MINUTE ITEM
This Calendar Item No. C21
was approved as Minute Item
No. 21 by the State Lands
Commission by a vote of 3
to 0 at its May 3, 1995
meeting.

CALENDAR ITEM
C21

A 26

S 12

05/03/95
W 25009PRC 7825
D. Jones

GENERAL LEASE - PUBLIC AGENCY USE

APPLICANT:
State Department of Fish and Game
1416 Ninth Street
Sacramento, California 95814

AREA, TYPE LAND AND LOCATION:
An approximate 12-acre parcel of sovereign land in the Merced River at River Miles 29 and 30 near Cressey (T6S, R12E, MDM) adjacent to APN's 140-03-06, 140-03-11, 140-03-12, and 140-03-13.

LAND USE:
Restoration of winter-run chinook salmon rearing and migratory habitat in the Merced River by reconstructing a pond levee, modification of the natural river channel, and revegetation of riparian habitat.

PROPOSED LEASE:
Lease period:
25 years, beginning April 1, 1995.

CONSIDERATION:
The public use and benefit; with the State reserving the right at any time to set a monetary rental if the Commission finds such action to be in the State's best interest.

BASIS FOR CONSIDERATION:
Pursuant to 2 Cal. Code Regs. 2003.

APPLICANT STATUS:
Applicant is permittee of upland.

PREREQUISITE CONDITIONS, FEES AND EXPENSES:
Filing fee and processing fee have been received.

STATUTORY AND OTHER REFERENCES:
A. P.R.C.: Div. 6, Parts 1 and 2; Div. 13.

B. Cal. Code Regs.: Title 3, Div. 3; Title 14, Div. 6.

CALENDAR PAGE	52
MINUTE PAGE	436

AB 884:

Incomplete.

OTHER PERTINENT INFORMATION:

1. The principle objective of this project is to improve the migratory and rearing habitat of chinook salmon. Salmon habitat in the Merced River has undergone extensive alteration as a result of various human activities since the late 1800's. Salmon populations have been capable of limited adjustment to changes in the habitat but have exhibited a steady decline during the past century. Although severe environmental stresses continue, there are opportunities available to increase salmon survival at some points in the life cycle.

2. Past aggregate mining operations have left deep pits within the portion of the Merced River which is the subject of this lease. Several of these abandoned pits have caused levee failure; the levee failure has, in turn, allowed the river to be diverted through a ten-acre lake-like environment, hereinafter referred to as a pond, consisting of deep, slowing moving water which is ideal warmwater predator habitat, primarily for black bass. Juvenile salmon migrating downstream through these lake-like areas are more vulnerable to predation and disorientation, hence less like to survive. The purpose of the project is to isolate the pond from the river channel thereby allowing the adult and juvenile salmon to migrate down the river channel, hopefully increasing their survival.

3. The project consists of 1) isolating the pond from the active river channel by repairing 900 linear feet of levee, and 2) reestablishing a natural river channel by clearing it of riparian vegetation which has established itself, reshaping and resloping it, thus allowing the river to follow a natural channel. Currently, a natural channel adjacent to the pond contains no surface flow; it is only during high water years that the river flows down this natural channel. The reconstruction of the pond levee and the modification of the natural channel will require movement of approximately 50,000 cubic yards of gravel and soil. To compensate for the loss of riparian vegetation which has grown in the natural river channel, the Department has prepared a Revegetation

Plan. The lease requires submittal of the final Revegetation Plan to the Commission. The loss of riparian habitat will be compensated by a ratio of 10:1.

4. A Negative Declaration was prepared and adopted for this project, SCH 93042050, by the State Department of Fish and Game. The State Lands Commission staff has reviewed such document.

5. By letter dated July 1, 1993, the County of Merced has indicated no permits from their jurisdiction are required.

APPROVALS OBTAINED:

California Regional Water Quality Control Board, Central Valley Region, State Department of Fish and Game, U.S. Army Corps of Engineers.

FURTHER APPROVALS REQUIRED:

State Lands Commission.

EXHIBITS:

A. Site Map (3 pages)
B. Location Map
C. Notice of Determination and Negative Declaration

RECOMMENDED ACTION:

IT IS RECOMMENDED THAT THE COMMISSION:

CEQA FINDING:

FIND THAT A NEGATIVE DECLARATION WAS PREPARED AND ADOPTED FOR THIS PROJECT, SCH 93042050, BY THE STATE DEPARTMENT OF FISH AND GAME AND THAT THE COMMISSION HAS REVIEWED AND CONSIDERED THE INFORMATION CONTAINED THEREIN.

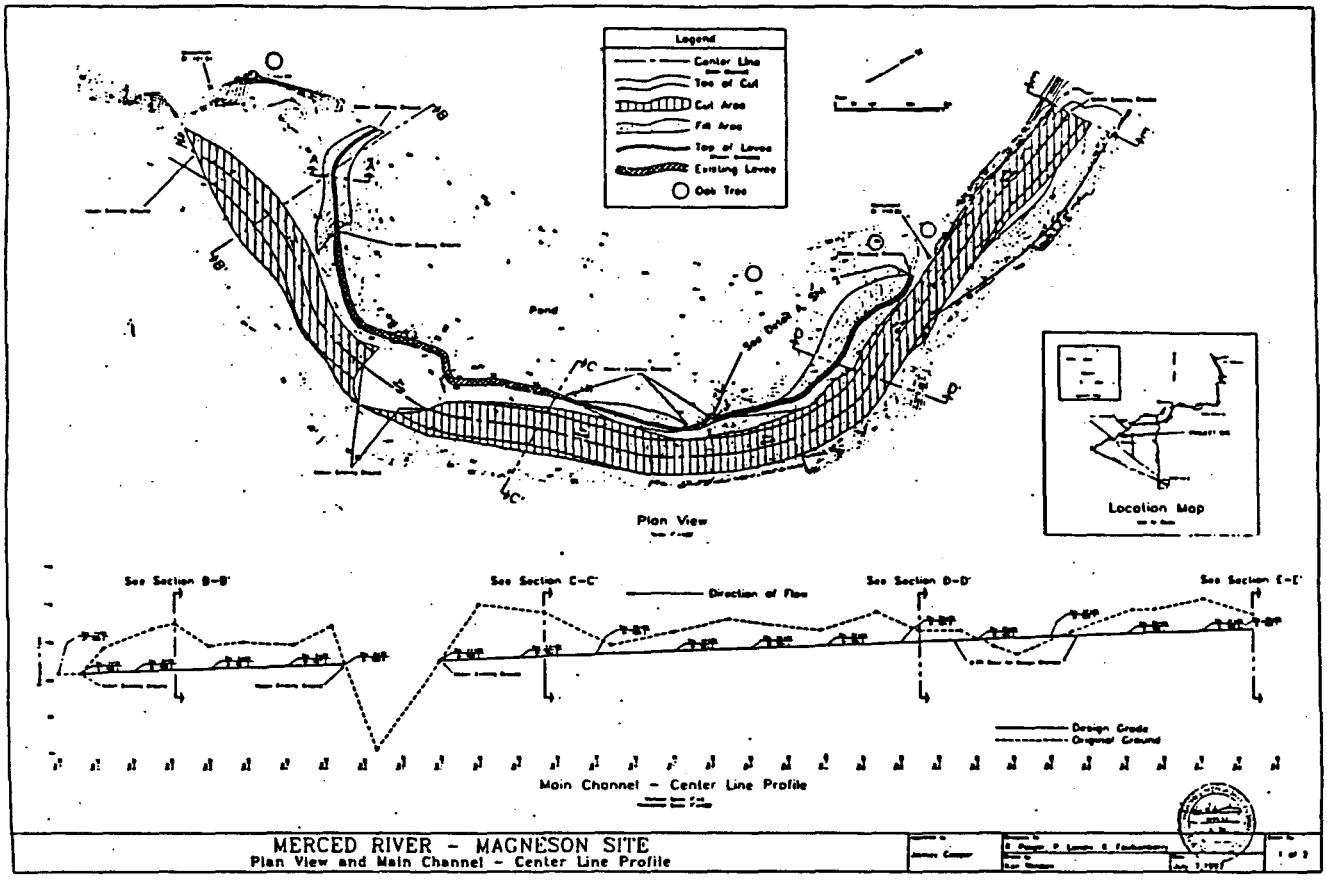
SIGNIFICANT LANDS INVENTORY FINDING:

FIND THAT THE ACTIVITY IS CONSISTENT WITH THE USE CLASSIFICATION DESIGNATED FOR THE LAND PURSUANT TO P.R.C. 6370, ET SEQ.

AUTHORIZATION:

AUTHORIZE THE ISSUANCE TO THE STATE DEPARTMENT OF FISH AND GAME OF A 25-YEAR GENERAL LEASE - PUBLIC AGENCY USE,

BEGINNING APRIL 1, 1995; IN CONSIDERATION OF THE PUBLIC USE AND BENEFIT WITH THE STATE RESERVING THE RIGHT AT ANY TIME TO SET A MONETARY RENTAL IF THE COMMISSION FINDS SUCH ACTION TO BE IN THE STATE'S BEST INTEREST; FOR THE RECONSTRUCTION OF A LEVEE, MODIFICATION OF THE MERCED RIVER CHANNEL, AND REVEGETATION OF RIPARIAN VEGETATION; ON THE LAND DESCRIBED ON EXHIBIT "A" ATTACHED AND BY REFERENCE MADE A PART HEREOF.



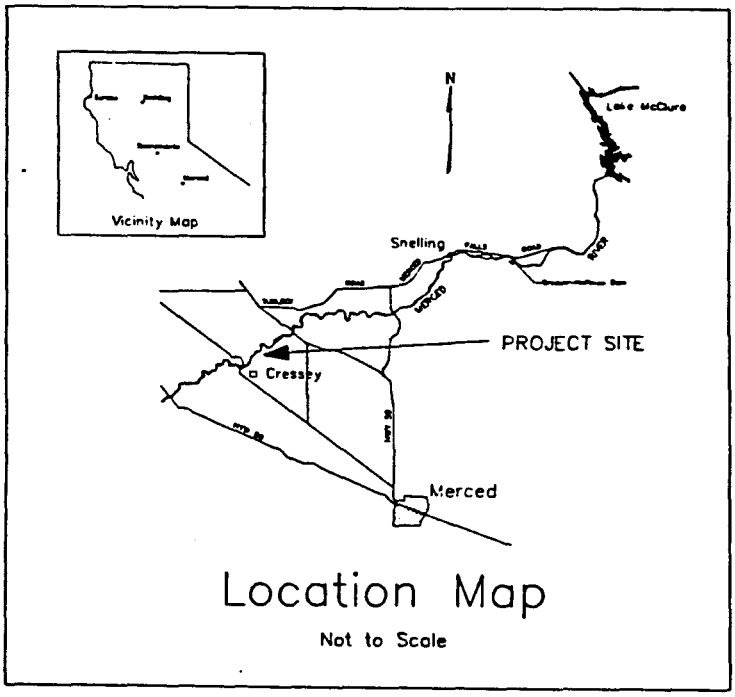


EXHIBIT "A"
W 25009
Dept. of Fish & Game
Salmon Habitat Restoration
S4,T6S, R12E, MDM
Merced River
MERCED COUNTY
Sheet 1 Of 2

This Exhibit is solely for purposes of generally defining the lease premises, and is not intended to be, nor shall it be construed as, a waiver or limitation of any State interest in the subject or any other property.

CALENDAR PAGE 56
MINUTE PAGE 440
CG 7/93

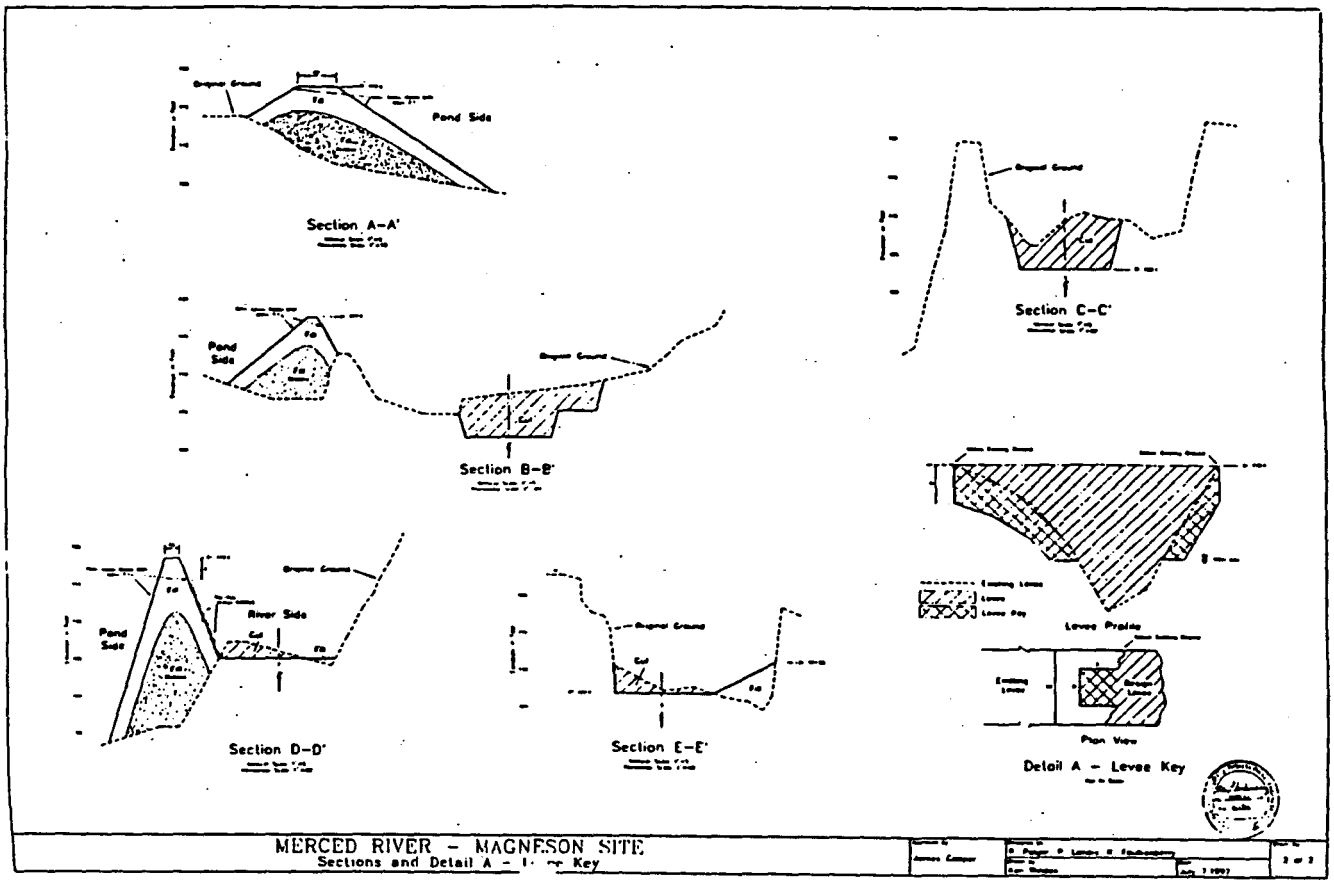


EXHIBIT "A"
W 25009
Dept. of Fish & Game
Salmon Habitat Restoration
S4,T6S, R12E, MDM
Merced River
MERCED COUNTY
Sheet 2 Of 2

This Exhibit is solely for purposes of generally defining the lease premises, and is not intended to be, nor shall it be construed as, a waiver or limitation of any State interest in the subject or any other property.

CALENDAR PAGE 57
MINUTE PAGE 441

CG 7/93

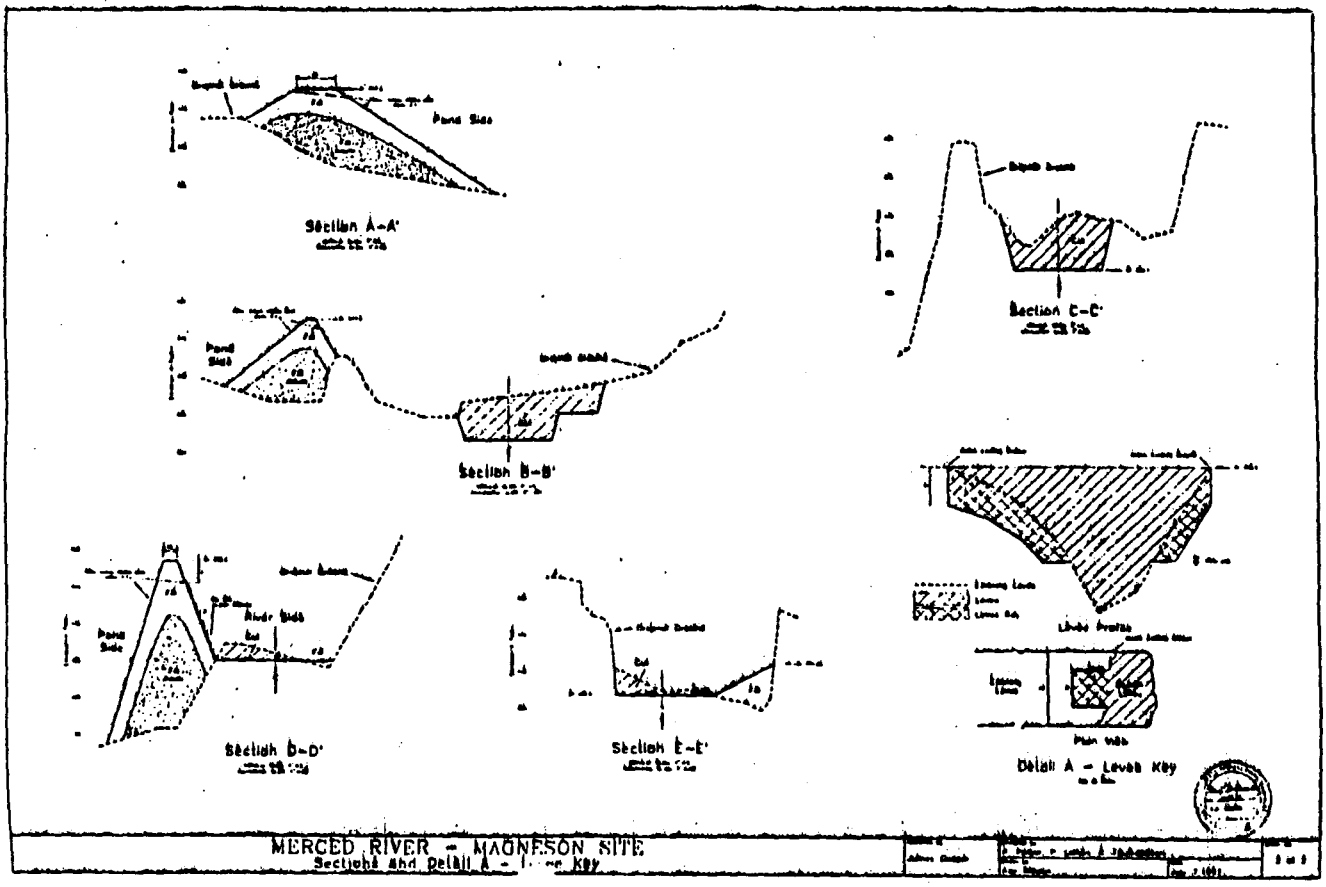


EXHIBIT "A"
W 25009
Dept. of Fish & Game
Salmon Habitat Restoration
S4,T6S, R12E, MDM
Merced River
MERCED COUNTY
Sheet 2 Of 2

This Exhibit is solely for purposes of generally defining the lease premises, and is not intended to be, nor shall it be construed as, a waiver or limitation of any State interest in the subject or any other property.

CALENDAR PAGE 58
MINUTE PAGE 442
CO 7/93

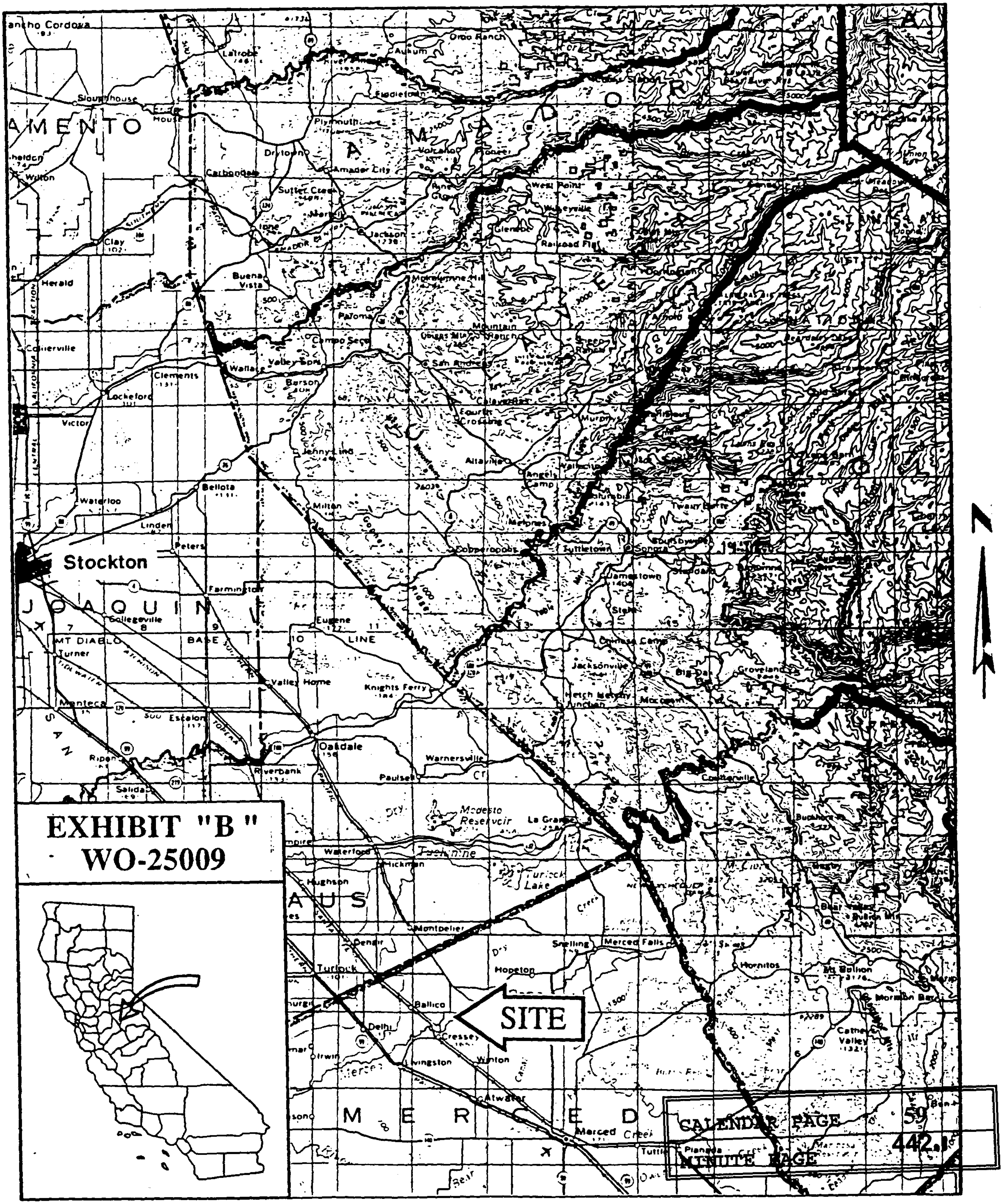


EXHIBIT "B"
WO-25009
SITE
CALENDAR PAGE 59
MINUTE PAGE 442
Stockton
Oakdale
Riverbank
Escalon
Manteca
Ripon
Salida
Turlock
Delhi
Ballico
Cressey
Livingston
Winton
Atwater
Merced
Hopeton
Snelling
Merced Falls
Montpelier
Hughson
Hickman
Waterford
La Grange
Modesto Reservoir
Turlock Lake
Knights Ferry
Valley Home
Paulsell
Warnerville
Coulterville
Hornitos
Jamestown
Sonora
Columbia
Copperopolis
Milton
Farmington
Linden
Bellota
Lockeford
Clements
Valley Springs
San Andreas
Jackson
Sutter Creek
Amador City
Plymouth
Drytown
Ione
Latrobe
Sloughthouse
Herald
Clay
Victor
Waterloo
Peters
Collegeville
Eugene
Turner
Jenny Lind
Angels Camp
Altaville
Murphys
Mokelumne Hill
Paloma
Campo Seco
Wallace
Burson
Buena Vista
West Point
Wilseyville
Railroad Flat
Glencoe
Volcano
Pioneer
Fiddletown
Aukum
Omo Ranch
Rancho Cordova
Galt
Chinese Camp
Jacksonville
Big Oak Flat
Groveland
Moccasin
Tuttletown
Soulsbyville
Standard
Stent
Mt Bullion
Catheys Valley
Mormon Bar
Bear Valley
Planada
Tuttle
Mariposa
Buckhorn
Bagby
MT DIABLO BASE LINE
AMADOR
SACRAMENTO
SAN JOAQUIN
STANISLAUS
MERCED
MARIPOSA
Tuolumne

State of California

Memorandum

To : Office of Planning and Research
1400 Tenth Street, Room 121
Sacramento, California 95814

Date : June 15, 1993

From : **Department of Fish and Game**

Subject: Notice of Determination for the Restoration of Salmon Habitat in the Merced River -- Magneson Site, Merced County.

Attached is the Notice of Determination for the Restoration of Salmon Habitat Project (SCH # 93042050). A thorough analysis of the proposed project indicated no significant impacts to the environment would occur as a result of this project. Consequently, the Department of Fish and Game prepared a draft Negative Declaration (DND). A Notice of Completion was filed with the State Clearinghouse on April 16, 1993, and the DND was available for public review and comment for 30 days. At the end of the comment period (May 17, 1993), no written comments were received from any agencies.

Based on the information contained in the Negative Declaration, and from comments received from the public, we find that the proposed project could not have a significant impact on the environment.

If you have any questions regarding this project, please contact Mr. Tim Farley, Inland Fisheries Division, Department of Fish and Game, 1416 Ninth Street, Sacramento, California 95814, telephone (916) 653-6194.

Boyd Gibbons
Director

EXHIBIT "C"

CALENDAR PAGE	60
MINUTE PAGE	443

To: X Office of Planning and Research
1400 Tenth Street, Room 121
Sacramento, CA 95814

___ County Clerk
County of _____

From: (Public Agency) Calif. Department of Fish & Gam.
Inland Fisheries Division
(Address)
1416 Ninth Street
Sacramento, CA 95814

Subject:

Filing of Notice of Determination in compliance with Section 21108 or 21152 of the Public Resources Code.

Restoration of Salmon Habitat - Merced River
Project Title

SCH #93042050	Terry Mills	(916) 653-9642
State Clearinghouse Number (If submitted to Clearinghouse)	Lead Agency Contact Person	Area Code/Telephone/Extension

Near the Community of Cressy, Merced County
Project Location (include county)

Project Description: Chinook salmon rearing and migratory habitat improvement - Project--Portions of a pond levee will be repaired and a 0.5 mile reach of the Merced River will be returned to its original channel.

This is to advise that the Calif. Dept. of Fish and Game has approved the above described project on
[X] Lead Agency [ ] Responsible Agency
_____ and has made the following determinations regarding the above described project:
(Date)

1. The project [ ]will [X]will not] have a significant effect on the environment.
2. [ ] An Environmental Impact Report was prepared for this project pursuant to the provisions of CEQA.
   [X] A Negative Declaration was prepared for this project pursuant to the provisions of CEQA.
3. Mitigation measures [ ]were [X]were not] made a condition of the approval of the project.
4. A statement of Overriding Considerations [ ]was [X]was not] adopted for this project.
5. Findings [ ]were [X]were not] made pursuant to the provisions of CEQA.

This is to certify that the final EIR with comments and responses and record of project approval is available to the General Public at:
INland Fisheries Division, 1416 Ninth Street, Sacramento, CA 95814

Signature (Public Agency) *Date* *Title*

Date received for filing at OPR:

FILED

CALENDAR PAGE 61
MINUTE PAGE 444

Revised October 1989

STATE OF CALIFORNIA—THE RESOURCES AGENCY PETE WILSON, Governor

DEPARTMENT OF FISH AND GAME
1416 NINTH STREET
P.O. BOX 944209
SACRAMENTO, CA 94244-2090

April 15, 1993

To: All Interested Parties

Proposed Negative Declaration for the Restoration of Salmon Rearing and Migration Habitat in the Merced River Magneson Site

The Department of Fish and Game is proposing to restore chinook salmon rearing and migratory habitat in a 0.5 mile reach of the lower Merced River near Cressey. A ten-acre pond created from previous gravel extraction activities will be isolated from the active river channel by repair of approximately 900 linear feet of levee. The channel geometry and flow capacity of the adjacent natural river reach will be improved to ensure that the river will remain in this channel. The reconstruction of the pond levee and modification of the stream channel will require movement of approximately 50,000 cubic yards of gravel and soil. The material manipulated will remain on site and will be used to form pond levees and contour features for river channel definition and flood plain slope contours. Riparian vegetation will be reestablished where construction activities disturb existing plants, and additional native plants will be established to create dense riparian vegetation. Please see the detailed project description attached. The Department has prepared a Negative Declaration pursuant to the California Environmental Quality Act (CEQA).

This reach is within the reach of the lower Merced River designated in Fish and Game Code Section 1505 as a salmon spawning area. Chinook salmon populations are currently at seriously low levels in the San Joaquin River basin. This project is part of a major program to improve habitat conditions for salmon spawning and rearing in the basin.

Benefits of this project are 1) isolation of the pond area, with its dense warmwater fish predator population, from the active river channel will increase survival and reduce migration time for both juvenile and adult salmon, and 2) revegetation of the project area will create a dense riparian zone which will

CALENDAR PAGE	62
MINUTE PAGE	444.1

increase stream shading and benefit several fish and wildlife species. There are two State-listed threatened species, the giant garter snake and Swainson's hawk, which have the potential to occur on the project site. Detailed descriptions, potential impacts and procedures that will be followed are discussed in the attached Project Description, Environmental Checklist and Biological Opinion. These are all designed to provide minimum impact to fish and wildlife habitat during construction, and long-term habitat benefit for chinook salmon and wildlife. Pursuant to the CEQA, it is the Department's opinion that the project will not jeopardize the continued existence of any threatened or endangered species or any other wildlife or habitat. Significant benefits to chinook salmon and other wildlife will accrue following construction.

We find that restoration of salmon rearing and migratory habitat in the Merced River at the Magneson Site will not have any significant adverse effect on the environment.

Sincerely,

John Turner, Chief
Environmental Services Division

Attachment

CALENDAR PAGE	63
MINUTE PAGE	444.2

State of California
The Resources Agency
DEPARTMENT OF FISH AND GAME

Initial Study, Negative Declaration, and Biological Opinion

PROPOSED RESTORATION OF SALMON HABITAT IN THE MERCED RIVER - MAGNESON SITE

Inland Fisheries Division
February 1993

CALENDAR PAGE	64
MINUTE PAGE	445

TABLE OF CONTENTS

State of California
The Resources Agency
Department of Fish and Game

NEGATIVE DECLARATION
FOR THE PROPOSED
RESTORATION OF SALMON REARING AND MIGRATION HABITAT
IN THE MERCED RIVER

MAGNESON SITE

The Project: The principal objective of this project is to improve the migratory and rearing habitat of chinook salmon in the Merced River. This will be accomplished by isolating a 10 acre pond from the river channel and improving the channel geometry and flow capacity of a 0.5 mile reach of river. Isolation of the pond area, with its dense predator population, from the rearing and migratory environments of chinook salmon will increase survival and reduce migration time for both juvenile and adult salmon.

Riparian vegetation will be reestablished where construction activities disturbed existing plants, and additional native plants will be established to create dense riparian vegetation within the project reach to benefit several fish and wildlife species.

The Finding: The Department of Fish and Game finds that implementing the proposed project will have no significant impact on the environment.

Basis for the Finding: Based on the Initial Study, it was determined that there would not be any significant adverse environmental effects resulting from implementing the proposed project. The project is expected to achieve a net benefit to the environment by increasing the survival of juvenile and adult chinook salmon produced in the Merced River.

Therefore, this Negative Declaration is filed pursuant to CEQA Guidelines Section 15073.

John Turner, Chief
Environmental Services Division

4/15/93
Date

CALENDAR PAGE	66
MINUTE PAGE	447

State of California
The Resources Agency
Department of Fish and Game

INITIAL STUDY FOR THE RESTORATION OF SALMON REARING AND MIGRATION HABITAT IN THE MERCED RIVER

MAGNESON SITE

Introduction

The salmon habitat in the Merced River has undergone extensive alteration as a result of various human activities since the late 1800's. Salmon populations have been capable of limited adjustment to changes in the habitat but have exhibited a steady decline during the past century. Although severe environmental stresses continue, there are opportunities available to increase salmon survival at some points in the life cycle.

Past aggregate mining operations have left deep pits within the river corridor. Several of these abandoned pits have failed levees that allow the river to be diverted through the lake-like environment, consisting of deep, slowing moving water and ideal warmwater predator habitat. Juvenile salmon migrating downstream through these lake-like areas are more vulnerable to predation and disorientation, hence less likely to survive, than if allowed to migrate within a natural, faster moving river channel. It is believed that isolating the lake-like areas from the river channel will increase survival of juvenile salmon.

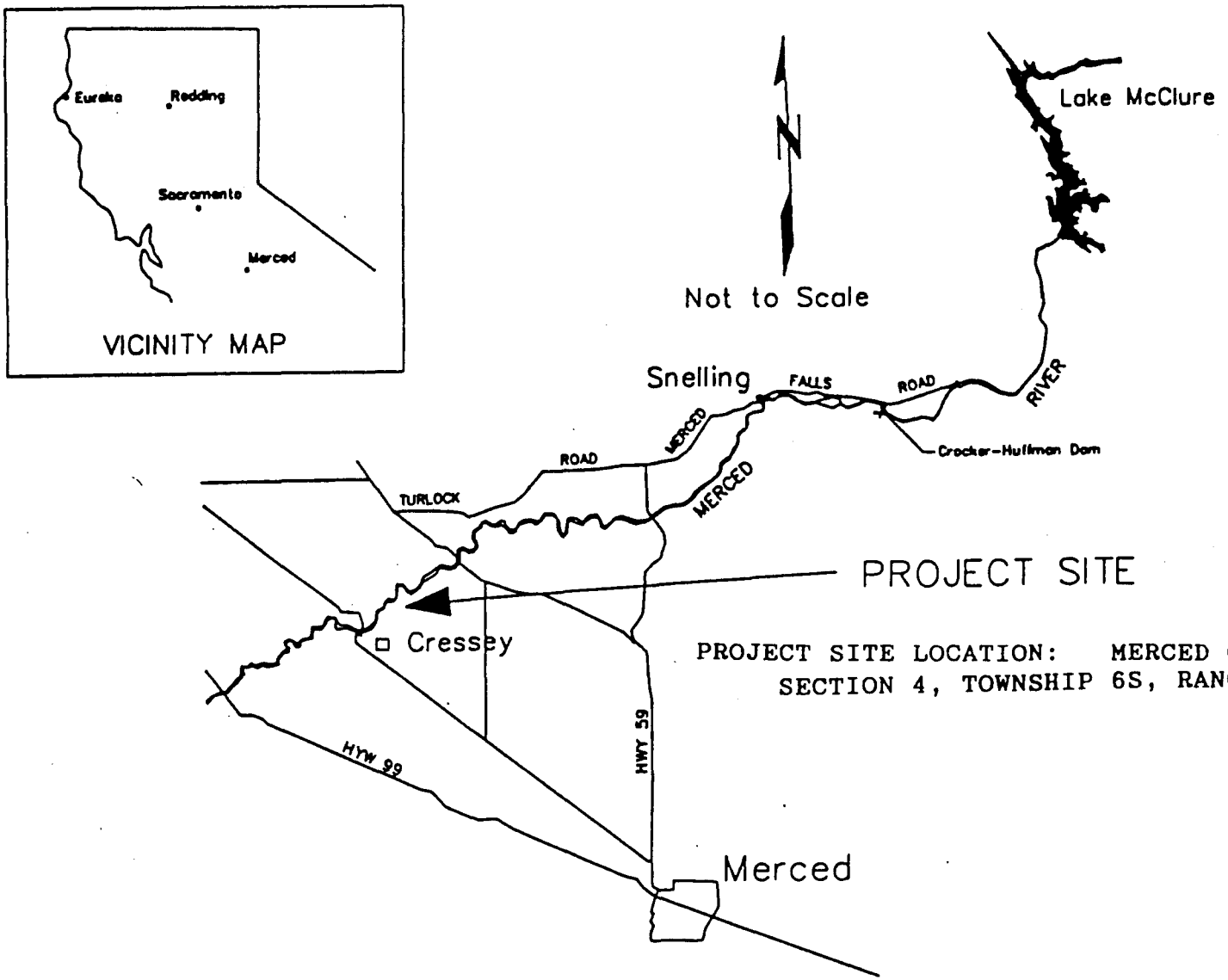
Project Objective

The principal objective of this project is to improve the migratory and rearing habitat of chinook salmon in the Merced River. This will be accomplished by repairing portions of a pond levee to redirect the river from flowing through a 10-acre pond and allowing the river to flow in its natural channel. Isolation of the 10-acre pond, with its dense warmwater fish predator population, from the river flow and improvement of the flow capacity in a 0.5-mile reach of river channel is expected to increase survival and reduce migration time of both juvenile and adult chinook salmon.

Project Setting

The proposed project site is in the Merced River, between river miles 29 and 30, near the community of Cressey (Figure 1).

LOCATION MAP



PROJECT SITE LOCATION: MERCED COUNTY
SECTION 4, TOWNSHIP 6S, RANGE 12E

Figure 1

CALENDAR PAGE	68
MINUTE PAGE	449

The designated salmon spawning area (Fish and Game Code Section 1505) in the Merced River is from Cressey upstream to Crocker-Huffman Dam. This 24-mile river reach is located on the east side of the San Joaquin Valley and consists of relatively low gradient stream coursing through primarily rural agricultural land. The land adjacent to the project is in private ownership (Mr. Charles Magneson) and is presently used for agriculture. Past gravel mining operations have left numerous "pits" adjacent to the river, and most are presently filled with water, forming ponds of various sizes. These ponds are ideal habitat for warmwater fishes. Black bass, the principle predator of young salmon in this river reach, have been estimated to occur in relatively high densities in these ponds. At the project location the Merced River has breached a levee surrounding a 10-acre abandoned pond, allowing the entire river flow to pass through the pond instead of remaining in the defined river channel (Figure 2).

The river channel within the project reach has become "choked" with vegetation, primarily willows, during the past few years that the river has not flowed in this reach of channel. Dense vegetation in the "active river channel zone" adversely impacts salmon migration. However, riparian vegetation along the river bank is a positive habitat feature and native species will be maintained and/or established within the project area. No net loss of riparian vegetation is expected to occur as a result of this project.

Potential habitat exists for three sensitive species within the project area. One elderberry (Sambucus sp.) plant occurs within the project impact area. This plant is potential habitat for the federally-listed threatened Valley Elderberry Longhorn Beetle (Desmocerus californicus dimorphus). No beetles have been observed within the project site during surveys conducted in April and June 1992. No emergence holes were present on the elderberry shrub on the project site. Informal consultation with the USFWS indicated that appropriate protection for this species would include relocation of this single plant and establishment of additional elderberry plants within the project area.

Potential habitat also exists within the project area for the giant garter snake (Thamnophis couchi gigas) and the Swainson's hawk (Buteo swainsoni), state-listed threatened species. Giant garter snakes have not been observed within the project area; however, appropriate hazing activities will be conducted prior to commencement of construction activities in case they may be present. Potential nesting habitat for the Swainson's hawk is present in the project area, but construction will occur outside the nesting period for the species. Biological Opinions regarding these species are included within this document.

CALENDAR PAGE	69
MINUTE PAGE	450

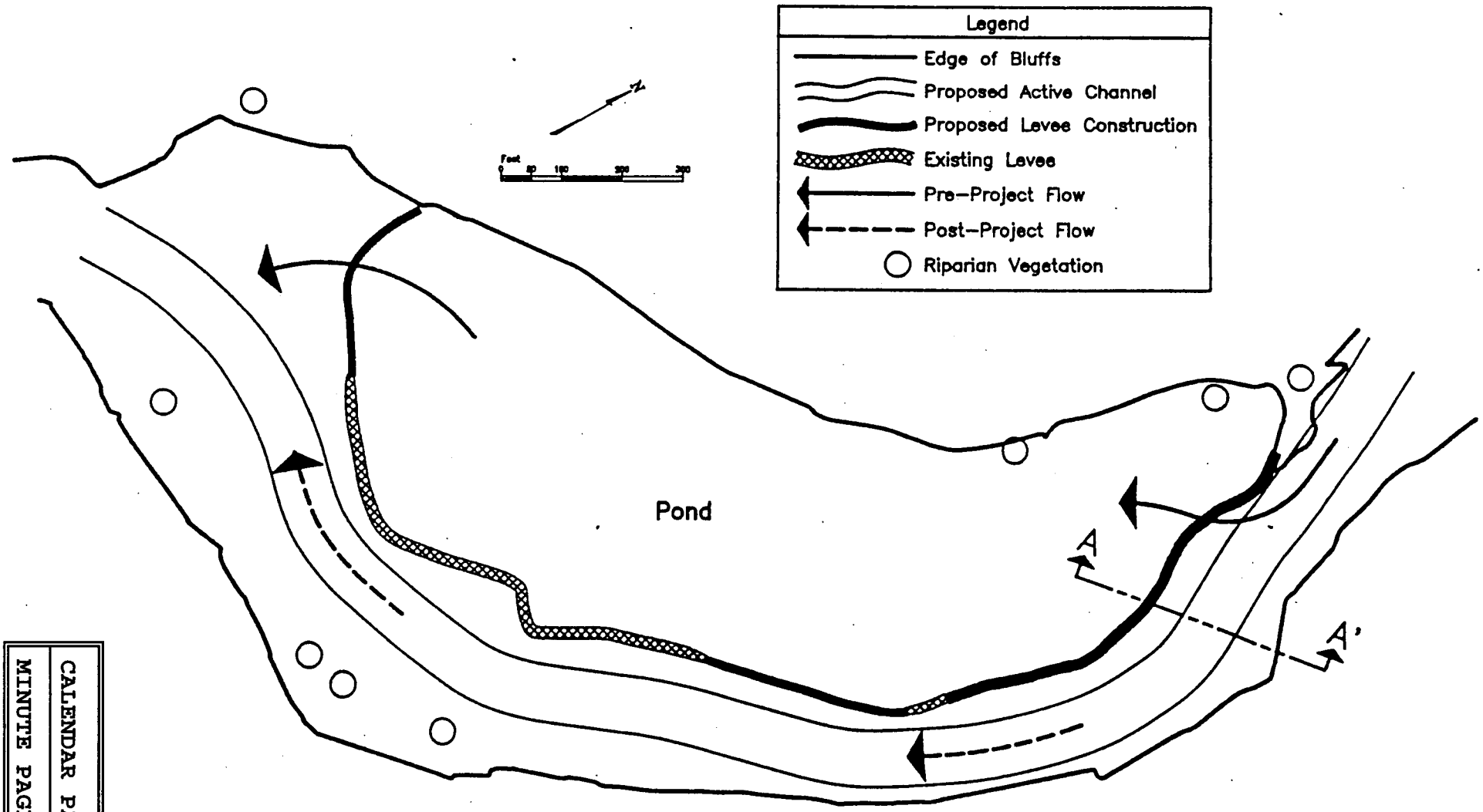


FIGURE 2. PLAN VIEW OF MAGNESON RESTORATION SITE, MERCED RIVER

Project Description

This project will increase the survival of chinook salmon by improving the migration and rearing habitat of salmon in a 0.5 mile reach of the Merced River. Warmwater predator habitat will be isolated from salmon rearing habitat and the river migration corridor for salmon will be improved (Figure 2).

Project specifics include:

a) diverting the river flow from running through the pond to the natural river channel will increase the present length of from 2,000 to 2,500 feet,

b) repair or construct about 900 lineal feet of levee,

c) isolate about 10 acres of warmwater predator habitat from salmon rearing and migration habitat.

d) replace disturbed vegetation and establish additional riparian vegetation within the project area using native species.

The reconstructed section of pond levee will allow water to percolate from the river into the pond to maintain water quality in the pond suitable for warmwater fishes and human recreation.

The pond levee repair and reconstruction, and the river channel improvements will be engineered and supervised by Department of Water Resources (DWR) engineers, experienced in this type of design. Although natural events could potentially impact the project, the levee will be designed to withstand up to a 100-year magnitude flood event.

The construction period will be between August 15 and October 1, to prevent impacts on adult and juvenile chinook salmon, the Swainson's hawk, and the giant garter snake.

Riparian vegetation will be reestablished where construction activities disturbed existing plants, and additional native plants will be established to create dense riparian vegetation within the project reach to benefit several fish and wildlife species. A detailed revegetation plan is presented in Exhibit A.

This project will be monitored annually by DFG during the first five years after construction to determine levee and stream channel integrity and riparian vegetation growth success.

Environmental Checklist Form

I. **Background**

1. Name of Proponent: California Department of Fish and Game

2. Address and Phone Number of Proponent: 1416 Ninth Street Sacramento, CA 95814 Phone No. (916) 653-9642

3. Date of Checklist Submitted March 24, 1993

4. Agency Requiring Checklist: Calif. Dept. of Fish and Game

5. Name of Proposal, if applicable: Restoration of Salmon Rearing and Migration Habitat in the Merced River - Magneson Site

---

II. **Environmental Impacts and Discussion of Environmental Evaluation**

1. **Earth.** Will the proposal result in:	Yes	Maybe	No
a. Unstable earth conditions or in changes in geologic structures?	___	___	X
b. Disruptions, displacements, compaction or overcovering of the soil?	X	___	___
c. Change in topography or ground surface relief features?	___	X	___
d. The destruction, covering or modification of any unique geologic or physical features?	___	___	X
e. Any increase in wind or water erosion of soils, either on of off the site?	___	___	X
f. Changes in deposition or erosion of beach sands, or changes in siltation, deposition or erosion which may modify the channel of a river or stream or the bed of the ocean or bay, inlet or lake?	___	X	___
g. Exposure of people or property to geologic hazards such as earthquakes, landslides, mudslides, ground failure, or similar hazards?	X		

CALENDAR PAGE	72
MINUTE PAGE	453

1b. The reconstruction of the pond levee and modification of the stream channel will require movement of about 50,000 cubic yards of gravel and soil material. The material manipulated will remain on site and will be used to form pond levees, and contour features for river channel definition and flood plain slope contours.

1c. Breaches in existing pond levees will be repaired. The original river channel will be widened to increase flow capacity and reduce hydraulic pressure on levees at high flows. These repairs will not significantly change the existing surface features within the project area.

1f. Restoration of the river channel in the project area will have the potential of reducing deposition of silt and fine sediment within the project reach.

	Yes	Maybe	No
2. Air. Will the proposal result in:			
a. Substantial air emissions or deterioration of ambient air quality?	___	_____	X
b. The creation of objectionable odors?	___	_____	X
c. Alteration of air movement, moisture, or temperature, or any change in climate, either locally or regionally?	___	_____	X

Emissions from construction vehicle exhausts are the only known source of air pollutants resulting from this project and are considered insignificant.

	Yes	Maybe	No
3. Water. Will the proposal result in:			
a. Changes in currents, or the course of direction of water movements, in either marine or fresh waters?	X	_____	___
b. Changes in absorption rates, drainage patterns, or the rate and amount of surface runoff?	___	_____	X
c. Alterations to the course or flow of flood waters?	___	X	___
d. Change in amount of surface water in any water body?	X	_____	___

CALENDAR PAGE	73
MINUTE PAGE	454

	Yes	Maybe	No
e. Discharge into surface waters, or in any alteration of surface water quality, including but not limited to temperature, dissolved oxygen or turbidity?	___	X	___
f. Alteration of the direction or rate of flow of ground waters?	___	_____	X
g. Change in the quantity of ground waters, either through direct additions or withdrawals, or through interception of an aquifer by cuts or excavations?	___	_____	X
h. Substantial reduction in the amount of water otherwise available for public water supplies?	___	_____	X
i. Exposure of people or property to water related hazards such as flooding or tidal waves?	___	_____	X

3a. The Merced River, within the project reach, no longer flows within the natural stream channel. A failed pond levee at a bend in the channel allows the river to escape the original channel and flow into a large pond area and eventually back to the river channel farther downstream. This project will repair the failed levee and cause the river to follow the original channel bend thus redirecting the surface flow to remain in the river channel.

3c. The proposed increase in channel capacity will result in reduced flood potential in the area immediately upstream of the project area. A HEC-II analysis of potential flood elevations has been performed and that data is available from the Department of Water Resources.

3d. The Merced River channel adjacent to the pond presently contains no surface flow. This project will result in increased surface flow within the river channel within the project area.

3e. During construction water turbidity may increase slightly in the local area. This effect will be minimized, however, because construction will be allowed only during a period of low river flows, June 15 through October 15.

	Yes	Maybe	No
4. **Plant Life.** Will the proposal result in:			
a. Change in the diversity of species, or any number of species of plants (including trees, shrubs, grass, crops, and aquatic plants)?	___	X	___
b. Reduction of the numbers of unique, rare or endangered species of plants?	___	_____	X
c. Introduction of a new species of plants into an area, or result in a barrier to the normal replenishment of existing species?	___	_____	X
d. Reduction in acreage of any agricultural crop?	___	_____	X

4a. Although some riparian plant species will be disturbed during construction, replacement of disturbed plants will occur at levels of at least 5 to 1. Willows have encroached into the streambed and will be removed from the active stream channel to benefit fish migration. The winter before construction, when plants are dormant, cuttings of several plant species within the project site will be taken and placed in cold storage for later planting when construction has been completed. Where possible within the construction zone large clumps of vegetation will be set aside and later replanted within the disturbed areas. A net increase of riparian vegetation within the project area is expected as a result of this project.

	Yes	Maybe	No
5. **Animal Life.** Will the proposal result in:			
a. Changes in the diversity of species, or numbers of any species of animals (birds, land animals including reptiles, fish and shellfish, benthic organisms or insects)?	___	X	___
b. Reduction of the numbers or any unique rare or endangered species of animals?	___	_____	X
c. Introduction of new species of animals into any area, or result in a barrier to the migration or movement of animals?	___	_____	X
d. Deterioration to existing fish or wildlife habitat?	___	_____	X

CALENDAR PAGE	75
MINUTE PAGE	456

5a. The primary objective of this project is to increase the production of chinook salmon in the Merced River. This will be accomplished by isolating salmon habitat from predator habitat and improving stream migration and rearing habitat for salmon. An improvement of general wildlife habitat and habitat complexity is expected as a result of this project.

	Yes	Maybe	No
6. **Noise.** Will the proposal result in:			
a. Increases in existing noise levels?	___	_____	X
b. Exposure of people to severe noise levels?	___	_____	X

During project construction there may be increased noise levels from machinery during a 2-3 week period. These noise levels are not expected to be greater than typical agricultural machinery noise periodically occurring in the general area and will not result in a significant impact to humans or wildlife.

7. **Light and Glare.** Will the proposal produce new light or glare?	___	_____	X

The project will not alter present light or glare conditions.

8. **Land Use.** Will the proposal result in a substantial alteration of the present or planned use of an area?	___	_____	X

This project will involve improvements to a river channel that benefit salmon production and migration, and will not result in any changes of land use.

9. **Natural Resources.** Will the proposal result in:			
a. Increase in the rate of use of any natural resources?	___	_____	X
b. Substantial depletion of any non-renewable natural resource?	___	_____	X

This project is expected to result in the increased survival of chinook salmon in the Merced River system.

10. **Risk of Upset.** Will the proposal involve:

a. A risk of an explosion or the release of hazardous substances (including, but not

CALENDAR PAGE	76
MINUTE PAGE	457

	Yes	Maybe	No
limited to, oil, pesticides, chemicals or radiation) in the event of an accident or upset conditions?	___	_____	X
b. Possible interference with an emergency response plan or an emergency evacuation plan?	___	_____	X

During construction no fuel will be present on site other than in vehicle fuel tanks. No hazardous chemicals, other than vehicle fuel, will be used during construction. Fuel handling procedures and spill contingency measures will be included in the 1601 permit procedures.

11. **Population.** Will the proposal alter the location, distribution, density or growth rate of the human population of an area?	___	_____	X

The proposed project will have no effect on the human population growth.

12. Housing. Will the proposal affect existing housing, or create a demand for additional housing?	___	_____	X

The proposed project will have no effect on housing.

13. **Transportation/Circulation.** Will the proposal result in:

a. Generation of substantial vehicular movement?	___	_____	X
b. Effects on existing parking facilities, or demand for new parking?	___	_____	X
c. Substantial impact upon existing transportation systems?	___	_____	X
d. Alterations to present patterns of circulation or movement of people and/or goods?	___	_____	X
e. Alterations to waterborne, rail or air traffic?	___	_____	X
f. Increase in traffic hazards to motor vehicles, bicyclists or pedestrians?	___	_____	X

This project will not result in any changes to transportation or traffic patterns.

CALENDAR PAGE	77
MINUTE PAGE	458

	Yes	Maybe	No
14. **Public Services.** Will the proposal have an effect upon, or result in a need for new altered governmental services in any of the following areas:			
a. Fire protection?	___	_____	X
b. Police protection?	___	_____	X
c. Schools?	___	_____	X
d. Parks or other recreational facilities?	___	_____	X
e. Maintenance of public facilities, including roads?	___	_____	X
f. Other governmental services?	___	_____	X

This project will have no effect on public services.

15. Energy. Will the proposal result in:			
a. Use of substantial amounts of fuel or energy?	___	_____	X
b. Substantial increase in demand upon existing sources or energy, or require the development of new sources of energy?	___	_____	X

This proposed project will not require or result in the use of substantial amounts of fuel or energy.

16. Utilities. Will the proposal result in a need for new systems, or substantial alterations to the following utilities?			
a. Power or natural gas?	___	_____	X
b. Communications systems?	___	_____	X
c. Water?	___	_____	X
d. Sewer or septic tanks?	___	_____	X

CALENDAR PAGE	78
MINUTE PAGE	459

	Yes	Maybe	No
e. Storm water drainage?	___	_____	X
f. Solid waste and disposal?	___	_____	X

The proposed project will not require new utility services or the modification of existing utilities.

17. **Human Health.** Will the proposal result in:

a. Creation of any health hazard or potential health hazard (excluding mental health)?	___	_____	X
b. Exposure of people to potential health hazards?	___	_____	X

The project will not create or result in any hazard to public health.

18. **Aesthetics.** Will the proposal result in the obstruction of any scenic vista or view open to the public, or will the proposal result in the creation of an aesthetically offensive site open to public view?	___	_____	X

The project will not result in the obstruction of aesthetically pleasing scenic views.

19. **Recreation.** Will the proposal result in an impact upon the quality or quantity of existing recreational opportunities?	___	_____	X

The goal of this project is to increase the natural production of chinook salmon in the Merced River. The net result of increased salmon production resulting from this project may increase the quantity of salmon available to the angler.

20. **Cultural Resources.**

a. Will the proposal result in the alteration of or the destruction of a prehistoric or historic archaeological site?	___	_____	X
b. Will the proposal result in adverse physical or aesthetic effects to a prehistoric or historic building, structure, or object?	___	_____	X

CALENDAR PAGE	79
MINUTE PAGE	460

	Yes	Maybe	No
c. Does the proposal have the potential to cause a physical change which would affect unique ethnic cultural values?	___	_____	X
d. Will the proposal restrict existing religious or sacred uses within the potential impact area?	___	_____	X

The proposed project will not significantly effect cultural resources. An evaluation of the site by the Central California Information Center, Department of Anthropology at Stanislaus State University, revealed that no historic or prehistoric records of cultural resources existed for this proposed project. The potential for culturally significant sites to occur in the project area is small and further study was not recommended.

If cultural measures are encountered during project construction, measures will be implemented to avoid the materials and their context until a cultural resource consultant has evaluated the situation. Project personnel will not collect cultural resources including chert or obsidian flakes, projectile points, mortars and pestles, and dark friable soil containing shell and bone dietary debris, heat affected rock or human burials.

21. **Mandatory Findings of Significance.**

	Yes	Maybe	No
a. Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	___	_____	X
b. Does the project have the potential to achieve short-term, to the disadvantage of long-term environmental goals? (A short-term impact on the environment is one which occurs in a relatively brief, definite period of time while long-term impacts will endure well into the future.)	___	_____	X

CALENDAR PAGE	80
MINUTE PAGE	461

	Yes	Maybe	No
c. Does the project have impacts which are individually limited, but cumulatively considerable? (A project may impact two or more separate resources where the impact on each resource is relatively small, but where the effect of the total of those impacts on the environment is significant?	___	_____	X
d. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	___	_____	X

III. **Determination**

On the basis of this initial evaluation:

I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared. _____

I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because the mitigation measures described on an attached sheet have been added to the project. A NEGATIVE DECLARATION WILL BE PREPARED. X

I find the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required. _____

3/24/93
Date

Timothy C Farley
For The California Department of Fish and Game

CALENDAR PAGE	81
MINUTE PAGE	462

State of California
The Resources Agency
Department of Fish and Game

CALIFORNIA ENDANGERED SPECIES ACT
BIOLOGICAL OPINION
(Fish and Game Code Section 2090)

RESTORATION OF SALMON HABITAT
IN THE MERCED RIVER
MAGNESON SITE

SUMMARY

The California Department of Fish and Game, Inland Fisheries Division, proposes to repair a failed levee and clear vegetation obstructing the normal channel of the Merced River. The purpose is to improve survival of juvenile salmon during migration. The project site is between river miles 29 and 30, near Cressey. Approximately 900 feet of levee will be repaired. The project site provides suitable habitat for giant garter snake and Swainson's Hawk which are state-listed as threatened species. Adequate measures to avoid take of these species, including adverse impacts to their habitats, are incorporated into the project design.

PROJECT DESCRIPTION

SETTING

The proposed project is located in the Merced River, between river miles 29 and 30, near the community of Cressey. At this point, the river is a relatively low gradient stream coursing through primarily rural agricultural land. Past gravel mining operations have left numerous pits adjacent to the river, and most presently contain water under normal conditions. The ponds thus formed support relatively high densities of black bass (*Micropterus salmoides*, *M. dolomieui*), the primary predator of young salmonids in this reach of the Merced River. Striped bass (*Morone saxatilis*), another predator of young salmonids, are also known to concentrate in deep pools in this area of the Merced River.

At the project location, the Merced River has breached a levee surrounding a 10-acre abandoned pond, allowing the entire river to flow through the pond instead of remaining in the defined river channel. Significant predation upon young salmon is expected to currently occur as a result of this condition.

In the time since the levee was breached, the river channel in the project reach has become vegetated, primarily with willows. This vegetation in the river channel adversely affects salmon migration.

PROPOSED ACTION

The proposed project consists of levee restoration, clearing of vegetation obstructing the normal channel, and restoration and enhancement of riparian habitat. The proposed actions are:

1. **Reconstruction or repair of about 900 feet of failed levee that formerly separated the pond and the main river channel.** This reconstruction would involve the use of imported materials, as well as materials deposited in the pond and/or the currently bypassed river channel. Construction is estimated to take approximately 2-3 weeks. Existing access roads through adjacent private agricultural land, and on levees or levee remnants are adequate. The levee would be designed to withstand the 100-year flood event.

2. **Revegetation of disturbed areas of riparian vegetation, and enhancement of existing riparian vegetation.** The site revegetation plan is integrated with measures to reduce or avoid project impacts to giant garter snake habitat. Such measures include planting emergent vegetation, riparian understory plants, and elderberry shrubs, and depositing debris and riprap.

LISTED SPECIES

Two state-listed species are known from the vicinity of the project. These are the state-threatened giant garter snake (*Thamnophis gigas*) and the state-threatened Swainson's Hawk (*Buteo swainsoni*). Suitable habitat for these species is present on and around the project area.

GIANT GARTER SNAKE

The giant garter snake (*Thamnophis gigas*) is state-threatened and currently (1992) under review for listing by the U.S. Fish and Wildlife Service.

The giant garter snake is a very large garter snake, the total length of adult females commonly reaching 4 feet and occasionally exceeding 4-1/2 feet. It has an elongated head with a pointed muzzle. Its color is dull brown, with a checkered pattern of well separated black spots, and a dull yellow mid-dorsal stripe often fading and with irregular margins posteriorly. Lateral stripes are frequently indistinct or lacking, the venter is brown, supralabial scales dull brown and usually lacking distinct wedge marks. The maximum number of

dorsal scale rows is usually 23, supralabial scales eight, infralabial scales 10 or 11 on each side.

The giant garter snake is a highly aquatic garter snake, relying upon aquatic environments for food, shelter, and escape from predators. The historical range includes most of the floor of the San Joaquin valley and Sacramento-San Joaquin Delta. Known historical habitats include permanent and seasonal freshwater ("tule") marshes and low gradient streams with still or slow moving water and vegetated banks. The giant garter snake is an aquatic feeder specializing in ambushing small fish (including introduced carp, (*Cyprinis carpio*), and mosquitofish, (*Gambusia affinis*) underwater. It will also readily take larvae and young of the widely introduced bullfrog (*Rana catesbeiana*). The aquatic feeding of the giant garter snake may enable it to compete successfully with the more terrestrial valley garter snake (*T. fitchi*) which is common throughout the range of the giant garter snake.

The giant garter snake is a wary snake and is difficult to catch. Giant garter snakes often frequent vegetation over water, or at the water's edge, and when alarmed escape by swimming underwater for several minutes. Reliable surveys for the presence of this snake may be difficult to conduct.

As a result of human activities, the giant garter snake and its supporting habitat are depleted throughout its range. The giant garter snake has been extirpated from about one third of its range and habitat continues to be degraded or threatened in those remaining areas still supporting this species. The destruction of wetlands and channelization of streams, both essential giant garter snake habitat, are major causes of the loss of giant garter snake habitat. Other causes include pollution, destruction of food sources, and predation by native and introduced species.

The project site is within the range of the giant garter snake, and suitable habitat is present in and around the site. This species may be present on the site.

SWAINSON'S HAWK

The State-listed threatened Swainson's hawk (*Buteo swainsoni*) is a medium-sized buteo with relatively long, pointed wings and a long, square tail. The species occurs in three main color morphs: light, rufous and dark, with intermediates, all of which have been observed in California populations. Adult birds have dark brown heads with a dark breast band which is set off

from a lighter-colored belly in lighter morph birds. In dark birds, however, the entire body may be a sooty-brown to black color. The throat is white or partially white in dark birds. The wings are bicolored underneath with the wing linings generally lighter than the dark flight feathers. Adult females weigh 20-34 ounces and males, 25-31, ounces.

Swainson's Hawks breeding in California spend the winter in South America as far south as Argentina. The diet of the Swainson's Hawk is varied with the California vole *(Microtus californicus)* being the staple in the Central Valley. A variety of birds and insects are also taken. Swainson's Hawks often nest peripheral to riparian systems of the valley as well as utilizing lone trees or groves of trees in agricultural fields. Valley oak *(Quercus lobata)*, Fremont cottonwood (*Populus fremontii*), walnut (*Juglans hindsii*) and large willows *(Salix spp.)* are the most commonly used nest trees in the Central Valley.

Swainson's Hawks require large, open grasslands with abundant prey in association with suitable nesting trees. Suitable foraging habitat includes native grasslands or lightly grazed pastures, alfalfa and other hay crops, and certain grain and row crops.

The species decline is generally attributed to land use changes, and loss of riparian and associated habitat complexes. In addition, direct and indirect effects of pesticides are likely to have contributed to the species threatened status.

Swainson's Hawks are known from the general area of the project. They may nest and forage on or near the project site.

PROJECT EFFECTS ON LISTED SPECIES

In the absence of specific conditions to avoid jeopardy, the proposed project could have adverse effects on the three listed species discussed above. Possible adverse effects could include:

1. Direct or indirect mortality or injury of giant garter snake;

2. Significant disturbance of nesting Swainson's Hawks, leading to reduced reproduction or mortality of nestlings;

3. Permanent and temporary loss of habitat for giant garter snake;

However, the project includes measures designed to avoid or compensate for these possible effects, reducing the potential for

take and adverse impacts to a negligible level. These measures are discussed under "Conditions to Avoid Jeopardy". Possible impacts are discussed below.

TAKE OF INDIVIDUALS

If unmitigated, construction activities could result in injury or death of individuals of the three species of concern. However, the project includes measures, discussed under "Conditions to Avoid Jeopardy", that if implemented, will reduce the chances of injury or mortality to a negligible level. Therefore, no take of giant garter snake or Swainson's Hawk is anticipated to result from the proposed project.

DISTURBANCE OF NESTING SWAINSON'S HAWK

Swainson's Hawks that might nest within 0.5 miles of the project site could be disturbed by construction activities if construction occurs during their active nesting period. However, nests will not be disturbed by the proposed project, due to timing of construction activities.

PERMANENT AND TEMPORARY LOSS OF HABITAT

No habitat alteration beyond restoring flows to the natural channel is proposed. Following construction, disturbed areas will be revegetated to restore and enhance habitat for giant garter snake. There will be no permanent loss of habitat for the two listed species.

The project as proposed would result in temporary loss of habitat suitable for giant garter snake. Removal of brushy riparian vegetation, and removal of emergent vegetation would decrease suitable giant garter snake habitat. Excavation and deposition of fill for levee repair would also result in a temporary decrease in giant garter snake habitat. This impact would be mitigated to a less than significant level by manipulated and natural site revegetation.

CONDITIONS TO AVOID JEOPARDY

TAKE OF INDIVIDUALS

The following measures will avoid injury or mortality of giant garter snake.

Giant Garter Snake. Measure to avoid take of giant garter snakes during construction will be employed. These are:

1. Project construction activities will be limited to one bank of the river at a time.

2. Construction will take place only during the giant garter snake's active season. This is approximately May 1 to October 1.

3. Within one hour prior to the first daily disturbance of suitable habitat by machines, giant garter snakes that could be present in the area to be disturbed will be hazed from the area by one or more individuals on foot. Suitable hazing activities include vigorous walking, jumping (to create detectable vibrations in the substrate), shaking vegetation, etc.

4. Vehicle traffic will be restricted to construction or other official vehicles.

5. Any giant garter snakes observed in the vicinity of operating earthmoving machinery shall be hazed away or captured by a biologist and immediately released in undisturbed habitat nearby.

DISTURBANCE OF NESTING SWAINSON'S HAWKS

Project construction will take place after August 15, outside the nesting period for the Swainson's hawk.

LOSS OF HABITAT

Giant Garter Snake

Temporary loss of giant garter snake habitat will be mitigated by restoring disturbed areas, and enhancing adjacent habitat areas. Restoration and enhancement will utilize plant species occurring normally on the site or similar locations. Restoration and enhancement features will include:

1. Manipulated establishment of riparian understory vegetation.

2. Manipulated and natural establishment of emergent vegetation in the river and/or adjacent ponds.

3. Creation of 4 or more refugia. The refugia shall be above the 100-year flood level if possible, and consist of broken concrete, quarry rock or similar material semi-buried in the ground or levee banks, covering areas of approximately 10 feet by 10 feet, or as otherwise approved by a CDFG biologist.

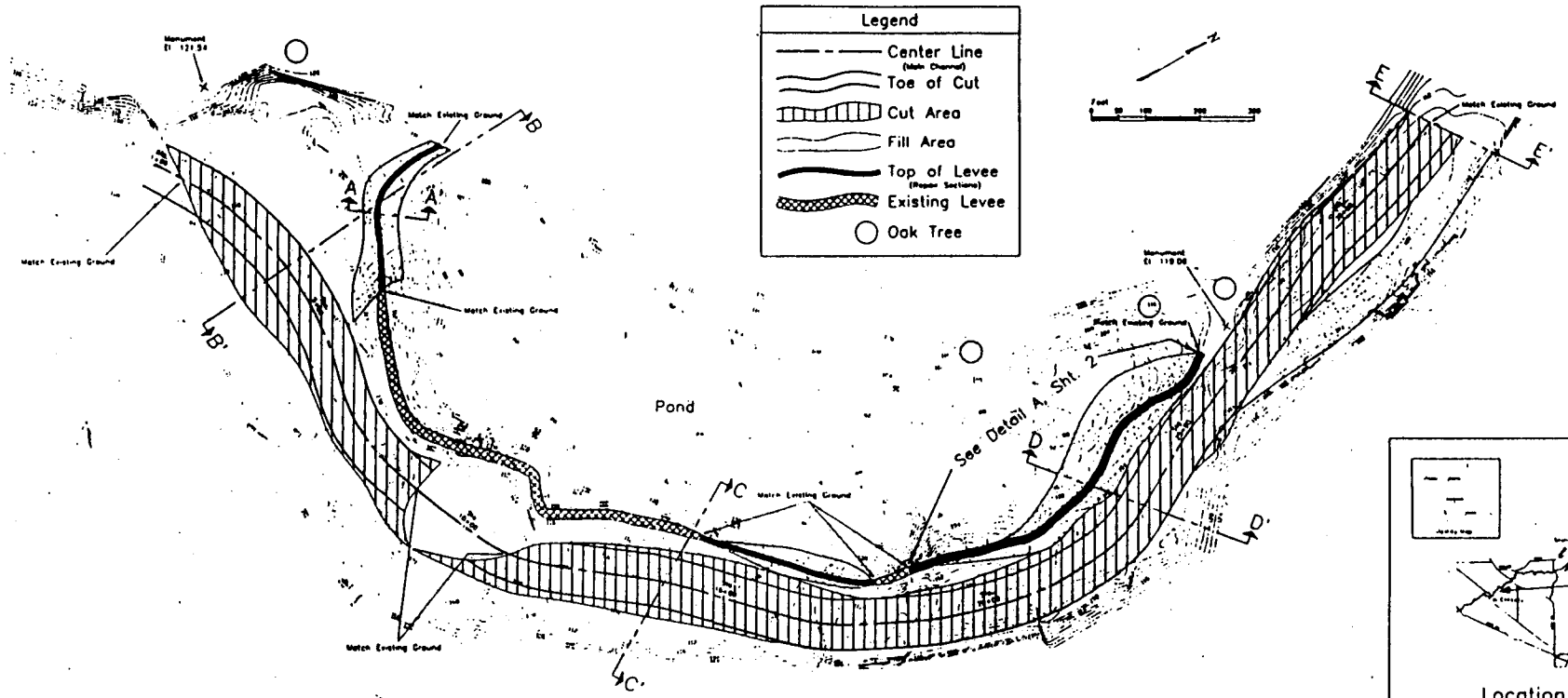
4. Inclusion of restored giant garter snake habitat in the revegetation monitoring plan.

INCIDENTAL TAKE

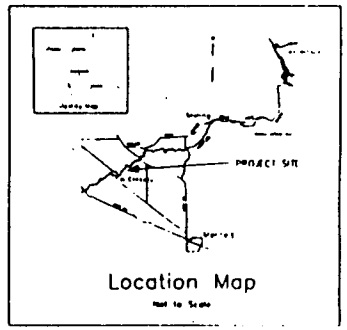
Incidental take of giant garter snake or Swainson's Hawk is not likely to result from the proposed project.

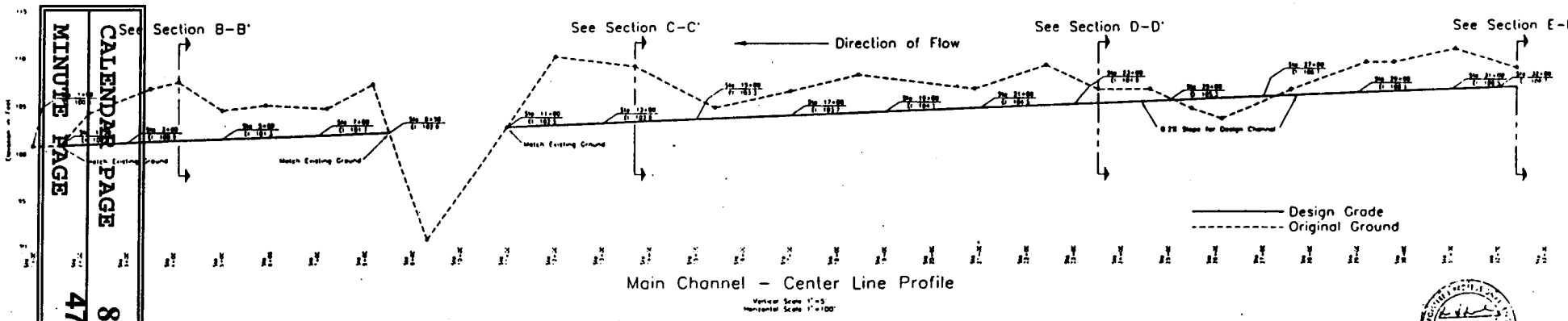
CONCLUSION

If the above conditions are agreed to and fully implemented, then the Department has determined that the project as proposed would not likely jeopardize the continued existence of the giant garter snake or Swainson's Hawk.



Plan View





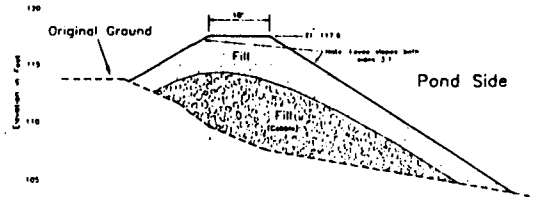
Main Channel – Center Line Profile

CALENDAR PAGE 89
MINUTE PAGE 470

MERCED RIVER – MAGNESON SITE

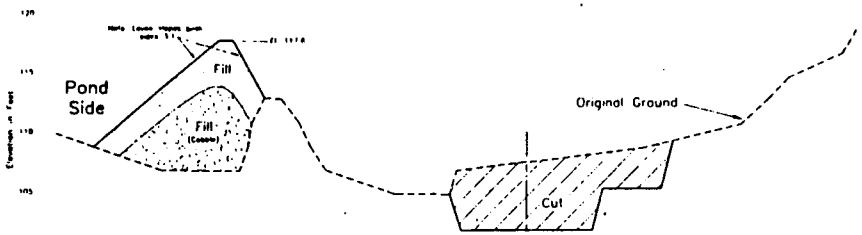
Plan View and Main Channel – Center Line Profile

Approved by: James Cooper	Designed by: R. Polgar, P. Landis, K. Faulkenberry	Sheet No. 1 of 2
	Drawn by: Ken Winden	Date: July 7, 1992

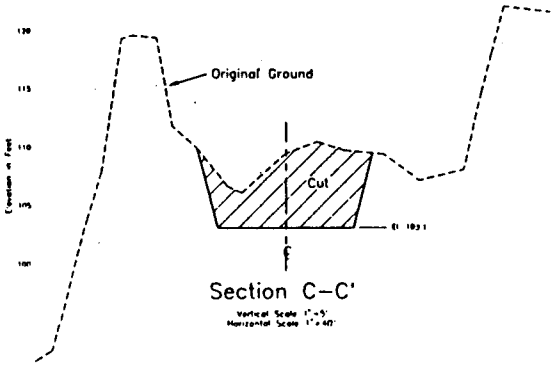


Section A–A'

Vertical Scale 1"=5'
Horizontal Scale 1"=10'

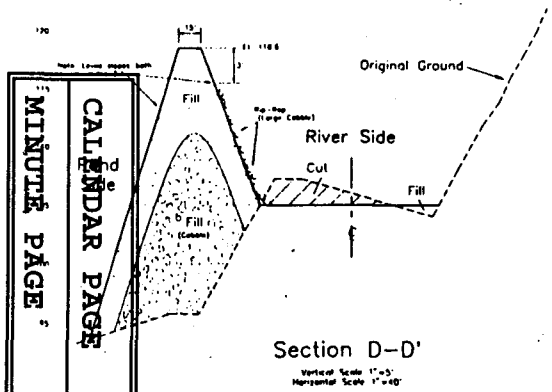


Section B–B'



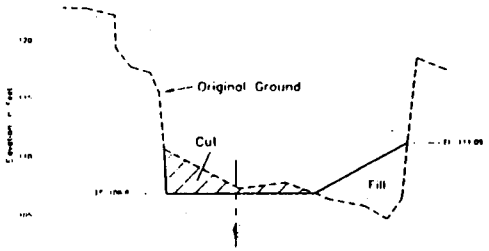
Section C–C'

Vertical Scale 1"=5'
Horizontal Scale 1"=40'



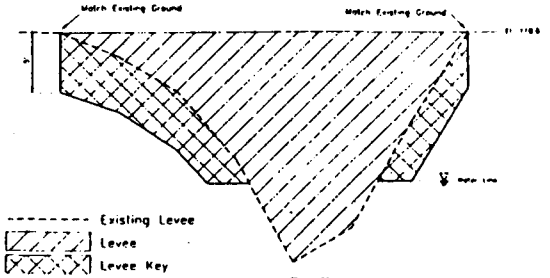
Section D–D'

Vertical Scale 1"=5'
Horizontal Scale 1"=40'

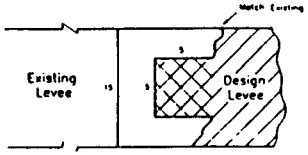


Section E–E'

Vertical Scale 1"=5'
Horizontal Scale 1"=40'



Levee Profile



Plan View

Detail A – Levee Key

Not to Scale

MINUTE PAGE 90
CALENDAR PAGE 471

MERCED RIVER – MAGNESON SITE

Sections and Detail A – Levee Key

Approved by	Designed by	Sheet No.
James Cooper	R. Polgar, P. Landis, K. Faulkenberry	2 of 2
	Drawn by: Ken Winden	Date: July 7, 1992

Site Revegetation Plan

Proposed Restoration of Salmon
Habitat on the
Merced River - Magneson Site

10/20/92

1.0 INTRODUCTION

In a combined effort with the Department of Fish and Game, the Department of Water Resources is proposing to improve the migratory and rearing habitat of chinook salmon in the Merced River. A 10 acre pond left by previous sand and gravel operations will be removed from the active river bed to improve the channel morphology and flow capacity in a .5 mile stretch of the river. The levee dividing the pond from the river broke several years ago at the upstream and downstream ends, allowing the river to flow through the pond. As a result, the river channel became established with riparian vegetation. Only during high water years does the river flow down the channel. Warmwater fish species inhabiting the pond now depredate on the salmon fry moving downstream in the river. The project involves clearing the original river channel of vegetation, and reshaping, resloping and reestablishing the active channel. Elimination of the pond and the reestablishment of the river channel will enhance the survival and reduce migration time for both juvenile and adult salmon.

2.0 PROJECT SETTING

The proposed project site is on the Merced River between river miles 29 and 30, near the town of Cressey in Merced County (Figure 1). This stretch of the river is located on the east side of the San Joaquin Valley and is characterized by low gradient stream patterns. The river corridor is bounded by a series of bluffs created as the river meandered across the valley. The flood plain terraces surrounding the river within its basin have been slowly converted by agriculture into crops of alfalfa, corn, nuts, and dairy. Previous and current sand and gravel operations have further encroached upon the river system creating large ponds, backwaters, piles of overburden spoil, and silted and eroded channels. The construction of several dams and diversions upstream have resulted in a confined active river channel supported by a mostly decadent riparian community structure.

The riparian habitat at the project site, although reduced in size and structure, still contains a diverse assemblage of species. The site is bounded on the south by a bluff ranging from 10 to 40 feet high. A remnant mixed riparian forest dominates the bluff and the upstream and downstream ends of the northern side of the project. The species mix contains Fremont cottonwood (Populus fremontii), Hinds willow (Salix hindsii), Oregon ash (Faxinus latifolia), box elder (Acer negundo), mexican elderberry (Sambucus mexicana), California rose (Rosa californica), and wild grape (Vitus

californica). Valley oaks (Quercus lobata) also dominate in the riparian forest and in scattered locations in the floodplain.

Along the northern edge of the project, a small levee divides the pond and the river channel. The levee supports a disturbed, mostly open riparian mix dominated by white alder (Alnus rhombifolia), Hinds willow, buttonbush (Cephalanthus occidentalis), and sandbar willow (Salix goodingii). The levee is covered by perennial and annual grasses comprised of creeping wildrye (Elymus triticoides), bermuda grass (Cynodon dactylon), wild oats (Avena fatua), and Hordeum species.

The river channel bottom supports a variety of habitat types and is structurally diverse. Because of the lack of river flows through this stretch since the levee was breached, it has become overgrown and has changed from a riverine community structure to freshwater marshes, small isolated sloughs and backwaters, and early successional stages of mixed riparian forest. Dominant species include sandbar willow, buttonbush, box elder, and Red willow (Salix laevigata) with smaller amounts of cottonwood, Hinds willow, cattails (Typha domingensis), water hyacinth (Eichhornia crassipes), and early seral stage freshwater marsh species of grasses and forbs.

3.0 METHODS

3.1 SITE PREPARATION

During winter of 1992-93, the site will be staked and flagged, with the low and high water channel and the levee repair sites delineated. The vegetative species within the impact zone to be used in the project as hardwood cuttings will be cut down. The cuttings will be sorted by species, cut to length, and placed in cold storage until the construction phase is completed and the revegetation phase begins. Preserving and reestablishing the vegetation at the site retains species' genetic composition within the geographic region, prevents the introduction of exotic gene pools, and enhances species survival rates by preserving site adapted species' phenotypes.

During the construction phase of the project, the heavy equipment used on site will prepare the site for the revegetation effort. Channel design specifications will dictate channel morphology, e.g. slope, depth, and shape. The channel bottom will be flat with 3:1 slopes rising to the levees for a total average distance of 90 ft. In the downstream section of the channel, terraces will be made as part of the channel for planting purposes. The southern edge of the site containing the established riparian vegetation will not be disturbed. The northern levee will be mostly reconstructed

and will be revegetated. (See Figure 2)

The impact area will be cleared of most vegetation during the project. Some vegetation will likely be pushed over and flattened. The fine soils containing propagules (seeds, rhizomes, roots) of pioneering species that have accumulated in the marshy and edge areas will be preserved to the extent possible for spreading over the site after construction.

Soil testing will not be conducted nor will any soil amendments be used during the revegetation effort due to the prohibitive cost.

3.2 SITE LAYOUT

Four planting zones will be established: the channel slopes, base of levee slopes, levee top, and miscellaneous sites (Figure 2 and 3). The species to be planted in each zone are as follows:

Channel slopes:

sandbar willow
red willow
buttonbush

Base of Levee slopes

sandbar willow
red willow
Hinds willow
buttonbush
box elder
white alder
cottonwood

Levee top

Valley oak
elderberry
wild rose
creeping wildrye (levee top and slopes)

Miscellaneous

(mix of above species)

Each planting zone is patterned on current species presence, a result of the hydrologic conditions of the specific site. The channel slopes will be planted in rows no more than 20 ft apart with plantings spaced no more than 2 feet apart. The rows will be angled at 45 degrees to the river flow with the lowest planting near the mean water elevation. Row planting can be conducted quickly by using a backhoe to dig trenches in which cuttings are placed. The levee slopes and top and the miscellaneous areas will be planted in random patterns with plants spaced no closer than 5 feet apart. The miscellaneous areas are sites throughout the project area that will be planted, such as parking areas, staging areas, or optimal locations for mitigation plantings, such as along the northern edge of the pond, and the elderberry mitigation site along the southern edge of the pond.

3.3 SPECIES ACQUISITION

Most of the plant material will be obtained from the site or as close to the site as possible. The willows, buttonbush, and cottonwood species will be outplanted as cuttings. The cuttings will be collected while dormant during winter 1992-93 from the project impact area. The cuttings will be cut and sized and placed in cold storage until planting. The planting end will be cut at an angle for distinction and ease of planting. Box elder seeds have been collected from the site and could be propagated into container stock if time and money allows. Valley oak acorns have not been found in the area yet, but the potential exists for them to be collected and planted. Elderberries will be obtained from The Nature Conservancy's Stoney Creek Preserve on the upper Sacramento River. The rest of the species will be purchased from a nursery. Plant orders will be placed in winter 1992-93 for planting the following winter.

There were no wild roses and only one small cottonwood found in the impact area. However, they will be planted on the site because they grow on the southern bluff, are an important component of the riparian community, and they are easy to obtain. The elderberries are being planted as mitigation for removing one elderberry at the site. Elderberry is the host plant of the valley elderberry longhorn beetle (Desmocerus californicus dimorphus) a threatened species listed by the U.S. Fish and Wildlife Service.

The project impact area in the river channel is approximately 9 acres. The channel bottom and slopes in the section to be cleared is about 6.8 acres. A cursory survey of the number of each species in the channel to be removed was conducted to help in determining possible revegetation planting densities. Based on the survey results, data from similar projects, and estimated mortality, the numbers below provide an estimate of the number of each species needed to revegetate the site.

SPECIES	PROPAGULE	SOURCE	AMOUNT
sandbar willow	cutting	site	1000
red willow	cutting	site	150
Hinds willow	cutting	site	200
Fremont cottonwood	cutting	site and local	175
buttonbush	cutting	site	250
box elder	seed or 1 gal pot	site or nursery	150
white alder	1 gal pot	nursery	50
California rose	1 gal pot	nursery	50
elderberry	1 gal pot	TNC	200
valley oak	1 gal pot (deep)	nursery	100
creeping wildrye	seed	seed supplier	45#

3.4 PLANTING

Planting will be conducted by the California Conservation Corps, DWR and DFG personnel, and/or volunteer labor from civic groups and interested parties. Planting will be conducted after the project is completed if adequate irrigation is available, or the following winter when temperatures are cool and plants are dormant. Cuttings will not be removed from cold storage until planting begins.

On the channel slopes, trenches will be dug to the water table with a backhoe and the cuttings placed vertically along one edge with the angled end in the trench. The cuttings will be cut long enough and planted deep enough to reach ground moisture. The cuttings will be covered over either by hand or the backhoe.

Where feasible, trenches will also be excavated on the levee slope, primarily at the base, for planting as above. If slope stability prohibits backhoe trenching, holes or short trenches will be dug by hand using shovels, picks, augers, etc. Larger cuttings may be planted using fencepost-pounders. The primary effort will be to

place the cuttings in the water table so that irrigation will not be required. Container stock will be planted by hand and will probably require irrigation. If planting is conducted during the growing season (April to November), the irrigation system will be installed prior to planting sites requiring water to prevent desiccation of plant materials.

The levee tops and miscellaneous planting areas will be planted mostly with container stock. Irrigation will be required during the growing season. The grass seed will be sown in the Fall before winter rains using a hand operated belly-grinder or similar seed spreader. If planting occurs in winter, the grass should be planted immediately on completion but no later than February 15th. To prevent seed loss to foraging wildlife species and to increase seed germination, the seed will be covered slightly by raking or dragging chainlink fencing over the seed. Straw mulch spread at the rate of 2 tons/acre will add moisture saving mulch and help stabilize the soils. If required and funds are available, erosion control blankets will be used. Blankets should be of the same quality and durability as the North American Green Blanket SC150 made of straw and coconut fiber.

3.5 IRRIGATION

Irrigation will be required for all plantings not planted sufficiently close to the water table to access adequate moisture for survival. This will include plants on the levee top and slopes and some of the miscellaneous areas. The Department of Fish and Game will take the lead on design and installation of the system.

The general layout will consist of a drip irrigation system and a portable pump used to pump water from the pond or river. A 3000 ft long, 2 inch PVC line will be buried along the top of the levee. Fifteen 3/4 inch risers will connect via 15 psi pressure regulators to 1/2 inch black line drip tubing. Two gal/hr drip emitters will be placed at each plant in the 1/2 inch line or at the end of 1/4 inch black drip line.

A 2 horse-power 2 inch pump will be installed at the mid-point of the 2 inch line. Water will be pumped from either the pond or the river, depending on depth to water table, distance, and water quality conditions. The pump will be modified to fit a large fuel tank for running the pump for an extended period of 15 to 20 hours. This will allow personnel to start the pump and let it run all day and night without refueling. The pump will be run twice per week for 20 hrs, giving each plant 80 gal. of water per week. A gravel and/or commercial filtration system will filter the water.

3.6 SITE PROTECTION

Plant depredation by beavers will likely be a problem, especially for the cuttings. Chicken wire will be placed around each row of cuttings where feasible. Individual plantings may be protected as losses become evident. The fencing will be supported with 2 inch grape stakes and be a minimum height of 3 ft. If depredation by other small mammals becomes substantial, other means of protection may become necessary, e.g. plastic mesh screens around individual plants, chemical repellants, or trapping. A certain amount of loss is expected to occur to foraging animals and is mitigated in the planting density; however, extreme losses are unacceptable.

Losses to vandalism can be minimized as well. The site is located on private land with limited access. Local landowners are supportive of and involved in the project which will help increase awareness and security for the site. Cryptic signs can be painted on the pump cage informing people of the value of the habitat enhancement project.

The drip system will be secured to the extent possible. The 2 inch line and as much of the black line tubing will be buried where possible. The pump will be secured in a welded, steel hardware cloth cage. The cage will have footings placed in cement and padlocks will lock the cage down. If adequate funding is unavailable for this setup, a pump will be transported to the site each week for watering. To save funds over time, the system can be removed and used again for other revegetation projects after the plants become established.

4.0 MONITORING PLAN

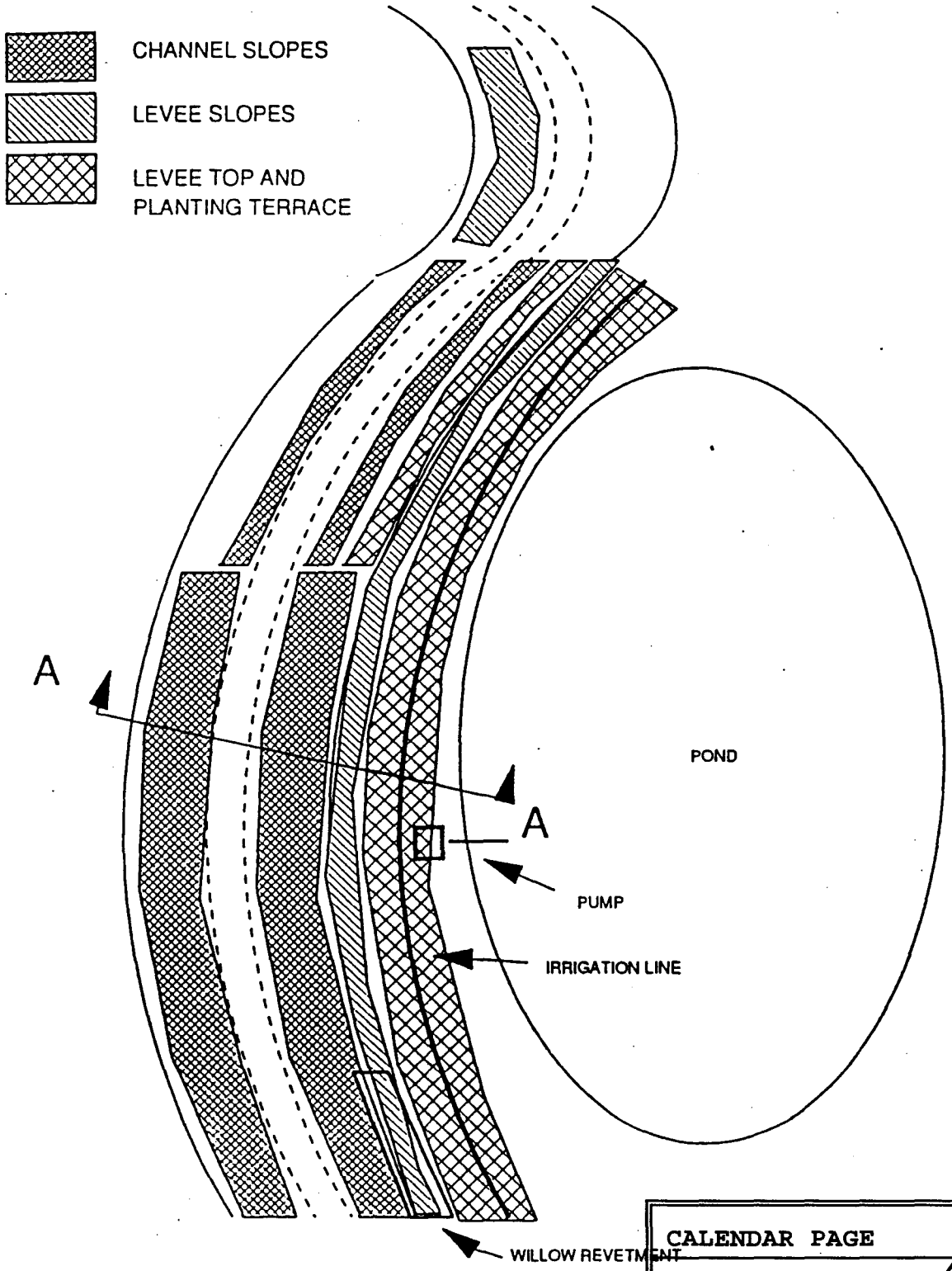
The site will be watered for 3 years or until the required number of plants become established. Site monitoring will continue for 10 years to ensure both the salmon and the revegetation species reestablish; lost plant species are replaced; project features remain stable; sedimentation and erosion are controlled; and project goals are attained.

5.0 PROJECT SCHEDULE

ACTION	1993 J	F	M	A	M	J	J	A	S	O	N	D	1994 J	F	M	A	M	J	J	A	S	O	N	D	1995	1996	1997-2004
stake and flag site	X																										
remove plant material	X																										
order nursery stock	X																										
construction					X	X	X																				
site preparation							X																				
irrigation sys. install								X																			
planting										X	X																
obtain additional cuttings											X																
seeding											X																
irrigation																	X	X	X	X	X	X	X	X	X	X	
monitoring																									X	X	X

FIGURE 1
PROJECT SITE
CRESSEY
ROAD J7
KNOWN VELB
LOCATIONS
HYW 99

FIGURE 2
Revegetation planting areas



CALENDAR PAGE	101
MINUTE PAGE	482

FIGURE 3
Planting area X-section A-A