

32554 Questionaire.pdf

32554 - Project Description.docx

32554 - Attachment 1.docx

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32554 - Attachment 5.1.xlsx

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32554 - Attachment 6.xlsx

32554 - Monitoring and Assessment Plan 1.docx

32554 - Land Tenure\_Site Control.pdf

32554 - Scientific Merit.docx

32554 - Project Maps.pdf

**PIN 32554 - Rush Ranch Lower Spring Branch Creek and Suisun Hill Hollow Tidal Connections Project -  
ASSIGNED**

**Application**

**Application Overview**

**RFP Title:** CDFW - Prop. 1, Watershed Restoration & Delta Water Quality and Ecosystem Restoration Grant Programs

**Submitting Organization:** Solano Land Trust

**Submitting Organization:**

**Division:**

**Project Title:** Rush Ranch Lower Spring Branch Creek and Suisun Hill Hollow Tidal Connections Project  
**Project Description:** The Lower Spring Branch Creek and Suisun Hill Hollow project (Project) restores seasonal and tidal wetland habitat by reconnecting tidal, fluvial and upland components and by reinitiating related physical and ecological processes within Suisun Marsh and two braided creeks with headwaters in the Potrero Hills. The project fulfills the goal of many local and regional programs to restore tidal portions of Suisun Marsh, connect uplands to the marsh, enhance fish habitat, enhance rare plant habitat, enable fluvial ecosystem adaptation to sea level rise, and restore native wetland and upland communities, provide public trail access and facilitate scientific research and monitoring. The Project is located at Rush Ranch in Solano County, a permanently protected open space owned and operated by Solano Land Trust (SLT) and noted as a San Francisco Bay National Estuarine Research Reserve Site (SF-NERR).

**Water System ID:**

**District Office:**

**APPLICANT DETAILS**

**Applicant:** Solano Land Trust

**Organization:**

**Applicant**

**Organization**

**Division:**

**Applicant:** 1001 Texas Ste C , Fairfield , CA - 94533

**Address:**

**PROJECT LOCATION**

**Latitude :** 38.202520    **Longitude:** -122.020890

**Watershed:**

**County:** Solano

**Responsible**

**Regional Water**

**Board:**

**PROJECT BUDGET**

**Funds Requested(\$):** 839,449.00

**Local Cost Match(\$):** 34,645.00

**Total Budget(\$):** 874,094.00

Funding Program	Applied	Amount Recommended by State Water Board			
Delta Water Quality and Ecosystem Restoration Grant Program	Yes	\$0.00			
Watershed Restoration Grant Program	No	\$0.00			
Project Management Role	First Name	Last Name	Phone	Fax	Email
Project Director: Authorized Representative	Nicole	Byrd			
Project Manager: Day to day contact	Steven	Kohlmann			

**Applicant Information**

**Name:**

Solano Land Trust

**Division:**

**Address:**

1001 Texas Ste C Fairfield, CA , 94533

**Federal Tax ID:**

**DUNS Number:**

Legislative Information	Primary	Additional District(s)
Senate District	03	
Assembly District	11	
US Congressional District		03,

[Download all Pre Submission Attachments](#)



Questionnaire - Phase 1

### **Section 1: Summary Information**

#### **1.1 Mailing Address of Project Director**

**Provide street address, city, state and zip code (or P.O. Box) of the Project Director, who will serve as the signatory. If project is funded, agreement will be sent to this address for signature.**

Answer: 1001 Texas, Suite C, Fairfield, CA 94533

#### **1.2 Mailing Address of Project Manager**

**Provide street address, city, state and zip code (or P.O. Box) for mailing address of Project Manager, who will serve as the point of contact for the project.**

Answer: 1001 Texas, Suite C, Fairfield, CA 94533

## **1.3 Organization Type**

Select which organizational type the applicant falls under. If applicant does not fall under a listed category, the applicant is not an eligible entity.

- 1. Public Agency**
- 2. Nonprofit Organization**
- 3. Public Utility\***
- 4. Mutual Water Company\***
- 5. Federally Recognized Indian Tribe**
- 6. State Indian Tribe listed on the Native American Heritage Commission's California Tribal Consultation List**

**\*Public utilities and mutual water companies must describe a clear and definite public purpose and benefit to the customers of the water system. Please provide additional information in the box below.**

Answer:  Yes

Answer:

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## **1.4 Nonprofit Organization**

Is the applicant qualified to do business in California and qualified under Section 501(c)(3)? If yes, provide 501(c)(3) nonprofit organization number.

Answer:  Yes

Answer: C 1529360 \_\_\_\_\_

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## **1.5 Additional Information for Water Suppliers**

Select the appropriate choice from the box below. See Section 3.1 of the Solicitation for more information.

Answer:  Not Applicable

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## **1.6 Mitigation**

Is the proposed project required mitigation or is it to be used for mitigation under laws such as CEQA, NEPA, CESA, ESA, CWA, or other pertinent laws and regulations, or a permit issued by any local, state or federal agency? If yes, project is ineligible.

Answer:  No

## **Section 2: Project Integration Information**

### **2.1 Implement Actions of the California Water Action Plan**

**Does the project implement actions in the CWAP? If yes, identify those actions.**

Answer:  Yes

Answer: Action 1 ↳ Make Conservation A California Way of Life. This project will end cattle watering in a natural stream. It is a highly visible project in a public area.

Action 2 ↳ Increase Regional Self-reliance and Integrated Water Management across All Levels of Government. This project will support resilience to sea-level rise and storm water retention by removing barriers to floodwater and sea level rise accommodation.

Action 3 ↳ Achieve the Co-Equal Goals for The Delta

This project implements the CWAP action of "Achieving co-equal goals for the Delta" by returning a portion of Suisun Marsh from seasonal to tidal wetland. DSC and CDFW have reviewed this project and the associated monitoring program. Ongoing ecosystem studies at the site provide important baseline data for similar, systemwide restoration projects.

Action 4 ↳ Protect and Restore Important Ecosystems. The project will "protect and restore important ecosystems" by providing tidal wetland habitat enhancement and connecting upland fluvial systems with the Suisun Marsh. Impacts to the fluvial processes and ecosystem processes in Suisun Marsh have been profoundly detrimental to native fish, plants and animal populations. This project aims to restore instream flows, and tidal marsh foodwebs by removing barriers to seasonal flows and nutrient streams.

Action 5 ↳ Manage and Prepare for Dry Periods. This project will provide a significant drought adaptation by removing cattle reliance on surface flows.

Action 6 ↳ Expand Water Storage Capacity and Improve Groundwater Management. Removal of barriers (and cattle grazing) will result in higher plant biomass and less erosion. Water retention and hydroperiods will be expanded and water-holding capacity of adjacent soils will increase native plant species

Action 8 ↳ Increase Flood Protection. The project provides significant floodwater and sea-level rise accommodation opportunities by removing barriers, expanding floodplains, and stabilizing streambeds.

### **2.2 Applicable Solicitation Priority(ies)**

**Check all appropriate boxes that apply to the project:**

- 1. Improve Water Quality or Contribute to the Improvement of Water Quality (non-CWAP Action)**
- 2. Habitat Restoration, Conservation, and Enhancement (CWAP Action or California EcoRestore)**
- 3. Scientific Studies and Assessments to Support Implementation of the Delta Science Plan (CWAP Action)**

Answer:  12

### **2.3 Proposal Category**

**Choose the proposal category:**

- 1. Planning**
- 2. Implementation**
- 3. Acquisition**
- 4. Scientific Studies, Monitoring, and Assessment**

Answer: I 2

## **2.4 Project Readiness**

**Project/construction start date:**

Answer: 03/01/2016

**Project/construction end date:**

Answer: 03/01/2019

## **2.5 Consistency with and Implementation of Other Plans**

**Does the project have consistency with and implementation of other plans (e.g., existing conservation, restoration, recovery plans, or other relevant local, state, or federal plans or policies)? Copies of the plan(s) must be available upon request.**

**If yes, identify the plan(s) (use the following format: author, year, title, organization, city, state.) and associated action(s):**

Answer: I Yes

Answer: San Francisco Bay Joint Venture. 2001 20-year Implementation plan  
Restore and enhance wetlands, riparian habitat and associated uplands; Improve habitat management; Restore and/or enhance approximately 1000 miles of creeks and protect 40,000 acres of riparian corridors for resident and migratory songbirds  
SF Bay Area Bayland Ecosystem Habitat Goals Project 1999 Periphery of the marsh to reestablish soft-bird-beak and seasonal wetlands on these edges.  
WCB Strategic Plan- WCB 2014. Goals A, B - Environmental Restoration and Enhancement.  
Project is aligned with Wildlife Action Plan enhancing rare plant and season wetland bird habitat.  
Project has long-term stewardship with an accredited land trust and endowment maintenance funds. Project addresses, climate change resiliency of the creek, species refugia, habitat connectivity, endangered species, and appropriate public use include use by adjacent underserved communities Goal C -Public Use and Recreation. Project provides stability and resiliency to public trail system for continued ecosystem enhancement.  
State Wildlife Action Plan-SWAP 2015. Cons Strategy # 1- outreach and education, invasive species control. Removal of invasive species within riparian /wetland corridor. Cons Strategy # 3- Direct management of grazing through installation of infrastructure. Cons strategy #5- Removal of barriers to riparian flow and connectivity of waters from upland to marsh.  
Suisun Marsh Habitat Management, Preservation and Restoration Plan (SMP), 2013 Bureau of Reclamation (section 3.6) systems are called out for enhancement, particularly with fencing to enable improved grazing management. SMP action of "increase natural connectivity between shallow high productivity marsh plan habitat and adjacent nutrient rich channels and sloughs"  
Rush Ranch Management Plan (SLT, 2014). Funded by SCC. This project is highlighted in the

approved Rush Ranch Management Plan.

## **2.6 Project Area Covered by Integrated Regional Water Management Plan (IRWM)**

**Is the project area covered by an Integrated Regional Water Management Plan?**

**If yes, identify Plan and relevant project.**

Answer:  No

Answer:

## **2.7 Coordination with the California Conservation Corps and Certified Local Corps**

**Has consultation occurred with the California Conservation Corps and Certified Local Corps? Unless otherwise exempted (i.e., projects that only involve planning or acquisition), applicants that fail to consult with the CCC will not be eligible to receive CDFW Proposition 1 funding. Attach Completed Corps Consultation Review Document in Attachments Tab.**

Answer:  Yes

## **2.8 Application to Other Grant Programs**

**Has the proposal been submitted to another grant program for this project (i.e., that would fund the same project components applied for in this application)? If yes, identify program name(s).**

Answer:  Yes

Answer: Proposal to be submitted to Prop 1 State Coastal Conservancy on September 30, 2016.

## ***Section 3: Project Location Information***

### **3.1 Project Location Information**

**Provide exact project location information, including the following:**

- 1. Address;**
- 2. Latitude/Longitude (NAD83, use multiple coordinates if necessary);**
- 3. USGS 7.5-minute quadrangle(s);**
- 4. Township;**
- 5. Range; and**

## **6. Section.**

**For projects with multiple sites, provide this information for each site. Also provide a brief description of what the coordinates refer to, such as the downstream end of the project reach.**

Answer: Project Site Location

3521 Grizzly Island Road, Suisun City, CA 94585

USGS Quad: Fairfield South

S-T-R: Section12-T4N-R2W, Section 1-T4N-R2W, Section 7-T4N -R1W , Section 6-T4N-R1W

Coordinates of the Solano Land Trust Rush Ranch Headquarters Building: Lat: 38.202520; Lon: -122.020890

Lower Spring Branch Creek Project Site: 38°12'22.56"N 122° 0'57.57"W (Eastern project site boundary at Grizzly Island Rd.)

Suisun Hill Hollow Project Site: 38°12'57.72"N 122° 1'22.68"W (Eastern project site boundary at Grizzly Island Rd.)

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## **3.2 Project Maps**

**Include both a location and project specific map. The project specific map should include clearly delineated project boundaries on an appropriately scaled, USGS (or equivalent) 7.5 minute contoured topographic quadrangle map. For watershed level planning proposals, provide a map scale that is appropriate. Aerial photos do not satisfy this requirement. All maps must be labeled with project title, applicant name, USGS quadrangle name, and be positioned so that relevant map information such as stream names, towns, main roads, water bodies, etc. are not obscured.**

**Upload project map(s) on the Attachments tab.**

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## **3.3 Site Description**

**Provide the physical description of terrain and land cover type(s).**

Answer: The project is located in northwestern Suisun Marsh. Abutting the Potrero Hills, the 2070-acre Rush Ranch, (owned and managed by SLT) is the largest remnant tidal wetland in the entire Delta region and is characterized by a diversity of tidal wetland habitats ranging from reference conditions to diked, truncated channels connected to managed waterfowl ponds. Approximately half of Rush Ranch is tidal brackish marsh, containing dendritic tidal channel networks that drain into subsidiary Suisun Slough. The two project sites at Rush Ranch comprise fluvial drainages connecting uplands with the marsh. Suisun Hill Hollow originates at the base of Suisun Hill near a seasonal spring and merges into a broad fluvial depression/seasonal wetland modified by humans before entering Goat Island marsh. Lower Spring Branch provides the upland transition to First Mallard Slough, a dendritic network of channels that retain connectivity with vegetated intertidal

marsh.

### **3.4 County(ies)**

**Check the appropriate box of the county or counties in which the project will occur.**

Answer:  I

**Counties continued.**

Answer:  I

**Counties continued.**

Answer:  I

**Counties continued.**

Answer:  I

**Counties continued.**

Answer:  I Solano

**Counties continued.**

Answer:  I

### **3.5 Driving Directions**

**Provide driving directions from nearest freeway, city, town, or major landmark.**

Answer: From I-80 near Fairfield CA, take Hwy 12 east 3 miles to Grizzly Island Road. Turn south on Grizzly Island Road for 2 miles to the Rush Ranch headquarters driveway.

### **3.6 Waterbody and Watershed**

**If applicable, provide the name of the waterbody where the project will occur, the tributary (any watercourse that flows into a body of water), and the watershed name (e.g., Sacramento River, etc.).**

**Waterbody:**

Answer: Lower Spring Branch Creek and Suisun Hill Hollow Creek

**Tributary to:**

Answer: First Mallard Slough, Suisun Slough

**Watershed Name:**

Answer: Suisun Bay 18050001

### **3.7 Is Project Located in Close Proximity to an Existing Restoration**

## Project

**Is the project Contiguous or Adjacent to an Existing Restoration Project?**

**If yes, explain (include distance).**

Answer: I Yes

Answer: Proximity to proposed restoration projects:

1. CDFW Hill Slough (immediately to north across Hill Slough)
2. Solano Land Trust Goat Island and Upper Spring Branch Creek (on the Rush Ranch property)
3. DWR Overlook Club (6 miles east)
4. SFCWA Tule Red (6 miles south)
5. Montezuma Wetlands (10 miles southeast).

Proximity to constructed restoration projects:

1. DWR Blacklock (6 miles east)
2. Caltrans Suisun Bay (10 miles southwest)
3. CDFW Goodyear Slough (10 miles southwest)

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## 3.8 Project Area Ownership

**Check the appropriate box(es) identifying ownership of the land where the project will occur (or will require access to enter). Please provide the name of all land owners in the box below.**

"Not applicable" may apply to watershed level planning proposals only.

Answer: I Private

Answer: Solano Land Trust (applicant)

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## *Section 4: Conflict of Interest*

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### 4.1 Applicant

**Identify members of the applicant's team who:**

**Wrote the proposal;**

**Will be performing the work listed in the proposal;**

**Or who will benefit financially if the proposal is funded.**

Answer: Solano Land Trust Staff: Steve Kohlmann, Sue Wickham, Nicole Byrd, Anne DeLozier, Natalie DuMont

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### 4.2 Subcontractors

**Identify subcontractors who:**

**Will perform some work listed in the proposal;  
Will benefit financially if the proposal is funded.**

**Include name(s) and organization(s).**

Answer: Design-Build Engineer: To be determined as part of the planning phase.  
Contractor: To be determined as part of the planning phase.  
Biological Monitors: To be determined as part of the planning phase.  
Cultural Resource Monitor: To be determined as part of the planning phase.  
Stuart Siegel: Siegel Environmental

## **4.3 Others**

**Identify other individuals that helped with proposal development (e.g., reviewing drafts or providing critical suggestions or ideas contained within the proposal). These individuals may include agency staff. List the name(s) and organization(s) of any individuals who were consulted during proposal development.**

Answer: Steve Chappell, Suisun RCD  
Mike Vasey, SFSU and SF- Bay NERR

## **Section 5: Qualifications and Experience of Applicant and Professionals**

### **5.1 Project Team**

**List project team's qualifications and experience that directly apply to the proposed tasks.**

**Separate curriculum vitae/resumes for key personnel may be uploaded on the Attachment tab (two pages maximum per person).**

Answer: Steve Kohlmann, Ph.D - SLT Stewardship Director. Dr. Kohlmann oversees all of SLT's fee title properties including all projects on these 12,000-acres. Steve is a certified wildlife biologist with over 20 years of experience as project manager and habitat ecologist. He has worked closely with SF Bay NERR staff to implement vegetation mapping and habitat management at Rush Ranch. For the proposed projects, he will be the Project Lead, working with staff, consultants and contractors focusing on efficient implementation and application to standards. He will be providing all reporting and administrative documents to the funders and regulatory agencies.

Sue Wickham & SLT Project Manager. Ms. Wickham has worked with SLT implementing stream, riparian and wetland restoration projects for over 10 years. She will be the project manager for several aspects of the project including developing permit applications and working with regulatory staff to effectively implement the projects. Sue has experience with permitting numerous large-scale riparian restorations at SLT's Lynch Canyon and most recently at Rush Ranch. As needed, Sue will be assisting with other aspects of the projects such as volunteer activities and outreach.

Anne DeLozier & SLT Business Services Manager. Ms. DeLozier is an expert in comprehensive financial and accounting work for SLT for the past 5 years. She is trained in non-profit accounting and her work is audited annually by a third party. She will be working closely with the SLT project lead to provide accurate accounting for the project in CDFW format and in accordance with SLT's own high standards. She will be the lead for contracts, subcontractor documents, insurance and other administrative tasks.

Nicole Byrd- SLT Executive Director. Ms. Byrd is responsible for maintaining SLT's standards for

project implementation and assuring that SLT's resources are dedicated to the project during the grant period and in the future. She is the lead liaison to SLT's Board of Directors and Committees. She is the Project Director for this project and signatory.

Natalie DuMont-SLT Volunteer and Outreach Coordinator. Ms. DuMont manages over 350 volunteers for SLT and provides media and other outreach materials for SLT lands, events, and projects. She will assist with all volunteer events and media outreach for this project.

Stuart Siegel, PhD ,Siegel Environmental. Dr. Siegel is the project's ecological consultant; he has been involved with wetland restoration projects at Rush Ranch and Suisun Marsh for over 10 years and has contributed to the Rush Ranch Management Plan. Stuart was key to the wetland restoration design for this project and will serve as technical advisor for many of the actions.

## 5.2 Previous Projects

**List previous projects (funded by CDFW or others) and give examples of similar work.**

Answer: Solano Land Trust Projects:

- ↳ Lynch Canyon: South Fork Lynch Creek in-stream construction projects, total over \$1.5 M with associated restoration of over 30 acres of riparian habitat.
- ↳ Mitigation for Swainson's hawk habitat in eastern Solano County (3 conservation easements on farms)
- ↳ Conservation of critical habitat for restoration of CTS, CRLF, CSB, TCBB, and other special status species on > 11,600 acres of fee title ranches
- ↳ Native vegetation restoration (weed management, grazing systems, water wells, solar pumping systems, and trough /tank installations) at 8 SLT fee-title owned ranches.
- ↳ SLT served as the project manager and planning collaborator for CDFW's , Restoring Ecosystem Integrity in the Northwest Delta ↳ Phase II (Lindsey Slough)
- ↳ Rush Ranch Management Plan 2014 includes planning and design for four restoration projects.

## 5.3 Licensed Professional

**Is a licensed professional needed? If so, select appropriate option, provide license number, affiliation, and contact information (phone and email address).**

Answer: I Yes

**Name:**

Answer: To be determined in Task 1

**License number:**

Answer:

**Affiliation:**

Answer:

**Contact Information (Phone/E-mail):**

Answer:

**If no, provide justification for that determination:**

Answer:

## **5.4 Licensed Professionals Qualifications and Experience**

**List licensed professionals qualifications and experience. Please specify which licensed professionals(s) will be providing direct oversight on the project (if applicable):**

Answer: A licensed professional civil engineer will be engaged as part of the planning phase of this project

## **5.5 Capacity**

**Describe project team's capacity to perform the proposed tasks.**

Answer: Solano Land Trust (SLT) is a private, non-profit organization founded in 1986 to preserve agricultural lands, open space, and natural resources in Solano County. SLT is Land Trust Alliance accredited, has a staff of 13 professional conservation specialists, and manages approximately 12,000 acres of natural lands in the county. SLT has long-standing partnerships the University of California Reserve System and the San Francisco National Estuarine Research Reserve (SFBay NERR). SLT staff and science partners work collaboratively to implement restoration projects and adaptive management plans that are founded in sound science and are supported by strong monitoring components. SLT has a long and successful track record of acquiring, managing and restoring tidal and fluvial wetlands and has served as project manager for CDFW on a large tidal restoration project at the Calhoun Cut Ecological Reserve. Endangered species protection, sea level rise accommodation and water quality benefits are the primary measurable outcomes of our activities. Working in close partnership with local landowners, municipal agencies, nonprofits and our over 350 dedicated volunteers, SLT's strives to protect and enhance the biological and agricultural resources that support our communities. The project team consists of experienced professionals and project managers supervising specialized construction contractors (TBD). Project Lead Dr. Kohlmann will work closely with the consultants (engineering firm and Dr. Siegel to determine drainage feature modification and final grade). Permitting and the final design will be performed by a design & build engineer under the supervision of the Project Lead and Project Manager. Construction is anticipated to begin in 2016. Thus, SLT will be able to hire contractors for this work and schedule it accordingly. There is an existing SLT office at Rush Ranch for staff.

## **Section 6: Community Support and Collaboration**

### **6.1 Evidence of Public and Institutional Support**

**Briefly describe if the project has public and institutional support, at the local, regional, or larger scale. Briefly describe evidence of that support, for example have stakeholders provided funds, in-kind contributions (i.e., administrative/technical services, labor, materials, equipment, etc.), partnerships, etc.:**

**Letters of support may also be uploaded on the Attachment tab.**

Answer: This project has the support regionally from the SF Bay Joint Venture and locally Suisun Marsh Resource Conservation District which holds the Regional General Permit for Suisun Marsh. The State Coastal Conservancy helped purchase Rush Ranch in 1988 and funded the development of the 2014 Rush Ranch Management Plan and 2015 CEQA document which contained much of the

planning for this project. A stakeholder group of science advisors including representatives from academia, agency and professional scientists met three times during the planning process and approved the current design of the restoration projects. Rush Ranch is an SF Bay NERR site. The SF Bay NERR supports scientific research at Rush Ranch and is a key to applied management of the site. The USFWS (Coastal Program) has supported *lepidium latifolium* research and control planning at the project site. Rush Ranch restoration projects are noted on the Suisun Marsh Plan and the Delta EcoRestore plans ,and the project site has been personally visited and endorsed by Mr. David Okita (EcoRestore). Lastly, the project is supported by Solano County Resource Management Department who recognize the importance of Suisun Marsh to Solano County.

## 6.2 Stakeholders

**Briefly describe efforts to include stakeholders in project planning, design, outreach/education, implementation, monitoring, maintenance, etc.**

Answer: Solano County as the lead CEQA agency has strongly supported the restoration projects at Rush Ranch, including the proposed project. SLT as a non-profit land is governed by a diverse Board of Directors, representing agriculture, natural resource, business, community interests and local groups. The SLT board has sought and received input on the proposed project over more than a decade of preparatory work. The initial plans for this project were developed by staff and consultants and were reviewed by a science advisory panel of wetland and marsh experts from local universities, SF Bay NERR, and from consulting firms. Their recommendations formed the 30% design plan. In addition, CDFW technical staff, USFWS scientists, and the Suisun RCD have indicated their support of the project. The Rush Ranch Educational Council, SLT's non-profit partner in environmental education has strongly supported the enhanced public education components of the project. Finally, the NRCS, local Farm Bureau representatives and the resident livestock producer have all supported the grazing infrastructure and vegetation enhancement components of the project.

## 6.3 Disadvantaged Community

**Will the project occur in a Disadvantaged Community as defined in CWC Section 79505.5(a)?**

Answer: I Yes

**Will the project benefit a Disadvantaged Community?**

**If yes, describe benefit(s).**

Answer: I Yes

Answer: Rush Ranch is open daily, free to the public, for hiking and nature observation. The nearest cities are Fairfield, Suisun City and Vallejo. Up to 5,000 visitors come to Rush Ranch including 30 school classes annually from Fairfield, Vallejo, Suisun City and other location for a half- day educational program by SLT's Rush Ranch Educational Council docents. Fairfield and Vallejo are recognized as a Disadvantaged Community. In addition, Rush Ranch is the headquarters of Access Adventure, a non-profit organization facilitating access to nature for disabled persons via horse-drawn wagons.

## **Section 7: Project Statement**

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### **7.1 Introduction**

**Briefly describe the history, background and overview of the project. This should include the following information:**

**Describe history of the project, including all phases completed to date (including funding sources), the current phase for which funding is being requested, and plans for future project phases.**

**Include how the project will address the priorities of this Solicitation as well as other planning documents.**

Answer: In 2014, SLT finalized the comprehensive Rush Ranch Management Plan (RRMP), based on a 10-year planning effort and the technical contributions from wildlife agencies, universities, regional and State planning agencies, and private consulting firms. The plan was funded through grants from the State Coastal Conservancy and provides the general strategy to manage, preserve and restore the unique habitats and species at Rush Ranch. It seeks to improve and restore upland-to-marsh connectivity and enhance and improve native ecosystem processes and vegetation diversity. The proposed Lower Spring Branch Creek and Suisun Hill Hollow riparian barrier removal projects are significant components of the Plan. An Initial Study/Mitigated Negative Declaration (IS/MND) for the proposed projects is currently under public review. We expect a final approved IS/MND by November 2015.

This project fulfills the Delta Water Quality and Ecosystem Restoration Grant Program priorities: Habitat Restoration, Conservation, and Enhancement. It is consistent with the objectives of the California Water Action Plan by providing more reliable water supplies (by preserving wetlands, streams and channel margins) and restoring important species habitats (riparian and tidal wetlands) to benefit special status species, and native fish. It will enhance a regional hotspot for the highest numbers of juvenile native fishes in the Suisun Marsh. The project is consistent with The Suisun Marsh Plan by improving fluvial flows into the estuary, removing barriers, and managing native vegetation diversity through weed control and plantings. The project site will be protected from cattle grazing and will be monitored extensively post-construction to assess success criteria. The project is consistent with Section 1 part II of the "Conservation Strategy" and is largely within the intertidal area of Suisun Marsh with connections to lower fluvial floodplains, seasonal wetlands, and upland fluvial habitat.

### **7.2 Project Description - Purpose and Implementation**

**Include a detailed project description that can serve as a statement of work for a grant agreement.**

**Include the rationale for project need, a description of the objectives and how the proposed approach addresses those objectives. Describe how the project is technically feasible. Describe the means by which each element of the project will be implemented (e.g., methods/techniques used, materials and equipment, etc.). If permits are to be obtained for a proposed project, a complete description of the permits needed and the application status must be included. If applicable, provide the basis for the use of new or innovative technology or practices.**

**Upload Project Description on Attachments tab. The Project Description can be a maximum of ten pages.**

## **7.3 Project Outcomes - Diversity and Significance of the Benefits**

**Describe the project's multiple benefits and the objectives related to those multiple benefits. Where feasible, the objectives should be measureable and quantifiable. Provide analysis and documentation to demonstrate the likelihood that the multiple benefits will be realized and their significance (e.g., climate change response actions, drought preparedness, integrated flood management, protection or improvement of water quality, use and reuse water more efficiently, expand environmental stewardship, increase habitat for threatened and endangered species, reduce species survival stressors).**

Answer: The Suisun Hill Hollow and Lower Spring Branch Restoration project will improve connectivity of fluvial, upland and marsh components by removing restrictions to seasonal surface flows and nutrient transport pathways. This will facilitate the gradual transgression of tidal marsh over edge habitats as sea level rises. In addition, the project actively facilitates establishment of target special-status plant species within the marsh and its edges by implementing a program of expert-designed and supervised propagation, direct seeding of annuals, and transplanting of perennials into suitable local sub-habitats.

Restoration is expected to provide ecosystem benefits to a number of listed species, including those species identified as part of the Fish Restoration Program Agreement (FRPA), which insures the requirements of the USFWS Biological Opinion (BO) for delta smelt, NMFS Biological Opinion for salmon, and DFG Incidental Take Permit for longfin smelt are satisfied. Additionally, restoration is anticipated to support vital habitat for tidal marsh species, including the salt marsh harvest mouse and native and protected rare plant species.

Species and potential ecosystem benefits are further outlined as follows:

↳ Delta smelt is an estuarine resident that spawns in tidal freshwater but can briefly tolerate salinities as high as 19 psu. Delta smelt use of tidal marshes may be largely limited to a secondary function ↳ consumption of productivity exported from the marsh. Direct evidence exists for the high diversity and abundance of juvenile and adult fishes in First Mallard Slough.

↳ Longfin smelt occur mainly during the larval stage when they use the brackish waters as nurseries. Previous fish catch surveys have documented presence of longfin smelt, indicating that suitable conditions exist nearby. The project would extend suitable nursery habitat for longfin smelt benefit adults by increased prey production exports (due to higher freshwater inflows and low food web competition).

↳ Chinook Salmon runs reflect different timing of juvenile rearing states within the Estuary. The proposed restoration Project is expected to benefit juvenile Chinook salmon through foraging within the tidal marshes and foraging in nearby shallow areas that can receive productivity exported from the tidal marshes.

↳ Food web productivity. Primary production within tidal wetlands is quite high, primarily due to the growth of emergent wetland vegetation (macrophytes) within the low to high-elevation marsh areas. Epiphytic algae also play a key role in primary production. Tidal marshes have four main food web pathways to aquatic species: phytoplankton and zooplankton production in tidal channels; terrestrial invertebrate production, transported on ebb tides off the marsh plain into tidal channels; benthic and epibenthic invertebrates on the marsh plain and in tidal marsh channels; and microbial decomposition of marsh detritus. These multiple forms of food web productivity may be accessed within tidal marshes themselves by fish that enter tidal channels and transit the marsh plain on overbank high tides, or outside the tidal marsh through ebb tide export or through 'trophic relay' by other small fishes. Tidal restoration would be expected to extend the influences of

these food web productivity mechanisms.

- Carbon sequestration. Restoration and protection of tidal marsh habitats within Suisun Marsh supports sequestration of atmospheric carbon via emergent wetland vegetation on subsided lands. Such efforts have the potential to yield net reductions in greenhouse gases (GHG), which may provide offset potential (Merrill et al. 2010). SFBay NERR and USGS are currently tracking GHG emissions from the tidal marsh via flux towers.
- Climate change and sea level rise accommodation is accomplished through expansion of tidal marsh into the adjacent uplands as sea level rises. The project removes barriers to sea level and floodwater accommodation.

## 7.4 Project Organization and Management

**Describe how the project will be organized in terms of staffing levels, supervision, administration of tasks, project oversight, auditing, planning sessions, etc. Identify all applicant staff to be funded and their specific roles in the project. Also describe how the project will be fiscally managed, outline subcontracted work, and all personnel services included in the budget.**

Answer: The project has four distinct tasks; 1) Administrative Functions of project management and financial management; 2) Project Development; 3) Construction and Implementation, and 4) Monitoring and Maintenance.

### Task 1 Administrative Functions

- Staffed by SLT staff Kohlmann and DeLozier with oversight by Byrd. Grant reporting to be completed by Kohlmann.

- Financial record-keeping, Contract administration, Invoicing to funders by DeLozier
- No subcontractors will be used for this task.

### Task 2 Project Development (final engineered design, permit applications)

- Lead by Kohlmann and Wickham with oversight by Byrd (As described in Section 5.1). Planning sessions with engineer(s) and SLT staff/committee will be led by Kohlmann, as needed.

- Subcontracting a civil engineer for the project is part of the project development process. Engineer will assist with permit applications, provide final designs, and assist with contractor selection.

- Ecological consulting for permit applications, final design review, and preconstruction hydrologic monitoring will be provided by Siegel Environmental.

### Task 3 Construction and Implementation (all on the ground work)

- Staffed by SLT staff Kohlmann with assistance from Wickham and oversight by Byrd. Volunteer coordination by SLT staff DuMont. Grazing infrastructure installation supervision by SLT staff field stewards.

- Construction supervision by civil engineer to be determined in Task 1

- Biological monitoring per permit requirements by Sequoia Environmental

- Cultural resource monitoring by Solano Archaeological Services if needed by USACOE agreement.

- Technical assistance by Siegel Environmental for on-the-ground supervision of channel excavation, pepperweed removal, final form, and planting plan.

- Construction by contractor to be determined in Task 1 and to carry out all on the ground construction work for the project including all excavation, soil hauling, construction of low impact trails, construction of trough and tank pads, and possibly fences.

- CCC ‐ The CCC was contacted and determined that they could not implement this project. SLT would be willing to use this organization or the local CAL-CC group for fence or planting assistance if they reconsider.

- ↳ In-kind volunteer planting services.
- Task 4 Monitoring and Maintenance**
- ↳ Staffed by SLT staff Kohlmann (permit reporting) with assistance by staff field stewards for weed control and infrastructure maintenance.
  - ↳ In kind monitoring by SF- Bay NERR
  - ↳ Post construction hydrologic monitoring, monitoring data evaluation, and adaptive management assistance by Siegel Environmental
  - ↳ The expenditures of this project are mostly contractor and consultant costs with SLT staff managing the project and the grant administration. SLT has a dedicated business services manager, Ms. DeLozier, who will manage all fiscal services needed for this project. Ms. DeLozier inputs time and expenses, manages Quickbooks, provides monthly and quarterly project costs, generates invoices, tracks account receivables and payables.
  - ↳ No personnel services are required for this project. SLT will not be hiring any staff specifically for this project.

## 7.5 Project Deliverables

**Describe all project deliverables. Periodic progress reports and a final report must be included as deliverables. Project deliverables should correlate to the tasks described above and be identified in the Schedule and List of Deliverables in Section 8.**

**Final reporting for Scientific Studies, Monitoring and Assessment projects must include a synthesis of all findings and provide conclusions on hypotheses tested, as well as recommendations for resource management and further investigations related to the research subject area. The deliverables will include a draft manuscript in a format suitable for publication in a scientific peer-reviewed journal.**

- Answer: Tasks and Deliverables
- Rush Ranch - Lower Spring Branch Creek and Suisun Hill Hollow
- Task No. Task Title Deliverables and
- Key Project Milestones Estimated Completion
- Dates
- 1 Project Management and Administration
    - contract execution 4/1/2016
    - Invoices Quarterly
    - Subcontractor Selection and Scope of Work 6/15/16
  - 1 Administrative Reports
    - Progress Reports
    - Due within thirty (30) days following each quarterly month following Agreement execution.
    - Due annually
    - Due sixty (60) days prior to end of grant term
    - Due thirty (30) days prior to end of grant term
    - Annual Report
    - Due thirty (30) days prior to end of grant term
    - Draft Final Report 2/1/2019
  - Final Report 4/1/2019

- Close-Out Summary Report 4/1/2019
- As-Built report per permit requirements 11/1/2017
- 2 Project Development final engineered design 6/15/2016
- 2 Project Development contractor and selections 11/1/2016
- 2 Project Development permits approved 12/15/2016
- 3 Construction project constructed 10/1/2017
- 3 Construction planting completed 3/1/2018
- 4 Monitoring and Maintenance monitoring data collected year 1 3/1/2018
- 4 Monitoring and Maintenance monitoring data collected year 2 3/1/2019

## **7.6 Scientific Merit - Scientific Basis and Enhance Scientific Understanding**

**Describe background and scientific basis based on the best available science. Identify the proposed methods, approaches, and technology for the project. Explain how project is timely and important, and is justified relative to existing knowledge.**

**Identify key scientific uncertainties and how the project will fill important information gaps. Describe if the project will generate novel information, methodologies, or approaches.**

**Planning, Implementation, and Scientific Studies, Monitoring, and Assessment projects must include a conceptual model that clearly explains the underlying basis of the knowledge that will support the proposed work. Conceptual models can be presented either graphically or as narrative. The conceptual model should reference the pertinent scientific literature. Describe how the conceptual model will be integrated into the project design. The conceptual model must be revisited in the project's final report.**

**Upload Scientific Merit on the Attachments tab.**

## **7.7 Land Tenure/Site Control**

**Applicants for projects conducting on-the-ground work must submit documentation showing that they have adequate tenure to, and site control of, the properties to be improved or restored for a minimum of 25 years. Proof of adequate land tenure includes, but is not necessarily limited to:**

**Fee title ownership.**

**An easement or license agreement.**

**Other agreement between the applicant and the fee title owner, or the owner of an easement on the property, sufficient to give the applicant adequate site control for the purposes of the project and long-term management.**

**For projects involving multiple landowners, all landowners or an appointed designee must provide written permission to complete the project.**

**When an applicant does not have tenure at the time of proposal submission, but intends to establish tenure via an agreement that will be signed upon grant authorization, the applicant must upload a template copy of the proposed agreement, memorandum of understanding (MOU), or permission form**

on the Attachments tab.

## 7.8 Durability of Investment

Implementation and Acquisition projects should generally be maintained for a minimum of 25 years, unless CDFW permits otherwise. Using the Attachments tab, upload a copy of the proposed long-term management and maintenance plan which includes the project's adaptive management strategies.

## 7.9 Climate Change Considerations

Describe how climate change has been taken into account in the proposal. Applicants should describe anticipated climatic changes and resulting impacts to the project area, and how the proposed actions will help the system to adapt or respond to these changes. Applicants should also address how future climate conditions might affect the benefits provided by the project in the long-term.

Answer: The actions described in the project – primarily berm removal and reconnection of the estuarine and fluvial systems – provide for sea level rise within the fluvial systems. The proposed actions will allow for transgression into the uplands without barriers and at a site where studies can be carried out to further our knowledge of how natural systems adapt. Specifically adaptation of plant communities to salinity change, biological invasion, sediment dynamics and wildlife habitat suitability and structure. Study of this project site in the future will allow scientist to gain insight into restoration approaches and efficacy while improving our overall understanding of estuarine dynamics in response to climate change.

## 7.10 Performance Measures

Identify specific performance measures designed to assess progress towards achieving the objectives using [Attachment 1 - Performance Measures Table](#) on the Attachments tab. The performance measures should be linked to the objectives defined above in Section 7.2 and 7.3. Differentiate between those results that are expected to occur within the term of the grant versus those that will require additional time.

## 7.11 Monitoring and Assessment

Describe the approach for monitoring, assessing, and reporting the compliance and effectiveness of the project, which is consistent with the project's objectives. The monitoring design should directly link to the performance measures identified in Attachment 1 - Performance Measures Table.

The monitoring plan shall include the following elements: what will be monitored, monitoring objectives, clearly stated assessment questions, the specific metrics that will be measured and the methods / protocol(s) that will be used, linkages to relevant conceptual model(s), the timeframe and frequency of monitoring, including pre- and post-project monitoring, the spatial scope of the monitoring effort, quality assurance/quality control procedures, compliance with all permit requirements for monitoring activities (e.g., Scientific Collecting Permits), description of relationships to existing monitoring efforts, and how the resulting data will be analyzed, interpreted and reported.

Standardized approaches should be incorporated into the monitoring design, where applicable. Where feasible, describe approaches to leverage existing monitoring efforts or produce data that can be readily integrated with such efforts. Applicants pursuing Implementation or Scientific Studies, Monitoring, & Assessment projects should identify opportunities to extend the monitoring beyond the grant term (e.g.,

**by using standardized, readily replicated monitoring and evaluation processes; leveraging on-going monitoring programs; and building partnerships capable of attracting funding from multiple sources over time).**

**For planning grants, describe baseline monitoring that has been, or will be, conducted in order to support project evaluation during and following implementation. If not feasible based on characteristics of the proposed project, provide justification.**

**Upload Monitoring & Assessment Plan on the Attachments tab.**

## **7.12 Data Management and Access**

**Describe how data and other information generated by the project will be handled, stored, and shared (i.e., disseminated to the public, participants, stakeholders, and the State). Where appropriate, describe data management activities that support incorporation of project data and information into statewide data systems. If applicable, discuss integration of data into the State Water Resources Control Board's California Environmental Data Exchange Network (CEDEN) or Groundwater Ambient Monitoring Assessment (GAMA) Program.**

Answer: Data management activities will be coordinated by project manager Sue Wickham and the lead PI, Steve Kohlmann. All requests for data and research information will be facilitated by the lead PI. Project data, reports, and internal documentation will be stored in two locations using standard data formats:

- ↳ SLT internal server
- ↳ Google Docs

Research, preliminary reports, and data syntheses will be disseminated through CEDEN in accordance with permit obligations.

Internal reports and may be also presented at regional conferences including:

- ↳ Land Trust Alliance Conference
- ↳ Bay Area Open Space Conference

Project updates will also be provided on an ongoing basis to:

- ↳ SLT Executive Committee
- ↳ SLT Board Members
- ↳ SLT Project Committees

Project data and research products will include:

- ↳ Physical collections and samples
- ↳ Images
- ↳ GIS Data in ESRI format
- ↳ Publications
- ↳ Reports
- ↳ Tabular data (XLS)

A SLT maintained web portal will facilitate public use of data and associated research products where appropriate or required.

Ongoing collection, storage, and management of field data will follow internal QA/QC protocols to ensure chain of custody and data consistency. In all cases, data will be stored or converted to a standard digital format.

Naming conventions will be standardized to accommodate versioning and to increase the usability of data. Data generated over the course of the project life-cycle will be maintained in a master

database following standard naming conventions. Version control will be managed through software versioning functionality. Metadata will be captured for all datatypes using metadata-standards appropriate for the datatype.

Source data will be made available to interested agencies, institutions, and partners after an internal audit and processing. Data will be maintained for a period of 3 years following project completion and subsequently archived on the SLT server.

Expected data and research end-users include the following state, federal and local agencies, and institutions:

- ↳ California Department of Fish and Wildlife
- ↳ United States Fish and Wildlife Service
- ↳ National Oceanic and Atmospheric Administration
- ↳ San Francisco State University
- ↳ University of San Francisco
- ↳ California Native Plant Society
- ↳ Department of Water Resources
- ↳ Solano Resource Conservation District
- ↳ State Water Resources Control Board
- ↳ Bay Conservation and Development Council
- ↳ Solano Land Trust

Vegetation and wildlife data captured through the research program will be submitted to the California Natural Diversity Database.

Rare plants documented during vegetation surveys will be reported to CNPS.

## 7.13 Literature Cited

Include a list of literature referenced in the proposal. Upload Literature Cited on the Attachments tab.

### ***Section 8: Schedule and List of Deliverables***

Provide estimated completion dates for all Tasks and Deliverables identified in Section 7.2 (Project Description - Purpose and Implementation) and Section 7.5 (Project Deliverables) using [Attachment 2 - Schedule and List of Deliverables](#). Upload completed document to Attachments Tab. Grants will be executed approximately six months from award and typical grant terms will be three years. Schedules should include project management and identify quarterly submission of progress reports and invoices. If permits are to be obtained for a proposed project, a timeline for obtaining them must be included in the Schedule and List of Deliverables. Completion dates for tasks must allow for final reporting and cannot fall on last day of grant term.

### ***Section 9: Plans, Permits, Landowner Access, and Environmental Compliance***

## 9.1 Delta Stewardship Council - Delta Plan Consistency

Does the project occur, in whole or in part, within the boundaries of the Delta or Suisun Marsh, meet the other necessary conditions in order to be deemed a covered action (CWC §85057.5), therefore requiring consistency with the Delta Plan?

**If yes, describe approach to ensuring consistency with the applicable Delta Plan policies.**

Answer: I Yes

Answer: The Delta Stewardship Council's role is to achieve the coequal goals of providing a more reliable water supply for California and protecting, restoring, and enhancing the Delta ecosystem.

This project serves both goals. The Rush Ranch habitat restoration project directly applies to the Delta Plan's co-equal goals for enhancing and restoring the Delta Ecosystem and provides measurable metrics of compliance with the water supply goal. By restoring and enhancing seasonal flows and removing barriers to flow and floodwater accommodation, the project will increase flows, water storage and water quality issues, thus supporting a more reliable water supply for California. The habitat goal of the DSC is clearly addressed by the project's focus on improving habitat for rare, special status species and restoring native ecosystem processes to support productive and resilient habitat, food-webs and nutrient flows. In its review of the Rush Ranch Management Plan (2105) the DSC commented favorably on the strong monitoring and adaptive management component of the Rush Ranch restoration projects, facilitated by our close collaboration with premier science organizations such as the SFBay-NERR, USGS, and UC Davis. Implementing the monitoring plan for this project will be crucial in providing a baseline and comparative trajectory for other restoration projects, especially CDFW's Hill Slough Project (adjacent to Rush Ranch).

Finally, the DSC aims at preserving the "unique cultural, recreational, natural resource, and agricultural values of the Delta as an evolving place." Rush Ranch, with its historic and cultural significance is a prime example of such an "evolving" place. From a working cattle ranch to a local leader in conservation, Rush Ranch combines a balanced approach to restoring ecosystem processes while maintaining a working landscape and preserving its rich cultural heritage.

## **9.2 Water Conservation and Efficiency Program**

**Pursuant to Governor Brown's April 2014 Executive Order, recipients of funding for future projects that impact water resources, including groundwater resources must have appropriate water conservation and efficiency programs in place in response to persistent drought conditions (refer to Section 3.16 of the Solicitation). Applicants must verify that their organization has a water conservation and efficiency program in place; however, it does not need to be submitted with the proposal.**

**Does the applicant's organization have a Water Conservation and Efficiency Program?**

Answer: I Yes

## **9.3 Landowners Granting Access for Project**

**Provide Landowner information to show permission to access land in which project will occur on, or access will be needed.**

**Please include the following information: Name, Address, and Phone Number.**

## **9.4 Water Rights for Project**

If water will be diverted in any way, provide water rights and permit number associated with that right.

If Post-1914 permit, provide Water Rights permit number and upload a copy of the permit on the Attachments tab.

Answer: I Not Applicable

Answer:

## **9.5 Environmental Compliance**

Identify all federal, state, and local permits for the project and their status using [Attachment 3 - Environmental Compliance Checklist](#).

Upload completed document using Attachments tab.

## **CEQA Information**

Projects that receive funding shall comply with all applicable laws and regulations, including the California Environmental Quality Act (CEQA).

### **9.6 CEQA Compliance**

If the project meets the definition of a "project" in Public Resources Code Section 21065, identify the Lead Agency, contact person, and the justification for why the lead agency was selected.

**Lead Agency:**

Answer: Solano County

**Contact Person:**

Answer: Nedzlene Ferrario

**Address:**

Answer: 675 Texas Street, Suite 5500, Fairfield, CA

**Phone Number:**

Answer: 707-784-6765

**Justification:**

Answer: County has permit authority over facility use at Rush Ranch and Marsh development in Suisun Marsh

## 9.7 CEQA Documentation

Select the type of CEQA documentation to be prepared.

Answer: I NegDec/Mitigated NegDec

## 9.8 CEQA Status

Describe the status of the CEQA documents, expected date of completion, and Initial Study if applicable.

Answer: The Initial Study/ Mitigated Negative Declaration public comment period for the intent to adopt the document began August 31, 2015 and ended September 30, 2015. We expect all applicable documents to be completed by November 1, 2015.

## 9.9 CEQA Document Name

Has the CEQA document been completed?

If yes, provide the name of the document and the State Clearinghouse number. Upload a copy of the documentation on the Attachments tab.

Answer: I Yes

Document Name:

Answer: TBD - After Nov 1, 2015

State Clearinghouse Number:

Answer:

## Section 10: Project Budget

### 10.1 Line Item Budget

Upload [Attachment 4 - Applicant Budget](#) and, if applicable, [Attachment 5 - Subcontract Budget](#) for each proposed subcontractor (do not upload additional sheets for subcontractor's subcontractors) on the Attachments tab.

### 10.2 Budget Justification

Provide a budget break down by task. The tasks should be consistent with Section 7.2 (Project Description, Purpose and Implementation). Describe which line items will be included under each task, and how the line items will be utilized. Describe what is included in each line item that is not self-explanatory [e.g., materials, or equipment (as defined in the [CDFW General Grant Provisions](#))].

Answer: Task1- Project Administration \$ 31,535

Project administration by SLT Kohlmann, oversight by SLT Byrd, all financial, all reporting & permit and grant related.

Task2- Project Development \$ 109,690

Final design, permits and fees, contractor and consultant final selection

Task 3-Implementation \$ 684,512

All on the ground construction, pre construction monitoring, weed control and vege plantings.

Includes most of the supplies for the project.

Task 4-Monitoring and Maintenance \$ 48,357

Hydrologic and vegetation monitoring, data evaluation and adaptive management within grant period.

## 10.3 Construction Component Costs

**For construction projects only, provide a breakdown of construction costs by component of the project.**

**For example, identify construction costs at each project site, or if there are distinctly separate components of the project provide costs of each separate component.**

Answer: Task unit quantity total

mobilization LSBC LS 1 \$ 8,700.00 \$ 8,700.00

lower downstream impoundment berm & side berms BCY 2800 \$ 23.00 \$ 16,000.00

grade new swale & lepidium removal BCY 2700 \$ 18.50 \$ 49,950.00

low impact crossing LF 410 \$ 205.00 \$ 84,050.00

cattle exclusion fence LF 5100 \$ 10.50 \$ 53,550.00

install cattle gates (includes 16'gate) EA 4 \$ 1,050.00 \$ 4,200.00

piping from headquarters to first trough LF 500 \$ 5.00 \$ 2,500.00

Mobilization SHH LS 1 \$ 6,500.00 \$ 6,500.00

lay back channel slopes BCY 1600 \$ 11.50 \$ 18,400.00

remove access road through channel BCY 40 \$ 141.00 \$ 5,640.00

lower downstream impoundment berm BCY 600 \$ 11.50 \$ 6,900.00

grade depression pools downstream BCY 800 \$ 18.50 \$ 14,800.00

low impact crossing LF 165 \$ 205.00 \$ 33,825.00

install water tank (concrete pad, 2500 gal) EA 2 \$ 19,200.00 \$ 38,400.00

install cattle trough pad EA 3 \$ 4,350.00 \$ 13,050.00

cattle trough 300-400 gallon concrete EA 3 \$ 1,500.00 \$ 4,500.00

cattle exclusion fence LF 10300 \$ 10.50 \$ 8,150.00

install cattle gates (includes 16'gate) EA 4 \$ 1,050.00 \$ 4,200.00

## 10.4 Indirect Charges Justification

**Explain the methodology used to determine indirect rate and provide detailed calculations in support of the indirect charge rate.**

Answer: Benefits:

The overall benefit rate for SLT is 30% and is calculated as an average of all employees and includes the following:

- ↳ Payroll Taxes
- o Federal
- o State
- ↳ Workers Compensation
- ↳ Medical, Dental and Vision
- ↳ Retirement
- ↳ Vacation, Sick and Holiday

Indirect Costs:

Indirect costs are costs that are shared by all programs and are consistent with the Federal definition of indirect costs. The overall shared rate of 20% is calculated as a percentage of Direct Salaries and Benefits and include the following:

- ↳ Office Rent 3.9%
- ↳ Office Utilities 0.5%
- ↳ Insurance 6.1%
- ↳ Office Supplies 1.4%
- ↳ Telephone and Website 1.1%
- ↳ Audit and Fiscal Services 5.3%
- ↳ Information Systems and Support 1.6%
- ↳ Other Operating Expenses (banking and payroll fees) 0.1%

## Cost Share

To be eligible, cost share must be applied directly to the project and spent during the grant term. Where applicable, cost share agreements or funding assurances will be required prior to grant execution.

### 10.5 Fund Sources and Cost Share

Upload [Attachment 6 - Fund Sources and Cost Share](#) on the Attachments tab. To be considered eligible, cost share must be used to support the proposed project, must be spent during the proposed project term, and must be secured prior to grant award.

### 10.6 Cost Share Funding

Describe how the cost share funding identified in Attachment 6 will be used in the project (i.e., which project components will the cost share support?):

Answer: The cost share supports implementation and monitoring within the grant period. SIT outreach and volunteer coordinator will perform all services in-kind. SLT land steward staff will provide weed control and infrastructure maintenance, SLT will provide all weed control and maintenance vehicles including ATVs and tractors. Volunteers will provide seed collection and planting services, SLT will provide all media and outreach supplies/expenses.SF Bay NERR will provide monitoring services

### 10.7 Cost Share Funding- Secured

Describe the degree to which the cost share funding identified in Attachment 6 is secured (i.e., proposal submitted, grant executed, grant awarded, etc.). In instances where cost share has not been secured, provide anticipated date by which funding will be secured:

Answer: SLT's Board of Directors reviewed the cost share budget on September 2, 2015 and agreed to provide these services during the grant period and for the 25-year maintenance period (by minute action).

SF Bay NERR has agreed to provide their stewardship coordinator for monitoring services during the grant period. SF Bay NERR is also applying for a CDFW Prop 1 grant (Sept 16 submittal) for more comprehensive research and data collection, which, if funded, would provide additional and optional monitoring data for this project.

SLT has over 350 volunteers who work with us regularly for activities such as planting. We believe there will be no issue in providing 160 hours over the grant period to assist with planting these projects as needed.

Certification And Submission Statement

**Please read before signing and submitting application.**

I certify under penalty of perjury:

- The information entered on behalf of Applicant Organization is true and complete to the best of my knowledge;
- I am an employee of or a consultant for the Applicant Organization authorized to submit the application on behalf of the Applicant Organization; and
- I understand that any false, incomplete or incorrect statements may result in the disqualification of this application.

By signing this application, I waive any and all rights to privacy and confidentiality of the proposal on behalf of the applicant, to the extent provided in this RFP.

**Submission By:** solanoland

**Submitter Initials:** sw

**Submission Date:** 9/16/2015 8:23:56

AM

## Lower Spring Branch Creek and SHH

(7.2) Project Description-Purpose and Implementation (Detailed project description that can serve as a statement of work for a grant agreement – 10 pages max) Purpose – need – objectives-how is it technically feasible-means of implementation- permitting & app status-Basis for new technology

+++++

### Project Description

The primary purpose of the Rush Ranch Lower Spring Branch Creek and Suisun Hill Hollow project is to remove barriers to estuarine transgression in order to allow habitats to move up the drainage gradient as sea level rises. The project will restore tidal flow from Suisun Marsh to the two braided creeks which have headwaters in the Potrero Hills.

The project removes berm and berm barriers in order to reinitiate the exchange of flows, wildlife, sediment, nutrients and seeds. Secondary actions include non-native species removal and native plant revegetation within the tidal and seasonal wetlands and the upland to wetland transition zone. The Suisun Hill Hollow portion of the project will also involve fencing the creek from cattle and installing off-channel water sources for to assist in adaptively managing livestock on the property. Accommodations will be made in the project to continue recreational and educational public access in the project site with installation of low-impact trails. The project will use innovative science and new technology practices and be able to share these practices with the public.

The project fulfills the goal of many local and regional programs to restore portions of Suisun Marsh to tidal flow, connect the uplands to the marsh, enhance fish habitat, enhance rare plant habitat, and provide high quality science to sites where the public can observe, learn and enjoy. The Project is wholly located at Rush Ranch in Solano County, a property owned and operated by Solano Land Trust (SLT) and noted as a San Francisco Bay National Estuarine Research Reserve Site (SF-NERR).

### Project Need

This project was described and planned as part of a Rush Ranch management Plan (SLT, 2014). Funding for that plan was received from the State Coastal Conservancy and included 30% design and CEQA document preparation. SLT wants to implement the project. The project needs a final design in order to permit the project. The final design will include the low impact trail detail and location. Without this critical final planning and permitting piece, the project cannot move forward.

Rush Ranch is unique in Suisun Marsh. While since the early 1930s over 130 duck clubs leveed the marsh waters and managed the habitat for migrating waterfowl, a large part of Rush Ranch remained as tidal marsh. As such, the estuarine area of Rush Ranch is studied as a reference site for marsh restoration and to gain insight into climate change and sea level rise. In addition, Rush Ranch has an undeveloped ecotone transition spanning its entire margin of the marsh. This important zone will slowly migrate as sea level rises. The proposed project will provide scientific insight into how estuarine communities migrate through the ecotone and into the upland on a small scale and fast pace as the tidal

barriers are removed from the creeks. The project will allow visitors to see the transition and gain a greater understanding of our future climate challenges.

This project will also assist with grazing management at Rush Ranch. Scientists have learned the importance of the uplands bringing a multitude of benefits down the creeks and into the marshes. In the past, creeks have been heavily impacted by cattle causing little downstream benefit. This project will exclude cattle from the last unfenced creek and provide off-creek water for livestock. This grazing infrastructure will allow cattle to be used in the riparian area for vegetation management during the dry season with monitoring controls to assure downstream benefit. The fencing and off-creek water allow SLT's land managers to use rotational grazing throughout the ranch.

### Project Objectives and Approach

- Develop final design and submit permit applications
  - *Contract with a licensed engineer to develop final designs and assist with permit application filing.*
  - *Prepare all required permit applications, confirm with agency staff and receive approvals to proceed with implementation from all applicable agencies.*
- Increase hydrologic and hydraulic connectivity between upland, fluvial, and estuarine habitat.
  - *Remove the existing cross-channel berms that currently restrict tidal flow.*
  - *Remove an existing side berm and old roadway within the floodplain.*
- Reconnect the creek to its floodplain and facilitate the establishment of natural fluvial processes.
  - *Construct a new tidal channel to hydraulically connect areas up and downstream of the former berm.*
- Restore natural form and function to the creeks and estuarine systems
  - *Restore seasonal wetland in Suisun Hill Hollow*
  - *Restore tidal wetland in Lower Spring Branch Creek*
- Reduce the abundance of invasive, non-native plant species
  - *Removal of Lepidium latifolium (perennial pepperweed) physically from the floodplain during the construction phase.*
  - *Control invasive non-native species annually. The process will include: an annual assessment of weeds present using innovative drone mapping and satellite imagery; a plan for control using livestock, physical removal, or herbicides in accordance with the Rush Ranch Management Plan, permit requirements and adaptive management.*
- Increase the relative cover of native and special status plants in tidal marsh and seasonal wetlands.
  - *Cultivate tidal marsh and seasonal wetland plantings from local seed via seed collection and contract growing.*
  - *Revegetate former pepperweed areas with native species via native recruitment and installation of cultivated native plants.*

- *Plant riparian scrub vegetation along former berms and other edge disturbed areas to increase plant diversity and provide habitat for native birds such as tri-colored blackbirds.*
- Maintain and enhance habitat for special status species that currently use the site or have potential to use the site.
  - *Recruit special status plants, such as the onsite- soft-bird's beak, following construction and site evaluation.*
- Maintain and enhance existing public and education use.
  - *Construct 575 feet of new trail linkages around the restoration sites along a newly constructed low impact trail.*
  - *Provide docent training, interpretive information, and signage for the public and tours for public and school groups that use the property.*
  - *Encourage local birding groups to collect data on nesting birds and migratory bird use and provide public birding tours..*
  - *Provide public outreach for new drone mapping technology through SLT and SF- NERR media.*
- Accommodate cattle rotation between pastures and limit cattle access to project site
  - *Provide cattle gates and a pathway for twice a year cattle movement between pastures on either side of the creeks.*
  - *Re-align fencing in the SHH restored area to limit cattle access and provide public viewing opportunities and security for the project.*
  - *Permanently exclude cattle from the site during wet-season and during native seed production. Utilize cattle for non-native vegetation control through rotational management.*
  - *Install two troughs and water storage outside the SHH area to promote rotational grazing and vegetation enhancement.*
- Protect restored habitat
  - *Install approximately 10,000 feet of barbed wire fencing along the north side of Suisun Hill Hollow to complete the riparian enclosure. The riparian pastures can thus be grazed for vegetation control as needed, limiting cattle overuse.*
- Data collection and adaptive management
  - *Data collected for permit requirements will be evaluated and assist SLT in adaptively managing Rush Ranch.*

This project is easily implemented. From prior work funded through the State Coastal Conservancy, 30% of the project design work has been completed. The CEQA document for this and other projects at Rush Rsnch is finalized (Nov 2015). The site has been well studied and many of the newer studies were summarized in the Rush Ranch Management Plan and appendices (SLT, 2015).

The first work task will be to develop a final design suitable for permitting and construction. The existing 30% design provided adequate specification to develop costs estimates and quickly develop final plans. Baseline topographic points and some surveying existing conditions will be required to finalize permit applications. SLT will return to stakeholder for comment on the final location and design of the low-impact trail crossing. The project site has been well studied biologically and rare plant and wildlife surveys required for the permits will be conducted prior to construction. The work described above is stand practice.

The berms removal and channel shaping will not take more than a few weeks of excavator and trucking with a contractor. The tidal channel morphology and location has been designed and is easily excavated in the dry season. Onsite personnel will direct this work to specification. Lepidium control has been studied and implemented in the upper portion of Spring Branch Creek through a USFWS grant. Restoration of native species within the reconstructed floodplain and banks is easily accomplished from the huge source of seed in other parts of Rush Ranch including tidal marsh. Scientific monitoring and adaptive management will be accomplished by our partners SF-Bay NERR in conjunction with knowledgeable SLT staff focused on Rush Ranch, its habitats and livestock operations.

Rush Ranch has over 8,000 visitors a year from school-age children to scientific agencies and organizations on field trips and workshops. This project will have excellent outreach through docent-led tours, staff and partner-led tours and workshops and SLT and SF NERR media.

#### Project Implementation Detail

##### Task 1 Project Administration

SLT will administer the project and provide overall project management. SLT's Stewardship Director will be the project lead and oversee all grant-related and permit-related requirements, contract with consultants and contractors and develop a schedule for the project. He will also gather all monitoring and as-built data and provide reporting to the funders as required.

##### Task 2 Project Development

The project has a 30% design and a completed (CEQA) California Environmental Quality Act document. The primary zone of Suisun Marsh which has a 2013 Regional General Permit (RGP3) through (name agencies). This project, which removes berms is not a named project in the RGP3, thus will have to apply for permits on its own. The practices will correspond to those in the RGP3 as much as possible. The permits the project SLT will have to:

- Contract with a licensed civil engineer to provide a final design suitable for permitting and contractor build. Design of a low impact trail that crosses the creek and its precise location is the main unfinished task for this engineer. They will also confirm quantities of soil removal from the berm and determine baseline topographic points. They will assist SLT with permit applications.
- Pre-construction creek monitoring. Siegel Environmental will provide baseline creek cross section for the purpose of monitoring change before and after the construction, per permit requirements and as detailed in the monitoring section of this proposal.
- As required for permitting and construction, Siegel Environmental will provide revegetation plans and monitoring plans.
- Invite all agencies for a site tour to be able to understand the scope of this project. Rush Ranch is well-known to local permitting agencies as a site for workshops and meetings and many agency personnel are familiar with the project. SLT typically invites everyone out at the same time for a tour in order to move the project along quicker by answering all questions and understanding what needs each agency has.
- Apply for BCDC approval of the project. The BCDC application will allow the work to proceed in the primary zone of the marsh, which is under BCDC jurisdiction. All of the Lower Spring Branch site and a portion of the Suisun Hill Hollow site is in the primary marsh. This permit will be applied for upon funding for the engineer and final design.
- Obtain a US Army Corps of Engineers (USACE) 404 permit for working in wetlands under federal jurisdiction. This permit will trigger US Fish and Wildlife Service (USFWS) consultation for federally listed species (list federal species). Wetland delineations and approximate earth moving quantities have been determined. Engineered final designs will be available when the project is funded. SLT will work with the SRCD to streamline the process through the existing RGP3. This permit will be applied for upon funding for the engineer and final design.
- Obtain California Regional Water Quality Control Board (RWQCB) 401 certification for working in wetlands and riparian areas. This project may qualify as a small restoration projects under new guidelines or a standard 401 certification. This certification will be applied for upon funding.
- Obtain a Streambed Alteration Agreement (SAA) from California Department of Fish and Wildlife (CDFW) for working in riparian area. This project may qualify for small restoration projects under new guidelines because only a small portion of the project areas is in the secondary zone of the marsh. This agreement will be applied for upon funding.
- County grading permit will be applied for as needed.
- Coordinate with CDFW for fill storage. SLT has arranged for the berm soil to be used at the CDFW Hill Slough project (adjacent site). This project cost estimate anticipates that the soil will be stored at Rush Ranch until the Hill Slough project is ready for it. (i.e. it does not include transport to Hill Slough.

- Contract with consultants to provide pre-construction and construction monitoring for the project with scopes to be as provided in final permits.

### Task 3 Project Implementation

Project Implementation will follow existing plans and any revisions as required by permit agencies. Actions for this task are on the ground actions. Construction is anticipated to take in the late summer (August 1 and beyond) to avoid rail breeding season and will be confirmed with preconstruction monitoring.

- Preconstruction monitoring provide permit required data and baseline data for the project. SLT anticipates that nesting birds, burrowing owls (could be migratory), migratory birds, and possibly invertebrates will be subject to pre-construction monitoring by qualified biologists.
- Hydrologic monitoring will include cross-sections and profiles and possibly other hydrologic measures such as tidal extent etc as the season allows. This monitoring will be performed on the ground and with aerial imagery, and topographic surveying with hand-held equipment. If possible, transducers will be installed to provide flow and depth data.
- There are two sites in the project with similar actions to take place on each. Contractors will utilize Rush Ranch headquarters and parking areas for mobilization of equipment for both sites as it is centrally located and has developed surfaces that will not be impacted by large equipment or multiple vehicles.
- The contracted engineer and SLT staff will review plans and specifications, permit conditions and SLT's requirements on the first day of work. Biologists will also review any restrictions or requirements based on preconstruction monitoring and permits. Access roads to these sites are already in-place.
- Excavation. The contractor will first construct a coffer dam at the Lower spring Branch Site to prevent tidal inundation of the work area. Then they take down the berms located at each site and any side berms present as noted in the project specifications. Soil will be hauled to a parking lot site at the Rush Ranch Headquarters until it can be used at the CDFW Hill Slough Project. The contractor will use land-based equipment such as a backhoe, front-end loader and excavator. Side berms and an old roadway will also be excavated per the specifications using this same equipment. The contract and the engineer will work in concert with laser levels and surveying gear to assure that elevations of excavations are precisely as planned.
- Under the direction of Siegel Environmental and the engineer the contractor will excavate a channel with the dimensions as in the plans (13 feet top width, 5 foot bottom width and approximately 11162 feet in length).
- Under the direction of SLT staff, Siegel Environmental and the engineer, the contractor will excavate out lepidium patches and haul the root wad/impacted soil for offsite disposal.
- The contractor will also smooth out the banks, create depressions, and create a natural floodplain and bank in the excavated area, as shown on plans and at engineer direction.

- Revegetation will take place immediately in the tidal area and in late fall/winter in the seasonal areas. Plugs and seeds will be planted by volunteers under the direction of SLT staff.
- After one year, riparian scrub species, such as California rose, elderberry, coyote brush and other native species as in the plans, will be planted in the floodplain toe bordering season marsh pools in patches and at irregular intervals by volunteers under the direction of SLT staff.
- Fencing repairs and new segments of 5-strand barbed wire fence will be implemented at Lower Spring Branch Creek to fully enclose the riparian area. New fencing will be installed all along the north side of Suisun Hill Hollow to fully enclose the riparian area. Both sites will have pedestrian and cattle gates installed at the new crossing area.
- Low impact trails, to be designed in Task 1, will be installed by the contractor following all excavation actions. The trail may include a rock lense or similar feature that will allow water to flow over, under and within the structure and also provide a safe footing for pedestrian and occasional service atvs.
- Cattle infrastructure will be added to the pastures above and below Suisun Hill Hollow. The infrastructure will include two water troughs on gravel or concrete pads and a water storage tank, 5,000-gallon, on a pad in southern pasture. Water will be sourced at SLT's existing well at headquarters. The contractor will install the pad and piping for all three items and SLT staff will hook up the items.
- Post construction measurements will be collected and form the basis for as-built reporting and baseline.

#### Task 4 Monitoring and Maintenance

- Monitoring Plans are outlined in Section 7.11 and attachments. Monitoring will cover permit requirements and SLT's standard monitoring. Specifically the monitoring will cover native plant success, invasive species, vegetation change, infrastructure, and wildlife occurrence. All monitoring will be performed by SF Bay NERR.
- Site maintenance during the grant period will cover the entire project site and infrastructure. SLT staff will observe functioning of the cattle infrastructure at least weekly and fencing at least monthly. Livestock operator at the site will assist with maintenance and observing functioning of these items.

**New technology and practice:** SLT has developed a novel approach to mapping of vegetation via low-level aerial imagery produced by Unmanned Aerial Systems (UAS; Lewis and Kohlmann 2015). The Solano Land Trust in partnership with the SF Bay National Estuarine Research Reserve (SF NERR) has recently began work on a remote sensing methodology intended to support the long term vegetation monitoring requirements on more than 12,000 acres including one of the largest intact tidal brackish marsh systems in the U.S., Rush Ranch. This program seeks to develop a standardized, repeatable methodology for annual and long term vegetation monitoring that is broadly applicable across ecological gradients, including the estuarine component of the lands managed by each respective organization. The methodology adapts current GIS and remote sensing methodologies and integrates innovative research and

technologies developed within the past decade. We used an unmanned aerial system (aka “drone”) equipped with near-infrared and color imagery sensors to map invasive weed species and impacts of feral swine in a remnant tidal marsh and adjacent uplands at Rush Ranch. We evaluated the system’s ability to detect and map various weed species and swine rooting using high resolution imagery (2-3 cm) and developed an image classification for several common invasive species. This work suggests that this technology provides high-quality imagery suitable for mapping and identifying vegetation communities and individual weeds species in marsh and ecotone habitats, where access is limited. Thus the use of UAS can significantly increase the accuracy and efficiency of vegetation assessment, with lower labor and other associated costs. Using UAS will be integrated into the monitoring phase of the project and will allow the rapid mapping of vegetation communities at the landscape scale.

## Attachment 1 – Performance Measures Table

Using the Performance Measures Table, identify performance measures designed to assess progress towards achieving the project's objectives. The performance measures should be linked to the objectives defined in Section 7.2 and 7.3 of the application. Differentiate between those results that are expected to occur within the term of the grant versus those that will require additional time. At least some of the performance measures must be feasible to meet during the term of the grant (e.g., can be met within 1-2 years post-implementation). Applicants may need to complete multiple Performance Measures Tables depending on what types of objectives are proposed.

Project Objective(s)	<p>Identify the project objective(s). Objectives are specific, often quantitative, statements of the desired outcomes that the project is expected to achieve. Where feasible, the objectives should be measurable and quantifiable.</p> <ul style="list-style-type: none"> <li>➤ <b>Develop final design and submit permit applications</b> <ul style="list-style-type: none"> <li>○ Contract with a licensed engineer to develop final designs and assist with permit application filing.</li> <li>○ Prepare all required permit applications, confirm with agency staff and receive approvals to proceed with implementation from all applicable agencies.</li> </ul> </li> <li>➤ <b>Increase hydrologic and hydraulic connectivity between upland, fluvial, and estuarine habitat.</b> <ul style="list-style-type: none"> <li>○ Remove the existing cross-channel berms that currently restrict tidal flow. Approximately 2500 CY will be removed from LSBC and 600 CY will be removed from SHH.</li> <li>○ Remove an existing LSBC side berm of approximately 300 CY and 40 CY from an old roadway and 1600 CY of side slope contouring and creating depressions within the SHH floodplain and banks</li> </ul> </li> <li>➤ <b>Reconnect the creek to its floodplain and facilitate the establishment of natural fluvial processes.</b> <ul style="list-style-type: none"> <li>○ Construct a new tidal channel to hydraulically</li> </ul> </li> </ul>
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## Attachment 1 – Performance Measures Table

	<p>connect areas up and downstream of the former berm. Approximately 800 cy will be removed at LSBC.</p> <ul style="list-style-type: none"> <li>• Restore natural form and function to the creeks and estuarine systems           <ul style="list-style-type: none"> <li>○ Restore seasonal wetland in Suisun Hill Hollow. 5-acres of seasonal wetlands restored in SHH</li> <li>○ Restore tidal wetland in Lower Spring Branch Creek. 15-acres of tidal wetland restored in LSBC.</li> </ul> </li> </ul> <p>➤ <b>Reduce the abundance of invasive, non-native plant species</b></p> <ul style="list-style-type: none"> <li>○ Removal of <i>Lepidium latifolium</i> (perennial pepperweed) physically from the floodplain during the construction phase. Up to 1000 CY of soil with <i>Lepidium</i> roots will be removed and disposed of.</li> <li>○ Control invasive non-native species annually. The process will include: an annual assessment of weeds present in the 20 acres of restored area using innovative drone mapping and satellite imagery; a plan for control using livestock, physical removal, or herbicides in accordance with the Rush Ranch Management Plan, permit requirements and adaptive management.</li> </ul> <p>➤ <b>Increase the relative cover of native and special status plants in tidal marsh and seasonal wetlands.</b></p> <ul style="list-style-type: none"> <li>○ Cultivate tidal marsh and seasonal wetland plantings from local seed via seed collection and contract growing. Up to 20,000 plugs will be cultivated and installed.</li> <li>○ Revegetate former pepperweed areas with native species via native recruitment and installation of cultivated native plants. Up to 4 volunteer events will assist with installation.</li> </ul>
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## Attachment 1 – Performance Measures Table

	<ul style="list-style-type: none"> <li>○ Plant riparian scrub vegetation along former berms and other edge disturbed areas to increase plant diversity and provide habitat for native birds such as tri-colored blackbirds. Up to 4 volunteer events will be held to install plantings.</li> <li>➤ <b>Maintain and enhance habitat for special status species that currently use the site or have potential to use the site.</b></li> <li>○ Recruit special status plants, such as the onsite- soft-bird's beak, following construction and site evaluation.</li> <li>➤ <b>Maintain and enhance existing public and education use.</b></li> <li>○ Construct 575 feet of new trail linkages around the restoration sites along a newly constructed low impact trail.</li> <li>○ Provide docent training, interpretive information, and signage for the public and tours for public and school groups that use the property. Each grant year one docent training will be held.</li> <li>○ Encourage local birding groups to collect data on nesting birds and migratory bird use and provide public birding tours. At least one birding tour per year.</li> <li>○ Provide public outreach for new drone mapping technology through SLT and SF- NERR media. At least one article per year will be written and distributed.</li> <li>➤ <b>Accommodate cattle rotation between pastures and limit cattle access to project site</b></li> <li>○ Provide cattle gates and a pathway for twice a year cattle movement between pastures on either side of the creeks. Two cattle gates will be installed.</li> <li>○ Re-align fencing in the SHH restored area to limit cattle access and provide public viewing</li> </ul>
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## Attachment 1 – Performance Measures Table

	<p>opportunities and security for the project. 10,000 feet of fencing will be installed</p> <ul style="list-style-type: none"> <li>○ Permanently exclude cattle from the site during wet-season and during native seed production. Utilize cattle for non-native vegetation control through rotational management. Cattle will be actively managed on a rotational system.</li> <li>○ Install two troughs and water storage outside the SHH area to promote rotational grazing and vegetation enhancement.</li> </ul> <p>➤ <b>Protect restored habitat</b></p> <ul style="list-style-type: none"> <li>○ Install approximately 10,000 feet of barbed wire fencing along the north side of Suisun Hill Hollow to complete the riparian enclosure. The 15 acres riparian pasture can thus be grazed for vegetation control as needed, limiting cattle overuse.</li> </ul> <p>➤ <b>Data collection, adaptive management and administration</b></p> <ul style="list-style-type: none"> <li>○ Data collected for permit requirements will be evaluated and assist SLT in adaptively managing Rush Ranch. How will we make good use of the data and share it with others? – workshops, show and tell, NERR?</li> <li>○ Grant funds will be managed in accordance with strict non-profit standards and UPMIFA requirements.</li> <li>○ Project management and administration will occur throughout the project and provide deliverables for permit and grant requirements</li> </ul>
Project Output Performance Measures	Identify project output performance measures for each objective. Output performance measures evaluate factors that may be influencing outcomes and include tracking project implementation (e.g., activities, products, deliverables, acres of habitat restored, etc.). These should include measurable targets or benchmarks against which project

## Attachment 1 – Performance Measures Table

	<p>success can be measured.</p> <p><i>Output performance measures during implementation include:</i></p> <ul style="list-style-type: none"> <li>✓ <i>Contract with a project engineer</i></li> <li>✓ <i>Permits submitted and approved</i></li> <li>✓ <i>Grant funds managed with monthly review</i></li> <li>✓ <i>Grant requirements fulfilled by year 3</i></li> <li>✓ <i>Contract with contractor completed</i></li> <li>✓ <i>Project constructed to specification</i></li> <li>✓ <i>Seasonal wetland and tidal wetland species recruited and planted by year 2 in project area</i></li> <li>✓ <i>Pepperweed reduced 50% by year 3 in project area</i></li> <li>✓ <i>Annual reduction of 10% in invasive species in project area</i></li> <li>✓ <i>Cattle infrastructure constructed and in use</i></li> <li>✓ <i>Pasture rotation implemented</i></li> <li>✓ <i>Project outreach through docent training and media</i></li> <li>✓ <i>Partner birding tours completed</i></li> </ul>
Project Outcome Performance Measures	<p>Identify project outcome performance measures for each objective. Outcome performance measures evaluate ecosystem responses to the project activities (e.g., improvement in environmental conditions). These should include measurable targets or benchmarks against which project success can be measured, at least some of which must be feasible to meet during the term of the grant (e.g., can be met within 1-2 years post-implementation).</p> <p style="padding-left: 20px;">➤ <b>Increase hydrologic and hydraulic connectivity between upland, fluvial, and estuarine habitat.</b></p> <p style="padding-left: 20px;"><i>With removal of the berms during construction, hydrologic and hydraulic connectivity will be achieved within the first year of seasonal flow</i></p>

## Attachment 1 – Performance Measures Table

	<p><i>and tidal action.</i></p> <ul style="list-style-type: none"> <li>➤ <b>Reconnect the creek to its floodplain and facilitate the establishment of natural fluvial processes.</b></li> </ul> <p><i>With construction of the channel and removal of side berms, the creek will be reconnected physically upon construction and within the first two years thereafter the creeks will start to establish natural processes as the creeks continue to evolve over decades.</i></p> <ul style="list-style-type: none"> <li>➤ <b>Restore natural form and function to the creeks and estuarine systems</b></li> </ul> <p><i>Tidal and seasonal wetland species will begin to re-establish themselves within two years with plantings and continue to evolve over decades.</i></p> <ul style="list-style-type: none"> <li>➤ <b>Reduce the abundance of invasive, non-native plant species</b></li> </ul> <p><i>Pepperweed will be removed during construction and annual weed monitoring and control will keep it in check. This will be an ongoing effort for years to come.</i></p> <ul style="list-style-type: none"> <li>➤ <b>Increase the relative cover of native and special status plants in tidal marsh and seasonal wetlands.</b></li> </ul> <p><i>After construction, native plantings will be planted over the 2 year period with success monitored for that period and in the future. Four or more volunteer events will be held to increase stewardship for the project.</i></p> <ul style="list-style-type: none"> <li>➤ <b>Maintain and enhance habitat for special status species that currently use the site or have potential to use the site.</b></li> </ul> <p><i>After construction, soft bird's beak populations will be evaluated for potential expansion.</i></p>
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## Attachment 1 – Performance Measures Table

	<ul style="list-style-type: none"> <li>➤ <b>Maintain and enhance existing public and education use.</b>  <i>New trail connections will be established to continue public access. Docents, birding groups, and the public will be able to observe the site as soon as construction is complete. Media will provide further details of the restoration site and high-tech monitoring methods.</i></li> <li>➤ <b>Accommodate cattle rotation between pastures and limit cattle access to project site</b>  <i>During the first grazing season after construction the cattle will move through the restoration area to get to adjacent pastures along low-impact trails.</i></li> <li>➤ <b>Protect restored habitat</b>  <i>Fencing will protect the restored habitat immediately after construction.</i></li> <li>➤ <b>Data collection, adaptive management and administration</b>  <i>Data collection and adaptive management will occur during the permit and grant period with formal reporting. Thereafter, SLT will continue to collect and utilize data to manage habitats for optimum restoration.</i></li> </ul>
Measurement Tools and Methods	<p><b>Measurement Tools and Methods</b></p> <ol style="list-style-type: none"> <li>1. Permanent cross sections and long profiles will assess geomorphic changes (within grant term and beyond)</li> <li>2. Vegetation surveys using stratified-random plot and transect methods (within grant term and beyond)</li> <li>3. Occurrence information for the salt marsh harvest mouse and the Suisun shrew collected by CDFW or research organization (within grant term)</li> <li>4. Conduct special status bird species surveys (within grant term and beyond)</li> <li>5. Population demographic monitoring for</li> </ol>

**Attachment 1 – Performance Measures Table**

	<p>special status vegetation communities (within grant term and beyond)</p> <p>6. Ongoing visual inspection public infrastructure (within grant term and beyond)</p> <p>7. Ongoing visual inspection of fence lines (within grant term and beyond)</p> <p>8. Photo monitoring of site and vegetation characteristics (within grant term and beyond)</p> <p>9. Remote Sensing (UAS, Satellite, Aerial Imagery) to assess vegetation dynamics, change, and biological invasion (within grant term and beyond)</p> <p>Optional methods (contingent upon SF Bay NERR funding) (within grant term and beyond)</p> <p>1. Pressure transducers will assess seasonal and tidal hydrology</p> <p>2. Sediment elevation tables (SETs) deployed to capture changes in sediment deposition</p> <p>3. Soil quality monitoring: organic matter, P, %C, %N, C:N, water content and soil pore water salinity)</p> <p>4. Water column salinity measurements</p> <p>5. Permanent piezometers, installed prior to restoration</p> <p>6. Pre-restoration Invertebrate surveys</p>
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## Tasks and Deliverables

### Rush Ranch - Lower Spring Branch Creek and Suisun Hill Hollow

Task No.	Task Title	Deliverables and Key Project Milestones	Estimated Completion Dates
1	Project Management and Administration	contract execution	4/1/2016
		<ul style="list-style-type: none"> <li>• Invoices</li> <li>• Subcontractor Selection and Scope of Work</li> </ul>	Quarterly
			6/15/16
1	Administrative Reports	<ul style="list-style-type: none"> <li>• Progress Reports</li> <li>• Annual Report</li> <li>• Draft Final Report</li> <li>• Final Report</li> <li>• Close-Out Summary Report</li> <li>• As-Built report per permit requirements</li> </ul>	<ul style="list-style-type: none"> <li>• Due within thirty (30) days following each quarterly month following Agreement execution.</li> <li>• Due annually</li> <li>• Due sixty (60) days prior to end of grant term</li> <li>• Due thirty (30) days prior to end of grant term</li> <li>• Due thirty (30) days prior to end of grant term</li> </ul> <p>2/1/2019</p> <p>4/1/2019</p> <p>4/1/2019</p> <p>11/1/2017</p>
2	Project Development	final engineered design, plans and specs (grading, planting)	6/15/2016
2	Project Development	contractor is selected and contracts are in place	11/1/2016
2	Project Development	All permits approved	12/15/2016
3	Construction	Pre-construction surveys completed, construction implemented, quality checked and approved as designed.	10/1/2017
3	Construction	planting completed, watering (if any) installed	3/1/2018
4	Monitoring and Maintenance	monitoring data collected year 1	3/1/2018

4	Monitoring and Maintenance	monitoring data collected year 2, monitoring report submitted	3/1/2019
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### Attachment 3 – Environmental Compliance Checklist

Permitting Agency	Type of Requirements	Required	Applied	Acquired	Date Anticipated/Received
<b>FEDERAL AGENCIES:</b>					
U.S. Army Corps of Engineers	Clean Water Act Section 404 Permit	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
U.S. Army Corps of Engineers	Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Not applicable
U.S Fish and Wildlife Service	Biological Opinion (Section 7 Endangered Species Act)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
NOAA Fisheries	Biological Opinion (Section 7 Endangered Species Act)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Not applicable
<b>STATE AGENCIES:</b>					
CA. Dept. of Fish and Wildlife	Lake or Streambed Alteration Agreement (Section 1600)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
CA. Dept. of Fish and Wildlife	Incidental Take Permit, or Consistency Determination (CESA)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
CA. Dept. of Fish and Wildlife	Habitat Restoration and Enhancement Act of 2014 (AB 2193)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Possibly applicable

### Attachment 3 – Environmental Compliance Checklist

<b>Permitting Agency</b>	<b>Type of Requirements</b>	<b>Required</b>	<b>Applied</b>	<b>Acquired</b>	<b>Date Anticipated/Received</b>
CA. Dept. of Transportation	Encroachment Permit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Not applicable
CA. Coastal Commission	Letter of Consistency	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Delta Conservancy
State Water Resources Control Board	401 General Water Quality Certification for Small Habitat Restoration Projects	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Possibly applicable
Regional Water Quality Control Board	401 Water Quality Certification of Waste Discharge Requirement	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
State Water Resources Control Board	Construction Activities Storm Water General Permit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Not applicable
Central Valley Flood Protection Board	Permission to Encroach on Waterways within Designated Floodways	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Not applicable
<b>Local and Regional Planning Agencies:</b>					
City/County	Grading Permit	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
City/County	Environmental Health Department	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Not applicable

### Attachment 3 – Environmental Compliance Checklist

City/County	Road Use Permits	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Not applicable
Permitting Agency	Type of Requirements	Required	Applied	Acquired	Date Anticipated/Received
Tahoe Regional Planning Agency	Any Relevant Permit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Local Resource Conservation District	Consultation	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	RGP3 amendment
Flood Control Districts	Floodway & Hydrological Analysis	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Other(s) (List):		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Attachment 4 - Applicant Budget			
Rush Ranch Lower Spring Branch Creek and Suisun Hill Hollow			
<b>A. PERSONNEL SERVICES</b>			
<u>Level of Staff</u>	Hours	Rate	Total Project Cost
Executive Director	36.00	\$ 55.11	\$ 1,984
Lands Director	530.00	\$ 42.89	\$ 22,732
Project Manager	120.00	\$ 36.17	\$ 4,340
Business Services Manager	288.00	\$ 27.56	\$ 7,937
Outreach and Education Coordinator	120.00	\$ 28.54	\$ 3,425
Land Steward (includes match hrs.)	160.00	\$ 30.27	\$ 4,843
<Insert or delete line items as needed>	0.00	\$ -	\$ -
<b>Subtotal Personnel Services</b>			\$ 45,261
Staff Benefits @ %		30.00%	\$ 13,578.40
Volunteer Labor (in-kind match- no staff benefits)	160.00	\$ 26.87	\$ 4,299
<b>TOTAL PERSONNEL SERVICES</b>			\$ 63,139
<b>B. OPERATING EXPENSES: GENERAL</b>			
<u>Items (units)</u>	Number of Units	Cost per Unit	Total Project Cost
General Expenses	0.00	\$ -	\$ -
Field Supplies planting plugs, seed field supplies vege restore	1.00	\$ 22,000.00	\$ 22,000
Aerial imagry expense	1.00	\$ 7,327.00	\$ 7,327
cattle infrastructure SLT	1.00	\$ 5,000.00	\$ 5,000
Permit Fees	1.00	\$ 1,000.00	\$ 1,000
volunteer seed collection (in-kind match)	1.00	\$ 9,650.00	\$ 9,650
SLT match vehicles and supplies for maintenance and install	2.00	\$ 1,000.00	\$ 2,000
SLT match nature center for outreach	1.00	\$ 2,750.00	\$ 2,750
SLT match signage and media	1.00	\$ 800.00	\$ 800
SLT match weed control supplies	1.00	\$ 8,000.00	\$ 8,000
<a href="#">See General Grant Provisions for applicable travel reimbursement rates</a>	1.00	\$ 750.00	\$ 750
<Insert or delete line items as needed>	0.00	\$ -	\$ -
<b>Subtotal Operating Expenses: General</b>			\$ 59,277
<b>C. OPERATING EXPENSES: SUBCONTRACTORS</b>			
Excavation contractor (TBD in task 1)			\$ 570,978
Engineer (TBD Task1)			\$ 80,000
Cultural Resource monitor (TBD Task1)			\$ 4,000
Siegel Environmental			\$ 60,407
Biologicals monitoring (TBD TAsk1)			\$ 4800
SF-Bay NERR (In-Kind Monitoring)			\$ 7,010
<b>Subtotal Operating Expenses: Subcontractors</b>			\$ 727,195
<b>D. OPERATING EXPENSES: EQUIPMENT</b>			
See General Grant Provisions for definitions of electronic and purchased equipment definitions.			
<Insert or delete line items as needed>			\$ -
<Insert or delete line items as needed>			\$ -
<b>Subtotal Operating Expenses: Equipment</b>			\$ -
<b>TOTAL OPERATING EXPENSES</b>			\$ 849,611
<b>E. SUBTOTALS &amp; INDIRECT COSTS</b>			
SUBTOTAL A + B (Personnel Services + Operating Expenses: General) includes volunteers and match			\$ 122,416
SUBTOTAL C (Operating Expenses: Subcontractors)			\$ 727,195
SUBTOTAL D (Operating Expenses: Equipment)			\$ -
Requested Indirect Charge Rate (max.20%) @ % (Indirect Charges cannot be applied to subcontracts or equipment)	20.00%	\$ 24,483.19	
<b>TOTAL INDIRECT CHARGES</b>			\$ 24,483.19
<b>D. GRAND TOTAL</b>			\$ 874,094

Attachment 5 - Subcontract Budget				
<b>Rush Ranch Lower Spring Branch Creek and Suisun Hill Hollow</b>				
<b>Siegel Environmental</b>				
Note: A separate subcontract budget sheet must be included for each subcontractor.				
<b>A. PERSONNEL SERVICES</b>				
<u>Level of Staff</u>	Hours	Rate	Total Project Cost	
Principal Classification Title <Insert or delete line items as needed>	234.00 0.00 0.00	\$ 115.35 \$ - \$ -	\$ 26,992 \$ - \$ -	
<b>Subtotal Personnel Services</b>			\$ 26,992	
Staff Benefits @ %		30.00%	\$ 8,098	
<b>TOTAL PERSONNEL SERVICES</b>			\$ 35,089	
<b>B. OPERATING EXPENSES: GENERAL</b>				
<u>Items (units)</u>	Number of Units	Cost per Unit	Total Project Cost	
General Expenses Travel (break down by lodging, per diem, mileage) Mileage Parking <a href="#">See General Grant Provisions for applicable travel reimbursement rates</a>	250.00 0.00 2,000 100.00	\$ 1.00 \$ - \$ 0.575 \$ 1.00	\$ 250 \$ - \$ 1,150 \$ 100	
<b>Subtotal Operating Expenses: General</b>			\$ 1,500	
<b>C. OPERATING EXPENSES: SUBCONTRACTORS</b>				
Hydrologic monitoring pre construction Hydrologic monitoring per year post construction <Insert or delete line items as needed>	1 2	6500 5000	\$ 6,500 \$ 10,000 \$ -	
<b>Subtotal Operating Expenses: Subcontractors</b>			\$ 16,500	
<b>D. OPERATING EXPENSES: EQUIPMENT</b>				
See General Grant Provisions for definitions of electronic and purchased equipment definitions.				
<Insert or delete line items as needed>			\$ -	
<Insert or delete line items as needed>			\$ -	
<b>Subtotal Operating Expenses: Equipment</b>			\$ -	
<b>TOTAL OPERATING EXPENSES</b>			\$ 53,089	
<b>E. SUBTOTALS &amp; INDIRECT COSTS</b>				
SUBTOTAL A + B (Personnel Services + Operating Expenses: General)			\$ 36,589	
SUBTOTAL C (Operating Expenses: Subcontractors)			\$ 16,500	
SUBTOTAL D (Operating Expenses: Equipment)			\$ -	
Requested Indirect Charge Rate (max.20%) @ % (Indirect Charges cannot be applied to subcontracts or equipment)		20.00%	\$ 7,317.89	
<b>TOTAL INDIRECT CHARGES</b>			\$ 7,317.89	
<b>D. GRAND TOTAL</b>			\$ 60,407	

Attachment 5 - Subcontract Budget			
<b>Rush Ranch Lower Spring Branch Creek and Suisun Hill Hollow</b>			
<b>Subcontractors to be determined in Task 1 (See Attachment 4 for breakdown estimate)</b>			
Note: A separate subcontract budget sheet must be included for each subcontractor.			
<b>A. PERSONNEL SERVICES</b>			
<u>Level of Staff</u>	Hours	Rate	Total Project Cost
Classification Title Classification Title <Insert or delete line items as needed>	0.00 0.00 0.00	\$ - \$ - \$ -	\$ - \$ - \$ -
<b>Subtotal Personnel Services</b>			\$ -
Staff Benefits @ %		0.00%	\$ -
<b>TOTAL PERSONNEL SERVICES</b>			<b>\$ -</b>
<b>B. OPERATING EXPENSES: GENERAL</b>			
<u>Items (units)</u>	Number of Units	Cost per Unit	Total Project Cost
General Expenses Field Supplies Permit Fees <i>Travel (break down by lodging, per diem, mileage)</i> <a href="#">See General Grant Provisions for applicable travel reimbursement rates</a> <Insert or delete line items as needed>	0.00 0.00 0.00 0.00 0.00	\$ - \$ - \$ - \$ - \$ -	\$ - \$ - \$ - \$ - \$ -
<b>Subtotal Operating Expenses: General</b>			<b>\$ -</b>
<b>C. OPERATING EXPENSES: SUBCONTRACTORS</b>			
Subcontractor 1 Name Subcontractor 2 Name <Insert or delete line items as needed>			\$ - \$ - \$ -
<b>Subtotal Operating Expenses: Subcontractors</b>			<b>\$ -</b>
<b>D. OPERATING EXPENSES: EQUIPMENT</b>			
See <a href="#">General Grant Provisions</a> for definitions of electronic and purchased equipment definitions.			
<Insert or delete line items as needed> <Insert or delete line items as needed>			\$ - \$ -
<b>Subtotal Operating Expenses: Equipment</b>			<b>\$ -</b>
<b>TOTAL OPERATING EXPENSES</b>			<b>\$ -</b>
<b>E. SUBTOTALS &amp; INDIRECT COSTS</b>			
SUBTOTAL A + B (Personnel Services + Operating Expenses: General)			\$ -
SUBTOTAL C (Operating Expenses: Subcontractors)			\$ -
SUBTOTAL D (Operating Expenses: Equipment)			\$ -
Requested Indirect Charge Rate (max.20%) @ % (Indirect Charges cannot be applied to subcontracts or equipment)	0.00%		\$ -
<b>TOTAL INDIRECT CHARGES</b>			<b>\$ -</b>
<b>D. GRAND TOTAL</b>			<b>\$666,788</b>

**Attachment 6 - Fund Sources and Cost Share Sheet**

To be considered eligible, cost share must be used to support the proposed project, must be spent during the proposed project term, and must be secured prior to grant award.

**<< Insert Project Title >>**

<b>Source of Funds</b>	<b>Cash</b>	<b>In-Kind (If Applicable)</b>	<b>Total</b>
<b>CDFW Restoration Grant Program (see Project Budget)</b>	\$ 839,449	\$ -	\$ 839,449
<b>Applicant</b>	\$ -	\$ 20,476	\$ 20,476
<b>Other State Agency (insert additional rows as needed by Agency Name and funding source)</b>	\$ -	\$ -	\$ -
<b>Federal (insert additional rows as needed by Agency Name and funding source)</b>	\$ -	\$ -	\$ -
<b>SLT volunteers</b>	\$ -	\$ 7,159	\$ 7,159
<b>SF Bay NERR</b>	\$ -	\$ 7,010	\$ 7,010
<b>Total Project Cost</b>	\$ 839,449	\$ 34,645	\$ 874,094

## Section 7.11 Monitoring & Performance Measures

Performance measures (1-10 below) describe the restoration targets this project aims to achieve. Monitoring actions (1-13 below) measure whether the specific restoration targets/performance measures are met.

### Performance Measures

1. Increase hydrologic and hydraulic connectivity between upland, fluvial, and estuarine habitat.
2. Reconnect the creek to its floodplain and facilitate the establishment of natural fluvial processes.
3. Restore natural form and function to the creeks and estuarine systems
4. Reduce the abundance of invasive, non-native plant species
5. Increase the relative cover of native and special status plants in tidal marsh and seasonal wetlands.
6. Maintain and enhance habitat for special status species that currently use the site or have potential to use the site.
7. Maintain and enhance existing public and education use.
8. Accommodate cattle rotation between pastures and limit cattle access to project site
9. Protect restored habitat
10. Data collection, adaptive management and administration

### Monitoring Actions

1. Tidal and Seasonal Hydrology (Performance Measure 1, 2, 4,10)

Pressure transducers assess seasonal and tidal hydrology across the site conditions before and after hydrological reconnection. SLT or NERR deploy pressure transducers in the locations necessary to capture the variation of tidal and seasonal water depth, duration, and frequency found across the primary site conditions within tidal and seasonal marsh (Tables 4.5 and 4.9).

## 2. Geomorphology (Performance Measure 1- 4,10)

Geomorphic monitoring assesses the relationship between restoration actions and stream bed and bank scour and deposition before and after hydrological reconnection. Permanent cross sections and long profiles measure geomorphic changes every year, and are strategically positioned to capture changes within newly created channel and specific site conditions within tidal marsh, seasonal marsh, and transition zone. Short-term channel dimension performance measures are based on marsh area-channel geometry relationships while long-term channel dimension performance measures are based on tidal prism-channel geometry relationships (Williams 2002, Simenstad 2006). In addition, sediment elevation tables (SETs) are installed within restoration conditions to capture changes in sediment deposition and erosion within the marsh plain.

## 3. Vegetation (Performance Measure 1,2,5,6,9,10)

Vegetation monitoring detects vegetation trends and response to restoration actions including hydrological reconnection, exotic plant management, and revegetation. A stratified-random plot or transect placement approach targets specific conditions found within tidal wetlands, seasonal wetlands, and transition zones and randomly places the plot or transect within that condition. The approach establishes a sufficient number of plots or transects for each treatment type for each condition (e.g. weed control method 1 + active revegetation; weed control method 1 + passive revegetation; weed control method 2 + active revegetation; weed control method 2 + passive revegetation, etc). Monitoring detects general trends in the plant community (new weed observations or increases/decreases in species presence), and whether actions achieve the plant community structure and species composition objectives. Vegetation surveys occur on

an annual basis during peak flowering time. While current performance measures for vegetation are general (increase, decrease) Rush Ranch Stewardship program defines performance measures for each weed species.

**4. Soil Quality (Performance Measure 1-7,9,10)**

Soil quality monitoring assesses soil characteristics (organic matter, P, %C, %N, C: N, water content and soil pore water salinity) across site conditions before and after restoration. Monitoring will assesses conditions of soil within same plots established for vegetation monitoring above in order to evaluate the relationship between vegetation, restoration actions, and soil conditions.

**5. Water Column Salinity (Performance Measure 1,2,3,9,10)** Water column salinity measurements provide information on relationship between seasonal inundation, salinity, and vegetation community distribution. Measurements occur multiple times of year in order to capture the seasonal variation.

**6. Ground Water (Performance Measure 1,2,3,10)** Permanent piezometers, installed prior to restoration, measure ground water elevation across the range of site conditions within the tidal marsh and seasonal marsh before and after restoration. Measurements occur multiple times a year to capture the seasonal variation.

**7. Small Mammals (Performance Measure 5,6,9,10)**

Project Managers coordinate with Department of Fish and Game to collect occurrence information for the salt marsh harvest mouse and the Suisun shrew within the tidal marsh, seasonal marsh, and transition zone. If DFG is unable to perform surveys, a qualified biologist with appropriate permits is contracted instead.

**8. Birds (Performance Measure 4,5,6,9,10)**

Project Managers coordinate with PRBO or another qualified specialist to conduct special status bird species surveys before and after restoration within the tidal marsh and seasonal marsh. In

order to avoid impact to birds from restoration activities, site surveys occur prior to and during all restoration activities.

**9. Invertebrates (Performance Measure 4,5,6,9,10)**

A qualified invertebrate taxonomist surveys invertebrates prior to restoration within the tidal marsh and seasonal marsh. If taxonomist observes rare or unusual invertebrates, site grading avoids important invertebrate areas. Invertebrate surveys occur on an annual basis thereafter.

**10. Soft Bird's Beak (Performance Measure 4,5,6,9,10)**

Soft bird's beak population demographic monitoring occurs on an annual basis within the tidal marsh and seasonal marsh. A qualified botanist uses protocols developed by Brenda Grewell (2005) or another qualified expert to survey the population.

**11. Public Use (Performance Measure 7,10)**

SLT quantifies public use features including length of trail, a number of features (signs, etc.) pre and post restoration. Public use surveys evaluate public opinion of access features pre and post restoration in order to determine whether public objectives are met.

**12. Rangeland Infrastructure (Performance Measure 8,10)**

On an annual basis, SLT visually inspects fencelines to ensure that cattle access is restricted. Fenceline repairs occur on an as-needed basis.

**13. Weed Control Efficacy (3,4,5,6,9,10)**

Efficacy monitoring evaluates the effectiveness of particular weed treatment methodologies. For each weed control activity, project manager:

- Records spray locations and amount and type of chemical used each day of treatment, and total person hours required to implement action.
- Records percent cover and size (square meters) of weed patch before treatment and on

an annual basis thereafter.

- Establishes photo monitoring locations at representative treatment areas. Revisit on annual basis.





## LEGAL DESCRIPTION

PG 55567

THE LAND REFERRED TO HEREIN IS DESCRIBED AS FOLLOWS:

ALL THAT REAL PROPERTY IN THE COUNTY OF SOLANO, STATE OF CALIFORNIA,  
DESCRIBED AS FOLLOWS:

PARCEL ONE:

BEGINNING AT A POINT DUE SOUTH OF THE LINE BETWEEN SECTIONS 17 AND 18,  
IN TOWNSHIP 4 NORTH, RANGE 1 WEST, MOUNT DIABLO BASE AND MERIDIAN, ON  
THE RIGHT BANK OF A NAVIGABLE SLOUGH; THENCE ACCORDING TO THE TRUE  
MERIDIAN AS FOLLOWS: NORTH TO AND ALONG SAID LINE BETWEEN SECTIONS  
17 AND 18, 6 CHAINS AND 58 LINKS TO A CORNER OF SWAMP LAND SURVEY NO.  
(AND STILL ON SAID SECTION LINE) 40 CHAINS TO THE NORTHEAST CORNER OF  
SAID SURVEY NO. 476; THENCE NORTH ON LINE BETWEEN SWAMP LAND SURVEYS NO. 476 AND NO. 35  
WITH A LINE BETWEEN SWAMP LANDS AND UPLANDS; FROM WHICH A STAKE MARKED  
136 BEARS NORTH 86 1/2° WEST DISTANT 3 CHAINS AND 40 LINKS AND A STAKE MARKED  
137 BEARS WOUTH 86 1/2° EAST DISTANT 80 LINKS; THENCE ON UPLANDS  
ASCENDING ALONG SAID FENCE WHICH IS THE DIVIDING LINE BETWEEN UPLAND  
LOTS 7 AND 8, NORTH 13 3/4° WEST 32 CHAINS AND 50 LINKS TO STAKE MARKED  
220 AT FENCES, BEING COMMON CORNER TO UPLAND LOTS 7, 8, 16 AND 4; THENCE  
ACROSS THE MAIN RIDGE, ALONG THE FENCE BETWEEN UPLAND LOTS NOS. 4 AND 16,  
AS FOLLOWS: NORTH 1° EAST 4 CHAINS AND 58 LINKS TO A STAKE MARKED "T";  
THENCE DESCENDING NORTH 15° EAST 3 CHAINS AND 77 LINKS TO STAKE MARKED  
"S"; THENCE NORTH 39° EAST 9 CHAINS AND 46 LINKS TO STAKE MARKED "R";  
THENCE NORTH 49 1/4° EAST 12 CHAINS AND 50 LINKS TO STAKE MARKED 211  
IN VALLEY AT COMMON CORNER TO UPLAND LOTS NOS. 3, 4 AND 16 (AT 11 CHAINS  
AND 50 L'NDS CROSSES MAIN CREEK COURSE WESTERLY) FROM STAKE MARKED 211;  
THENCE ALONG FENCES BETWEEN UPLAND LOTS NOS. 3 AND 4 NORTH 83 1/2° WEST  
11 CHAINS AND 28 LINKS TO STAKE MARKED 206, FROM WHICH AN OLD WELL  
BEARS NORTH 45° EAST DISTANT 20 LINKS; THENCE ASCENDING NORTH 12 1/4° WEST  
30 CHAINS AND 84 LINKS TO STAKE MARKED 205 AT FENCE; THENCE DESCENDING  
NORTH 11 1/2° WEST 24 CHAINS AND 53 LINKS TO STAKE MARKED 203 AT  
CROSS FENCE, BEING COMMON CORNER TO UPLAND LOTS NOS. 3, 4 AND 5;  
THENCE ALONG FENCE BETWEEN UPLAND LOTS 3 AND 5 DESCENDING NORTH  
11 1/4° WEST 15 CHAINS AND 72 LINKS TO A STAKE MARKED 204 AT FENCE;  
THENCE NORTH 1 1/4° WEST 3 CHAINS AND 90 LINKS TO A STAKE MARKED  
"R" ON THE EXTERIOR BOUNDARY AND ON THE LINE BETWEEN UPLAND AND SWAMP  
LAND, BEING COMMON CORNER TO UPLAND LOTS NOS. 3 AND 5; THENCE SOUTH  
74 1/2° WEST 1 CHAIN AND 43 LINKS TO A STAKE MARKED 47; NORTH 58 1/4°  
WEST 3 CHAINS AND 60 LINKS TO A STAKE MARKED 48; NORTH 24° EAST 2  
CHAINS AND 80 LINKS TO A STAKE MARKED 49; SOUTH 89 3/4° WEST 3 CHAINS  
AND 60 LINKS TO A STAKE MARKED 50; NORTH 23 1/4° WEST 3 CHAINS AND 42

(CONTINUED)

LINKS TO A STAKE MARKED 51; SOUTH 81 3/4° WEST 3 CHAINS AND 70 LINKS TO STAKE MARKED 52; SOUTH 26 3/4° WEST 7 CHAINS, 45 LINKS TO STAKE MARKED 53; SOUTH 76 1/4° WEST 5 CHAINS AND 50 LINKS TO STAKE MARKED 54; NORTH 65° WEST 5 CHAINS AND 50 LINKS TO STAKE MARKED 55; NORTH 9° WEST 4 CHAINS AND 82 LINKS TO STAKE MARKED 56; NORTH 39 3/4° WEST 2 CHAINS AND 30 LINKS TO STAKE MARKED 57; SOUTH 9° WEST 4 CHAINS AND 11 LINKS TO STAKE MARKED 58; NORTH 31 1/2° WEST 7 CHAINS TO STAKE MARKED 59; NORTH 63 3/4° WEST 3 CHAINS AND 35 LINKS TO STAKE MARKED 60; SOUTH 45 3/4° WEST 2 CHAINS AND 50 LINKS TO STAKE MARKED 61; SOUTH 12 1/4° EAST 4 CHAINS AND 36 LINKS TO STAKE MARKED 62; THENCE SOUTH 13 3/4° WEST 5 CHAINS AND 90 LINKS TO STAKE MARKED 63; SOUTH 41 3/4° WEST 6 CHAINS TO STAKE MARKED 64; SOUTH 79 1/4° WEST 2 CHAINS AND 75 LINKS TO STAKE MARKED 65; SOUTH 52 3/4° WEST 5 CHAINS AND 20 LINKS TO STAKE MARKED 66; SOUTH 4 1/4° EAST 8 CHAINS AND 50 LINKS TO STAKE MARKED 67; NORTH 81 3/4° EAST 5 CHAINS AND 88 LINKS TO STAKE MARKED 68; SOUTH 5 3/4° WEST 3 CHAINS AND 50 LINKS TO STAKE MARKED 69; SOUTH 52 1/4° EAST 5 CHAINS AND 20 LINKS TO STAKE MARKED 70; SOUTH 85 3/4° WEST 9 CHAINS AND 40 LINKS TO STAKE MARKED 71; NORTH 25 3/4° WEST 3 CHAINS TO STAKE MARKED 72; SOUTH 35 1/2° WEST 5 CHAINS AND 25 LINKS TO STAKE MARKED 73; SOUTH 84° WEST 4 CHAINS AND 42 LINKS TO STAKE MARKED 74; SOUTH 59 3/4° WEST 4 CHAINS AND 12 LINKS TO STAKE MARKED 75; NORTH 73 1/4° WEST 4 CHAINS TO STAKE MARKED 76 (AT 2 CHAINS AND 26 LINKS TO NORTHWEST CORNER OF FLOOR OF WAREHOUSE, WHICH HAD BLOWN DOWN); NORTH 41 1/2° WEST 3 CHAINS AND 92 LINKS TO STAKE MARKED 77; NORTH 52 1/4° WEST 3 CHAINS TO STAKE MARKED 78; SOUTH 74 1/4° WEST 2 CHAINS AND 63 LINKS TO STAKE MARKED 79; SOUTH 13 1/4° WEST 5 CHAINS AND 40 LINKS TO STAKE MARKED 80; SOUTH 19 1/2° EAST 7 CHAINS AND 88 LINKS TO A STAKE MARKED 81; SOUTH 64 3/4° WEST 9 CHAINS AND 40 LINKS TO A STAKE MARKED 82; SOUTH 12 3/4° WEST 3 CHAINS AND 22 LINKS TO A STAKE MARKED 83; AND SOUTH 21° EAST 3 CHAINS TO THE NORTHERLY BOUNDARY LINE OF SWAMP LAND SURVEY NO. 33; THENCE LEAVING THE UPLAND AND FOLLOWING THE BOUNDARIES OF SAID SWAMP LAND SURVEY NO. 33 AS FOLLOWS: WEST 13 CHAINS AND 60 LINKS TO THE LEFT BANK OF Suisun Slough; THENCE ALONG THE SAME SOUTH 75° WEST 2 CHAINS AND 23 LINKS, SOUTH 3 1/4° WEST 1 CHAIN AND 6 LINKS; SOUTH 20° WEST 2 CHAINS AND 37 LINKS, SOUTH 38 3/4° WEST 2 CHAINS AND 85 LINKS NORTH 34° WEST 57 LINKS; SOUTH 55 1/2° WEST 6 CHAINS AND 50 LINKS, SOUTH 86° WEST 7 CHAINS AND 88 LINKS, SOUTH 81° WEST 4 CHAINS AND 50 LINKS, SOUTH 34 1/2° WEST 4 CHAINS; SOUTH 61 1/4° EAST 4 CHAINS NORTH 76 1/4° EAST 4 CHAINS AND 50 LINKS; SOUTH 86 1/4° EAST 6 CHAINS AND 50 LINKS; SOUTH 69° EAST 7 CHAINS; SOUTH 23 3/4° EAST 5 CHAINS AND 7 LINKS; SOUTH 23 3/4° EAST 17 CHAINS AND 43 LINKS; SOUTH 23° EAST 2 CHAINS AND 50 LINKS; SOUTH 9° WEST 11 CHAINS AND 14 LINKS; SOUTH 63° 10' WEST 12 CHAINS AND 18 LINKS; NORTH 78° 05' WEST 20 CHAINS AND 28 LINKS; SOUTH 32° :0' WEST 16 CHAINS AND 66 LINKS; SOUTH 16 1/4° WEST 10 CHAINS AND 35 LINKS; SOUTH 72° 50' EAST 12 CHAINS AND 31 LINKS, TO THE LINE BETWEEN SWAMP LAND SURVEY NOS. 33 AND 34; THENCE ALONG THE BOUNDARIES OF SWAMP LAND SURVEY NO. 34, STILL ALONG THE LEFT BANK OF Suisun Slough; SOUTH 62° 05' EAST, 5 CHAINS AND 14 LINKS; SOUTH 11° 25' EAST, 5 CHAINS AND 17 LINKS; SOUTH 70° 50' WEST 22 CHAINS AND 58 LINKS; SOUTH ALONG WEST LINE OF SECTION 13, 4 CHAINS AND 28 LINKS, SOUTH 60° 40' EAST 11 CHAINS AND 33 LINKS,

(CONTINUED)

SOUTH 52° 55' EAST 18 CHAINS AND 38 LINKS TO THE MOUNT OF A NAVIGABLE SLOUGH; THENCE LEAVING SUISUN SLOUGH AND UP THE RIGHT BANK OF THE NAVIGABLE SLOUGH AS FOLLOWS: NORTH 37° 55' EAST 6 CHAINS AND 2 LINKS; NORTH 73° 40' EAST 5 CHAINS AND 8 LINKS, NORTH 55 3/4° EAST 6 CHAINS AND 66 LINKS; NORTH 56° 05' EAST 6 CHAINS AND 90 LINKS; SOUTH 81 1/2° EAST 10 CHAINS AND 92 LINKS, SOUTH 3 CHAINS AND 15 LINKS; SOUTH 71 1/2° WEST 7 CHAINS AND 27 LINKS; SOUTH 29° WEST 4 CHAINS AND 84 LINKS; SOUTH 59 1/2° EAST, 13 CHAINS, SOUTH 89° EAST 4 CHAINS AND 68 LINKS; NORTH 64° EAST 11 CHAINS; NORTH 76 1/4° EAST 4 CHAINS AND 92 LINKS TO THE LINE BETWEEN SECTIONS 13 AND 18 (RANGE LINE BETWEEN TOWNSHIPS 4 NORTH, RANGES 1 AND 2 WEST) NORTH 75 1/4° EAST 3 CHAINS AND 24 LINKS; SCUTH 84° EAST 5 CHAINS; SOUTH 59 1/2° EAST, 7 CHAINS AND 88 LINKS; SOUTH 29° WEST 3 CHAINS; SOUTH 24 1/4° EAST 6 CHAINS, SOUTH 19 3/4° WEST 4 CHAINS TO LINE BETWEEN SWAMP LAND SURVEYS NO. 34 AND 477, COURSE EAST; THENCE ALONG THE BOUNDARIES OF SWAMP LAND SURVEY NO. 477, STILL ALONG RIGHT BANK OF SAID NAVIGABLE SLOUGH, SOUTH 42° 55' EAST 27 CHAINS AND 32 LINKS, SOUTH 58° EAST 8 CHAINS, AND 20 LINKS TO LINE BETWEEN SWAMP LAND SURVEYS NO. 477 AND NO. 476, COURSE NORTH; THENCE ALONG THE BOUNDAREIS OF SWAMP LAND SURVEY NO. 476; STILL ALONG THE RIGHT BANK OF SAID NAVIGABLE SLOUGH; SOUTH 56 3/4° EAST 6 CHAINS AND 46 LINKS, SOUTH 51° EAST 18 CHAINS, SOUTH 83 1/2° EAST, 9 CHAINS AND 66 LINKS, NORTH 52 17/4° EAST 12 CHAINS AND 43 LINKS TO LINE BETWEEN SECTIONS 18 AND 17, COUSE NORTH TO THE POINT OF BEGINNING, COMPRISING UPLAND LOTS NOS. 4, 5, 6 AND 7, CONTAINING AN AGGREGATE AREA OF UPLANDS OF 1053-91/100 ACRES AND SWAMP LAND SURVEYS NOS. 33, 34 AND 477, AND PARTS OF SWAMP LAND SURVEYS NOS. 35 AND 476, ALL AS SHOWN ON THAT CERTAIN MAP ENTITLED: "MAP OF RUSH RANCH", MADE BY G. E. ALLARDT, C.E., AND NOW ON FILE IN THE OFFICE OF THE COUNTY RECORDER OF SOLANO COUNTY IN BOOK 4 OF MAPS, PAGE 33.

EXCEPTING THEREFROM: ANY PORTION THEREOF LYING WITHIN SWAMP AND OVERFLOWED LAND SURVEY NO. 310;

ALSO EXCEPTING THEREFROM: THAT PORTION THEREOF LYING WITHIN THE PARCEL OF LAND DESCRIBED IN THE DECREE QUIETING TITLE HAD ON DECEMBER 10, 1956 IN THE SUPERIOR COURT, SOLANO COUNTY, IN THE MATTER ENTITLED: "FRANK J. JONES, ET AL, PLAINTIFFS, VS. THE ANGLO CALIFORNIA NATIONAL BANK OF SAN FRANCISCO, ET AL, DEFENDANTS", CASE NO. 29703, A CERTIFIED COPY OF WHICH DECREE WAS RECORDED DECEMBER 10, 1956 IN BOOK 860 OF OFFICIAL RECORDS PAGE 347, INSTRUMENT NO. 21833.

REMAINING

RESERVING UNTO THE GRANTOR ANY AND ALL/OIL, GAS, CASINGHEAD GAS, ASPHALTUM, MINERALS, HYDROCARBONS, AND ALL CHEMICAL GAS, NOW OR HEREAFTER FOUND SITUATED OR LOCATED IN ALL OR ANY PART OR PORTION OF SAID LANDS. ENTRY SHALL BE PERMITTED ON THE REAL PROPERTY FOR PURPOSES OF EXPLOITATION OR EXPLORATION OF MINERAL RIGHTS RETAINED BY GRANTOR ONLY UPON FORMAL APPROVAL BY THE GRANTEE AND THE STATE COASTAL CONSERVANCY, WHICH APPROVAL SHALL BE GRANTED ONLY UPON A FINDING THAT THE PROPOSED ENRY WILL NOT IMPAIR THE HABITAT AND SCENIC VALUES OF THE PROPERTY NOR THE IMPLEMENTATION OF THE RUSH RANCH ENHANCEMENT AND MANAGEMENT PLANS, AND SUBJECT TO SUCH TERMS AND CONDITIONS, INCLUDING PAYMENT OF JUST COMPENSATION TO THE GRANTEE FOR USL OF THE PROPERTY, AS THE GRANTEE AND STATE COASTAL CONSERVANCY SHALL APPROVE.

PARCEL TWO:

PG 55570

PART OF SWAMP LAND SURVEYS NO. 35 AND NO. 476 AS SHOWN ON THE MAP OF THE RUSH RANCH IN SOLANO COUNTY, CALIFORNIA, SURVEYED IN JANUARY, 1900, BY GEO. F. ALLARDT, C. E., WHICH MAP WAS FILED IN THE OFFICE OF THE RECORDER OF SAID COUNTY, MARCH 20, 1900. THE LAND HEREIN CONVEYED BEING PARTICULARLY DESCRIBED AS FOLLOWS, - BEGINNING AT A POINT ON THE NORTHERLY BANK OF CUT OFF SLOUGH, WHERE THE SAME IS INTERSECTED BY THE LINE BETWEEN SECTIONS 19 AND 20 IN TOWNSHIP 4 NORTH, RANGE 1 WEST, M.D.M., THENCE NORTHEASTERLY ALONG THE

BANK OF SAID SLOUGH ABOUT 34 CHAINS TO THE SOUTH OF A SMALL SLOUGH, THENCE UP THE MIDDLE OF SAID SMALL SLOUGH AND A LARGER ONE, NORTHWESTERLY ABOUT 80 CHAINS, TO THE PARTITION LINE BETWEEN LAND CONVEYED BY SARAH E. RUSH TO MARY E. RUSH AND KATHARINE RUSH BY DEED DATED MARCH 29, 1900 AND RECORDED IN BOOK 13 DEEDS, PAGE 43 AND LAND OF B. F. RUSH, THENCE ALONG SAID PARTITION LINE SOUTH 13° 55' EAST ABOUT 12.20 CHAINS, SOUTH 49.20 CHAINS TO THE PLACE OF BEGINNING. SAID LAND IS MORE PARTICULARLY SHOWN ON A MAP OF SAME ON FILE IN THE RECORDER OFFICE OF SAID COUNTY, SURVEYED BY E. N. EAGER, LICENSED SURVEYOR, JULY 6, 1900, WHICH MAP WAS FILED IN THE OFFICE OF THE RECORDER OF SOLANO COUNTY, CALIFORNIA, ON OCTOBER 26, 1910 IN BOOK 3 OF MAPS AT PAGE 33.

EXCEPTING THEREFROM: AN UNDIVIDED ONE-HALF OF ALL OIL, GAS, CASINGHEAD GAS, ASPHALTUM, MINERALS, HYDROCARBONS, AND ALL CHEMICAL GAS, NOW OR HERAFTER FOUND, SITUATED OR LOCATED IN ALL OR ANY PART OR PORTION OF SAID LANDS, AS RESERVED IN THE DEED FROM FENTON F. O'CONNELL, OR HIS SUCCESSOR(S), AS TRUSTEE (UNDER TRUST AGREEMENT DATED JULY 30, 1971 AND RECORDED AUGUST 13, 1971 IN BOOK 9462, PAGE 553 OF OFFICIAL RECORDS OF SANTA CLARA COUNTY, CALIFORNIA), RECORDED OCTOBER 30, 1987 IN BOOK 1987 AT PAGE 149599, SOLANO COUNTY RECORDS, INSTRUMENT NO. 73710.

RESERVING TO THE GRANTOR ANY AND ALL REMAINING OIL, GAS, CASINGHEAD GAS, ASPHALTUM, MINERALS, HYDROCARBONS, AND ALL CHEMICAL GAS, NOW OR HERAFTER FOUND, SITUATED OR LOCATED IN ALL OR ANY PART OR PORTION OF SAID LANDS.

ENTRY SHALL BE PERMITTED ON THE REAL PROPERTY FOR PURPOSES OF EXPLOITATION OR EXPLORATION OF MINERAL RIGHTS RETAINED BY GRANTOR ONLY UPON FORMAL APPROVAL BY THE GRANTEE AND THE STATE COASTAL CONSERVANCY, WHICH APPROVAL SHALL BE GRANTED ONLY UPON A FINDING THAT THE PROPOSED ENTRY WILL NOT IMPAIR THE HABITAT AND SCENIC VALUES OF THE PROPERTY NOR THE IMPLEMENTATION OF THE RUSH RANCH ENHANCEMENT AND MANAGEMENT PLANS, AND SUBJECT TO SUCH TERMS AND CONDITIONS, INCLUDING PAYMENT OF JUST COMPENSATION TO THE GRANTEE FOR USE OF THE PROPERTY, AS THE GRANTEE AND STATE COASTAL CONSERVANCY SHALL APPROVE.



This is a copy of the original record  
which is held at the Solano County Assessor's Office.  
Copies of the original record may be obtained by  
paying a fee to the Solano County Assessor's Office.  
Solano County Assessor's Office  
Ward G. Tonneisen  
Gordon J. Dechant  
Debbie [illegible]  
Date \_\_\_\_\_  
Place \_\_\_\_\_  
Copy No. \_\_\_\_\_

This is certified to be an exact  
reproduction of the filed record if  
certification is imprinted in purple ink,  
bearing date of issuance and an original  
signature of the Assessor/Recorder or  
deputy.  
MARC C. TONNESEN  
Solano County Assessor/Recorder  
By: Lena Roche, Deputy  
Issue Date: 04-22-09  
Copy No: 09-355855



**3. C. IRS LETTER**

Internal Revenue Service

District  
Director

Department of the Treasury

P.O. Box 2350, Los Angeles, CA. 90053

Solano County Farmlands  
Open Space Foundation  
1000 Webster Rm 100  
Fairfield, CA 94533-4836

Person to Contact: Gilda Lewis

Telephone Number: (213) 894-2336

Refer Reply to: Org. Name

Date: January 27, 1997

EIN: 94-3015363

Dear Taxpayer:

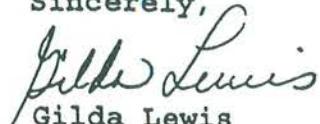
This letter is in response to your request for a copy of the determination letter for the above name organization.

Our records indicate that this organization was recognized to be exempt from Federal Income tax in December 1986 as described in Internal Revenue Code Section 501(c)(3). It is further classified as an organization that is not a private foundation as defined in Section 170(b)(1)(A)(vi).

The exempt status for the determination letter issued in December 1986 continues to be in effect.

If you need further assistance, please contact our office at the above address or telephone number.

Sincerely,

  
Gilda Lewis

Disclosure Assistant

**Internal Revenue Service**

**Date:** January 26, 2005

SOLANO LAND TRUST  
1001 TEXAS STREET SUITE C  
FAIRFIELD CA 94533

**RECEIVED**

JAN 31 2005

**SOLANO LAND TRUST**

**Department of the Treasury**

P. O. Box 2508  
Cincinnati, OH 45201

**Person to Contact:**

Ms. Edwards 31-07427  
Customer Service Representative

**Toll Free Telephone Number:**

8:00 a.m. to 6:30 p.m. EST  
877-829-5500

**Fax Number:**

513-263-3756

**Federal Identification Number:**

94-3015363

Dear Sir or Madam:

This is in response to the amendment to your organization's Articles of Incorporation filed with the State of California on December 18, 2003. We have updated our records to reflect the name change as indicated above.

In December 1986 we issued a determination letter that recognized your organization as exempt from federal income tax. Our records indicate that your organization is currently exempt under section 501(c)(3) of the Internal Revenue Code.

Our records indicate that your organization is also classified as a public charity under sections 509(a)(1) and 170(b)(1)(A)(vi) of the Internal Revenue Code.

Our records indicate that contributions to your organization are deductible under section 170 of the Code, and that you are qualified to receive tax deductible bequests, devises, transfers or gifts under section 2055, 2106 or 2522 of the Internal Revenue Code.

If you have any questions, please call us at the telephone number shown in the heading of this letter.

Sincerely,

*Janna K. Skufca*

Janna K. Skufca, Director, TE/GE  
Customer Account Services

## **7.1 Scientific Merit – Scientific Basis and Enhance Scientific Understanding:**

*Describe background and scientific basis based on the best available science. Identify the proposed methods, approaches, and technology for the project. Explain how project is timely and important, and is justified relative to existing knowledge.*

*Identify key scientific uncertainties and how the project will fill important information gaps. Describe if the project will generate novel information, methodologies, or approaches:*

*Planning, Implementation, and Scientific Studies, Monitoring, and Assessment projects must include a conceptual model that clearly explains the underlying basis of the knowledge that will support the proposed work. Conceptual models can be presented either graphically or as narrative. The conceptual model should reference the pertinent scientific literature. Describe how the conceptual model will be integrated into the project design. The conceptual model must be revisited in the project's final report.*

Note: The following materials are adapted and sourced from

1. "Rush Ranch Existing Conditions Report, FINAL REPORT, December 23, 2010 prepared by Wetlands and Water Resources, Inc., with Peter Baye, Ph.D. and Vollmar Consulting. On file at SLT.
2. Memorandum on Lower Spring Branch Creek Restoration Design, 2012 to Ben Wallace, Solano Land Trust from ESA-PWA staff Jessie Olson, Christina Toms, Michelle Orr, and Phil Luecking and Independent Consultant Peter Baye. On file at SLT
3. Memorandum on Suisun Hill Hollow Creek Restoration Design, 2012 to Ben Wallace, Solano Land Trust from ESA-PWA staff Jessie Olson, Christina Toms, Michelle Orr, and Phil Luecking and Independent Consultant Peter Baye. On file at SLT

### **Background, scientific basis and project need**

The proposed restoration project is integral to estuarine stewardship and restoration of native ecosystems at Rush Ranch. Wetlands at Rush Ranch comprise regionally unique landscapes that preserve a high degree of natural prehistoric ecological and geomorphic variability. The estuarine wetlands within Rush Ranch are also the most extensive remaining tracts of fully tidal marsh within Suisun Marsh, and contain the largest extent of remaining tidal-terrestrial edge soil and vegetation. These unique habitats provide a significant proportion of the remaining Suisun Marsh refuges for a broad range of special-status species.

The project is located within the broad transition zone between the tidal marsh plan and alluvial fans, upland grasslands. The terrestrial ecotones perform important ecological services to maintain the integrity of tidal marshes. The high marsh terrestrial ecotone is a high stress environment characterized by complex inundation patterns, high soil salinity, and localized freshwater inputs from active alluvial fans, resulting in uniquely adapted native plant species and vegetation assemblages. This zone contains suitable habitat for soft bird's beak, a federally endangered species, and provides important habitat for black rails, salt marsh harvest mouse, potential habitat for Suisun shrew and other wildlife of interest. Nutrients are exported from this ecosystem component into the channels, where they support some of the highest juvenile fish densities recorded in Suisun Bay.

Intact tidal marsh areas provides a broad range of habitat functions for fish, including spawning habitat, nursery, migratory corridor, foraging habitat, and refuge. However, in most areas within Suisun Bay levees associated with duck ponds prevent the development of edge habitat and obstruct hydraulic connectivity between tidal marshes and adjacent aquatic habitat. The absence of large, diked areas and Rush Ranch's regionally unique morphology therefore makes it particularly well-suited to supporting fish species.

However, modifications by past owners of the Ranch within the Lower Spring Branch and Suisun Hill Hollow have created barriers to nutrient exports and natural hydrographic connectivity. This project aims at removing these barriers and restoring the channels to their original ecological functions. The Spring Branch Creek corridor (terminating in First Mallard Sough) in particular harbors a high diversity and abundance of fishes (J. Durand, USGS, pers. comm. 2010), while rare plants are the primary focus in Suisun Hill Hollow. The lower alluvial fan at Spring Branch Creek and Suisun Hill Hollow support 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 -and some possibly undescribed- invertebrate taxa, including disjunct populations of species and genera found in interior alkali desert habitats or coastal shoreline habitat, such as tiger beetles (*Cicindelidae*), staphylinid and anthribid beetles, multilid wasps, and numerous aquatic and terrestrial coleopteran beetles. The seasonally wet, naturally flood disturbed alkali flats, washes, and depressions of active alluvial fans are likely refugia for significant invertebrate biodiversity. Rush Ranch's southern tidal marsh plains support the last known populations of Suisun Thistle (*Cirsium hydrophilum* ssp. *hydrophilum*, federally listed as endangered), large natural and artificially established populations of soft bird'sbeak (*Chloropyron molle* ssp. *molle*), and the only known contemporary San Francisco Estuary (type locality, Suisun Marsh) population of Bolander's waterhemlock (*Cicuta bolanderi*, syn. *C. maculata* var. *bolanderi*), a globally rare plant. Suisun Thistle and Bolander's waterhemlock were historically associated with one another. They both occur mostly on deep, tidally well drained brackish marsh peat soils bordering well drained banks. These local rare plant populations occupy a relatively small portion of what appears to be suitable sub-habitats more widely distributed around Rush Ranch. In addition, Rush Ranch supports numerous other uncommon or regionally rare species and disjunct plant populations, including Suisun aster and Lyngbye's sedge. Vegetation of inactive alluvial fans (relict Pleistocene fans) grade into tidal marshes and seasonal wetlands, but are otherwise terrestrial grasslands. Past exclusions of cattle from such areas has shown rapid recolonization by lowland clonal perennial grassland and sedge meadow dominants.

### **Proposed methods, approaches, and technology**

The project aims to restore a significant, previously degraded seasonal streams and wetland area to full function and interaction with the tidal ecosystem. It specifically focuses on facilitating downslope nutrient and stream flows, upslope migration of tidal marsh as sea level rises, removal of cattle grazing from sensitive seasonal wetlands, and impeding the invasion of noxious weeds. 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 impoundment sites to recreate a natural hydrograph, implementing vegetation management actions to encourage native wetland plants and discourage weeds, and installing a compatible trail to maintain public access across the site.

Detailed project descriptions, including the proposed approaches, methods, equipment and schedules are presented in Section 7.2 of the application. These restoration project descriptions include schematic diagrams displaying the locations and sizes of restoration features, a description of vegetation management techniques, an estimate of project cut and fill amounts, an estimate of impacts to wetlands and stream habitats, and a description of construction methods and construction phasing.

## **How the project is timely and important**

The restoration of the two major drainages at Rush Ranch has been planned since the early 2000's and has undergone extensive scientific and public review. The CEQA process is nearing completion with an expected approval date of November 2015. The finalization of the design and its implementation is a logical next step, especially in view of the ongoing drought and the necessity to better manage wetlands within the Suisun Bay. The project is important for a variety of reasons, including:

- Restoring habitats and ecosystem function
- Protecting sensitive resources from drought-related impacts (impoundments, cattle watering)
- Increasing ecosystem resilience and adaptation to ecological change
- Improving public access and educational opportunities
- Providing a baseline for similar restoration projects within Suisun Marsh
- Testing scientific hypotheses on trajectories of ecological functions with restore systems compared to baseline

## **Science Support**

The Rush Ranch management plan entails a strong adaptive management and monitoring program as a foundation of sound decision making. The adaptive management program relies on two crucial elements: (1) new information gathered through monitoring and research and from other complementary sources (e.g., results of monitoring and research conducted by SLT partners and others), and (2) a systematic adjustment of management strategies or decisions to ensure that biological goals and objectives are met and that species and natural communities are provided effective conservation and contributions toward recovery.

However, adaptive management often requires scientific data and expertise that extend beyond the capacity of a land trust. Thus, SLT looks to the NERR as its current primary science partner in managing the Ranch. NERR in partnership with SLT provides the crucial science support that allows management decisions to be made adaptively and based on the best available science. In that respect, NERR scientists will support SLT in providing peer reviews of annual reports, project designs, specialized management plans (e.g., invasive species) and restoration projects. NERR scientists, by virtue of having unlimited access to the Ranch as an outdoor laboratory and reference site, are intimately familiar with the conditions, activities and management objectives of the Ranch, and therefore will be able to provide realistic, practicable scientific advice and support to managers in reducing uncertainty. The close working relationship between SLT and NERR provides opportunities for restoration projects being designed manipulative studies to test hypotheses and to help reduce uncertainty related to high variability in natural conditions through carefully laid-out statistical designs. The ability to integrate scientific experimentation and long-term observation of a rare ecological system while supporting its preservation, enhancement and restoration is a unique benefit to both partners. It will ensure that management decisions are made with the best available information.

## **Key drivers of future change, uncertainties:**

The primary driver of future change at Rush Ranch -and within the Suisun Bay ecosystem- is sea level rise and climate change. Rush Ranch tidal marsh vegetation has in the past undergone long-lasting (multiple centuries) shifts in dominant vegetation in relation to long-term variability in rainfall and delta outflows. Rush Ranch's tidal marsh plain supports mature high marsh habitats developed under relatively low rates of sea level rise (< 2 mm/yr) within the last 2000 years, before which it was primarily low

marsh or unstable tidal flats and low marsh. The distribution of high tidal marsh habitats associated with many special status species is closely associated with the extensive tidal drainage (creek and ditch) networks within the marsh plain. Current research suggests that the marsh plain, as a vegetated geomorphic feature, may be able to persist at rates of accelerated sea level rise significantly greater than those under which it formed during the late Holocene, rather than “drown” as mudflat. The dominant vegetation of the marsh plain and high marsh bordering creeks and ditches, however, may become vulnerable to major shifts. Climate change projections are sensitive to many future human actions and to highly complex atmospheric processes, making specific projections challenging at best. California is projected to retain its Mediterranean climate of cool and wet winters and warm and dry summers, including experiencing a high degree of variability in interannual precipitation amounts.

Reduced regional supply of suspended estuarine sediment and rates of sea level rise significantly greater than 2 - 3 mm/yr, however, may cause upper intertidal marsh accretion rates in particular to lag behind rising sea level. Lagging high marsh accretion rates (particularly in El Niño years with punctuated rises of sea level tens of centimeters above the “smoothed” sea level rise curve) makes high marsh habitats within the marsh plain vulnerable to conversion to middle marsh zones with different dominant plant assemblages, such as bulrush. Similarly, poorly-drained marsh plains farther from overbank sediment supplies of tidal channels may be subject to conversion to low marsh if marsh accretion rates lag significantly behind rising sea levels.

In general, high marsh habitats on the peaty marsh platform, dependent on marsh accretion to keep pace with accelerated sea level rise significantly above long-term average rates, are at high risk of instability. These interior high marsh habitats support most of the rare or endangered tidal marsh plants and wildlife at Rush Ranch, including the endemic Suisun Thistle. Conversion of high brackish marsh to lower brackish marsh zones dominated by bulrush may also constrain the growth and spread of some dominant non-native invasive plants in well drained marsh plains or high marsh, such as broadleaf pepperweed (*Lepidium latifolium*). In contrast, high marsh zones fringing the terrestrial ecotone below the extreme high water line are independent of marsh accretion and form directly on antecedent slopes as sea level rises. This fringing high marsh and terrestrial ecotone is not confined by dikes or development at Rush Ranch, and is capable of natural landward estuarine transgression with sea level rise, particularly in valleys (active alluvial fans) with very gentle topographic gradients. The landward-edge linear fringe of existing high marsh on terrestrial mineral soils, however, provides limited habitat for wildlife species that must nest and forage in relation to tidal creeks, and may not provide equivalent substrate or hydrology for rare plants associated with high marsh vegetation of peaty tidal creek banks and natural levees.

The primary system-wide uncertainty is related to the cumulative effects of sea level rise on tidal marsh vegetation of Rush Ranch, which will likely include significant interactions with direct and indirect influences of climate change, including long-term shifts in salinity (annual average and seasonal variability, extreme events), tidal range (tidal damping effects of planned or unplanned unrepaired breaches of levees of subsided diked baylands of Suisun Marsh, or the Delta), and especially rainfall.

#### **Conceptual Model of 21st Century Tidal Marsh Vegetation Change (from WRA 2010).**

The geomorphic and ecological development of Rush Ranch tidal marshes during the last 2500 years occurred over a period of consistently slow sea level rise and strongly fluctuating climate and salinity regimes (Byrne et al. 2001). The warm, dry, saline phases of its development lasting from decades to many centuries, may be comparable to forecast climate warming of the 21st century (Knowles and Cayan 2002), but interactions among higher salinity and temperatures with significantly accelerated sea level rise are likely to generate unprecedented, ecological conditions unprecedented in the Holocene paleoecological record (Malamud-Roam et al. 2007, Watson and Byrne 2009). Qualitative predictions of likely large-scale, long-term ecological responses of Rush Ranch tidal marsh vegetation to combined

accelerated sea level rise, altered seasonal Delta outflows, and higher temperatures can be based on recent historic trends of vegetation change in the San Francisco Bay Estuary (Watson and Byrne 2009), and adapted to specific Rush Ranch conditions.

The following assumptions form the basis for a qualitative conceptual model of long-term 21<sup>st</sup> century vegetation change in Rush Ranch tidal marshes:

- Net deposition of fine suspended tidal sediment in the Suisun Marsh will continue to decline as sea level rises (Ganju and Schoellhamer 2009)
- Proportionally more tidal marsh accretion will depend on deposition of fine suspended sediment as sea level rise rates increase and marsh productivity declines with increasing submergence (Byrne et al. 2001)
- Increased summer salinity will result from decreased Sierra snowpack and melt water affecting summer delta outflows (Knowles and Cayan 2002)
- Low tidal marsh salinity increases will directly affect composition and productivity of low marsh vegetation (Watson and Byrne 2009)
- High tidal marsh (marsh plain) salinity will be offset by increased tidal immersion in tidally drained marsh plains (Watson and Byrne 2009)
- High tidal marsh salinity in poorly drained or undrained tidal marsh (pans, undrained interfluves) may increase due to higher salt loading during spring tides followed by evaporation.
- High tidal marsh salinity in tidal marsh terrestrial ecotones will increase due to reduced rainfall and prolonged evaporation following infrequent spring tide flooding episodes.
- Increased tidal marsh bank erosion (fringing marsh, slough banks, bay marsh edges) will occur due to increased tidal marsh prism per unit marsh area, and increased water nearshore water depths per unit wave fetch.
- Tidal sedimentation gradients associated with overbank deposition will concentrate suspended sediment and organic marsh peat accretion in high marsh near bank edges
- High marsh elevations bordering tidal channel sedimentation gradients will fall behind sea level rise more slowly than marsh plains distant from tidal channel sedimentation gradients.
- High marsh areas of terrestrial edges will keep pace with sea level rise depending on slope of alluvial fans subject to estuarine transgression, and alluvial sedimentation into rising tidal marsh.
- High marsh bordering bluff scarps (Suisun Slough, Hill Slough) will be subject to increased disturbance from bank slumping due to wave erosion and undercutting associated with sea level rise acceleration.

Low marsh (now tule-dominated) fringing channels is likely to respond to increased frequency and duration of high salinity by conversion to bulrush marsh (*Schoenoplectus americanus*) at lower brackish ranges of increased salinity, and alkali-bulrush marsh (*Bolboschoenus maritimus*) or even cordgrass (*Spartina foliosa*) at higher brackish ranges of increased salinity. These bulrush species do not grow below MTL, unlike tules that tolerate submergence at MLW and below. Bulrush low marsh conversion

will therefore cause narrowing of low marsh zones, and reduced canopy height. Marsh width and shoot height are principal factors influencing wave energy attenuation. As fringing low marsh becomes narrower and lower, wave energy attenuation will decrease, providing positive feedback to marsh erosion response to bay deepening and increased wave energy associated with sea level rise. Because of frequent (daily) tidal inundation, the potential rate of sediment accretion in low marsh is relatively high in response to sea level rise.

High marsh (tall vegetation, natural levees) bordering tidal sloughs, one of the primary habitats for sensitive wildlife and plant species, is very infrequently flooded compared with low marsh, and is likely to suffer very low rates of sediment accretion in response to sea level rise. High tide flood refuge functions of slough banks within marsh interiors are likely to deteriorate, and increased horizontal slough bank erosion (slumping) due to increased tidal prism is likely to exceed vertical bank accretion. This internal loss of high marsh cover will decrease habitat suitability for resident rallid species and small mammals dependent on high tide refuge cover within their home ranges in the marsh plain. High tide wildlife cover/flood refuge habitat within the marsh plain may depend increasingly on scarce large woody debris or floating debris during extreme high tides. Tidal channels will widen but high marsh zones (natural levees) will narrow or disappear as erosion increases. This process will significantly reduce habitat for special-status high marsh species narrowly distributed along slough banks, such as Suisun thistle, soft bird's beak, and Bolander's water-hemlock.

Most stable or persistent high tidal marsh zones will remain along the terrestrial edge of the marsh on low hillslope toes and alluvial fans composed of mineral sediment. Silty, low bulk density high marsh soils will be associated with active alluvial fan deposition. Higher bulk density soils will be associated with tidal marsh edges transgressing sandy clay loams of older alluvial fans. Peaty, well-drained high tidal marsh banks will become very scarce or eliminated in the marsh overall. Terrestrial edge high marsh may be dominated by low-growing species compared with tidal marsh slough banks, and may provide less cover during extreme spring high tides.

As peak summer salinity in channels increases, oligohaline (fresh-brackish) high tidal marsh species assemblages may become limited to areas of active terrestrial seeps (shallow groundwater discharge) or edges of alluvial fans with seasonal streamflow. Tidal marsh plains are likely to increase in tidal drainage as channel networks erode headward in response to increased tidal prism. Vegetation of well-drained tidal marsh plains will increase in silverweed, bulrush and rush dominance. Extreme droughts associated with summer tidal channel salinity over about 18 ppt will increase pickleweed and saltgrass in marsh plains over bulrush (i.e., similar to current Napa Marsh). Increased tidal flooding and drainage of marsh plains will offset net increases in salinity from tidal sources, as predicted by Watson and Byrne (2009). Remaining poorly drained tidal marsh plains will revert to pans, and will exhibit increased peak summer salinity. Regenerated pans more than 30 cm deep may initially support sago pondweed *Stuckenia pectinatus*, but may become dominated by wigeongrass (*Ruppia maritima*) if summer peak salinities exceed 18 ppt. The pace of marsh change is likely to be punctuated by abrupt increases in sea level (20 cm or more) associated with strong ENSO and PDO events, and extreme drought events. Extreme events may establish new patterns of marsh vegetation dominance that lag over recovery intervals in more average conditions, such as rapid expansion of bulrush stands in wet El Nino years with elevated sea levels, or expansion of saltgrass-pickleweed vegetation in extreme drought years.

Non-native invasive plant species that are widespread dominants in middle and high brackish marsh zones of the southern marsh plain, such as broadleaf pepperweed (*Lepidium latifolium*) and wild celery (*Apium graveolens*) are likely to endure increased competition from native dominant bulrush and rush species with higher flooding tolerance as sea level rise rates accelerate, and marsh accretion rates fall behind rising sea level. Impacts of these invasive species on sensitive rare native species in many interior marsh plain locations are likely to be reduced or nil, as habitat suitability for rare native species will likely be

reduced or eliminated sooner than *Lepidium latifolium* is reduced by bulrush competition in submerging marsh plains. Wetland weed invasion pressure and impacts on terrestrial edge high marsh vegetation may increase as marsh zones ascend gentle topographic gradients as sea level rises. Pre-emption (invasion resistance) effects of antecedent vegetation in the shifting narrow landward highmarsh gradients may become relatively more important for 21st century invasive species management. Wetland weed invasion of terrestrial tidal marsh edges may become limited by progressive expansion of widespread native clonal perennial graminoid species like *Leymus triticoides*, and to lesser extent, *Carex praegracilis* and *C. barbara*.

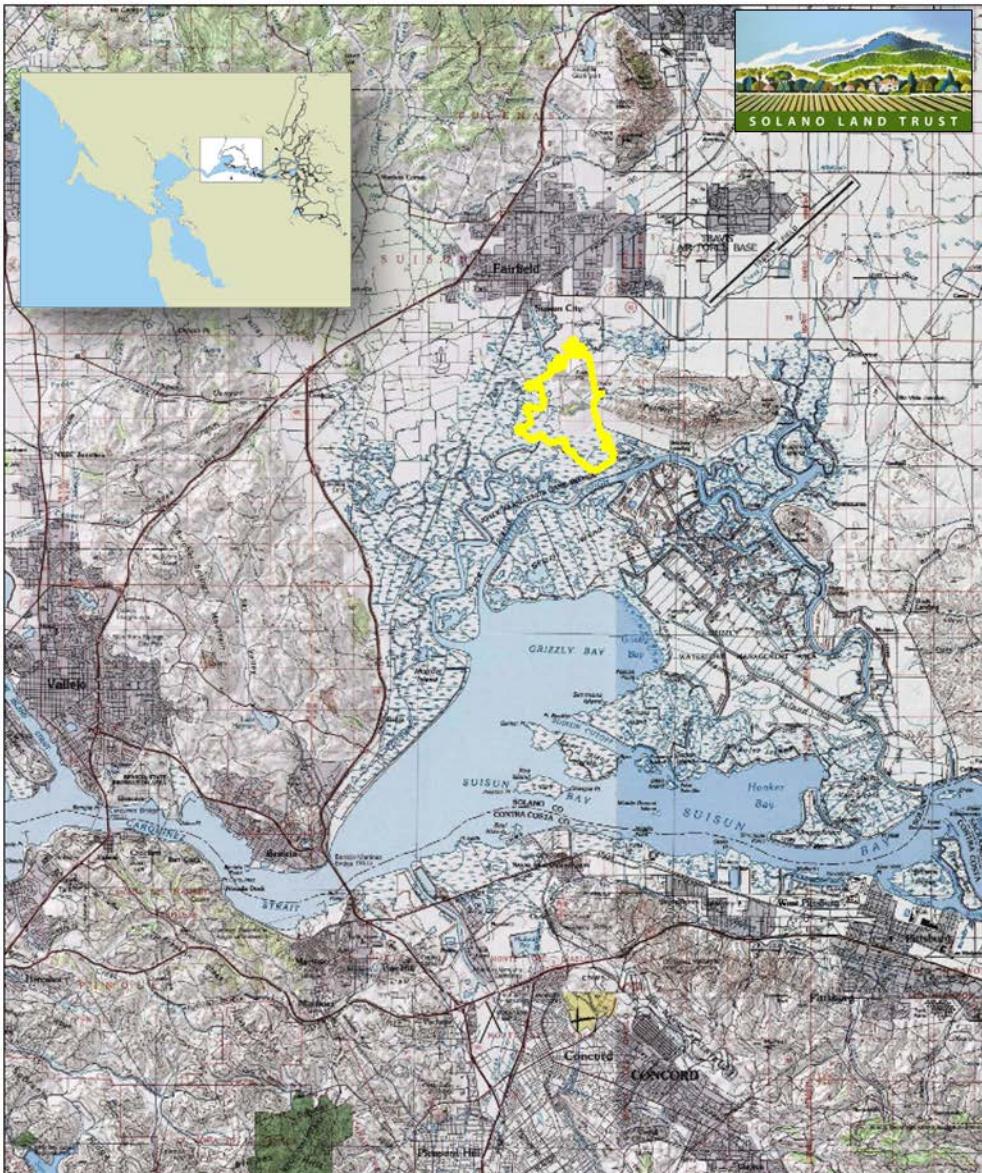
In summary, 21st century tidal marsh vegetation changes important to management and conservation goals may be expected to include reduction or loss of high marsh bordering erosional tidal sloughs and marsh plain interiors, conversion of tule-dominated low marsh to narrower bulrush marsh, spread of bulrush and rush over marsh plains (extensive conversion of high marsh to middle marsh zones), increased channel density and extent in marsh plains partially offsetting vegetation impacts of net increases in channel, erosion of fringing marsh, salinity, and reduction of high marsh zones primarily to terrestrial edges, where species assemblages differ from slough bank high marsh. Some invasive species problems like *Lepidium latifolium* in marsh plains may literally be “drowned out” by marsh submergence combined with and bulrush and rush competition, but probably after special-status species habitats are degraded or lost. Special –status wildlife species dependent on high tide cover within home ranges on the marsh plain (mostly high marsh vegetation near slough banks) will suffer reduced high tide cover and loss of suitable habitat. Oligohaline tidal marsh vegetation may become restricted to small terrestrial-edge groundwater discharge zones.

The above conceptual model is the working hypothesis of how the tidal and seasonal wetlands interact under the future scenario of climate change and sea level rise. These assumptions formulate the basis of the restoration design. Although the model comprises the entire marsh, the elements that are most pertinent to the proposed project are the model components directly addressing the marsh-upland transition zones on low hillslope toes and alluvial fans. In particular, oligohaline (fresh-brackish) high tidal marsh species assemblages (including many of the rare and unique native insects associated with alkali flats) may become even more dependent on areas of active terrestrial seeps (shallow groundwater discharge) or edges of alluvial fans with seasonal streamflow. Restoring these special, rare habitats (including preventing their future degradation by cattle impacts and weeds) provides refugia for rare species and thus constitutes an important component of ecosystem adaptation to climate change and sea level rise.

#### **Literature Cited:**

- Byrne, R., B. L. Ingram, S. Starratt, F. Malamud-Roam, J. Collins, E. Conrad. 2001. Carbonisotope, diatom, and pollen evidence for late Holocene salinity change in a brackish marsh in the San Francisco Estuary. *Quaternary Research* 55, 66–76.
- Knowles, N. and D.R. Cayan. 2002. Potential effects of global warming on the Sacramento/San Joaquin watershed and the San Francisco Estuary. *Geophys Res Lett* 29:1891.
- Malamud-Roam, F., M. Dettinger, B. L. Ingram, M. K.Hughes, and Florsheim, J.L. 2007. Holocene Climates and Connections between the San Francisco Bay Estuary and its Watershed: A Review San Francisco Estuary and Watershed Science 5(1) <http://escholarship.org/uc/item/61j1j0tw>
- Watson, E.B. and R. Byrne. 2009. Abundance and diversity of tidal marsh plants along the salinity gradient of the San Francisco Estuary: Implications for global change ecology. *Plant Ecol* (2009) 205:113–128





0 500 1,000 1,500 2,000 2,500  
0 3,400 6,800 13,600 20,400 27,200 Feet



USGS Quad: Fairfield South  
Date: USGS 1/3 arcsecond Contours from Santa Rosa E. California  
20130300.

## VICINITY MAP

### Rush Ranch Lower Spring Branch Creek and Suisun Hill Hollow Tidal Connections Project

Solano Land Trust - Solano County, California

PROPOSITION 1 RESTORATION GRANT PROGRAMS - CDFW

