Production	0.9†
W-6	Public Goods Charge (Water)	TBD†
Industry		
I-1	Energy Efficiency and Co-Benefits Audits for Large Industrial Sources	TBD
I-2	Oil and Gas Extraction GHG Emission Reduction	0.2
I-3	GHG Leak Reduction from Oil and Gas Transmission	0.9
I-4	Refinery Flare Recovery Process Improvements	0.3

Measure No.	Measure Description	GHG Reductions (Annual Million Metric Tons CO_2e)
I-5	Removal of Methane Exemption from Existing Refinery Regulations	0.01
Recycling and Water Management		
RW-1	Landfill Methane Control (Discrete Early Action)	1
RW-2	Additional Reductions in Landfill Methane Increase the Efficiency of Landfill Methane Capture	TBD†
RW-3	High Recycling/Zero Water Commercial Recycling Increase Production and Markets for Compost Anaerobic Digestion Extended Producer Responsibility Environmentally Preferable Purchasing	9†
Forests		
F-1	Sustainable Forest Target	5
High Global Warming Potential (GWP) Gases		
H-1	Motor Vehicle Air Conditioning Systems: Reduction of Refrigerant Emissions from Non-Professional Services (Discrete Early Action)	0.26
H-2	SF_6 Limits in Non-Utility and Non-Semiconductor Applications (Discrete Early Action)	0.3
H-3	Reduction of Perfuorocarbons in Semiconductor Manufacturing (Discrete Early Action)	0.15
H-4	Limit High GWP Use in Consumer Products Discrete Early Action (Adopted June 2008)	0.25
H-5	High GWP Reductions from Mobile Sources Low GWP Refrigerants for New Motor Vehicle Air Conditioning Systems Air Conditioner Refrigerant Leak Test During Vehicle Smog Check Refrigerant Recovery from Decommissioned Refrigerated Shipping Containers Enforcement of Federal Ban on Refrigerant Release during Servicing or Dismantling of Motor Vehicle Air Conditioning Systems	3.3
H-6	High GWP Reductions from Stationary Sources High GWP Stationary Equipment Refrigerant Management Program:	10.9

Measure No.	Measure Description	GHG Reductions (Annual Million Metric Tons CO_2e)
	Refrigerant Tracking/Reporting/Repair Deposit Program Specifications for Commercial and Industrial Refrigeration Systems Foam Recovery and Destruction Program SF Leak Reduction and Recycling in Electrical Applications Alternative Suppressants in Fire Protection Systems Residential Refrigeration Early Retirement Program	
H-7	Mitigation Fee on High GWP Gases	5
Agriculture		
A-1	Methane Capture at Large Dairies	1.0†

[1] This is not the SB 375 regional target. CARB will establish regional targets for each Metropolitan Planning Organization (MPO) region following the input of the regional targets advisory committee and a consultation process with MPO's and other stakeholders per SB 375.
† GHG emission reduction estimates are not included in calculating the total reductions needed to meet the 2020 target.

4.7.2 Discussion

a,b.

Significance Thresholds

The 1999 BAAQMD CEQA Guidelines do not address GHG emissions and the BAAQMD 2010 thresholds that have been set aside by the writ of mandate did not require quantification of GHG emissions from construction. This analysis will identify the Proposed Project construction and/or as project operational emissions as significant if the project emissions would conflict with the AB 32 State goals for reducing GHG emissions. The potential for the project to conflict with AB 32 goals is assessed by determining if the project would: conflict with any of CARB's 39 recommended actions (Table GHG-1); result in emissions that would be equivalent to the size of major facilities that are required to report GHG emissions (25,000 metric tons/year of CO2e) to the State and Federal governments; not be inherently energy efficient; or conflict with an applicable plan, policy, or regulation of an agency adopted for the purpose of reducing GHG emissions.

As described above, four types of analyses are used to determine whether the project could conflict with the State goals for reducing GHG emissions. The analyses are as follows:

- Any potential conflicts with the CARB's thirty-nine (39) recommended actions (Table AQ-2).

- The relative size of the project. The project's GHG emissions will be compared to the size of major facilities that are required to report GHG emissions (25,000 metric tons/year of CO2e)14 to the State; and the project size will be compared to the estimated GHG reduction state goal of 174 million metric tons per year of CO2e emissions by 2020. As noted above, the 25,000 metric ton annual limit identifies the large stationary point sources in California that make up approximately 94 percent of the stationary emissions. If the project's total emissions are below this limit, its total emissions are equivalent in size to the smaller projects in California that as a group only make up six percent of all stationary source emissions. It is assumed that the activities of these smaller projects generally would not conflict with the State's ability to reach AB 32 overall goals. In reaching its goals, CARB will focus upon the largest emitters of GHG emissions.

- The basic energy efficiency parameters of a project to determine whether its design could be inherently energy efficient.

- Potential conflicts with an applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of GHGs.

Impact Analysis

Primarily, because of the small size of the project, the project would not conflict with implementation of State goals for reducing GHG emissions and would thereby not have a negative effect on Global Climate Change.

The Proposed Project would result in a few months of construction activities (primarily restoration of marsh areas) and potential increases in the number of annual visitors to Rush Ranch (see Table AQ-2). As with other individual and relatively small projects (i.e., projects that are not cement plants, oil refineries, electric generating facilities/providers, co-generation facilities, or hydrogen plants or other stationary combustion sources that emit more than 25,000 metric tons/year of CO2e), the specific emissions from this project would not be expected to individually have an impact on Global Climate Change (AEP, 2007). Furthermore, GHG impacts are considered to be exclusively cumulative impacts; there are no non-cumulative GHG emission impacts from a climate change perspective (CAPCOA, 2008).

[14] The State of California has not provided guidance as to quantitative significance thresholds for assessing the impact of GHG emissions on climate change and global warming concerns. Nothing in the CEQA Guidelines directly addresses this issue.

With regard to GHG significance threshold Item A, the project does not pose any apparent conflict with the CARB recommended actions (see Table GHG-1).

With regard to GHG significance threshold Item B, project construction GHG emissions have been estimated using the Road Construction Emissions Model, Version 7.1.2. Project construction GHG emissions would be approximately 930 tons of CO2 (844 metric tons of CO2e). Using the same techniques as described for the estimation of criteria pollutant emissions in Table AQ-2, the operational emissions from the increase in project visitors (vehicles) would be 322 tons per year of CO2e.

The project would not be classified as a major source of GHG emissions (actually construction emissions would be less than one percent of the lower reporting limit, which is 25,000 metric tons/year of CO2e). When compared to the overall State reduction goal of approximately 174 million metric tons/year of CO2e, the construction emissions for the project (844 metric tons/year of CO2e or less than 0.001 percent of the State goal) are quite small and would not conflict with the State's ability to meet the AB 32 goals. The maximum annual construction emissions (844 metric tons of CO2e) and the maximum annual operational emissions (322 tons per year of CO2e) are not only far below the 25,000 metric tons/year reporting limit but they are also below the very restrictive BAAQMD 2010 GHG threshold that has been set aside by the writ of mandate. The BAAQMD 2010 GHG threshold was 1,100 metric tons per year and was the most restrictive GHG threshold adopted (although only temporarily) in any of the air districts in California. The Air Quality Appendix provides details for the GHG estimates. The construction emissions were estimated using the Roadway Construction Emissions Model (version 7.1.2). The operational emissions were estimated based on assumed annual increases in the vehicles visiting Rush Ranch with implementation of the Project.

With regard to GHG significance threshold Item C, the Proposed Project would not be inherently energy inefficient because it is located near Interstates 80 and 680 and Highway 12 that access major population areas. As far as construction, more than half of the excavated materials would be used at the property, less than half would be exported to off-site locations.

With regard to GHG significance threshold Item D, the construction would occur in the unincorporated area of Solano County. Neither the increases uses of Rush Ranch nor the restoration construction would be expected to conflict with any local or state GHG plans, policies, or regulations.

The comparison of the project impacts with of GHG significance thresholds indicates that the proposed Project would not conflict with the State goals in AB 32 or any applicable plans, and therefore, this impact would be **less than significant**.

4.8 Hazards and Hazardous Materials

Checklist Items: Would the project		Significant Impact	Less Than Significant Impact With Mitigation	Less Than Signifi-cant Impact	No Impact
a.	Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	■	☐
b.	Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	■	☐	☐
c.	Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	■
d.	Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	■	☐
e.	For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	■
f.	For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	■
g.	Impair implementation of, or physically interfere with, an adopted emergency response	☐	☐	☐	■

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

4.8.1 Setting

Hazardous waste includes household and industrial products that cannot be safely disposed of in the trash or poured down sinks or storm drains. This includes used motor oil, batteries, solvents, poisons, chemicals, oil- and latex-based paints, and automotive fluids.

No contaminated areas within the project site or its immediate vicinity are listed in the California Department of Toxic Substances Control (DTSC) Envirostor Database, the State Water Resources Control Board List of Leaking Underground Storage Tank Sites (GeoTracker database), or the State Water Resources Control Board list of solid waste disposal sites with waste constituents above hazardous waste levels outside the waste management unit.

Within Solano County there are several locally and regionally important airports: Travis Air Force Base (AFB), Nut Tree Airport, Rio Vista Municipal Airport, Travis Aero Club. The Federal Aviation Administration (FAA) has jurisdiction over the permitting of airports and establishes standards for their construction and operation. State Law requires the preparation of airport land use compatibility plans (ALUCPs) that address potential airport and land use conflicts for each public-use and military airport in California. The Solano County Airport Land Use Commission (ALUC) is the agency in Solano County empowered by state law to prepare the ALUCP for airports and heliports in the county.

The nearest schools are located in Suisun City, more than one mile to the north of the project site.

4.8.2 Discussion

a. None of the Proposed Project components has the potential to create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials because no hazardous materials would be associated with the project other than some minor amounts of petroleum products, paints, and common cleaning products. Therefore, this impact would be ***less than significant*** and no mitigation is required.

b. During construction activities for the Proposed Project, limited amounts of fuel and other potentially hazardous construction materials would be used on-site. The transport, use, storage, and handling of hazardous waste is highly regulated by federal, state and local requirements. The Solano County Department of Resource Management maintains hazardous materials management plans to address emergency response to incidents involving hazardous materials

handled by a business over 55 gallons, 500 pounds or 200 cubic feet of gas. These plans include an inventory of hazardous materials, which is updated annually.[15] In addition, the Hazardous Materials Release Response and Inventory Program (California Health and Safety Code Sections 25500-25520) establishes business plans for the handling and release of hazardous materials. Basic information on the location, type quantity, and the health risks of hazardous materials handled, used, stored, or disposed of in the state, which could be accidentally released into the environment, is tracked by the local Certified Unified Program Agency (CUPA) for the use and awareness of hazardous materials responders, firefighters, emergency care providers, regulatory agencies and other interested persons. The Solano County Department of Resource Management is the CUPA for the region. Compliance with the state and county requirements would ensure that use of fuel and potentially hazardous construction materials during construction would not create a hazard to the environment or employees working at Rush Ranch Open Space Preserve. Therefore, the impact of the use of fuels and construction materials would be ***less than significant***.

Construction of the project components, could disturb undiscovered contaminated soils and/or groundwater, and expose workers, residents, and visitors at the project site to potentially hazardous materials. Implementation of mitigation measures HAZ-1 and HAZ-2 would properly manage any hazardous materials at the Project site. In addition, the Goat Island marsh and Lower Spring Branch Creek projects, which involve tidal marsh habitat restoration, would incorporate the following Environmental Commitments from the SMP EIR/EIS (Appendix B) to prevent impacts.

- Standard design features and construction practices
- Access points/staging areas
- Stormwater pollution prevention plan (also see HYDRO-1)
- Hazardous materials management plan

With these Environmental Commitments and mitigation measure HAZ-1 and HAZ-2, the impact would be ***less than significant with mitigation incorporated.***

Mitigation Measure HAZ-1

For projects in potentially contaminated areas of the ranch headquarters, or projects requiring import or export of fill from the project site, prior to grading permit issuance, soil and groundwater samples shall be obtained by the project applicant or the applicant's consultant in the ranch headquarters area, and analyzed for volatile and extractable hydrocarbons, volatile and extractable organics, pesticides, herbicides, and CAM 17 metals. If soil samples indicate contamination, the contaminated areas shall be remediated in coordination with the Yolo County Environmental Health Services prior to issuance of a grading permit for the contaminated site.

[15] County of Solano, *Solano County General Plan*, November 2008, Chapter 5 Public Health and Safety, page HS-51.

If contaminated soil and/or groundwater are encountered or suspected contamination is encountered during project construction, work shall be stopped in the suspected area of contamination, and the type and extent of the contamination be identified by the project applicant or the applicant's consultant. If necessary, a remediation plan shall be implemented in conjunction with continued project construction. A contingency plan shall be developed and implemented to dispose of any contaminated soil or groundwater. In addition, if groundwater is encountered and any dewatering is to occur at this location, the RWQCB would need to be consulted for any special requirements such as containing the water until it can be sampled and analyzed to ensure that no contaminants are in the groundwater.

Mitigation Measure HAZ-2

Prior to off-site disposal of excavated site soils or fill, site screening, field evaluation, and chemical testing where appropriate and in accordance with Regional Water Quality Control Board (RWQCB) guidelines and permit conditions shall be performed on representative samples of excavated material to determine suitability for re-use or disposal in appropriate landfill facilities. The project sponsor shall comply with all permit conditions regarding disposal or placement of soil and fill excavated from the project site, as well as any additional requirements that are imposed by the County's Resource Management Department.

c. As discussed above, the nearest schools are located in Suisun City, more than one mile to the north of the project site. There are no schools within one-quarter mile of the Project site. There would be ***no impact*** and no mitigation is required

d. The California Department of Toxic Substances Control (DTSC) Envirostor Database, the State Water Resources Control Board List of Leaking Underground Storage Tank Sites (GeoTracker database), and the State Water Resources Control Board list of solid waste disposal sites with waste constituents above hazardous waste levels outside the waste management unit, were reviewed. Based on the data, there are no contaminated areas within the Proposed Project site or its immediate vicinity. The nearest sites identified in the databases are located in Suisun city, more than one mile north of the project site. These contaminated sites would not significantly affect the Project site. The available information does not suggest any historic contamination has occurred either within or near the Rush Ranch Open Space Preserve site that might impact or be impacted by the Proposed Project. Therefore, this impact would be ***less than significant.***

e. The project site is approximately three miles southwest of Travis Air Force Base (AFB), and is within the Airport Influence Area of Travis AFB.[16] The proposed Project would include construction of relatively small structures, but these project structures would not exceed the height of the existing structures on the site, which include windmills and a wind turbine. The Proposed Project would not interfere with air safety or result in a safety hazard for people residing or working in the project area. ***No impact*** would occur and no mitigation is required.

[16] County of Solano, *Solano County General Plan*, November 2008, Chapter 2 Land Use, Figure LU-6 Airport Influence Areas.

f. There are no known private airstrips within the project vicinity; therefore, the Proposed Project has no potential to cause safety hazards associated with private airstrips for people residing or working in the project area. There would be ***no impact*** and no mitigation is required.

g. Major evacuation routes are located along major interstates, freeways and major north-south and east-west roads. The Proposed Project activities and facilities have no potential to permanently impact emergency evaluation plans or emergency response plans. The Project would not alter existing public roads or rights-of-way. Delivery of Project materials and off-haul of excavated materials would occur on local and regional roadways in compliance with applicable laws. The Proposed Project would not have any potential to interfere with emergency response or emergency evacuation plans, and ***no impact*** would occur. No mitigation is required.

h. The Project would be implemented on the existing Rush Ranch Open Space Preserve. Much of the upland area of Rush Ranch east of Grizzly Island Road is designated as a "High" Wildland Fire Hazard Area in the Solano County General Plan.[17] The Project site is not located in an area where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands. There is one caretaker's residence on the site, but the Project would not alter the existing level of wildland fire risk to this existing residence. The project would not involve additional residences. The project would include prescribed burning, to be conducted according to standard procedures to control the risk of fire spreading beyond the prescribed area. As discussed in 2.14 Public Services, these procedures would limit the risk that the fire would spread out of control. For these reasons, the project would not substantially change the existing level of exposure of people or structures to a significant risk of loss, injury, or death involving wildland fires. This impact would be ***less than significant***, and no mitigation is required.

[17] County of Solano, *Solano County General Plan*, November 2008, Chapter 5 Public Health and Safety, Figure HS-9 Wildland Fire Hazard Areas.

4.9 Hydrology and Water Quality

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

	flooding as a result of the failure of a levee or dam?				
j.	Be subject to inundation by seiche, tsunami, or mudflow?	☐	☐	■	☐

4.9.1 Setting

Hydrology

The hydrology of Rush Ranch is characterized by small seasonal creeks draining upland hillslopes and active and inactive alluvial fans, gradating to tidal and non-tidal wetlands fringing Suisun, First Mallard, and Second Mallard Sloughs. The northern portion of the Rush Ranch uplands is drained by a small ephemeral creek called Suisun Hill Hollow. Suisun Hill Hollow is unique among the Rush Ranch drainages in that it contains a perennial spring at its head. This spring is currently impounded by a berm east of Grizzly Island Road. Suisun Hill Hollow flows into Goat Island Marsh, a diked, non-tidal, brackish marsh that is separated from Suisun Slough by a low levee and non-operational water control structures at its northeast and southwest corners. While minimal tidal flows may move through the non-operational water control structures, Goat Island Marsh is functionally non-tidal.

In the area of the Rush Ranch headquarters, stormwater drainage ditches have been graded into the upland hillslopes to help drain water away from the headquarters. These ditches currently flow through the portion of the headquarters area used for horse paddocks before draining into Goat Island Marsh (IS-5).

The southern portion of the Rush Ranch uplands is drained by Spring Branch Creek, a drainage which begins on private property to the east before flowing onto the Rush Ranch property. Appropriately, Spring Branch Creek has a number of springs in its headwaters, but all of these springs appear to be seasonal in nature. The labels “Upper” and “Lower” Spring Branch Creek refer, respectively, to the portions of the creek that are upstream and downstream of Grizzly Island Road. Lower Spring Branch Creek flows into the brackish tidal wetlands that surround First Mallard Slough. Tidal flows move in and out of the tidal marshes through ditches as well as the historic tidal channels branching from First and Second Mallard Sloughs.

Goat Island Marsh is diked off from tidal action, though inoperable water control structures at its northeast and southwest corners facilitate a small range of muted tidal exchange between the Marsh and Suisun Slough. Tides reach Lower Spring Branch Creek through First Mallard Slough. A culvert and berm across the creek’s floodplain near the fluvial-tidal interface constrain tidal flow into Lower Spring Branch Creek. An L-shaped levee upstream of the berm/culvert limits tidal action to a linear channel (the borrow ditch for the levee) and largely prevents tidal inundation of an area that would otherwise be tidal marsh.

Other smaller local watersheds drain the northern portions of Rush Ranch uplands to form similar (and often, similarly impacted) fluvial-tidal ecotones to SBC. One of these watersheds, Suisun Hill Hollow, is located north of the main ranch complex, and drains into the diked marsh near Goat Island. Two impoundments are in line with this channel – one immediately upstream of Grizzly

Island Road, and a second formed by a pedestrian trail that crosses the ephemeral channel floodplain downstream of the road (upstream of Goat Island Marsh). A culvert underneath the trail transmits flows downstream to Goat Island Marsh.

Sea Level Rise. Global climate change has resulted and will continue to result in global mean sea level rise. Local mean sea level rise predictions for San Francisco Bay include up to 16 inches by 2050 and up to 55 inches by 2099 (San Francisco Bay Conservation and Development Commission 2009). In addition, global sea level rise predictions include up to 78.7 inches by 2100 (Allison et al. 2009). The largest 2009 high-tide differential documented within Suisun Bay is 1.7 inches (National Oceanic and Atmospheric Administration 2009). Thus, sea level rise for the Suisun Bay area would equate to up 17.7 inches at high tide in 2050 and up to 80.4 inches at high tide in 2099 (USBR et al. 2011).

Groundwater

Past groundwater monitoring efforts at Rush Ranch (WRA and PWA 1990) have encountered groundwater in the alluvium of saline marine sediments with elevated salt concentrations. Groundwater salinity is strongly influenced by precipitation and its attendant soil saturation: one well higher in the watershed had summer salinities up to 11 pt and winter salinities of around 7 ppt, while a well relatively lower in the watershed had a summer salinity of 3.5 ppt and a winter salinity of only 1 ppt.

Several small, seasonal springs are located in the hillsides within the Spring Branch Creek watershed. Some spring flows are captured by the impoundments within the Spring Branch Creek Valley; others express themselves as facultative wetland vegetation along lower alluvial hillslopes upslope of ordinary high water marks.

The head of Suisun Hill Hollow contains the only known perennial spring on the Rush Ranch property. Flows from this spring are captured in an impoundment that gradually draws down over the dry season due to evapotranspiration. This spring has been measured to have salinities below 5 ppt during the summer dry season; wet season salinity at this spring is likely lower.

The Rush Ranch headquarters utilizes a well to provide drinking, stock watering, and irrigation water for the property. SLT's Land Steward estimates that the average groundwater level in the well is approximately 15 feet below the surface based on on-site experience placing and managing groundwater pumps.

Upland Water Quality

Water quality in the seasonal creeks that drain Rush Ranch (e.g. Suisun Hill Hollow and Spring Branch Creek) is largely contingent upon two factors: (1) the relative proportion of creek flow that is stored in impoundments and (2) the degree to which cattle can access the impoundments and the active creek channel/floodplain. Little data on water quality have been collected in the upland drainages, but observation by SLT staff, ESNERR scientists, and others have indicated the following trends:

- At Rush Ranch, summer salinity levels vary widely between impoundments based on the underlying soil type. The impoundments are typically warmer, more saline, and eutrophic in summer, and cooler, less saline, and less eutrophic in the winter.

- During the summer drawdown period, salinity in the impoundments generally increases and water levels decrease. The drawdown of the impoundments results in the deposition of salt crusts and algae mats along the formerly inundated edges of the impoundments.
- Aerial photos indicate that some impoundments, particularly the upstream impoundment in Suisun Hill Hollow, get saline enough over the summer to host halophilic bacteria (similar to the "pink" salt ponds around San Francisco Bay).
- Summertime salinity in the impoundments is likely too high for healthy use by cattle and calves.

The more access cattle have to impoundments and creek channels/floodplains, the poorer the water quality in both. Cattle tend to rest (and defecate) in shady areas during the summer, however they may congregate in the wet areas, particularly during the heel fly season. This use enriches the creeks and impoundments with nutrients, and the resulting soil erosion increases turbidity.

Tidal Marsh Water Quality

Water quality in tidal marshes at Rush Ranch is primarily driven by two elements: tidal flows reaching the site through Suisun, Montezuma, Cutoff, and First/Second Mallard Sloughs, and stormwater flows from the upland watersheds. The primary water quality constituents of concern at Rush Ranch are described below. Water quality in Goat Island Marsh typically approximates conditions in Suisun Slough, but the limited tidal mixing likely impacts water quality (particularly temperature and dissolved oxygen) during the warm summer months.

Salinity

Water column salinity in First and Second Mallard Slough ranges from .01-10.3 PPT, with lower values found in winter and spring (NERR 2008-2012). Salinity is one of the most managed water quality parameters in Suisun Marsh (USBR et al. 2011). Monthly salinity objectives have been set at Eastern Suisun Marsh monitoring sites, including Montezuma Slough near Belden's Landing.

Water Temperature

According to the NERR monitoring stations on First and Second Mallard Slough, Water temperatures range from 4.2 and 27.2ºC (NERR 2008-2012). The Regional Water Quality Control Board (RWQCB) developed temperature quality objectives in order to help control major thermal power-plant cooling discharges (USBR et al. 2011). Objectives include (1) any increase in surface water temperature must be less than 4°F(outside a mixing zone) (2) a change in 25% of the cross section of a river must be less than 1°F (USBR et al. 2011).

pH

pH ranges between 6.8 and 8.3 at the First Mallard and Second Mallard monitoring stations (NERR 2008-2012). Local productivity and diurnal variability drives pH levels in Suisun Marsh (Ferner 2012).

Dissolved Oxygen

Dissolved oxygen ranges between.3-13.4 mg/L at the First and Second Mallard monitoring station (NERR 2008-2012). Low dissolved oxygen, which could be deleterious to fish, was a greater threat

prior to technical improvements and regulation of wastewater discharge in Suisun Marsh. Other factors limiting the occurrence of low dissolved oxygen includes tidal mixing and the subsequent lack of water stratification. However, periodic hypoxic (low dissolved oxygen) events do occasionally occur in areas of restricted tidal flushing, including Goat Island Marsh. Further some of these hypoxic events have been associated with fish kills adjacent to Rush Ranch (Ferner 2011). DO in Suisun Slough can also decrease in response to the seasonal flood-drain cycles implemented by duck clubs in the vicinity (WWR 2011).

Turbidity

Because of threshold declines in suspended sediment supply in Suisun Marsh and the estuary as a whole (Schoellhammer 2011), the delivery of suspended sediment to the estuary has decreased in recent decades. Suspended sediment is essential for marsh accretion, especially with consideration of accelerated sea level rise. Despite reductions in sediment supply, Suisun Marsh remains a turbid estuary, which may impact phytoplankton productivity (Ferner 2011).

Contaminants

The main contaminant concern in Suisun Marsh related to existing elevated levels and production of methylmercury, which may cause risks to ecological and human health (CDFG 2011). High elevation tidal marsh and floodplain environments influence production of methyl mercury, as well as open water habitats to a lesser degree (Wiener et al. 2003). In the last 40 years, methylmercury concentrations have remained stable, however restoration of tidal marshes may lead to an increase in methylmercury production (Ferner 2011). The production of methylmercury in tidal marshes is an area of active research and is discussed further below under “Impacts and Mitigations.”

Nutrients

Water column nutrient measurements from multiple sites and seasons in Suisun Marsh from 2004 to 2007 provide a basis for existing nutrient ranges in tidal marsh areas at Rush Ranch (Parker and Cohen 2011). The highest nutrient concentrations within Suisun Marsh were found in western sloughs, near Rush Ranch (Parker and Cohen 2011). This may because western sloughs are in close proximity to the City of Fairfield wastewater discharge facilities, where they have previously discharged advanced secondarily treated sewage into one of the western sloughs (Boynton Slough) (SFBWQCB 2010).

4.9.2 Discussion

a, f) The Proposed Project could degrade water quality as described below:

Construction Impacts

The construction of the various facility improvements and upgrades at the Rush Ranch headquarters would involve earthmoving activities. While these earthmoving activities would be conducted during the dry season and are not located within the vicinity of any water courses, there would be a possibility of sediments and construction contaminants (i.e. fuel, lubricants, engine oil) becoming mobilized and entering nearby water bodies if unchecked. The implementation of the Goat Island Marsh, Suisun Hill Hollow, and Upper/Lower Spring Branch Creek habitat restoration/enhancement projects would involve multiple construction elements

such as levee breaches, impoundment berm reduction/removal, trail construction, and more. Figures IS-6 through IS-12) Remobilization of sediments into the water column caused by restoration activities such as levee breaching and grading can lead to temporary, localized increases in suspended sediment concentrations, which can in turn impact DO levels.

Because of the short duration of construction, limited extent of local construction activities, implementation of the appropriate best management practices, and the implementation of Mitigation Measures 2.9-2 and 2.9-3 to minimize and control erosion, these temporary water quality impacts would be ***less than significant with mitigation*****.** The Goat Island Marsh and Lower Spring Branch Creek projects also would incorporate an erosion and sediment control plan, as specified in the Environmental Commitments in the SMP EIR (Appendix B):

Operational Impacts

All Project-related operational impacts to water quality described in this section would be related to long-term operation of the habitat restoration and enhancement projects.

Salinity

Goat Island Marsh is connected to Suisun Bay through Suisun Slough. Modeling referenced in the Suisun Marsh Plan EIR/EIS (RMA 2009 in USBR et al. 2011) indicated that even a much larger restoration than that being proposed at Goat Island Marsh (7,500 ac vs. 80 ac) would not significantly affect salinity in Suisun Slough or elsewhere throughout the marsh. Seasonal magnitude of salinity in the Marsh would continue to be governed primarily by Delta outflow and operation of the Suisun Marsh Salinity Control Gates (SMSCG). Additionally, the seasonal salinity pattern (determined primarily by Delta outflow) would remain similar, and any potential change to salinity should not reduce the value of Marsh channel water for managed wetlands flood and drain operations. The models predict that salinity changes due to tidal restoration at Suisun Marsh monitoring locations would be much less than the maximum allowed by monthly objectives. Also, any change in salinity would be substantially less than 10% of the objectives at those locations. Therefore, changes to salinity in both the Marsh and upstream are expected to be ***less than significant.***

Methylmercury (MeHg)

Studies indicate that tidal wetland habitat produces and exports less methylmercury than managed wetlands (USBR et al. 2011). Unfortunately, authoritative studies comparing methylmercury production and export among tidal and non-tidal wetlands are lacking. There is no evidence to conclude that tidal restoration at Goat Island Marsh would lead to increased problems with methylmercury for fish and wildlife (and consumers). One preliminary, unpublished account focusing on water entering and leaving the newly tidal Blacklock area suggests an overall reduction in the export of methylmercury in water. This result must also remain preliminary and unsubstantiated. Some experts suspect an actual benefit of less methylmercury being exported by tidal marshes than from existing habitat may occur. However, ultimately it is not the amount of inorganic or even organic mercury in sediment or in water that is most critical, but the amount of organic mercury that appears in representative, resident organisms and that enters the food chain. As yet there are insufficient data to conclude that those amounts would increase with tidal restoration (USBR et al. 2011).

It is reasonable to assume that tidal wetland restoration at Goat Island Marsh would not result in increased methylmercury compared to the baseline export of mercury (total or methyl-) in sediment or soils from managed wetlands to tidal sloughs during flood and drain activities. The Suisun Marsh Plan EIR/EIS (USBR et al. 2011) calls for sediment and fish monitoring of methylmercury at several restoration sites. Ongoing information from these and other efforts can be used adaptively to correct long-term construction and management plans and activities associated with restoration. This impact is therefore ***less than significant*.**

Mitigation Measure HYDRO-1

Prior to issuance of a grading permit, a stormwater pollution prevention plan (SWPPP) shall be developed by a qualified civil engineer or a California Qualified SWPPP Developer or QSDand implemented prior to construction. The objectives of the SWPPP shall be to (1) identify pollutant sources associated with construction activity and project operations that may affect the quality of stormwater and (2) identify, construct, and implement stormwater pollution prevention measures to reduce pollutants in stormwater discharges during and after construction. The Solano Land Trust and/or their contractor(s) shall develop and implement a spill prevention and control plan as part of the SWPPP to minimize effects from spills of hazardous, toxic, or petroleum substances during construction of the project. Implementation of this measure would comply with state and federal water quality regulations. The SWPPP shall be kept on site during construction activity and during operation of the project and would be made available upon request to representatives of the RWQCB. The SWPPP would include but is not limited to:

- A description of potential pollutants to stormwater from erosion,
- Management of dredged sediments and hazardous materials present on site during construction (including vehicle and equipment fuels),
- Details of how the sediment and erosion control practices comply with state and federal water quality regulations, and
- A description of potential pollutants to stormwater resulting from operation of the project.

Mitigation Measure HYDRO-2

The applicant shall establish staging areas for equipment storage and maintenance, construction materials, fuels, lubricants, solvents, and other possible contaminants in coordination with resource agencies. Practices and procedures for construction activities along city and county streets shall be consistent with the policies of the affected local jurisdiction.

Where possible, staging of equipment, fuels and other potentially hazardous materials shall be located at the ranch headquarters within existing parking areas. All other potential staging areas for equipment or construction materials shall have a stabilized entrance and exit and would be located at least 100 feet from bodies of water unless site-specific circumstances do not allow such a setback, in which case the maximum setback possible shall be used. If an off-road site is chosen, qualified biological and cultural resources personnel shall survey the selected site to verify that no sensitive resources would be disturbed by staging activities. If sensitive resources are found, an appropriate buffer zone shall be staked and flagged to avoid impacts. If impacts on sensitive

resources cannot be avoided, the site shall not be used and staging will be located at the headquarters area within existing parking areas.

Where possible, no equipment refueling or fuel storage shall take place within 100 feet of a body of water. Vehicle traffic shall be confined to existing roads and the proposed access route. Ingress and egress points shall be clearly identified in the field using orange construction fence. Work shall not be conducted outside the designated work area.

b) The design for Suisun Hill Hollow project includes the option of developing the spring with either a standard spring-box or shallow well with associated piping located at the existing spring-fed impoundment upstream of Grizzly Island Road. Spring boxes are a standard agricultural infrastructure that diverts water to a cattle trough and prevents cattle from accessing and trampling the spring. If needed, the spring-box would provide a watering source for cattle that would be eliminated with the planned removal of the impoundment berm. Development of the spring could result in decreasing flows available to the adjacent wetlands and downstream floodplain/seasonal wetland habitats. Impacts to flow from this spring would be ***less than significant with mitigation incorporated*** with implementation of Mitigation Measure BIO-6.

c, d) The Solano Land Trust proposes to install storm water management improvements in and around the headquarters to reduce water accumulation and soil saturation in areas of moderate to heavy public use and to minimize the potential for pollutant discharge into sensitive marsh habitats Figure IS-11 and IS-12). The new drainage features are described in section 3.4.2 by phase of construction. These proposed changes would reduce storm water flow volumes, direct flows away from heavy use areas, reduce storm water accumulation within public access areas, travel corridors and work areas, minimize potential for discharge of pollutants to downslope tidal wetlands, and separate surface runoff from the entrance road and gravel areas from nutrient enriched runoff from the corrals. These changes would benefit stormwater conveyance and downstream water quality, and as such have no adverse impact on hydrology or water quality.

The proposed habitat restoration projects at Suisun Hill Hollow would change the manner in which surface water runoff drains to receiving waters. Currently, the impoundments at Suisun Hill Hollow impede full expression of the storm hydrograph by capturing storm flows behind earthen dams. The impoundments decrease peak flows, which are necessary to facilitate geomorphic processes habitats for plants, invertebrates, and other species that are targeted for enhancement in portions of Rush Ranch. The impoundments also reduce the amount of water that is available to support target seasonal creek and wetland habitats downstream. Once the impoundments are reduced/removed, the stream hydrographs would more closely resemble their “natural” (unimpeded) hydrograph, with higher peak flows that can move more water downstream. These changes would benefit local habitats, and as such would have no adverse impact on hydrology and water quality.

Restoration of Goat Island Marsh would result in the construction of two breaches at the marsh’s northeast and southwest corners. Ebb tidal currents from Goat Island Marsh would enter Suisun Slough, which is over 500 ft wide and is one of the main tidal sloughs that drains east-central Suisun Marsh. Maximum ebb flows at the mouth of Suisun Slough downstream of Goat Island Marsh are more than 15,000 cubic feet per second (cfs) (BOR 2011). Ebb flows from the

approximately 80-acre Goat Island Marsh site are expected to be minimal relative to flows within the Slough. Tidal currents exiting the larger, northeast breach must cross the Slough and at least 70 ft of outboard tidal marsh in order to reach the levee on the opposite side of the Slough, which is highly unlikely given the distance and the considerable ebb flows within the Slough itself. Tidal currents exiting the smaller, southeast breach would be deflected and slowed by existing tidal marsh around First Mallard Slough before turning west to enter Suisun Slough. In both cases, flows exiting Goat Island Marsh would make a less than significant contribution to ebb flows within Suisun Slough and as such are not expected to contribute to erosion of levees along the slough, so this impact would be ***less than significant***.

e) The development of a small (4,000 ft^2) staging area along the east side of Grizzly Island Road and an expanded trail in the East Hills will contribute a minimal proportion of stormwater runoff to the existing drainage ditch along the road. The staging area and trail expansion would be designed and constructed according to the best management practices described above in Mitigation Measures HYDRO-1 and HYDRO-2. Finally, the Proposed Project includes improvements to existing stormwater drainage systems in the headquarters area that would reduce the amount of polluted runoff. The small size of these features and their proposed construction and maintenance methods would result in this impact being ***less than significant*.**

g) The Proposed Project would not place housing in 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, resulting in ***no impact*.**

h) The improvements at the Rush Ranch headquarters would not place within a 100-year flood hazard area structures that would impede or redirect flood flows. Stormwater drainage would be improved at the headquarters area and the Suisun Hill Hollow and Spring Branch Creek projects would remove existing impediments to flood flows. The Goat Island Marsh project would involve the construction of a boardwalk within the 100-year flood hazard area. This feature would be designed so as not to impede flood flows, thus resulting in a ***less-than significant impact***.

i) The Proposed Project would not 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, resulting in ***no impact*.**

j) The entire Project area could potentially be inundated by Tsunami, but there would be no increase in risk over current conditions. The boardwalk planned as part of the Goat Island Marsh project would not host a temporary or permanent shelter for Rush Ranch visitors. Therefore, the impact would be **less than significant**.

4.10 Land Use and Planning

Checklist Items: Would the project		Significant Impact	Less Than Significant Impact With Mitigation	Less Than Signifi-cant Impact	No Impact
a.	Physically divide an established community?	☐	☐	☐	■
b.	Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	■	☐	☐
c.	Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	■

4.10.1 Setting

The Rush Ranch Open Space Preserve is within two County zoning districts: the terrestrial (eastern) portion of the site, is in the Agriculture - Suisun Marsh -160 (A-SM-160) use district and the tidal marsh (western) portion is in the Marsh Preservation (MP) use district (refer to Zoning Map). Land use designations in the Solano County General Plan are Agriculture for the terrestrial (eastern) portion of the site, and Marsh for the tidal marsh (western) portion, both with a Resource Conservation Overlay.

A Use Permit and Marsh Development Permit was granted in 1990 (U-90-29, MD 90-05) for the facility to implement the Rush Ranch Management Plan, including required revisions regarding the caretaker facility. The current project requires an amendment to the Use and Marsh Development Permit.

In the A-SM-160 use district, a Use Permit is required for marsh oriented recreation, marsh education, and a special events facility that has more than 12 events per year or more than 150 attendees. Agriculture including grazing, a primary dwelling, and public open space areas are allowed by right. In the Marsh Preservation (MP) use district, a Use Permit is required for marsh oriented recreation, marsh education, and restoration of tidal, managed, and seasonal wetlands. Public assembly uses are not allowed. Agriculture including grazing, a primary dwelling, and public open space areas are allowed by right.

The proposed Project site and Associated Projects are located within the Suisun Marsh Local Protection Program (LPP). Under the Suisun Marsh Protection Act, Solano County and other

agencies having jurisdiction within the Suisun Marsh are required to bring their policies, regulations, programs and operating procedures into conformity with the provision of the Suisun Marsh Protection Act and the Suisun Marsh Protection Plan through the preparation of a Local Protection Program. Solano County's component of the Local Protection Program includes General Plan policies and other polices, programs and regulations to preserve and enhance the wildlife habitat of the Suisun Marsh and to assure retention of upland areas adjacent to the marsh in uses compatible with its protection.

The San Francisco Bay Conservation and Development Commission (BCDC) has jurisdiction on San Francisco Bay includes all sloughs, marshlands between mean high tide and 5 feet above mean sea level, tidelands, submerged lands, and land within 100 feet of the Bay shoreline. Projects approved by BCDC must be consistent with its master-planning document, the Bay Plan.[18] The Suisun Marsh Local Protection Program is a more specific application of the policies of the BCDC Bay Plan because of the unique characteristics of the Suisun Marsh. In event of policy conflict between the Bay Plan and Protection Plan, the policies of the Protection Program control.

The Project site and Associated Projects are surrounded by sloughs on the north, west, and south boundary, with private hunting clubs and state run wildlife reserves across the channel. The site is bounded by private rangeland to the east.

There are no habitat conservation plans or natural community conservation plans applicable to the project site.

4.10.2 Discussion

a. The proposed Project is located within the existing Rush Ranch Open Space Preserve. Existing nearby uses consist of sloughs to north, west, and south, and rangeland to the east. None of the project components has the potential to divide an existing community. There would be ***no impact***.

b. The Project would be located within the Rush Ranch Open Space Preserve, which is designated in the General Plan as Agriculture and Marsh with a Resource Conservation Overlay, and are within the Agriculture - Suisun Marsh -160 (A-SM-160) and Marsh Preservation (MP) use districts. Portions of the Project site are located within the Suisun Marsh Local Protection Program (LPP).

[18] BCDC, 2012. *San Francisco Bay Plan.* Available on the internet at: http://www.bcdc.ca.gov/laws_plans/plans/sfbay_plan#25, accessed 3 January 2013.

County General Plan Policies

The proposed Project would be implemented at the existing Rush Ranch Open Space Preserve, which functions as an open space preserve, public recreation facility, and grazing land. Goals and policies in the Solano County General Plan pertaining to the Proposed Project are listed below.

- Agriculture Goal AR.G-2: Preserve and protect the county's agricultural lands as irreplaceable resources for present and future generations.
- Agriculture Policy AG.P-3: Encourage consolidation of the fragmented pattern of agricultural preserves and contracts established under the Land Conservation Act (Williamson Act) and the retention of agricultural preserves and contracts in agricultural, watershed, and marshland areas.
- Agriculture Policy AG.P-19: Require agricultural practices to be conducted in a manner that minimizes harmful effects on soils, air and water quality, and marsh and wildlife habitat.
- Resources Goal RS.G-1: Manage and preserve the diverse land, water, and air resources of the county for the use and enrichment of the lives of present and future generations.
- Resources Goal RS.G-2: Ensure continued presence and viability of the county's various natural resources.
- Resources Goal RS.G-3: Repair environmental degradation that has occurred, and seek an optimum balance between the economic and social benefits of the county's natural resources.
- Resources Goal RS.G-4: Preserve, conserve, and enhance valuable open space lands that provide wildlife habitat; conserve natural and visual resources; convey cultural identity; and improve public safety.
- Resources Policy RS.P-1: Protect and enhance the county's natural habitats and diverse plant and animal communities, particularly occurrences of special-status species, wetlands, sensitive natural communities, and habitat connections.
- Resources Policy RS.P-2: Manage the habitat found in natural areas and ensure its ecological health and ability to sustain diverse flora and fauna.
- Resources Policy RS.P-3: Focus conservation and protection efforts on high-priority habitat areas depicted in Figure RS-1 [the project site is identified as "High Value Vernal Pool Conservation Areas" in Figure RS-1].
- Resources Policy RS.P-4: Together with property owners and federal and state agencies, identify feasible and economically viable methods of protecting and enhancing natural habitats and biological resources.
- Resources Policy RS.P-7: Preserve and enhance the diversity of habitats in marshes, delta to maintain these unique wildlife resources.

- Resources Policy RS.P-8: Protect marsh waterways, managed wetlands, tidal marshes, seasonal marshes, and lowland and grasslands because they are critical habitats for marsh-related wildlife and are essential to the integrity of the marshes.
- Resources Policy RS.P-9: Encourage restoration of historic marshes to wetland status, either as tidal marshes or managed wetlands. When managed wetlands are no longer used for waterfowl hunting, restore them as tidal marshes.
- Resources Policy RS.P-10: The County shall preserve and enhance wherever possible the diversity of wildlife and aquatic habitats found in the Suisun Marsh and surrounding upland areas to maintain these unique wildlife resources.
- Resources Policy RS.P-11: The County shall protect its marsh waterways, managed and natural wetlands, tidal marshes, seasonal marshes and lowland grasslands that are critical habitats for marsh-related wildlife.
- Resources Policy RS.P-12: Existing uses should continue in the upland grasslands and cultivated areas surrounding the critical habitats of the Suisun Marsh in order to protect the Marsh and preserve valuable marsh-related wildlife habitats. Where feasible, the value of the upland grasslands and cultivated lands as habitat for marsh-related wildlife should be enhanced.
- Resources Policy RS.P-13: Agriculture within the Primary Management Area of the Suisun Marsh should be limited to activities compatible with, or intended for, the maintenance or improvement of wildlife habitat. These include extensive agricultural uses such as grain production and grazing. Intensive agricultural activities involving removal or persistent plowing of natural vegetation and maintenance of fallow land during part of the year should not be permitted.
- Resources Policy RS.P-14: Agricultural uses consistent with protection of the Suisun Marsh, such as grazing and grain production, should be maintained in the Secondary Management Area [the project site is identified as “Secondary Management Areas” in Figure RS-3]. In the event such uses become infeasible, other uses compatible with protection of the Marsh should be permitted.
- Resources Policy RS.P-19: Within the watershed of the Suisun Marsh, the County shall encourage sound agricultural practices that conserve water quality and the riparian vegetation.
- Resources Policy RS.P-41: Provide trail links and an integrated trail system to connect people to accessible open spaces and to regional trail routes.
- Resources Policy RS.P-46: Encourage local farmers and ranchers to incorporate recreational and educational activities that provide visitor-oriented opportunities into agricultural land, in areas deemed appropriate for such opportunities.
- Resources Policy RS.P-48: Maintain and expand public access and recreational activities within the Suisun Marsh consistent with applicable marsh policies and the protection of wildlife resources.

- Park and Recreation Goal 1: Preserve and manage a diverse system of regional parks and natural resources for the enjoyment of present and future County residents and park visitors.
- Park and Recreation Goal 2: Promote, develop and manage diversified recreational facilities to meet the regional recreation needs of the County.
- Park and Recreation Objective 3: Identify, preserve and manage significant regional recreation and natural areas.

Project Compliance with County General Plan Policies

The Proposed Project would preserve agricultural land and continue agricultural practices that minimize impacts to natural resources, which is consistent with Agriculture Goal AR.G-2 and Agriculture Policies AG.P-3 and AG.P-19. The project would preserve natural resources including land and water, preserve open space, continue existing uses in upland grasslands, limit agriculture to grazing, provide trails, incorporate recreational and educational activities that provide visitor-oriented opportunities into agricultural land, and provide public access, which is consistent with Resources Goals RS.G-1, RS.G-2, RS.G-3, and RS.G-4, and Resources Policies RS.P-1, RS.P-2, RS.P-3, RS.P-4, RS.P-7, RS.P-8, RS.P-9, RS.P-10, RS.P-11, RS.P-12, RS.P-13, RS.P-14, RS.P-19, RS.P-41, RS.P-46, and RS.P-48. The Project would maintain and enhance parks, and recreational facilities, which is consistent with Park and Recreation Goals 1 and 2 and Park and Recreation Objective 3. The habitat restoration and enhancement projects would enhance habitat diversity and protect and restore natural habitats and degraded marsh areas, which is consistent with the Resource Goals listed above. These projects would enhance natural resources, which is consistent with Park and Recreation Goals 1 and 3. For these reasons, the Proposed Project would be consistent with the County General Plan goals and policies identified above.

Solano County Zoning Ordinance

The Solano County Zoning Ordinance, Section 28.79, contains specific regulations for Resource Protection uses. These include consistency with the County General Plan, controls to prevent offensive noise, odor, dust, fumes, smoke, and vibration, and control of invasive plants. The Proposed Project is consistent with these requirements.

County Zoning Ordinance Section 28.79 contains specific regulations for Recreation, Education, and Public Assembly uses. Requirements applicable to the project include truck- loading areas designed to avoid traffic hazard and congestion, lighting directed away from adjacent properties and public rights-of-way to prevent offensive light and glare, and parking spaces as required in Section 28.94. The Project would have a truck loading area off the public road (Grizzly Island Road), and would not create offensive light and glare to adjacent properties and public rights-of-way. Section 28.94 requires one parking space per each four persons at capacity for public assembly uses.

As discussed in the Project Description, above, the existing all-weather parking area accommodates up to 22 vehicles, and supplemental and overflow parking can accommodate 353 vehicles during dry conditions. The Proposed Project includes expansion of the all-weather parking capacity to 30-40 vehicles, by converting some of the supplemental parking spaces to all

weather spaces, with no net change in total parking spaces. With the project, all-weather parking would be sufficient for 120-160 attendees at a time, at one parking space per four visitors. This would be sufficient for all anticipated public uses identified in Table 1-8, above, with the exception of Picnic Rental and Medium and Large Special Events. Picnic Rental is anticipated year-round, with a maximum of 300 users. Although this would exceed the all-weather parking capacity, it is unlikely that more than 120-160 picnickers would use the site during wet weather; thus, the all-weather parking capacity proposed by the project is anticipated to be sufficient. Special Events could have up to 1,500 visitors, but would be scheduled only during the spring, summer, and fall. At these times, the dry-weather supplemental and overflow parking areas would be available. At one parking space per four visitors, the all-weather supplemental, and overflow parking areas would provide space for 1,500 visitors. Thus, the project would be consistent with the parking requirements of Section 28.94. The Project would also comply with the other zoning regulations for Recreation, Education, and Public Assembly uses.

County Zoning Ordinance Section 28.71 contains specific regulations for Agricultural uses. Requirements applicable to the grazing activities of the Proposed Project include setbacks for accessory buildings and animal shelters as specified in Table 28.22B, Section 28.22.30. The Project would be consistent with these requirements.

BCDC Bay Plan Policies

Relevant goals and policies in the BCDC's Bay Plan pertaining to the Proposed Project are listed below.

Part III - The Bay as a Resource

Water Quality

Policy 3: New projects should be sited, designed, constructed and maintained to prevent or, if prevention is infeasible, to minimize the discharge of pollutants into the Bay by: (a) controlling pollutant sources at the project site; (b) using construction materials that contain nonpolluting materials; and (c) applying appropriate, accepted and effective best management practices, especially where water dispersion is poor and near shellfish beds and other significant biotic resources.

Policy 7: Whenever practicable, native vegetation buffer areas should be provided as part of a project to control pollutants from entering the Bay, and vegetation should be substituted for rock riprap, concrete, or other hard surface shoreline and bank erosion control methods where appropriate and practicable.

Tidal Marshes and Tidal Flats

Policy 1: Tidal marshes and tidal flats should be conserved to the fullest possible extent. Filling, diking, and dredging projects that would substantially harm tidal marshes or tidal flats should be allowed only for purposes that provide substantial public benefits and only if there is no feasible alternative.

Policy 2: Any proposed fill, diking, or dredging project should be thoroughly evaluated to determine the effect of the project on tidal marshes and tidal flats, and designed to minimize, and if feasible, avoid any harmful effects.

Policy 3: Projects should be sited and designed to avoid, or if avoidance is infeasible, minimize adverse impacts on any transition zone present between tidal and upland habitats. Where a transition zone does not exist and it is feasible and ecologically appropriate, shoreline projects should be designed to provide a transition zone between tidal and upland habitats.

Policy 8: Based on scientific ecological analysis and consultation with the relevant federal and state resource agencies, a minor amount of fill may be authorized to enhance or restore fish, other aquatic organisms, or wildlife habitat if the Commission finds that no other method of enhancement or restoration except filling is feasible.

Part IV - Development of the Bay and Shoreline

Safety of Fills

Policy 4: Adequate measures should be provided to prevent damage from sea level rise and storm activity that may occur on fill or near the shoreline over the expected life of a project. The Commission may approve fill that is needed to provide flood protection for existing projects and uses. New projects on fill or near the shoreline should either be set back from the edge of the shore so that the project will not be subject to dynamic wave energy, be built so the bottom floor level of structures will be above a 100-year flood elevation that takes future sea level rise into account for the expected life of the project, be specifically designed to tolerate periodic flooding, or employ other effective means of addressing the impacts of future sea level rise and storm activity. Rights-of-way for levees or other structures protecting inland areas from tidal flooding should be sufficiently wide on the upland side to allow for future levee widening to support additional levee height so that no fill for levee widening is placed in the Bay.

Recreation

Policy 4: To assure optimum use of the Bay for recreation, the following facilities should be encouraged in waterfront parks and wildlife refuges.

a. In waterfront parks. (1) Where possible, parks should provide some camping facilities accessible only by boat, and docking and picnic facilities for boaters. (2) To capitalize on the attractiveness of their bayfront location, parks should emphasize hiking, bicycling, riding trails, picnic facilities, swimming, environmental, historical and cultural education and interpretation, viewpoints, beaches, and fishing facilities. Recreational facilities that do not need a waterfront location…(3) Where shoreline open space includes areas used for hunting waterbirds…(4) Public launching facilities for a variety of boats and other water-oriented recreational craft, such as kayaks, canoes and sailboards, should be provided in waterfront parks where feasible. (5) Except as may be approved pursuant to recreation policy 4-b, limited commercial recreation facilities, such as small restaurants, should be permitted… (6) Trails that can be used as components of the San Francisco Bay Trail, the Bay Area Ridge Trail

or links between them should be developed in waterfront parks. San Francisco Bay Trail segments should be located near the shoreline unless that alignment would have significant adverse effects on Bay resources; in this case, an alignment as near to the shore as possible, consistent with Bay resource protection, should be provided. Bay Area Ridge Trail segments should be developed in waterfront parks where the ridgeline is close to the Bay shoreline. (7) Bus stops, kiosks and other facilities to accommodate public transit should be provided in waterfront parks to the maximum extent feasible. Public parking should be provided in a manner that does not diminish the park-like character of the site. Traffic demand management strategies and alternative transportation systems should be developed where appropriate to minimize the need for large parking lots and to ensure parking for recreation uses is sufficient. (8) Interpretive information describing natural, historical, and cultural resources should be provided in waterfront parks where feasible. (9) In waterfront parks that serve as gateways to wildlife refuges, interpretive materials and programs that inform visitors about the wildlife and habitat values present in the park and wildlife refuges should be provided. Instructional materials should include information about the potential for adverse impacts on wildlife, plant and habitat resources from certain activities. (10) The Commission may permit the placement of public utilities and services, such as underground sewer lines and power cables, in recreational facilities provided they would be unobtrusive, would not permanently disrupt use of the site for recreation, and would not detract from the visual character of the site.

c. Historic Buildings in waterfront parks and wildlife refuges should be developed and managed for recreation uses to the maximum practicable extent consistent with the Bay Plan Map policies and all of the following:

1. Physical and visual access corridors between inland public areas, vista points and the shoreline should be created, preserved or enhanced. Corridors for Bay-related wildlife should also be created, preserved and enhanced where needed and feasible.
2. Historic structures and districts listed on the National Register of Historic Places or California Registered Historic Landmarks should be preserved consistent with applicable state and federal Historic Preservation law and should be used consistent with the Bay Plan recreation policies. Public access to the exterior of these structures should be provided. Public access to the interiors of these structures should be provided where appropriate.
3. To assist in generating the revenue needed to preserve historic structures and develop, operate and maintain park improvements and to achieve other important public objectives, uses other than water-oriented recreation, commercial recreation and public assembly facilities may be authorized only if they would: (a) not diminish recreational opportunities or the park-like character of the site; (b) preserve historic buildings where present for

compatible new uses; and (c) not significantly, adversely affect the site's fish, other aquatic life and wildlife and their habitats.

Policy 5: Bay resources in waterfront parks and, where appropriate, wildlife refuges should be described with interpretive signs. Where feasible and appropriate, waterfront parks and wildlife refuges should provide diverse environmental education programs, facilities and community service opportunities, such as classrooms and interpretive and volunteer programs.

Policy 7: Because of the need to increase the recreational opportunities available to Bay Area residents, small amounts of Bay fill may be allowed for waterfront parks and recreational areas that provide substantial public benefits and that cannot be developed without some filling.

Public Access

Policy 3: Public access to some natural areas should be provided to permit study and enjoyment of these areas. However, some wildlife are sensitive to human intrusion. For this reason, projects in such areas should be carefully evaluated in consultation with appropriate agencies to determine the appropriate location and type of access to be provided.

Policy 4: Public access should be sited, designed, and managed to prevent significant adverse effects on wildlife. To the extent necessary to understand the potential effects of public access on wildlife, information on the species and habitats of a Proposed Project site should be provided, and the likely human use of the access area analyzed. In determining the potential for significant adverse effects (such as impacts on endangered species, impacts on breeding and foraging areas, or fragmentation of wildlife corridors), site-specific information provided by the project applicant, the best available scientific evidence, and expert advice should be used. In addition, the determination of significant adverse effects may also be considered within a regional context. Siting, design, and management strategies should be employed to avoid or minimize adverse effects on wildlife, informed by the advisory principles in the Public Access Design Guidelines. If significant adverse effects cannot be avoided or reduced to a level below significance through siting, design and management strategies, then in lieu public access should be provided, consistent with the project and providing public access benefits equivalent to those that would have been achieved from on-site access. Where appropriate, effects of public access on wildlife should be monitored over time to determine whether revisions of management strategies are needed.

Policy 6: Whenever public access to the Bay is provided as a condition of development, on fill or on the shoreline, the access should be permanently guaranteed. This should be done wherever appropriate by requiring dedication of fee title or easements at no cost to the public, in the same manner that streets, park sites, and school sites are dedicated to the public as part of the subdivision process in cities and counties.

Policy 7: Public access improvements provided as a condition of any approval should be consistent with the project and the physical environment, including protection of Bay natural resources, such as aquatic life, wildlife, and plant communities, and provide for the public's

safety and convenience. The improvements should be designed and built to encourage diverse Bay-related activities and movement to and along the shoreline, should permit barrier free access for the physically handicapped to the maximum feasible extent, should include an ongoing maintenance program, and should be identified with appropriate signs.

Policy 8: In some areas, a small amount of fill may be allowed if the fill is necessary and is the minimum absolutely required to develop the project in accordance with the Commission's public access requirements.

Policy 9: Access to and along the waterfront should be provided by walkways, trails, or other appropriate means and connect to the nearest public thoroughfare where convenient parking or public transportation may be available. Diverse and interesting public access experiences should be provided which would encourage users to remain in the designated access areas to avoid or minimize potential adverse effects on wildlife and their habitat.

Climate Change Findings and Policies

Policy 7: Until a regional sea level rise adaptation strategy can be completed, the Commission should evaluate each project proposed in vulnerable areas on a case-by-case basis to determine the project's public benefits, resilience to flooding, and capacity to adapt to climate change impacts. The following specific types of projects have regional benefits, advance regional goals, and should be encouraged, if their regional benefits and their advancement of regional goals outweigh the risk from flooding:

d. a natural resource restoration or environmental enhancement project.

The following specific types of projects should be encouraged if they do not negatively impact the Bay and do not increase risks to public safety:

f. a small project;

h. a public park.

Project Compliance with BCDC Bay Plan Policies

Because the Project is a small project that does not involve the siting of critical infrastructure or residential, commercial, or industrial development, only a limited number of BCDC climate change policies are relevant to it. Specifically, Policies 7.d, 7.f, and 7.h are most applicable to the Project as they respectively relate to the encouragement of projects that enhance the environment, are small, and/or are public parks. The habitat restoration/enhancement projects would enhance the environment, and are therefore consistent with these policies.

The Proposed Project would provide vegetated buffer areas and incorporate mitigation measures to protect water quality (discussed in 2.9 Hydrology and Water Quality), which is consistent with BCDC Water Quality Policies 3 and 7. The project would include trails, public access facilities, educational and interpretive facilities near the Bay, and incorporate mitigation measures to preserve the significance and integrity of historic buildings on the site, which is consistent with BCDC Recreation Policies 4, 5, and 7. The project would include trails and mitigation measures to reduce the impacts of the new trails on wildlife, which is consistent with BCDC Public Access

Policies 3, 4, 6, 7, 8, and 9. With incorporation of mitigation measures identified in this Initial Study, the Project would not negatively impact the Bay or increase risks to public safety, and would include natural resources restoration, which is consistent with BCDC Climate Change Policies 7.d, 7.f, and 7.h. In summary, the Proposed Project, incorporating mitigation measures identified in this Initial Study to reduce impacts on historic buildings and biological resources, would be consistent with the BCDC policies above.

The Project would construct an interpretive nature trail (up to 8,200 feet) and boardwalk (up to 600 feet) at Goat Island Marsh. Depending on the length of new trail that is constructed, this would offset some portion of the loss of approximately one mile of the existing levee portion of the Marsh Trail around Goat Island Marsh, which would be necessitated by the marsh restoration. The replacement trails would be located as close to the bay as possible. The project would also construct an interpretive nature trail, boardwalk, and platform at Spring Branch Creek, and a staging area and footpath extension in the East Hills. The Project would restore tidal marshes, maintain transition zones between tidal and upland habitats, and minimize bay fill, which is consistent with BCDC Tidal Marshes and Tidal Flats Policies 1, 2, 3, and 8. The Project would contain measures to accommodate sea level rise in marshes, and would not involve substantial new structures in areas vulnerable to sea level rise, which is consistent with BCDC Safety of Fills Policy 4.

In summary, the impacts associated with the proposed Project would be ***less than significant with mitigation*** incorporated. (Mitigation measures are identified for specific resource topics elsewhere in this document)

Suisun Marsh Preservation Act, Local Protection Plan

The Suisun Marsh Preservation Act is intended to protect valuable natural resources within the marshand invests BCDC with ultimate authority over its implementation. Under the Act, the marsh consistes of “primary” water-covered areas and lowland grasslands, and upland “secondary” areas. Development in the primary areas requires a permit from BCDC. For development in secondary areas, such as Upper Spring Branch Creek, a marsh development permit must be obtained from the local land use regulatory agency (in this case, Solano County). The County may issue a marsh development permit “only if it finds that the proposed development “is consistent with or in conformity with the adopted Local Protection Program [LPP]” _(Section 29503, subd. a)_The local protection program is defined as “those provisions of general or specific plans; ordinances; zoning districts maps; land use regulations, procedures, or controls; or any other programs, standards, or controls that are adopted, undertaken, or carried out by local governments, districts, of LAFCO in and adjacent to the marsh that are submitted by the County to BCDC and meet the requirements and implement the Suisun Marsh Protection Plan at the local level (Section 29111).

Relevant policies from the LPP include:

Wildlife Habitat Management and Preservation Policies

The Suisun Marsh and adjacent uplands provide a unique resource for a wide range of aquatic and

wildlife species, due to the occurrence of many diverse habitats in close proximity to each other. The marsh also provides habitat for many rare and endangered plant and animal species.

The tidal marshes, managed wetlands, seasonal marshes and the lowland grasslands of the Suisun Marsh represent a vital resource for many forms of marsh wildlife. Most of the wet islands in the Marsh are managed wetlands that are artificially flooded and cultivated to enhance the production of preferred waterfowl food plants.

The tidal marshes, which occur on the edges of the bays and sloughs, are exposed to the natural daily tidal rhythm. Seasonal marshes are found adjacent to the managed wetlands in several areas. They are low-lying lands that are flooded annually by winter and spring rains, and dry out with the approach of summer. Between the Marsh and adjacent uplands lies a "transition zone" of lowland grasslands, which supports a mixture of plants common to both the wetlands and the upland grasslands. Because of their critical importance to Marsh wildlife these areas should be managed so as to preserve and enhance marsh habitat while limiting agricultural use to practices consistent with wildlife use.

Wildlife habitat within the Suisun Marsh shall be managed and preserved through the following policies:

1. The diversity of habitats in the Suisun Marsh and surrounding upland areas should be preserved and enhanced wherever possible to maintain the unique wildlife resource.

2. The Marsh waterways, managed wetlands, tidal marshes, seasonal marshes, and lowland and grasslands are critical habitats for marsh-related wildlife and are essential to the integrity of the Suisun Marsh. Therefore, these habitats deserve special protection.

3. The eucalyptus groves in and around the Marsh, particularly those on Joice and Grizzly islands, should not be disturbed.

4. Burning in the primary management area is a valuable management tool. However, it should be kept to a minimum to prevent uncontrolled fires which may destroy beneficial plant species and damage peat levees, and to minimize air pollution.

5. Where feasible, historic marshes should be returned to wetland status, either as tidal marshes or managed wetlands. If, in the future, some of the managed wetlands are no longer needed for waterfowl hunting, they should also be restored as tidal marshes.

Section 9-3. Permits for change of drainage

It shall be unlawful for any person to do any of the following acts within the county without first receiving a written permit therefore from the county engineer:

(a) Level or relevel agricultural land for irrigation purposes.

(b) Change the topography of any land in such manner that alters or interferes with existing water drainage.

(c) Fill, close or divert any storm water drainage channel or water course.
(d) Use for any purpose or in any manner any levee, embankment, service road, channel, berm, reservoir, canal, protective work or facility constructed by any public agency for flood control, water delivery or drainage, unless permission for the use has been previously granted by the public agency involved.
(e) Allow any water applied by him for commercial crop irrigation purposes to drain or spill upon the right-of-way of any public street, road or highway, or any district canal or channel.
(f) To encroach on any designated flood control easement or right-of-way by construction of any building, facilities, pipelines, fences, etc., or permit the installation of any restriction within the prism of any constructed channel which 'would reduce the designated hydraulic capacity, or in any natural channel which restrict its average flow characteristics.
(g) To do any of the following activities within or in areas adjacent to those, channels flowing or which will flow into the Suisun -Marsh, as more fully shown on that diagram entitled "Protected Channels of the Suisun Marsh Watershed" on file at the Public Works Department and which is incorporated herein as though set forth in full.

(1) Newly construct any structure, except that the repair, replacement, reconstruction, improvement or maintenance of any existing structure may be taken unless the county engineer determines that such repair, replacement, reconstruction, improvement or maintenance will result in an increase in flood level, public flood hazard, or increase sedimentation to such an extent that adverse environmental effects will occur in the Suisun Marsh.
(2) Fill, grade, excavate, obstruct, close, divert, repair or reconstruct the channel or adjacent area of the channel'. Emergency repairs may be commenced prior to obtaining a permit.
(3) Cut or remove vegetation except for:
(i) Grazing, cultivation of land, and other agriculturally related activities including cutting or removing vegetation from channels or adjacent areas for agricultural or flood control purposes.
(ii) Gardening and landscape activities associated with an established use.

Section 31-300 of the County Grading Ordinance:

o) Except as limited by Chapter 28-33.6 designated watercourse environmental areas, filling, grading, excavating or obstructing the bed or banks of a watercourse and removal of riparian vegetation shall be allowed only where no reasonable alternative is available and, where allowed, shall be limited to the minimum amount necessary.

Project Compliance with Local Protection Plan Policies

The project would restore wetland and riparian areas to natural functions and habitats. This would be consistent with the Wildlife Habitat Management and Preservation Policies promoting preservation and enhancement of the marsh and surrounding upland areas.

The Suisun Hill Hollow Restoration project aims to restore seasonal and tidal wetland habitat by reconnecting tidal, fluvial and upland components and by reinitiating related physical and ecological processes. A primary purpose of the project is to remove barriers to estuarine transgression in order to allow restored marsh to transgress up the gradient as sea level rises. The berms that form impoundments above and below Grizzly Island Road in Suisun Hill Hollow would be lowered to a maximum ponding depth of 1.5-2 feet deep. The purpose of maintaining depressional pools in these areas is to provide the functional equivalent habitat value of the impoundment, while allowing ecological and geomorphic processes such as seed exchange, sediment scouring and deposition, and water and nutrient exchange to occur. Grading associated with this project involves the removal of two degraded berms that impounded stream flows along Suisun Hollow and prevent sea level rise accommodation into the upper sections of the creek. Removal of the old berms is the only feasible alternative suited to reestablishing native alkali seasonal wetland vegetation and rare and uncommon species within dispersal pathways adjacent to the tidal marsh. For example, piping stream flows around the impoundments would not allow natural erosional and depositional dynamics to occur, would be management intensive and cause increased scour. Likewise, there are no feasible alternatives to facilitating sea level rise accommodation without removal (grading) of barriers. Potential impacts on existing rare invertebrate habitat populations within and along the creek swale are mitigated by minimizing the grading area within the project worksite and active replanting of native vegetation assemblages in disturbed areas.

c. As discussed above, the project site is not within the area of a habitat conservation plan or natural community conservation plan. There would be ***no impact***.

4.11 Mineral Resources

Checklist Items: Would the project		Significant Impact	Less Than Significant Impact With Mitigation	Less Than Significant Impact	No Impact
a.	Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	■	☐
b.	Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	■	☐

4.11.1 Setting

There are no identified mineral resources at the Rush Ranch Open Space Preserve. In the Solano County General Plan, the eastern portion of the site is designated "MRZ-3 Areas containing mineral deposits, the significance of which cannot be evaluated from available data".[19] None of the Proposed Project components are located in the eastern portion of the site.

4.11.2 Discussion

a. As discussed above, the project site contains mineral resources, but the significance of these mineral resources is not known. However, none of the project components would substantially affect or substantially impede the availability of mineral resources on the project site, if any significant resources exist. This impact would be ***less than significant***, and no mitigation is required.

b. As discussed above, a portion of the project site is designated in the Solano County General Plan as an area contains mineral resources, but the significance of these mineral resources is not known. However, none of the project components would substantially affect or impede the availability of mineral resources on the project site, if any significant resources exist. This impact would be ***less than significant***, and no mitigation is required.

[19] County of Solano, *Solano County General Plan*, November 2008, Chapter 4 Resources, Figure RS-4 Mineral Resources, page RS-33.

4.12 Noise

	Checklist Items: Would the project	Significant Impact	Less Than Significant Impact With Mitigation	Less Than Significant Impact	No Impact
a.	Exposure of persons to, or generation of, noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	■	☐
b.	Exposure of persons to or generation of, excessive ground borne vibration or ground borne noise levels?	☐	☐	■	☐
c.	A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	■	☐
d.	A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	■	☐	☐
e.	For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	■	☐
f.	For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	■

4.12.1 Setting

Introduction to Noise Descriptors

To describe noise environments and to assess impacts on noise-sensitive areas, a frequency weighting measure, which simulates human perception, is commonly used. It has been found that A-weighting of sound levels best reflects the human ear's reduced sensitivity to low frequencies, and correlates well with human perceptions of the annoying aspects of noise. The A-weighted decibel scale (dBA)[20] is cited in most noise criteria. Decibels are logarithmic units that conveniently compare the wide range of sound intensities to which the human ear is sensitive**.** **Table Noise-1**: Typical Noise Levels identifies decibel levels for common sounds heard in the environment.

Several time-averaged scales represent noise environments and consequences of human activities. The most commonly used noise descriptors are equivalent A-weighted sound level over a given time period (Leq);[21] average day-night 24-hour average sound level (Ldn)[22] with a nighttime increase of 10 dBA to account for sensitivity to noise during the nighttime; and community noise equivalent level (CNEL),[23] also a 24-hour average that includes both an evening and a nighttime weighting. Noise levels are generally considered low when ambient levels are below 45 dBA, moderate in the 45 - 60 dBA range, and high above 60 dBA.

Table Noise-1: Typical Noise Levels

Noise Level (dBA)	Outdoor Activity	Indoor Activity
90+	Gas lawn mower at 3 feet, jet flyover at 1,000 feet	Rock Band

[20] A decibel (dB) is a unit of sound energy intensity. Sound waves, traveling outward from a source, exert a sound pressure level (commonly called "sound level") measured in dB. An A–weighted decibel (dBA) is a decibel corrected for the variation in frequency response to the typical human ear at commonly encountered noise levels.

[21] The Equivalent Sound Level (L_{eq}) is a single value of a constant sound level for the same measurement period duration, which has sound energy equal to the time-varying sound energy in the measurement period.

[22] L_{dn} is the day-night average sound level that is equal to the 24-hour A-weighted equivalent sound level with a 10-decibel penalty applied to night between 10:00 p.m. and 7:00 a.m.

[23] CNEL is the average A-weighted noise level during a 24-hour day, obtained by addition of 5 decibels in the evening from 7:00 to 10:00 p.m., and an addition of a 10-decibel penalty in the night between 10:00 p.m. and 7:00 a.m. It is similar to the L_{dn}, but with an additional evening penalty.

80-90	Diesel truck at 50 feet	Loud television at 3 feet
70-80	Gas lawn mower at 100 feet, noisy urban area	Garbage disposal at 3 feet, vacuum cleaner at 10 feet
60-70	Commercial area	Normal speech at 3 feet
40-60	Quiet urban daytime, traffic at 300 feet	Large business office, dishwasher next room
20-40	Quiet rural, suburban nighttime	Concert hall (background), library, bedroom at night
10-20		Broadcast / recording studio
0	Lowest threshold of human hearing	Lowest threshold of human hearing

Source: Modified from Caltrans Technical Noise Supplement, 1998

Existing Noise Sources

Sources of existing noise emanate primarily from vehicular traffic, resulting from visitors and staff entering and leaving the Rush Ranch Nature Center, and reportedly from bands or music from private events. Given the rural nature of the Rush Ranch property, background noise would normally be in the range of 35 to 50 dBA. However the Rush Ranch property is in direct alignment with the Travis Air Force Base (AFB) runways (and about 2 miles away at the closest location), so the property is affected aircraft noise from Travis AFB. Travis AFB is known as the "Gateway to the Pacific". Travis AFB handles more cargo and passenger traffic through its airport than any other military air terminal in the United States. The base has a long and proud history of supporting humanitarian airlift operations at home and around the world. The Travis AFB Noise Contours in the Solano County General Plan estimate future contours over the Rush Ranch property will vary from less than 60 CNEL to as high as 75-80 CNEL. Unlike constant noise from a freeway, aircraft noise is usually characterized by periods of quiet between aircraft flyovers. According to the Travis Air Force Base Land Use Compatibility Plan (Shutt Moen Associates, 2002) Rush Ranch is located in Compatibility Zone C, which encompasses locations exposed to potential noise in excess of approximately 60 dB CNEL together with additional areas occasionally affected by concentrated numbers of low-altitude (below 3,000 feet MSL) aircraft overflights. The boundaries are delineated so as to follow section lines, other geographic features, and fixed offset distances from the extended runway centerlines. Developed residential areas within existing city limits are excluded.

Table HS-2 in the Solano County General Plan allows noise that is less than 75 dBA (CNEL or Ldn) within agricultural areas. Table HS-4 in the Solano County General Plan includes noise standards for various land uses. For non-transportation noise sources, the average noise threshold for residential uses is 55 dBA for outdoor areas during the day and 50 dBA for outdoor areas during nighttime hours. The average interior threshold is 35 dBA. The maximum noise threshold for outdoor areas during the day is 70 dBA and 65 dBA for the nighttime hours with a 55-dBA interior threshold.

4.12.2 Discussion

a. The Proposed Project includes construction that could involve heavy equipment. Most heavy equipment has a maximum decibel level of 89 decibels or less at a reference distance of 50 feet and pile drivers generate noise levels of approximately 101 decibels at a distance of 50 feet (Cunniff, 1977 and U.S. EPA, 1971). Project construction would be at least 6,000 feet from the nearest residences. At a distance of 6,000 feet, noise from heavy equipment would be reduced to approximately 37 dBA and noise from pile drivers would be reduced to approximately 49 dBA. The noise levels would not exceed the Solano County General Plan's most restrictive outdoor noise standard of 50 dBA for nighttime hours and the project's impacts would be ***Less than Significant***.

Another concern is the effect of noise from Travis AFB planes on employees and visitors at Rush Ranch. Unlike constant noise from a freeway, aircraft noise is usually characterized by periods of quiet between aircraft flyovers. Thus, as with current activities at Rush Ranch, future activities would be periodically interrupted by aircraft noise that could periodically hinder normal conversations. While more visitors may be exposed to the aircraft noise, the periodic interruptions would be similar to the existing conditions at the site.

Most of the land in the vicinity of Travis AFB is in the land use jurisdiction of Solano County. The County's plans for this area call for nearly all of it to remain in agricultural or open space uses. The Proposed Projects at Rush Ranch would be consistent with the County's plans. The Airport Land Use Compatibility Plan (ALUCP) notes that noise and safety may need to be taken into account with regard to certain types of agricultural activities near Travis AFB, as well as for any rural residences that might be built in the area, but the presently planned land uses are, on the whole, compatible with Travis AFB operations (Solano County, 2002). Therefore this impact would be ***Less than Significant***.

b. Pile driving will be required for the Goat Island Marsh Nature Trail (150 pilings) and the Spring Branch Creek Nature Trail (80 pilings). Depending on the construction equipment used, groundborne vibrations can be perceptible within 30 to 100 feet. Structural damage from pile driving typically does not occur in buildings more than 50 feet from the location of the activity (Caltrans 2004). No residences are within 50 feet of the proposed construction areas. Therefore, the associated Goat Island project would result in a ***Less than Significant*** impact related to groundborne vibrations.

c. The proposed Project would not include any components that would permanently raise ambient noise levels in the project vicinity compared to existing land uses. Long-term uses would be similar to those already occurring at the site. Therefore this impact would be ***Less than Significant***.

d. **Construction Impacts:** As discussed in noise item a) above, the Proposed Project would include short-term construction projects with levels at the nearest residence of 37 dBA from the heavy equipment and 49 dBA from the pile driving. While these noise levels would probably be less than the ambient noise levels (especially traffic noise from Highway 12) in most cases,

nighttime construction could be very annoying to some of the residences even at these relatively low decibel levels. Implementation of Mitigation Measure NOISE-1 would prohibit nighttime construction and reduce potential impacts to ***less than significant with mitigation incorporated***.

Operational Impacts: The Proposed Project would include more visitors than existing activities, but there would not be an increase in the maximum number of vehicles using Rush Ranch facilities. As described in the Project Description, activities generating music or noise would be required to maintain noise levels at or below 90 dB within the Visitor Services Area, as measured no more than 100 feet from the source. Noise generating activities will cease by 10 pm. The facility has hosted annual events with 1,200 to 1,400 guests in the recent past. Because the maximum event size would not be increased substantially, there would be no need for amplified music to increase from current levels, therefore the project should not result in an increase in noise from amplified music. However, since there have reportedly been concerns about loud music in the past, Mitigation Measure NOISE-2 should be implemented as part of the project to assure implementation of the noise condition in the Project Description. The proposal to continue this annual event with up to 1,500 guests would not result in a substantial increase from existing guest levels at the recent annual events. Therefore this impact would be mitigated to ***Less than Significant***.

Mitigation Measure NOISE-1

Outdoor construction activities using heavy equipment and pile driving shall be limited to daytime hours between 7 a.m. and 7 p.m.

Mitigation Measure NOISE-2

Any noise-generating activities such as amplified music and use of public address systems shall cease by 10 pm.

e. Portions of the Rush Ranch property are within two miles of the Travis AFB property boundaries, but most of the project activities would more than two miles from the property boundary. It should be noted that the Travis AFB runways are in direct alignment with the Rush Ranch property and, even though the projects would be more than two miles from Travis AFB, the Travis AFB Noise Contours in the Solano County General Plan estimate future contours over the Rush Ranch property would vary from less than 60 CNEL to as high as 75-80 CNEL. Unlike constant noise from a freeway, aircraft noise is usually characterized by periods of quiet between aircraft flyovers. Thus, like current activities at Rush Ranch, future activities would be periodically interrupted by aircraft noise that could periodically hinder normal conversations. While more visitors may be exposed to the aircraft noise, the periodic interruptions would be similar to the existing conditions at the site. Therefore this impact would be ***Less than Significant***.

f. The Project would not be affected by noise from any known private airstrips. Therefore the project would have ***No Impact*** associated with airstrips.

4.13 Population and Housing

Checklist Items: Would the project		Significant Impact	Less Than Significant Impact With Mitigation	Less Than Significant Impact	No Impact
a.	Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	■
b.	Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	■
c.	Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	■

4.13.1 Setting

The headquarters at the Rush Ranch Open Space Preserve includes a caretaker residence and overnight quarters. The overnight quarters are currently approved for R3 occupancy and are primarily used by researchers conducting studies at Rush Ranch.

4.13.2 Discussion

a. The Proposed Project would not alter the existing caretaker's residence on the site. The project intends to obtain approval for general-purpose usage of the overnight quarters in the preserve headquarters to allow rental of the facility to the general public for overnight stays, but would not add any permanent residences. The project would not increase employment on the site, extend roads or other infrastructure, or substantially change visitor numbers at the site. There would be ***no impact*** on growth, either directly or indirectly, and no mitigation is required.

b. The Proposed Project would not alter the existing caretaker's residence on the site. The project would not displace any housing and would not necessitate the construction of replacement housing elsewhere. There would be ***no impact*** on housing, and no mitigation is required.

c. The Proposed Project would not alter the existing caretaker's residence on the site. The project would not displace any residents and would not necessitate the construction of replacement housing elsewhere. There would be ***no impact*** on residents, and no mitigation is required.

4.14 Public Services

Checklist Items: Would the project		Significant Impact	Less Than Significant Impact With Mitigation	Less Than Significant Impact	No Impact
a.	Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, 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:				
1)	Fire Protection?	☐	☐	■	☐
2)	Police Protection?	☐	☐	■	☐
3)	Schools?	☐	☐	☐	■
4)	Parks?	☐	■	☐	☐
5)	Other Public Facilities?	☐	☐	☐	■

4.14.1 Setting

Fire protection and emergency medical service for the project site is provided by the Suisun Fire Protection District, a volunteer fire protection district. The Solano County Sheriff's Department provides law enforcement services throughout the unincorporated county, including Rush Ranch. Solano County has seven K-12 school districts: (1) Benicia, (2) Dixon, (3) Fairfield-Suisun, (4) River Delta (Rio Vista), (5) Travis, (6) Vacaville, and (7) Vallejo City. The closest schools to the project site are located in Suisun City approximately 1.5 miles to the north.

4.14.2 Discussion

a.1. The Proposed Project includes prescribed burning for weed control, which requires a permit from the Suisun Fire Protection District, and is managed by the Bay Area Air Quality Management District. Prescribed burning is allowed only on days with low wind and stable air, which limits the risk that the fire would spread out of control and requires a response by the Suisun Fire Protection District.[24] Other project components do not have the potential to substantially increase the demand for fire protection services. There would be no new residents, and the number of events and attendees at Rush Ranch would not change substantially. No new or physically altered fire protection facilities would be required. This impact would be ***less than significant***, and no mitigation is required.

a.2. The Proposed Project components do not have the potential to substantially increase the demand for police protection services. There would be no new residents, and the number of events and attendees at Rush Ranch would not change substantially. The Solano County Sheriff's Office does not anticipate that the project would result in a significant increase in the number of service calls generated by Rush Ranch Open Space Preserve.[25] No new or physically altered law enforcement facilities would be required. This impact would be ***less than significant***, and no mitigation is required.

a.3. There are no schools within one mile of the Project site. None of the project components would result in population growth, directly or indirectly. The project would not impact schools through generation of additional students, because the project does not include new residences, or through proximity of school facilities because the nearest school is approximately 1.5 miles from the project site. No new or altered school facilities would be required. Therefore, there would be ***no impact*** and no mitigation is required.

a.4. The Proposed Project would improve existing recreation facilities, but would not create additional demand or use at other parks in Solano County, or require new or altered park facilities. As discussed in 2.15 Recreation, the Proposed Project consists, in part, of new and enhanced recreational facilities and activities on the project site. The impacts of these facilities and activities are assessed in the other sections of this Initial Study, and have been determined be mitigable to a less-than-significant level. Therefore, the impact would be ***less than significant with mitigation incorporated***.

a.5. The Proposed Project would not create additional demand for public services other than those discussed above. No new or altered public service facilities would be required. Therefore, there would be ***no impact*** and no mitigation is required.

[24] Alfred Abruzzini, Captain, Suisun Fire Protection District, personal communication, 14 December 2012.

[25] Don Bevins, Captain, Solano County Sheriff's Office, personal communication, 11 December 2012.

4.15 Recreation

	Checklist Items: Would the project	Significant Impact	Less Than Significant Impact With Mitigation	Less Than Significant Impact	No Impact
a.	Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	■
b.	Does the project include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?	☐	■	☐	☐
c.	Physically degrade existing recreational resources?	☐	■	☐	☐

4.15.1 Setting

The Rush Ranch Open Space Preserve project site is used for numerous outdoor recreation activities including hiking, picnicking, on leash dog walking on limited areas, and other activities. Rush Ranch hosts numerous organized activities and special events, including activities organized by Solano Land Trust and its partners, and private event rentals.

4.15.2 Discussion

a. The Proposed Project would continue the existing recreation uses of the site, with similar levels of use and would enhance some of the outdoor recreation facilities. Approximately one mile of the existing levee portion of the Marsh Trail around Goat Island Marsh along Suisun Slough would be closed, and replaced by an interpretive nature trail (up to 8,200 feet) and boardwalk (up to 600 feet) to the east of Suisun Slough at Goat Island Marsh. Depending on the length of new trail that is constructed, this would offset some portion of the loss of approximately one mile of

the existing levee portion of the Marsh Trail around Goat Island Marsh, which would be necessitated by the marsh restoration. The replacement trails would be located as close to the bay as possible. An interpretive nature trail, boardwalk, and platform would also be constructed at Spring Branch Creek, and a staging area and footpath extension in the East Hills. The new trails and partial replacement of the existing trail around Goat Island Marsh would continue to provide recreational hiking opportunities at the site. The Project would not generate new population or demand for use of other neighborhood or regional parks and there would be ***no impact*** on existing neighborhood or regional parks.

b. As discussed in item a, above, the Proposed Project would not require the construction or expansion of off-site recreational facilities. As described above, the Proposed Project consists, in part, of new and enhanced recreational facilities and activities on the project site. The impacts of these facilities and activities are assessed in the other sections of this Initial Study, and have been determined be mitigable to a less-than-significant level. Therefore, the impact would be ***less than significant with mitigation incorporated***.

c. As discussed in items a. and b., above, the Proposed Project consists, in part, of new and enhanced recreational facilities and activities on the project site. The impacts of these facilities and activities are assessed in the other sections of this Initial Study, and have been determined be mitigable to a less-than-significant level. Therefore, the impact would be ***less than significant with mitigation incorporated***.

4.16 Transportation and Traffic

Checklist Items: Would the project		Significant Impact	Less Than Significant Impact With Mitigation	Less Than Significant Impact	No Impact
a.	Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☐	■	☐
b.	Conflict with an applicable congestion management program, including, but not limited to level of service standard and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	☐	☐	■	☐
c.	Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	■
d.	Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible land uses (e.g., farm equipment)?	☐	☐	■	☐
e.	Result in inadequate emergency access?	☐	☐	■	☐
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?	☐	☐	■	☐

4.16.1 Setting

Vehicular access to Rush Ranch Open Space Preserve is provided by Grizzly Island Road, which passes through the project site. Grizzly Island Road connects to SR 12 north of the project site and dead-ends on Grizzly Island southeast of the site. Grizzly Island Road, which is maintained by Solano County, serves rural developments, managed wetlands, and agricultural operations in the project vicinity, and provides the only road access to Rush Ranch Open Space Preserve and Grizzly Island. Grizzly Island Road is a rural, two-lane road that operates with low traffic volumes and a high level of service (LOS), except during busy recreational events, such as opening day of duck hunting season.

FAST (Fairfield and Suisun Transit) provides bus service in the Fairfield/Suisun area. The nearest routes to the project site pass along SR 12. There is no public transit on Grizzly Island Road serving the project site.

There are no existing bicycle routes on Grizzly Island Road within the project site, but a Class III bicycle route along Grizzly Island Road through the project site is proposed in the Solano Countywide Bicycle Plan.[26]

The portion of Grizzly Island Road within the project site contains no sidewalks or pedestrian facilities. No pedestrian routes are designated on the segment of Grizzly Island Road within the project site in the Solano Countywide Pedestrian Plan.[27]

4.16.2 Discussion

a. **Construction:** Project construction would generate short-term vehicle traffic associated with construction employees accessing the site, equipment and materials being delivered, and off-haul of fill from the project site. Construction of the Proposed Project would include various components such as headquarters structure improvements, new/improved parking areas, trails, and habitat restoration/enhancement.

Project phases would require a crew of ten or fewer workers. Delivery of construction materials to the site for headquarters improvements would result in a maximum of three trucks (six truck trips) per day. Restoration work at Goat Island Marsh, Suisun Hill Hollow, and Spring Branch Creek would require a single mobilization of earthmoving equipment (bulldozer, excavator, and dump trucks), which would remain on the project site until the completion of all the restoration work. A total of approximately 34,200 cubic yards of fill would be excavated to construct the habitat

[26] Solano Transportation Authority, *Solano Countywide Bicycle Plan*, October 2004, pages 43 and 91.

[27] Solano Transportation Authority, *Solano Countywide Pedestrian Plan*, October 2004, Figure 2.2.

restoration and enhancement projects. Approximately 24,300 cubic yards of this excavated material would be placed elsewhere on the Rush Ranch project site, which would not generate off-site traffic. The remaining 9,900 cubic yards would be placed off-site and would generate vehicle traffic on Grizzly Island Road, SR 12, and other roads in the project vicinity. The soil will be used at an adjacent restoration site, Hill Slough, owned by the California Department of Fish and Wildlife (CDFW). CDFW has indicated they will accept the material and it can be stockpiled on their site prior to their use (Sarah Estrella, CDFW, personal communication with Steve Kohlmann of SLT, 2015). The Hill Slough site is approximately one mile to the north of Rush Ranch. At a capacity of 10 cubic yards per truck, off-haul of fill would result in 990 truckloads (1,980 truck trips). Assuming a two-month construction period (43 working days per month), this would result in approximately 46 truck trips per working day, or less than 6 trips per hour over an eight-hour working day. The construction off-haul truck traffic of 990 truckloads shall be restricted to the dry summer and fall month to avoid potential damage to Grizzly Island Road. Construction worker vehicles and materials deliveries would contribute an additional, smaller number of daily trips. This number of additional vehicle trips would not have a substantial effect on the levels of service on Grizzly Island Road, SR 12, and other nearby roads and intersections. Furthermore, the impacts of construction traffic would be temporary and limited in duration. It is unlikely that construction of more than two restoration/enhancement projects would occur simultaneously; thus reducing the number of construction-related trips in any given day. For these reasons, project construction would not conflict with applicable plans, ordinances or policies establishing measures of effectiveness for the performance of the circulation system. The impact would be ***less than significant.***

Operation: After completion of the Project, there would be a bus roundabout and an expanded, improved parking area at the headquarters area, and a new staging area for a trail to the East Hills with eight to ten parking spaces. Public access, special events, and other visitor activities at the site would continue, at a level that is similar to or a small increase over current use levels. As shown in Table 1-8, the largest event at the facility would occur one day per year and would involve 300 to 1,500 visitors. At an average vehicle occupancy of 3 persons, there would be up to 500 vehicles, or 1,000 vehicle trips. For an eight-hour event, there would be an average of 125 vehicle trips per hour. These vehicles would pass through the nearest intersection to the project site, Grizzly Island Road and SR 12, which is discussed above. As noted in Proposed Site Utilization, this would be similar to, or a small increase over, current use levels and vehicle traffic. During project operation, the transportation improvements at the ranch headquarters would improve circulation but would not substantially increase traffic levels on local roads. The new staging area for a trail to the East Hills with approximately eight to ten parking spaces would result in a small increase in vehicle trips to the site, which would be distributed throughout the day, and would not add substantially to morning or evening peak period traffic or substantially affect levels of service on local roads and intersections. Because the number of users at the site would not increase substantially, if at all, there would not be a substantial increase in project-generated vehicle trips. For these reasons, project operation would not conflict with applicable plans, ordinances or policies establishing measures of effectiveness for the performance of the circulation system. The impact of project operation on transportation would be ***less than significant***, and no mitigation is required.

b. As discussed under item a, above, neither Project construction nor operation would substantially increase vehicle traffic or affect levels of service on nearby roads and intersections. Therefore, the Project would not conflict with applicable congestion management programs. The impact of the Project on congestion management programs would be ***less than significant***, and no mitigation is required.

c. The Project site is approximately three miles southwest of Travis Air Force Base (AFB), and is within the Airport Influence Area of Travis AFB.[28] The Project would include construction of structures, but these project structures would not exceed the height of the existing structures on the site, which include windmills and a wind turbine. The Proposed Project does not have the potential to change air traffic patterns, either by an increase in traffic levels, or by a change in location that results in substantial safety risks. Therefore, there would be ***no impact*** and no mitigation is required.

d. The Proposed Project would improve circulation at the existing ranch headquarters by adding a bus roundabout and expanding the parking area, but would not otherwise alter roads and circulation on and near the project site. The Project contains no design features such as sharp curves or dangerous intersections that would substantially increase hazards. Project construction would temporarily increase traffic in the project vicinity, but this increase would have less than significant impacts on transportation and circulation. Project operation would not involve substantially greater numbers of visitors than currently, and would not substantially increase traffic in the project vicinity. The impact of the Project on transportation hazards would be ***less than significant***, and no mitigation is required.

e. As discussed in item d, above, the Proposed Project would improve circulation at the ranch headquarters, but would not otherwise alter roads and circulation on and near the project site. Neither project construction nor project operation would create permanent barriers to access for emergency vehicles. The impact of the project on emergency access would be ***less than significant***, and no mitigation is required.

f. Project construction would temporarily generate additional vehicle traffic in the project vicinity, but would not significantly affect circulation. Project operation also would not generate substantial additional vehicles on local roads or have a significant impact on transportation. The project would not alter public roads or rights-of-way, and there is no public transit, or formal bicycle or pedestrian facilities, serving the site. Therefore, the Project would not substantially decrease the performance or safety of public transit, bicycle, or pedestrian facilities, or conflict with adopted policies, plans, or programs regarding public transit, bicycle, and pedestrian facilities. The impact of the Project on public transit, bicycle, and pedestrian facilities and plans would be ***less than significant***, and no mitigation is required.

[28] County of Solano, *Solano County General Plan*, November 2008, Chapter 2 Land Use, Figure LU-6 Airport Influence Areas.

4.17 Utilities and Service Systems

Checklist Items: Would the project		Significant Impact	Less Than Significant Impact With Mitigation	Less Than Significant Impact	No Impact
a.	Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	■
b.	Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	■	☐
c.	Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	■	☐
d.	Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	■	☐
e.	Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	■
f.	Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	■	☐
g.	Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	■	☐

4.17.1 Setting

Wastewater Treatment

The existing ranch headquarters is served by an alternative septic system, installed in 2007 concurrent with the construction of the Rush Ranch Nature Center. The design flow is 1,200 gallons per day. The system includes a 3,000-gallon concrete, watertight septic tank, and pretreatment accessories.

Water Supply

Drinking water at Rush Ranch is pumped from an on-site well by a wooden windmill into two 8,000-gallon tanks, with 5,000 gallons held in reserve for fire and emergencies. Drinking water is purified with a multi-tiered purification process with an ozone generator, reverse osmosis through a filtration system, and ultraviolet irradiation. Current drinking water use at Rush Ranch includes a year-round residential caretaker facility (1-3 people), year-round day use by a small staff and volunteers (3-10 people), and short-term daily drop-in use by visitors.

Irrigation water at Rush Ranch is primarily used in the preserve headquarters for landscaping and occasionally for re-vegetation at habitat restoration project sites. Irrigation water is sourced from existing groundwater wells at the preserve headquarters.

Stock water at Rush Ranch is currently sourced from existing stock ponds and groundwater wells pumped by a wooden windmill in the preserve headquarters and South Pasture. Groundwater wells providing stock water are segregated from the drinking water well.

Stormwater Drainage

Existing stormwater drainage at the project site consists of a network of roadside ditches and culverts.

4.17.2 Discussion

a. The Proposed Project includes maintenance and upgrades to the existing alternative septic system, as needed. With implementation of the project, use of the existing septic system would continue; thus, no wastewater would be conveyed to a public wastewater treatment plant. There would be ***no impact*** on wastewater treatment requirements for any wastewater treatment plant.

b. The Proposed Project includes maintenance and upgrades to the existing alternative septic system, as needed. With implementation of the Project, use of the existing septic system would continue. The Project would not substantially change the existing level of visitors and usage at Rush Ranch Open Space Preserve. Thus, there would be no substantial increase in wastewater generation, and the Project would not require construction of new or expanded wastewater treatment facilities, other than the maintenance and upgrades of the existing on-site alternative septic system. The maintenance and upgrades of the existing on-site alternative septic

system would not result in significant environmental effects. The impact on wastewater treatment facilities would be ***less than significant***.

The Proposed Project includes maintenance and upgrades to the existing on-site water supply system, including new groundwater wells, as needed. With implementation of the Project, use of the existing water supply system would continue. The Project would not substantially change the existing level of visitors and usage at Rush Ranch Open Space Preserve. Thus, there would no substantial increase in water demand, and the Project would not require construction of new or expanded water treatment facilities, other than the maintenance and upgrades of the existing on-site water system. The maintenance and upgrades of the existing on-site water system, including new groundwater wells, would not result in significant environmental effects. The impact on water treatment facilities would be ***less than significant***.

c. The Proposed Project includes drainage improvements at the ranch headquarters, including culverts and notches in the roadside berm north of the entrance gate on the west edge of Grizzly Island Road to re-direct stormwater flows, a rock or grass swale along the entrance road and west of the corrals to direct flow away from heavy use areas, and a vegetated buffer strip/infiltration basin to capture and filter surface water flows from the corrals with a small downslope pre-treatment wetland to filter flows. These Project features would improve drainage at the headquarters area, but would not result in the need for new stormwater drainage facilities or expansion of existing facilities. The impact on drainage facilities would be ***less than significant***. (See 2.9 Hydrology and Water for further discussion of stormwater drainage.)

d. As discussed in item b. above, the Proposed Project would not substantially change the existing level of visitors and usage at Rush Ranch Open Space Preserve, or result in a substantial increase in water demand. The existing on-site water supply system would be sufficient to serve the Project from existing entitlements and resources. No new or expanded entitlements would be needed. The impact on water supplies would be ***less than significant***.

e. As discussed in item a. above, with implementation of the Project, use of the existing septic system would continue; thus, no wastewater would be conveyed to a public wastewater treatment plant. There would be ***no impact*** on capacity of any public wastewater treatment plant.

f, g. The Proposed Project would generate a minor amount of construction waste, and very minor operational solid waste, because the Project would not generate additional on-site population or substantially change the existing levels of visitors and use at the site.

The California Integrated Waste Management Act of 1989 mandates a 50 percent diversion goal. The Countywide Integrated Waste Management Plan (CIWMP) prepared by Solano County indicates that the County's diversion rate was 61 percent in 2006. Since 2006 unincorporated

Solano County has met the state's requirement of diverting 50 percent of all solid waste.[29] Solid waste generated by the project would be taken to the Potrero Hills Landfill, located near State Route (SR) 12 and Suisun City. The Potrero Hills Landfill will reach its near-term capacity in 2013, but may be expanded to reach its long-term capacity in 2049.[30] In any case, the quantity of solid waste generated by the project would be very small relative to available landfill capacity, and would have a negligible effect on the Potrero Hills Landfill.

Based on the availability of adequate recycling capacity, and the project's generation of solid waste, the project is not anticipated to result in any significant impacts to landfills or laws and regulations related to solid waste. The impact is considered ***less than significant*** and no additional mitigation is required.

[29] Memo to the Solano County Planning Commission, July 10, 2010 from Narcisa Untal, Senior Planner, Integrated Waste Management Board, accessed 17 December 2012. Available on the internet at: http://www.co.solano.ca.us/civicax/filebank/blobdload.aspx?blobid=9196.

[30] County of Solano, *Solano County General Plan*, November 2008, Chapter 8 Public Facilities and Services, page PF-20.

4.18 Mandatory Findings of Significance

Checklist Items: Would the project		Significant Impact	Less Than Significant Impact With Mitigation	Less Than Significant Impact	No Impact
a.	Does the project have the potential to (1) degrade the quality of the environment, (2) substantially reduce the habitat of a 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 or prehistory?	☐	■	☐	☐
b.	Does the project have impacts that are individually limited, but cumulatively considerable? "Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.	☐	■	☐	☐
c.	Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	■	☐	☐

4.18.1 Discussion

a. The headquarters site is developed and the ground surface has already been disturbed, which reduces the potential for the Proposed Project to impact subsurface cultural resources at the headquarters area. However, given the proposed excavation elsewhere on the site, and the proposed alterations to potentially historic buildings at the site, there is a potential for disturbance of both archaeological and historic architectural resources. Based on the analysis, adequate mitigation is available to reduce impacts to cultural resources to a level of ***less-than-***

significant with mitigation and is provided in the appropriate sections of this document. No further mitigation is required.

The Proposed Project could result in potentially significant impacts to special status species. However, with implementation of identified mitigation measures, the project would not substantially reduce the habitat for fish and wildlife species, would not cause a population of fish or wildlife species to drop below self-sustaining levels, would not eliminate a plant of animal community, and would not substantially reduce the number or restrict the range of a special-status plant or wildlife species. Therefore, based on the analysis, it was determined that impacts to biological resources were ***less-than-significant with mitigation***. No further mitigation is required.

b. Cumulative projects in the vicinity of Rush Ranch include the Hill Slough Restoration Project, located immediately north of the Rush Ranch site; the Montezuma Wetlands Restoration Project, located approximately ten miles southeast of the Rush Ranch site; the proposed Interim Management Plan at the Potrero Hills Quarry, located approximately five miles east of the Rush Ranch Site; and expansion of the Potrero Hills Landfill, located approximately five miles east of the Rush Ranch Site. The Hill Slough Restoration Project, which is currently undergoing environmental review, would restore tidal, managed, transitional wetlands, and upland habitat to approximately 950 acres of diked seasonal and perennial wetlands along the northern margin of Suisun Marsh. The Montezuma Wetlands Restoration Project, encompassing approximately 1800 acres, would return local farmland to its original wetland state using an upland ecosystem format of high and low marsh created with sediment material from the Oakland Bay dredging project. The Interim Management Plan for the Potrero Hills Quarry would be an amendment to the approved reclamation plan for the quarry that would continue the ongoing reclamation at the site. Expansion of the Potrero Hills Landfill was approved by the County Board of Supervisors in 2005, but has not been implemented due to litigation**.** Based on the analysis in this Initial Study, the Proposed Project, in combination with the cumulative projects identified above, would not cause impacts that are individually limited to contribute to cumulatively considerable effects.

Some Project construction activities may overlap those of other cumulative projects, however, because of the distance of the Project from the other projects and small scale of project activities, the project's contribution to cumulative impacts, with mitigation, would be minimal. Cumulative impacts to the marsh have been analyzed and mitigated in the Suisun Marsh Plan EIR; the Proposed Project incorporates mitigation strategies from that document as applicable. Cumulative air quality impacts are addressed via compliance with the regional Air Quality Plan. Noise and traffic impacts would not overlap those of the other cumulative projects. Short-term impacts to wetlands and sensitive species are addressed in mitigation measures for each of the projects, as well as the Suisun Marsh Plan. Cumulative cultural resources impacts would be mitigated on a project-by project basis. As described in this IS, hydrologic and water quality effects of the project would be mitigated to a minimal contribution to cumulative effects on the overall Suisun Bay. Other impacts of the Project would be minimal, as described in this IS. In the long term, the project would enhance biological resources, recreation, and water quality conditions. Therefore potential cumulative effects of implementing the Proposed Project have been determined to be ***less-than-significant with mitigation***.

c. The Proposed Project would provide improved recreation opportunities and enhance wildlife habitat at the site. With implementation of mitigation measures identified in the Initial Study, all impacts would be reduced to a less-than-significant level. The project does not have the potential to cause substantial adverse effects on human beings, either directly or indirectly. Therefore, the impact is ***less than significant with mitigation.***

5 AGENCY COORDINATION AND PUBLIC INVOLVEMENT

5.1 Consultation and Coordination with Public Agencies

The Initial Study is being circulated for public comment and referred to the State Clearinghouse for coordinated review by state agencies. In addition, it will be sent to the State Coastal Conservancy, Department of Conservation and the Solano County Agriculture Commissioner and other local agencies for review and comment.

(See Section 5.0 Distribution List)

5.2 Public Participation Methods

The Initial Study is available at the Solano County Department of Resource Management and online at the Department's Planning Services Division website at:

http://www.solanocounty.com/depts/rm/documents/eir/default.asp

Interested parties may contact the planner assigned to this project at the contact points provided below:

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7 DISTRIBUTION LIST

Federal Agencies

- US Army Corps of Engineers (Corps)
- US Fish And Wildlife Service (USFWS)
- National Oceanic and Atmospheric Administration (NOAA)
- US Coast Guard (USCG)
- US Bureau of Reclamation (USBR)

State Agencies

-
- Coastal Conservancy
- California Department of Fish and Wildlife (CDFW)
- California Department of Public Health (CDPH)
- California State Lands Commission (CSLC)
- State Historical Preservation Office (SHPO)
- State Water Resources Control Board (SWRCB)

Regional Agencies

- Bay Conservation and Development Commission (BCDC)
- Regional Water Quality Control Board -- San Francisco Bay Region (SFBRWQCB)
- Bay Area Air Quality Management District (BAAQMD)

Local Agencies

- Solano County Department of Resource Management,
    - Building and Safety Services Division
    - Environmental Health Services Division
    - Parks and Recreation Division
    - Planning Services Division
    - Public Works Division
- Solano County Agricultural Commissioner
- Solano County Mosquito Abatement District (SCMAD)
- Suisun Fire Protection District
- Suisun Resource Conservation District (Suisun RCD)

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9 APPENDIX A: SPECIAL STATUS SPECIES TABLES

Appendix A: Special Status Species Table

Species	Status	Preferred Habitat(s)	Occurrence on Site
Fish			
Delta smelt (Hypomesus transpacificus)	FE	Cooler (<20-22 °C), well-oxygenated, tidal freshwater (<2 ppt) habitats in the upper SF Estuary	May occasionally utilize subtidal channel habitats in Suisun, First Mallard, and Second Mallard Sloughs
Longfin smelt (Spirinchus thaleichthys)	CSSC	Estuarine open waters with salinity between 15-30 ppt (juveniles through pre-spawn adults) or <2 ppt (spawning adults)	May occasionally utilize subtidal channel habitats in Suisun, First Mallard, and Second Mallard Sloughs
Sacramento splittail (Pogonichthys macrolepidotus)	FT	Moderately shallow (<4 m), narrow, turbid, sloughs lined with tules and other emergent vegetation in the SF Estuary	Utilizes subtidal channel habitats in Suisun, First Mallard, and Second Mallard Sloughs
Chinook salmon (*Oncorhynchus tshawytscha*): C.V. fall and late run ESU (SSC), Sac. River winter run ESU (FE), C.V. spring run ESU (FT)	See ESU, left	Spawning and rearing: Cooler, well-oxygenated, freshwater habitats throughout SF Estuary	May rarely utilize subtidal channel habitats in Suisun, First Mallard, and Second Mallard Sloughs
Steelhead (*Oncorhynchus mykiss*): Central California Coast DPS and Central Valley DPS	FT	Spawning and rearing: Cooler, well-oxygenated, freshwater habitats throughout SF Estuary	May rarely utilize subtidal channel habitats in Suisun, First Mallard, and Second Mallard Sloughs
Amphibians and reptiles			
Northwest pond turtle (*Actinemys marmorata)*	FSSC, CSSC	Freshwater and brackish ponds, marsh and lagoons, slow-moving streams	Widespread in Suisun Marsh, channel banks and channels
California tiger salamander (*Ambystoma californiense*)	FE, CE	Seasonal pools (breeding), grassland mammal burrows (estivation)	Not detected at Rush Ranch; potential suitable habitat present
California red-legged frog (*Rana draytonii*)	FT, CT	Freshwater and fresh-brackish ponds and seasonal pools, marshes	Not detected at Rush Ranch; suitable habitat present
Birds			
California clapper rail (nesting/foraging) (*Rallus longirostris obsoletus*)	FE	Tidal salt and brackish marshes in SF Estuary with unrestricted daily tidal flows, adequate invertebrate prey food supply, well developed tidal channel networks, and suitable nesting and escape cover during extreme high tide	Rush Ranch is regionally important habitat. Present in tidal marsh plains around First and Second Mallard Sloughs; may also utilize diked marsh habitat at Goat Island Marsh
California black rail	CT,	Tidal marsh habitat in SF Estuary	Rush Ranch is regionally important

Species	Status	Preferred Habitat(s)	Occurrence on Site
(nesting/foraging) (*Laterallus jamaicensis coturniculus*)	FSSC		habitat. Present in tidal marsh plains around First and Second Mallard Sloughs; may also utilize diked marsh habitat at Goat Island Marsh
Yellow rail (Coturnicops noveboracensis)	CSSC	Not well known; inhabits wet meadows and coastal tidal marshes in winter	Rush Ranch may be regionally important winter habitat. Known from tidal marsh SW of ranch complex near tidal portion of Spring Branch Creek
Cooper's hawk (nesting) (Accipiter cooperii)	CWL	Nests in trees, typically hunts in woodlands and forests; target prey is small to medium birds.	May occasionally forage over the site.
Golden eagle (nesting/foraging) (Aquila chrysaetos)	CWL CFP	Nests on cliffs or tall trees; hunts in open grasslands and other open habitats; target prey includes small mammals and birds	Known from general region and likely to forage in grasslands on site.
Short-eared owl (nesting) (Asio flammeus)	CSSC	Nests on the ground in grasslands and other tall herbaceous habitats; hunts in grasslands, marshlands and other open habitats; target prey is voles but also hunts other small mammals and birds.	Rush Ranch is regionally important habitat. Nests in significant numbers within the grasslands on the alluvial fans; hunts within the grassland and marsh habitats.
Western burrowing owl (nesting) (Athene cunicularia hypugea)	CSSC	Nests in subterranean sites, especially California ground squirrel burrows but also under rip-rap piles, in culvert pipes, and other man-made features; prefers open to low grassland and open shrub habitats where it nests and hunts; target prey is small rodents and large insects.	At least one adult has been observed on the site during the breeding season (June) indicating the species may breed on site.
Swainson's hawk (nesting/foraging) (Buteo swainsoni)	CT	Summer nesting migrant; nests in trees; hunts in open grasslands and low agricultural fields (such as alfalfa); target prey is small mammals, birds and insects.	No documented occurrences on the site but common in the general region of eastern Solano County and likely to hunt on site, at least occasionally.
Northern harrier (nesting) (Circus cyaneus)	CSSC	Nests on the ground, typically in shrubby or tall herbaceous vegetation at the edge of a marsh; hunts in open grasslands and marsh habitat; target prey is small	Rush Ranch is regionally important habitat. Commonly observed hunting and nesting on the site.

Species	Status	Preferred Habitat(s)	Occurrence on Site
		mammals, birds, reptiles, and insects.	
White-tailed kite (nesting) (Elanus caeruleus)	CFP	Nests in trees; hunts in open grasslands, marshlands, low agricultural fields and other open habitats; target prey is small mammals but will also hunt small birds, reptiles and insects.	Occasionally observed on the site hunting over the grasslands and marshlands.
Loggerhead shrike (Lanius ludovicianus)	CSSC	Nests in shrubs; hunts in grasslands, open scrub, low agricultural fields and other open habitats; target prey includes insects, reptiles, and small mammals.	Known to forage on the site.
California horned lark (Eremophila alpestris actia)	CWL	Nests on the ground in grasslands; hunts primarily in grasslands; target prey includes insects and other terrestrial invertebrates.	Forages and likely nests on the site.
Tricolored blackbird (breeding colony) (Agelaius tricolor)	CSSC	Colonial nester within tall emergent marsh and riparian scrub habitat; hunts primarily in grasslands, riparian scrub, and some annual croplands; target prey is insects and other terrestrial invertebrates.	Known from the general region with potential to nest in emergent marsh habitat within the man-made stock pond along Spring Branch Creek and perhaps within the estuarine marsh habitats.
Suisun song sparrow (nesting/foraging) (*Melospiza melodia maxillaries*)	FSSC	Broad range of tidal and non-tidal wetland habitats throughout Suisun, including riparian areas, permanent ponds, and ditches with ample vegetation and brackish water	Rush Ranch is regionally important habitat. Known to forage and nest on the site.
Salt marsh common yellowthroat (*Geothylpis trichas sinuosa*)	CSSC	Wintering: tidal marshes and other habitats (often wetland ecotones) such as riparian thickets, freshwater marshes, marshy coastal forb vegetation, and brush or scrub near wetlands; breeding: brackish marsh, salt marsh, and associated wetland habitats	Rush Ranch is regionally important habitat. Known to forage and nest on the site.
Mammals			
Salt marsh harvest mouse (*Reithrodontomys raviventris*)	FE	Saline or subsaline marsh habitats around the SF Estuary and mixed saline/brackish areas in Suisun	Rush Ranch is regionally important habitat. Known from both tidal marsh and diked marsh habitats on the site.
Suisun shrew (Sorex ornatus	FSSC,	Primarily known from ecotone between tidal wetlands	Rush Ranch is regionally critical

Species	Status	Preferred Habitat(s)	Occurrence on Site
sinuosus)	CSSC	and grassland uplands along Grizzly Island and the northern extremes of Suisun Marsh	habitat; known to breed and forage on upland-estuarine ecotones on site.
Regionally Rare Invertebrates			
Hymenopteran bumblebee mimics (*Anthophora stanfordia*)	N/A	Erosional scarps at alluvial fan and distributary channel margins; unvegetated, weakly cohesive vertical slopes in soft sandstone or sandy subsoil	Known from alkali flats, meadows, seasonal pools, and erosion scars in the lower alluvial fans at Suisun Hill Hollow and Spring Branch Creek.
Tiger beetle family taxa (Cicindelidae), including *Cicincdela haemorrhagica, C. senilis*	N/A	In/near fresh sediment deposits of unconsolidated or loosely consolidated, noncohesive silty or sandy sediment up to approximately 30 cm depth, avoiding dense root zones	Known from alkali pools in the lower alluvial fans at Spring Branch Creek and potentially Suisun Hill Hollow.
Staphylinid and Anthribid beetles	N/A	Playa-like, alkali flats	Known from Spring Branch Creek alluvial fan.
Mutilid wasps (Mutillidae): Sphaeropthalma edwardsii, Photomorphus spp.	N/A	Alkali ponds and flats	Known from Spring Branch Creek alluvial fan.
Coleaopterid beetles - *Gyascutus* spp., potentially *G. pacificus*	N/A	On *Chenopodiaceae* sp. and *Frankenia* in alluvial flats and also in tidal marsh	Known from Spring Branch Creek alluvial fan.
Camel spider/Sun-scorpion (Sulifugae)	N/A	Alkali flats and barren trampled trails	Known from Spring Branch Creek alluvial fan.
Aquatic Coleopteran beetles (Dytiscidae and Hydrophilidae)	N/A	Vernal pool and alkali vernal pool habitats of alluvial flats and uplands	Known from Spring Branch Creek and Suisun Hill Hollow alluvial fans.
Heterocidae (mud-loving beetles with scissor jaws)	N/A	Alkali vernal pools	Known from Spring Branch Creek alluvial fan.
Robber-fly (*Wilcoxia* spp.)	N/A	Alkali flats and barren trampled trails	Known from Spring Branch Creek alluvial fan.
Plants			
Bolander's water-hemlock (*Cicuta maculata* L. var. *bolanderi,* syn. *Cicuta bolanderi*)	FSSC	Brackish tidal high marsh	Rare in SF Estuary and CA; Rush Landing, local
Suisun thistle (Cirsium hydrophilum var.	FE, CE	Brackish tidal high marsh near channel	Rare, endemic to Suisun Marsh; limited

Appendix A: Special Status Species Table

Species	Status	Preferred Habitat(s)		Occurrence on Site
hydrophilum)			or ditch banks	to Rush Ranch tidal marsh
Soft bird's-beak (*Chloropyron molle)*		FE, CE	Brackish tidal high marsh	Rare, endemic to northern San Francisco Estuary; local at Rush Ranch tidal marsh
Jepson's tule pea (*Lathryrus jepsonii* var. *jepsonii*)		FSSC, CSSC	Brackish tidal high marsh channel banks, levees	Uncommon in eastern San Francisco Estuary and Delta; locally in Rush Ranch tidal marsh
Mason's lilaeopsis (*Lilaeopsis masonii*)		FSSC, CSSC	Brackish tidal marsh turf, eroded banks	Uncommon in eastern San Francisco Estuary, occasional at Rush Ranch tidal marsh
Lyngbye's sedge (*Carex lyngbyei*)		N/A	Brackish tidal low marsh, middle marsh	Rare in SF Estuary; Hill Slough, upper Suisun Slough
Suisun aster (Symphiotrichum lentum)		FSSC, CSSC	Brackish tidal high marsh	Uncommon in eastern San Francisco Estuary and Delta; locally in Rush Ranch tidal marsh

10 APPENDIX B: SMP ENVIRONMENTAL COMMITMENTS

Environmental Commitments

As part of the plan implementation, individual project proponents will incorporate certain environmental commitments and BMPs into specific projects to avoid or minimize potential impacts as applicable. Project proponents and the appropriate agencies also will coordinate planning, engineering, and design phases of the project. The environmental commitments are divided between Restoration Activities and Managed Wetland Activities. For restoration activities, project proponents are defined as any state, federal or local agency, landowner, or implementing body of a restoration action. For managed wetland activities, the SMPA Agencies (SRCD, DFG, DWR, and/or Reclamation) are the project proponents and will be responsible for implementing the environmental commitments, depending on the activity (Table 1-1).

Restoration Environmental Commitments

The following BMPs and environmental commitments will be implemented during restoration activities. The environmental commitments discussed below apply to the activities described in the Restore Tidal Wetlands section above.

Standard Design Features and Construction Practices

USFWS, Reclamation, and DFG, as lead agencies for the SMP, determined the following design features and construction practices to be potentially feasible and implementable measures to reduce or mitigate certain short-term, construction-related effects. These measures would be implemented at a site-specific level, as appropriate, depending on the location of construction, potential effects of the specific project, and surrounding land uses. The identified measures are:

- Stopping work immediately if a conflict with a utility facility occurs and contacting the affected utility to (1) notify it of the conflict, (2) aid in coordinating repairs to the utility, and (3) coordinate to avoid additional conflicts in the field.
- Constructing structures in accordance with California Building Code and County General Plan Standards to resist seismic effects and to meet the implementation standards outlined in the Solano County General Plan.
- Ensuring that changes within the Suisun Marsh channels will not significantly affect navigation and emergency access by having Rio Vista and Vallejo Coast Guard Stations review plans to assess safety issues associated with changes when there is potential for in-channel work to affect access.
- Implementing BMPs to minimize any disease-carrying mosquitoes and threats to public health if it is found that project components pose a threat to public health.

- Controlling construction equipment access and placement of fill to maintain acceptable loading based on the shear strength of the foundation material.
- Minimizing degradation of wetland habitats where feasible, i.e., work will be conducted from levee crown.
- Implementing BMPs and measures to minimize water quality impacts such as temporary turbidity increases. See Erosion and Sediment Control Plan below.
- Inspecting all equipment for oil and fuel leaks every day prior to use. Equipment with oil or fuel leaks will not be used within 100 feet of wetlands.
- Requiring the construction contractor to remove all trash and construction debris after construction and to implement a revegetation plan for temporarily disturbed vegetation in the construction zones.
- Maintaining waste facilities. Waste facilities include concrete wash-out facilities, chemical toilets, and hydraulic fluid containers. Waste will be removed to a proper disposal site.

Access Point/Staging Areas

Project proponents will establish staging areas for equipment storage and maintenance, construction materials, fuels, lubricants, solvents, and other possible contaminants in coordination with resource agencies. Practices and procedures for construction activities along city and county streets will be consistent with the policies of the affected local jurisdiction.

Staging areas will have a stabilized entrance and exit and will be located at least 100 feet from bodies of water unless site-specific circumstances do not allow such a setback, in which case the maximum setback possible will be used. If an off-road site is chosen, qualified biological and cultural resources personnel will survey the selected site to verify that no sensitive resources would be disturbed by staging activities. If sensitive resources are found, an appropriate buffer zone will be staked and flagged to avoid impacts. If impacts on sensitive resources cannot be avoided, the site will not be used. An alternate site will be selected.

Where possible, no equipment refueling or fuel storage will take place within 100 feet of a body of water. Vehicle traffic will be confined to existing roads and the proposed access route. Ingress and egress points will be clearly identified in the field using orange construction fence. Work will not be conducted outside the designated work area.

Erosion and Sediment Control Plan

For projects that could result in substantial erosion, project proponents will prepare and implement an erosion and sediment control plan to control short-term and long-term erosion and sedimentation effects and to restore soils and

vegetation in areas affected by construction activities. The plan will include all the necessary local jurisdiction requirements regarding erosion control and will implement BMPs for erosion and sediment control as required.

An erosion control plan will be developed to ensure that during rain events construction activities do not increase the levels of erosion and sedimentation. This plan will include the use of erosion control materials (baffles, fiber rolls, or hay bales; temporary containment berms) and erosion control measures such as straw application or hydroseeding with native grasses on disturbed slopes, and floating sediment booms and/or curtains to minimize any impacts that may occur from increased mobilization of sediments.

Stormwater Pollution Prevention Plan

For projects that involve grading or disturbance of more than 1 acre, a stormwater pollution prevention plan (SWPPP) will be developed by a qualified engineer or erosion control specialist and implemented prior to construction. The objectives of the SWPPP would be to (1) identify pollutant sources associated with construction activity and project operations that may affect the quality of stormwater and (2) identify, construct, and implement stormwater pollution prevention measures to reduce pollutants in stormwater discharges during and after construction. The project proponents and/or their contractor(s) will develop and implement a spill prevention and control plan as part of the SWPPP to minimize effects from spills of hazardous, toxic, or petroleum substances during construction of the project. Implementation of this measure would comply with state and federal water quality regulations. The SWPPP will be kept on site during construction activity and during operation of the project and will be made available upon request to representatives of the RWQCB. The SWPPP will include but is not limited to:

- a description of potential pollutants to stormwater from erosion,
- management of dredged sediments and hazardous materials present on site during construction (including vehicle and equipment fuels),
- details of how the sediment and erosion control practices comply with state and federal water quality regulations, and
- a description of potential pollutants to stormwater resulting from operation of the project.

Noise Compliance

The project proponents and/or their contractors will comply with local noise regulations when construction activities occur near residences by limiting construction to the hours specified by Solano County. It is assumed that construction activities would occur during normal working hours, between

7:00 a.m. and 6:00 p.m., Monday through Friday, and between 8:00 a.m. and 5:00 p.m., Saturday and Sunday.

Additionally, when it is determined through site-specific analysis that construction has the potential to occur near residences, noise-reduction practices listed below will be implemented.

1. Use electrically powered equipment instead of internal combustion equipment where feasible.
2. Locate staging and stockpile areas and supply and construction vehicle routes as far away from sensitive receptors as possible.
3. Establish and enforce construction site and haul road speed limits.
4. Restrict the use of bells, whistles, alarms, and horns to safety warning purposes.
5. Design equipment to conform to local noise standards.
6. Locate equipment as far from sensitive receptors as possible.
7. Equip all construction vehicles and equipment with appropriate mufflers and air inlet silencers.
8. Restrict hours of construction to periods permitted by local ordinances.
9. Locate redirected roadways away from sensitive receptors.

Traffic and Navigation Control Plan and Emergency Access Plan

For projects that would substantially affect traffic or navigation patterns, or could result in hazardous road or waterway conditions, the project proponents, in coordination with affected jurisdictions, will develop and implement a traffic and navigation control plan, which will include an emergency access plan to reduce construction-related effects on the local roadway and waterway systems and to avoid hazardous traffic and circulation patterns during the construction period. All construction activities will follow the standard construction specifications and procedures of the appropriate jurisdictions, and will avoid major construction activities on days known or expected to have a significant increase in traffic as a result of events in the Marsh.

The traffic and navigation control plan will include an emergency access plan that provides for access into and adjacent to the construction zone for emergency vehicles. The emergency access plan, which requires coordination with emergency service providers such as the Coast Guard before construction, would require effective traffic and navigation direction, substantially reducing the potential for disruptions to response routes.

The traffic and navigation control plan will include but not be limited to the following actions, depending on site-specific conditions:

- coordinating with the affected jurisdictions on construction hours of operation;
- following guidelines of the local jurisdiction for road closures caused by construction activities;
- installing traffic control devices as specified in the California Department of Transportation's (Caltrans's) *Manual of Traffic Controls for Construction and Maintenance Works Zones* (2004);
- notifying the public of road closures in the immediate vicinity of the open trenches in the construction zone and of temporary closures of recreation trails;
- posting signs that conform to the California Uniform State Waterway Marking System upstream and downstream of the dredge areas to warn boaters of work;
- providing access to driveways and private roads outside the immediate construction zone;
- coordinating with Solano County to monitor and repair road damage to levee roads and any other roads damaged during construction to the extent allowed by law, depending on the specific project proponent. An MOU may be implemented for specific restoration projects and could include the following as suggested by Solano County:
  - The restoration project will be responsible for the cost of maintaining, repairing, paving and/or reconstructing roads affected during construction, operation, and maintenance of the restoration project.
  - Repairs will be implemented to comply with the current County Road Improvement Standards, except that repairs to damaged paved sections may be made within 5 inches of asphalt concrete at the discretion of the County, while repairs to damaged gravel sections of road will replace the preexisting depth of aggregate base but not less than 12 inches in depth;
- coordinating with the Union Pacific Railroad prior to beginning any work within the right-of-way of a rail line to ensure that the integrity of the rail line is maintained and to minimize disruptions to service; and
- coordinating with emergency service providers before construction to develop an emergency access plan for emergency vehicles into and adjacent to the construction zone; the emergency access plan would require effective traffic direction, substantially reducing the potential for disruptions to response routes.

Recreation Best Management Practices

The project proponents will implement measures related to recreation and recreation facilities to decrease impacts.

- Avoid nesting habitats and other sensitive areas, such as important roosting and foraging sites during critical nesting periods.

Temporary impacts on boating access may be minimized by:

- not allowing construction to occur during major summer holiday periods;
- maintaining boat access to prime areas;
- providing public information regarding alternate access;
- posting warning signs and buoys in channels, upstream of and downstream of all construction equipment, sites, and activities, during construction;
- posting signs describing alternate boating routes in convenient locations when boating access is restricted; and
- minimizing water-level fluctuation during construction.

Mosquito Abatement Best Management Practices

As described in Section 7.8, Public Health and Environmental Hazards, the Solano County Mosquito Abatement District (SCMAD) is concerned that tidal restoration has the potential to increase mosquito production in the Marsh. However, tidal restoration would be designed to minimize such effects. To further reduce the potential for this effect to occur, SCMAD has recommended several measures to reduce the potential for the production and subsequent spread of diseases carried by mosquitoes. Specific project proponents would develop site-specific plans to address mosquito production for each restoration activity based on the following recommendations, which would be implemented prior to removal or breaching of any levee or water control structure:

1. Develop a management program consistent with Marsh-wide management actions for the control of mosquitoes.
2. If necessary, obtain an engineering survey to locate depressions that would retain tidal water and design site restoration to promote water drainage.

Hazardous Materials Management Plan

A hazardous materials spill plan will be developed prior to construction of each action. The plan will describe the actions that will be taken in the event of a spill. The plan also will incorporate preventive measures to be implemented (such as vehicle and equipment staging, cleaning, maintenance, and refueling) and contaminant (including fuel) management and storage. In the event of a contaminant spill, work at the site immediately will cease until the contractor has contained and mitigated the spill. The contractor will immediately prevent further contamination, notify appropriate authorities, and mitigate damage as appropriate. Adequate spill containment materials, such as oil diapers and hydrocarbon cleanup kits, will be available on site at all times. Containers for

storage, transportation, and disposal of contaminated absorbent materials will be provided on the project site.

The project proponents and their contractors will not use any hazardous material in excess of reportable quantities, as specified in Title 40 CFR Part 355, Subpart J, Section 355.50, unless approved in advance by the Office of Emergency Services (OES), and will provide to the OES in the annual compliance report a list of hazardous materials contained at a project site in reportable quantities. The reporting of Hazardous Materials in excess of reportable quantities of Title 40 CFR Part 355 is required annually to Solano County Environmental Health Services Division as the Solano County Certified Unified Program Agency (CUPA).

For large-scale projects, the project proponents will prepare a risk management plan (RMP). The RMP will be submitted to EPA and will reflect the comments of the Solano County CUPA. An RMP addresses acutely hazardous materials such as chlorine gas, ammonia gas, hydrogen chloride, flammable gases. This document is required to be submitted to both the EPA and Solano County Environmental Health Services Division as the CUPA. The plan will describe procedures, protective equipment requirements, and training and contain a checklist. At least 60 days prior to the start of construction, or a lesser period of time as mutually agreed upon, the project proponents will provide the final RMP and the safety plan to the Certified Property Manager (CPM).

Air Quality Best Management Practices

The following control practices will be used to offset any air quality issues that may arise (Bay Area Air Quality Management District 1999).

Basic Control Measures

The following controls will be implemented at all construction sites.

- Treat all graded surfaces to prevent nuisances from dust or spillage on roads or adjacent properties.

Enhanced Control Measures

The following measures will be implemented at construction sites greater than 4 acres in area.

- Hydroseed with native or non-invasive species appropriate to that specific location or apply (nontoxic) soil stabilizers to inactive construction areas (i.e., previously graded areas inactive for 10 days or more).
- Limit traffic speeds on unpaved roads to 15 mph.

- Install sandbags or other erosion control measures to prevent silt runoff to public roadways.
- Replant vegetation with native or non-invasive species appropriate to that specific location in disturbed areas as quickly as possible.

Additional Air Quality Best Management Practices

In addition to the above BMPs, the following measures will be required in order to further reduce construction emissions:

- maintain properly tuned engines;
- minimize the idling time of diesel-powered construction equipment to 2 minutes;
- use alternative-powered (e.g., hybrid, compressed natural gas, biodiesel, electric) construction equipment;
- use add-on control devices such as diesel oxidation catalysts or particulate filters; and
- require all contractors to use equipment that meets California Air Resources Board's (ARB's) most recent certification standard for off-road heavy-duty diesel engines.

Visual/Aesthetic Best Management Practices

For projects that have the potential to affect views or create a new source of light or glare, project proponents will identify sensitive view receptors for site-specific analysis and ensure that contractors minimize fugitive light from portable sources used for nighttime operations. Also, a visual barrier will be installed to prevent light spill from truck headlights in areas with sensitive view receptors.

Inadvertent Discovery of Cultural Resources

Federal and state laws and regulations outline the courses of action required in the event of inadvertent discoveries of cultural resources, including human remains. Section 106 of the National Historic Preservation Act (NHPA) allows for federal agencies to plan for post-Section 106 review, or inadvertent, discoveries of cultural resources prior to authorization of a federal action or undertaking (36 CFR 800.13[a]). One avenue for planning is through a programmatic agreement (PA) (see 36 CFR 800.13[a][2]). Such PAs must define the parties responsible for action in the event of cultural resource discoveries, communication protocols, response times, and specific action items. The cultural resources analysis in this EIS/EIR identifies a PA as a critical element in mitigating significant effects on cultural resources; the PA will include provisions for inadvertent discoveries.

Federal and state laws and regulations impose additional requirements specific to the discovery of human remains and associated artifacts. On federal or tribal land, human remains discoveries are subject to the Native American Grave Protection and Repatriation Act (NAGPRA). Additionally, Reclamation has specific policies for the implementation of the NAGPRA provisions (Reclamation Directives and Standards LND 07-01). For human remains discoveries on non-federal land, the requirements of the California Public Resources Code and Health and Safety Code apply, as described below. In the event that human remains are discovered inadvertently during ground-disturbing activities, the lead state or federal agency will implement the following measures. These measures also will be discussed, with explicit treatment of roles and responsibilities under the various applicable regulations, in the PA referenced previously.

- The contractor immediately will cease work within 100 feet of the find. All construction personnel will leave the area. Vehicles and equipment will be left in place until a qualified archaeologist identifies a safe path out of the area. The on-site supervisor will flag or otherwise mark the location of the find and keep all traffic away from the resource. The on-site supervisor immediately will notify the lead state or federal agency of the find.
- The lead federal agency is responsible for compliance with NAGPRA (43 CFR 10) if inadvertent discovery of Native American remains occurs on federal lands. The lead federal agency is responsible for compliance with state laws relating to the disposition of Native American burials (Public Resources Code [PRC] 5097 and California Health and Safety Code 7050.5[b]) for human remains discoveries on non-federal lands.
- If human remains of Native American origin are discovered during ground-disturbing activities on non-federal land, the lead state or federal agency must comply with state laws relating to the disposition of Native American burials, which fall within the jurisdiction of the Native American Heritage Commission (NAHC) (PRC 5097). If human remains are discovered or recognized in any location other than a dedicated cemetery, the lead state or federal agency will not allow further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent human remains until:
  - the Solano County coroner has been informed and has determined that no investigation of the cause of death is required; and
  - if the remains are of Native American origin,
    - the descendants of the deceased Native Americans have made a recommendation to the landowner or the person responsible for the excavation work for means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods as provided in PRC 5097.98; or
    - the NAHC was unable to identify a descendant or the descendant failed to make a recommendation within 48 hours after being notified by the NAHC.

Biological Resources Best Management Practices

The following section outlines the potential BMPs that would be implemented to avoid or minimize impacts on biological resources. The BMPs that are implemented for each specific project will depend on the project location, potential to adversely affect biological resources, and guidance and requirements set forth by resource agencies through informal and formal consultations. Environmental commitments, including an erosion and sediment control plan, SWPPP, hazardous materials management plan, spoils disposal plan, and environmental training content will be provided to NMFS, USFWS, and DFG 30 days prior to construction activities commencing at a restoration site. Any adverse effects on special-status species, critical habitat, or essential fish habitat (EFH) attributable to construction activities may require implementation of additional avoidance or mitigation measures. NMFS, USFWS, and DFG will be consulted, and additional avoidance and mitigation measures may be implemented on a site-specific basis.

General Best Management Practices

- No firearms (except for federal, state, or local law enforcement officers and security personnel) will be permitted at the project site to avoid harassment, killing, or injuring of wildlife.
- No pets will be permitted at the project site to avoid harassment, killing, or injuring of wildlife.
- Native vegetation trimmed or removed on the project site will be stockpiled during work. After construction activities, removal of temporary mats and construction-related materials, and application of native seed mix have been completed, stockpiled native vegetation will be reapplied over temporarily disturbed wetlands to provide temporary soil protection and as a seed source.
- Where vegetation removal is required, work will be conducted using hand-held tools to enable wildlife to escape. If any areas with pickleweed or vegetation within 50 feet of the edge of pickleweed need to be cleared for project activities, vegetation shall be removed only with non-mechanized hand tools (i.e., trowel, hoe, rake, and shovel). No motorized equipment, including weed whackers and lawn mowers, shall be used to remove this vegetation. Vegetation shall be removed under the supervision of a qualified biologist approved by DFG and USFWS. If a mouse of any species is observed within the areas being removed of vegetation, DFG and USFWS shall be notified. Vegetation removal may begin when no mice are observed and shall start at the edge farthest from the salt marsh or the poorest habitat and work its way toward the salt marsh or the better salt marsh habitat.
- Removal of vegetation in wetland habitat will be conducted with a qualified biological monitor present. This monitor will watch for special-status wildlife species and temporarily stop work if special-status species are encountered. Wildlife will be allowed to escape before work is resumed. Monitors with the appropriate qualifications to handle special-status species

will be allowed to move special-status species to safe locations as permitted by their authorizations.

- Temporarily affected wetlands will be restored by removing construction-related debris, and trash. Affected areas will be seeded with a seed mix of local native wetland species.

Worker Training

Project proponents will provide training to field management and construction personnel on the importance of protecting environmental resources. Communication efforts and training will be done during preconstruction meetings so that construction personnel are aware of their responsibilities and the importance of compliance.

Construction personnel will be educated on the types of sensitive resources located in the project area and the measures required to avoid impacts on these resources. Materials covered in the training program will include environmental rules and regulations for the specific project and requirements for limiting activities to the construction right-of-way and avoiding demarcated sensitive resources areas. Training seminars will educate construction supervisors and managers on:

- the need for resource avoidance and protection,
- construction drawing format and interpretation,
- staking methods to protect resources,
- the construction process,
- roles and responsibilities,
- project management structure and contacts,
- environmental commitments, and
- emergency procedures.

If new construction personnel are added to the project, the contractor will ensure that the personnel receive the mandatory training before starting work. A representative will be appointed during the employee education program to be the contact for any employee or contractor who might inadvertently kill or injure a listed species or who finds a dead, injured, or entrapped individual. The representative's name and telephone number will be provided to the USFWS before the initiation of ground disturbance.

Special-Status Plant Species Protection

A complete botanical survey of restoration areas will be completed using the USFWS's *Guidelines for Conducting and Reporting Botanical Inventories for*

Federally Listed, Proposed and Candidate Plants (September 23, 1996) (U.S. Fish and Wildlife Service 1996a) and DFG's *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (November 24, 2009) (California Department of Fish and Game 2009).

- Special-status plant surveys required for project-specific permit compliance will be conducted within 1 year prior to initiating construction. The purpose of these surveys will be to verify that the locations of special-status plants identified in previous surveys are extant, identify any new special-status plant occurrences, and cover any portions of the project area not previously identified. The extent of mitigation of direct loss of or indirect impacts on special-status plants will be based on these survey results.
- Locations of special-status plants in proposed construction areas will be recorded using a global positioning system (GPS) unit and flagged.
- If initial screening by a qualified biologist identifies the potential for special-status plant species to be directly or indirectly affected by a specific project, the biologist will establish an adequate buffer area to exclude activities that would directly remove or alter the habitat of an identified special-status plant population or result in indirect adverse effects on the species.
- Access may be restricted around restoration sites where necessary to protect special-status plant populations though appropriate management plans and the design of the tidal marsh restoration. This may include signage, buffers, seasonal restrictions and design or no access depending on the sensitive species in question.
- The project proponents will oversee installation of a temporary, plastic mesh–type construction fence (Tensor Polygrid or equivalent) at least 1.2 meters (4 feet) tall around any established buffer areas to prevent encroachment by construction vehicles and personnel. A qualified biologist will determine the exact location of the fencing. The fencing will be strung tightly on posts set at maximum intervals of 3 meters (10 feet) and will be checked and maintained weekly until all construction is complete. The buffer zone established by the fencing will be marked by a sign stating:

  > This is habitat of *[the special-status species being protected],* a *[identify the species' status]* plant species, and must not be disturbed. This species is protected by *[the Endangered Species Act of 1973, as amended/California Endangered Species Act/California Native Plant Protection Act]*. Violators are subject to prosecution, fines, and imprisonment.

- No construction activity, including grading, will be allowed until this condition is satisfied.
- No grading, clearing, storage of equipment or machinery, or other disturbance or activity will occur until all temporary construction fencing has been inspected and approved by the qualified biologist.
- Where feasible, for stump-sprouting vegetation, construction will limit removal of woody vegetation by trimming vegetation to approximately 1 foot above ground level.

Protection of Special-Status Wildlife Species

If individuals of listed wildlife species may be present and subject to potential injury or mortality from construction activities, a qualified biologist will conduct a preconstruction survey. Minimum qualifications for the qualified biologist will be a 4-year college degree in biology or related field and 2 years of professional experience in the application of standard survey, capture, and handling methods for the species of concern. However, in the case of fully protected species, no capture or handling will be done. Fully protected wildlife species are listed in Section 6.3, Wildlife. Any special-status mammal, bird or other species observed during surveys will be reported to DFG so the observations can be added to the California Natural Diversity Database (CNDDB).

Mammals

Only two special-status mammal species occur in the Marsh, salt marsh harvest mouse and Suisun shrew. Suisun shrews use habitat similar to salt marsh harvest mouse, so any measures implemented to protect salt marsh harvest mouse would apply to shrews. The following measures will be implemented:

- A USFWS-approved biologist, with previous salt marsh harvest mouse monitoring and surveying experience, will identify suitable salt marsh habitat for the mouse prior to project initiation.
- Disturbance to wetland vegetation will be avoided to the extent feasible in order to reduce potential impacts on salt marsh harvest mouse habitat. If wetland vegetation cannot be avoided, it will be removed by hand. The USFWS-approved biologist will be on site to monitor all wetland vegetation removal activities.
- The upper 6 inches of soil excavated within salt marsh harvest mouse habitat will be stockpiled separately and replaced on top of the backfilled material.
- Vegetation will be removed by hand using hand tools.
- In construction and staging areas where habitat is to be disturbed, vegetation must be cleared to bare ground or stubble no higher than 1 inch.
- Work will be scheduled to avoid extreme high tides (6.5 feet or above, as measured at the Golden Gate Bridge) when there is potential for salt marsh harvest mouse to move to higher, drier grounds. All equipment will be staged on existing roadways away from the project site when not in use.
- To prevent salt marsh harvest mouse from moving through the project site during construction, temporary exclusion fencing will be placed around a defined work area before construction activities start and immediately after vegetation removal. The fence should be made of a material that does not allow salt marsh harvest mouse to pass through or over, and the bottom should be buried to a depth of 2 inches so that mice cannot crawl under the fence. Any supports for the salt marsh harvest mouse exclusion fencing must be placed on the inside of the project area.
- Prior to the start of daily construction activities during initial ground disturbance, the USFWS-approved biological monitor will inspect the salt

marsh harvest mouse–proof boundary fence to ensure that it has no holes or rips and the base is still buried. The fenced area also will be inspected to ensure that no mice are trapped in it. Any mice found along and outside the fence will be closely monitored until they move away from the construction area.

- If a salt marsh harvest mouse is discovered, construction activities will cease in the immediate vicinity of the individual until DFG and USFWS are contacted and the individual has been allowed to leave the construction area.
- A DFG- and USFWS-approved biologist with previous salt marsh harvest mouse experience will be on site during construction activities occurring in wetlands. The biologist will document compliance with the project permit conditions and avoidance and conservation measures. The biologist has the authority to stop project activities if any of the requirements associated with these measures is not being fulfilled. If the biologist has requested work stoppage because of take of any of the listed species, the USFWS and DFG will be notified within 1 day by email or telephone.

Birds

The project proponents will perform preconstruction surveys to determine whether nesting birds, including migratory birds, raptors, and special-status bird species, are present within or immediately adjacent to the project sites and associated staging and storage areas if activities would occur during active nesting periods. Bird species using the managed wetland habitat include waterfowl, shorebirds, Suisun song sparrow, Suisun common yellowthroat, and several other resident and migratory songbirds.

- The project proponents will remove all woody and herbaceous vegetation from construction areas (earthwork areas) during the nonbreeding season (September 1–February 1) to minimize effects on nesting birds.
- During the breeding season, all vegetation subject to impact will be maintained to a height of approximately 6 inches to minimize the potential for nesting.
- If construction occurs during the breeding season and not all affected vegetation has been removed, a qualified biologist will survey the construction area for active nests and young migratory birds immediately before construction.
- If active nests or migratory birds are found within the boundaries of the construction area, the project proponents will develop appropriate measures and coordinate with DFG to determine an acceptable buffer width.
- Inactive migratory bird nests (excluding raptors) located outside of the construction areas will be preserved. If an inactive migratory bird nest is located in the area of effect, it will be removed before the start of the breeding season (approximately February 1).
- Impacts on great blue heron rookeries will be avoided; mature trees will not be removed and nearby work will occur outside the nesting season.

Raptors

- Preconstruction surveys will be performed before and during the raptor nesting season (bimonthly, i.e., two times per month) to identify existing nests that may be used during the nesting season.
- Raptors may nest from later winter through mid-summer; therefore, multiple nesting season surveys will performed.
- DFG will be notified of all raptor nests located during the preconstruction surveys. If a raptor nest is located within the recommended buffer, the project proponents will coordinate with DFG to determine an acceptable buffer width.
- If an active raptor nest is found outside the construction areas, a buffer zone will be created around the nest tree. For special-status species a larger buffer will be required (e.g., 0.5-mile Swainson's hawk buffer). The project proponents will coordinate with DFG prior to project implementation to determine the species-specific buffer widths.

California Clapper Rail and California Black Rail

If construction activities are necessary during the breeding season, preconstruction surveys for California clapper rail and black rail will be conducted at and adjacent to areas of potential tidal and managed wetlands habitats for California clapper rail and black rail. The surveys will focus on potential habitat that may be disturbed by construction activities during the breeding season to ensure that these species are not nesting in these locations. Survey methods will follow the protocols used by DFG during previous rail surveys in Suisun Marsh (California Department of Fish and Game 2007). The specific project proponent will implement the following survey protocols:

- Surveys should be initiated sometime between January 15 and February 1. A minimum of four surveys should be conducted. The survey dates should be spaced at least 2 to 3 weeks apart and should cover the time period from the date of the first survey through the end of March or mid-April. This will allow the surveys to encompass the time period when the highest frequency of calls is likely to occur.
- Listening stations will be established at 150-meter intervals along road, trails, and levees that will be affected by plan implementation.
- California clapper rail and California black rail vocalization recordings will be played at each station.
- For California clapper rails, each listening station will be occupied for a period of 10 minutes, followed by 1 minute of playing California clapper rail vocalization recordings, then followed by an additional minute of listening.
- For black rails, each listening station will be occupied for 1 minute of passive listening, 1 minute of "grr" calls followed by 30 seconds of "ki-ki-krrr" calls, then followed by another 3.5 minutes or passive listening.
- Sunrise surveys will begin 60 minutes before sunrise and conclude 75 minutes after sunrise (or until presence is detected).

- Sunset surveys will begin 75 minutes before sunset and conclude 60 minutes after sunset (or until presence is detected).
- Surveys will not be conducted when tides are greater than 4.5 National Geodetic Vertical Datum (NGVD) or when sloughs and marshes are more than bankfull.
- California clapper rail and California black rail vocalizations will be recorded. A GPS receiver will be used to identify call location and distance. The call type, location, distance, and time will be recorded on a data sheet.

If California clapper rail or black rail is present in the immediate construction area, the following measures will apply during construction activities.

- To avoid the loss of individual California clapper rails or black rails, activities within or adjacent to California clapper rail or black rail habitat will not occur within 2 hours before or after extreme high tides (6.5 feet or above, as measured at the Golden Gate Bridge), when the marsh plain is inundated, because protective cover for California clapper rails is limited and activities could prevent them from reaching available cover.
- To avoid the loss of individual California clapper rails or black rails, activities within or adjacent to tidal marsh areas will be avoided during the California clapper rail breeding season from February 1 through August 31 each year unless surveys are conducted to determine California clapper rail locations and California clapper rail and black rail territories can be avoided. Figure 2-5 shows the areas of known clapper rail breeding habitat.
- If breeding California clapper rails or black rails are determined to be present, activities will not occur within 700 feet of an identified calling center. If the intervening distance across a major slough channel or across a substantial barrier between the California clapper rail calling center and any activity area is greater than 200 feet, it may proceed at that location within the breeding season.
- *Exception:* Only inspection, maintenance, research, or monitoring activities may be performed during the California clapper rail or black rail breeding season in areas within or adjacent to California clapper rail breeding habitat with approval of the USFWS and DFG under the supervision of a qualified biologist.

California Least Tern

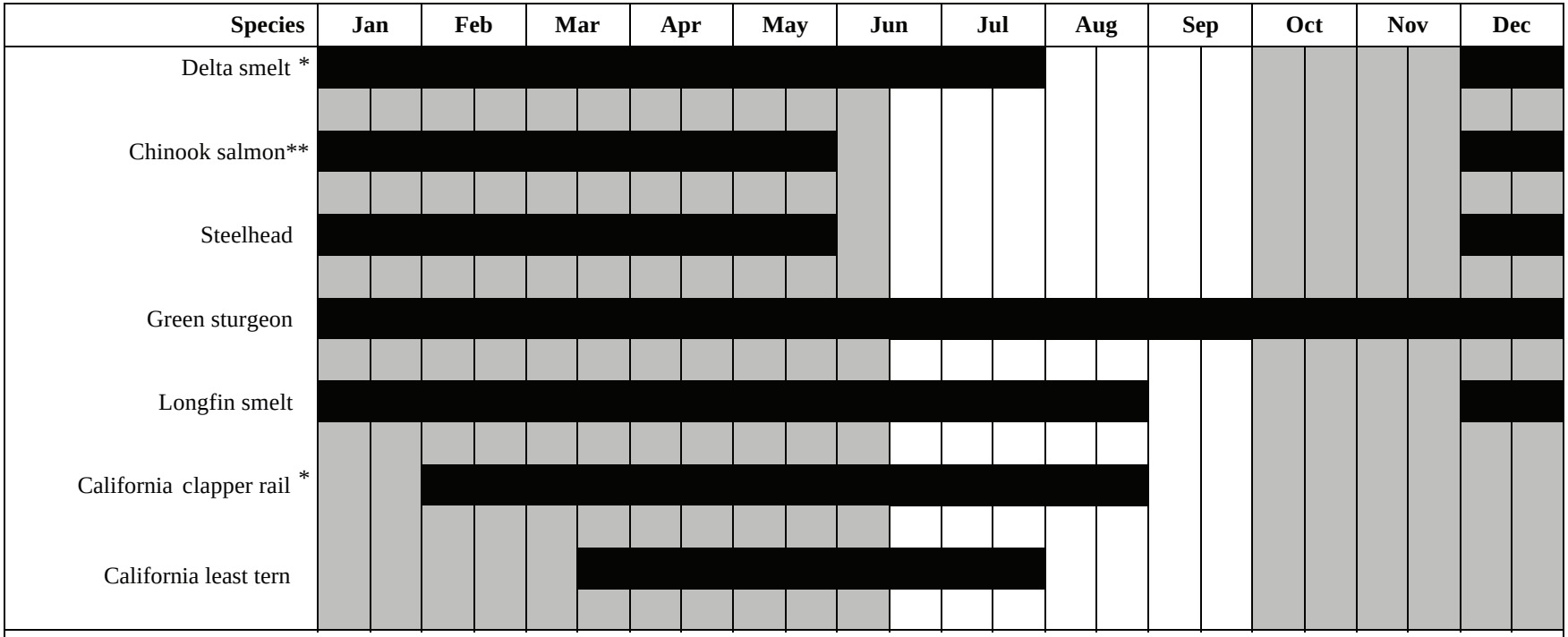
- No activities will be performed within 300 feet of an active least tern nest during the least tern breeding season, April 15 to August 15 (or as determined through surveys).
- *Exception:* Only inspection, maintenance, research, or monitoring activities may be performed during the least tern breeding season in areas within or adjacent to least tern breeding habitat with approval of the USFWS and DFG under the supervision of a qualified biologist.

Biological Monitoring

- The project proponents will provide a biologist/environmental monitor who will be responsible for monitoring implementation of the conditions in the state and federal permits (federal Clean Water Act [CWA] Section 401, 402, and 404; ESA Section 7; Fish and Game Code Section 1602 and/or 2050; project plans [SWPPP]; and EIS/EIR mitigation measures).
- The biologist/environmental monitor will determine the location of environmentally sensitive areas adjacent to each construction site based on mapping of existing land cover types and special-status plant species. If such maps are not available, the biologist/environmental monitor will map and quantify the land cover types and special-status plant populations in the proposed project footprint prior to construction.
- To avoid construction-phase disturbance to sensitive habitats immediately adjacent to the project area, the monitor will identify the boundaries of sensitive habitats and add at least a 100-foot buffer, where feasible, using orange construction barrier fencing. The fencing will be mapped on the project designs. Erosion-control fencing also will be placed at the edges of construction where the construction activities are upslope of wetlands and channels to prevent washing sediment off site. The sensitive habitat and erosion-control fencing will be installed before any construction activities begin and will be maintained throughout the construction period.
- The biologist/environmental monitor will ensure the avoidance of all sensitive habitat areas outside direct project footprints, including patches of tidal wetland along channel banks, during dredging operations, to the extent practical.
- Plants for revegetation will primarily come from natural recruitment. Plants imported to the restoration areas will come from local stock, and to the extent possible, local nurseries. Only native plants will be used for restoration efforts.

Construction Period Restrictions

Timing of restoration construction activities will depend on the type of activity, presence or absence of sensitive resources, tides, and/or water management in wetlands. In general, landside work will occur between July and September. In-water activities will be conducted during the months of August through November (Figure 2-4). Working outside this window would require additional approvals from the resource agencies. Other timing restrictions may be necessary during the hunting season, such as limiting work to days other than Saturday, Sunday, and Wednesday.



Notes:

* Delta smelt and California clapper rail are present year-round in the marsh. Black represents periods of species sensitivity to construction activities.

** Chinook salmon includes spring-, winter-, fall-, and late fall–run species.

Species presence and/or period of sensitivity

Permissible time period for construction

No construction activities can occur

Graphics/Projects/06888.06 Suisun Marsh (10-10) SS

ICF INTERNATIONAL

Figure 2-4
Work Activity Windows for Sensitive Species

Nonnative Plant Control

The project proponents will include the following measures in the project construction specifications to minimize the potential for the introduction of new noxious weeds and the spread of weeds previously documented in the project area.

- Use certified, weed-free, imported erosion control materials (or rice straw in upland areas).
- Coordinate with the county agricultural commissioner and land management agencies to ensure that the appropriate BMPs are implemented.
- Educate construction supervisors and managers on weed identification and the importance of controlling and preventing the spread of noxious weeds.
- Clean equipment at designated wash stations after leaving noxious weed infestation areas.
- Treat isolated infestations of noxious weeds identified in the project area with approved eradication methods at an appropriate time to prevent further formation of seed, and destroy viable plant parts and seed.
- Minimize surface disturbance to the greatest extent possible.
- Use certified weed-free native mixes for any restoration planting or seeding as may be necessary, as provided in the revegetation plan developed in cooperation with DFG. Mulch with certified weed-free mulch. Rice straw may be used to mulch upland areas.
- Use native, noninvasive species or nonpersistent hybrids in erosion control plantings to stabilize site conditions and prevent invasive species from colonizing.

Cultural Resources

- If any previously unknown historic or archeological artifacts are discovered while accomplishing the authorized work, the landowner must stop work immediately and notify the Corps. The activity is not authorized until the requirements of Section 106 of the NHPA have been satisfied.
- Work is not authorized within 100 feet of archeological site CAL-SOL-13.

11 APPENDIX C: DRAFT MITIGATION MONITORING AND REPORTING PROGRAM

11.1 INTRODUCTION

This section provides the Mitigation Monitoring Program (MMRP) Rush Ranch Habitat Restoration, Facility Improvements, and Site Utilization Project for U-90-29 & MD-90-05 Minor Revision No. 2 pursuant to Section 21081.6 of the California Public Resources Code, which requires public agencies to "adopt a reporting and monitoring program for the changes made to the project or conditions of project approval, adopted in order to mitigate or avoid significant effects on the environment." An MMRP is required for the proposed project because the Mitigated Negative Declaration (MND) identified significant adverse impacts, and mitigation measures have been identified to reduce those impacts to less-than-significant levels, where feasible.

The numbering of the mitigation measure follows the numbering sequence found in the Mitigated Negative Declaration (MND). All revisions to mitigation measures that were identified in responses to comments have been incorporated into this MMRP.

Adoption of the MMRP shall occur prior to, or concurrently with, adoption of the proposed project for which the program has been developed.

11.2 PURPOSE OF THE MITIGATION MONITORING PROGRAM

The purpose of the MMRP is to:

- ensure that mitigation measures are implemented;
- provide feedback to agency staff and decision makers about the effectiveness of mitigation measures;
- provide learning opportunities for improving mitigation measures on future projects; and
- identify the need for enforcement action before irreversible environmental damage occurs.

The components of the MMRP are addressed briefly below.

Mitigation Measures: The mitigation measures are taken verbatim from the Mitigated Negative Declaration (MND), in the same order that they appear in the Mitigated Negative Declaration (MND).

Monitoring and Enforcement Actions: For every mitigation measure, one or more actions are described. These are the heart of the MMRP, as they delineate the means for implementing the mitigation measures and, in many cases, the criteria for determining whether the measure has been implemented.

Responsible Entity: This column identifies the entity that will undertake the required action. Generally, the contractor is named for actions occurring during grading or construction. On-site inspections will be done by County staff.

Timing/Milestone: Each action must take place during or prior to some part of project development or approval. The timing of actions generally falls into one of the categories shown in the table below.

Monitoring and Enforcement Responsibility: Solano County will have ultimate and legal responsibility for implementation of all mitigation measures. This column indicates which department within the County will conduct the actual monitoring and reporting, as well as take corrective actions when a measure has not been properly implemented.

Mitigation Measures	Responsible Entity	Timing/ Milestone	Monitoring and Enforcement Responsibility
11.2.1.1 Air Quality			
11.2.1.2 Mitigation Measure AQ-1 The Applicant shall require its construction contractor to implement a dust control plan that shall include the following Basic Construction Mitigation Measures as recommended by the BAAQMD: • All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day. • All haul trucks transporting soil, sand, or other loose material off-site shall be covered. • All visible mud or dirt track-out onto adjacent public roads shall 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 shall be limited to 15 mph. • All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used. • Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points. • All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified visible emissions evaluator. • A sign with the telephone number and person to contact at the lead agency regarding dust complaints shall be posted in a	SLT/construction contractor	Plan should be developed prior to start of grading; implementation during construction period	Solano County Resource Management Department

publically visible location. This person shall respond and take corrective action within 48 hours. The BAAQMD's phone number shall also be visible to ensure compliance with applicable regulations.			
11.2.1.3 Biological Resources			
11.2.1.4 Mitigation Measure BIO-1 Structural trails bordering or within the high tidal marsh-terrestrial transition zone shall be aligned to minimize shore-parallel alignments that would degrade existing suitable habitat of soft bird's-beak and impair its long-term viability by precluding continuous landward and vertical migration in response to rising sea level within the expected life of the trail. The transition zone is at the boundary between the upland ecogeomorphic units of "hillslopes, Older Alluvial Fans and Younger Alluvial Fans" and Tidal, Diked and Fringing Marsh Ecotones shown on Figure IS-3. The transition is variable in size and defined by plant community as well as geomorphology.	SLT	Trail locations should be on final construction maps submitted to the County	Solano County Resource Management Department
11.2.1.5 Mitigation Measure BIO-2 Prior to issuance of a grading permit, a qualified biologist shall inspect all proposed construction areas and access routes and shall flag all suitable SMHM habitat areas for avoidance. The Biologist shall prepare a report and submit the findings to the County. If these areas cannot be avoided, the following measures shall be performed under the supervision of the biologist: • The biologist shall be on-site during all construction activities occurring within wetland areas • In excavation/construction areas, all wetland vegetation shall be removed with hand tools or, (if the area is large enough) scraped with an excavator. The upper six inches of excavated soil shall be	SLT	Inspection prior to issuance of a grading permit; monitoring during habitat-restoration construction period	Solano County Resource Management Department

stockpiled separately and replaced on top of backfilled material. • In vegetation disturbance areas (i.e., access and staging areas), all vegetation must be cleared to bare ground or stubble < one inch. • To prevent SMHM from moving through construction areas, temporary exclusion fencing shall be installed around the defined work area before construction activities start and immediately after vegetation removal. Prior to the start of daily construction activities during initial ground disturbance, the biologist shall inspect the fencing to ensure there are no holes or other openings and that no mice are trapped within. • If a SMHM is discovered in the construction area, work activities shall cease in the immediate vicinity until the individual has left the work area.			
11.2.1.6 Mitigation Measures BIO-3: Short-term construction impacts to western pond turtles at Goat Island Marsh shall be minimized by (a) conducting pre-construction surveys for western pond turtles in areas designated for fill, dredging, or excavation; (b) providing an on-site wildlife biologist supervisor working with construction equipment operators to detect western pond turtles and prevent direct impacts; (c) hazing (flushing) or trapping and removal of western pond turtles from excavation/dredge and grading areas prior to earthmoving, with permission from CDFW; and (d) constructing all breaches outside of the breeding season (April - July). The biologist shall provide a pre-construction survey report to CDFW and County upon request and shall maintain records of all western pond turtle detections, hazing and removal activities. The biologist shall provide a pre-construction survey report to CDFW and County upon request and shall maintain records of all western pond turtle detections, hazing and removal activities**.**			

11.2.1.7 Mitigation Measure BIO-4 A peninsula of existing marsh shall be retained during the expansion of the existing Goat Island Marsh pond shown on Figure IS-8 in the southern portion of Goat Island Marsh just west of the headquarters. This peninsula will be located just north of the existing pond shall be of sufficient width and length to screen a substantial (>40%) portion of the expanded pond from marsh trails. The exact location and shape shall be determined after surveying topography and finalizing the wetland design for the project. Additionally, a pond of equivalent size (approximately ½-acre) to the Goat Island Marsh pond shall be constructed in the northwest portion of the restoration that is currently infested with invasive Phragmites, as shown on Figure IS-8 just west of Suisun Hill Hollow. The exact size, shape, and location of this pond shall be determined by an expert in wetland design. These actions would provide a net benefit from the creation of additional habitat for waterfowl and wading birds. Prior to the issuance of a grading permit, submit a site plan, identifying specific location, size and dimension of the peninsula to be retained and the pond.	SLT	Existing marsh peninsula to be preserved shall be on final construction maps submitted to the County	Solano County Resource Management Department
11.2.1.8 Mitigation Measure BIO-5 During the Goat Island Marsh construction period, provide brush and large woody debris cover structures at intervals along Goat Island Marsh edges within the upper marsh and upland transition zone to provide alternate cover for coyotes with access to brackish marsh. Monitor coyote activity and coyote sign around the marsh prior to and immediately following completion of Goat Island Marsh construction activities. *11.2.1.9*	SLT/ construction contractor	During the Goat Island Marsh construction period	Solano County Resource Management Department
11.2.1.10 Mitigation Measure BIO-6 Cattle water supplies from groundwater associated with the spring in Suisun Hill Hollow shall be provided such that the spring-head vegetation is not adversely affected. This shall be done in one of the following	SLT	Cattle-water supply approach	Solano County Resource Management

approaches: 1. If feasible, install a well for cattle watering trough above the existing spring-head slope marsh. The well would supply a trough to be located in an upland slope outside of the spring-head area. If trough location slopes are over 5%, the area immediately around the trough should be armored to minimize soil trampling and erosion. The well shall provide water to the off-site trough either via gravity or via a solar-powered pump. The spring-head slope marsh shall be protected from cattle activity by cattle exclusion fencing. Well drilling or excavation activities shall include temporary slope stabilization measures (set-backs, geotextile fence) to ensure that slip-outs of excavated soil or slope failure do not fill slope marsh. Well pumping rates shall be adjusted to minimize rare dewatering and desiccation events (threshold for perennial marsh dieback) of the springhead marsh below during drought years. or, 2. If the off-wetland well approach is determined not to be feasible by SLT and/or the rancher leasing the property, install an in-spring well or spring box at the spring diverting some of the spring flow via a pipe to a separate trough outside of the spring marsh area. The spring-head slope marsh shall be protected from cattle activity by cattle exclusion fencing. The area immediately around the trough should be armored to minimize soil trampling and erosion. Diversion rates shall be adjusted to prevent dewatering and desiccation events (threshold for perennial marsh dieback) of the springhead marsh during drought years.		shall be identified prior to issuance of grading permit	Department
11.2.1.11 Mitigation Measure BIO-7 During the wet season prior to construction on the Suisun Hill Hollow Restoration Project, delineate and flag (or otherwise mark for practical visibility to construction crews) all vernal pool depressions and swales with indicator vegetation, saturated soils, standing water, or surface sheetflow connected to vernal pools. Construction vehicle and equipment access shall be aligned to avoid vernal pool drainages, and fill placement	SLT biologists	During the wet season prior to construction on the Suisun Hill	Solano County Resource Management Department

in vernal pools, swales, and seasonally saturated flats supporting native seasonal wetland (alkali grassland/vernal pool) vegetation shall be prohibited. A qualified field botanist shall supervise vernal pool habitat and hydrology delineation (not federal Section 404 Clean Water Act wetland jurisdictional delineation) for impact avoidance.		Hollow Restoration Project,	
11.2.1.12 Mitigation Measure BIO-8 To conserve potential effective refugia for undetected larval or resting-stage populations of uncommon, rare, or endemic invertebrates of Suisun Hill Hollow in the absence of comprehensive multi-year surveys (which may be infeasible or impractical due to constraints in available invertebrate taxonomic expertise and survey time available), approximately 20 patches of designated grading refuges, each 3 meters in diameter, shall be distributed over the lower Suisun Hill Hollow flats, using either stratified random or selective dispersion patterns to minimize sampling error or bias that may under-represent topographic or hydrologic environmental variability. *11.2.1.13*	SLT biologists	Grading refuges shall be shown on grading plan for Suisun Hill Hollow prior to approval of grading permit for that project.	Solano County Resource Management Department
11.2.1.14 Mitigation Measure BIO-9 Prior to initiation of construction, a qualified wildlife biologist shall inspect the proposed work areas for any habitat that could potentially support SMHM, Suisun shrew and CTS. Potential SMHM/shrew habitat shall be flagged so that it can be avoided during construction. Avoidance measures identified for SMHM and Suisun shrew in BIO-2 would be implemented as necessary.	SLT biologists	Prior to initiation of construction	Solano County Resource Management Department
11.2.1.15 Mitigation Measure BIO-10 Excavation of the cross-levee and L-shaped berm shall be initiated from upland areas, and avoid areas of mixed halophytes that could potentially	SLT/ construction	During	Solano County Resource Management

support SMHM and Suisun shrew. *11.2.1.16*	contractor	construction of Goat island Marsh project	Department
Mitigation Measures 2.5: **CR – 01:** Should buried, unforeseen archaeological deposits be encountered during any construction activity, work must cease within a 50-foot radius of the discovery and a qualified archeologist be notified to document the discovery, assess its significance and recommend treatment. In the event that human remains or any associated funerary artifacts are discovered during construction, all work must cease within the immediate vicinity of the discovery. In accordance with CEQA (Section 1064.5) and the California Health and Safety Code (Section 7050.5), the Solano County coroner must be contacted immediately. If the remains are deemed to be Native American, the coroner will notify the Native American Heritage Commission, which will in turn appoint and notify a Most Likely Descendent (MLD) to act as a tribal representative. The MLD will work with a qualified archaeologist to determine the proper treatment of the human remains and associated funerary objects. Construction activities will not resume until the human remains are exhumed and official notice to proceed is issued.	Applicant	On-going	Department of Resource Management/Solano County
Mitigation Measures 2.6: None			
2.7 HAZARDS AND HAZARDOUS MATERIALS			
Mitigation Measures 2.7: None			
Mitigation Measures 2.8: None			
Mitigation Measures 2.9: None			

Mitigation Measures 2.10: None			
2.11 NOISE			
Mitigation Measures 2.11: None			
2.12 POPULATION AND HOUSING			
Mitigation Measures 2.12: None			
2.13 PUBLIC SERVICES			
Mitigation Measures 2.13: None			
2.14 RECREATION			
Mitigation Measures 2.14: None			
2.15 TRANSPORTATION AND TRAFFIC			
Mitigation Measures 2.15: None			
2.16 UTILITIES AND SERVICE SYSTEMS			
Mitigation Measures 2.16: None			