

# **Non-Native Invasive Species Control and Wildlife-Friendly Agriculture in a Rangeland Vernal Pool Complex**

## **Project Information**

### **1. Proposal Title:**

Non-Native Invasive Species Control and Wildlife-Friendly Agriculture in a Rangeland Vernal Pool Complex

### **2. Proposal applicants:**

John B. Meek, Jr., San Joaquin County Resource Conservation District

### **3. Corresponding Contact Person:**

Amy Augustine  
San Joaquin Resource Conservation District  
P.O. Box 3117 Sonora, CA 95370  
209 532-7376  
landplan@mlode.com

### **4. Project Keywords:**

**Endangered Species**  
**Nonnative Invasive Species**  
**Vernal pools**

### **5. Type of project:**

Implementation\_Pilot

### **6. Does the project involve land acquisition, either in fee or through a conservation easement?**

Yes

**If yes, is there an existing specific restoration plan for this site?**

No

### **7. Topic Area:**

Non-Native Invasive Species

### **8. Type of applicant:**

Private non-profit

### **9. Location - GIS coordinates:**

Latitude: 37.969

Longitude: -120.993

Datum:

**Describe project location using information such as water bodies, river miles, road intersections, landmarks, and size in acres.**

936 +/- acres of vernal pool grasslands and seasonal wetlands located on the southeast corner of the intersection of Copperopolis and Escalon-Bellota Roads. A portion of Sections 3 & 4, T1N, R9E, San Joaquin County, CA.

**10. Location - Ecozone:**

13.1 Stanislaus River, 11.3 Calaveras River

**11. Location - County:**

San Joaquin

**12. Location - City:**

Does your project fall within a city jurisdiction?

No

**13. Location - Tribal Lands:**

Does your project fall on or adjacent to tribal lands?

No

**14. Location - Congressional District:**

18

**15. Location:**

**California State Senate District Number: 5**

**California Assembly District Number: 17**

**16. How many years of funding are you requesting?**

3

**17. Requested Funds:**

a) Are your overhead rates different depending on whether funds are state or federal?

No

If no, list single overhead rate and total requested funds:

Single Overhead Rate: 7.5%

Total Requested Funds: 679,200

b) Do you have cost share partners already identified?

Yes

If yes, list partners and amount contributed by each:

**Central Valley Project Improvement Act \$625,000.00**

c) Do you have potential cost share partners?

Yes

If yes, list partners and amount contributed by each:

**National Fish and Wildlife Foundation \$50,000.00**

**Caltrans Environmental Enhancement and Mitigation Fund \$250,000.00**

**Great Valley Center \$25,000.00**

**USDA NRCS EQIP \$5,000.00**

d) Are you specifically seeking non-federal cost share funds through this solicitation?

No

If the total non-federal cost share funds requested above does not match the total state funds requested in 17a, please explain the difference:

18. **Is this proposal for next-phase funding of an ongoing project funded by CALFED?**

No

Have you previously received funding from CALFED for other projects not listed above?

Yes

If yes, identify project number(s), title(s) and CALFED program.

**98E-12 Lower Mokelumne River Watershed Stewardship Program Watershed**

**99N15 Continuation of the Lower Mokelumne River Watershed Stewardship Program Watershed**

**Pending Murphy Creek Restoration Project Watershed**

**19. Is this proposal for next-phase funding of an ongoing project funded by CVPIA?**

**Yes**

If yes, identify project number(s), title(s) and CVPIA program (e.g. AFRP, AFSP, b(1) other).

<b>01FG200062</b>	<b>Acquisition of Farmington Property aka Vernal Pool Grassland &amp; Seasonal Wetland Conservation and Restoration Program</b>	<b>Central Valley Project Conservation Program &amp; Habitat Restoration Program</b>
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Have you previously received funding from CVPIA for other projects not listed above?

No

**20. Is this proposal for next-phase funding of an ongoing project funded by an entity other than CALFED or CVPIA?**

No

**Please list suggested reviewers for your proposal. (optional)**

**21. Comments:**

# Environmental Compliance Checklist

## Non-Native Invasive Species Control and Wildlife-Friendly Agriculture in a Rangeland Vernal Pool Complex

### 1. CEQA or NEPA Compliance

- a) Will this project require compliance with CEQA?

No

- b) Will this project require compliance with NEPA?

No

- c) If neither CEQA or NEPA compliance is required, please explain why compliance is not required for the actions in this proposal.

The project does not propose any environmental changes to the environment. Grazing already occurs on site. The purpose of the program is to better manage rangelands in a vernal pool setting. Vernal pool sampling shall be conducted by qualified biologists with the applicable incidental take permits for collecting/sampling (e.g., for fairy shrimp).

2. **If the project will require CEQA and/or NEPA compliance, identify the lead agency(ies). If not applicable, put "None".**

CEQA Lead Agency:

NEPA Lead Agency (or co-lead):

NEPA Co-Lead Agency (if applicable):

3. **Please check which type of CEQA/NEPA documentation is anticipated.**

#### **CEQA**

- Categorical Exemption
- Negative Declaration or Mitigated Negative Declaration
- EIR
- Xnone**

#### **NEPA**

- Categorical Exclusion
- Environmental Assessment/FONSI
- EIS
- Xnone**

If you anticipate relying on either the Categorical Exemption or Categorical Exclusion for this project, please specifically identify the exemption and/or exclusion that you believe covers this project.

4. **CEQA/NEPA Process**

- a) Is the CEQA/NEPA process complete?

Not Applicable

b) If the CEQA/NEPA document has been completed, please list document name(s):

5. **Environmental Permitting and Approvals** (*If a permit is not required, leave both Required? and Obtained? check boxes blank.*)

**LOCAL PERMITS AND APPROVALS**

Conditional use permit

Variance

Subdivision Map Act

Grading Permit

General Plan Amendment

Specific Plan Approval

Rezone

Williamson Act Contract Cancellation

Other

**STATE PERMITS AND APPROVALS**

Scientific Collecting Permit      Obtained

CESA Compliance: 2081

CESA Compliance: NCCP

1601/03

CWA 401 certification

Coastal Development Permit

Reclamation Board Approval

Notification of DPC or BCDC

Other

**FEDERAL PERMITS AND APPROVALS**

ESA Compliance Section 7 Consultation

ESA Compliance Section 10 Permit

Rivers and Harbors Act

CWA 404

Other

## **PERMISSION TO ACCESS PROPERTY**

Permission to access city, county or other local agency land.

Agency Name:

Permission to access state land.

Agency Name:

Permission to access federal land.

Agency Name:

Permission to access private land.

Landowner Name: Goodwin/Gwerder, Valley Crest Tree Company      Obtained

### **6. Comments.**

5. San Joaquin Resource Conservation District is currently in negotiations for purchase with the landowner's representative, Al Alves/Valley Agri/Tek. He may be contacted at: (916) 922-7662. Alternatively, Dick Jones, President of Agriculture Industries can address access. He can be reached at (916) 372-5595.

# Land Use Checklist

## Non-Native Invasive Species Control and Wildlife-Friendly Agriculture in a Rangeland Vernal Pool Complex

1. Does the project involve land acquisition, either in fee or through a conservation easement?

Yes

If you answered yes to #1, please answer the following questions:

- a) **How many acres will be acquired?**

Fee: 936

Easement: 0

Total: 936

- b) Will existing water rights be acquired?

Yes

- c) Are any changes to water rights or delivery of water proposed?

No

2. **Will the applicant require access across public or private property that the applicant does not own to accomplish the activities in the proposal?**

No

3. **Do the actions in the proposal involve physical changes in the land use?**

No

If you answered no to #3, explain what type of actions are involved in the proposal (i.e., research only, planning only).

The proposal includes rangeland management practices in a vernal pool setting. No true land use changes will occur (only variations in grass lengths, removal of non-natives).

4. **Comments.**



# Conflict of Interest Checklist

## Non-Native Invasive Species Control and Wildlife-Friendly Agriculture in a Rangeland Vernal Pool Complex

Please list below the full names and organizations of all individuals in the following categories:

- Applicants listed in the proposal who wrote the proposal, will be performing the tasks listed in the proposal or who will benefit financially if the proposal is funded.
- Subcontractors listed in the proposal who will perform some tasks listed in the proposal and will benefit financially if the proposal is funded.
- Individuals not listed in the proposal who helped with proposal development, for example by reviewing drafts, or by providing critical suggestions or ideas contained within the proposal.

The information provided on this form will be used to select appropriate and unbiased reviewers for your proposal.

### **Applicant(s):**

John B. Meek, Jr., San Joaquin County Resource Conservation District

### **Subcontractor(s):**

Are specific subcontractors identified in this proposal? Yes

If yes, please list the name(s) and organization(s):

Loran May	May & Associates, Inc.
Various	California Cattleman's Association
Dave Simpson	USDA Natural Resources Conservation Service
None	None
None	None
None	None
None	None

### **Helped with proposal development:**

Are there persons who helped with proposal development?

Yes

If yes, please list the name(s) and organization(s):

**Loran May    May & Associates, Inc.**

**Comments:**

# Budget Summary

## Non-Native Invasive Species Control and Wildlife-Friendly Agriculture in a Rangeland Vernal Pool Complex

Please provide a detailed budget for each year of requested funds, indicating on the form whether the indirect costs are based on the Federal overhead rate, State overhead rate, or are independent of fund source.

### Federal Funds

Year 1												
Task No.	Task Description	Direct Labor Hours	Salary (per year)	Benefits (per year)	Travel	Supplies & Expendables	Services or Consultants	Equipment	Other Direct Costs	Total Direct Costs	Indirect Costs	Total Cost
1	Land Acquisition Parcels 1 & 2	0	0	0	0	0	10,000	0	144,000	154000.0	11,550	165550.00
2	Implementation of Managed Grazing and Non-Native Eradication Plans	0	0	0	0	1,000	20,000	0	29,120	50120.0	1,575	51695.00
3	Evaluation/Assessment/Adaptive Management	0	0	0	0	1,000	25,000	0	0	26000.0	4,134	30134.00
4	Option/Down payment for Parcel 3	0	0	0	0	0	5,500	0	4,500	10000.0	3,412	13412.00
5	Project Oversight/Coordination and Information Dissemination	0	0	0	0	1,000	24,000	0	25,000	50000.0	1,875	51875.00
		0	0.00	0.00	0.00	3000.00	84500.00	0.00	202620.00	290120.00	22546.00	312666.00

Year 2												
Task No.	Task Description	Direct Labor Hours	Salary (per year)	Benefits (per year)	Travel	Supplies & Expendables	Services or Consultants	Equipment	Other Direct Costs	Total Direct Costs	Indirect Costs	Total Cost
1	Acquire Parcel 3	0	0	0	0	0	3,000	0	207,800	210800.0	15,810	226610.00
2	Implement Managed Grazing and Non-Native Eradication Plans	0	0	0	0	1,000	20,000	0	14,560	35560.0	1,500	37060.00
3	Evaluation/Assessment/Adaptive Management	0	0	0	0	1,000	25,000	0	0	26000.0	2,250	28250.00
5	Project Oversight, Coordination and Information Dissemination	0	0	0	0	1,000	10,100	0	0	11100.0	832	11932.00
		0	0.00	0.00	0.00	3000.00	58100.00	0.00	222360.00	283460.00	20392.00	303852.00

Year 3												
Task No.	Task Description	Direct Labor Hours	Salary (per year)	Benefits (per year)	Travel	Supplies & Expendables	Services or Consultants	Equipment	Other Direct Costs	Total Direct Costs	Indirect Costs	Total Cost
2	Implement Managed Grazing and Non-Native Invasive Species Eradication Plans	0	0	0	0	1,000	20,000	0	0	21000.0	1,500	22500.00
3	Evaluation/Assessment/Adaptive Management	0	0	0	0	1,000	25,000	0	0	26000.0	2,250	28250.00
5	Project Oversight/Coordination and Information Dissemination	0	0	0	0	1,000	10,100	0	0	11100.0	832	11932.00
		0	0.00	0.00	0.00	3000.00	55100.00	0.00	0.00	58100.00	4582.00	62682.00

**Grand Total=679200.00**

### Comments.

The preceding total costs are for requested funding only. \$625,000 already has been secured from CVPIA towards acquisition. An additional \$50,000 is anticipated from the National Fish and Wildlife

Foundation for Year 1. Total Year 1 budget is: \$987,666 (\$675,000 from other sources for acquisition and a request for \$312,666 in this application for implementation and acquisition). Similarly, for Year #2: Total budget is \$503,852 with \$200,000 anticipated from non-CALFED/non-CVPIA sources and \$303,852 requested in this application.

## Budget Justification

### Non-Native Invasive Species Control and Wildlife-Friendly Agriculture in a Rangeland Vernal Pool Complex

**Direct Labor Hours.** Provide estimated hours proposed for each individual.

No direct labor hours proposed. See "Services and Consultants"

**Salary.** Provide estimated rate of compensation proposed for each individual.

No direct labor hours proposed. See "Services and Consultants"

**Benefits.** Provide the overall benefit rate applicable to each category of employee proposed in the project.

No direct labor hours proposed. See "Services and Consultants"

**Travel.** Provide purpose and estimate costs for all non-local travel.

Travel costs are included in estimated rates for consultants (for travel to and from project site). Additional travel costs are not anticipated.

**Supplies & Expendables.** Indicate separately the amounts proposed for office, laboratory, computing, and field supplies.

Plotter (paper and ink refills): For mapping/reporting/reproduction costs = \$3,000/Yr. Additional supplies for field work are included in consultant costs

**Services or Consultants.** Identify the specific tasks for which these services would be used. Estimate amount of time required and the hourly or daily rate.

YEAR 1: Services/Consultants shall include: Tasks 1 and 4: Acquisition/Optioning: Appraiser (if needed to update existing appraisal): 8 days @ \$250/day = \$2,000 Title company (for escrow): Anticipate 10 days @ \$500/day (including fees) = \$5,000 Land use attorney or equivalent (to assist in finalizing negotiations, purchase agreements for all three parcels and an option for parcel 3): Hourly rate \$200/hr for approximately 25 hrs. = \$5,000 Phase I Site Assessment: 5 days @ \$700/day (includes expenses)=\$3,500 Task 2: Implementation of Grazing Management and Non-native Species Eradication Plans: Range Manager - \$7,500 Biologists (wildlife biologist, wetlands biologist, botanist) - \$7,500 Restoration Specialists (replacing non-natives with natives)- \$7,000 Goat rental - \$3,000 Task 3: Data evaluation/analysis: Wetlands consultant (Evaluation of overall vernal pool health per established rating system, feedback for adaptive management) - \$7,000 Botanist -(Flora analysis/evaluation, feedback for adaptive management) - \$7,000 Invertebrate biologist, wildlife biologist (Fauna analysis, feedback for adaptive management) - \$3,000 Range Manager (Analysis of Grazing Management Plan Efficacy, feedback for adaptive management)- \$3,000 Task 5: Project Oversight/Dissemination of information RCD Special Projects Coordinator - \$65/hr X 350 hrs. = \$22,750 Web professional - dissemination of project information through sjrcrd.org - \$1,250/year YEAR 2: Task 1: (Acquisition) Title Company - @ \$500/day X 10 days = \$5,000 (includes fees) Land Use Attorney @ 200/hr X 2.5 hrs = \$500 Task 2: Implementation of Grazing Management and Non-native Species Eradication Plans: Range Manager - \$7,500 Biologists (wildlife biologist, wetlands biologist, botanist) - \$7,500 Restoration Specialists (replacing non-natives with natives)- \$7,000 Goat rental - \$3,000 Task 3: Data evaluation/analysis: Wetlands consultant (Evaluation of overall vernal

pool health per established rating system, feedback for adaptive management) - \$7,000 Botanist -(Flora analysis/evaluation, feedback for adaptive management) - \$7,000 Invertebrate biologist, wildlife biologist (Fauna analysis, feedback for adaptive management) - \$3,000 Range Manager (Analysis of Grazing Management Plan Efficacy, feedback for adaptive management)- \$3,000 Task 5: Project Oversight/Dissemination of information RCD Special Projects Coordinator - \$65/hr X 155 hrs. = \$10,100 Web professional - dissemination of project information through sjrcrd.org - \$1,250/year YEAR 3: Task 2: Implementation of Grazing Management and Non-native Species Eradication Plans: Range Manager - \$7,500 Biologists (wildlife biologist, wetlands biologist, botanist) - \$7,500 Restoration Specialists (replacing non-natives with natives)- \$7,000 Goat rental - \$3,000 Task 3: Data evaluation/analysis: Wetlands consultant (Evaluation of overall vernal pool health per established rating system, feedback for adaptive management) - \$7,000 Botanist -(Flora analysis/evaluation, feedback for adaptive management) - \$7,000 Invertebrate biologist, wildlife biologist (Fauna analysis, feedback for adaptive management) - \$3,000 Range Manager (Analysis of Grazing Management Plan Efficacy, feedback for adaptive management)- \$3,000 Task 5: Project Oversight/Dissemination of information RCD Special Projects Coordinator - \$65/hr X 155 hrs. = \$10,100 Web professional - dissemination of project information through sjrcrd.org - \$1,250/year

**Equipment.** Identify non-expendable personal property having a useful life of more than one (1) year and an acquisition cost of more than \$5,000 per unit. If fabrication of equipment is proposed, list parts and materials required for each, and show costs separately from the other items.

No equipment proposed. Please refer to Other Direct Costs for anticipated fencing costs.

**Project Management.** Describe the specific costs associated with insuring accomplishment of a specific project, such as inspection of work in progress, validation of costs, report preparation, giving presentations, response to project specific questions and necessary costs directly associated with specific project oversight.

Project oversight/coordination shall be accomplished by the RCD's Special Project's Coordinator. Task 5 includes all costs associated with project oversight (Year 1 - \$24,000; Year 2 - \$10,100 and Year 3 - \$10,100). Specific duties shall include preparing scope of work and hiring all consultants and service providers, budget oversight, contracting, grant administration, inspection of work in progress, preparing all reports, preparing and giving presentations, project contact for all questions and answers, facilitating information dissemination to the public and other agencies)and other duties as necessary to achieve the project's goals and objectives.

**Other Direct Costs.** Provide any other direct costs not already covered.

Permanent Fencing - (Site is already fenced. Cross fencing will be needed to separate areas undergoing varying management practices and for off-watering in some locations). 3 miles @ \$2.00 per foot for materials and labor = \$31,680.00 Temporary/Moveable Electric Fencing - (Provides flexibility in restricting access and movements for cattle and other grazers) - \$1,736/164'. Estimated acquisition of 4 units = \$7,000 Purchase of Native Plants, Irrigation materials - (\$3/tree/shrub) = \$5,000 Approximately 2/3rds of these costs to be expended in Year 1 (\$29,120)and 1/3 in Year 2 (\$14,560). Rental of seeders - Rental of equip for plant eradication - Frog eradication equipment - .....

**Indirect Costs.** Explain what is encompassed in the overhead rate (indirect costs). Overhead should include costs associated with general office requirements such as rent, phones, furniture, general office staff, etc., generally distributed by a predetermined percentage (or surcharge) of specific costs.

Indirect costs of 7.5% have been predetermined based on rent, phone, furniture, general office staff, use of equipment. Documentation is available upon request (and has been previously submitted in accordance with other CALFED Agreements)

## **Executive Summary**

### **Non-Native Invasive Species Control and Wildlife-Friendly Agriculture in a Rangeland Vernal Pool Complex**

Proposed pilot program on 936 acres of vernal pool grasslands in eastern San Joaquin County. In addition to assisting in completing acquisition, the project will demonstrate the use of focused grazing with goats, revegetation with native species and, potentially, limited spot use of herbicides in a rangeland vernal pool setting. The site includes 10 special status species (including California tiger salamander and burrowing owls), suitable habitat for an additional 16 special status species, 394 existing vernal pools, 49 vernal swales, four stock ponds and three channels. The objective of the project is to provide an alternative to prescribed burning (which requires complex planning, may be costly, requires some special training and equipment) which can be easily implemented and more-widely implemented by ranchers. The project will compare the use of goats, goats plus revegetation with natives, goats plus revegetation with natives plus limited, spot use of herbicides on five pastures in the vernal pool complex. Vernal pool evaluations, upland evaluations and rangeland evaluations will be ongoing throughout the program to assist in determining (and achieving through adaptive management) the most successful protocols for reducing starthistle and medusahead populations. Rotational cattle grazing (current site use) will continue on the site. Hypotheses tested will reveal the efficacy of the alternative approaches. This program will assist in the implementation of strategic goals 4 and 5 of the CALFED ERP through control of non-native invasive species (starthistle and medusahead) while maintaining ongoing agricultural activities in a rangeland vernal pool setting. The program also will assist in achieving CVPIA goals (the project already has secured \$625,000 towards acquisition from that program) including protection and restoration of native habitats which have experienced great declines (e.g., vernal pools) and stabilizing and improving populations of native species impacted by the CVP.



# **Proposal**

**San Joaquin County Resource Conservation District**

**Non-Native Invasive Species Control and Wildlife-Friendly Agriculture in a  
Rangeland Vernal Pool Complex**

John B. Meek, Jr., San Joaquin County Resource Conservation District

# Non-Native Invasive Species Control and Wildlife - Friendly Agriculture in a Rangeland Vernal Pool Complex

## A. Project Description: Project Goals and Scope of Work

**1. Problem:** Starthistle (*Centaurea solstitialis*) and medusahead (*Taeniatherum caput-medusae*) are two non-native invasive species (NIS) which out-compete most native and non-native grasses on many valley rangelands. Both weeds are poor forage for livestock and are primary targets for eradication on rangelands, including those with vernal pools.

Past studies and solutions: The success of prescribed burning in the control of starthistle and medusa-head in a vernal pool grassland/rangeland setting has been demonstrated on numerous preserves with both vernal pools and livestock:

- *Vina Plains Preserve* (Tehama County, CA) A three-year study demonstrated that prescribed burning reduced the frequency of medusa-head grass by over ninety percent. Star-thistle also was reduced by the prescribed burns, most notably after two or three consecutive spring burns (Griggs, 2000).
- *Cosumnes River Preserve* (Sacramento County, CA). The Cosumnes River Preserve conducted test plantings of native bunch grasses in spring, 2000, coupled with burns to control weeds. TNC and the California Department of Forestry staff are now helping private landowners conduct weed control burns on their home ranches. In 1999, TNC and its cooperators conducted prescribed burns on 10,000 weed-infested acres with promising results. (Reiner et al., 2000)
- *Dales Lake Ecological Reserve* (Tehama County). Approximately 250 acres of Dales Lake Ecological Reserve underwent a prescribed burn in the summer of 1999 and a wildfire burned Hog Lake Plateau in the summer of 1999 (burning even through some vernal pools). Initial pH readings of post-burn vernal pools indicated slightly alkaline water, but fairy shrimp populations hatched on schedule with no apparent adverse effects (CDFG, 2000)
- *Jepson Prairie Preserve* The Jepson Prairie Preserve has a long history of prescribed burning. In 1995, a 200-acre pasture on the preserve was selected for burn treatment. Results of the study, reported in 1991, indicate that late-spring prescribed burning is effective in reducing medusahead. Additional research is planned at the preserve. (Pollak et al, 1996 and Mawdsley, 2000)

With these successes, however, have come some challenges (Mawdsley, 2000):

*“Attempts to conduct pasture-scale burns have been frustrated the past two years because of the complex planning needed to bring together fire crews from several locations and organizations, borrow equipment and obtain the necessary air quality and burn permits, all within the limited time period when burning will most effectively control the target species. Advanced fire training for local staff, recruitment of local volunteers,*

*acquisition of key equipment and scheduling smaller burns to accommodate official concerns are strategies now being planned to surmount those difficulties.”*

While some of these challenges have been overcome through group efforts undertaken and/or funded by conservation agencies on conservation lands, it is uncertain that individual ranchers will have the same persistence, funding and expertise required to undertake prescribed burns to control NIS. In addition, air quality restrictions in the valley may preclude large-scale prescribed burning when such burning would be most effective in controlling non-native invasive species. Recently, the East Bay Regional Park District’s plans for prescribed burning as part of its control program for starthistle were stalled when the Bay Area Air Quality Management District introduced a new, prohibitively high permit fee for prescribed burns.(EBRPD, 2000). As noted in UCD, 1996 :

*“A grazing strategy that takes excessive time is just as impractical as one that takes excessive money.”*

One solution to this problem is the development of a small-to-large-scale, economical and easily implemented alternative to prescribed burning for the control of starthistle and medusahead on rangelands in a vernal pool complex. Effective and proven alternatives meeting this criteria are somewhat limited and are either still experimental (e.g., biological controls using insects), have unknown long-term impacts, may interfere with ongoing agricultural uses, are not readily available or are expensive. Other alternatives may adversely affect water quality and biological diversity in vernal pools (e.g., the large-scale use of herbicides) . Grazing provides an option for controlling non-native invasive species while maintaining productive agricultural use of land. However, studies to date indicate that rotational cattle or sheep grazing also requires prescribed burning for maximum effectiveness.

Therefore, the development of an economical, feasible, easy-to-implement alternative to prescribed burning could benefit both vernal pool ecosystems and rangeland operations on a large scale.

Goal/Objective: The desired outcome of this project is:

*The identification of an easy-to-implement, economically feasible program for eradicating/controlling starthistle and medusahead grass on rangelands in a vernal pools setting which can be widely used by both small and large landowners and which maintains or increases the quality and biodiversity of vernal pools.*

To achieve this goal, this project shall compare the effectiveness of different approaches to eradicating starthistle and medusa-head grass on rangelands in a vernal pool setting which meet the preceding criteria.

Scope of Work: To achieve this goal, the San Joaquin County Resource Conservation District (SJCRC) is negotiating with a willing seller to secure approximately 936 acres of high quality, high density vernal pool complex in eastern San Joaquin County located near the boundary

between the Southeast Sacramento Valley Vernal Pool Region and the Southern Sierra Foothills Vernal Pool Region. The site will be used, to the maximum extent feasible, for experimentation, education and demonstration projects focusing on the interrelationships between economically beneficial range management practices and the conservation of vernal pool quality, quantity and biodiversity. The first of these proposed projects will demonstrate a NIS eradication/control method which does not require prescribed burning. Instead, grazing goats within portable electrified enclosures which can be situated directly over NIS concentration areas will be used to directly attack forage which is less desirable to cattle (starthistle and medusahead) and for a longer duration than is possible with cattle (goats will eat starthistle even in its late, spiny stage). Five pastures will demonstrate a control, grazing goats alone, grazing goats plus native replacement plantings (two pastures to allow for testing a wide range of native plants) and, grazing goats plus native replacement plantings plus limited/spot use of herbicides allowing for comparisons to identify the optimal combination of actions necessary to achieve NIS control/eradication.

Hypotheses The project will test the following hypotheses (note: all hypotheses assume ongoing rotational cattle grazing throughout the site):

1. (N<sub>0</sub>) Controlled grazing with goats is ineffective in eradicating/controlling starthistle and medusahead grass on rangelands in a vernal pool setting.  
*(N<sub>A</sub>) Controlled grazing with goats is effective in eradicating/controlling starthistle and medusahead grass on rangelands in a vernal pool setting.*
  
2. (N<sub>0</sub>) Controlled grazing with goats plus replanting with natives on rangelands in a vernal pool setting is ineffective in eradicating/controlling starthistle and medusahead grass.  
*(N<sub>A1</sub>) Controlled grazing with goats plus replanting natives on rangelands in a vernal pool setting is effective in eradicating/controlling starthistle and medusahead grass.*  
*(N<sub>A2</sub>) Controlled grazing with goats plus planting natives on rangelands in a vernal pool setting is more effective in eradicating/controlling starthistle and medusahead grass than the use of goats alone.*  
*(N<sub>A3</sub>) Controlled grazing with goats plus planting natives on rangelands in a vernal pool setting is as effective in eradicating/controlling starthistle and medusahead grass as the use of only cattle grazing and prescribed burning.*  
*(N<sub>A4</sub>) The use of natives to replace starthistle and medusahead grass increases available pollinators and may increase wildflower diversity in vernal pool ecosystems.*
  
3. (N<sub>0</sub>) The combination of goat grazing and replanting with natives to control/eradicate starthistle and medusahead grass on rangelands in a vernal pool complex setting reduces livestock productivity.  
*(N<sub>A</sub>) The combination of goat grazing and replanting with natives to control/eradicate starthistle and medusahead grass on rangelands in a vernal pool complex setting improves forage for livestock, thereby increasing productivity.*

4. (N<sub>0</sub>) Controlled grazing with goats to eradicate/control starthistle and medusahead grass on rangelands in a vernal pool setting is detrimental to water quality and species diversity in vernal pools and detrimental to upland native plant diversity.  
*(N<sub>A1</sub>) Controlled grazing with goats to eradicate/control starthistle and medusahead grass on rangelands in a vernal pool setting allows for highly focused grazing, maximum predictability and maximum control of results which maintains water quality and species diversity in vernal pools.*  
*(N<sub>A2</sub>) Controlled grazing with goats to eradicate/control starthistle and medusahead grass on rangelands in a vernal pool setting produces benefits for vernal pools grasslands similar to those produced through the use of only cattle-grazing and prescribed burning (e.g., greater upland floristic diversity).*  
 [NOTE: This hypotheses will be separated to address water quality, vernal pool species and upland plants individually]
5. (N<sub>0</sub>) Controlled grazing with goats on rangelands in a vernal pool setting is more expensive, more time-consuming and more complicated to implement than cattle grazing and prescribed burning for the control of starthistle and medusahead grass.  
*(N<sub>A</sub>) Controlled grazing with goats on rangelands in a vernal pool setting is less expensive, takes less time to implement and is more easily implemented (e.g., requires minimal training and minimal special equipment) by ranchers than cattle grazing and prescribed burning for the control of starthistle and medusahead grass* [NOTE: This hypothesis will be broken into its three separate elements for implementation purposes and shall be applied to all scenarios - goats alone, goats plus natives, goats plus natives plus herbicides]
6. (N<sub>0</sub>) Limited/Spot-Use of herbicides will adversely impact water quality and biodiversity in vernal pools.  
*(N<sub>A1</sub>) Limited/Spot-Use of herbicides can be used as part of an overall program for controlling/eradicating starthistle in a rangeland vernal pool setting with no adverse impacts to water quality or vernal pool species diversity.*  
*(N<sub>A2</sub>) Limited/Spot-use of herbicides in combination with grazing goats and replanting with natives is more effective in controlling/eradicating starthistle and medusahead grass in a rangeland-vernal pool setting than the combined use of grazing goats and replanting with natives without herbicides.*

Location/Site Description: The 936-acre project site is located approximately three miles north of the town of Farmington at the southeast corner of the intersection of Copperopolis Road and Escalon-Bellota Road, in San Joaquin County, California. The site includes all of Section 4 and the western half of Section 3 in T1N, R9E. The boundary dividing the watersheds of the Calaveras and Stanislaus Rivers passes through the project site. The site encompasses 394 vernal pools, 49 vernal swales, four stock ponds and three channels. Footprints of former wetlands also exist within the project boundaries and provide an outstanding future opportunity to pursue rehabilitation activities for wetlands and vernal pools. The site is known to support 10 special

status species: burrowing owls, golden eagles, California tiger salamanders, ferruginous hawks, merlins, northern harriers, California horned larks, long-billed curlews, great blue heron, and great egret. The site has suitable habitat for 16 additional special status species which are expected to occur on site (See Attachment B). On-site soils include two narrowly distributed soil types associated with vernal pools in the Central Valley--Keyes and Pentz.

## **2. Justification (Including conceptual model, hypotheses and selection of project type)**

### **A. Justification for Taking Action/Selection of Project Type/Conceptual Model**

The proposed project is a pilot project. Results are expected to reduce scientific uncertainty and result in a demonstration project.

As noted in Section A1, scientific knowledge has identified an approach which involves prescribed burning and rotational grazing of cattle or sheep for the control of non-native invasive species, including starthistle and medusahead in a rangeland vernal pool setting. Grazing cattle or sheep alone also has shown some success, but grazing in combination with prescribed burning has superior results in controlling NIS. However, this approach has been largely implemented by conservation organizations on conservation lands and presents some practical challenges for wide application by individual ranchers (e.g., expense, time-consuming, complex planning). An alternative approach tailored to the capacities of individual ranchers may allow wider application of NIS control efforts.

Previous grazing studies have established certain “formulas” for eradicating/controlling starthistle and medusahead focusing on timed grazing coinciding with the bud stage of NIS to reduce seed production with follow-up prescribed burning (Yacoub, 2001). In a vernal pool setting, continued grazing of cattle late in the season may be impractical due both to a lack of sufficient nutrition in forage, potential damage to vernal pools in late-season resulting from overgrazing and because cattle (and sheep) will not eat starthistle in its late, spiny stage. Goats, however, will eat anything. In addition to tin cans, goats eat (and even digest the seeds of) starthistle--even in the spiny stage. Protein concentration in the plant varies from 11-28% and is sufficient to support most ruminants. The weed appears to have the ability to sustain animals several weeks beyond annual grass “dry down” when starthistle is abundant. Intensive grazing in late May and June using large numbers of animals for short duration can reduce plant height, canopy size and seed production (UC IPM, 1999).

While grazing with goats can be used to attack starthistle at both the bud and (through focused grazing) in later stages, studies identifying alternative companion actions other than prescribed burning are limited. Success rates for maintenance of eradication/control results increase when grazing is combined with other actions, in particular revegetation using natives (USGS, 2001). Demonstrations of the efficacy of using goats in combination with revegetation using natives are sparse as are comparisons of success rates between goats/natives and the use of only cattle and prescribed burns. The proposed project will provide that demonstration and comparison.

The proposed approach involves establishing five separate pasture areas on the 936-acre vernal

pool site focusing on the use of grazing goats to assist in NIS control with added variables to compare success rates (NOTE: Rotational cattle grazing will occur on the entire site with cattle onsite in late fall through early spring):

**Field One (Control):** Rotational cattle grazing only

**Field Two:** Graze goats in focused NIS concentration areas, rotational cattle grazing.

**Field Three:** Graze goats in focused NIS concentration areas, rotational cattle grazing, planting natives in NIS concentration areas to replace NIS

**Field Four:** Graze goats in focused NIS concentration areas, rotational cattle grazing, plant different natives than used in Field 3 in NIS concentration areas to replace NIS

**Field Five:** Graze goats in focused NIS concentration areas, rotational cattle grazing, limited use of herbicide (Per EPA requirements), plant natives in NIS concentration areas to replace NIS.

■ *Why goats? Why portable fencing? Why plant natives? and Why consider limited use of herbicides?*

*Why goats?* The San Joaquin Resource Conservation District, in partnership with the USDA Natural Resource Conservation Service (NRCS) with funding from the Mokelumne Partnership Fund, is currently undertaking restoration activities along the Mokelumne River at its Plant Materials Center in Lockeford, CA adjacent to the Mokelumne River. Himalayan blackberries growing thick and dense along the Mokelumne proved impenetrable to humans attempting eradication in advance of planting native riparian species. The RCD Mokelumne River Restoration Project is finding that controlling small groups of goats in focused areas is relatively easy with the use of electrified portable fencing which forces goats to eat “bad” riparian vegetation and leave “good” riparian vegetation while protecting the goats from mountain lion attacks and wandering. In a vernal pool setting, this model also would allow for highly controlled grazing by location, predictable results of grazing, and the ability to control disturbances to vernal pools (rotational cattle grazing is expected to yield desired results for controlling competitors on a large scale, while focused grazing by goats is expected to reduce large populations of starthistle and medusahead in uplands). In addition, the portable fencing is cost-effective and re-usable. Goats are rented from local providers and are transported by their owners to and from the project site. Similar positive results have been found by the East Bay Regional Park District at Briones Regional Park and Vasco Caves. EBRPD contracts with Goats R Us to manage both fuel breaks and assist in the control of yellow starthistle and by the Mid-Peninsula Open Space District at Russian Ridge (Yacoub, 2001).

*Why plant natives to replace non-natives after grazing?* Studies in Oregon have identified perennial grasses with early growth which are effective in suppressing starthistle (e.g., Berber orchard grass and Idaho fescue). (Borman et al., 1991). The combination of goat grazing plus the use of native replacement plantings can assist in maintaining NIS suppression

In addition, SJCRCD has been advocating, through its draft Lower Mokelumne River Watershed

Stewardship Plan, the application of the management practices prescribed in “*Bring Farm Edges Back to Life, How to Enhance Your Agriculture and Farm Landscape with Proven Conservation Practices for Increasing Wildlife Cover on Your Farm*” (Yolo, 1999). These practices emphasize the control of NIS on farm edges (road sides, ponds, fence lines) through planting natives which out-compete non-natives and provide insectaries beneficial to adjacent farmlands. One of the primary benefits of this program is the research that supports it. The success (i.e., survival) rates of some natives and the benefits of those natives to adjacent agricultural operations have been evaluated and guide selection of natives which best out compete NIS and benefit adjacent agricultural uses. In addition, study results indicate that native-plant-hosted insectaries are beneficial to many crops. This study will consider if that finding translates to rangelands resulting in possible increases in wildflower diversity in and around vernal pools.

*Why consider using herbicides in a vernal pool setting?* As is often noted, vernal pools are inhospitable to 90% of non-natives due to their flooded/dry cycles. Hence, there is no need to use herbicides in close proximity to vernal pools. However, based on the experiences of the USDA NRCS Plant Materials Center botanical staff and the Yolo County RCD’s demonstration projects for *Bring Farm Edges Back to Life* (Yolo, 1999), the limited use of spot applications of certain herbicides prior to planting natives increases the survival rate of natives. Therefore, for purposes of adaptive management, this alternative is proposed should survival rates of natives fail to meet performance standards as a result of competing non-natives.

Adaptive Management At least annually, data will be collected for evaluation and assessment by biologists, a range manager(s) and lessee (rancher) (see #3, below, for details). These parties and the SJCRCD will meet to discuss project data and undertake, as necessary, appropriate adaptive management strategies. It is anticipated that most adaptive management actions for this project will take the following path: Information/Learning (gathering data/field observations) → Assess/Evaluate Data → Adapt/Refine/Change → Continue with implementation incorporating necessary changes.

*An example:* Data collection reveals that yarrow has a high survival rate when planted after grazing. Starthistle has not re-emerged in areas planted with yarrow (or has limited emergence). Onion grass has a low survival rate when planted after grazing. Field review indicates that onion grass requires more water than anticipated. Starthistle re-establishes in dense clusters where onion grass has been planted. Assessment of this data might lead to planting more yarrow the next season in areas where onion grass had previously been planted.

While not expected, it is recognized that evaluation/assessment may reveal information requiring a more extensive adaptive management process and more extensive project changes than anticipated--up to and including re-defining the project model, revising the project goal/objective or re-assessing the problem. Examples of data results which could trigger a more extensive process include: a) Starthistle and medusahead populations increase at all pasture locations, except the control pasture; or b) Species diversity decreases and water quality is degraded in vernal pools at all pasture locations except for the control pasture.



Project design will test the hypotheses described in Section A1 as follows:

<b>Application/Approach</b>	<b>Variable</b>	<b>How Hypotheses Tested (See Section 1 for Hypothesis Tested)</b>	<b>Uncertainty Addressed</b>
Control: Rotational Cattle Grazing only	None	Are results of other approaches different from “doing nothing”?	Are results of alternative approaches due to variables or coincidence?
Same as above plus focused, goat grazing outside of vernal pools in upland NIS concentration areas	Focused goat grazing, longer duration in NIS concentration areas, over longer season (than possible with cattle)	Does focused grazing outside of vernal pools in NIS concentration areas and over an extended grazing season affect the success rate of efforts to control/eradicate starthistle? Medusahead?	Can goats be used successfully to control NIS? If so, what are the protocols for success?
Same as above plus planting natives to replace NIS	Use of natives to replace NIS	Does planting natives after grazing reduces NIS affect the success rate for control/eradication of starthistle? Of medusahead?	Does the use of goats plus revegetation with natives successfully control NIS? If so, what plants and what protocols yield the best results?

<b>Application/Approach</b>	<b>Variable</b>	<b>How Hypotheses Tested (See Section 1 for Hypothesis Tested)</b>	<b>Uncertainty Addressed</b>
Same as above, using different native species	Use of native plants (different from above) to replace NIS	Does planting natives after grazing reduces NIS affect the success rate of control/eradication efforts for starthistle? Medusahead?	In addition to above, Which natives have the best survival rates? Which natives best suppress NIS? How does the addition of revegetation with natives to goat grazing affect success rates? How easy is it to implement this strategy?
Same as above, with limited application of herbicide between grazing and planting of natives	Limited use of herbicides	Does the use of herbicides in combination with grazing and/or planting natives affect the success of eradication/control efforts for starthistle? Medusahead?	In addition to preceding, How does the addition of herbicide use to revegetation with natives and goat grazing affect the success rate? If herbicide use increases success, which herbicides work best? What are the most successful protocols for use?

### 3. Approach

Study Design: Rotational cattle grazing shall be ongoing at the site. Rotational cattle grazing consistent with vernal pool conservation will require moving cattle off grasslands in the spring and a return of cattle in late fall. Five pastures, approximately 40 acres each in size, shall be established. The five pastures shall be used as follows:

- |                        |  |
|------------------------|--|
| Pasture One (Control): | Rotational cattle grazing, no additional NIS controls  |
| Pasture Two:           | Graze goats in focused NIS concentration areas, rotational cattle grazing  |
| Pasture Three:         | Graze goats in focused NIS concentration areas, rotational cattle grazing, plant natives in NIS concentration areas after grazing to replace NIS   |
| Pasture Four:          | Graze goats in focused NIS concentration areas, rotational cattle grazing, plant different natives than used in Field 3 in NIS concentration areas after grazing to replace NIS          |
| Pasture Five:          | Graze goats in focused NIS concentration areas, rotational cattle grazing, limited/spot use of herbicide (Per EPA requirements), plant natives in NIS concentration areas to replace NIS |

*Grazing:* Because rotational cattle grazing will provide some control of NIS, goat grazing is intended to be more focused and to extend grazing duration over a longer season in NIS concentration areas. Unless modified through adaptive management, goats shall be contained within portable electrified fencing within each pasture (except the control) in locations with high concentrations of starthistle and/or medusahead. Goats will initially graze during the bud stage of yellow starthistle. Upon re-appearance of starthistle, even if it occurs in spine stage, additional goat grazing shall occur. Grazing shall be highly focused and of short duration within portable electric fencing.

*Planting:* Planting natives shall occur in late fall/early winter when rains have commenced for the season. Site preparation, irrigation and native plant species to be established in NIS concentration areas shall be selected using guidelines established for native plants with high survival rates in low water habitats (planting is anticipated in uplands) as field-tested in *Bring Farm Edges Back to Life!* (Yolo, 1999) and with species listed in “*Know your Natives*” (Yolo, 2000). In addition, plantings will include native plant species existing on site and those with proven track records for suppressing NIS (e.g., Berber orchard grass and Idaho fescue per Borman et al., 1991). Two primary categories of native planting shall be used: a) native grasses, perennial forbs and b) hedgerow-type plantings along roadside/fence lines including some deciduous and evergreen shrubs in addition to native grasses and perennial forbs. Transplants, stem cuttings and plants purchased from native plant sources (e.g., Tuolumne Mi-wok Native Plant Nursery, USDA Plant

Materials Center) will be emphasized. Pre-testing of native grass seed mixes shall be conducted in a controlled setting (PMC Greenhouse) to confirm the absence of non-native contaminants prior to broadcasting seeds.

*Limited/Spot Use of Herbicides:* All herbicides shall be applied in compliance with all local, state and federal regulations regarding restrictions and location of use. Herbicide application is planned on a single pasture site and will be applied only in upland areas. Spot applications are anticipated. Applications are expected to occur after goat grazing reduces NIS cover and before planting natives. Herbicides which have been used successfully in similar circumstances include: Clopyralid aka Transline [acts on both pre and post-emergent starthistle with no grazing restrictions, can injure legumes, use along roadsides and in pastures, rangelands permitted (UC IPM, 1999)]; Chlorsulfuron aka Telar (CNGA, 2000); and eleven herbicides detailed in *Bring Farm Edges Back to Life* (Yolo, 1999) targeting re-establishment of perennial grasses and including Round Up. All eleven herbicides are rated for effectiveness on non-natives and include costs. All 11 herbicides include guidelines for application to reduce impacts to natives. As in similar studies, Clopyralid, while costly, rates high for successful post-emergent control of yellow starthistle (Yolo, 1999).

In addition, subject to evaluation and analysis, the use of mulches may be considered through adaptive management. Rice straw (Drewitz, 2001) and pine needle mulch produced from whole pine trees (Darling, 1996) have shown promise as mulches with minimal weed reintroduction and successful suppression of starthistle.

Descriptions and Types of Sampling/Analytical Techniques In addition to baseline surveys already conducted and planned, the following ongoing assessments are proposed to assist in evaluating and analyzing the effectiveness of the proposed project:

*Vernal Pool/Seasonal Wetlands/Pond Assessments:* Temperature, pH, dissolved oxygen, specific conductance and salinity shall be recorded at a minimum of five vernal pools within each of the five test pastures. All large ponds on site shall be monitored using the same parameters. It is anticipated that temperature shall be recorded on an ongoing basis using a *StowAway* (submerged data logging device). Hand held instruments will be used to measure the other parameters at bimonthly intervals. Fairy shrimp population sampling shall occur approximately every two weeks during inundation. Sampling is expected to consist of drawing a fine mesh net through a known volume of water at random locations. Place fairy shrimp temporarily into a pan of water, count and release. Up to sixteen sweeps may be performed to generate sufficient counts for statistical analysis. Pool depth, turbidity, presence of algae or decaying vegetation and types of other invertebrates, as well as prevailing weather conditions also will be recorded. (All protocols adapted from CDFG, 2000)

*Plant Sampling* Approximately 10 transects with permanent plots shall be established in each test pasture (including the control) distributed between the uplands, flats and pools. Based on standards used by CDFG (CDFG, 2000), it is anticipated that random transects will be

approximately 80 meters with approximately 32 rectangular (.25m<sup>2</sup>) plots along each transect. Within each plot, percent of ground covered by each plant species will be estimated. Plots will be located in both control and non-control pastures and monitored once per year.

*Cattle Grazing* As noted, rotational cattle grazing consistent with vernal pool conservation will require moving cattle off grasslands in the spring and a return of cattle in late fall. The exact timing, duration and density of animals will be recorded annually. In addition, a range manager will assist in assessing mulch density, forage quality and in evaluating when rotations are best timed.

Quality Assurances/Criteria to Test Hypotheses Criteria for conducting evaluations shall be per latest versions of published guidelines. See item #4 regarding detailed protocols. The SJCRCD Project Coordinator will be responsible for project oversight and quality control. Ongoing monitoring and evaluation of site work shall be undertaken by the Project Coordinator.

How Approach Maximizes Info Richness The proposed approach will provide information on multiple variables including not only the effectiveness of using goats and focused grazing to control NIS, but also if and which types of native plants are able to out-compete starthistle and medusahead and whether or not herbicide use is necessary for successful control of NIS in the absence of prescribed burns. All of this information allows a comparison of approaches for effectiveness in controlling NIS without adverse impacts to vernal pools, will provide a cost-benefit analysis and, potentially, a formula/guide for private landowners to control/eradicate NIS in a rangeland vernal pool environment.

**4. Feasibility** Based on similar studies using alternative management approaches (e.g., CDFG, Griggs, Reiner, Mawdsley, 2000), three years is proven a standard for the implementation and evaluation of NIS control/eradication programs in a rangeland vernal pool environment.

No permitting requirements are anticipated for this project. Fairy shrimp sampling will be conducted by biologists with valid collection permits from the USFWS, therefore, delays to secure collection permits for take are not expected. As described in the submitted project forms, no changes in land use, zoning, general plan, topography or similar land use changes are anticipated. Therefore, no environmental compliance requirements are expected (see environmental compliance for additional details).

*Contingencies.* The SJCRCD is currently negotiating with a willing seller to purchase the 936-acre site in fee. Because of acquisition in fee, permission to enter from the landowner would be unnecessary (the SJCRCD would be the landowner). The landowner has not only granted, but encouraged access to the property in past dealings with the SJCRCD. The SJCRCD has been talking to the landowner for more than two years regarding purchase of the site and has recently secured funds to commence purchasing approximately half of the site (which consists of three parcels). An appraisal of the 936-acre site has been completed and accepted by the U.S. Bureau of Reclamation. It is anticipated that escrow, once opened, will be uneventful. Should any

delays occur during escrow, a negotiated agreement for an easement pending close of escrow could be negotiated to allow this proposed project to proceed. Because the proposed project will not result in changes that preclude continued use of the site for rangeland grazing, opposition by the landowner to such an agreement is unlikely.

Planting natives is dependent upon a rainy season occurring between late fall and early spring. Should a drought situation occur during the project period, it will be possible to provide supplemental watering for new plants using on-site water (one well and four stock ponds are on site).

Finally, completion of the proposed project within three years is contingent upon execution of CALFED agreement in a manner which coincides with optimal grazing/planting seasons.

**5. Performance Measures** (See Attachment A : Standards for measuring project success)

**6. Data handling and storage/ 7. Expected Products/Outcomes:** Records shall be maintained at the SJCRCD offices in Stockton in electronic format. Proposed work products include:

- Quarterly reports (due by the tenth of the month following the end of each quarter)
- Final report
- Status reports and preliminary results posted on the SJCRCD website at [sjcrcd.org](http://sjcrcd.org).

- Slide presentation illustrating project progress and positive and negative results
- If results indicate success and potential for wide-ranging application; SJCRCD shall prepare a how-to guide for implementation and publicize the program at a regional workshop sponsored by SJCRCD targeting rangeland managers, ranchers, rangeland organizations and other interested parties identified through the SJCRCD Vernal Pool Education Program.

**8. Work Schedule**

✘ = Completion of this task is a Milestone

Task 1: **✘ Complete Acquisition** of 160 and 470-acre parcels (Year 1);  
**✘ Complete Acquisition** of 306 acre parcel (Year 2)  
(Year 1 funds requested: \$165,550 - supplements \$625,000 secured/ \$50,000 anticipated)  
(Year 2 funds requested: \$226,610)

Task 2A: **Implement Native Invasive Species Management Plan** (3 years)

Task 2B: **Implement Rotational Grazing Strategy** (3 years)  
(Year 1: \$37,060)/(Year 2: \$37,060)/(Year 3: \$22,500)

**Task 3: Assessment/Evaluation/Adaptive Management (3 years)**

3A: Vernal Pool evaluations

3B: Floristic evaluations

(Year 1: \$30, 134)/(Year 2: \$28,250)/(Year 3: \$28,250)

✘ Work product: Annual reports of results

**Task 4: Option Parcel 3 (Year 1 Only: \$13,412)**

**Task 5: Project oversight/coordination/dissemination of information (3 years)**

(Year 1: \$51,875—includes \$25,000 in materials)/(Year 2: \$11,932)/(Year 3: \$11,932)

✘ Work product: Annual Report

✘ Work product: Web page

Task Interdependency The project cannot proceed in the absence of Task 1. Tasks 2, 3 and 5 must occur together. Task 4 can be delayed until Year 2 or Year 3 without jeopardizing the overall project or the project time line.

**Upon execution of an agreement with CALFED, acquisition would commence (date reflected in Task 1 is established to reflect timing of rotational grazing, floristic evaluations and vernal pool evaluations which are season-dependent).**

Year 1	Year 2	Year 3
Task 1 8/02 to 10/02	Task 1 8/03 to 12/03	
Task 2A 9/02 to 1/03	Task 2A 9/03 to 1/04	Task 2A 9/04 to 1/05
Task 2B 10/02 to 4/03 - 5/03	Task 2B 10/03 to 4/04 - 5/04	Task 2B 10/04 to 4/05 - 5/05
Task 3A 12/02 - 2/03	Task 3A 12/03 to 2/04	Task 3A 12/04 to 3/04
Task 3B 2/03 - 8/03	Task 3B 2/04 to 8/04	Task 3B 3/05 to 8/05
Task 4 8/02 to 10/02		
Task 5 8/02 to 8/03	Task 5 8/03 to 8/04	Task 5: 8/04 to 8/05
Requested funding: \$312,666	Requested funding: \$303,852	Requested funding: \$62,682

**B. Applicability to CALFED ERP and Science Program Goals and Implementation Plan and CVPIA Priorities**

**1. ERP, Science Program and CVPIA Priorities.** Consistent with CALFED Ecosystem Restoration Program Strategic Goals, the program is specifically tailored to assist in achieving Strategic Goals 4 and 5:

✓ Goal 4 (Habitats: Protect and/or restore function habitat types) The program tailors a strategy to control/eradicate non-native invasive species economically and feasibly for

small landowners thereby assisting in implementation Uplands and Wildlife Friendly Agriculture Actions - managing agricultural land to improve habitat values (see Section 1 for habitat types) for special-status wildlife and other native species (See Section 1 for partial species list)

✓ Goal 5: Preventing the establishment of additional non-native species and reduce the negative biological and economic impacts of established non-native species in the Bay-Delta estuary and its watershed. The program will assist in limiting the spread and, if possible, eliminating populations of non-native invasive species through management.

The proposed project furthers CVP goals by:

✓ *Protecting and restoring native habitats which have experienced great declines in quality and quantity since construction of the CVP.* Specifically the project will restore and enhance CVP target habitats including wetlands (vernal pools and seasonal wetlands) and grasslands; and

✓ *Stabilizing and improving populations of native species impacted by the CVP including federally-listed, proposed or candidate species, and other non-listed State and Federal species of special concern including migratory birds and other native wildlife species associated with wetlands and grasslands.* The project specifically improves habitat for vernal pool and wetland species, native raptor species that depend on grasslands for nesting and foraging and for neotropical species that use the habitats for migration, nesting and foraging. (See Section 1 for list).

Consistent with CVP priorities, the project:

✓ *Targets recovery of vernal pool habitat in the Central Valley to protect and contribute towards the recovery of federal and state-listed vernal pool invertebrates and plants (See Attachment B);*

✓ *Contains biologically functioning priority habitat types (vernal pools, grasslands);*

✓ *Benefits 10 special status wildlife species with the potential to benefit at least 16 additional special status species and at least 88 common species (See Attachment B); and*

✓ *Encompasses habitats (wetlands, including vernal pools and grasslands) and species which have been impacted by the CVP.*

The proposed project is also consistent with the following CVP Goals as stated in Title 34 of the Central Valley Project Improvement Act:

✓ Section 3402 (a): To protect, restore, and enhance fish, wildlife, and associated habitats in the Central Valley...of California;



- ✓ Section 3402(e): To contribute to the State of California's interim and long-term efforts to protect the San Francisco Bay/Sacramento-San Joaquin Delta Estuary;
- ✓ Section 3402(f): To achieve a reasonable balance among competing demands for use of Central Valley Project water, including the requirements of ...wildlife, agriculture....
- ✓ Section 3406(D)(23)(c)(2): Fish and Wildlife Restoration Activities - including evaluation and determination of existing and anticipated future basin needs in the Stanislaus River basin in conjunction with the Stanislaus River Basin and Calaveras River Water Use Program Environmental Impact Statement (in consultation with the State of California, affected counties, and other interests);
- ✓ Section 3406(g)(3): Ecosystem and Water System Operation Models for - surface-ground and stream wetland interactions;
- ✓ Section 3406(g)(8): Ecosystem and Water System Operation Models including - opportunities to protect and restore wetland and upland habitats throughout the Central Valley.

Consistent with the CVP goals, the project site encompasses uplands within both the Stanislaus and Calaveras River watersheds where declines in grasslands and wetland habitats, and their associated species, have occurred as a result of the construction of the New Melones Reservoir and New Hogan Dam (both CVP projects).

**2. Relationship to Other Ecosystem Restoration Projects.** The San Joaquin County Multi-Species Habitat Conservation and Open Space Plan (SJMSCP) was issued permits by the US Fish and Wildlife Service and CA Department of Fish and Game in May and July, 2001, respectively. Implementation of the program requires the acquisition and enhancement of over 100,000 acres of habitat lands in San Joaquin County (primarily to remain in agricultural production). The SJCRCD's proposed 936-acre acquisition site is immediately south of a large ranch exceed 4,500 acres which also contains vernal pools (although at a lower density than on the proposed acquisition site). The acquisition of easements on the 4,500 site is under consideration through the SJMSCP. Acquisition and management of the adjacent 4,500 ranch coupled with the SJCRCD site would result in an overall conservation area exceeding 5,500 acres.

**3. Request for Next-Phase Funding/4. Previous Recipients** The SJCRCD has been awarded \$625,000 through the CVPIA's Conservation and Habitat Restoration Program for implementing Agreement #01FG200062 for the "Acquisition of Farmington Property" proposal (aka Vernal Pool, Grassland & Seasonal Wetland Conservation and Restoration Program). A project agreement was signed 9/27/2001. Escrow is slated to open prior to December 31, 2001. This CVPIA project funding is contingent upon receiving additional funding to complete acquisition and management of the entire 936-acre project site.

**5. System-wide ecosystem benefits** The proposed program will result in both short- and long-

term benefits to Central Valley habitats and special-status species, including:

***Short-Term Benefits:***

- ✓ Immediate protection of Central Valley habitats (vernal pools, seasonal wetlands and grasslands) that are directly threatened by habitat conversion;
- ✓ Conservation of biologically functioning priority habitat types (vernal pools, grasslands);
- ✓ Establishment of a “core” preserve site that will anchor larger conservation areas within San Joaquin County;
- ✓ Restoration of some watershed functions within the Calaveras River/Stanislaus River/Duck Creek/Little John’s Creek watershed;
- ✓ Preservation of populations of multiple special-status and common species, and
- ✓ Enhancement and restoration of native Central Valley habitats.

***Long-Term Benefits:***

- ✓ Protecting and preserving high-quality representatives of Central Valley Native habitats in a county that currently lacks protected open space;
- ✓ Net increase in wetland acreages and functions;
- ✓ Net increase in wildlife habitat values and aesthetic open space lands; and
- ✓ Provision of a Sustainable Grazing Demonstration Program which promotes resource conservation for ranchers operating in a vernal pool environment

**6. Additional information for Land Acquisition Proposals** The proposed acquisition site is currently offered for sale by willing sellers. Current zoning and general plan designations for the site are agricultural and will remain agricultural. The land is not mapped as prime, of statewide importance, or unique farmland. The land, currently leased for grazing will continue to be leased for cattle grazing.

The boundary dividing the watersheds of the Calaveras and Stanislaus Rivers passes through the project site. The site encompasses **394 vernal pools (Northern hardpan), 49 vernal swales**, four stock ponds and three channels. Footprints of former wetlands also exist within the project boundaries and provide an outstanding future opportunity to pursue rehabilitation activities for wetlands and vernal pools. The site is known to support 10 special status species: **burrowing owls**, golden eagles, **California tiger salamanders**, ferruginous hawks, merlins, northern harriers, California horned larks, long-billed curlews, great blue heron, and great egret. The site has suitable habitat for 16 additional special status species which are expected to occur on site (See Attachment B). On-site soils include two narrowly distributed soil types associated with vernal pools in the Central Valley--Keyes and Pentz.

Based on a county-wide survey and ranking of vernal pools conducted by the San Joaquin County Resource Conservation District (SJCRCDD, 2000), the project site was ranked as one of the top three vernal pool sites in the county for overall quality of vernal pools, quantity of vernal pools and species diversity.

**C. Qualifications. The San Joaquin Resource Conservation District (SJCRCDD)** has been providing vernal pool educational outreach to the region since 1998. Five workshops with attendance of 30-75 per workshop were sponsored in San Joaquin and Merced Counties in 1998 and 1999. Topics included: “What is a Vernal Pool and Why Are They Regulated?” and “Land Management Practices for Preserving Vernal Pools Within a Livestock Grazing Operation.” More than 300 organizations and individuals have been contacted and landowners surveyed to assess assistance needs and willingness to participate in programs such as the one proposed in this application. The SJCRCDD has successfully implemented a CALFED grant for the Lower Mokelumne River Watershed Stewardship Plan, and is currently implementing a second Lower Mokelumne River CALFED Grant which is proceeding on time and on budget. SJCRCDD was recently awarded a third CALFED grant to undertake riparian restoration activities on Murphy Creek (a tributary of the Lower Mokelumne). A second watershed coordinator has been hired by the SJCRCDD to assist in grant oversight and implementation. **SJCRCDD President John B. Meek, Jr.** has farmed and managed farm properties all of his adult life including citrus, cotton and native pasture. He operates his own agricultural land management consulting firm and administers six Reclamation Districts in the Delta Region. **Special Projects Coordinator Amy Augustine** is a land use planner and biologist with nearly 14 years of experience in land use planning, consensus building, grant writing and administration, long-range planning and management of natural and cultural resources. Amy has served as the Lower Mokelumne River Watershed Stewardship Plan Watershed Coordinator and as support staff for the RCD since 1998. Amy holds a B.A. in Biological Sciences, with honors, from CSU Sacramento. Amy will be in charge of project implementation, administration, reporting, contracting, initiation and is the single-source contact for all program activities associated with this proposal. **Loran May**, May and Associates, will oversee vernal pool monitoring. Her staff includes several wetlands biologists and botanists with both bachelor’s and doctorates. Loran has worked with the SJCRCDD since 1998 and prepared the countywide vernal pool assessment and conducted all vernal pool educational workshops for the RCD. **Bill Roper**, May and Associates, holds a Bachelor’s degree from Humboldt State University in Range Management and will oversee range management activities on the project site in cooperation with the lessee. **Dave Simpson** is the District Conservationist for the USDA Natural Resource Conservation Service where he has served for more than 25 years. He holds a B.S. from Humboldt State University in Natural Resources Management and has been active in the USDA NRCS’s Wetland Reserve and Wildlife Habitat Incentive Programs. Dave will provide technical assistance with planting natives and use of herbicides, as needed. **Tish Espinosa** is a Plant Materials Specialist. She holds an M.S. in Agronomy from Cal Poly Pomona and has been with the USDA NRCS for more than 10 years. Operating out of the NRCS Plant Materials Center located along the Lower Mokelumne River, she will provide assistance in selecting appropriate natives, acquiring plant materials, establishing new native plantings and testing seed mixtures for contaminants. Tish initiated and oversees the riparian restoration activities at the USDA NRCS Plant Materials Center including management of non-native species eradication efforts using goats.

**D. Cost/1. Budget/2. Cost-sharing** See forms e-mailed separately. The CVPIA already has awarded \$625,000 towards the acquisition of the 936 acre site. The National Fish and Wildlife

Foundation has indicated support for a \$50,000 funding pre-proposal. A formal invitation to submit a full proposal is pending. Pending and planned funding applications from other potential partners are detailed in standard forms submitted with this application.

**E. Local Involvement** The proposed project will involve local ranchers (the land will be leased for continued grazing). Local schools and colleges will be invited to visit the site and, to the maximum extent feasible, participate in monitoring and data collection. The Yolo County RCD is proposing a CALFED project to involve students in on-the-ground restoration activities. This program will be made available to participants in the Yolo program, if both programs are funded. The City of Lodi already has a trained team of Citizen's Water Quality Monitors monitoring temperature, pH, dissolved oxygen, turbidity, and total dissolved solids (conductivity) at Lodi Lake, in the Mokelumne River and at city storm drains. State certification of the citizen monitoring program is pending. These citizen monitors (which include high school students) will be invited to participate in on-site monitoring activities.

**F. Compliance with Standard Terms and Conditions.** The applicant has read and agrees to the contract terms described in Attachments D and E. Applicant anticipates a request to negotiate a contract for reimbursement of 10% upon completion of milestones (See milestones in time line) rather than completion of the entire project.

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**Attachment A**

**(5) Performance Measures:** Standards by which success of the project may be measured include:

<b>Standard to be Measured</b>	<b>No Success</b>	<b>Low Success</b>	<b>Moderate Success</b>	<b>Highly Successful</b>
Native species diversity in vernal pools (measured in #s of species)	Decrease	No change	Increase by less than three species	Increase by three or more species
Native species diversity in uplands (Measured in #s of species)	Decrease	No change	Increase by less than three species	Increase by three or more species
Survival rate of native plants (measured as % surviving compared to percent planted)	0% -29%	30%-49%	50%- 64%	65% or more
Reduced population of starthistle (measured in % decrease in coverage of site based on comparative acreage changes)	Increased coverage; or reduction in coverage of 0-20%	Reduction in coverage by 21% - 44%	Reduced coverage by 45% - 79%	Reduced coverage by 80% or more
Reduced populations of medusahead (measured in % decrease in coverage of site based on comparative acreage change)	Increased coverage or reduction in coverage of 0-20%	Reduction in coverage by 21% - 44%	Reduced coverage by 45% - 79%	Reduced coverage by 80% or more
Time Investment (measured as requirement for repetition annually)	Ongoing annually in perpetuity or repetition more than four consecutive years	Maintenance only required after application in three non-consecutive years.		Maintenance only required after two years of implementation

<b>Standard to be Measured</b>	<b>No Success</b>	<b>Low Success</b>	<b>Moderate Success</b>	<b>Highly Successful</b>
Water Quality in Vernal Pools (Five separate categories to be evaluated: as a measure of pH, dissolved oxygen, temperature, specific conductance and salinity)	Degraded	No change	–	Improved
Ease/Cost of implementation (measured in terms of special equipment/expertise required)	High level of expertise required and/or special equipment required which is not widely available or cost exceeds that of equipment necessary for prescribed burning	Moderate level of expertise required and/or special equipment available at a cost of equal to that required for prescribed burning	Low level of expertise required and special equipment widely available at a cost of less than that required for prescribed burning	No special expertise required and no special equipment required
Other standards identified as a result of adaptive management	–	–	–	--





**Attachment B**  
**Special Status Wildlife Species Expected to Benefit from the Proposed Project**

Species Name	Species Status /a/	Occurs on site (O), Adjacent (A), Nearby (N), in County (C)
<b>Plants</b>		
Succulent owl's clover aka fleshy owl's clover ( <i>Castilleja campestris</i> ssp. <i>succulenta</i> )	FT, SE, CNPS 1B	C
Boggs Lake hedge-hyssop ( <i>Gratiola heterosepala</i> )	SPOC, SE, CNPS 1B	N
Legenere ( <i>Legenere limosa</i> )	SPOC, CNPS 1B	historically
Orcutt grass/Greene's tuctoria ( <i>Tuctoria greenei</i> )	FE, SR, CNPS 1B	historically
<b>Crustacea</b>		
Vernal pool fairy shrimp ( <i>Branchinecta lynchi</i> )	FT	A
Vernal pool tadpole shrimp ( <i>Lepidurus packardi</i> )	FE	
Clam shrimp (Conchostracans)	Consideration pending	N
<b>Amphibians</b>		
California tiger salamander ( <i>Ambystoma californiense</i> )	FC, SSC	O
Foothill yellow-legged frog ( <i>Rana boylei</i> )	SPOC, SSC	Potential habitat
Western spadefoot toad ( <i>Scaphiopus hammondi</i> )	SPOC, SSC	A
<b>Reptiles</b>		
Western pond turtle ( <i>Clemmys marmorata</i> )	SPOC, SSC	Expected
<b>Birds</b>		

Species Name	Species Status /a/	Occurs on site (O), Adjacent (A), Nearby (N), in County (C)
Golden eagle ( <i>Aquila chrysaetos</i> )	SSC, MBTA, BGEPA, FPS	O
Great blue heron ( <i>Ardea herodias</i> )	SA, MBTA	O
Great egret ( <i>Ardea albus</i> )	SA, MBTA	O
Short-eared owl ( <i>Asio flammens</i> )	SSC, MBTA	N
Ferruginous hawk ( <i>Buteo regalis</i> )	SPOC, SSC, MBTA	O
Swainson's hawk ( <i>Buteo swainsonii</i> )	SPOC, T(state), MBTA	N
Northern harrier ( <i>Circus cyaneus</i> )	SSC, MBTA	O
California horned lark ( <i>Eremophila alpestris actia</i> )	SPOC, SSC, MBTA	O
Merlin ( <i>Falco columbarius</i> )	SSC, MBTA	O
Prairie falcon ( <i>Falco mexicanus</i> )	SSC, MBTA	O
Bald Eagle ( <i>Haliaeetus leucocephalus</i> )	FE, SE, BGEPA, MBTA	N
Loggerhead shrike ( <i>Lanius ludovicianus</i> )	SPOC, SSC, MBTA,	
Long-billed curlew ( <i>Numenius americanus</i> )	SPOC, SSC, MBTA	O
Burrowing owl ( <i>Speotyto cunicularia</i> )	SSC, MBTA	O
<b>Mammals</b>		
Yuma myotis/bat ( <i>Myotis yumanensis</i> )	SPOC	N

/a/ See key on following page for descriptions of abbreviations

## KEY

### FEDERAL

**C** = Taxa for which the USFWS has on file sufficient information on biological vulnerability and threats to support proposals to list them as endangered or threatened species

**E** = endangered

**T** = threatened

**PE** = proposed endangered

**PT** = proposed threatened

**R** = Taxa for which currently available information does not support issuance of a proposed listing

**SPOC** = Species of Concern

**CH** = Critical Habitat

**ESA** = Federal Endangered Species Act

### STATE

**E** = endangered

**T** = threatened

**R** = rare

**SA** = California Natural Diversity Database special animal (may include taxa considered endangered or rare under Section 15380(d) of CEQA guidelines; taxa that are biologically rare, very restricted in distribution or declining throughout their range; population(s) in California that may be peripheral to the major portion of a taxon's range, but which are threatened with extirpation in California; and taxa closely associated with habitat that is declining in California --e.g. wetlands, riparian, old growth forest, desert aquatic systems, native grasslands); this category may apply to species at specific stages--e.g. wintering, rookery, breeding, nesting activities.

**SP** = California Natural Diversity Database special plant

**SSC** = California Department of Fish and Game Species of Special Concern (may apply to species at particular stages--e.g. wintering, rookery, breeding, or nesting activities)

**FPS** = California Department of Fish and Game fully protected species, as described in Section 4700 of Chapter 8, Section 5050 of Chapter 2, Division 6, Chapter 1, Section 5515 of the California Fish and Game Code

**CESA** = California Endangered Species Act

**CEQA** = California Environmental Quality Act

### OTHER

**CNPS** = California Native Plant Society

**CNPS 1A** = plants presumed extinct in California but which may occur in the Plan area over the life of the SJM SCP Permits.

**CNPS 1B** = plants rare, threatened, or endangered in California and elsewhere

**CNPS 2** = plants rare, threatened or endangered in California, but more common elsewhere

**MBTA** = birds protected under the Migratory Bird Treaty Act (16 U.S.C. 703 et seq.) which implements treaties with Great Britain (for Canada), Mexico, Japan and Russia for protection of migratory birds whose welfare is a federal responsibility

**BGEPA** = the Bald and Golden Eagle Protection Act (USC Sections 668-668d) which prohibits the taking of bald and golden eagles.

**NK** = No killing of individuals of the species

**NCO** = No Conversion of habitat known to be occupied by the species

**LCA** = Species is covered for limited SJM SCP Covered Activities