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DIVISION OF WATER QUALITY

Alameda County Mosquito Abatement District

Proposed Source Reduction Work for the 2011-2012 Season

US Army Corps of Engineers
General Permit Number 248520S

Prepared by:

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Alameda County Mosquito Abatement District
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Alameda County Mosquito Abatement District

John R. Rusmisel
District Manager
acmad@mosquitoes.org

June 14, 2010

Ms. Kerry A. Padgett
Supervising Public Health Biologist
California Department of Public Health
Division of Communicable Disease Control
Vector Borne Disease Section
850 Marina Bay Parkway
Richmond, CA 94804

Dear Ms. Padgett,

Attached are the proposed projects for source reduction for the 2011-2012 period by the Alameda County Mosquito Abatement District. These 12 projects are for the maintenance of existing ditches or access to mosquito sources. Our agency feels that these projects are necessary to reduce mosquito production. Also find attached our annual report of source reduction activities for 2010-2011.

The sources covered by these projects and our permit are inspected by field personnel. Vegetative growth or obstructions determine if and when maintenance is required. It is the District's goal to minimize unneeded activity in wetlands. Our staff will be ready to begin work, for the fifth year of the permit, on September 1, 2011 and will finish by Jan 31, 2012. Consultation will be made with property owners and wildlife personnel to determine the least disruptive period to complete this necessary maintenance.

I certify, under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment, for knowing violations.

Thank you for your efforts in obtaining the Regional Permit.

Yours truly,

John R. Rusmisel

John Rusmisel
District Manager

23187 Connecticut Street, Hayward, CA 94545 (510) 783-7744 Tel (510) 783-3903 FAX

2010-2011 Source Reduction Activity Totals

Project Name	Lineal feet of ditch		% completed
Trojan Marsh (Project # 1)	allotted	12,900	
	cleaned	0	0%
Oro Loma Marsh (Project # 2)	allotted	2,000	
	cleaned	2050	103%
Hayward Landing (Project # 3)	allotted	1,500	
	cleaned	1850	123%
Marsicano Properties (Project # 4)	allotted	2,000	
	cleaned	0	0%
Alameda Creek Stables (Project # 5)	allotted	2,600	
	cleaned	0	0%
Patterson Hill Marsh (Project # 6)	allotted	4,000	
	cleaned	0	0%
Ecology Marsh (Project # 7)	allotted	8,200	
	cleaned	0	0%
Alameda Creek (Project # 8)	allotted	500	
	cleaned	0	0%
Hetch-Hetchy Marsh (Project # 9)	allotted	2,150	
	cleaned	0	0%
Mowry Slough (Project # 10)	allotted	8,000	
	cleaned	1,313	16%
Albrae Slough (Project # 11)	allotted	16,000	
	cleaned	3326	21%
Mouse Pasture (Project # 12)	allotted	3,775	
	cleaned	885	23%
TOTALS	allotted	63,625	
	cleaned	9,424	15%

As the table above states 9,424 LF of ditches were cleaned, out of a possible 63,625 LF. Overall completion was approximately 15%. The orginal alloted lineal feet for Projects 2 and 3 were underestimated so the new permit reflects the revised numbers.

We observed negligible changes in the vegetation in the marshes due to our ditching. We are quite aware of the two invasive species – *Lepidium* and *Spartina* – and carefully observe any floristic changes in the marshes. However, these plants were seldom found in the ditches we cleaned.

Current salt marsh source reduction techniques

Environmental Considerations: Prior to the 1970s when the majority of mosquito control ditching, filling, and impoundment construction were completed, mosquito control was usually the primary consideration when manipulating salt marshes. Little concern was given to environmental issues. Today, minimizing adverse salt marsh impacts must be considered when designing a source reduction project and has equal weight in the process of achieving regulatory approval. Minor hand ditching and maintenance of existing ditches by the District is subject to permitting and reporting processes through the Army Corps of Engineers, in coordination with the land owner (usually a local, state or federal agency) and other federal, local and regional agencies.

Ditching: Ditching can be used in both salt or freshwater marsh locations to control mosquitoes by:

1) enhancing drainage thus eliminating mosquito-producing sites, or,
2) allowing access of larvivorous fish to mosquito breeding locations (this can be enhanced through the creation of permanent water bodies which act as predatory fish reservoirs).

Hand Ditching Applications: This is the technique used most often by the District. It is used to maintain existing small ditches covered by an Army Corp of Engineer's permit. The District may apply for 30,000 feet or more of ditch maintenance on a permit. Actual maintenance depends upon the condition of the ditches, vegetation growth, mosquito production history of the area and localized blockages that occur from debris in ditches (old boats, lumber, stumps, mattresses, or other slimy items). In a typical year the District may maintain 2-5,000 feet of ditches. When maintenance is done the change in capacity of a cleaned ditch is only negligible or insignificant. Additionally, the surface area is restored, the spoil is deposited as authorized by the permit, and the work does not impact any mature trees, threatened or endangered plant species, or sensitive habitat areas. Mitigation: To avoid adverse effects on the habitat, hand maintenance of ditches is done only when needed. The work is done when the tide is out and the water in the ditches is stationary or slow moving to prevent spread of the localized turbidity. Spoils and removed silt are spread as requested in the permit to avoid changes in the character of the marsh and to keep undesirable plant species from becoming established. The time of entry for maintenance is planned to avoid nesting seasons or critical times when wildlife would be disturbed from nesting. The entry is coordinated with land owners.

Scavel Ditching: Scavel ditching is a technique of pulling a scavel ditcher behind the District DMC 1200 (this vehicle goes by many names: Thiokol, Spryte, DeLorean, DMC 1200, Snowcat, etc). This technique creates vertical sided ditches about one foot deep and spreads the spoils to both sides of the ditch. Spoils are compacted by the vehicle tracks. This technique has been used by the District for many years in marsh areas.

Benefits of a Scavel Ditching Plan: Scavel ditches have been easy and inexpensive for the District to create. The technique is adaptable to differing soil types and equipment is not damaged by hidden logs or concrete.
Environmental Risks of Scavel Ditching: Scavel ditching keeps the spoils rather close to the ditch and the compacted spoils may change the drainage characteristics of the marsh. Because the spoils are deposited to the side of the ditch and compacted there will be more time required for vegetation to rejuvenate. The tracks on the DMC 1200 have metal cleats that cut 3 inches into the soil and cut marsh vegetation.

Scavel Ditching Applications: This technique is used in restoration projects, in areas where ditches need to be connected and to create ditches into low areas of a marsh. It is also used to re-open heavily sedimented ditches.

Access for Source Reduction Work

Access to work area for ditching is generally on foot from levee roads (80%± of the time). When distances to reach the work area become greater than about 1000 feet, access may be made using an Argo to transport (20%± of the time) personnel and tools. Below is a description of the District's Argo use:

Argo: Argos are eight wheeled, plastic body all-terrain vehicles manufactured by Ontario Drive and Gear Limited, Canada. These are driven with and without tracks depending upon local conditions. Ground pressure is 2.1 psi. These vehicles can carry two people and a 50 gallon spray rig. Argos will float and can be equipped with an outboard motor for deep water use. These vehicles are used for monitoring and treatment. Below is a discussion of the District use of Argos in source reduction work, adapted from the District's CEQA documents.

All Terrain Vehicles (Argo): The District relies upon the use of an Argo to facilitate access into areas that are not otherwise reasonably accessible by foot or general use vehicles. Some situations, where flooding and wetlands preclude access by 4-wheel drive or reasonable walking distance in waders/boots (in excess of 1000± feet), require the use of an Argo. An Argo allows timely access to large areas (over 5 acres) or areas where vehicle access cannot be used and greater distances need to be covered to reach work area. During the wet season, Argos's are used more extensively to enable personnel to reach sources more quickly. Overall, Argos are used as transport of last resort. Argos are used where:

1) existing passages are available,
2) vegetation does not impede mobility,
3) open water situations present the best course in which to proceed
4) size and distance makes the use of these vehicles necessary for effective and efficient use of time and
5) unacceptable environmental damage may occur if a general use vehicle is used

The potential impacts from Argo use and the District's way of mitigating these impacts are discussed below:

Dust: Dust is generally not a problem as most Argo use is during the wet season.

Rutting: Argo travel is used because of the very low ground pressure from the vehicle on areas too soft for general use vehicle traffic. Even with the low ground pressure ruts can be created. Mitigation: Open mud and very soft areas are avoided during Argo use. Travel is done slowly and carefully on sensitive habitat areas (pickleweed marshes). No Argo travel is done where endangered or threatened plants occur.

Vegetation removal: Vegetation may be removed by the scraping of the tires or tracks during operations or when making turns. Mitigation: Fast or sharp turning is avoided or turns are made on areas outside of the marsh such as levee roads. Personnel may utilize an Argo as a transport for personnel and source reduction tools. Argo travel is done slowly and carefully in marshes. No vehicle travel is done where endangered or threatened plants occur.

Vegetation crushing: Whenever a vehicle drives over vegetation, pressure from the weight of the vehicle will crush some vegetation. The amount of any damage depends on the type of vegetation and its condition. Most effects of crushing disappear as the vegetation returns to its normal position or, at worst, last until the next growth season. A study done on ATV travel in salt marsh habitats by the University of California (Hannaford and Resh) did show impacts on marsh vegetation. The study was done during the active growing season when vegetation was most susceptible to impacts. Most of the travel done by the District is done during the dormant season before active growth occurs so impacts would be expected to be minimal. One of the impacts from ATV use is the visibility of track marks for a short period. The visibility is from wetting the vegetation as the vehicle drives over, the light coating of mud on the vegetation from the wetting, and the temporary impression left in the vegetation. This visible impact has caused occasional complaints to wildlife personnel about possible unauthorized vehicle travel in the marsh. Mitigation: No vehicle travel is done where endangered or threatened plants occur. ATV travel is kept to the minimum necessary and done slowly and carefully in marsh habitats. Areas where vegetation is tender and subject to lasting damage are avoided. Points of entry into sources are varied if possible to avoid multiple travel over the same area. ATV travel directions are adjusted to avoid causing visible disruptions. Access utilizing Argos for source reduction work is generally done when marsh vegetation is dormant and therefore not damaging to new succulent growth.

Fire: Fire danger is usually not a problem in the season Argo travel is necessary.

Wildlife: The act of traveling in many areas can disturb wildlife or cause injury or death. Most disturbances from Argo travel are of no lasting impact to wildlife. Animals and birds move to avoid a perceived threat. Injury, death or damage to nests may occur from direct contact with an Argo. Mitigation: Argo operations are normally done at low speeds allowing birds and animals time to adjust to the vehicle and move out of the way. Potential nesting and burrowing (burrowing owls) areas are avoided or carefully surveyed for nests. Travel in Snowy Plover nesting areas is not a problem for Argo source reduction operations because few mosquito producing habitats are found near the preferred nesting areas, and source reduction work operations do not generally occur during nesting season.

Other Environmental Considerations:

Several potential impacts could occur due to ditch cleaning:
Vegetation Changes: One of these would be a change in vegetation or the invasion of undesirable species. The areas worked by the District involve only several *Spartina* areas. Work done in these areas is the removal of any large obstructions such as stumps, tires, timbers, abandoned boats, appliances, etc. The potential for invasion by *Spartina alterniflora* is not changed by District work. Very little ditch cleaning by District personnel is done in areas high enough in the marsh profile to allow pepperwort (*Lepidium* sp) to become established. Soil and sediment removed from the ditches is spread thinly over the surface to minimize any increase in elevation.
Turbidity: Another consideration is water turbidity created during the ditch cleaning work. Observation over a number of years indicates that the turbidity caused by ditch cleaning work is very localized. Work is generally done during low tide and incoming tide moves the localized turbidity into the marsh where settling can occur. The distance from the Bay that most of the work is done allows the suspended material to settle out well before reaching the Bay.

Environmental Monitoring of District Source Reduction Program

District personnel monitor the work done for source reduction, and maintain records of work performed (See attached document - Source Reduction Work Report Form). The District monitors for:

1. Effectiveness in controlling mosquito populations.
2. Changes in drainage caused by District cleaning work.
3. Changes in vegetation in work areas.

Source Reduction Work Report
Alameda County Mosquito Abatement District

Source Name:	District Source Number:	Date:

Source Location:

(Attach Army Corps Permit Map or other map of project) Record areas where work was done and any photographs taken before or after work was completed.

Description of Work Done:

Persons Working on Project:

Equipment and Tools Used on Project:

- ☐ Shovel
- ☐ Pitchfork
- ☐ Rake
- ☐ Hoe
- ☐ McLeod Fire Tool
- ☐ Machete
- ☐ Gas Powered Weed Cutter
- ☐ Argo

Estimate Distance Driven

_____ feet

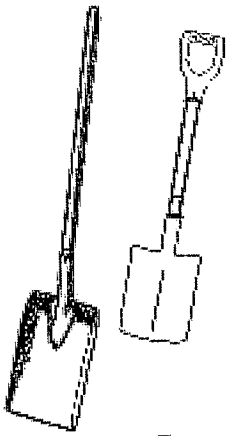
General Observations and Comments

Observed Changes:

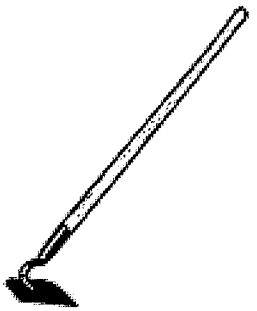
Any Observed Variations in Marsh Vegetation:
Take photographs and/or bring in sample for identification

Any Observed Changes in Drainage from Previous Work:
(Describe)

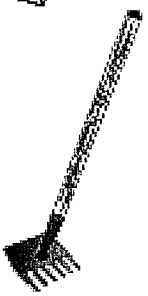
Source reduction hand tools used for ditch maintenance



Various types of flat shovels with sharpened edges are used to trim vegetation along ditches and to remove vegetation debris from ditch bottoms.



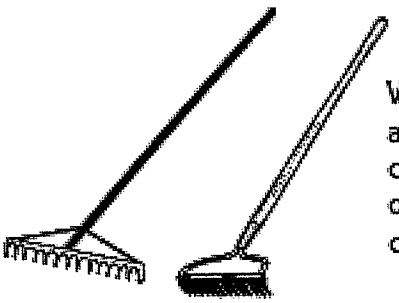
Hoes with sharpened edges are used for light vegetation trimming.



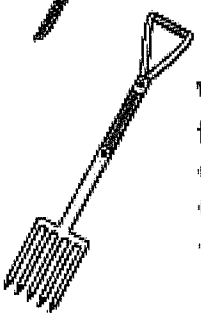
The McLeod fire tool is used to trim vegetation along the ditch edges and to remove cut vegetation from the ditch.

Gasoline powered weed cutter, usually with a steel blade is used to trim vegetation from edges and bottoms of larger ditches.

Machetes and machete-like tools are used to trim vegetation along the edges of ditches.



Various types of rakes are used to remove cut vegetation from the ditches and spread the cut material.



Various types of pitch forks are used to remove cut vegetation from the ditches and spread the cut material.

Purpose:

Habitat Enhancement Plans for Long Term Reduction of Mosquito Populations

Contact Information:
Alameda County Mosquito Abatement District
23187 Connecticut St
Hayward, CA 94545
Phone: (510) 783-7744
Fax: (510) 783-3903
email: enspec@mosquitoes.org

US Army Corps of Engineers
Regional Permit No. 2485205

Project start date: 01 Sep 2011

Prepared by Erika Castillo

Mosquito prevention and maintenance work

Work Categories and Land Use Information

A. Maintenance of existing small circulation ditches (up to 18 X 24 inches maximum) in tidal, non-tidal, or diked marshes. Side cast (dredge) materials will be flattened in place. Number of lineal feet will be indicated.

B. Maintenance of existing medium to large circulation ditches (18 X 24 inches up to and including 6 X 4 foot maximum) in tidal, non-tidal, or diked marshes. Side cast (dredge) materials will be alter-natively mounded to provide upland refugia for marsh biota. Number of lineal feet will be indicated.

C. Placement of NEW circulation ditches or realignment of existing circulation ditches in tidal, non-tidal or diked marshes. Size as delineated in A and B. Depending on size of ditch, side cast (dredge) materials will be flattened in-place or alternately mounded. Number of lineal feet will be indicated.

D. Repair of levees due to damage or subsidence.

E. Repair or maintenance of existing water control structures, (such as water pumps, floodgates, weirs, head gates, corrugated pipe culverts, etc.). Number and type of structure will be indicated.

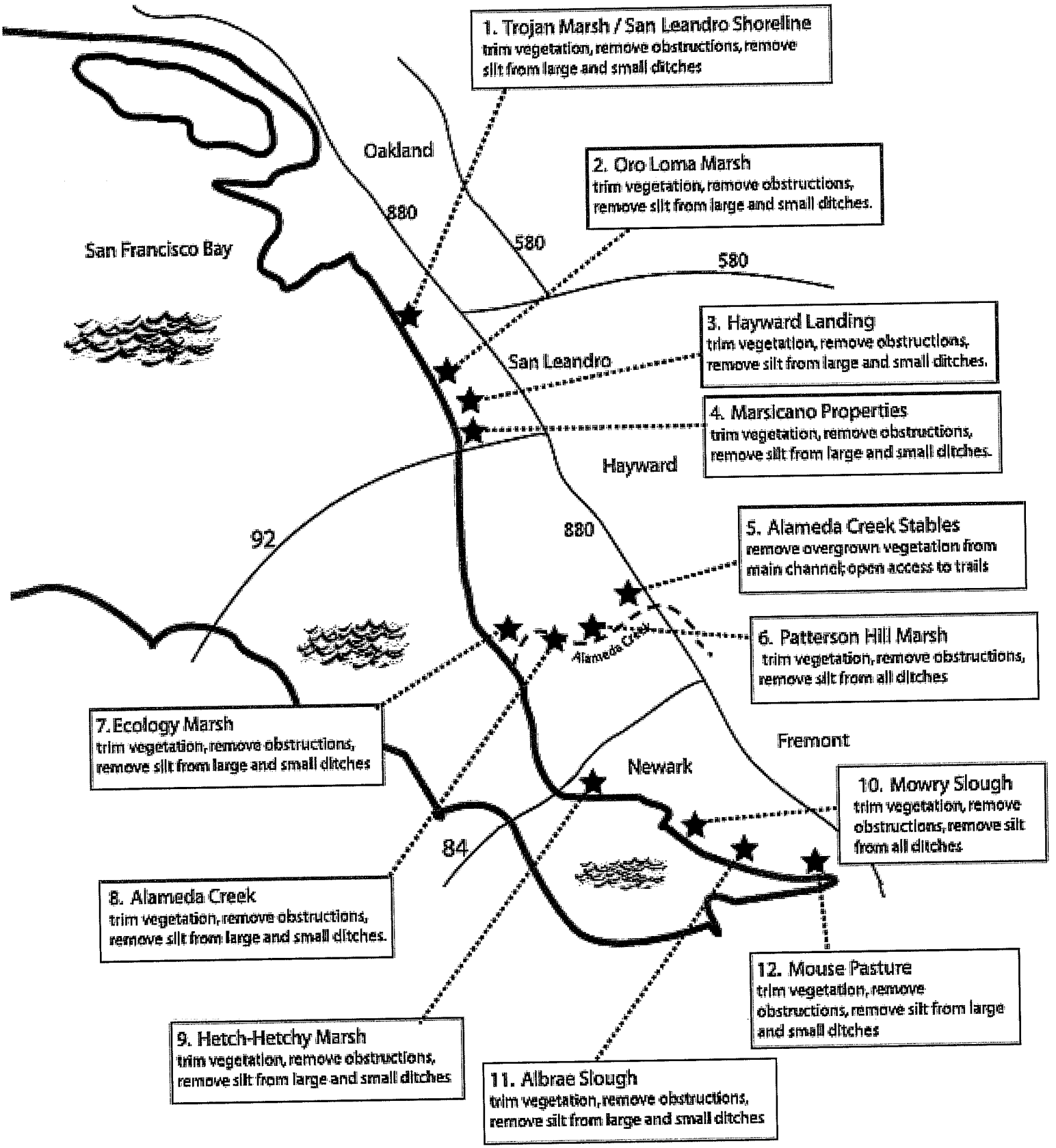
F. Weed and emergent vegetation abatement in channels where normal water flow or circulation are impeded such that mosquito breeding can occur. Vegetation will be removed.

G. Filling of portions of existing ditches with on-site materials or commercial materials in order to achieve necessary natural water circulation dynamics and enhance marsh restoration.

H. Present land and water use.

- H(1) diked marsh
- H(2) tidal marsh
- H(3) non-tidal marsh
- H(4) water channel
- H(5) dredge material disposal site
- H(6) aquatic impoundments
- H(7) agricultural ditches
- H(8) experimental effluent to establish or enhance wetlands

Area map and overview of proposed projects for 2011-2012



PERMIT NUMBER: 248520S
PROJECT YEAR: 2011

PROJECT SITE DESCRIPTION

Project No. 1-
Trojan Marsh

Property Owner:
Heron Bay Home Owner's Association/
Citation Builders and City of San Leandro

Project Location:
West end of Lewelling Blvd.
San Leandro, CA

Agency:
Alameda County Mosquito Abatement District (ACMAD)

Contact Person:
Erika Castillo
Phone: (510) 783-7744
Fax: (510) 783-3903
email: enspec@mosquitoes.org

ACMAD Source Number: 3038

Work category	Linear feet new	Linear feet maintenance	Number of structures	Beginning date	Completion date	Percent complete
A		7100		1-Sep-2011		
B		5800		1-Sep-2011		
C						
D						
E						
F						
G						
H	Present land and water use		H2 Tidal marsh			

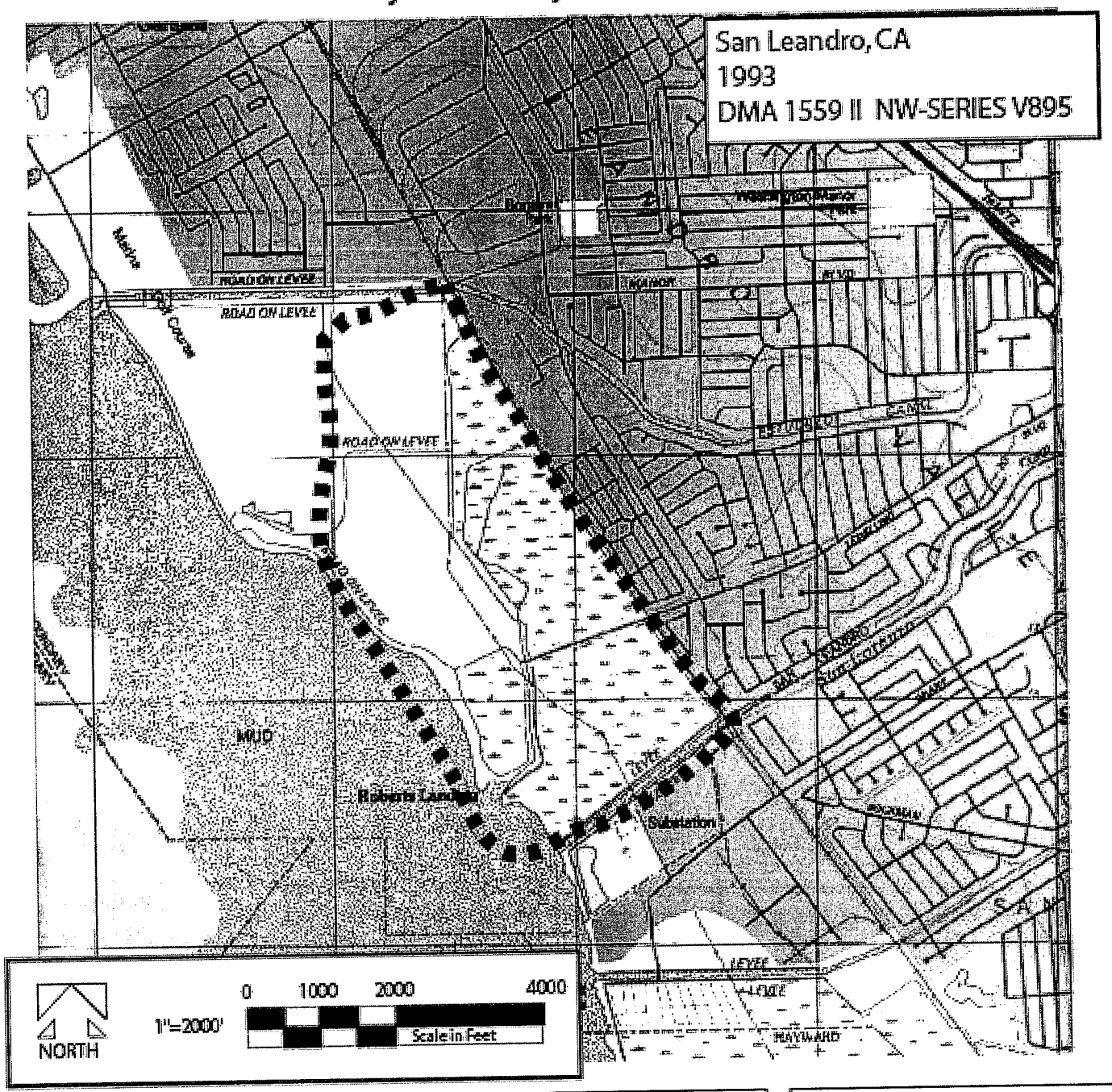
Project Description:

This project is part of the San Leandro Shoreline Marsh restoration. In 1997 the District assisted in this project by using our DMC 1200 with a scavel plow to create and enhance the ditch drainage system. District personnel assisted by hand digging and cleaning ditches. The ditches created for this project are becoming overgrown with vegetation and the District would like to clear the edges of the ditches, remove obstructions and perform minor silt removal. All removed silt will be spread away from the ditch edges. Work will be done with an Argo to transport tools and personnel to the work site.

Aedes squamiger, Culiseta inornata and *Culex tarsalis* mosquitoes are produced in this source.

The dominant vegetation is pickleweed *(Salicornia virginica)* with some salt grass *(Distichlis* sp.) and California sea-blite *(Suaeda depressa)*.

Project 1 - Trojan Marsh



Purpose:
To clear vegetation, obstructions and minor silt accumulations from ditches to minimize mosquito breeding and increase natural tidal flushing.

Contact Information:
Alameda County Mosquito Abatement District
23187 Connecticut St
Hayward, CA 94545
Phone: (510) 783-7744
Fax: (510) 783-3903
email: enspec@mosquitoes.org

Project Number 1
US Army Corps of Engineers
Regional Permit No. 2485205

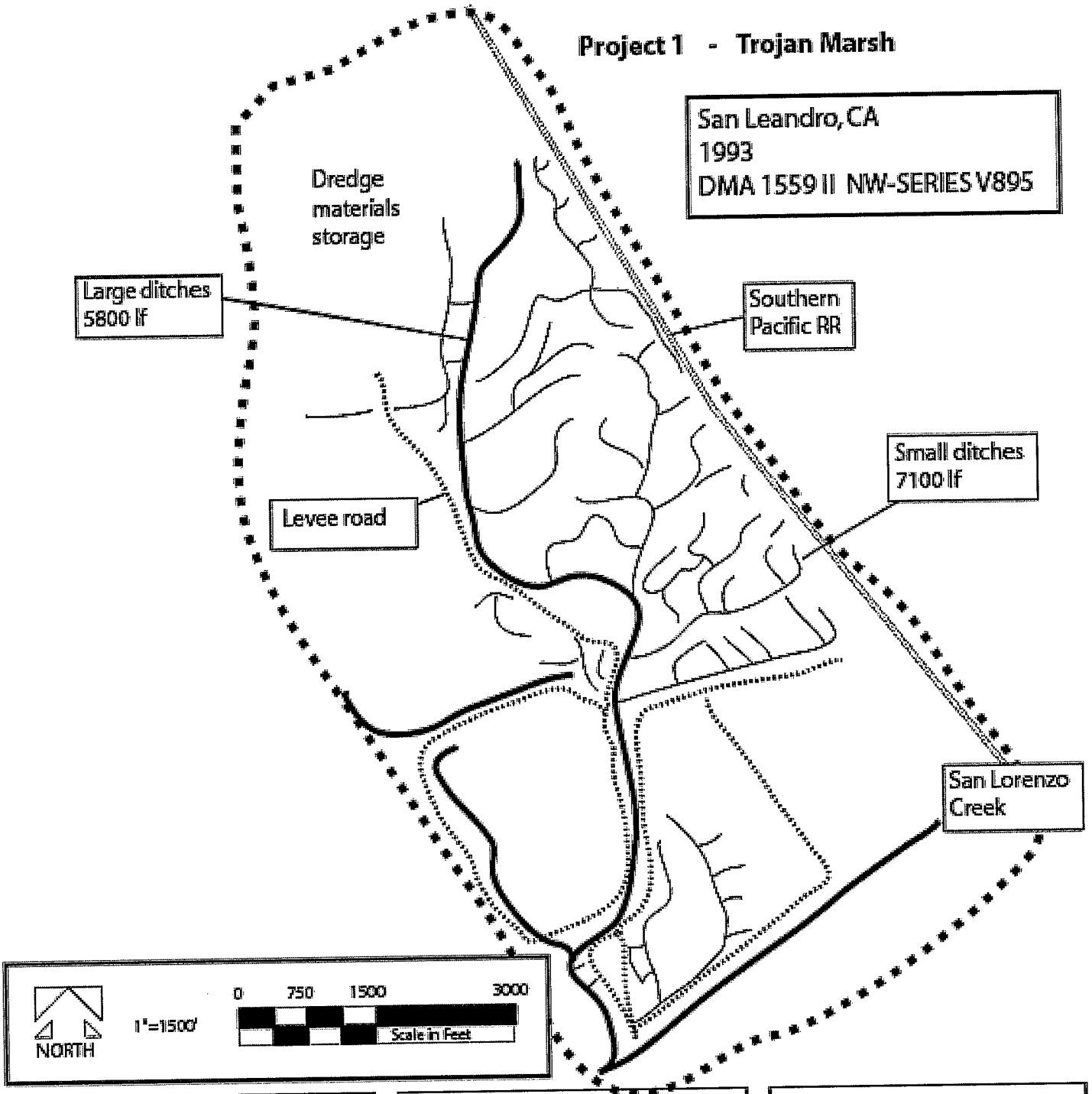
Site Location:
West end of Lewelling Blvd
San Leandro, CA
Sheet 1 of 2

Project start date: 01 Sep 2011

SCALE: 1" = 2000'

Prepared by Erika Castillo

Project 1 - Trojan Marsh



Purpose:
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Hayward, CA 94545
Phone: (510) 783-7744
Fax: (510) 783-3903
email: enspec@mosquitoes.org

Project Number 1
US Army Corps of Engineers
Regional Permit No. 2485205

Site Location:
West end of Lewelling Blvd
San Leandro, CA
Sheet 2 of 2

Project start date: 01 Sep 2011

SCALE: 1" = 1500'

Prepared by Erika Castillo

PERMIT NUMBER: 248520S
PROJECT YEAR: 2011

PROJECT SITE DESCRIPTION

Project No. 2
Oro Loma Marsh

Property Owners:
East Bay Regional Parks District, US Fish and Wildlife Service, State Wildlife Conservation Board, Oro Loma Sanitary District
Project Location:
Areas W of Bandoni Ave and Via Sarita;
San Lorenzo, CA

Agency:
Alameda County Mosquito Abatement District (ACMAD)

Contact Person:
Erika Castillo
Phone: (510) 783-7744
Fax: (510) 783-3903
email: enspec@mosquitoes.org

ACMAD Source Number: 3031

Work category	Linear feet new	Linear feet maintenance	Number of structures	Beginning date	Completion date	Percent complete
A		4000		1-Sep-2011		
B						
C						
D						
E						
F						
G						
H	Present land and water use		H2 Tidal marsh			

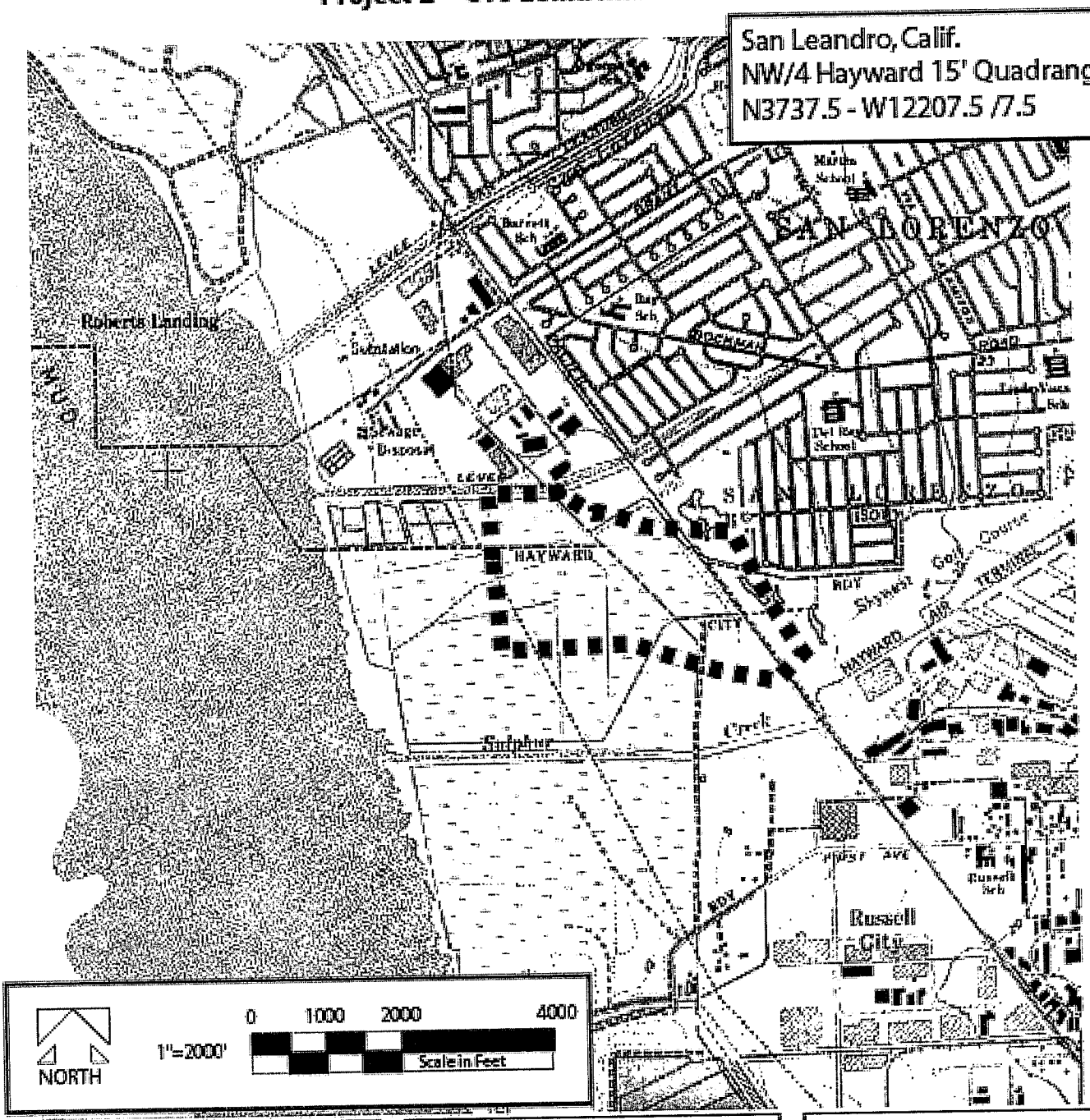
Project Description:

This new project has 2 separate components: 1- involves cleaning out an existing ditch along the W side of the Union Pacific Railroad tracks due west of Via Sarita, San Lorenzo; and 2- removing vegetation and sediment from existing ditches that connect to 3 ponds. All removed silt will be spread away from the ditch edges.

Aedes dorsalis, Aedes squamiger, Culiseta inornata and *Culex tarsalis* mosquitoes are produced in this source.

The dominant vegetation is pickleweed (*Salicornia virginica*) with some salt grass (*Distichlis* sp.) and California sea-blite (*Suaeda depressa*).

Project 2 Oro Loma Marsh



Purpose:
To clear vegetation, obstructions and minor silt accumulations from ditches to minimize mosquito breeding.

Contact Information:
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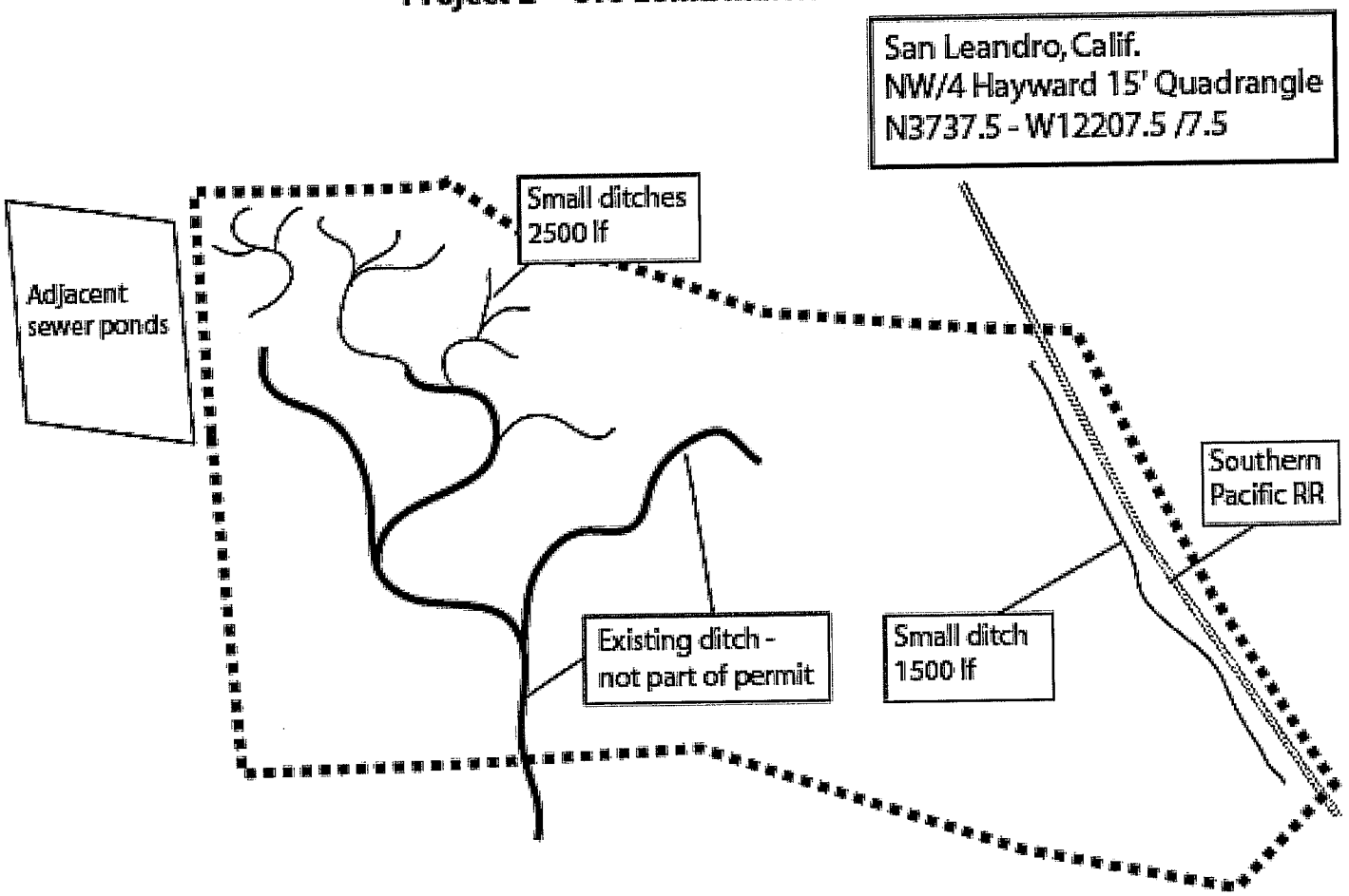
23187 Connecticut St
Hayward, CA 94545
Phone: (510) 783-7744
Fax: (510) 783-3903
email: enspec@mosquitoes.org

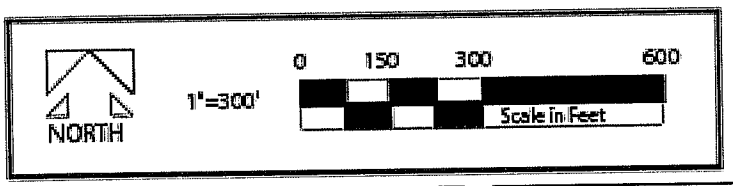
Project Number 2
US Army Corps of Engineers
Regional Permit No. 2485205

Site Location:
Areas W of Bandoni Ave and Via Sarita, San Lorenzo;
Sheet 1 of 2

Project start date: 01 Sep 2011 **SCALE: 1" = 2000'** **Prepared by Erika Castillo**

Project 2 Oro Loma Marsh





Purpose:
To clear vegetation, obstructions and minor silt accumulations from ditches to minimize mosquito breeding.

Contact Information:
Alameda County Mosquito Abatement District
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Hayward, CA 94545
Phone: (510) 783-7744
Fax: (510) 783-3903
email: enspec@mosquitoes.org

Project Number 2
US Army Corps of Engineers
Regional Permit No. 2485205

Site Location:
Areas W of Bandoni Ave and Via Sarita, San Lorenzo;
Sheet 2 of 2

Project start date: 01 Sep 2011

SCALE: 1" = 300'

Prepared by Erika Castillo

PERMIT NUMBER: 248520S
PROJECT YEAR: 2011

PROJECT SITE DESCRIPTION

Project No. 3
Hayward Landing

Property Owner:
East Bay Regional Park District
Project Location:
~ 0.5 mile WNW of the end of West Winton Ave,
Hayward, CA

Agency:
Alameda County Mosquito Abatement District (ACMAD)

Contact Person:
Erika Castillo
Phone: (510) 783-7744
Fax: (510) 783-3903
email: enspec@mosquitoes.org

ACMAD Source Number: 3029 Russell Salt Marsh

Work category	Linear feet new	Linear feet maintenance	Number of structures	Beginning date	Completion date	Percent complete
A		2000		1-Sep-2011		
B						
C						
D						
E						
F						
G						
H	Present land and water use		H2 Tidal marsh			

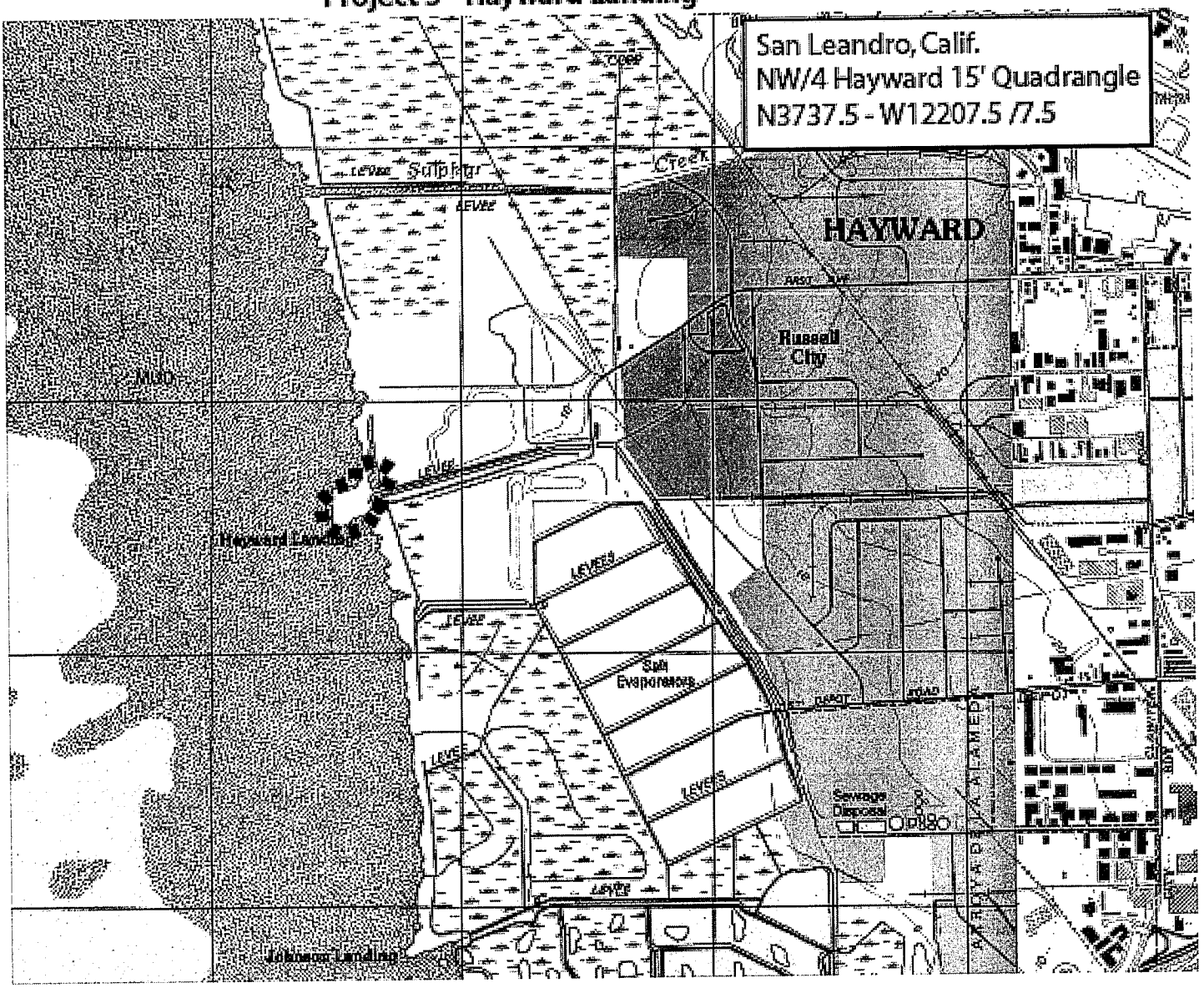
Project Description:

The ditches here are becoming overgrown with vegetation and the District would like to clear the edges of the ditches, remove obstructions and perform minor silt removal. All removed silt will be spread away from the ditch edges.

Aedes squamiger, Aedes dorsalis, Culiseta inornata and *Culex tarsalis* mosquitoes are produced in this source.

The dominant vegetation is pickleweed (*Salicornia virginica*) with some salt grass (*Distichlis* sp.).

Project 3 Hayward Landing



Purpose:
To clear vegetation, obstructions and minor silt accumulations from ditches to minimize mosquito breeding.

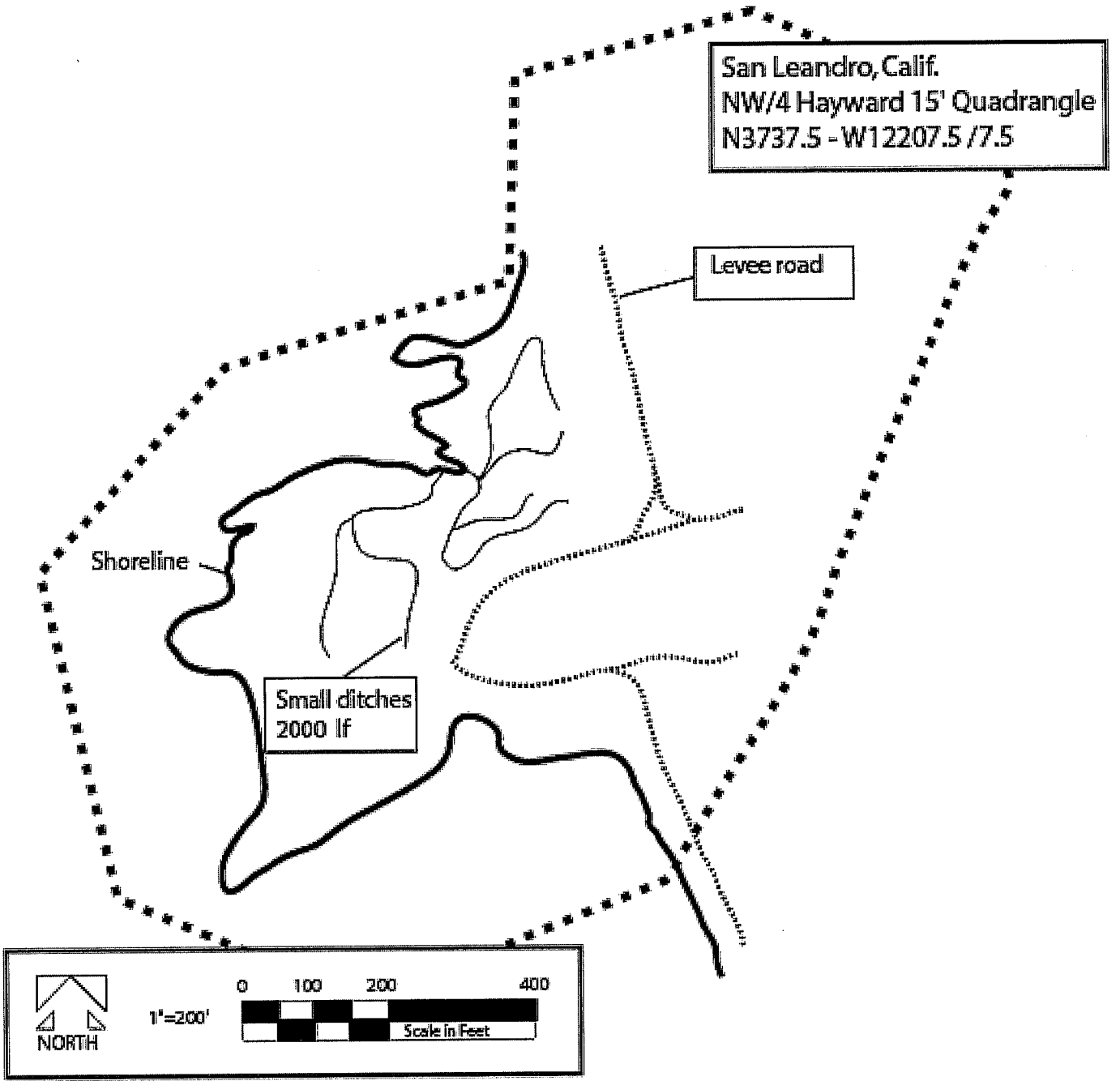
Contact Information:
Alameda County Mosquito Abatement District
23187 Connecticut St
Hayward, CA 94545
Phone: (510) 783-7744
Fax: (510) 783-3903
email: enspec@mosquitoes.org

Project Number 3
US Army Corps of Engineers
Regional Permit No. 2485205

Site Location:
~ 0.5 mile WNW of the end of West Winton Ave, Hayward, CA
Sheet 1 of 2

Project start date: 01 Sep 2011 **SCALE: 1" = 2000'** **Prepared by Erika Castillo**

Project 3 Hayward Landing



Purpose:
To clear vegetation, obstructions and minor silt accumulations from ditches to minimize mosquito breeding.

Contact Information:
Alameda County Mosquito Abatement District
23187 Connecticut St
Hayward, CA 94545
Phone: (510) 783-7744
Fax: (510) 783-3903
email: enspec@mosquitoes.org

Project Number 3
US Army Corps of Engineers
Regional Permit No. 2485205

Site Location:
~ 0.5 mile WNW of the end of West Winton Ave, Hayward, CA
Sheet 2 of 2

Project start date: 01 Sep 2011 **SCALE: 1" = 200'** **Prepared by Erika Castillo**

PERMIT NUMBER: 248520S
PROJECT YEAR: 2011

PROJECT SITE DESCRIPTION

Project No. 4
Marsicano Properties

Property Owner:
Hayward Area Recreation District
(& East Bay Regional Park District?)
Project Location:
Just N of the end of Breakwater Ave and
Highway 92
Hayward, CA

Agency:
Alameda County Mosquito Abatement District (ACMAD)

Contact Person:
Erika Castillo
Phone: (510) 783-7744
Fax: (510) 783-3903
email: enspec@mosquitoes.org

ACMAD Source Numbers: 3001, 3002, 3005

Work category	Linear feet new	Linear feet maintenance	Number of structures	Beginning date	Completion date	Percent complete
A		500		1-Sep-2011		
B		1500		1-Sep-2011		
C						
D						
E						
F						
G						
H	Present land and water use		H2 Tidal marsh			

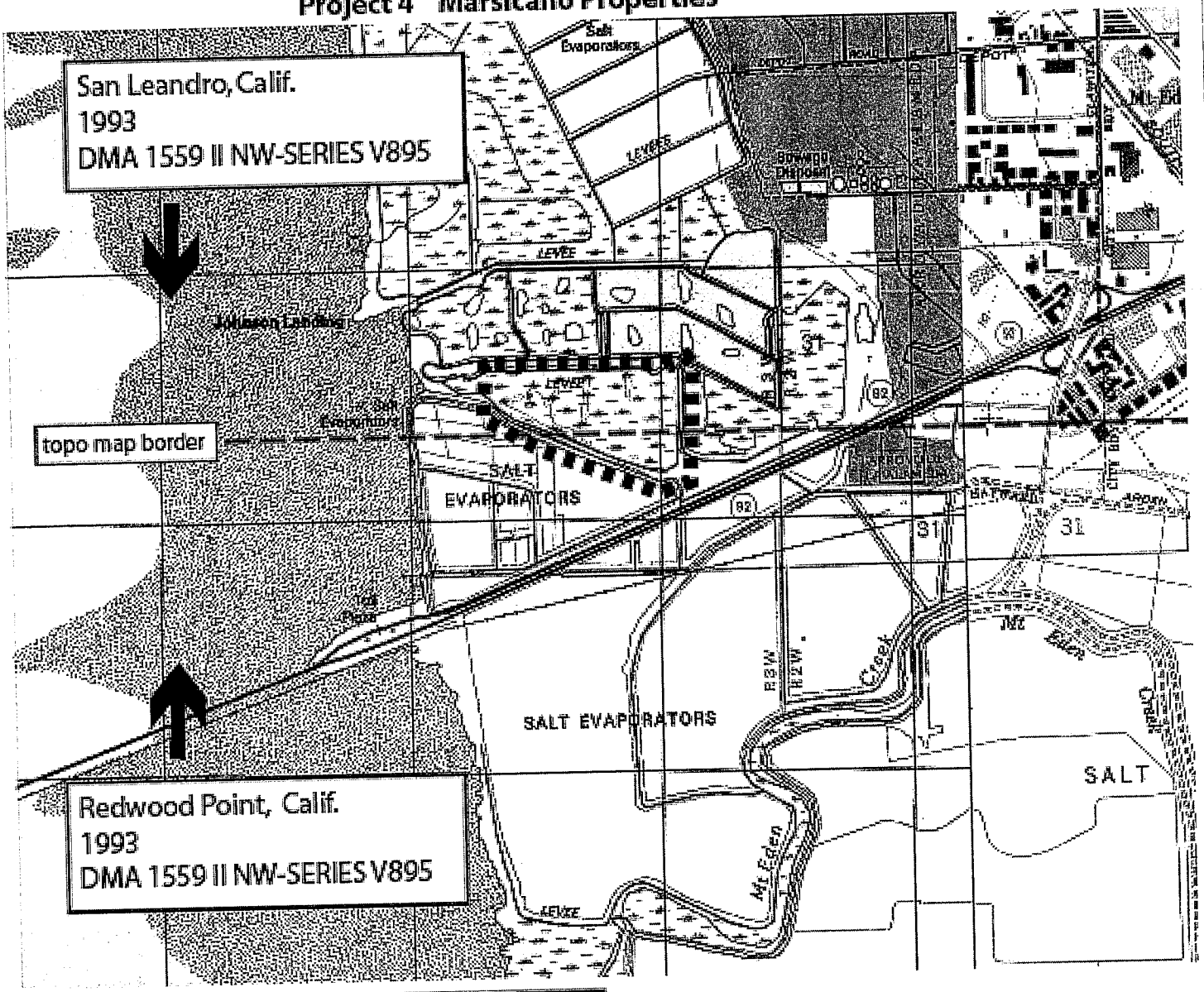
Project Description:

HARD has just finished a marsh restoration here and some old lateral ditches need to have sediment removed. Other ditches here are becoming overgrown with vegetation and the District would like to clear the edges of the ditches, remove obstructions and perform minor silt removal. All removed silt will be spread away from the ditch edges. This area has been maintained by ACMAD employees in the past.

Aedes squamiger, Aedes dorsalis, Culiseta inornata and *Culex tarsalis* mosquitoes are produced in this source.

The dominant vegetation is pickleweed *(Salicornia virginica)* with some salt grass *(Distichlis* sp.).

Project 4 Marsicano Properties



NORTH

1"=2000'

0 1000 2000 4000

Scale in Feet

Purpose:
To clear vegetation, obstructions and minor silt accumulations from ditches to minimize mosquito breeding.

Contact Information:
Alameda County Mosquito Abatement District
23187 Connecticut St
Hayward, CA 94545
Phone: (510) 783-7744
Fax: (510) 783-3903
email: enspec@mosquitoes.org

Project Number 4
US Army Corps of Engineers
Regional Permit No. 2485205

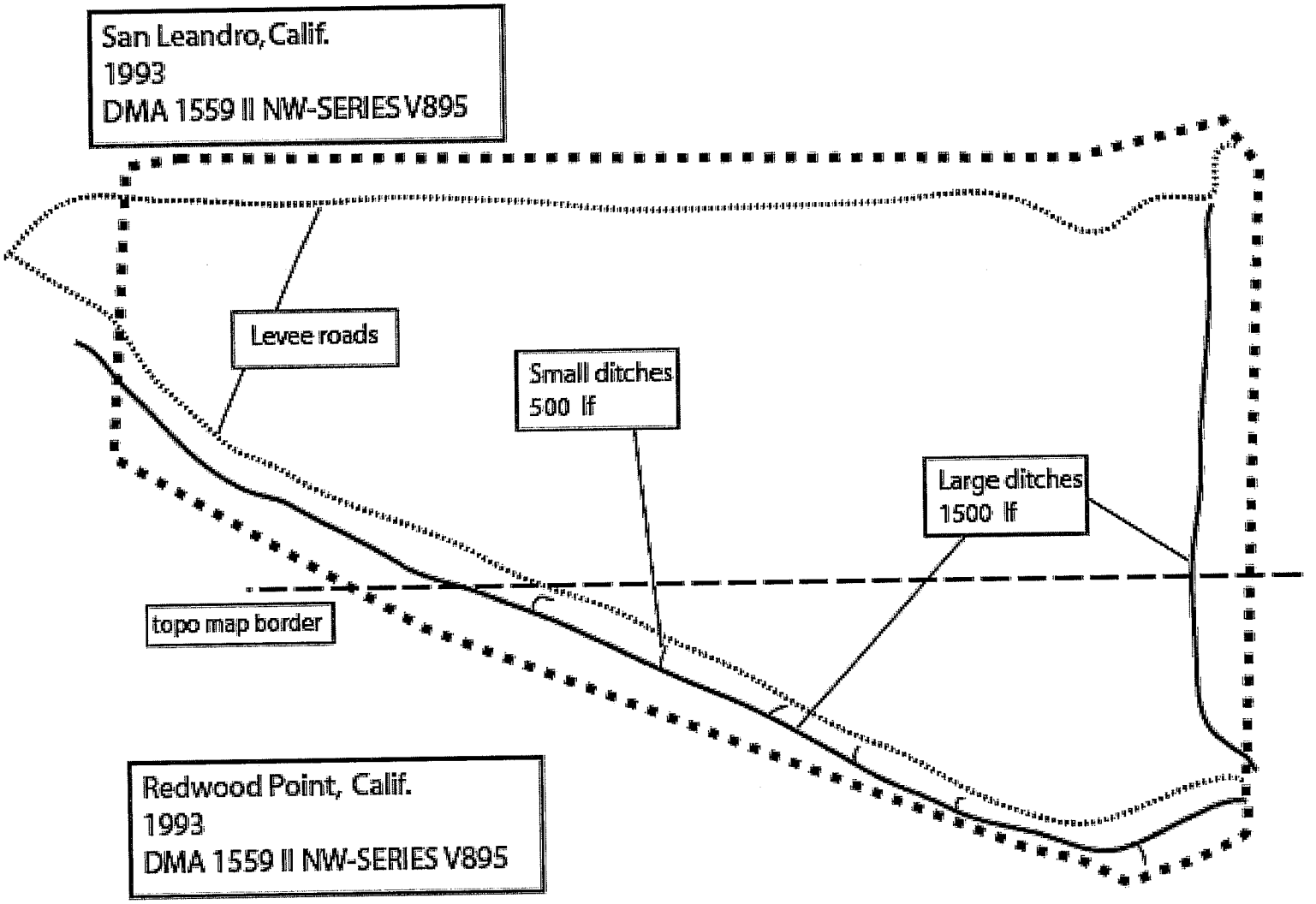
Site Location:
Just N of the end of Breakwater Ave and Highway 92
Hayward, CA
Sheet 1 of 2

Project start date: 01 Sep 2011

SCALE: 1" = 2000'

Prepared by Erika Castillo

Project 4 Marsicano Properties



NORTH

1"=400'

0 200 400 800

Scale in Feet

Purpose:
To clear vegetation, obstructions and minor silt accumulations from ditches to minimize mosquito breeding.

Contact Information:
Alameda County Mosquito Abatement District
23187 Connecticut St
Hayward, CA 94545
Phone: (510) 783-7744
Fax: (510) 783-3903
email: enspec@mosquitoes.org

Project Number 4
US Army Corps of Engineers
Regional Permit No. 2485205

Site Location:
Just N of the end of Breakwater Ave and Highway 92
Hayward, CA
Sheet 2 of 2

Project start date: 01 Sep 2011

SCALE: 1" = 400'

Prepared by Erika Castillo

PERMIT NUMBER: 248520S
PROJECT YEAR: 2011

PROJECT SITE DESCRIPTION

Project No. 5
Alameda Creek Stables

Property Owner:
Alameda County Public Works Agency

Project Location:
Just W of intersection of Union City Blvd and Coyote Hills Slough;
Union City, CA

Agency:
Alameda County Mosquito Abatement District (ACMAD)

Contact Person:
Erika Castillo
Phone: (510) 783-7744
Fax: (510) 783-3903
email: enspec@mosquitoes.org

ACMAD Source Number: 6132

Work category	Linear feet new	Linear feet maintenance	Number of structures	Beginning date	Completion date	Percent complete
A						
B		2600		1-Sep-2011		
C						
D						
E						
F						
G						
H	Present land and water use		H3 Non-tidal marsh			

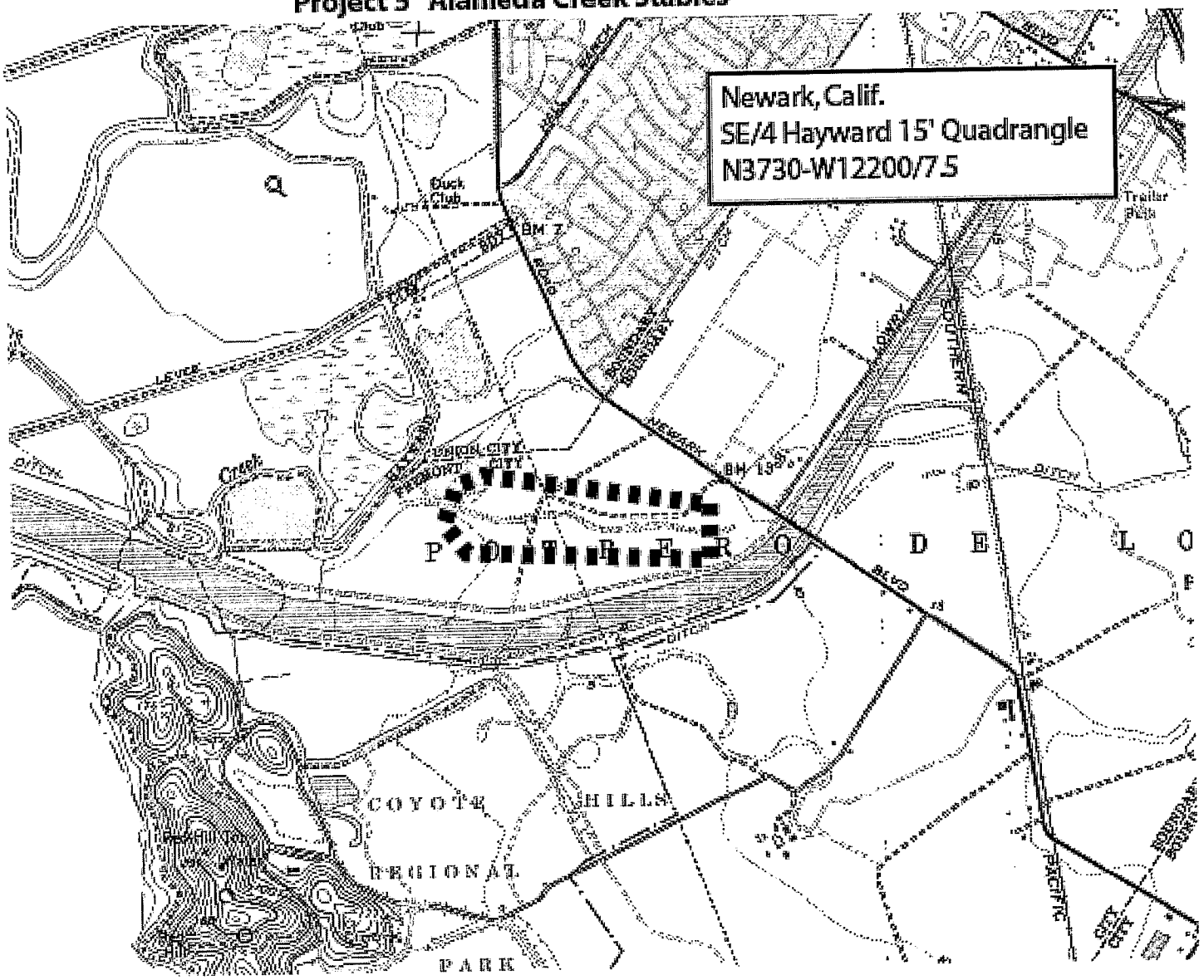
Project Description:

We need to remove overgrown vegetation from the main channel, and to clear trails for access. This area has been maintained by ACMAD employees and the East Bay Conservation Corps in the past.

Aedes washinoi, *Culiseta inornata* and *Culex tarsalis* mosquitoes are produced in this source.

The dominant vegetation in the main channel are tules (*Typha* sp.). Blackberries, poison oak and willow are found in the accompanying riparian corridor.

Project 5 Alameda Creek Stables



Purpose:
We need to remove overgrown vegetation from the main channel, and to clear trails for access.

Contact Information:
Alameda County Mosquito Abatement District
23187 Connecticut St
Hayward, CA 94545
Phone: (510) 783-7744
Fax: (510) 783-3903
email: enspec@mosquitoes.org

Project Number 5
US Army Corps of Engineers
Regional Permit No. 2485205

Site Location:
Just E of intersection of Union City Blvd and Coyote Hills Slough; Union City, CA
Sheet 1 of 2

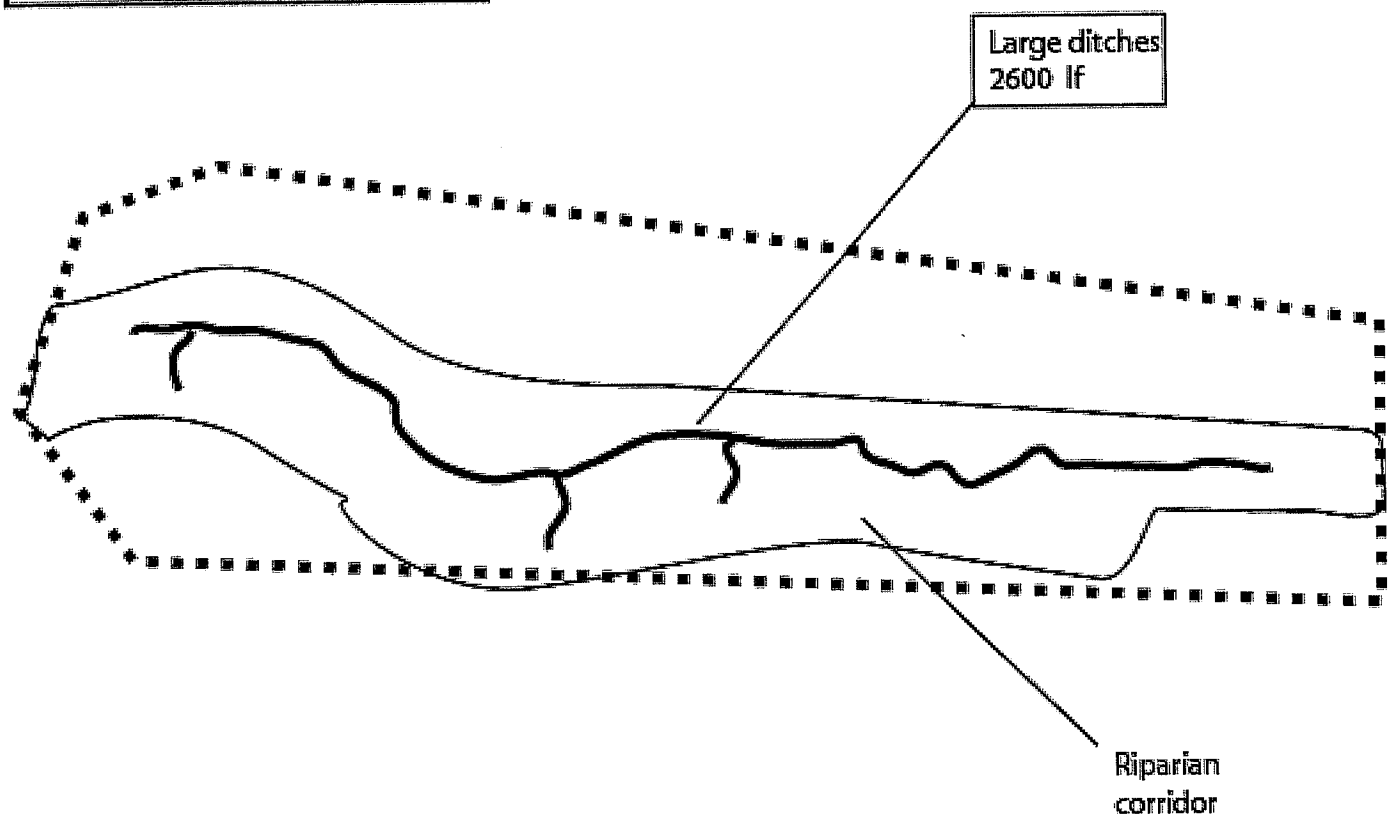
Project start date: 01 Sep 2011

SCALE: 1" = 2000'

Prepared by Erika Castillo

Project 5 Alameda Creek Stables

Newark, Calif.
SE/4 Hayward 15' Quadrangle
N3730-W12200/7.5



NORTH

1"=400'

0 200 400 800

Scale in Feet

Purpose:
We need to remove overgrown vegetation from the main channel, and to clear trails for access.

Contact Information:
Alameda County Mosquito Abatement District
23187 Connecticut St
Hayward, CA 94545
Phone: (510) 783-7744
Fax: (510) 783-3903
email: enspec@mosquitoes.org

Project Number 5
US Army Corps of Engineers
Regional Permit No. 2485205

Site Location:
Just E of intersection of Union City Blvd and Coyote Hills Slough; Union City, CA
Sheet 2 of 2

Project start date: 01 Sep 2011

SCALE: 1" = 400'

Prepared by Erika Castillo

PERMIT NUMBER: 248520S
PROJECT YEAR: 2011

PROJECT SITE DESCRIPTION

Project No.6
Patterson Hill Marsh
Property Owners:
East Bay Regional Park District
Project Location:
~1 mile W of intersection of Union City Blvd and Coyote Hills Slough;
Union City, CA

Agency:
Alameda County Mosquito Abatement District (ACMAD)

Contact Person:
Erika Castillo
Phone: (510) 783-7744
Fax: (510) 783-3903
email: enspec@mosquitoes.org

ACMAD Source Number: 6063

Work category	Linear feet new	Linear feet maintenance	Number of structures	Beginning date	Completion date	Percent complete
A		3200		1-Sep-2011		
B		800		1-Sep-2011		
C						
D						
E						
F						
G						
H	Present land and water use		H2 Tidal marsh			

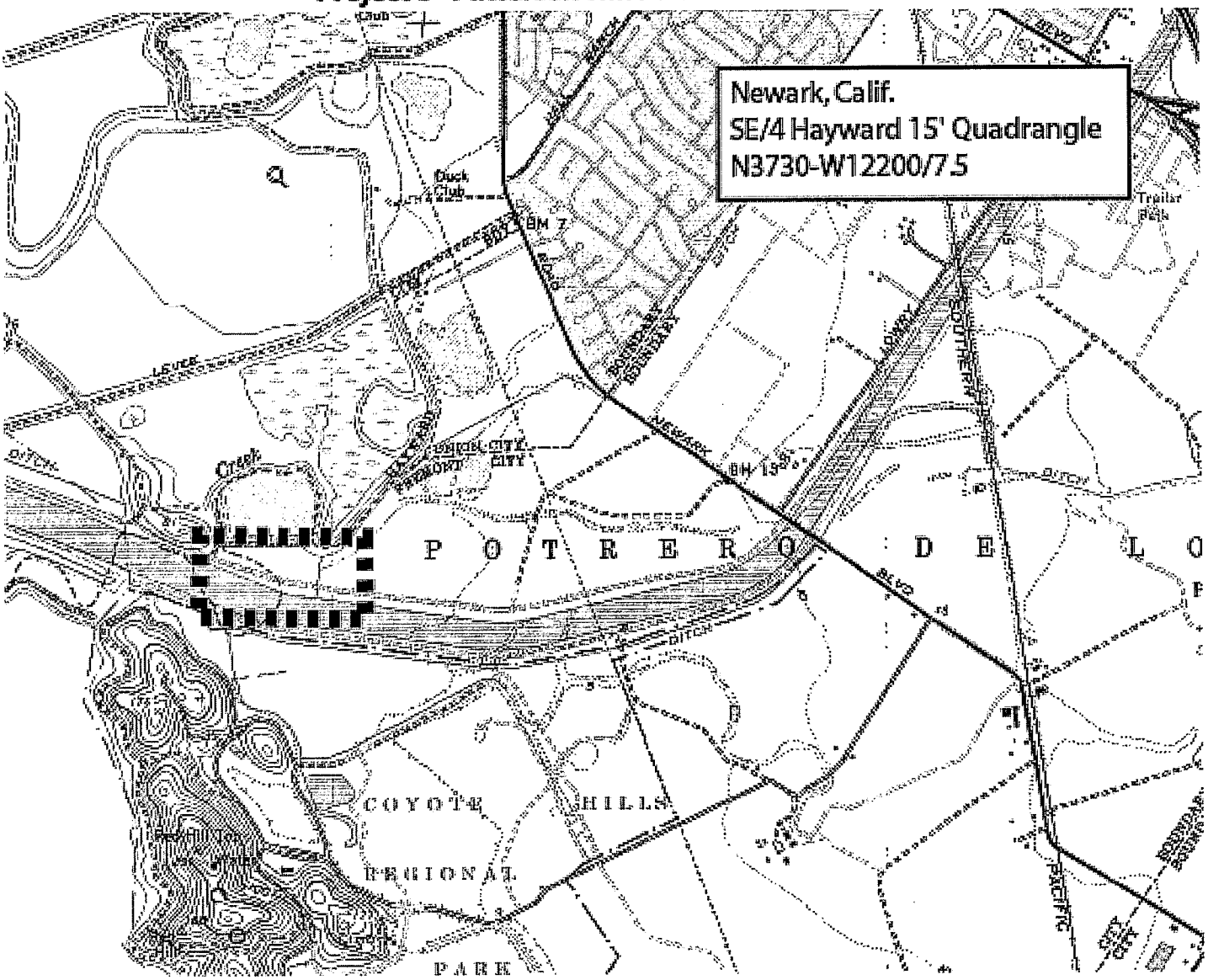
Project Description:

The ditches here are becoming overgrown with vegetation and the District would like to clear the edges of the ditches, remove obstructions and perform minor silt removal. All removed silt will be spread away from the ditch edges.

The dominant vegetation in the lower areas is pickleweed (*Salicornia virginica*) with the remainder being salt grass (*Distichlis spicata*).

This site produces *Aedes dorsalis* and *Aedes squamiger*, *Culiseta inornata* and *Culex tarsalis* mosquitoes.

Project 6 Patterson Hill Marsh



Purpose:
To improve water circulation to reduce mosquito breeding. Vegetation will be trimmed and obstructions removed from ditches.

Contact Information:
Alameda County Mosquito Abatement District
23187 Connecticut St
Hayward, CA 94545
Phone: (510) 783-7744
Fax: (510) 783-3903
email: enspec@mosquitoes.org

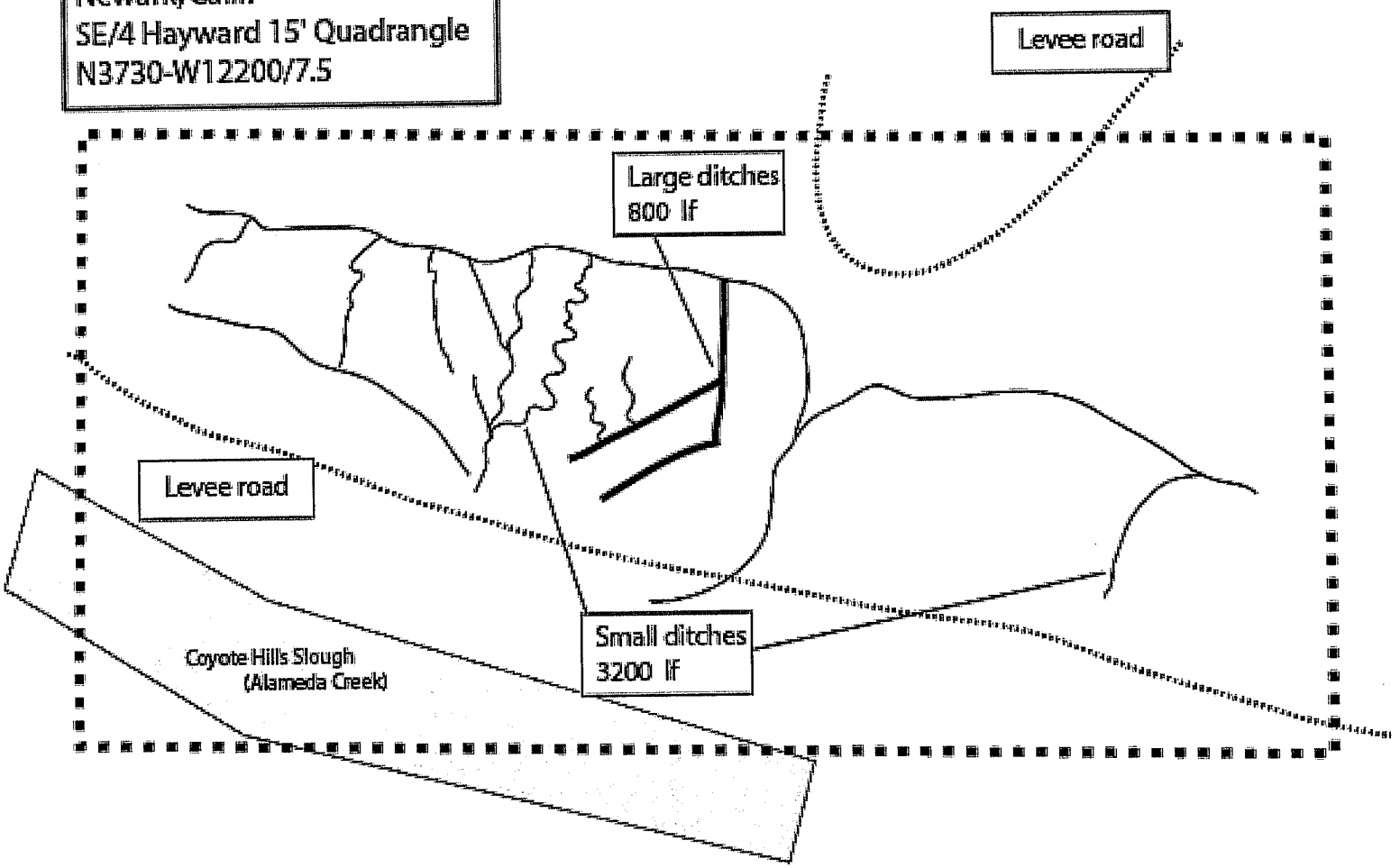
Project Number 6
US Army Corps of Engineers
Regional Permit No. 24852OS

Site Location:
Just E of intersection of Union City Blvd and Coyote Hills Slough; Union City, CA
Sheet 1 of 2

Project start date: 01 Sep 2011 **SCALE: 1" = 2000'** **Prepared by Erika Castillo**

Project 6 Patterson Hill Marsh

Newark, Calif.
SE/4 Hayward 15' Quadrangle
N3730-W12200/7.5



NORTH

1"=300'

0 150 300 600

Scale in Feet

Purpose:
To clear vegetation, obstructions and minor silt accumulations from ditches to minimize mosquito breeding.

Contact Information:
Alameda County Mosquito Abatement District
23187 Connecticut St
Hayward, CA 94545
Phone: (510) 783-7744
Fax: (510) 783-3903
email: enspec@mosquitoes.org

Project Number 6
US Army Corps of Engineers
Regional Permit No. 2485205

Site Location:
~ 1 mile W of intersection of Union City Blvd and Coyote Hills Slough; Union City, CA
Sheet 2 of 2

Project start date: 01 Sep 2011

SCALE: 1" = 300'

Prepared by Erika Castillo

PERMIT NUMBER: 248520S
PROJECT YEAR: 2011
PROJECT SITE DESCRIPTION

Project No. 7
Ecology Marsh

Property Owner:
Alameda County Flood Control District

Project Location:
N of Alameda Creek at SF Bay;
Hayward, CA

Agency:
Alameda County Mosquito Abatement District (ACMAD)

Contact Person:
Erika Castillo
Phone: (510) 783-7744
Fax: (510) 783-3903
email: enspec@mosquitoes.org

ACMAD Source Number: 6112

Work category	Linear feet new	Linear feet maintenance	Number of structures	Beginning date	Completion date	Percent complete
A		8200		1-Sep-2011		
B						
C						
D						
E						
F						
G						
H	Present land and water use		H2 Tidal marsh			

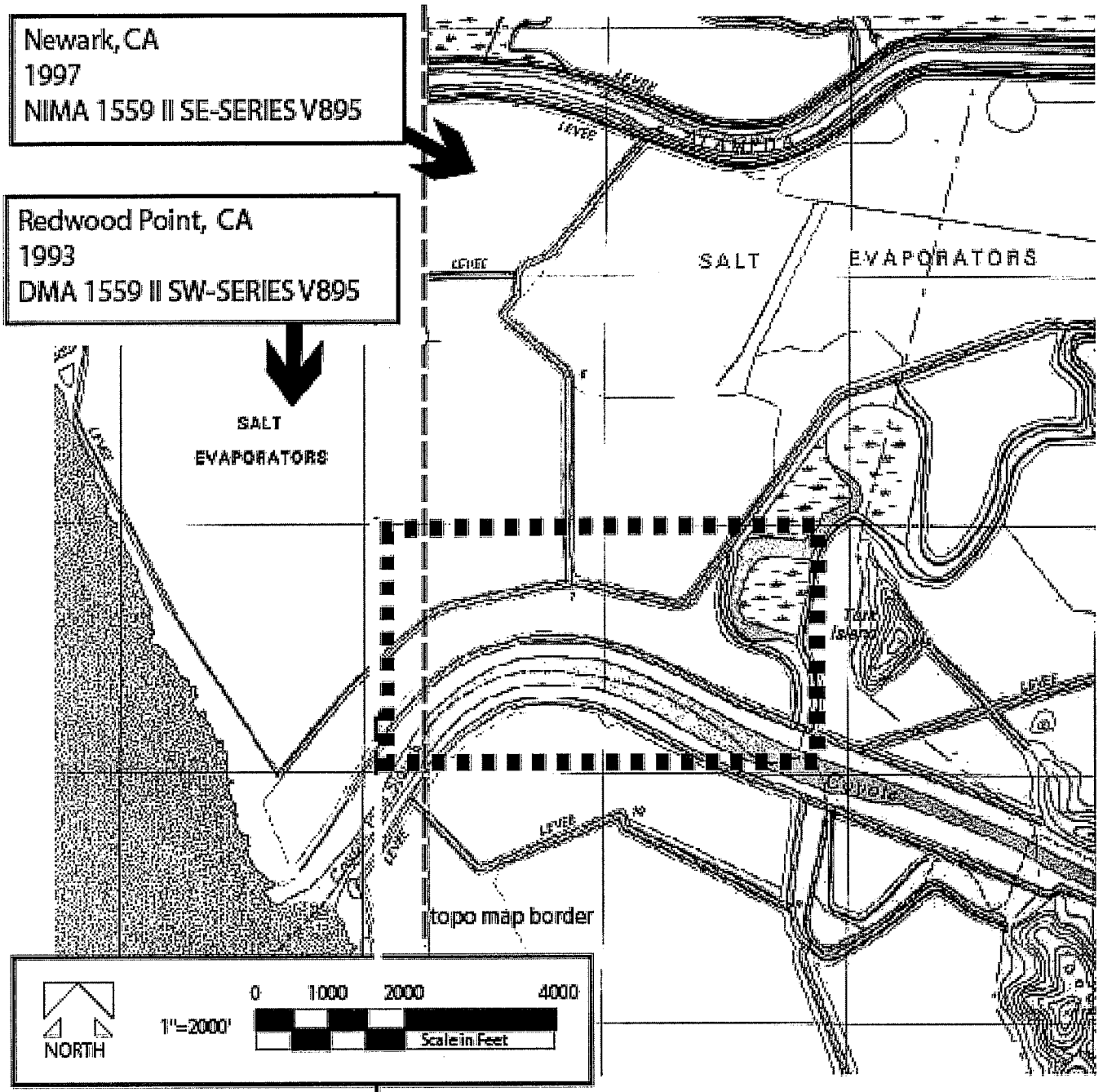
Project Description:

The 501 acre Ecology Marsh (our name for this marsh) was created by the Army Corps of Engineers as part of the Alameda Creek Flood Control Project. Dredge spoils were pumped onto this site to raise the level of the marsh. Since the completion of this project there have been mosquito problems in the easterly parts of this marsh. The Alameda County Mosquito Abatement District (ACMAD) used our DMC 1200 Thiokel with speed scavel ditching equipment in 1987 to install circulation ditches to alleviate these problems and again in 1995 to clear out these ditches. The ditches need regular trimming and clearing.

The vegetation in this area is primarily pickleweed *(Salicornia virginica)*. *Atriplex* spp., *Grindelia stricta*, *Frankenia grandifolia*, and *Spartina foliosa* can be found in this marsh but not in close proximity to the ditches. There are two non-native plant species of interest in this marsh: *Spartina alterniflora* and *Salicornia europaea*, which are found at the western end of this marsh.

This site produces *Aedes squamiger*, *Aedes dorsalis* and *Culiseta inornata* mosquitoes.

Project 7 - Ecology Marsh



Purpose:
To improve water circulation to reduce mosquito breeding. Vegetation will be trimmed and obstructions removed from ditches.

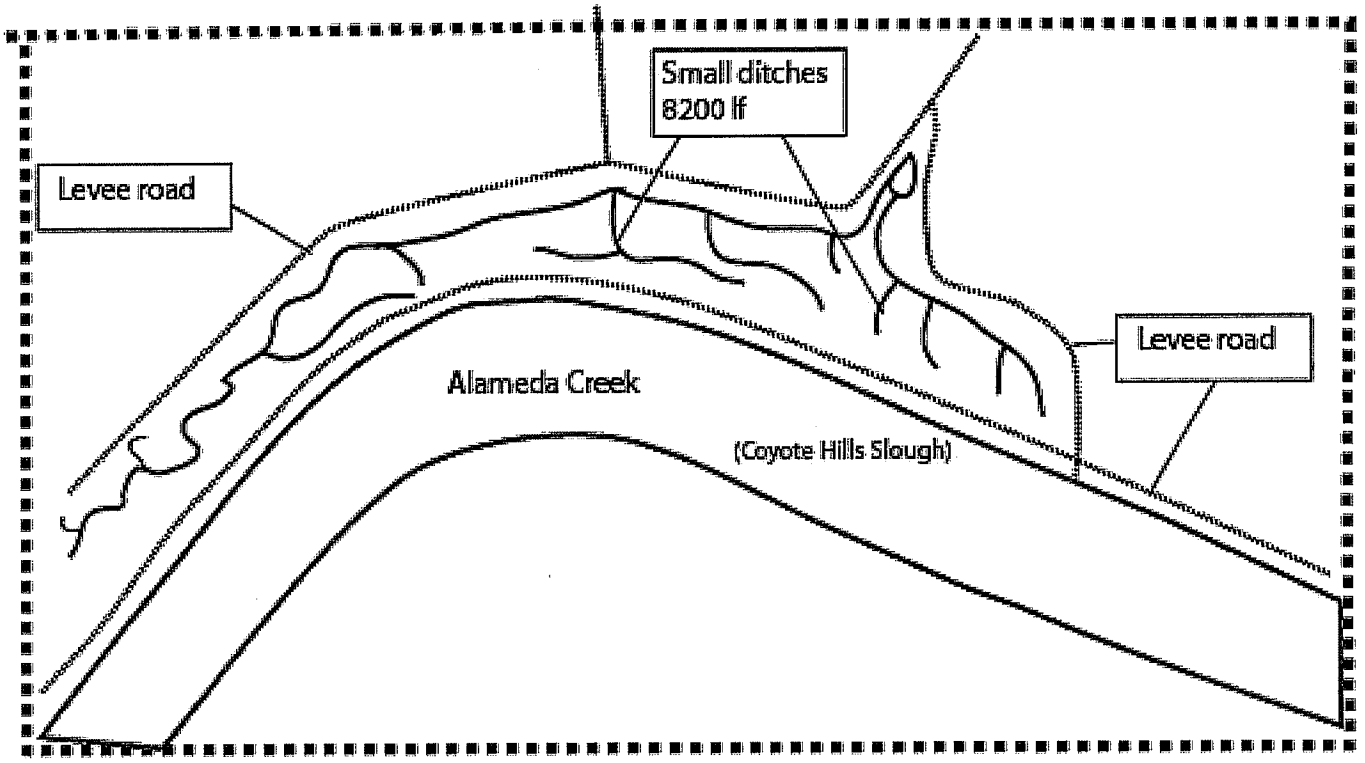
Contact Information:
Alameda County Mosquito Abatement District
23187 Connecticut St
Hayward, CA 94545
Phone: (510) 783-7744
Fax: (510) 783-3903
email: enspec@mosquitoes.org

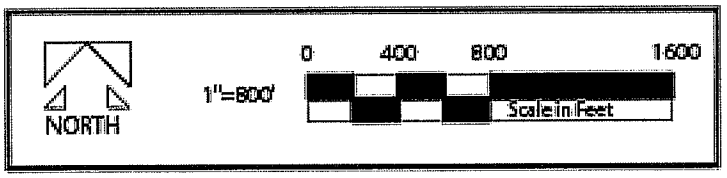
Project Number 7
US Army Corps of Engineers
Regional Permit No. 2485205
Site Location:
N of Alameda Creek at SF Bay;
Hayward, CA
Sheet 1 of 2

Project start date: 01 Sep 2011 **SCALE: 1" = 2000'** **Prepared by Erika Castillo**

Project 7 - Ecology Marsh

Newark, CA
1997
NIMA 1559 II SE-SERIES V895





Purpose:
To improve water circulation to reduce mosquito breeding. Vegetation will be trimmed and obstructions removed from ditches.

Contact Information:
Alameda County Mosquito Abatement District
23187 Connecticut St
Hayward, CA 94545
Phone: (510) 783-7744
Fax: (510) 783-3903
email: enspec@mosquitoes.org

Project Number 7
US Army Corps of Engineers
Regional Permit No. 2485205
Site Location:
N of Alameda Creek at SF Bay;
Hayward, CA
Sheet 2 of 2

Project start date: 01 Sep 2011

SCALE: 1" = 800'

Prepared by Erika Castillo

PERMIT NUMBER: 248520S
PROJECT YEAR: 2011

PROJECT SITE DESCRIPTION

Project No. 8
Alameda Creek

Property Owner:
Alameda County Flood Control District

Project Location:
~ 1 mile W of intersection of Union City Blvd and Coyote Hills Slough;
Union City, CA

Agency:
Alameda County Mosquito Abatement District (ACMAD)

Contact Person:
Erika Castillo
Phone: (510) 783-7744
Fax: (510) 783-3903
email: enspec@mosquitoes.org

ACMAD Source Number: 6118

Work category	Linear feet new	Linear feet maintenance	Number of structures	Beginning date	Completion date	Percent complete
A		500		1-Sep-2011		
B						
C						
D						
E						
F						
G						
H	Present land and water use		H2 Tidal marsh			

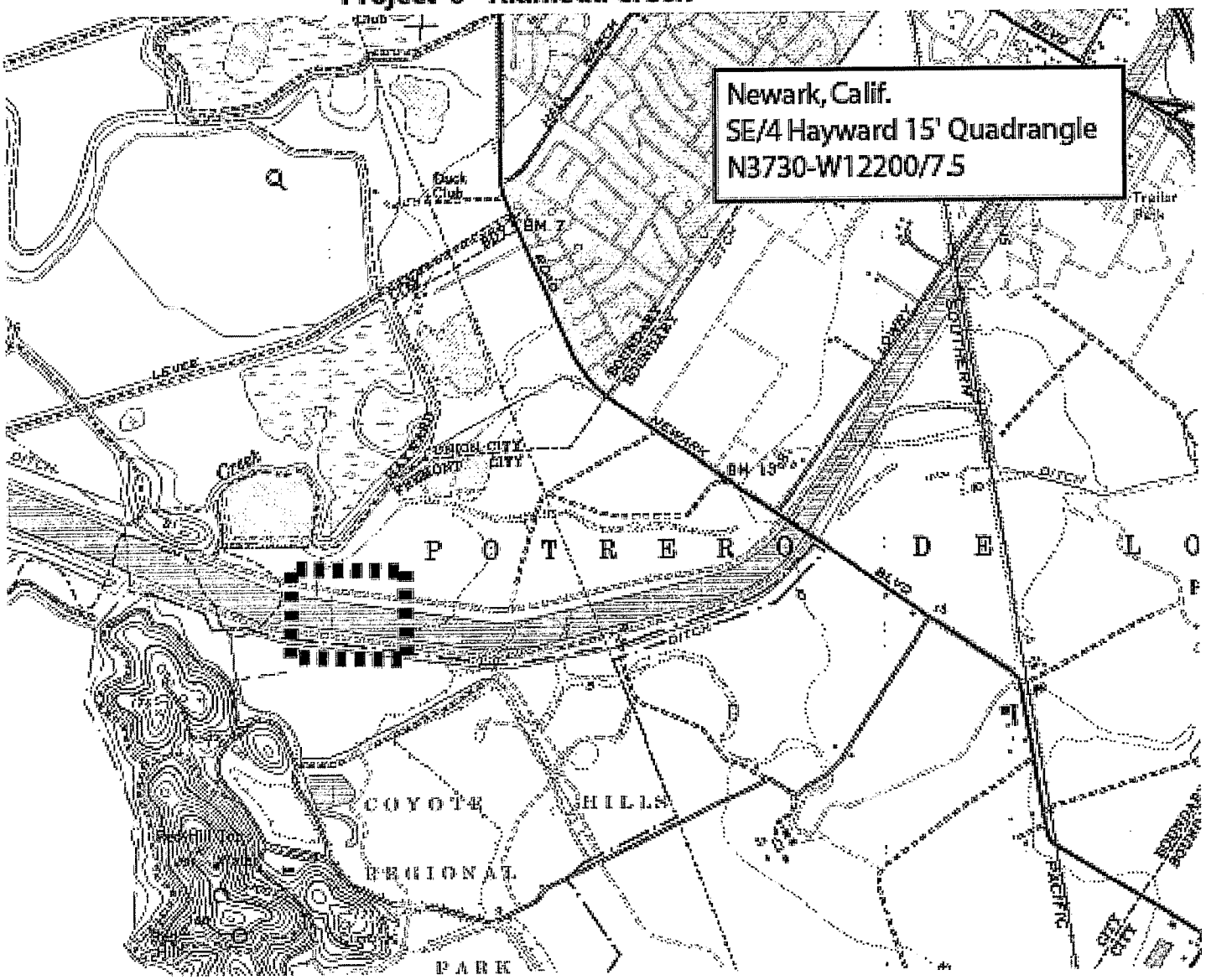
Project Description:

The ditches here are becoming overgrown with vegetation and the District would like to clear the edges of the ditches, remove obstructions and perform minor silt removal. All removed silt will be spread away from the ditch edges.

Aedes squamiger, *Aedes dorsalis*, and *Culex tarsalis* mosquitoes are produced in this source.

The dominant vegetation is pickleweed (*Salicornia virginica*) with some salt grass (*Distichlis* sp.).

Project 8 Alameda Creek



Purpose:
To improve water circulation to reduce mosquito breeding. Vegetation will be trimmed and obstructions removed from ditches.

Contact Information:
Alameda County Mosquito Abatement District
23187 Connecticut St
Hayward, CA 94545
Phone: (510) 783-7744
Fax: (510) 783-3903
email: enspec@mosquitoes.org

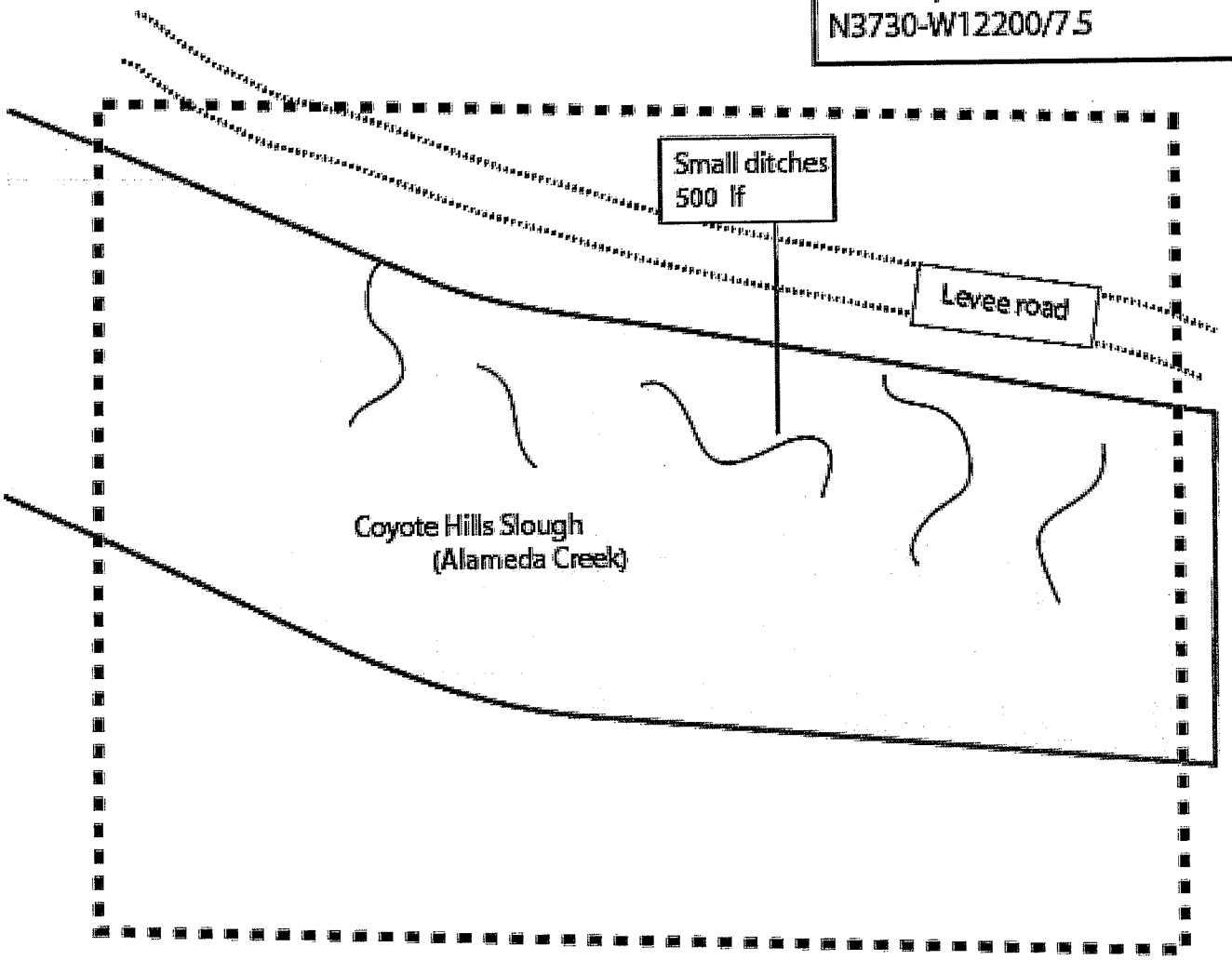
Project Number 8
US Army Corps of Engineers
Regional Permit No. 2485205

Site Location:
~ 1 mile W of intersection of Union City Blvd and Coyote Hills Slough; Union City, CA
Sheet 1 of 2

Project start date: 01 Sep 2011 **SCALE: 1" = 2000'** **Prepared by Erika Castillo**

Project 8 Alameda Creek

Newark, Calif.
SE/4 Hayward 15' Quadrangle
N3730-W12200/7.5



NORTH

1"=100'

0 50 100 200

Scale in Feet

Purpose:
To clear vegetation, obstructions and minor silt accumulations from ditches to minimize mosquito breeding.

Contact Information:
Alameda County Mosquito Abatement District
23187 Connecticut St
Hayward, CA 94545
Phone: (510) 783-7744
Fax: (510) 783-3903
email: enspec@mosquitoes.org

Project Number 8
US Army Corps of Engineers
Regional Permit No. 2485205

Site Location:
~ 1 mile W of intersection of Union City Blvd and Coyote Hills Slough; Union City, CA
Sheet 2 of 2

Project start date: 01 Sep 2011

SCALE: 1" = 100'

Prepared by Erika Castillo

PERMIT NUMBER: 24852OS
PROJECT YEAR: 2011

PROJECT SITE DESCRIPTION

Project No.9
Hetch-Hetchy Marsh
Property Owner:
US Fish and Wildlife Service

Project Location:
W of Hickory St, along N side of Hetch-Hetchy pipeline;
Newark, CA

Agency:
Alameda County Mosquito Abatement District (ACMAD)

Contact Person:
Erika Castillo
Phone: (510) 783-7744
Fax: (510) 783-3903
email: enspec@mosquitoes.org

ACMAD Source Number: 6072

Work category	Linear feet new	Linear feet maintenance	Number of structures	Beginning date	Completion date	Percent complete
A		1400		1-Sep-2011		
B		750		1-Sep-2011		
C						
D						
E						
F						
G						
H	Present land and water use		H2 Tidal marsh			

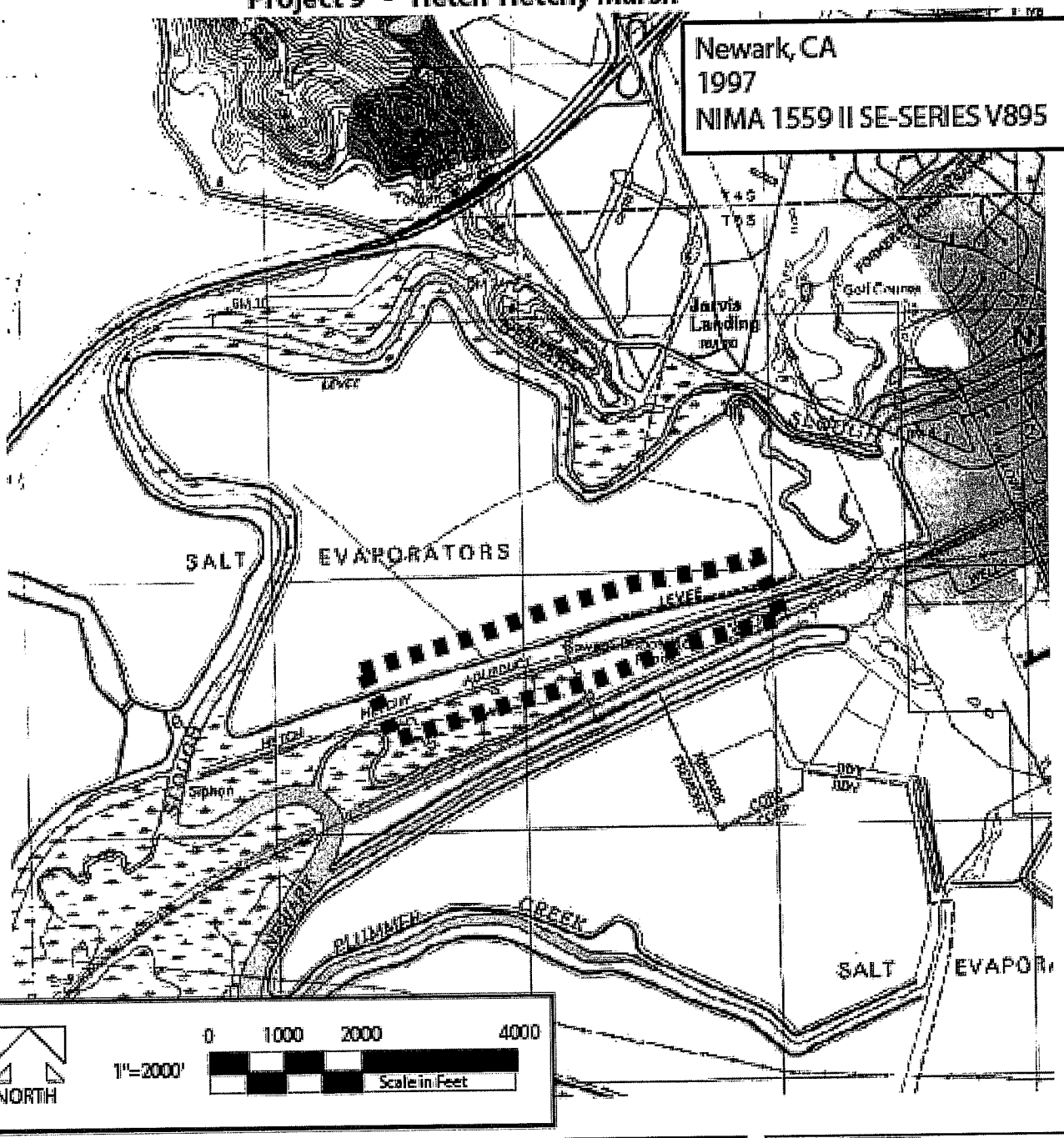
Project Description:

The ditch that runs along the Hetch-Hetchy Aqueduct access road on the S side of this tidal marsh is blocked with wood and other debris. We would like to clean out this material, using hand tools, to increase water circulation and fish access. By clearing out these ditches we would lessen the amount of pesticides applied to this marsh.

The dominant vegetation here (90%) is pickleweed *(Salicornia virginica)* with the remainder being salt grass *(Distichlis spicata)*.

This site produces *Aedes dorsalis, Aedes squamiger* and *Culiseta inornata* mosquitoes.

Project 9 - Hetch-Hetchy Marsh



Purpose:
To improve water circulation to reduce mosquito breeding. Vegetation will be trimmed and obstructions removed from ditches.

Contact Information:
Alameda County Mosquito Abatement District
23187 Connecticut St
Hayward, CA 94545
Phone: (510) 783-7744
Fax: (510) 783-3903
email: enspec@mosquitoes.org

Project Number 9
US Army Corps of Engineers
Regional Permit No. 2485205

Site Location:
W of Hickory St, along N side of Hetch-Hetchy pipeline;
Newark, CA
Sheet 1 of 2

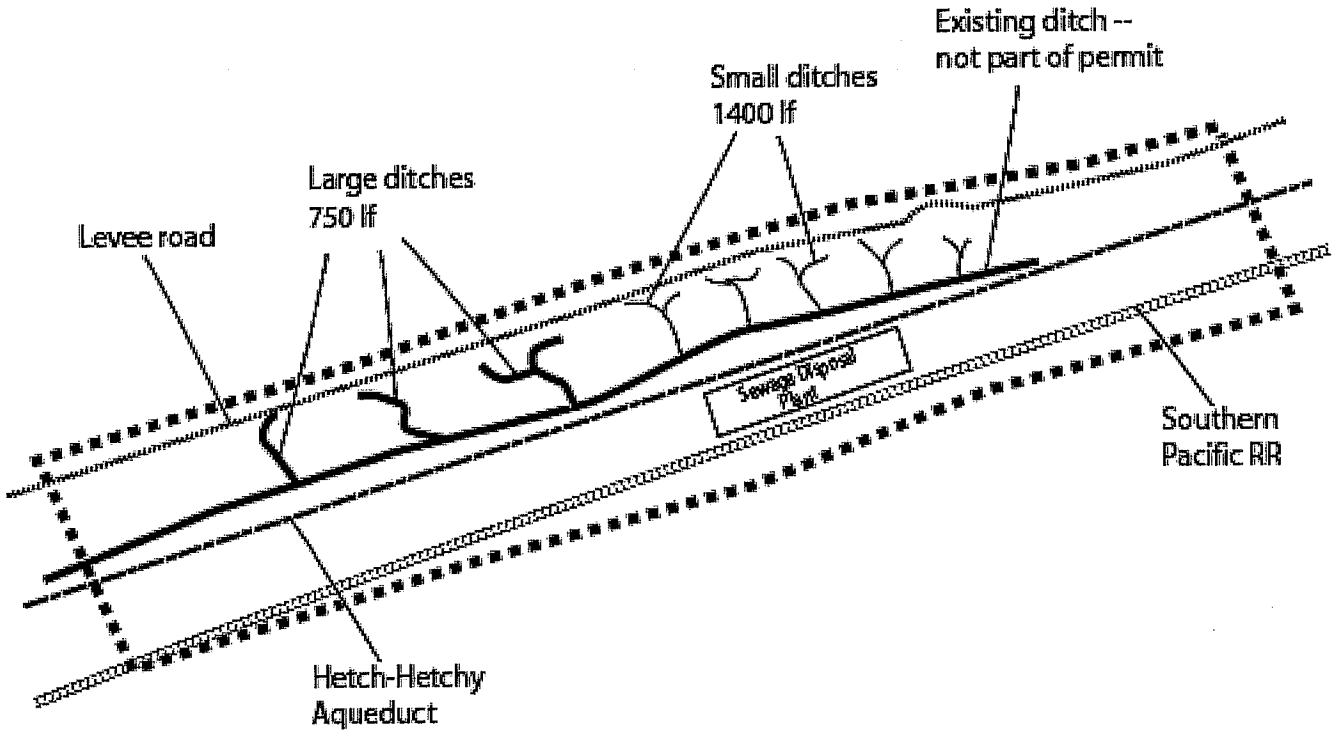
Project start date: 01 Sep 2011

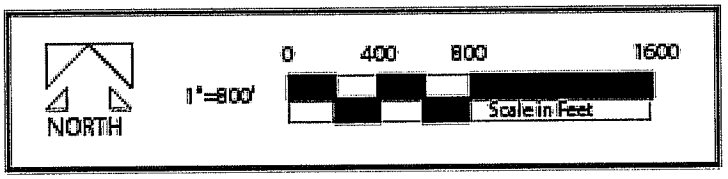
SCALE: 1" = 2000'

Prepared by Erika Castillo

Project 9 - Hetch-Hetchy Marsh

Newark, CA
1997
NIMA 1559 II SE-SERIES V895





Purpose:
To improve water circulation to reduce mosquito breeding. Vegetation will be trimmed and obstructions removed from ditches.

Contact Information:
Alameda County Mosquito Abatement District
23187 Connecticut St
Hayward, CA 94545
Phone: (510) 783-7744
Fax: (510) 783-3903
email: enspec@mosquitoes.org

Project Number 9
US Army Corps of Engineers
Regional Permit No. 2485205

Site Location:
W of Hickory St, along N side of Hetch-Hetchy pipeline;
Newark, CA
Sheet 2 of 2

Project start date: 01 Sep 2011

SCALE: 1" = 800'

Prepared by Erika Castillo

PERMIT NUMBER: 248520S
PROJECT YEAR: 2011

PROJECT SITE DESCRIPTION

Project No. 10
Mowry Slough
Property Owners:
Alameda County Flood Control and
Michael Siri, Palo Alto, CA

Project Location:
Approx 0.5 mile S of southern end of
Mowry Ave; Newark, CA

Agency:
Alameda County Mosquito Abatement District (ACMAD)

Contact Person:
Erika Castillo
Phone: (510) 783-7744
Fax: (510) 783-3903
email: enspec@mosquitoes.org

ACMAD Source Number: 8020

Work category	Linear feet new	Linear feet maintenance	Number of structures	Beginning date	Completion date	Percent complete
A		8,000		1-Sep-2011		
B						
C						
D						
E						
F						
G						
H	Present land and water use		H2 Tidal marsh			

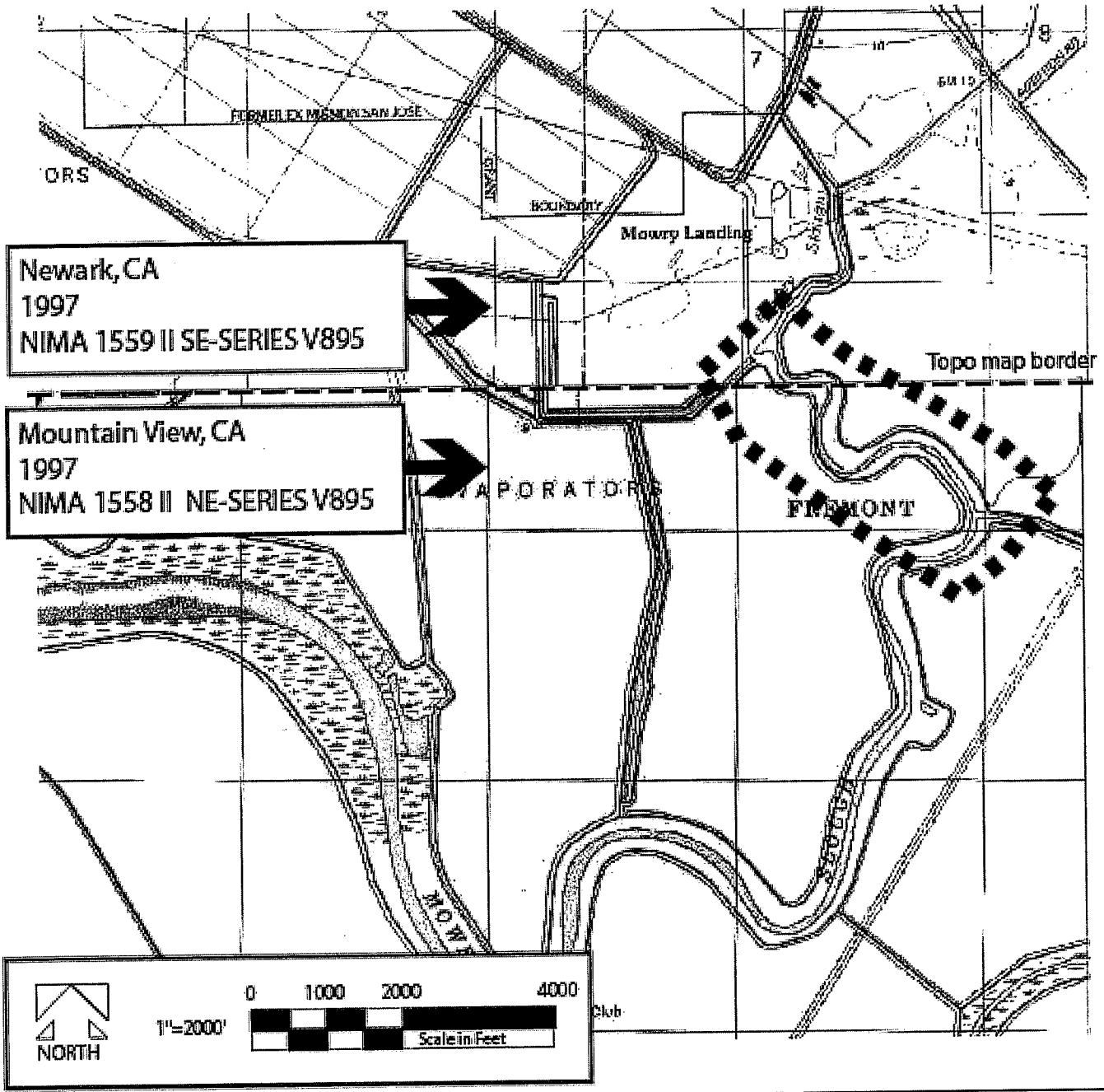
Project Description:

This project, begun in 2001, will require intensive work to clean out ditches that have heavy sediment deposits. The main channel flows well, but many laterals are clogged with sediment inhibiting the high tide waters from draining back into the slough. This ponding of tide water has resulted in much higher production of mosquitoes during the summer months. We will perform all the work on the ditches with handtools.

The dominant vegetation in the lower areas is pickleweed *(Salicornia virginica)* with the remainder being salt grass *(Distichlis spicata)*. Higher vegetation includes *Atriplex* spp., *Grindelia stricta* and *Frankenia grandifolia*.

This site produces *Aedes dorsalis and Aedes squamiger, Culiseta inornata* and *Culex tarsalis* mosquitoes.

Project 10 - Mowry Slough



Purpose:
To improve water circulation to reduce mosquito breeding. Ditches will be cleaned out by hand, vegetation will be trimmed and obstructions removed.

Contact Information:
Alameda County Mosquito Abatement District
23187 Connecticut St
Hayward, CA 94545
Phone: (510) 783-7744
Fax: (510) 783-3903
email: enspec@mosquitoes.org

Project Number 10
US Army Corps of Engineers
Regional Permit No. 248520S

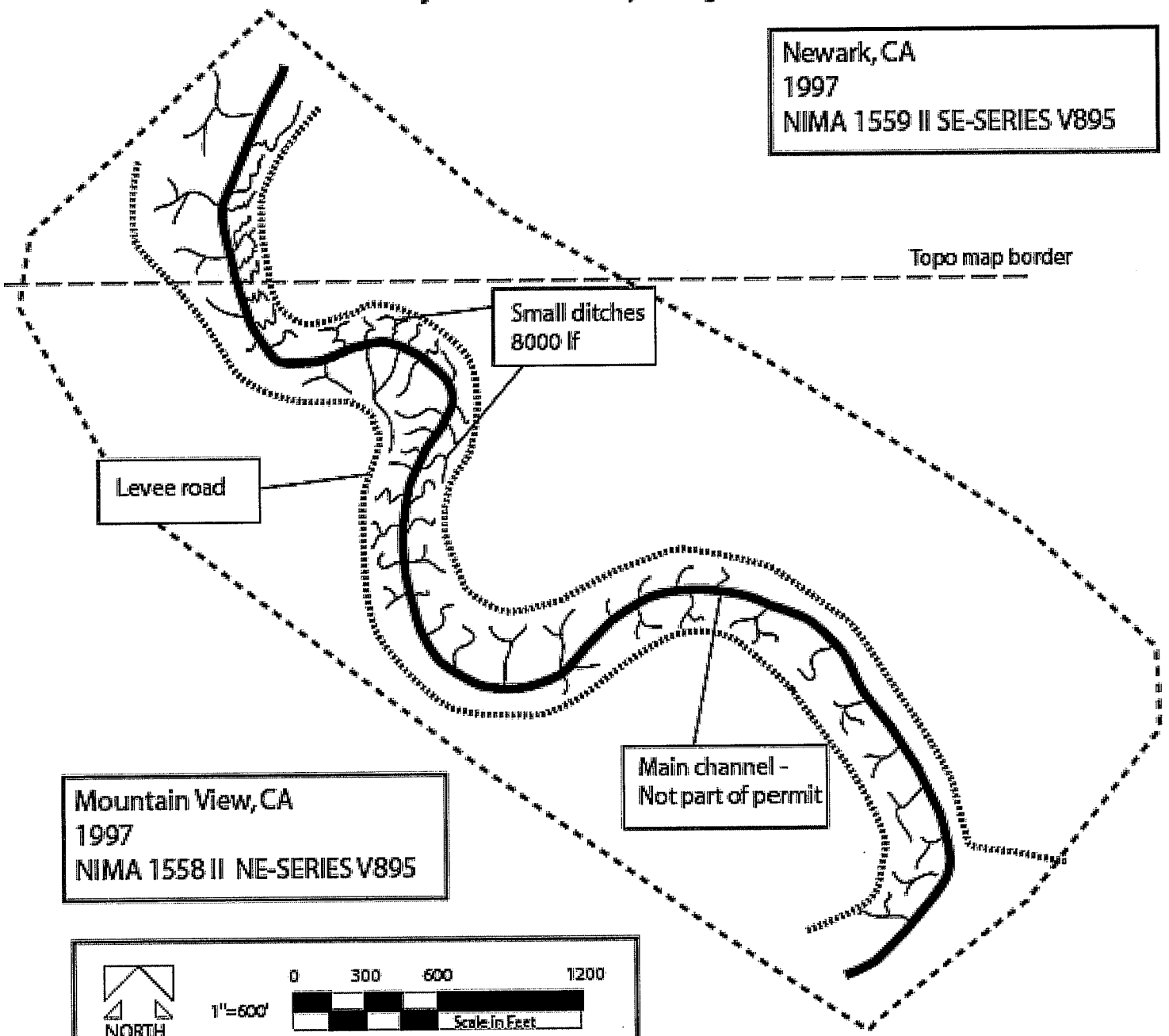
Site Location:
Approx 0.5 mile S of southern end of Mowry Ave;
Newark, CA
Sheet 1 of 2

Project start date: 01 Sep 2011

SCALE: 1" = 2000'

Prepared by Erika Castillo

Project 10 - Mowry Slough



Purpose:
To improve water circulation to reduce mosquito breeding. Ditches willl be cleaned out by hand, vegetation will be trimmed and obstructions removed.

Contact Information:
Alameda County Mosquito Abatement District
23187 Connecticut St
Hayward, CA 94545
Phone: (510) 783-7744
Fax: (510) 783-3903
email: enspec@mosquitoes.org

Project Number 10
US Army Corps of Engineers
Regional Permit No. 2485205

Site Location:
Approx 0.5 mile S of southern end of Mowry Ave;
Newark, CA
Sheet 2 of 2

Project start date: 01 Sep 2011 **SCALE: 1" = 600'** **Prepared by Erika Castillo**

PERMIT NUMBER: 248520S
PROJECT YEAR: 2011

PROJECT SITE DESCRIPTION

Project No. 11
Albrae Marsh
Property Owner:
US Fish and Wildlife Service

Project Location:
Approx 4000' SSW of the end of
Automall Pkwy;
Fremont, CA

Agency:
Alameda County Mosquito Abatement District (ACMAD)

Contact Person:
Erika Castillo
Phone: (510) 783-7744
Fax: (510) 783-3903
email: enspec@mosquitoes.org

ACMAD Source Number: 8115, 8042

Work category	Linear feet new	Linear feet maintenance	Number of structures	Beginning date	Completion date	Percent complete
A		12000		1-Sep-2011		
B		4000		1-Sep-2011		
C						
D						
E						
F						
G						
H	Present land and water use		H2 Tidal Marsh			

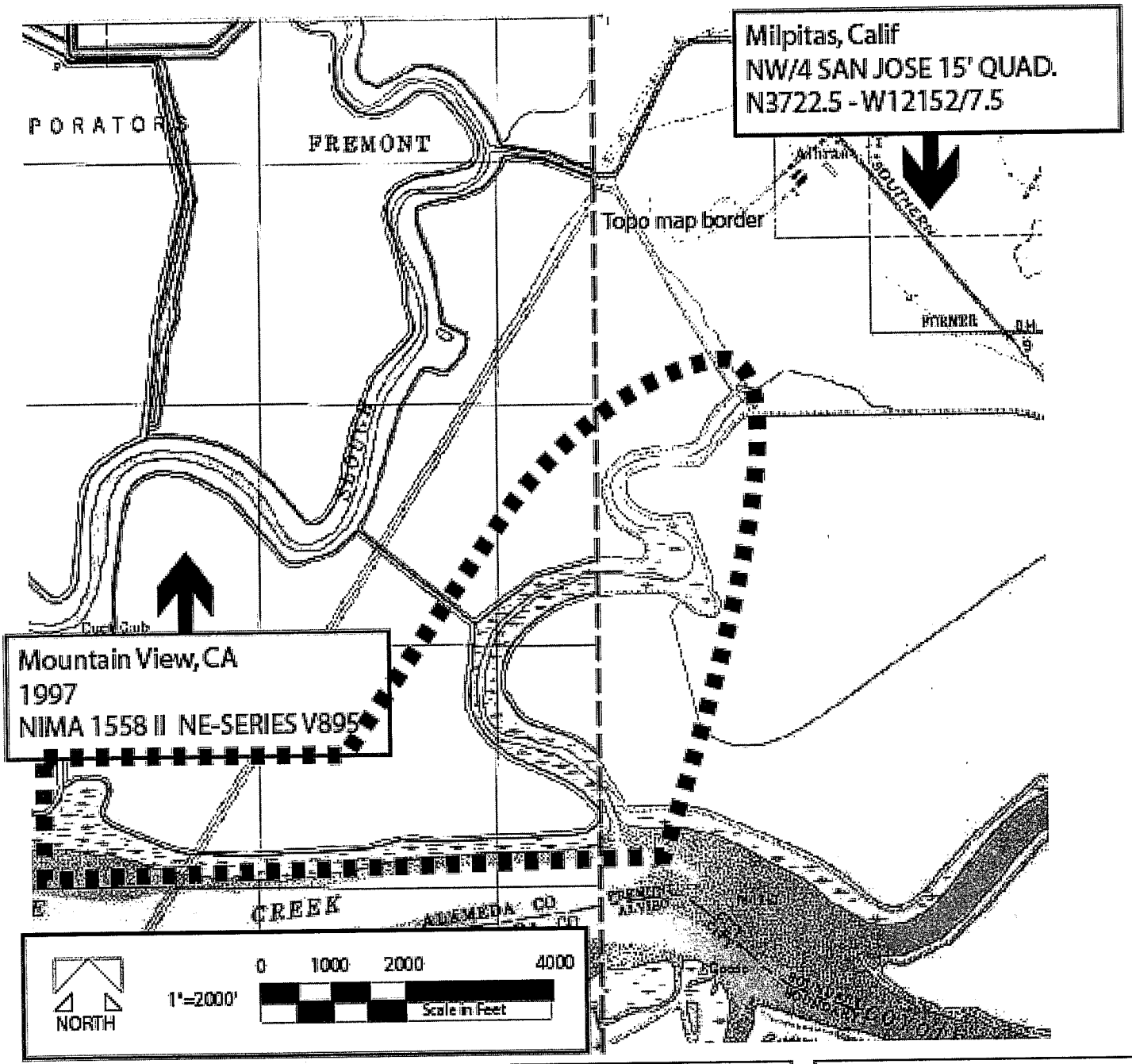
Project Description:

This dead end slough needs to have the circulation ditches opened up every year to prevent numerous mosquito species from developing. These ditches allow better water flow, which improves the health of the pickleweed and also provides fish access to mosquito producing areas. Our District personnel inspect and treat for mosquitoes on every high tide series. Maintenance of these ditches is to trim vegetation, remove obstructions, and remove sediment that has accumulated at these obstructions. This work would be done with hand tools.

The dominant vegetation (95%) is pickleweed *(Salicornia virginica)* with gumplant *(Grindelia stricta)* and *Frankenia grandifolia* prevalent on the higher areas. Alkali bulrush occurs in the main channel towards the bay where the water flow is greater.

This site produces *Aedes dorsalis* and *Aedes squamiger*, *Culiseta inornata* and *Culex tarsalis* mosquitoes.

Project 11 - Albrae Marsh



Purpose:
To improve water circulation to reduce mosquito breeding. Vegetation will be trimmed and obstructions removed from ditches.

Contact Information:
Alameda County Mosquito Abatement District
23187 Connecticut St
Hayward, CA 94545
Phone: (510) 783-7744
Fax: (510) 783-3903
email: enspec@mosquitoes.org

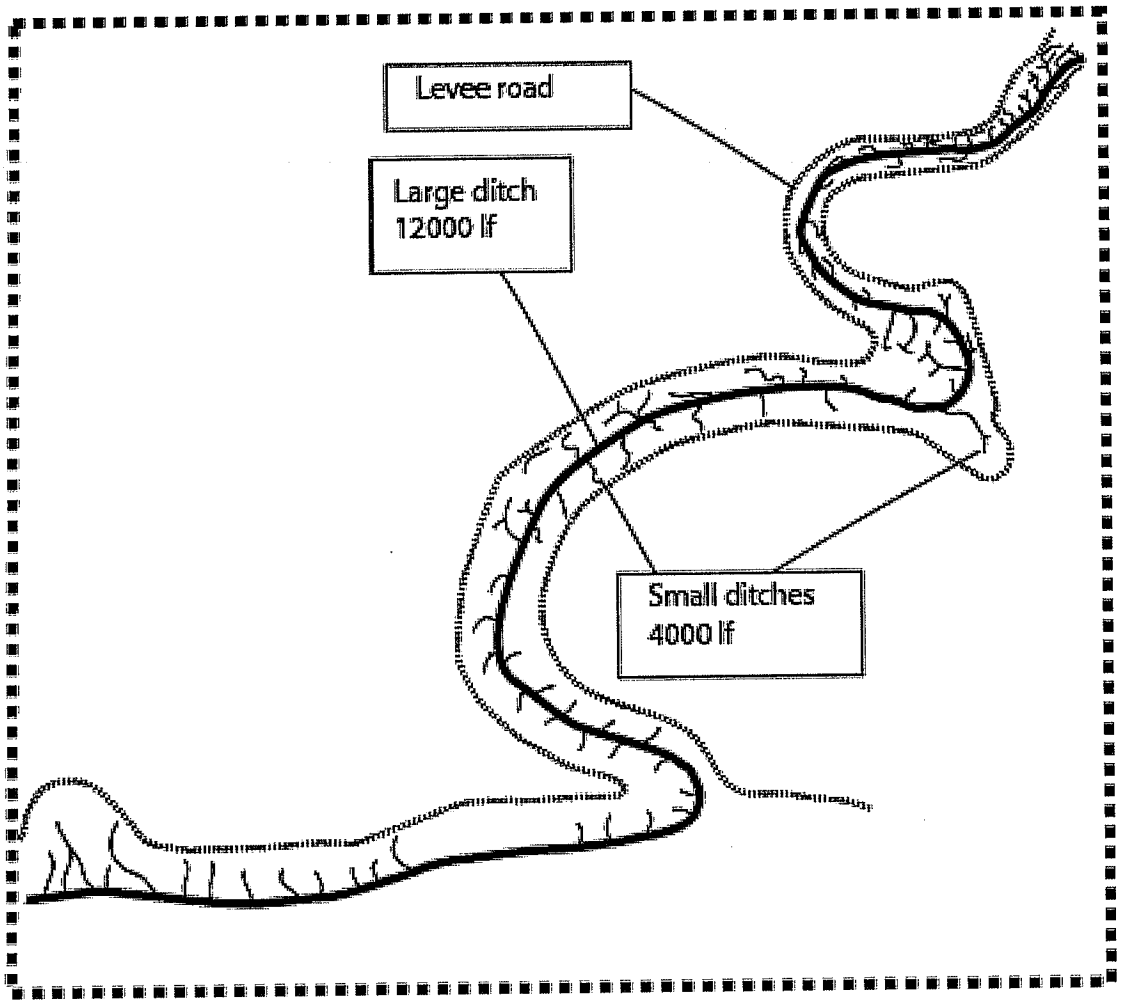
Project Number 11
US Army Corps of Engineers
Regional Permit No. 248520S

Site Location:
Approx 4000' SSW of the end of Automall Pkwy;
Fremont, CA
Sheet 1 of 2

Project start date: 01 Sep 2011 **SCALE: 1" = 2000'** **Prepared by Erika Castillo**

Project 11 - Albrae Marsh

Milpitas, Calif
NW/4 SAN JOSE 15' QUAD.
N3722.5 -W12152/7.5



NORTH

1"=800'

0 400 800 1600

Scale in Feet

Purpose:
To improve water circulation to reduce mosquito breeding. Vegetation will be trimmed and obstructions removed from ditches.

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Project Number 11
US Army Corps of Engineers
Regional Permit No. 248520S

Site Location:
Approx 4000' SSW of the end of Automall Pkwy;
Fremont, CA
Sheet 2 of 2

Project start date: 01 Sep 2011

SCALE: 1" = 800'

Prepared by Erika Castillo

PERMIT NUMBER: 248520S
PROJECT YEAR: 2011

PROJECT SITE DESCRIPTION

Project No. 12
Mouse Pasture, Warm Springs
Property Owner:
US Fish and Wildlife Service

Project Location:
0.25 mile W of the southern end
of Fremont Blvd;
Fremont, CA

Agency:
Alameda County Mosquito Abatement District (ACMAD)

Contact Person:
Erika Castillo
Phone: (510) 783-7744
Fax: (510) 783-3903
email: enspec@mosquitoes.org

ACMAD Source Number: 8009.1

Work category	Linear feet new	Linear feet maintenance	Number of structures	Beginning date	Completion date	Percent complete
A		3000		1-Sep-2011		
B		775		1-Sep-2011		
C						
D						
E						
F						
G						
H	Present land and water use		H1 Diked marsh			

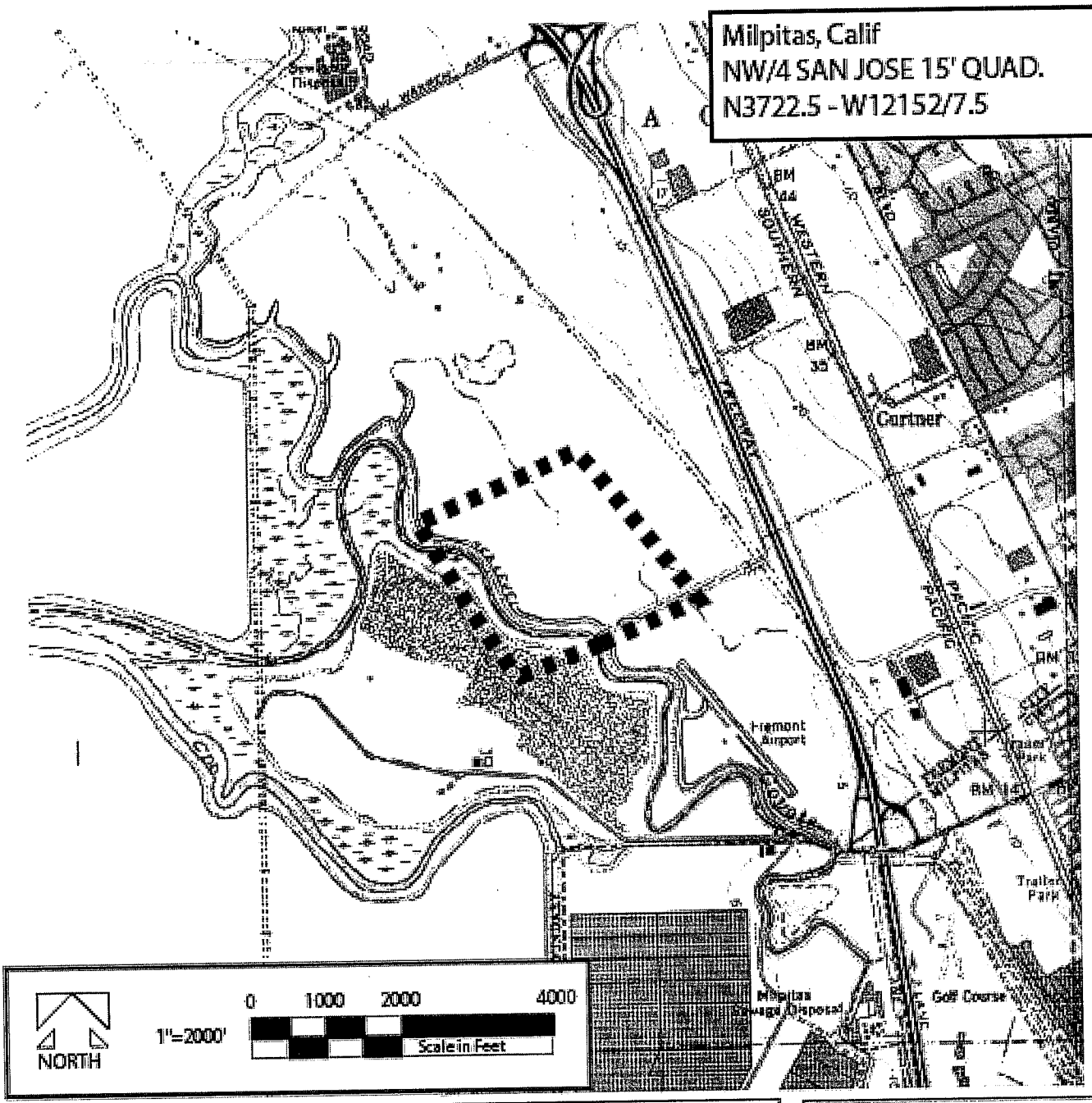
Project Description:

The 25 acre Warm Springs Mouse Pasture is set aside for the salt marsh harvest mouse (*Reithrodontomys raviventris raviventris*). The USFWS installed an 18" culvert and tide gate in May, 1994 and ACMAD created 3000 lf of new ditches in a cooperative project to improve the health of the pickleweed (and thereby, the mouse) and reduce mosquito populations. We would like to clear the ditches of accumulated debris and vegetation to keep the ditches open and free-flowing, as designed. We estimate 30-50% of the ditches need to be cleaned with very little sediment removal anticipated. All work will be done with hand tools.

The dominant vegetation is pickleweed (*Salicornia virginica*).

This site produces *Aedes dorsalis and Aedes squamiger, Culiseta inornata* and *Culex tarsalis* mosquitoes.

Project 12 - Mouse Pasture



Purpose:
Vegetation will be trimmed and obstructions removed.

Contact Information:
Alameda County Mosquito Abatement District
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Phone: (510) 783-7744
Fax: (510) 783-3903
email: enspec@mosquitoes.org

Project Number 12
US Army Corps of Engineers
Regional Permit No. 248520S

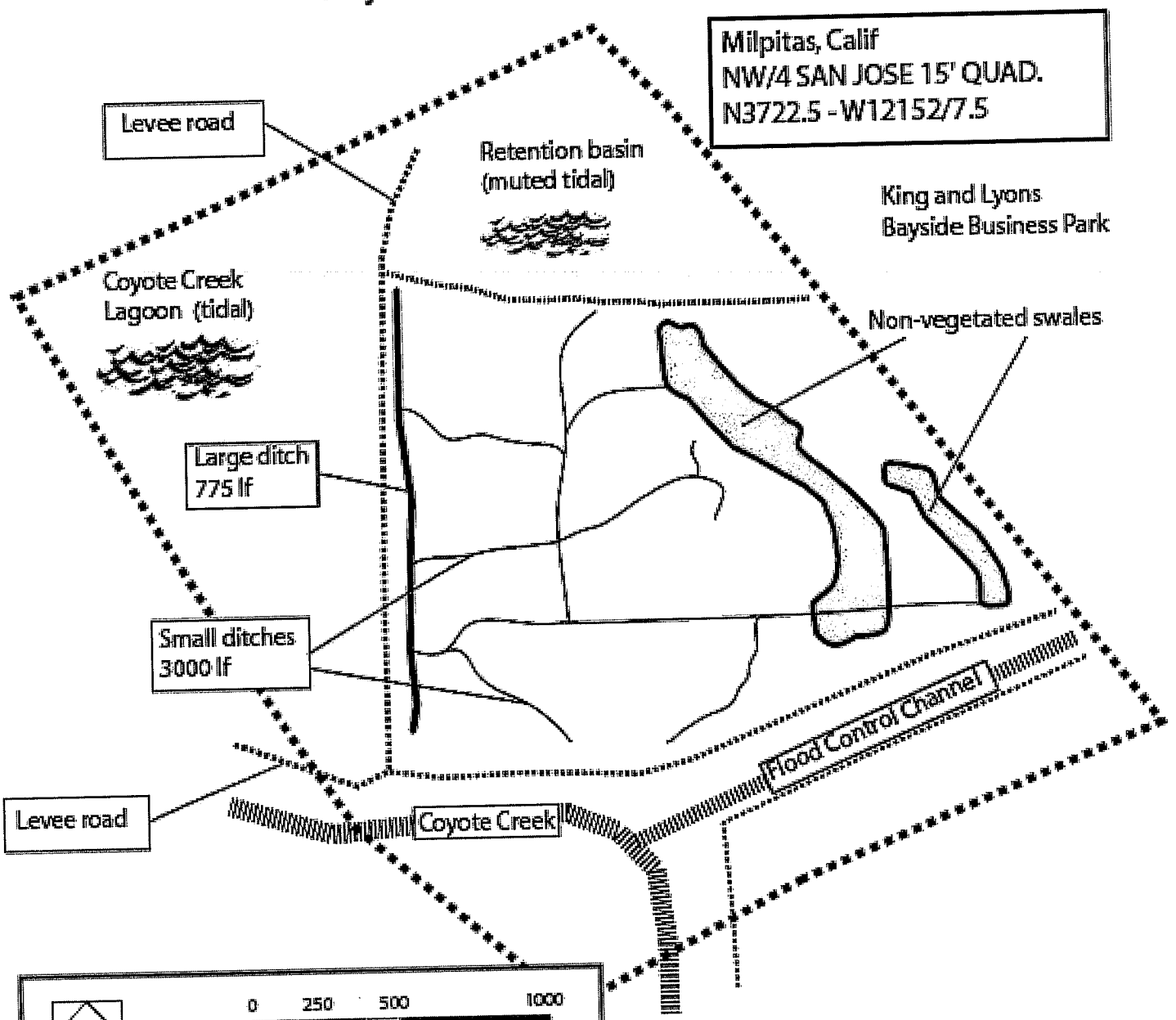
Site Location:
0.25 mile W of the southern end of Fremont Blvd;
Fremont, CA
Sheet 1 of 2

Project start date: 01 Sep 2011

SCALE: 1" = 2000'

Prepared by Erika Castillo

Project 12 - Mouse Pasture



Purpose:
Vegetation will be trimmed and obstructions removed from large and small ditches.

Contact Information:
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Project Number 12
US Army Corps of Engineers
Regional Permit No. 248520S

Site Location:
0.25 mile W of the southern end of Fremont Blvd;
Fremont, CA
Sheet 2 of 2

Project start date: 01 Sep 2011

SCALE: 1" = 500'

Prepared by Erika Castillo