

FINAL REPORT

Rare Plant Habitat Restoration
at
Vina Plains Preserve (Tehama County)

Contract No. FG-9508

Submitted to:

Sandy Morey
Endangered Plant Program
Natural Heritage Division
Department of Fish and Game

Submitted by:

Rich Reiner
Principal Investigator
The Nature Conservancy

October 15, 1991

COMPLETION REPORT

California Fish and Game Contract # FG 9508

by; Richard Reiner, Ph.D.

October 9, 1991

Background

Vina Plains Preserve is a 1,950 acre property which is owned and managed by the California Nature Conservancy. It is located 13 miles north of Chico on both sides of Highway 99 in Tehama and Butte Counties (map attached). It was protected because it is one of the best remaining examples of a Northern Basalt Vernal Pool plant community in the Great Valley. It is also a good example of Valley bottom Cismontane Light Soil Flower Fields. No fewer than 280 species of plants grow here including five species considered rare: Fremont's Calycadenia, Hoover Spurge, Greene's Orcuttia, Hairy Orcuttia, and Slender Orcuttia.

The primary threat to populations of the rare plants at the preserve is competition from introduced weeds. The most invasive weeds include Xanthium strumarium, Proboscidea louisianica and Convolvulus arvensis. Xanthium strumarium appears to be the greatest threat at this time. It was probably introduced by historical livestock grazing. Xanthium is most established in the large vernal pool in the "Safe Pasture" (pool # 4).

Xanthium is an invasive annual with conspicuous "velcro-like" seeds. The seeds are efficiently dispersed by attaching to animals and humans. Each seed pod contains two seeds. One seed germinates the spring after dispersal, the other is dormant and germinates the following year. The plant is particularly adapted to growth during the late season as the vernal pools dry down. This period is also the season that rare Orcuttia grass's are beginning to develop seeds. Efficient dispersal, late season growth, and delayed germination of some seeds, make this weed particularly invasive and a very real threat to rare plants in Vina's vernal pools.

Project Methods

The project is simply to remove Xanthium from pool #4. Removal of young plants by hand pulling and weed eater were considered. It was decided that hand removal was preferred. The population is localized enough to allow for near 100% removal during a particular year. Herbicide was not recommended due to the aquatic nature of vernal pools and the close proximity of rare plants.

Project Results

Xanthium was removed by hand from Pool #4 during late June 1991. A "weed eater" was purchased to accomplish this job, however, after some practice it was determined that pulling the plants out by hand was the preferred method. The hand pulling method was particularly successful if the plants were pulled out by the roots in the moist soil along the dry down line of the vernal pool. To the best of the worker's ability he estimated that close to 100% of the Xanthium sprouts were removed before they set seed.

Recommendations

It is very likely that Xanthium will return to the vernal pool next year from the soil's supply of dormant seeds. It is expected that if we remove the weeds for 2 to 3 years the seed supply will be significantly reduced and the amount of labor needed to "hold the line" will be minimal. Our experiment this year has told us that hand removal is effective. We recommend that \$350 per year of DFG funding be reserved for labor to continue removing weeds from this pool for the 2 to 3 years. If this method is demonstrated to be effective the results will be applicable to other Xanthium infested sites at the Preserve and across the state.

Project Budget

Funding approved by DFG \$1,600.00

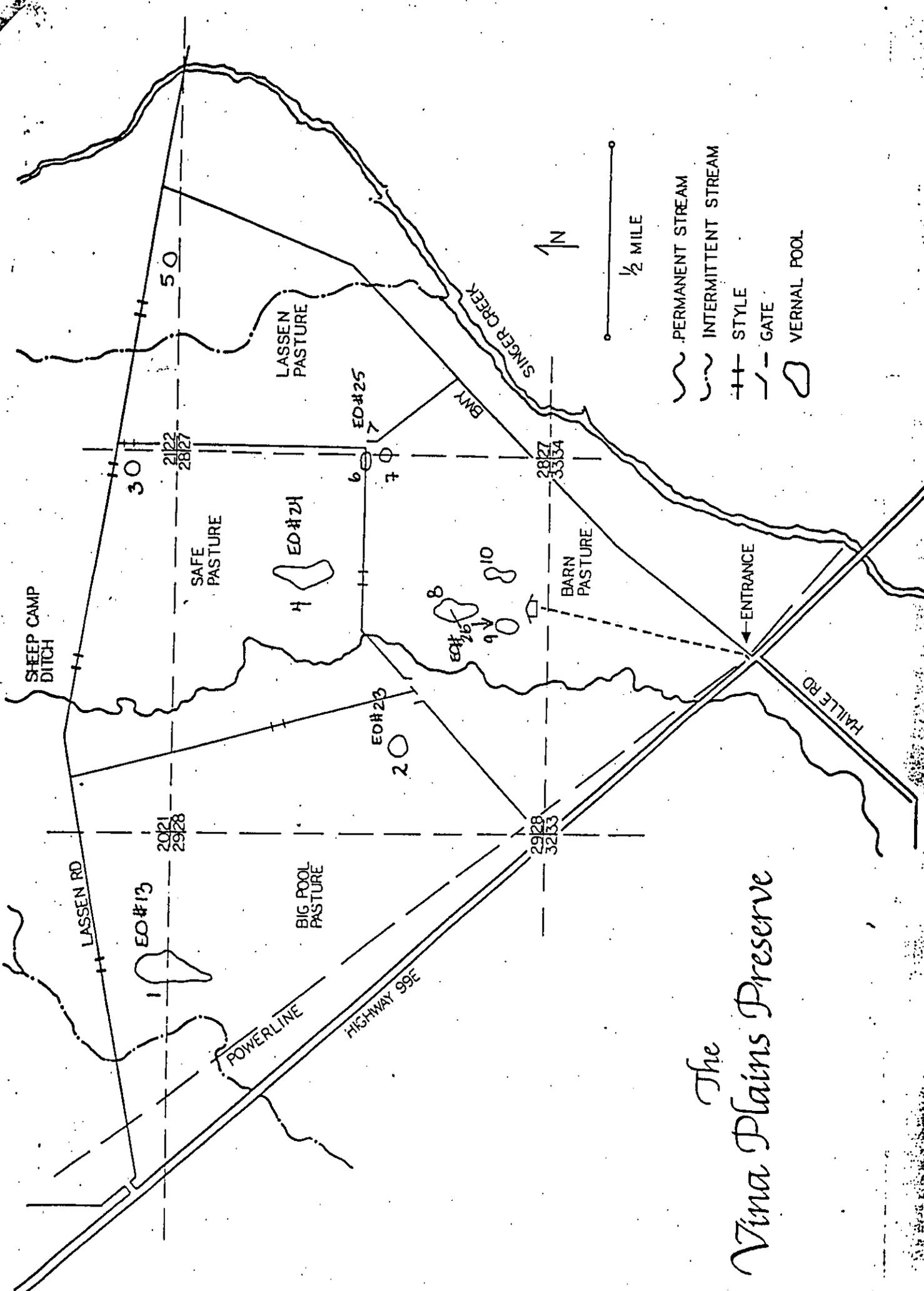
Funds spent by Calif. Nature Conservancy on this contract.

Contracted Labor \$350.00
Weed eater 570.97

Total to be reimbursed 920.97

Attached:

Location Map
2 Purchase orders



- PERMANENT STREAM
- INTERMITTENT STREAM
- STYLE
- GATE
- VERNAL POOL

1/2 MILE



The Vina Plains Preserve

10. Payee: ALSAW 11/01/04

From: The Nature Conservancy

6500 Desmond Rd
Grant. CA 95632



Ship to / Check to (circle if different from Payee):

Telephone: 916-684-2816
Ordered By: G. Elliott
Department: Stewardship
Sales Tax Exemption # _____

Reference: Galco # 0100129104

1099 Reportable YES _____ NO X
IF YES, VENDOR FED ID or SS # _____

Quantity	Description	Total Amount
1	weed eater	570.97
1	1-gal. gas can	5.95
2	6-pt oil	10.70
1	goggles	2.95
1	box extra line	14.95
	tax	2.68

SINGLE \ RECURRING (circle)
of Payments _____

PAYMENT PRIORITY (1-3) 2

TOTAL

608.20

Expense Distribution and Check Request

Center Name	Account Name	Center Number	Account Number	Sub Center	Grant Sub 2/3	Ctry	\$
Mid Calif. Area	non-office equipment	1051228003	5820	0100			570.97
"	non-office supplies	"	5303	0100			37.23

Authorized by: K. Greg Elliott

Title: Cosumnes Preserve Mgr. TOTAL

608.20

Signature: K. Greg Elliott
(print name)

FM 0002
rev. 4/91

WHITE - Vendor YELLOW - HQ Accounting PINK - Office Copy

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The primary threat to populations of the rare plants at the preserve is competition from introduced weeds. The most invasive weeds include Xanthium strumarium, Proboscidea louisianica and Convolvulus arvensis. Xanthium strumarium appears to be the greatest threat at this time. It was probably introduced by historical livestock grazing. Xanthium is most established in the large vernal pool in the "Safe Pasture" (pool # 4).

Xanthium is an invasive annual with conspicuous "velcro-like" seeds. The seeds are efficiently dispersed by attaching to animals and humans. Each seed pod contains two seeds. One seed germinates the spring after dispersal, the other is dormant and germinates the following year. The plant is particularly adapted to growth during the late season as the vernal pools dry down. This period is also the season that rare Orcuttia grass's are beginning to develop seeds. Efficient dispersal, late season growth, and delayed germination of some seeds, make this weed particularly invasive and a very real threat to rare plants in Vina's vernal pools.

Project Methods

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Recommendations

It is very likely that Xanthium will return to the vernal pool next year from the soil's supply of dormant seeds. It is expected that if we remove the weeds for 2 to 3 years the seed supply will be significantly reduced and the amount of labor needed to "hold the line" will be minimal. Our experiment this year has told us that hand removal is effective. We recommend that \$350 per year of DFG funding be reserved for labor to continue removing weeds from this pool for the 2 to 3 years. If this method is demonstrated to be effective the results will be applicable to other Xanthium infested sites at the Preserve and across the state.

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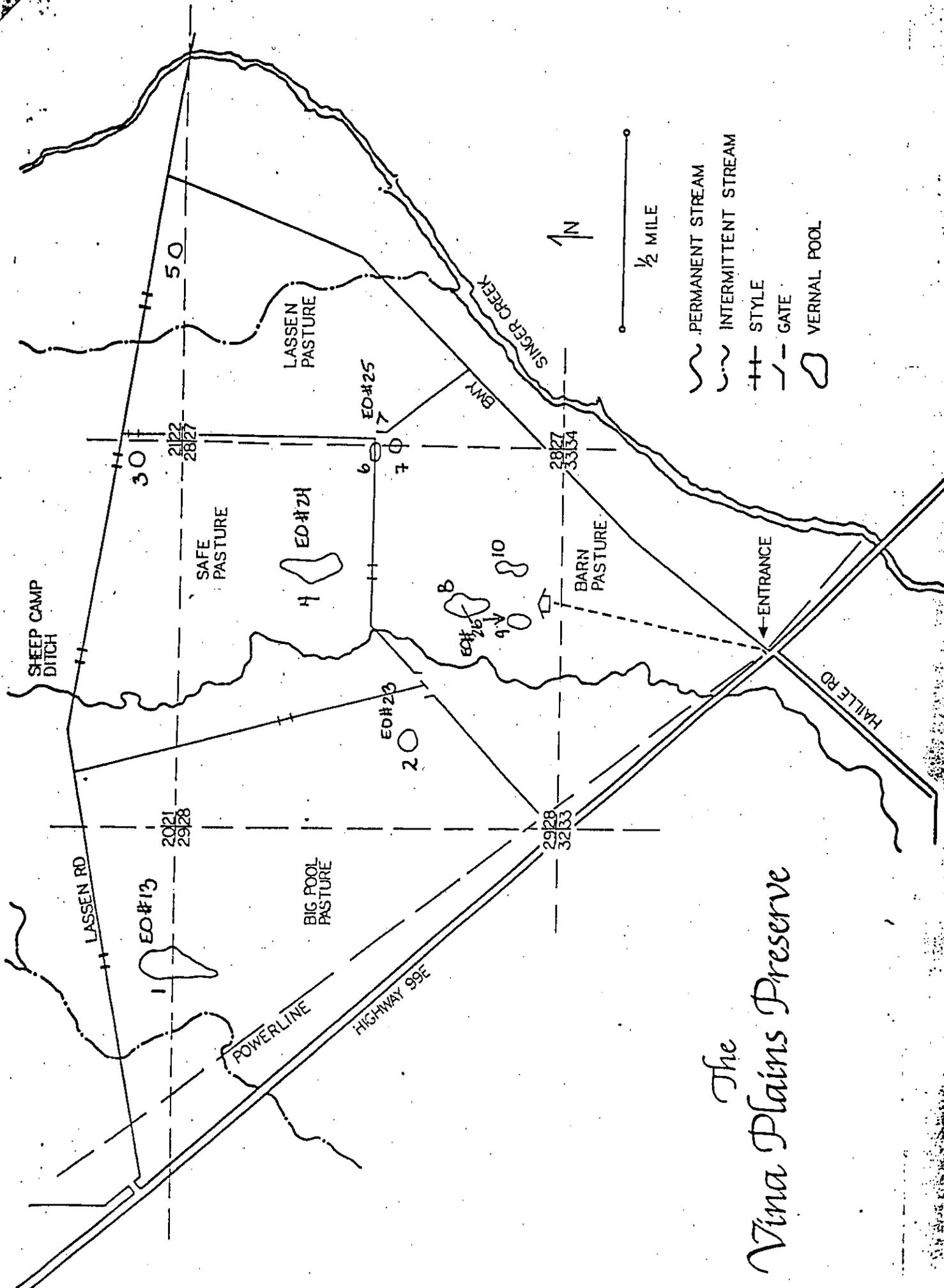
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Attached:

Location Map
2 Purchase orders



- PERMANENT STREAM
- INTERMITTENT STREAM
- STYLE
- GATE
- VERNAL POOL

The Vina Plains Preserve

To (Payee): #1 Saw 11/10/08

From: The Nature Conservancy

6500 Desmond Rd
Galt, CA 95632



Ship to / Check to (circle if different from Payee):

Telephone: 916-684-2816

Ordered By: G. Elliott

Department: Stewardship

Sales Tax Exemption # _____

Reference: Geico # 0100129104

1099 Reportable YES _____ NO X
IF YES, VENDOR FED ID or SS # _____

Quantity	Description	Total Amount
1	weed eater	570.97
1	1-gal gas can	5.95
2	6pk oil	10.70
1	goggles	2.95
1	box extra line	14.95
	tax	2.68

SINGLE \ RECURRING (circle)
of Payments _____

PAYMENT PRIORITY (1-3) 2

TOTAL

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Center Name	Account Name	Center Number	Account Number	Sub Center	Grant Sub 2/3	Ctry	\$
Mid Calif. Area	non-office equipment	1051228003	5820	0100			570.97
"	non-office supplies	"	5303	0100			37.23

Authorized by: K. Greg Elliott

Title: Cosumnes Preserve Mgr. TOTAL

Signature: K. Greg Elliott
(print name)

608.20

To (Payee):
Steven Weston
2238 Holly Ave
Chico CA 95926

From: The Nature Conservancy
 6500 Desmond Ave
 Galt CA
 95632



Ship to / Check to (circle if different from Payee):

Telephone: 916 684 2816
 Ordered By: RICH REINER
 Department: STEW
 Sales Tax Exemption # _____

Reference: _____

1099 Reportable YES _____ NO _____
 IF YES, VENDOR FED ID or SS # _____

Quantity	Description	Total Amount
	Invoice for exotic plant removal (labor)	350 ⁰⁰

SINGLE RECURRING (circle)
 # of Payments _____ PAYMENT PRIORITY (1-3) 2 TOTAL 350⁰⁰

Expense Distribution and Check Request

Center Name	Account Name	Center Number	Account Number	Sub Center	Grant Sub 2/3	Ctry	\$
Mid-CA Preserves	Repair	1051228003	5411				350 ⁰⁰

Authorized by: Rich Reiner Title: Area Manager TOTAL 350⁰⁰
 Signature: Rich Reiner (print name)

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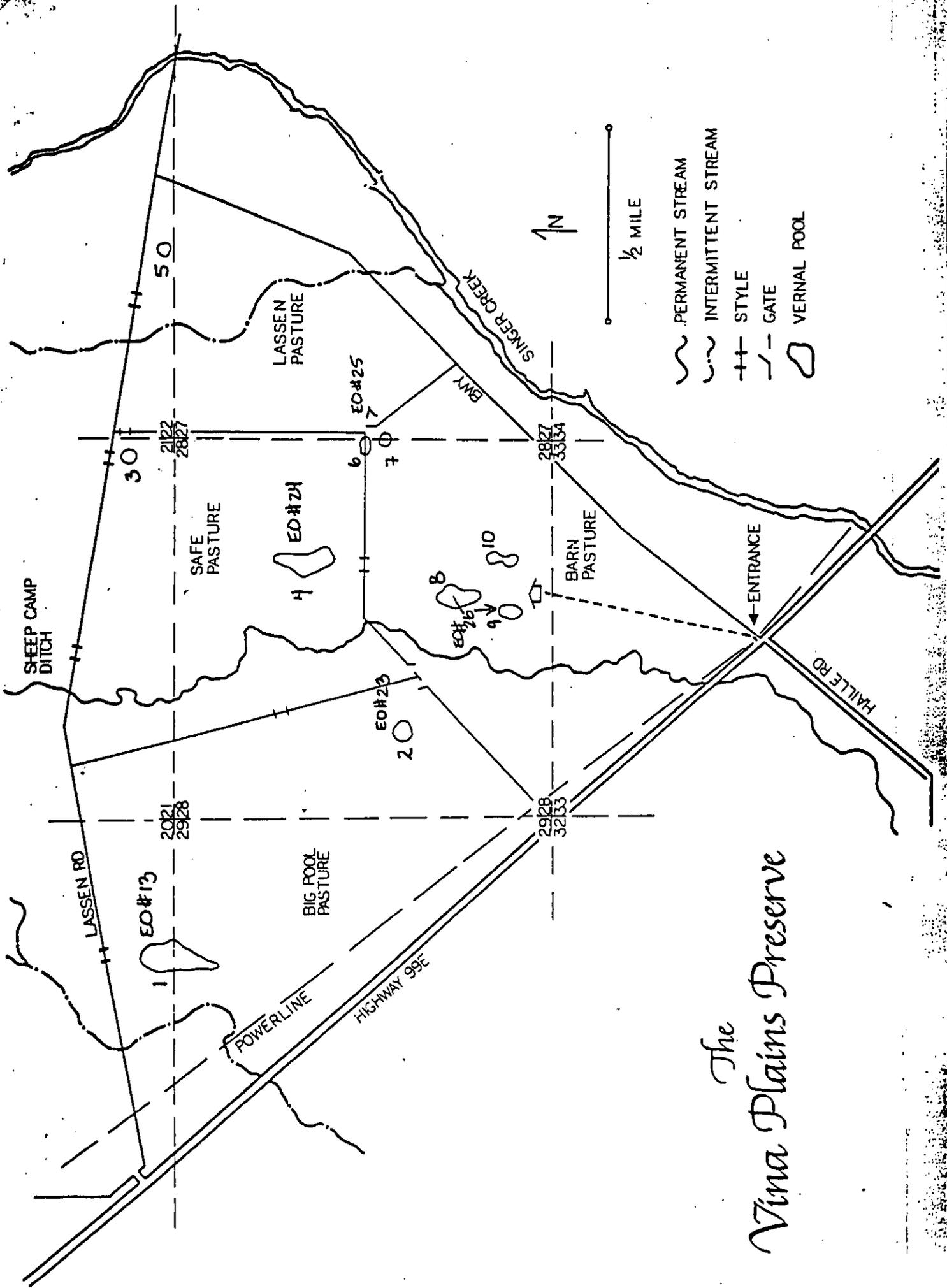
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Attached:

Location Map
2 Purchase orders



The Vina Plains Preserve

- PERMANENT STREAM
- INTERMITTENT STREAM
- STYLE
- GATE
- VERNAL POOL

1/2 MILE

N

Date: 8/16/11
 To (Payee): A-L Saw's Mower

INVOICE #: 179739

From: The Nature Conservancy
 6500 Desmond Rd
 Grant CA 95632



Ship to / Check to (circle if different from Payee):

Telephone: 916-684-2816
 Ordered By: G. Elliott
 Department: Stewardship
 Sales Tax Exemption # _____

Reference: Gelco # 0100129104

1099 Reportable YES _____ NO X
 IF YES, VENDOR FED ID or SS # _____

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"	non-office supplies	"	5303	0100			37.23

Authorized by: K. Greg Elliott Title: Conservation Preserve Mgr. TOTAL 608.20
 Signature: K. Greg Elliott (print name)

Date: August 17 1991

INVOICE #: 179734

To (Payee):
Steven Weston
2238 Holly Ave
Chico CA 95926

From: The Nature Conservancy
6500 Desmond Ave
Galt CA
95632



Ship to / Check to (circle if different from Payee):

0

Telephone: 916 684 2816
Ordered By: RICH REINER
Department: STEW
Sales Tax Exemption # _____

Reference: _____

1099 Reportable YES _____ NO _____
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