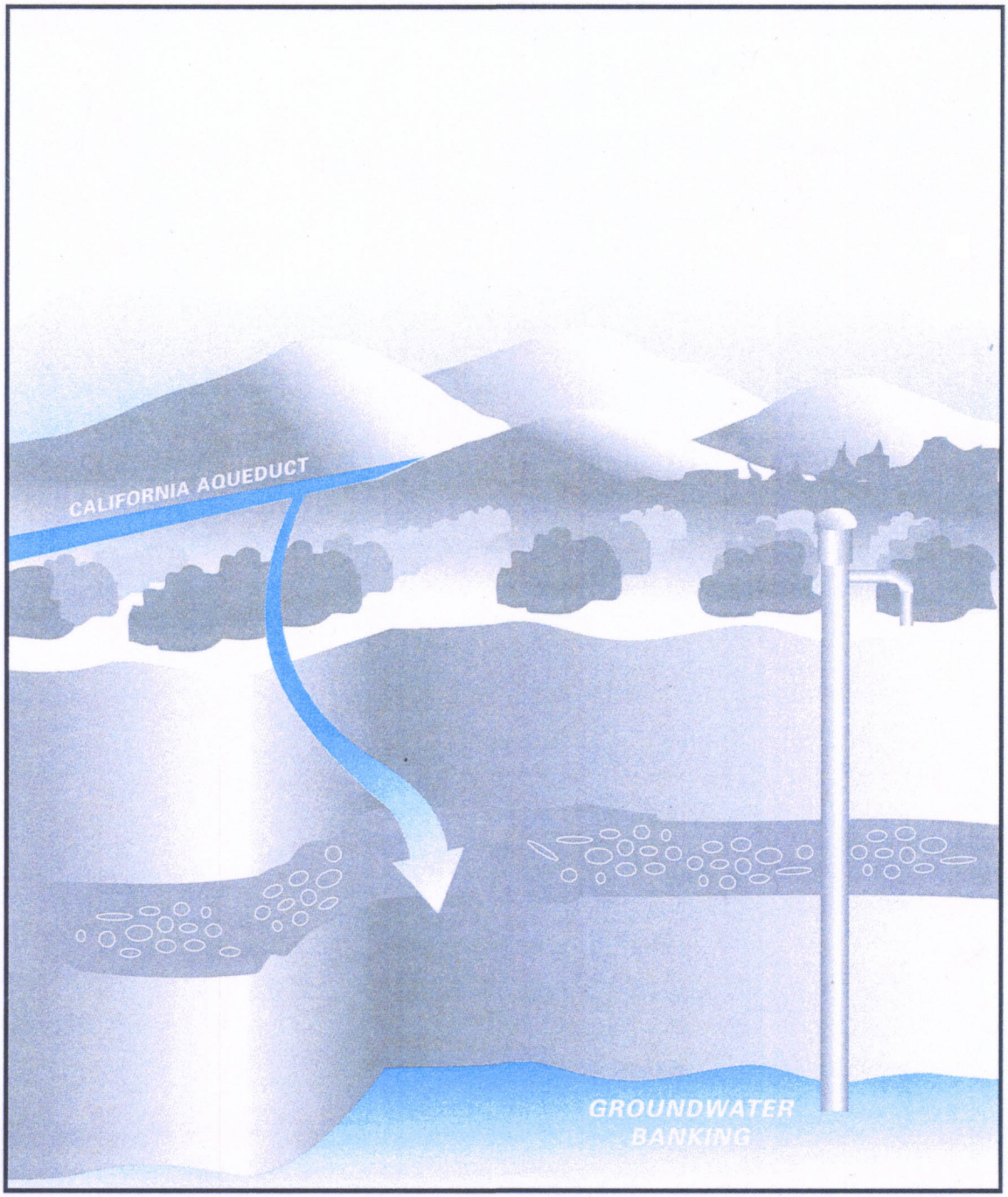

SEMITROPIC GROUNDWATER BANKING PROJECT

FINAL ENVIRONMENTAL IMPACT REPORT
Public Participation and Response to Comments

Semitropic Water Storage District

MWD
METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

July 1994

SEMITROPIC GROUNDWATER BANKING PROJECT
FINAL ENVIRONMENTAL IMPACT REPORT

Public Participation
and
Response to Comments

Prepared by the

SEMITROPIC IMPROVEMENT DISTRICT

of

THE SEMITROPIC WATER STORAGE DISTRICT

and

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

State Clearinghouse#
93072024

The following may be contacted for additional information regarding this document:

Wilmar L. Boschman
Engineer Manager
Semitropic Water Storage District
(805) 758-5113

Dirk Reed
Principal Engineer
Metropolitan Water District of
Southern California
(213) 217-6163

SEMITROPIC GROUNDWATER BANKING PROJECT

he following list of associated reports and documents are available for the Semitropic Groundwater anking Project:

- Environmental Impact Report
- Findings and Mitigation Monitoring Plan
- Public Participation and Response to Comments
- Biological Resources Technical Report

'he Environmental Impact Report, Findings, and Mitigation Monitoring Plan shall govern over the :nvironmental Planning Technical Report in the event of any discrepancies among the documents.

FINAL ENVIRONMENTAL IMPACT REPORT

PUBLIC PARTICIPATION

AND

RESPONSE TO COMMENTS

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CHAPTER 1 INTRODUCTION

HAPTER 1 INTRODUCTION

ıe Guidelines of the California Environmental ıality Act (CEQA) state that "the Lead Agency all evaluate comments on environmental issues ceived from persons who reviewed the Draft mitropic Groundwater Banking EIR and shall epare a written response."

compliance with these regulations, The Semitropic ıprovement District of the Semitropic Water orage District (Semitropic) and The Metropolitan ater District of Southern California (Metropolitan) leased the *Draft Environmental Impact Report for e Semitropic Groundwater Banking Project* for a -day public review and comment period on March , 1994. Copies of the Draft Environmental ıpact Report (EIR) were sent to agencies, ganizations, and individuals as required, and were ade available to the public upon request. A listing recipients is provided in Chapter 12 of the EIR. opies of the Draft EIR were also sent to public raries in Bakersfield, Shafter, and Wasco.

ıis volume provides a summary of the public mment and review period and contains an erview of the public comment management ocess, a listing of respondents, copies of the public eeting transcript and all written comment ocuments received, and the responses to the issues.

ne review of public comments served as one ement in the preparation of the Final EIR. Some sues addressed in the public comments led to onducting further analysis, reanalysis, and/or erification of data. All comments received in ccordance with CEQA guidelines have received sponses. Comments received and the responses to ıch are presented in this volume and are considered be a part of the Final EIR.

.1 PUBLIC REVIEW OF THE SEMITROPIC GROUNDWATER BANKING PROJECT

he 45-day public review and comment period for ıe Draft EIR began on March 29, 1994, and ended n May 13, 1994. During this review period, public omments on the Draft EIR were solicited. Written omments were submitted to Semitropic. Oral and ritten comments were received at a public meeting onducted during the 45 day comment period.

1.2 PUBLIC COMMENT MANAGEMENT PROCESS

During the public comment and review period, comments on the Draft EIR were received from federal, state, and local agencies and officials; organizations; and individuals. The comments included testimony at the public meeting (Table 1-1) (i.e., a transcript recorded by a court reporter), letters, and written statements submitted at the public meeting. Each of these are referred to as documents and all were given the same consideration in the review and analysis process. A total of 11 documents were received in addition to the transcripts from the public meeting.

Comments were analyzed and responses were prepared using a public comment management process. The purpose of this process was to analyze each comment received, formulate a response, and incorporate corrections, revisions, and necessary additional studies into the Final EIR. All documents were assigned a document number for purposes of identification and information tracking. A list of all individuals who provided oral comments at the public meeting are provided in Table 1-1. The list includes the individual's name, the page number of the public meeting transcript where their comments were recorded, and the page number of the response to their comments. A list of all respondents submitting written comments is provided in Table 1-2, identifying the author's name, affiliation

TABLE 1-1
SEMITROPIC GROUNDWATER BANKING DRAFT ENVIRONMENTAL IMPACT REPORT PUBLIC MEETING SPEAKERS

Speaker No.	Speaker	Comment and Response Page
1	Larry Ludy	5-64
2	Rick Weigis	5-85
3	Dennis Palla	5-87
4	Larry Ludy	5-92
5	Kane Totzke	5-95
6	Larry Ludy	5-96
7	Kane Totzke	5-103
8	Dennis Palla	5-103

(if appropriate), document number, and page numbers for the document and responses.

1.3 PUBLIC PARTICIPATION REPORT FORMAT

Presented in Chapter 2 of this report are the primary Public Involvement Issues and Brochures that were mailed out to Landowners within Semitropic and the public at large. Chapter 3 presents the Initial Scoping Process including the Notice of Preparation (NOP), Written Comments, and Transcripts of the Public Meeting. Agency coordination is discussed in Chapter 4. Chapter 5 presents the Written Comments and Public Meeting Transcript on the Draft EIR.

TABLE 1-2
SEMITROPIC GROUNDWATER BANKING
DRAFT ENVIRONMENTAL IMPACT REPORT
PUBLIC COMMENT DOCUMENTS

Document #	Agency/Organization	Document Page #	Response Page #
1	Buena Vista Water Storage District	5-9	5-121
2	Buttonwillow Land and Cattle Company	5-22	5-128
3	Department of Fish and Game, Region 4	5-23	5-128
4	Department of Transportation	5-29	5-131
5	Dooley & Herr, Attorneys At Law (North Kern Water Storage District)	5-30	5-132
6	Kern County Water Agency	5-36	5-135
7	Rosedale - Rio Bravo Water Storage District	5-38	5-135
8	San Joaquin Valley, Unified Air Pollution Control District	5-40	5-136
9	Shafter-Wasco Irrigation District	5-46	5-137
10	Governor's Office of Planning and Research	5-47	5-138
11	Dudley Ridge Water District	5-49	5-138

CHAPTER 2 ENVIRONMENTAL IMPACT REPORT INITIAL SCOPING

CHAPTER 2 ENVIRONMENTAL IMPACT REPORT-INITIAL SCOPING

2.1 INTRODUCTION

The Notice of Preparation (NOP) for the proposed project was distributed on July 1, 1993, for a public review period that ended on August 5, 1993. Semitropic held a public scoping meeting on July 15, 1993, at the Semitropic School located within the Semitropic Service Area approximately 9 miles west of the City of Wasco on State Highway 46. The purpose of the meeting was to present the Semitropic Groundwater Banking Project and to solicits comments regarding issues that should be addressed in the Draft EIR.

Semitropic publicized this meeting by including a full-page notice in the Semitropic Water Storage District Newsletter Summer 1993, and a two-column by 7-inch display ad in The Bakerslfied California (July 13). The Sacramento Bee (July 13), The Wasco Tribune (July 14), and The Shafter Press (July 14). In addition, an announcement was included in the NOP that was sent to public agencies, public libraries, area newspapers; and service organization.

2.2 PUBLIC SCOPING MEETING

On July 15, 1993, the Semitropic Water Storage District (Semitropic) hosted a public scoping meeting on the Environmental Impact Report (EIR) for its proposed groundwater banking project. Semitropic is serving as the lead agency for the EIR, with the Metropolitan Water District of Southern California (Metropolitan) serving as the responsible agency.

Approximately 20 people attended the meeting that took place at the Semitropic School near Wasco.

To open the meeting, the Chairman of the Semitropic Board and Semitropic's Engineer manager described the proposed project and why it is needed. They were followed by a Metropolitan representative who explained the EIR process. Finally, Semitropic invited the public to ask questions to comment on the project and the EIR. This summary presents public comments and questions and Semitropic's responses.

Question: Where will the money to build the project come from? Will Semitropic water users have an assessment levied on them?

Response: Metropolitan will provide the funds. It will pay Semitropic to store and return the water. Semitropic will use these funds to construct and operate the project.

Question: What is the estimated annual amount of water Metropolitan will store in the Semitropic groundwater basin?

Response: We are still evaluating that. Several variables affect this amount, such as when water is available, storage capacity, and constraints on the return of stored water. The EIR will have that information in it.

Question: Will Metropolitan be able to take its water out of the basin at any time?

Response: With certain agreed upon restrictions, Semitropic will return water at Metropolitan's request, through either groundwater extraction or State Water Project entitlement exchange.

Question: Will there be some safeguard like the 3 year/15 foot formula?

Response: Yes, the agreement being developed by Semitropic and Metropolitan will have several safeguards in it for Semitropic, the groundwater basin, and Metropolitan.

Question: If drought makes the local groundwater table lower than the historical norm, will there be a limit on Metropolitan's withdrawals?

Response: We will consider that in the EIR.

Question: If a stop-loss provision is invoked, what will happen to the remainder of Metropolitan's water?

Response: The agreement being developed by Semitropic and Metropolitan will have restrictions in it. Eventually, the groundwater basin would recover.

Question: Will losses be accounted for in the contact and EIR?

Response Yes, the agreement will specifically spell out the expected losses of the project. It will also provide for modifying the losses due to actual readings.

Question: What percent do you expect to be lost?

Response: Currently, losses are estimated at about 10 percent. We will evaluate these losses in more detail during the EIR process and during implementation of the project.

Question: Will there be a contract provision to make adjustments if the losses are higher than anticipated?

Response: Yes, the agreement will have provisions in it for modifying the losses due to actual readings.

Question: Are you addressing migratory losses in the EIR?

Response: Yes, we are analyzing all losses and groundwater benefits in the EIR.

Question: What new lands will be added to the Semitropic service area as a result of this agreements?

Response: As we anticipate it, only actively farmed lands within Semitropic could become part of this project.

Question: Will some areas in the district get short shrift on distribution?

Response: The purpose of the project is to help Semitropic provide a more reliable supply of water throughout its service area. Semitropic is intending to help everyone and short no one. Semitropic will monitor the project to make sure it operates as projected.

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2.3 NOTICE OF PREPARATION (NOP) OF DRAFT ENVIRONMENTAL IMPACT REPORT

Semitropic Water Storage District
BUTTONWILLOW IMPROVEMENT DISTRICT
POND-POSO IMPROVEMENT DISTRICT
SEMITROPIC IMPROVEMENT DISTRICT
P.O. BOX Z
WASCO, CALIFORNIA 93280
TELEPHONE (805) 758-5113 • 327-7144
FAX NO. (805) 758-3219

TO ALL CONCERNED PARTIES:

Notice of Preparation of a Draft Environmental Impact Report
for the Proposed Semitropic Groundwater Banking Project

The Semitropic Water Storage District (SWSD) has determined that the above referenced project may have a significant impact on the environment and that an Environmental Impact Report (EIR) should be prepared to address the following issues: biological resources, topography, soils, surface storage, construction-related noise, land use, air quality and traffic impacts, groundwater quantity and quality, local groundwater effects from pumping and recharge, growth-inducement, and cumulative impacts. A brief project description and project map are attached for your information. In addition, an Initial Study Checklist and Explanation of Responses are also attached, indicating potential environmental impacts of the proposed project.

The purpose of this notice is to inform you that an EIR is being prepared for this proposed project and to solicit your comments regarding the scope of the environmental issues that should be addressed in the EIR. Pursuant to Public Resources Code Section 21080.4(a), your response must be submitted to SWSD no later than 30 days after receipt of this Notice.

A public scoping meeting will be held at the time and location shown on the attached notice. Your attendance at these meetings will provide you with additional opportunities to learn more about the project and to comment on the scope and content of the draft EIR.

If you have any questions regarding the proposed project or would like additional information, please contact Wilmar L. Boschman, Engineer-Manager, at (805) 327-7144 or 758-5113. Thank you for your cooperation in this matter.

Sincerely,

Wilmar L. Boschman
Engineer-Manager

NOTICE OF PREPARATION OF AN ENVIRONMENTAL IMPACT REPORT

Semitropic Groundwater Banking Project
Kern County, California

This is to advise that the Semitropic Water District (SWSD) will serve as lead agency, and the Metropolitan Water District of Southern California (Metropolitan) will serve as the responsible agency under the California Environmental Quality Act (CEQA) in the preparation of a joint Environmental Impact Report (EIR) for the Semitropic Groundwater Banking Project. The proposed project will involve the construction, upgrade, and conjunctive use of various water conveyance facilities. The new facilities include turnouts, wells, pipelines, and canal enlargements adding to the existing water transport capacity of the SWSD system.

An Initial Study Checklist and Explanation of Responses has been prepared for this project to identify the range of possible environmental effects and identify those issues to be addressed in the EIR. Copies of the Initial Study are available upon request from SWSD at the address below.

A public scoping meeting will be held at 7:00 pm on July 15, 1993 at the Semitropic School located 9 miles west of the City of Wasco on Highway 46. If after review of the project information, you desire to provide written comments as to the scope and content of the EIR, your response should be send to the address indicated below at the earliest possible date, but not later than August 5, 1993. For additional information please write or call: Mr. Wilmar L. Boschman, Engineer-Manager, Semitropic Water Storage District, P.O. Box Z, Wasco, California 92380, (805) 327-7144 or (805) 758-5113.

Semitropic
Water
Storage
District

SEMITROPIC GROUNDWATER BANKING PROJECT
PROJECT DESCRIPTION

INTRODUCTION

1.0 SEMITROPIC WATER STORAGE DISTRICT

The Semitropic Water Storage District (SWSD) is located in north-central Kern County, about 20 miles northwest of the City of Bakersfield (Figure 1). The SWSD, which encompasses 221,000 acres, was organized in 1958 for the purpose of obtaining supplemental water for its lands from the State and Federal water projects. The predominant land use is agriculture and there are no incorporated cities within the SWSD.

2.0 EXISTING FACILITIES

State Water Project (SWP) water is delivered from the California Aqueduct through existing SWSD facilities which consist of approximately 41 miles of open canals for main conveyance, 137 miles of pipelines for lateral distribution, and 428 farm turnouts. These facilities were utilized during 1993 when the SWSD entered into an interim water banking program with the Metropolitan Water District of Southern California (Metropolitan) in which Metropolitan stored a portion of its 1992 SWP carryover water in the groundwater basin underlying the SWSD.

3.0 OBJECTIVES OF THE PROPOSED STUDY

There are three objectives of the proposed Semitropic Groundwater Banking Project:

- **Recharge groundwater and reduce overdraft.** The banking of supplemental surface water in the aquifer underlying the SWSD (through agreements with agencies such as Metropolitan) provides a way to reduce declines of groundwater levels. Additional advantages possible are the short-term decrease in pumping costs due to the reduced pumping lift needed and improvements in groundwater quality.

- **Optimize use and distribution of water resources.** Irrigation demands in the SWSD fluctuate annually with the highest demands occurring during the spring and summer seasons. Added flexibility provided by the conjunctive operation of surface and

groundwater supplies for irrigation could reduce the amount of pumping required during peak irrigation seasons. The supplemental stored water could also provide a way for the SWSD and its banking partners to optimize water resources by providing a place to store water when it is available.

- **Increase reliability and flexibility of water delivery.** As the existing conveyance facilities age, there is an increased potential that shutdown of these facilities due to routine maintenance activities or emergency conditions may cause interruptions in water deliveries. Additional stored water would provide operational reliability and flexibility to the SWSD and its banking partners during scheduled shutdowns and in the event of an emergency.

4.0 PROJECT ALTERNATIVES

Several alternatives to meet these objectives are described below. These are (1) groundwater banking of SWP water with Metropolitan, (2) expansion of the Department of Water Resources' (DWR) Kern Water Bank (KWB), and (3) desalination of agricultural drainage water. The no-project alternative is also discussed. The alternative which appears to meet all the objectives most effectively involves storing SWP water in the groundwater basin underlying the SWSD when such water is available.

4.1 GROUNDWATER BANKING PROJECT WITH METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

The proposed Semitropic Groundwater Banking Project is a long-term water storage project designed to optimize the distribution and use of available water resources between Semitropic and Metropolitan. Under this program, Metropolitan would deliver a portion of its SWP water to the SWSD during periods when such water is available. The SWSD could use this water in lieu of pumping groundwater for irrigation or could recharge the aquifer using spreading basins.

Upon request, the SWSD would return Metropolitan's water either by pumping the water from its groundwater basin through pumpback facilities and into the California Aqueduct, or by providing Metropolitan with an equivalent portion of SWSD's SWP water supply in exchange.

This project includes the following additional facilities:

(1) Additional Pipeline Distribution System - Approximately 100 miles of underground pipeline, 200 new turnouts and other improvements.

(2) Pumps - 42 new pumps, ten new pumping structures, and nine booster pumps.

(3) Canal Improvements - 20 miles of lining, 8.5 miles of canal enlargements.

(4) Groundwater Wells - 52 new groundwater wells.

The preliminary location of these proposed facilities is shown in Figure 2. Other pipeline alignments and locations for the facilities are also being assessed in order to identify the least environmentally damaging facility design.

4.2 EXPANSION OF DEPARTMENT OF WATER RESOURCES KERN WATER BANK

The KWB is planned by DWR and the Kern County Water Agency to be a SWP facility. It consists of a collection of separate projects (known as elements) for storing water and withdrawing it from the groundwater basin underlying Kern County. The SWSD has been considered as a potential element (the Semitropic Element) under this banking scheme.

The proposed Semitropic Element of the KWB would be implemented through a contractual relationship among DWR, the Kern County Water Agency, and the SWSD. Water storage could be accomplished by modifying the SWSD's current operations and increasing its overall capability of delivering supplemental surface water to its users. The facilities needed for this program would be similar to those described in Section 4.1[1]

4.3 DESALINATION OF AGRICULTURAL DRAINAGE WATER

Much of the agricultural drainage water in the San Joaquin Valley is brackish. Desalination of agricultural drainage water can be accomplished through desalters which remove dissolved solids, nitrates and other impurities. There are already a number of examples of this technology in Southern California. Many of the desalters use reverse osmosis and/or ion exchange to improve water quality. Other desalting facilities blend brackish with nonbrackish water to obtain potable water. Under this alternative, agricultural drainage water and brackish groundwater could be improved by reducing the total dissolved solids (TDS) and contaminants of concern, such as selenium and boron. The resulting water could be used to recharge the aquifer underlying the SWSD.

4.4 NO-PROJECT ALTERNATIVE

Under this alternative, the SWSD would not construct the proposed facilities. Existing facilities would be utilized to the maximum extent possible to recharge the aquifer underlying the SWSD through various water purchases financed by surface and groundwater banking programs similar to the 1993 interim agreement between the SWSD and Metropolitan. Annual fluctuations of the groundwater would continue to be extreme. The risk of water delivery interruptions due to system shutdowns would not be improved.

---

[1] See "Components of Feasibility Study of Semitropic Element of Kern Water Bank," A joint report prepared by the California Department of Water Resources, Kern County Water Agency, and the Semitropic Water Storage District, 1990.

5.0 SCHEDULE AND CONSTRUCTION

Construction of the project will begin in early 1994 and will be completed in approximately three years. All of the proposed facilities would occur on relatively open and level ground. A conventional open trench construction method will be used. Typical width of the construction zone will be approximately 100 feet. Each groundwater well requires a construction zone of 0.9 acres. Each pump plant requires a construction zone of 1.4 acres. Canal lining will be accomplished within the existing canal and on SWSD's existing maintenance roads. Excess excavation materials, if any, from pipeline and tunnel construction would be disposed in suitable locations.

INITIAL STUDY
ENVIRONMENTAL CHECKLIST

I. PROJECT INFORMATION

1. Project Name: Semitropic Groundwater Banking Project
2. Proponents: Semitropic Water Storage District and Metropolitan Water District of Southern California
3. CEQA Lead Agency: Semitropic Water Storage District
4. CEQA Responsible Agency: Metropolitan Water District of Southern California
5. Project Location: Within the Semitropic Improvement District of the Semitropic Water Storage District in Kern County
6. Agency and Department Preparing Initial Study: Semitropic Water Storage District and Metropolitan Water District of Southern California

II. ENVIRONMENTAL IMPACTS

Explanations for all responses are provided on attached sheets.

Issue Area	Potential Impact? Yes	Potential Impact? Maybe	Potential Impact? No	Is it Significant? Yes	Is it Significant? Maybe	Is it Significant? No
1. Geology, Soils, and Topography. *Will the proposal result in:*						
a. Change in topography or ground surface relief features?		X				X
b. Disruptions, displacements, complication or overcovering of the soil?	X				X	
c. Unstable earth conditions or changes in geologic substructures?			X			

Issue Area	Potential Impact? Yes	Maybe	No	Is it Significant? Yes	Maybe	No
d. The destruction, covering or modification of any unique geologic, paleontological or physical features?			X			
e. Any increase in wind or water erosion of soils, either on or off the site?	X				X	
f. Exposure of people or property to geologic hazards such as earthquakes, landslides, fault rupture, high seismicity, subsidence, liquifaction, expansive soils, mudslides, ground failure, or similar hazards?			X			
g. 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 any bay, inlet or lake?			X			
2. Water Resources. *Will the proposal result in:*						
a. Changes in currents, or the course of direction of water movements, in either marine or fresh waters?		X			X	
b. Changes in absorption rates, drainage patterns, or the rate and amount of surface runoff?		X			X	
c. Alterations to the course or level of flood waters?			X			
d. Exposure of people or property to water related hazards such as flooding or tidal waves			X			
e. Change in the amount of surface water in any water body?		X				X
f. Discharge into surface waters, or any alteration of surface water quality?		X				X

Issue Area	Potential Impact? Yes	Maybe	No	Is it Significant? Yes	Maybe	No
g. Change in the quantity of ground waters, through additions, withdrawals, change in recharge area, or through exposure of an aquifer by cuts or excavations?	X				X	
h. Change in groundwater quality?		X			X	
i. Alteration of the direction or rate of flow of ground waters?		X			X	
j. Reduction in the amount of water otherwise available for public water supplies?			X			
3. Air Quality. *Will the proposal result in:*						
a. Air emissions or deterioration of ambient air quality?	X				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			
4. Botanical Resources. *Will the proposal result in:*						
a. Change in the diversity of species, or number of any species of plants?			X			
b. Reduction of the numbers or habitat of any rare, endangered, or otherwise sensitive species of plants?		X			X	
c. Disturbance of any sensitive plant community or valuable tree specimens?		X			X	
d. Introduction of new species of plants into an area, or an impediment to the normal reproduction and growth of existing species?			X			

Issue Area	Potential Impact? Yes	Maybe	No	Is it Significant? Yes	Maybe	No
5. Fish and Wildlife. *Will the proposal result in:*						
a. Alteration or loss of fish or wildlife habitat?	___	X	___	___	___	X
b. Change in the diversity of species, or numbers of any species of animals (mammals, birds, amphibians, reptiles, fish, shellfish, benthic organisms or insects)?	___	___	X	___	___	___
c. Reduction of the numbers or habitat of any endangered or otherwise sensitive species?	___	X	___	___	X	___
d. Introduction of new species of fish or wildlife into an area, or result in a barrier to the migration or movement of species?	___	___	X	___	___	___
6. Agriculture. *Will the proposal result in:*						
a. Reduction in acreage or production of any agricultural crop?	___	X	___	___	___	X
b. Disruption of agricultural activities, including cropping and grazing?	___	X	___	___	___	X
c. Use of Williamson Act lands for non-agricultural uses?	___	X	___	___	X	___
7. Natural Resources. *Will the proposal result in:*						
a. Increase in the rate of extraction and use of any natural resources?	___	X	___	___	X	___
8. Cultural Resources. *Will the proposal result in:*						
a. Alteration or destruction of a prehistoric or historic archaeological site?	___	___	X	___	___	___
b. Adverse physical or aesthetic effects to a prehistoric or historic building, structure, or object?	___	___	X	___	___	___

Issue Area	Potential Impact? Yes	Maybe	No	Is it Significant? Yes	Maybe	No
c. A physical change which would affect unique ethnic cultural values?			X			
d. Restrict existing religious or sacred uses within the potential impact area?			X			
9. Land Use and General Plan Consistency. *Will the proposal result in:*						
a. Conflicts with existing land uses and community character?			X			
b. Conflicts with future planned land uses and community character?			X			
c. Inconsistency with General Plan policies?			X			
10. Recreation. *Will the proposal result in:*						
a. Impact upon the quality or quantity of existing and future recreational opportunities?		X			X	
11. Aesthetics. *Will the proposal result in:*						
a. 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			
12. Light and Glare. *Will the proposal result in:*						
a. New light or glare?			X			
13. Noise. *Will the proposal result in:*						
a. Increases in existing noise levels?		X				X
b. Exposure of people to disturbing noise levels?			X			
14. Population. *Will the proposal result in:*						
a. Alteration of the location, distribution, density, or growth rate of the human population of an area?			X			

Issue Area	Potential Impact? Yes	Maybe	No	Is it Significant? Yes	Maybe	No
15. Housing. *Will the proposal result in:*						
a. Affect existing housing, or create a demand for additional housing?	___	___	X	___	___	___
16. Transportation/Circulation. *Will the proposal result in:*						
a. Generation of additional vehicular movement and traffic volume?	___	X	___	___	___	X
b. Impact upon existing automobile transportation systems and circulation patterns?	___	X	___	___	___	X
c. Effects on existing parking facilities, or demand for new parking?	___	___	X	___	___	___
d. Alteration to waterborne, rail or air traffic?	___	___	X	___	___	___
e. Increase in traffic hazards to motor vehicles, bicyclists or pedestrians?	___	___	X	___	___	___
17. Public Services. *Will the proposal have an effect upon, or result in a need for new or 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	___	___	___
18. Utilities. *Will the proposal result in:*						
a. A need for new systems, or substantial alterations to public utilities?	___	X	___	___	___	X

Issue Area	Potential Impact? Yes	Maybe	No	Is it Significant? Yes	Maybe	No
19. Human Health. *Will the proposal result in:*						
a. Creation of any health hazard or potential health hazard (excluding mental health)?	___	X	___	___	X	___
b. Exposure of people to potential health hazards?	___	X	___	___	X	___
20. Risk of Upset. *Will the proposal result in:*						
a. A risk of an explosion or the release of hazardous substances (including, but not limited to, oil, pesticides, chemicals or radiation) in the event of an accident or upset conditions?	___	X	___	___	X	___
21. Energy. *Will the proposal result in:*						
a. Use of substantial amounts of fuel or energy?	___	X	___	___	___	X
22. Mandatory Findings of Significance. *Will the proposal result in:*						
a. 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 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	___	___	X	___
b. 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, definitive period of time while long-term impacts will endure well into the future.)	___	___	X	___	___	___

Issue Area	Potential Impact? Yes	Maybe	No	Is it Significant? Yes	Maybe	No
c. Impacts which are individually limited, but cumulatively considerable? (A project may impact on 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. Environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	___	___	X	___	___	___

III. DISCUSSION OF ENVIRONMENTAL EVALUATION

The proposed project will involve the construction and upgrade of various water conveyance facilities within the Semitropic Water Storage District (SWSD). The new facilities include approximately 100 miles of new or improved pipelines, 8.5 miles of canal enlargements, 52 new wells, 200 new turnouts, 20 miles of canal lining and other improvements. Using these new facilities, the Metropolitan Water District of Southern California (Metropolitan) could store a portion of its State Water Project (SWP) entitlement in the groundwater basin underlying the SWSD during periods when such water is available. Farmers in the SWSD would use this surface water in lieu of pumping groundwater for irrigation. Alternatively, Metropolitan's SWP water could also be stored in the groundwater using spreading basins. Upon request, the SWSD would return Metropolitan's stored water either by pumping the water from their groundwater basin, through a pumpback facility, and into the California Aqueduct, or by allowing Metropolitan to receive an equivalent portion of SWSD's SWP entitlement water in exchange.

IV. 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.

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

Wilmar L. Boschman
Engineer-Manager
Semitropic Water Storage District

7-01-93
Date:

V. EIR ISSUES OF FOCUS.

Biological resources; topography; soils; surface storage; construction-related noise; land use; air quality and traffic impacts; groundwater quality and quantity; local groundwater effects from pumping and recharge; growth inducement; cumulative impacts.

EXPLANATION TO RESPONSES
INITIAL STUDY CHECKLIST

Project: Semitropic Groundwater Banking Project

Agency: Semitropic Water Storage District

****

1. Geology, Soils, and Topography

a. The proposed project involves installation of buried pipelines in active agricultural land. Construction of this project would require short-term displacement of soil, with no change in topography or ground surface relief features. Some alternatives may include seasonal surface ponding of State Water Project water.

b. Soils would be graded and compacted during the installation of the pipelines.

c. The proposed project is not expected to uncover or expose any unstable earth conditions or geologic substructures.

d. Based on available information, no paleontological resources are known to occur within the proposed pipeline alignments.

e. There may be local increases in wind-generated fugitive dust at the construction locations during initial grading; however, this impact can be minimized by the use of a watering truck. Post-construction stabilization of the soil will eliminate any long-term impacts.

f. The proposed project does not cross a seismically active fault zone. No impacts related to geologic hazards are expected.

g. The pipelines will be buried at any river crossings and the streambed returned to pre-construction grade. As such, the project is not expected to change the patterns of sediment transport along any stream channels traversed.

2. Water Resources

a. The proposed project may have an effect on the quantity and timing of movement of surface water.

b. The proposed project involves water storage through irrigation of currently active agricultural fields.

c. The proposed project facilities would not alter flood levels because the facilities will be buried.

d. The proposed project would not alter flood hazard levels.

e. The proposed project may include seasonal surface ponding of State Water Project waters.

f. The proposed project may include seasonal surface ponding of State Water Project waters.

g. The proposed project would involve storage of water in the groundwater basin underlying the Semitropic Water Storage District. It would temporarily increase the amount of groundwater at the project site during storage periods.

h. The Semitropic Water Storage District already receives State Water Project water for irrigation use and groundwater recharge. Since the project also involves the storage of Metropolitan's State Project water, there may be beneficial changes in water quality associated with project implementation.

i. Raised groundwater levels resulting from recharge periods may cause changes in movement patterns of groundwater.

j. The project would increase the availability of public water supplies because the water stored in the groundwater basin would be used entirely for such purposes.

3. Air Quality

a. The project would result in increased localized fugitive dust, and emissions from vehicles and equipment during the construction period.

b. The project would not result in the generation of objectionable odors.

c. The project would have no effect on local climatic conditions.

4. Botanical Resources

a. The project will not result in a reduction in diversity of species. Several

rare, endangered, or other sensitive plant species potentially occur within the Semitropic Water Storage District, including the slough thistle (Federal candidate for listing), San Joaquin wooly-threads (Federal endangered species), California jewelflower (Federal endangered species), Lost Hills saltbush (Federal candidate for listing), Kern mallow (Federal endangered species), Hoover's eriastrum (Federal threatened species), and recurved larkspur (Federal candidate for listing).

b. The land-use along nearly all of the proposed pipeline alignments is agricultural. In most cases, pipelines will be installed either along roadways adjacent to active fields or within these fields. There may be a few instances in which fields which have been allowed to become fallow may support a few individuals of sensitive plants. Project impacts to these areas will be avoided as much as possible. To the extent that avoidance is not feasible, a small amount of sensitive plant acreage may be impacted. These impacts will be mitigated.

c. Some areas of the Goose Lake bed potentially support wetland species. Wetlands are considered to be sensitive communities. Impacts in this area will be avoided to the extent possible. All unavoidable impacts will be mitigated.

d. No introduction of new species will result from implementation of the project. Since the pipelines are buried, and nearly all of the land is in active agriculture, no impediment to the normal reproduction and growth of existing species is expected.

5. Fish and Wildlife

a. Construction of the project facilities may cause a disturbance to various fallow fields along the pipeline route. This disturbance would be temporary. The proposed project may also have an effect on the quantity and timing of movement of surface water supplies.

b. The project will not result in reduced species diversity. A number of rare, endangered, or otherwise sensitive wildlife species potentially occur within the Semitropic Water Storage District including the San Joaquin kit fox (Federal endangered species), Tipton kangaroo rat (Federal endangered species), the San Joaquin antelope squirrel (Federal candidate for listing), the blunt-nosed leopard lizard (Federal endangered species), the southwestern pond turtle (Federal candidate for listing), and others.

c. The land-use along nearly all of the proposed pipeline alignments is agricultural. In most cases, pipelines will be installed either along roadways adjacent to active fields or within these fields. There may be a

few instances in which fields which have been allowed to become fallow may support a few individuals of sensitive animals. Project impacts to these areas will be avoided as much as possible. To the extent that avoidance is not feasible, a small amount of sensitive wildlife acreage may be impacted. These impacts will be mitigated.

d. No introduction of new species will result from implementation of the project. Since the pipelines are buried, and nearly all of the land is in active agriculture, no impediment to the normal reproduction and growth of existing species is expected.

6. Agriculture

a. Implementation of the proposed project will probably not result in a long-term reduction in acreage or production of any agricultural crop. However, some reduction in agricultural acreage may occur during construction.

b. Implementation of the proposed project may result in disruption of agricultural activities is expected during project construction.

c. Implementation of the proposed project may affect Williamson Act lands. Further investigation is required to determine any possible impacts of significance.

7. Natural Resources

a. The proposed project may have an effect on the quantity and timing of movement of surface waters.

8. Cultural Resources

a. Based on available data, the proposed project is not expected to involve areas with prehistoric or historic archeological resources. Consequently, no alteration or destruction of sensitive archeological sites is anticipated.

b. There are no prehistoric or historic buildings, structures or objects within the proposed project boundaries. No adverse physical or aesthetic effects to such buildings, structures or objects will result from the proposed project.

c. Based on preliminary information, no unique ethnic resource would be adversely affected by the project.

d. Preliminary information indicates that the locations for the proposed

project facilities have not been used for religious purposes.

9. **Land Use and General Plan Consistency**

a. The proposed project is located within the Semitropic Water Storage District boundaries. Existing land uses primarily include agricultural and residential (semi-rural) areas. The proposed projects would not change or conflict with existing land uses and community character.

b. Implementation of the proposed project is not expected to affect future land uses.

c. The project facilities would occur on land owned by the project proponent and various private and public entities. These lands are subject to General Plan policies and Zoning Ordinances. Implementation of the proposed project would not affect land-use compatibility.

10. **Recreation.**

a. It is not anticipated that the quality and quantity of existing recreational opportunities will be affected by implementation of the proposed project. Future recreational opportunities may be enhanced by implementation of the proposed project within the Semitropic Water Storage District.

11. **Aesthetics**

a. The clearing of portions of the proposed pipeline alignments could cause a temporary visual intrusion. This type of impact would be short-term. No long-term visual impacts are anticipated since the pipelines will be buried.

12. **Light and Glare**

a. Construction activities would be restricted to daylight hours and there will be no new light or glare related to these activities. No impacts from construction light and glare are anticipated.

13. **Noise**

a. Construction of facilities would create temporary, local increases in noise levels due to construction equipment. Operation and maintenance of the proposed facilities are not expected to cause any substantial increase in ambient noise levels.

b. Since the primary land use in the vicinity of the proposed facilities is agriculture, there are few residents that will be exposed to increased short-

term noise levels resulting from construction. It is anticipated that any exposure to temporary increases in noise will not be significant.

14. Population

a. The proposed project will not alter the location and density of growth. The project is designed in response to adopted regional growth management plans. Construction would be accomplished with existing local contractors and would not require the importation of workers.

15. Housing

a. The proposed project will not require the acquisition of residential improvements, nor is it expected to directly create any additional demand for housing. The proposed project may affect access to existing housing during construction. It is not currently anticipated that the project will require removal of any residential units prior to construction.

16. Transportation/Circulation

a. There would be additional vehicular and truck traffic on local public roads and highways, and on private roads during construction. However, the volume of this short-term traffic is expected to be low and readily accommodated by available capacity on local public roads and highways.

b. The proposed project would not permanently alter existing public road systems or circulation patterns because no public road would be permanently closed or realigned as a result of the project. However, installation of the pipelines may require temporary closure of some roads and/or a diversion of traffic around the construction activities. This is expected to cause a temporary impact on local traffic flow and circulation patterns.

c. There would be a temporary demand for increased parking. All parking during construction would occur in specially designated temporary construction parking areas within the Semitropic Water Storage District.

d. Since the project area does not include waterborne, rail, or airport facilities, the proposed project would have no effect on these modes of transportation.

e. Construction-related traffic would be routed along existing roadways according to state requirements and is not expected to increase the level of hazards to other motorists, bicyclists or pedestrians using these roadways.

17. Public Services

a - f. The proposed project would basically entail construction and operation of new pipelines and wells. As such, it would not affect or require new public services including: fire protection; police protection; schools; parks and other recreational facilities; public services related to roads, sewerage, or flood control; or any other governmental services.

18. Utilities

a. Relocations of utilities may be required for construction.

19. Human Health

a - b. Construction activities may create situations which could pose potential health hazards to workers during construction of trenches.

20. Risk of Upset

a. Any breakage of a pipeline may cause localized flooding and inconvenience; however, there would be no release of hazardous substances. Fuels and oils associated with operation of construction equipment could be released in the event of an accident.

21. Energy

a. The new groundwater pumps would require additional electrical energy.

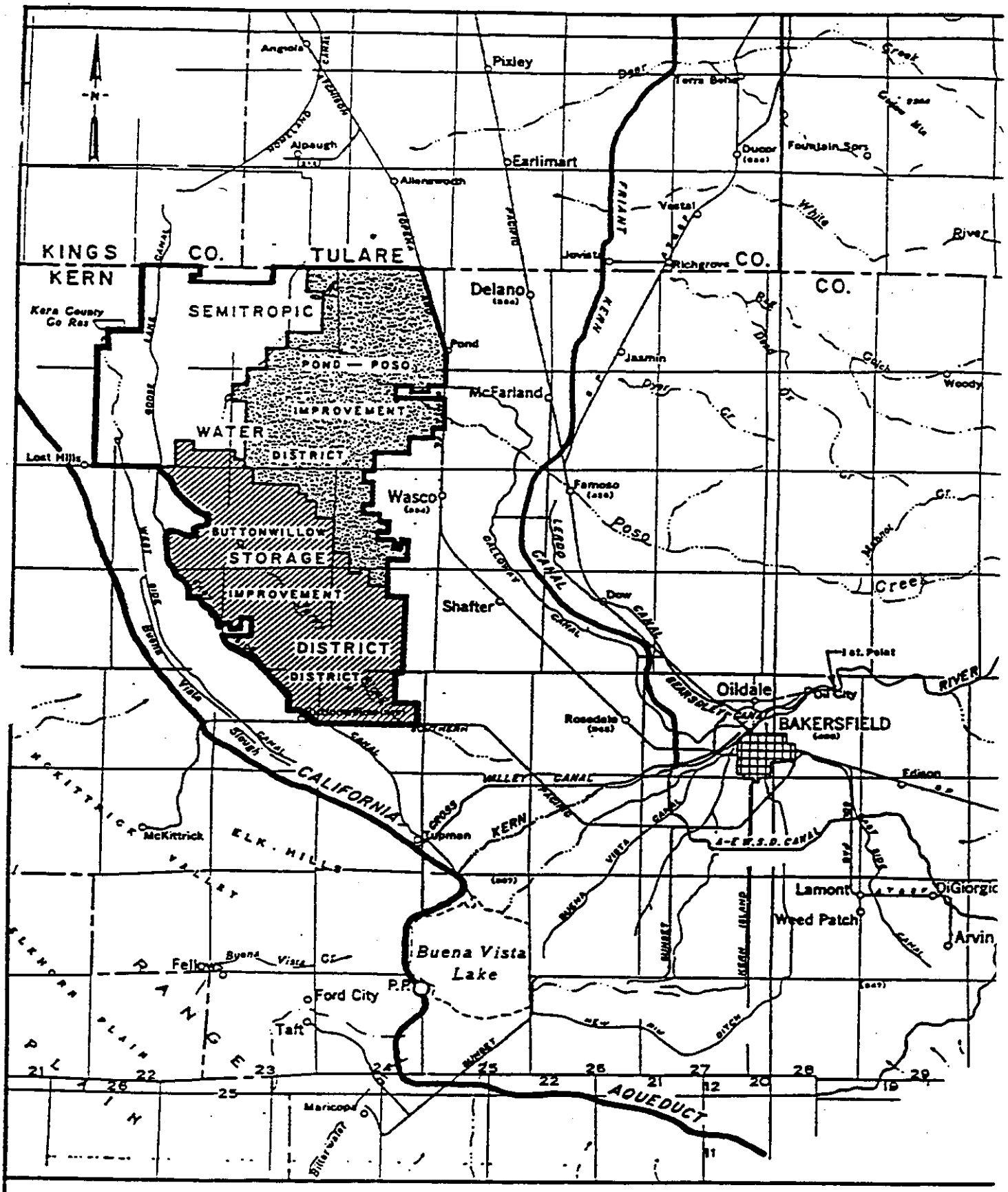
22. Mandatory Findings of Significance

a. The project may have an impact on threatened or endangered species. However, mitigation measures would be developed to avoid or minimize significant impacts.

b. Any mitigation measures designed for the proposed project will result in long-term environmental benefits.

c. It is not anticipated that the proposed project would have the potential to create significant cumulative impacts.

d. No indirect or direct substantial impacts to humans are anticipated.

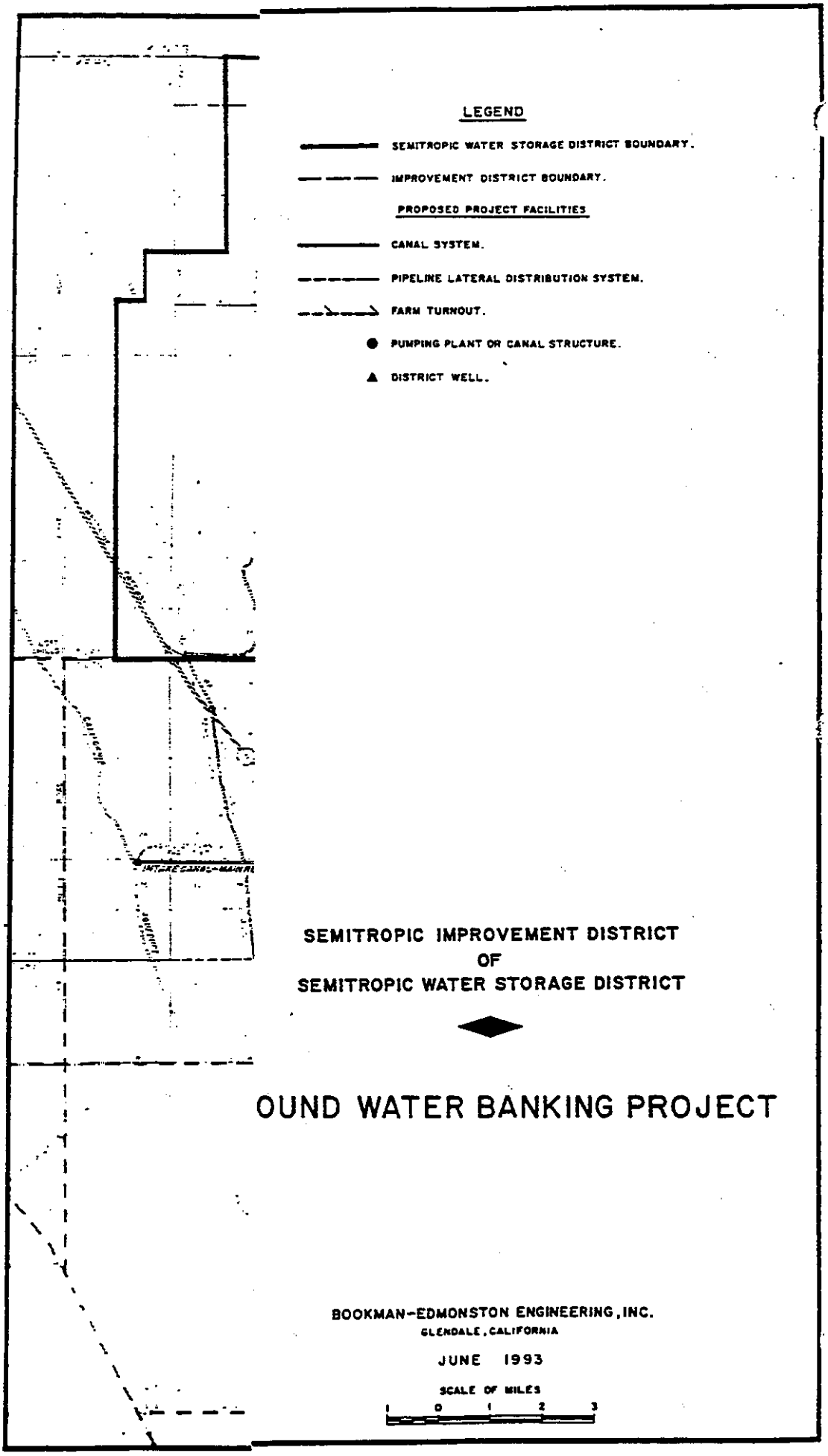


SEMITROPIC WATER STORAGE DISTRICT
KERN COUNTY, CALIFORNIA

LOCATION OF DISTRICT

SCALE OF MILES
10 0 10 20

Figure 1


LEGEND
SEMITROPIC WATER STORAGE DISTRICT BOUNDARY.
IMPROVEMENT DISTRICT BOUNDARY.
PROPOSED PROJECT FACILITIES
CANAL SYSTEM.
PIPELINE LATERAL DISTRIBUTION SYSTEM.
FARM TURNOUT.
PUMPING PLANT OR CANAL STRUCTURE.
DISTRICT WELL.
SEMITROPIC IMPROVEMENT DISTRICT
OF
SEMITROPIC WATER STORAGE DISTRICT
OUND WATER BANKING PROJECT
BOOKMAN-EDMONSTON ENGINEERING, INC.
GLENDALE, CALIFORNIA
JUNE 1993
SCALE OF MILES
1 0 1 2 3

SEMITROPIC WATER STORAGE PROJECT

NOTICE OF PREPARATION MAILING LIST

American Indian Council
of Central California
P.O. Box 3341
Bakersfield, CA 93385

Arvin-Edison Water Storage District
P.O. Box 175
Arvin, CA 93203

Beale Memorial Branch (Library)
701 Truxtun Avenue
Bakersfield, CA 93301
(805) 861-2135

Belridge Water Storage District
P.O. Box 1087
Bakersfield, CA 93302

Berrenda Mesa Water District
2100 "F" St., SU. 100
Bakersfield, CA 93301

Bookman-Edmonston Engineering, Inc.
100 North Brand Blvd., Suite 600
Glendale, CA 91203

Buena Vista Water Storage District
P.O. Box 756
Buttonwillow, CA 93206

California Air Resources Board
P.O. Box 2815
Sacramento, CA 95812

California Archaeological Inventory
Central San Joaquin Valley
Information Center
California State College, Bakersfield
9001 Stockdale Highway
Bakersfield, CA 93309

California Native Plant Society
909 12th Street, Suite 116
Sacramento, CA 95814

California Regional Water
Quality Control Board
Central Valley Region
Fresno Branch Office
3614 East Ashlan Avenue
Fresno, CA 93726

California Department of Conservation
Division of Mines and Geology
Attn: Steve Oliva
801 K Street, MS-24-02
Sacramento, Ca 95814

Caltrans, District 6
1352 West Olive Avenue
P.O. Box 12616
Fresno, CA 93778

Caltrans Planning Department
1120 N Street
Sacramento, CA 95814

Cawelo Water District
17207 Industrial Farm Road
Bakersfield, CA 93308-9801

City of Shafter
320 James
Shafter, CA 93263

City of Wasco
746 - E Street
Wasco, CA 93263

City of Bakersfield
1501 Truxtun Avenue
Bakersfield, CA 93301

Commission
Kern County
Agriculture Department
2610 "M" Street
Bakersfield, CA 93301

Department of Water Resources
P.O. Box 942836
Sacramento, CA 94236-0001

Department of Parks & Recreation
Attn: Mike Doyle
P.O. Box 942896
Sacramento, CA 94296-0001

Department of the Interior
U.S. Geological Survey
345 Middlefield Road
Menlo Park, CA 84025

Department of Food and Agriculture
Attn: Vashek Cervinka
1220 N Street
Sacramento, CA 95814

Department of Corrections
701 Scofield Avenue
Wasco, CA 93280

Dr. Janet Fahey
301 North Lake Avenue
Pasadena, CA 91101

Food and Agriculture Department
4800 Stockdale Highway
Bakersfield, CA 93309

Henry Miller Water District
P.O. Box 9759
Bakersfield, CA 93389-9759

Kern County Water Agency
P.O. Box 58
Bakersfield, CA 93302-0058

Kern Audubon Society
P.O. Box 3581
Bakersfield, CA 93385

Kern Delta Water District
P.O. Box 49216 Del Kern Station
Bakersfield, CA 93382

Kern River Fan Group
2001 - 22nd Street, SU. 100
Bakersfield, CA 93301

Kern National Wildlife Refuge
P.O Box 670
Delano, CA 93216

Kern County
Air Pollution Control District
1601 "H" Street, Suite 250
Bakersfield, CA 93301

Kern County Department of Planning
and Development Services
1103 Golden State Avenue
Bakersfield, CA 93301

Kern County
Public Works Department
2601 "O" Street
Bakersfield, CA 93301

Lost Hills Sanitary District
P.O. Box 246
Lost Hill, CA 93249

Lost Hills Water District
800 N. Chester Avenue
Bakersfield, CA 93308-3596

Metropolitan Water District
of Southern California
Attn: Ed Thornhill
P.O. Box 54153
Los Angeles, CA 90054-0153

Metropolitan Water District
of Southern California
Attn: Dirk Reed
P.O. Box 54153
Los Angeles, CA 90054

Native American Heritage Commission
915 Capitol Mall, Room 288
Sacramento, CA 95814

Newspapers
Bakersfield California
P.O. Box 440
Bakersfield, Ca 93302-0440

Shafter Press
107 E. Lerdo Hwy
Shafter, CA 93263

Wasco Tribune
911 - 7th Street
Wasco, CA 93280
(805) 758-3063

North Kern Water Storage District
P.O. Box 1195
Bakersfield, CA 93302

Office of Historic Preservation
Attn: Hans Kreutzberg
P.O. 942896
Sacramento, CA 94296-0001

Quad Consultants
9801 Camino Media
Bakersfield, CA 93311

Rosedale-Rio Bravo Water Storage District
P.O. Box 867
Bakersfield, CA 93302-0867

Semitropic Water Storage District
P.O. Box Z
Wasco, CA 93280

Shafter Branch (Library)
236 James Street
Shafter, CA 93263
(805) 746-2156

Shafter-Wasco Irrigation District
P.O. Box 158
Wasco, CA 93280

Sierra Club, Kern-Kawea Chapter
2815 LaCresta Drive
Bakersfield, CA 93304

Southern San Joaquin Municipal
Utility District
P.O. Box 279
Delano, Ca 93216

Stan Barnes, SMB-CE, Inc.
209 South Locust
Visalia, CA 93291

State of California
Department of Fish & Game
Attn: Ron Rempel
1234 East Shaw Avenue
Fresno, CA 93710

State of California
Department of Fish & Game
1234 East Shaw Avenue
Fresno, CA 93710

State Office of Intergovernmental Management
State Clearinghouse
1400 Tenth Street
Sacramento, CA 95814

State Water Resources Control Board
Division of Water Rights
P.O. Box 2000
Sacramento, CA 95810

State Lands Commission
1807 13th Street
Sacramento, CA 95814

State Water Contractors
555 Capitol Mall, SU 725
Sacramento, CA 95814-4502

U.S. Army Corps of Engineers
Sacramento District
650 Capitol Mall
Sacramento, CA 95814

U.S. Fish and Wildlife Service
Division of Ecological Services
2800 Cottage Way
Sacramento, CA 95825

U.S. Fish and Wildlife Service
Attn: Peter A. Cross
2800 Cottage Way, Room E-1803
Sacramento, CA 95825-1846

U.S. Environmental Protection Agency
Region 9
215 Fremont Street
San Francisco, CA 94105

Wasco Branch (Library)
1102 7th Street
Wasco, CA 93280
(805) 758-2114

Rag Gulch Water District
1820 21st Street
Bakersfield, CA 93301

Kern Tulare Water District
1820 21st Street
Bakersfield, CA 93301

West Kern Water District
P.O. Box MM
Taft, CA 93268-0024

Wheeler Ridge-Maricopa
Water Storage District
P.O. Box 9429
Bakersfield, CA 93389-9429

Young, Wooldridge, Paulden
Self & Farr Law Offices
Attn: Ernest A. Conant Esq.
1675 Chester Avenue, Fourth Floor
Bakersfield, CA 93301-5298

CHAPTER 3 PUBLIC COORDINATION

CHAPTER 3 PUBLIC COORDINATION

3.1 PUBLIC INVOLVEMENT OVERVIEW

Semitropic and Metropolitan have carried out a public involvement program to ensure that public concerns have been fully addressed in preparing the draft and final EIR for the Semitropic Groundwater Banking Project. The objectives of this public involvement effort have been:

- To increase public understanding of the need for additional water conveyance facilities and groundwater banking in the Semitropic area.
- To increase public familiarity with the facilities under consideration.
- To seek public identification and discussion of impacts of construction and operation of the project.
- To learn public opinion concerning the project.
- To respond to public questions and concerns.

Semitropic and Metropolitan sought and obtained public involvement on the Draft and Final EIRs through:

- Issuance of the Notice of Preparation (NOP) for the proposed project on July 1, 1993,
- A public scoping meeting as part of the NOP process on July 15, 1993, in Wasco, to determine issues of public concern to be addressed in the EIR,
- 10 meetings with surrounding agencies and interested groups on the EIR scoping process,
- 5 meetings with resource agencies on the EIR scoping process,
- Distribution of 90 copies of the Draft EIR for written public comment,
- 5 meetings with surrounding agencies and interested groups on the Draft EIR,
- 4 meetings with resource agencies on the Draft EIR,
- A public meeting on April 19, 1994, 9 miles west of the City of Wasco, to receive oral comments on the Draft EIR.

3.2 PUBLIC INVOLVEMENT ISSUES

This section summarizes the issues raised during the Notice of Preparation (NOP) process and the 45-day review period of the Draft EIR. Chapter 2 documents the NOP process. Chapter 4 documents agency coordination. Chapter 5 presents the Written Comments and Public Meeting Transcript on the Draft EIR.

3.2.1 Notice of Preparation

The NOP for the proposed project was distributed on July 1, 1993, for a public review period that ended on August 5, 1993. The specific issues raised by public agencies and service organizations during the public involvement process are summarized here based on written and verbal input received by Semitropic.

<u>SUMMARY OF COMMENTS FROM FEDERAL AGENCIES</u>

U.S. Fish and Wildlife Service:

> List the species which occur on or near the project site and are federally listed as endangered or threatened, proposed or candidates for federal listing; state listed; or species which are declining locally or are otherwise sensitive.

Discuss withdrawal of water from the Sacramento/San Joaquin River Delta.

Address conversion of wildlife habitat to agricultural land or other land uses because of the water diverted into Semitropic.

Discuss habitat loss and land conversion within the service area of Metropolitan resulting from this proposal.

U.S. Army Corps of Engineers:

No conflict with any project or other programs within their jurisdiction.

SUMMARY OF COMMENTS RECEIVED FROM STATE, REGIONAL, AND LOCAL AGENCIES

California Department of Water Resources:

Address withdrawal of groundwater and effects.

Address impacts to water schedules and operations as they apply to recharge and extraction activities.

Explain criteria governing recharge and extraction activities; list any limitations and priorities for use of facilities.

Indicate which alternative is preferred.

Impacts associated with spreading basins may reduce diversity of plant species.

Impacts associated with spreading basins, altered groundwater levels, etc., may be an impediment to normal reproduction and growth of existing plant species.

A possible significant alteration or loss of wildlife habitat, a change in diversity or number, and a barrier to the movement or migration of these species could occur.

Construction of 100 miles of pipeline may encounter archaeological sites since the general area of Goose Lake was used extensively by Native Americans.

California Department of Fish and Game:

Acre-feet of Metropolitan water that would be delivered to Semitropic on a monthly and yearly basis.

Habitat characterization and results of sensitive species surveys for all areas, including a 0.25-mile buffer area, which may be affected by the project.

An inventory of the wetland area within Goose Lake bed may be subject to changes in inundation frequency and/or level.

An analysis of the changes in the inundation regime (water quality, depth, duration, etc.) for wetlands within Goose Lake.

An analysis of the land use/cropping changes which may be associated with the project.

Results of San Joaquin kit fox studies conducted throughout Semitropic.

A map depicting any lands within Semitropic which currently have subsurface drainage problems or tile drains and lands which could have problems should additional surface water supplies become available.

An analysis of San Joaquin/Sacramento River Delta impacts (including delta smelt and Sacramento River winter-run chinook salmon impacts) associated with the diversion of water for this project.

Copies of State Water Project model runs with and without the project, incorporating current take restrictions of Delta pumping associated with the protection of Delta smelt and winter-run salmon.

A complete analysis of the interrelationships and cumulative biological impacts (both within Semitropic and the San Joaquin and Sacramento River (drainages) of this project, the Semitropic/Shafter-Wasco intertie pipeline project, the various elements of the Kern Water Bank, the Kern County Water Agency Kern Fan Project (Kern River Friant-Kern and SWP Pool Water) and other projects that Semitropic may be developing.

An analysis of the increased power generation from Semitropic small hydroelectric plant.

A complete project description including the size and location of all new and improved facilities (e.g., canals, Interstate 5 siphon, wells, recharge ponds, overflow basins).

An analysis of the impacts to the Colorado River ecosystem from additional water diversion to Metropolitan associated with this project.

City of Wasco:

Water quality and water supply issues to the City of Wasco, including whether the project has the potential to restrict or prevent water usage for urban purposes.

Cawelo Water District:

Assessment of the net effect on groundwater quantity and quality within the basin as a result of the proposed project.

North Kern Water Storage District:

Intended capacity of the project in terms of instantaneous recharge and extraction as well as total aggregate storage and extraction capacity.

Criteria to be utilized for determining which lands within Semitropic should be included within the in-lieu service area, and/or specific identification of such lands.

Criteria to be utilized for selection of extraction well sites.

Operational criteria to be utilized in determining where and when water is to be provided to in-lieu lands and criteria specifying when and from where water would be extracted.

Possible non-project utilization of project facilities, with criteria for such non-project use.

Procedures and programs to implement, monitor, and account for project operations.

Definition of the existing setting which may be affected by the project.

Operational alternatives and structural refinement of the project.

Evaluation of how the project would affect groundwater resources in and around the extraction areas. To the extent that the extraction area is not coterminous with the in-lieu area, specific consideration and evaluation must be given to the local and regional groundwater quantity and quality impacts of the project.

Alternatives should be considered which mitigate or avoid any impacts which might be created by the project.

Design of operation criteria.

Discussion of the non-project use of facilities.

Development of an area-wide groundwater monitoring program to monitor the groundwater conditions and various programs affecting groundwater within the bounds of the participating members.

A Mitigation Monitoring and Reporting Program would be part of the project approval procedure. It is recommended that such a program be centered around an agreement with surrounding districts, providing for groundwater monitoring programs and enforcement of operational criteria for the project.

SUMMARY OF COMMENTS FROM SERVICE ORGANIZATIONS

California Native Plant Society:

A botanical survey should be carried out during spring 1994.

The fall 1993 California Native Plant Society *Inventory of Rare and Endangered Vascular Plants* should be used in the EIR, in addition to federal and state listings.

Research does not show success with transplanting or reseeding sensitive plants into new unoccupied habitats as a way of re-creating the functions of the ecosystems in which the plants were originally found. If mitigation measures are required, it is preferable to acquire existing offsite habitat of high quality.

Kern Audubon Society:

Accommodation for endangered species and aquatic habitat for waterfowl and other animals dependent on wetlands.

Kern River Fan Group:

The banking program should not create an additional salt load to the groundwater basin. The total salt load of the net project water which is exported from the basin must equal or exceed the total salt load of the gross project water imported to the basin.

The 15-foot, 3-year criteria should not be relied upon exclusively. A technical committee, including representatives of the Kern River Fan Group, would review, among other things, any contemplated or actual extractions under the banking program to ensure that adequate care is taken to prevent groundwater degradation.

The project would provide facilities and/or monies which may be used in the future for the importation of additional water for overdraft correction. A commitment for its realization and specific information as to how this would be accomplished should be addressed.

3.2.2 Scoping Meeting

Semitropic initiated its public involvement program for the Semitropic Groundwater Banking Project with a public scoping meeting on July 15, 1993, at the Semitropic School located within the Semitropic area 9 miles west of the City of Wasco on State Highway 46. The purpose of the meeting was to present the Semitropic Groundwater Banking Project and to solicit comments regarding issues that should be addressed in the Draft EIR.

Semitropic publicized this meeting by including a full-page notice in the *Semitropic Water Storage District Newsletter*, Summer 1993, and a two-column by 7-inch display ad in The Bakersfield Californian (July 13), The Sacramento Bee (July 13), The Wasco Tribune (July 14), and The Shafter Press (July 14). In addition, an announcement was included in the NOP that was sent to public agencies, public libraries, area newspapers, and service organizations.

A total of 20 landowners, business people, government officials, representatives of environmental groups, and members of service organizations attended the scoping meeting. Public comments and questions generally focused on groundwater table stability, migratory losses of water, the distribution area, and effects on the local economy. Specific issues raised are summarized below:

GROUNDWATER TABLE STABILITY

What the annual amount of water stored by Metropolitan in the Semitropic groundwater basin will be;

When Metropolitan will be able to remove water from the groundwater basin; and

What types of safeguards there will be to protect groundwater levels.

MIGRATORY WATER LOSSES

Whether and how the EIR will address migratory losses;

The percentage of water expected to be lost; and

How losses will be accounted for.

DISTRIBUTION AREA

What lands will be included in the project.

Whether water distribution will be equitable.

EFFECTS ON LOCAL ECONOMY

Whether local water users will be assessed for project construction; and

How much it will cost to pump water from the groundwater basin back to the aqueduct and who will pay for the pumping.

3.2.3 Draft EIR Review

The 45-day public review and comment period for the Draft EIR began on March 29, 1994, and ended on May 13, 1994. Semitropic mailed copies of the Draft EIR to 90 agencies, organizations and individuals. Additional public review copies were made available at the Semitropic Water Storage District, the Metropolitan Water District of Southern California, the Bakersfield Main Library, the Shafter Branch Library, and the Wasco Branch Library.

Semitropic publicized the availability of the Draft EIR by publishing a legal notice in The Bakersfield Californian (April 4), The Sacramento Bee (April 4), The Los Angeles Times (April 4), The Wasco Tribune (April 6), and The Shafter Press (April 6). Following is a summary of the written comments received on the Draft EIR.

3.2.4 Public Meeting

To solicit oral comments on the Draft EIR, Semitropic held a public meeting on April 19, 1994, at the Semitropic School located within the Semitropic area 9 miles west of the City of Wasco on State Highway 46.

Semitropic publicized this meeting by including a full-page notice in the *Semitropic Water Storage District Newsletter*, Spring 1994, and a two-column by 7-inch display ad in; The Bakersfield Californian (April 11), The Wasco Tribune (April 13), and The Shafter Press (April 13). In addition, a meeting notice was mailed to all agencies, organizations, and individuals receiving the Draft EIR; and the legal notice announcing the availability of the Draft EIR (see 2.2.3 above) also announced the public meeting.

3.3 PUBLIC SCOPING MEETING WRITTEN COMMENTS

Mr. -

Kern Audubon Society
P.O. Box 3581 ☐ Bakersfield, CA 93385-3581

COPY

RECEIVED
JUL 29 1993
S.W.S.D.

July 28, 1993

Wilmar L. Boschman
Semitropic Water Storage District
P. O. Box Z
Wasco, CA 93280

Re: Groundwater Banking Project
Semitropic Water Storage District
Metropolitan Water District of Southern California

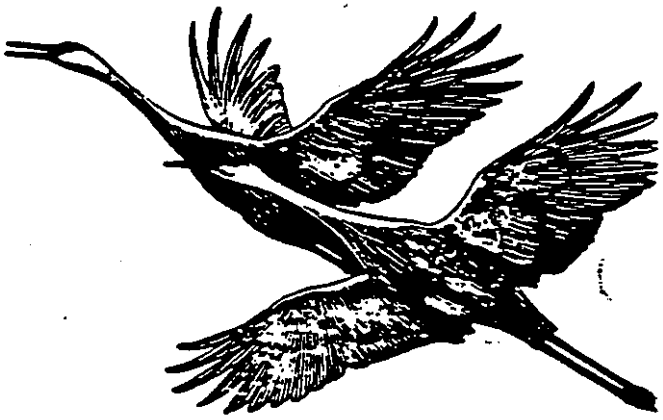
Dear Mr. Boschman,

Thank-you for a copy of the above referenced initial study. Kern Audubon is interested in this project because the Metropolitan Bakersfield Habitat Conservation Plan has identified Semitropic as a potential preserve. We hope there will be accommodation for endangered species and aquatic habitat for waterfowl and other animals dependent on wetlands. Perhaps in the future Audubon and the District can develop cooperative planning for sensitive areas that may be adversely impacted by water banking operations.

Sincerely,

Mary J. Griffin

Mary J. Griffin



STATE OF CALIFORNIA—THE RESOURCES AGENCY PETE WILSON, Governor

DEPARTMENT OF FISH AND GAME
REGION 4
234 E. Shaw Avenue
Fresno, CA 93710
(209) 445-6152

July 28, 1993

Mr. Wilmar Boschman
Engineer Manager
Semitropic Water Storage District
P.O. Box Z
Wasco, California 93280

Dear Mr. Boschman:

Notice of Preparation of a Draft Environmental Impact Report for the Semitropic Groundwater Banking Project, Kern County, California

We have reviewed the Initial Study/Notice of Preparation for Semitropic Water Storage and Metropolitan Water Districts' groundwater banking project in Kern County. Semitropic Water Storage District encompasses approximately 221,000 acres in north central Kern County approximately 20 miles northwest of Bakersfield.

The project would provide for delivery of a portion of Metropolitan Water District of Southern California (MWD) California Aqueduct water to Semitropic Water Storage District (SWSD) for surface irrigation use and direct aquifer recharge in "put" years. SWSD would return water to MWD by: 1) allowing MWD to take SWSD California Aqueduct Water (SWSD needs would be met by groundwater pumping); or (2) by pumping SWSD groundwater and returning it to the California Aqueduct for delivery to MWD; or (3) a combination of 1 and 2.

The objectives of the program are to recharge groundwater and reduce overdraft, optimize the distribution of water within SWSD, increase reliability and flexibility of water deliveries and provide storage for MWD State Water Project water that otherwise might not be placed in storage or allow for MWD to store water from other sources when available. Project components include 100 miles of new under ground pipeline, 200 new turnouts, 42 new pumps, ten new pumping structures, nine booster pumps, 20 miles of canal lining, enlargement of 8.5 miles of canal and development of 52 new groundwater wells. The project is scheduled for construction in 1994 with completion anticipated in 1997.

Lands within SWSD are used to grow a variety of crops which provide habitat for wildlife. In addition, the district also includes approximately 43,000 acres of high quality habitat for several threatened or endangered species including San Joaquin kit fox, San Joaquin antelope squirrels, blunt-nosed leopard lizards and Tipton kangaroo rats. These lands have been identified by an interagency working group (DFG, USFWS and Bureau of Land Management, DWR, Bureau of Reclamation) as being of preserve quality and potentially needed to recover these species. Additionally, Goose Lake provides the only significant wetlands habitat south of the Kern National Wildlife Refuge in the southern San Joaquin Valley.

The proposed project has the potential to directly impact threatened and endangered species, their habitat and wetlands. Indirect impacts from land use and cropping pattern changes may also result in adverse impacts to threatened and endangered species and wetlands.

MWD water for the project will be diverted from the Delta at the State Water Project pumps and shipped southward through the California Aqueduct. Delta pumping operations for the project may also result in the take of state and federally-listed species including the delta smelt and Sacramento winter-run chinook salmon.

To assess the potential impacts of the proposed project on public trust resources, we will need the following information:

(1) the acre feet of MWD water that will be delivered to SWSD on a monthly and yearly basis;

(2) biological data (habitat characterization, results of sensitive species surveys, etc.) for all areas (including a 1/4 mile buffer area) which may be directly impacted by the project (pipeline corridors, well sites, etc.)

(3) an inventory of the wetland area within Goose Lake bed which may be subject to changes in inundation frequency and or level;

(4) an analysis of the changes in the inundation regime (water quality, dept, duration, etc.) for wetlands within Gooselake;

(5) an analysis of the land use/cropping changes which may be associated with the project;

(6) results of San Joaquin kit fox studies conducted throughout the District,

(7) a map depicting any lands within the District which currently has sub-surface drainage problems or tile drains and lands which could have problems should additional surface water supplies become available,

(8) an analysis of San Joaquin/Sacramento River Delta impacts (including delta smelt and Sacramento River winter-run chinook salmon impacts) associated with the diversion of water for this project; (This analysis should clearly distinguish between water that is currently diverted and used or stored at other locations [identify location and acre-feet] and water which MWD may be entitled to through existing contracts but which is not currently received. Additionally, if storage capacity will be freed up in any SWP or MWD storage facility, the facility and acre feet of storage freed up should be identified);

(9) copies of SWP model runs with and without the project which incorporate take current restrictions on delta pumping associated with the protection of delta smelt and winter-run salmon,

(10) a complete analysis of the inter relationships and cumulative biological impacts (both within SWSD and the San Joaquin and Sacramento River drainages) of this project, the SWSD/Shafter-Wasco intertie pipeline project, the various elements of the Kern Water Bank, the Arvin-Edison/MWD project, the Kern County Water Agency Kern Fan Project (Kern River Friant-Kern and SWP Pool Water) and other projects that SWSD may be developing;

(11) an accurate analysis of the increased power generation from SWSD small hydro electric plant;

(12) a complete project description including the size and location of all new and improved facilities (e.g. canals, I-5 Siphon, wells, recharge ponds, over flow basins etc.); and

(13) an analysis of the impacts to the Colorado River ecosystem from additional water diversion to MWD associated with this project.

If you have any questions regarding the information needed by the Department, please contact Mr. Ron Rempel, Environmental Specialist IV at the address or telephone number listed on this letterhead.

Sincerely,

for/ George D. Nokes
Regional Manager

cc: Ms. Cindy Chadwick
Environmental Services
Sacramento

Mr. Peter Cross
US Fish and Wildlife Service

CAWELO WATER DISTRICT
17207 INDUSTRIAL FARM ROAD BAKERSFIELD, CALIFORNIA 93308-9766
(805) 393-6072
WATER ORDERS 393-6070
FAX 393-6073

JOHN L. JONES
DISTRICT MANAGER

August 3, 1993

Semitropic Water Storage District
P O Box Z
Wasco, Ca 93280

Att: Mr. Wilmar L Boschman, Engineer-Manager

Dear Will;

With respect to the Notice of Preparation of a Draft Environmental Impact Report for the Proposed Semitropic Groundwater Banking Project, Cawelo Water District encourages the scope of the environmental impact report include complete assessment of the net effect on groundwater quantity and quality within the basin as a result of the proposed Project.

Sincerely,

John L. Jones
District Manager

JLJ/ju

DOOLEY
& HERR
ATTORNEYS AT LAW

DANIEL M. DOOLEY
LEONARD C. HERR
KENNETH A. KUNEY
OF COUNSEL

3600 W. MINERAL KING
SUITE C
VISALIA, CA 93291

PHONE (209) 636-0200
FAX (209) 636-9759

COPY

RECEIVED
AUG - 4 1993
S.W.S.D.

August 3, 1993

Wilmar L. Boschman
Engineer-Manager
Semitropic Water Storage District
P.O. Box Z
Wasco, CA 93280

RE: Comments to Notice of Preparation of Draft Environmental Impact Report for the Proposed Semitropic Groundwater Banking Project.

Dear Mr. Boschman;

These comments are submitted on behalf of the North Kern Water Storage District ("NKWSD").

The proposed Semitropic Water Storage District Groundwater Banking Project (the "Project") is an important effort which has many potential benefits for the area. The Project may also have significant adverse impacts within the region depending upon how it is designed and operated. NKWSD appreciates the opportunity to provide comments and observations about the project at this early stage. These comments and NKWSD participation are intended to be constructive and contribute to a better and more successful project.

GENERAL COMMENTS

NKWSD operates a project which combines coordinated use of surface and groundwater for the benefit of the landowners within the boundaries of the District. Since beginning operation in 1950, NKWSD has introduced almost 7,000,000 acre feet of surface water. This effort by the District has been for the principal purpose of providing landowners within the District with a dependable long-term water supply. It is in the context of this primary NKWSD project purpose that the Project proposed by Semitropic is evaluated.

The following comments are also provided with a view of assisting and assuring Semitropic's compliance with the primary purposes of the California Environmental Quality Act ("CEQA") most particularly with CEQA's four primary objectives:

1) To inform public agencies and the public about potentially significant environmental effects of proposed projects;

2) To find ways that environmental damage can be avoided or substantially reduced;

3) To prevent significant avoidable damage to the environment by requiring changes in the project through use of feasible alternatives and mitigation measures; and

4) To disclose to the public the reason an agency chose to proceed with a project involving significant effects.

In order to fulfill the intent of CEQA, the project must be well defined and the range of alternatives sufficient to provide meaningful environmental comparison.

PROJECT DESCRIPTION

An accurate, stable and finite project description is an essential element of an informative and legally sufficient EIR. The project description must be sufficiently comprehensive to provide the reviewer of the EIR with a clear understanding of the project's technical, operational, economic and engineering characteristics.

The description of the Semitropic Project states that the program will include construction of 100 miles of new distribution pipeline, 200 new turnouts, 52 new extraction wells and various canal improvements and lift facilities. The description notes that the Project will allow Semitropic to: recharge groundwater and reduce overdraft; optimize use and distribution of water resources; and increase reliability and flexibility of water delivery system.

The description of the Project is much too general and therefore inadequate to allow NKWSD to evaluate the potential impacts of the Project on its operations. At a minimum the following detail must be included in the Project description before initiating the environmental review:

1) A statement of the intended capacity of the project in terms of instantaneous recharge and extraction as well as total aggregate storage and

extraction capacity;

2) Specification of criteria to be utilized for determining which lands within Semitropic will be included within the in-lieu service area, and/or specific identification of such lands;

3) Specification of criteria to be utilized for selection of extraction well sites;

4) Specification of operational criteria to be utilized in determining where and when water is to be provided to in-lieu lands and criteria specifying when and from where water will be extracted;

5) Identification of possible nonproject utilization of Project facilities, with criteria for such nonproject use; and

6) Specification of procedures and programs to implement, monitor and account for Project operation.

Inclusion of these matters in the Project description will more clearly define the Project and allow for more specific and thorough evaluation of potential impacts.

EXISTING ENVIRONMENTAL SETTING

Care should be given to clearly define the existing setting which may be impacted by the Project. The description of the existing environment must include a discussion of the regional and local settings.

This requirement is critical to fair and complete evaluation of some potential impacts. For example, the Project may in the aggregate be neutral in terms of impact on groundwater resources. However, it may have significant effects on a particular area depending upon how provision of in-lieu water and extraction operational criteria are established and implemented.

ALTERNATIVES

CEQA requires that a reasonable range of feasible alternatives be evaluated in the EIR. The alternatives included in the NOP are primarily alternative water supply programs. They include: expansion of the Department of Water Resources Kern Water Bank; desalination of Agricultural drainage water; and no project at all.

In order to fully consider the range of reasonable alternatives, the EIR should include operational alternatives and structural refinements of the Project. For example, alternatives that include the Project concept but develop less water or which restrict extraction to the in-lieu service area should be included. These alternatives may not develop as much water as the proposed Project. However, they may be equally or more feasible from a cost and environmental perspective.

SPECIFIC ISSUES

NKWSD has a number of specific concerns about the Project which should be evaluated in the EIR. Many of the following concerns were discussed in various communications with SWSD during consideration of the Semitropic Element of the Kern Water Bank. SWSD addressed some of the issues in its Resolution 91-5 approving the Negative Declaration for the proposed Semitropic Element of Kern Water Bank.

The following enumeration of issues is intended to include most, if not all, of the issues about which NKWSD has special concern. These issues should be specifically considered in the EIR evaluation.

GROUNDWATER IMPACTS

The EIR must carefully evaluate how the Project will impact groundwater resources in and around the extraction areas. To the extent that the extraction area is not coterminous with the in-lieu area, specific consideration and evaluation must be given to the local and regional groundwater quantity and quality impacts of the Project.

Additionally, the EIR should consider alternatives which mitigate or avoid any impacts which might be created by the Project. These may include modification of facilities or operational design. For example, facilities and/or operational criteria could be developed to insure that sufficient water is delivered in-lieu upgradient of the extraction wells to avoid adverse impacts on upgradient landowners.

Careful design of operational criteria can reduce or avoid impacts on neighboring landowners. The EIR should consider the full range of such operational parameters. A 15-foot rule was included in the project approval of the Semitropic Element of the Kern Water Bank. Similar and more specific parameters should be included.

NONPROJECT USE OF FACILITIES

The Project description does not include any discussion of nonproject use of the facilities. NKWSD is very concerned that use of Project facilities to pump other than Project banked water could have a very serious adverse impact on NKWSD and its landowners. The Project description should precisely identify any intended nonproject uses of the Project facilities as well as criteria limiting nonproject uses. The EIR should carefully evaluate the impacts on groundwater both locally and regionally which could result from such nonproject uses.

GROUNDWATER MONITORING AND OPERATION MANAGEMENT

NKWSD and SWSD have consistently supported the development of an area wide groundwater monitoring program. The magnitude of the presently proposed Project underscores the need to expedite the development of an acceptable program.

NKWSD and SWSD together with others have spent considerable time and effort in developing the framework of such a monitoring program. The proposed Initial Monitoring Program has been most recently articulated in an April 5, 1993 discussion draft. The purpose of the program would be to establish an "independent scorekeeper" to monitor the groundwater conditions and various programs affecting groundwater within the bounds of the participating members. Development of such a program is essential to the proper operation and management of the Project.

CEQA requires SWSD to include a Mitigation Monitoring and Reporting Program as a part of its Project approvals. NKWSD recommends that such program be centered around an agreement with surrounding districts which provides for the groundwater monitoring program and enforcement of operational criteria for the project. This procedure will insure an "independent scorekeeper" and provide a procedure for resolving problems that may arise in the future. Further, this approach will provide the umbrella under which future projects can be monitored.

CONCLUSION

NKWSD believes that the Project can be implemented in a manner which is benign as to NKWSD and its landowners and which also maximizes the benefit to SWSD. A full and complete EIR which addresses the issues identified herein is essential to the formulation of such a Project.

NKWSD remains committed to working cooperatively with SWSD to resolve issues of concern and implement proper monitoring procedures for our mutual benefit.

If you have questions or comments please call.

Sincerely,

DOOLEY & HERR

Daniel M. Dooley

Daniel M. Dooley

cc: North Kern Water Storage District
Stanley M. Barnes

MWD

THE CALIFORNIA NATIVE PLANT SOCIET

DEDICATED TO THE PRESERVATION OF CALIFORNIA NATIVE FLORA

August 3, 1993

Mr. Hilmar L. Boschman
Engineer-Manager
Semitropic Water Storage District
P.O. Box 2
Wasco, California 93280

RECEIVED
AUG - 4 1993
S.W.S.D.

Re: Preparation of a Draft Environmental Impact Report for the Proposed Semitropic Groundwater Banking Project

Dear Sir:

I am writing to express our concern for "Botanical Resources" that may be adversely affected by the proposed project. Our concerns include:

1. A botanical survey cannot adequately or accurately be carried out until spring of 1994, and your project start-up date is "early 1994". We urge you to carry out the botanical survey during the proper phenological period.
2. We urge you to use the new, fall 1993 Califor-

via Native Plant Society's <u>Inventory of Rare and Endangered Vascular Plants</u> in your draft EIR, in addition to federal and state listings. This new <u>Inventory</u> is to be published in fall, 1993.

3. We are very interested in seeing your mitigation plans for "sensitive plant acreage" and "wetland species." Research does not show success with transplanting or reseeding of sensitive plants into new "unoccupied" habitats as a way of recreating the functions of the ecosystems in which the plants were originally found. If mitigation measures are indeed required, we know it is preferable to acquire existing high quality habitat off-site.

We look forward to continuing a dialogue with you concerning your project. Please keep us informed of future developments by corresponding locally with

Randi McCormick
President, Kern Chapter
CNPS
5301 Office Park Dr. Suite 201
Bakersfield, CA 93301

and

Lucy Clark
Conservation Chair
CNPS
1619 9th Avenue
Delano, CA 93215

Sincerely,

Lucy Clark

N.W.D

CITY OF WASCO

746 8th Street P. O. Box 159 Wasco, California 93280 805-75[illegible]

August 3, 1993

RECEIVED
AUG - 5 1993
S.W.S.D.

Wilmar L. Boschman, Manager
Semitropic Water Storage District
P.O. Box Z
Wasco, Calif. 93280

Re: NOP for Semitropic Ground Water Banking Project

Dear Mr. Boschman:

Thank you for the opportunity to review the above mentioned project. Part of your project area is within the City of Wasco city limits as well as the City of Wasco Sphere of Influence. The long term ramifications of this project regarding water quality and water supply issues to the City of Wasco need to be discussed in the EIR. Does the project have the potential to restrict or prevent water usage for urban purposes?

We appreciate the opportunity to comment on this project. If you have any questions regarding the above please call me at (805) 758-3003, thank you.

Very truly yours,

Walter E. Cairns
Community Development Director

The City with a rosy future

STATE OF CALIFORNIA—THE RESOURCES AGENCY

DEPARTMENT OF WATER RESOURCES
1416 NINTH STREET, P.O. BOX 942836
SACRAMENTO, CA 94236-0001
16) 653-5791

COPY MWD

PETE WILSON, Governor

August 5, 1993

RECEIVED
AUG - 9 1993
S.W.S.D.

Mr. Wilmar L. Boschman
Semitropic Water Storage District
Post Office Box Z
Wasco, California 93280

Dear Mr. Boschman:

Notice of Preparation of a Draft Environmental Impact Report for the Proposed Semitropic Groundwater Banking Project
(SCH# 93072024)

The Department of Water Resources is a Responsible Agency for the subject project as defined in section 15381 of the California Environmental Quality Act guidelines of 1992, since two of the alternatives include State Water Project supplies and facilities.

The State Water Project Analysis Office within the Division of Operations and Maintenance has provided the following two comments:

- Semitropic's proposed project, described in Section 4.1, will require a contractual agreement among The Metropolitan Water District of Southern California, the Kern County Water Agency (Semitropic), and the Department of Water Resources.

- Article II: Environmental Impacts, Section 2g, discusses only the impact of increasing ground water storage in the area. It should also address withdrawal of ground water and consequent effects. (Semitropic's cover letter mentions both pumping and recharge effects.) Impacts to water schedules and operations as they apply to recharge and extraction activities should be addressed in detail, citing various benefits or possible conflicts. The criteria which will govern these activities should be explained and any limitations and priorities for use of facilities should be listed.

For further information or clarification of these comments please call Dan Flory at (916) 653-5942.

The San Joaquin District has the following specific comments:

INTRODUCTION

- 4.0 PROJECT ALTERNATIVES: Since the preferred alternative is identified only as storing SWP water and both alternatives 1 and 2 involve storing SWP water, which alternative is preferred?

INITIAL STUDY, ENVIRONMENTAL CHECKLIST
II. ENVIRONMENTAL IMPACTS

- **4. Botanical Resources.**

  a. The impacts associated with spreading basins may reduce diversity of plant species.

  d. The impacts associated with spreading basins, altered ground water levels, etc. may be an impediment to the normal reproduction and growth of existing species.

- **5. Fish and Wildlife.** If there is a possible significant reduction of numbers or habitat of endangered species (5. c.) then it should follow that:

  a. There is a possible significant alteration or loss of wildlife habitat.

  b. There is a possible significant change in diversity or numbers.

  d. There is a possible significant barrier to the movement or migration of these species.

- **8. Cultural Resources.** Construction of 100 miles of pipelines may encounter archaeological sites since the general area of Gooselake bottoms was used extensively by native Americans.

For further information or clarification of these comments, please call John M. Shelton at (209) 445-5137. Jack Erickson of the Division of Planning may comment directly at a later date.

Sincerely,

Carlos Madrid, Chief
Division of Local Assistance

cc: State Clearinghouse
1400 Tenth Street, Room 121
Sacramento, California 95814

LAW OFFICES
MCMURTREY & HARTSOCK
A PROFESSIONAL CORPORATION
2001 22ND STREET, SUITE 100
BAKERSFIELD, CALIFORNIA 93301

GENE R. MCMURTREY
ROBERT W. HARTSOCK
JAMES A. WORTH
CECILIA M. HORTON-BILLARD

AREA CODE 805
TELEPHONE 322-4417
FAX 322-8123

COPY

August 5, 1993

RECEIVED
AUG - 9 1993
S.W.S.D.

Semitropic Water Storage District
P. O. Box Z
Wasco, CA 93280

Attention: Wilmar Boschman

Re: Notice of Preparation of Draft
Environmental Impact Report
Proposed Semitropic Groundwater Banking Project

Dear Mr. Boschman:

On behalf of the Kern River Fan Group I am writing this letter in response to your request for comments on the above-referenced matter. In addition to the items listed in your "Notice of Preparation," you should ensure that the draft EIR addresses the following:

1. The banking program should not create an additional salt load to the groundwater basin. Thus, the total salt load of the net project water which is exported from the basin must equal or exceed the total salt load of the gross project water imported to the basin.

2. Your district should not rely exclusively on the "15-foot, 3-year criteria." Rather, in addition to said criteria, you should agree to form a technical committee (which includes representatives of the Kern River Fan Group) which will review, among other things, any contemplated or actual extractions under the banking program to ensure that adequate care is taken to prevent migration of poor quality groundwater resulting in groundwater degradation from occurring due to this program.

3. We understand that this project will not, in and of itself, result in a reduction of the basin overdraft occurring within Semitropic Water Storage District. However, we further understand that the project will provide facilities and/or monies which <u>may</u> be used in the future for the importation of additional water for overdraft correction. The draft EIR should include specific information as to how this will be accomplished and a <u>commitment</u> that it will in fact be accomplished.

Of course, we assume that all major issues surrounding groundwater banking programs will be thoroughly addressed by the environmental review process. We will submit further comments after receipt of the draft EIR.

Thank you for the opportunity to comment on the "Notice of Preparation."

Very truly yours,

James A. Worth

JAW:gg

cc: Kern River Fan Group Districts
Boyle Engineering; Attn.: Dan Schmidt
Harold Russell

\wp51\dist\gen\krfg\stwsd.ltr

MWD COPY

United States Department of the Interior

TAKE PRIDE IN AMERICA

FISH AND WILDLIFE SERVICE
Ecological Services
Sacramento Field Office
2800 Cottage Way, Room E-1803
Sacramento, California 95825-1846

In Reply Refer To:
1-1-93-TA-1183

August 4, 1993

RECEIVED
AUG - 9 1993
S.W.S.D.

Mr. Wilmar L. Boschman
Engineer-Manager
Semitropic Water Storage
P.O. Box Z
Wasco, California 93280

Subject: Species List and Comments for Proposed Semitropic Groundwater Banking Project, Semitropic Water Storage District, Northwest of Bakersfield, Kern County, California

Dear Mr. Boschman:

The enclosed list replies to your undated letter received July 6, 1993, requesting information on listed and proposed endangered and threatened species that may occur within the proposed planning area (Enclosure A). Some pertinent information concerning the distribution, life history, habitat requirements, and published references for the listed species is also enclosed.

Information and maps concerning candidate species in California are available from the California Natural Diversity Data Base, a program of the California Department of Fish and Game. Address your request to: Marketing Manager, California Department of Fish and Game, Natural Diversity Data Base, 1416 Ninth Street, Sacramento, California 95814 [(916) 324-0562]. You should also request additional information from the Chief, California Department of Fish and Game, Non-Game Heritage Program (916) 324-8348.

All listed species identified in Enclosure A are fully protected under the mandates of the Endangered Species Act, as amended, (Act). Section 9 of the Act and its implementing regulations prohibit the "take" of a federally listed wildlife species. Take is defined by the Act as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect" any such wildlife species. Take may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or shelter (50 CFR § 17.3).

Take incidental to an otherwise lawful activity may be authorized by one of two procedures. If a Federal agency is involved with the permitting, funding, or carrying out of this project, then initiation of formal consultation between that agency and the U. S. Fish and Wildlife Service (Service) pursuant to Section 7 of the Act is required if it is determined that the proposed project may affect a federally listed species. Such consultation would result in a biological opinion that addresses anticipated effects of the project to

listed and proposed species and may authorize a limited level of incidental take. If a Federal agency is not involved with the project, and federally listed species may be taken as part of the project, then an "incidental take" permit pursuant to Section 10(a) of the Act should be obtained. The Service may issue such a permit upon completion by the permit applicant of a satisfactory conservation plan for the listed species that would be affected by the project.

We recommend that the scope of the Environmental Impact Report be broad enough to include an assessment of the impacts to federally listed species caused by (1) the withdrawal of water from the Sacramento/San Joaquin River Delta, (2) the conversion of wildlife habitat to agricultural land or other land uses because of the water diverted into the Semitropic Water Storage District from this proposed project, and (3) habitat loss and land conversion within the service area of the Metropolitan Water District resulting from this proposal.

Because federally listed species may be found in the project area, we recommend that surveys for them be undertaken by qualified biologists during or prior to the environmental review process. We also recommend that surveys be undertaken for the candidate species included in Enclosure A. The results of these surveys should be published in any environmental documents prepared for this project.

Should these surveys determine that federally listed species occur in the area and are likely to be affected by the proposed project, the Service recommends that the project proponent, in consultation with this office and the California Department of Fish and Game, develop a plan that mitigates for the project's direct and indirect impacts to listed species and compensates for project-related loss of habitat. The mitigation plan also should be included in the environmental document.

We also recommend addressing adverse impacts to candidate species. One of the benefits of considering these species early in the planning process is that by exploring alternatives, it may be possible to avoid conflicts that could develop, should a candidate species become listed before the project is complete.

We appreciate your concern for endangered species. If you have further questions, please call Laurie Stuart Simons of this office at (916) 978-4866. For questions concerning the threatened winter-run chinook salmon, please contact Jim Lecky, Endangered Species Coordinator, at the National Marine Fisheries Service, Southwest Region, 501 West Ocean Boulevard, Suite 4200, Long Beach California 90802-4213, or call him at (310) 980-4015.

Sincerely,

for Wayne S. White
Field Supervisor

Enclosures

cc: National Marine Fisheries Service, Southwest Region, Attn: Jim Lecky, 501 West Ocean Boulevard, Suite 4200, Long Beach California 90802-4213
Mr. Ron Remple, California Department of Fish and Game, 1234 East Shaw, Fresno, California 993710

ENCLOSURE A

LISTED AND PROPOSED ENDANGERED AND THREATENED SPECIES AND CANDIDATE SPECIES THAT MAY OCCUR IN THE AREA OF THE PROPOSED SEMITROPIC GROUNDWATER BANKING PROJECT, SEMITROPIC WATER STORAGE DISTRICT, NORTHWEST OF BAKERSFIELD, KERN COUNTY, CALIFORNIA (1-1-93-TA-1183, JULY 30, 1993)

Listed Species

Fish

winter-run chinook salmon, *Oncorhynchus tshawytscha* (T)
delta smelt, *Hypomesus transpacificus* (T)

Reptiles

blunt-nosed leopard lizard, *Gambelia silus* (E)

Invertebrates

valley elderberry longhorn beetle, *Desmocerus californicus dimorphus* (T)

Plants

California jewelflower, *Caulanthus californicus* (E)
Kern mallow, *Eremalche kernensis* (E)
Hoover's wooly-star, *Eriastrum hooveri* (T)
San Joaquin wooly-threads, *Lembertia congdonii* (E)

Proposed Species

None

Candidate Species

Fish

Sacramento splittail, *Pogonichthys macrolepidotus* (2■)
green sturgeon, *Acipenser medirostris* (2R)
longfin smelt, *Spirinchus thaleichthys* (2R■)

Amphibians

western spadefoot toad, *Scaphiopus hammondi hammondi* (2R)

Reptiles

northwestern pond turtle, *Clemmys marmorata marmorata* (2■)
southwestern pond turtle, *Clemmys marmorata pallida* (1■)

Birds

tricolored blackbird, *Agelaius tricolor* (2)
white-faced ibis, *Plegadis chihi* (2)
mountain plover, *Charadrius montanus* (2)
loggerhead shrike, *Lanius ludovicianus* (2)
western snowy plover, interior population, *Charadrius alexandrinus nivosus* (2■)

Mammals

Pacific western big-eared bat, *Plecotus townsendii townsendii* (2)
Nelson's antelope ground squirrel, *Ammospermophilus nelsoni* (2)
short-nosed kangaroo rat, *Dipodomys nitratoides brevinasus* (1)
Tipton kangaroo rat, *Dipodomys nitratoides nitratoides* (E)
giant kangaroo rat, *Dipodomys ingens* (E)

Plants

heartscale, *Atriplex cordulata* (2)
Lost Hills saltbush, *Atriplex vallicola* (2)
slough thistle, *Cirsium crassicaule* (2)
dune larkspur, *Delphinium parryi* ssp. *blochmaniae* (2)
recurved larkspur, *Delphinium recurvatum* (2)
Smooth tarplant, *Hemizonia laevis* (2R)

(E)--Endangered (T)--Threatened (P)--Proposed (CH)--Critical Habitat
(1)--Category 1: Taxa for which the Fish and Wildlife Service has sufficient biological information to support a proposal to list as endangered or threatened.
(2)--Category 2: Taxa for which existing information indicated may warrant listing, but for which substantial biological information to support a proposed rule is lacking.
(1R)-Recommended for Category 1 status.
(2R)-Recommended for Category 2 status.
(■)--Listing petitioned.
(*)--Possibly extinct.

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

RIN 1018–AB66

Endangered and Threatened Wildlife and Plants; Determination of Threatened Status for the Delta Smelt

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: The Fish and Wildlife Service (Service) determines threatened status for the delta smelt (*Hypomesus transpacificus*), pursuant to the Endangered Species Act of 1973, as amended (Act). This osmerid fish species occurs only in Suisun Bay and the Sacramento-San Joaquin estuary (known as the Delta) near San Francisco Bay, California. The delta smelt has declined nearly 90 percent over the last 20 years, and is primarily threatened by large freshwater exports from the Sacramento River and San Joaquin River diversions for agriculture and urban use. The prolonged drought, introduced nonindigenous aquatic species, reduction in abundance of key food organisms, and agricultural and industrial chemicals also threaten this species. The final decision on the determination of critical habitat included in the proposed rule is postponed in accordance with section 4(b)(6)(C)(ii) of the Act. This rule implements the protection and recovery provisions afforded by the Act for the delta smelt.

EFFECTIVE DATE: April 5, 1993.

ADDRESSES: The complete file for this rule is available for public inspection, by appointment, during normal business hours at the U.S. Fish and Wildlife Service, Sacramento Field Office, 2800 Cottage Way, E–1803, Sacramento, California 95825–1846.

FOR FURTHER INFORMATION CONTACT: Nadine R. Kanim (see ADDRESSES section) at 916/978–4866.

SUPPLEMENTARY INFORMATION:

Background

The delta smelt originally was classified as the same species as the pond smelt (*Hypomesus olidus*), but Hamada (1961) and Moyle (1976, 1980) recognized the delta smelt as a distinct species. Hamada retained the name *H. olidus* for the delta smelt and renamed the pond smelt *H. sakhalinus*. In 1963, McAllister renamed the delta smelt from *H. olidus* to *H. transpacificus*, with a Japanese subspecies (*H. t. nipponensis*) and a California subspecies (*H. t. transpacificus*). More recent taxonomic work has shown that these subspecies should be recognized as species, the delta smelt being *H. transpacificus* and the Japanese smelt being *H. nipponensis* (Moyle 1980).

The delta smelt was described as follows by Moyle *et al.* (1989): A slender-bodied fish typically 60–70 mm (2.36–2.76 in) in standard length (SL), although a few may attain 120 mm (4.73 in) SL. Live fish are nearly translucent and have a steely-blue sheen to their sides. Occasionally there may be one chromatophore between the mandibles, but usually none is present. Its mouth is small, with a maxilla that does not extend past the mid-point of the eye. The eyes are relatively large; the orbit width is contained about 3.5–4 times in the head length. Small, pointed teeth are present in the upper and lower jaws. The first gill arch has 27–33 gill rakers and there are 7 branchiostegal rays. There are 9–10 dorsal fin rays, 8 pelvic fin rays, 10–12 pectoral fin rays, and 15–17 anal fin rays. The lateral line is incomplete and has 53–60 scales along it. There are 4–5 pyloric caeca.

From the analysis of length-frequency data, scientists have determined that the delta smelt is primarily a species with a 1-year (annual) life span (Moyle *et al.* 1992). Juvenile delta smelt are 40–50 mm (1.58–1.97 in) fork length (FL) by early August. They become sexually mature adults when 55–70 mm (2.17–2.76 in) FL. Although the largest delta smelt on record is 126 mm (4.96 in) FL, this species rarely grows larger than 80 mm (3.15 in) FL (Stevens *et al.* 1990). By June, delta smelt longer than 50 mm (1.97 in) FL are rare throughout their range, indicating that adult delta smelt die after spawning.

Historically, the delta smelt occurred from Suisun Bay upstream to the city of Sacramento on the Sacramento River and Mossdale on the San Joaquin River (Moyle *et al.* 1992). It is the only smelt endemic to California and the only true native estuarine species found in the Delta (Moyle *et al.* 1989, Stevens *et al.* 1990, and Wang 1986). The delta smelt is a euryhaline species (species adapted to living in fresh and brackish water) that occupies estuarine areas with salinities below 2 grams per liter (parts per thousand, ppt), rarely occurring in estuarine waters with more than 10–12 ppt salinity, about one-third sea water (Ganssle 1966, in Moyle 1976).

Delta smelt historically congregated in upper Suisun Bay and Montezuma Slough (mainly during March to mid-June) when the Sacramento and San Joaquin river flows were high. During very high river outflows some smelt may be washed into San Pablo Bay, but the rapidly restored higher salinities do not allow permanent populations of delta smelt to become established. Because of sustantial human-caused changes in the relative ratios of seasonal freshwater outflows, the center of delta smelt abundance has shifted to the Sacramento River channel in the Delta in the years since 1981 (Moyle *et al.* 1992). Delta smelt are now rare in Suisun Bay, and virtually absent from Suisun Marsh where they once were seasonally common. Even though suitable spawning and nursery habitat conditions occur less frequently in Suisun Bay than previously, when these conditions are present, they provide for increased levels of delta smelt recruitment that augment overall population levels. These suitable conditions occur when the mixing zone between salt water and freshwater is located in Suisun Bay.

Delta smelt have a low fecundity, producing 1,247–2,590 eggs per female (Moyle *et al.* 1992), when compared to two other species of Osmeridae occurring in California that exhibit fecundities from 5,000–25,000 eggs per female (Moyle 1976). Delta smelt spawn in freshwater at temperatures from about 7–15 degrees Celsius (°C) between February and June. Most spawning occurs in the dead-end sloughs and shallow edge-waters of channels in the western Delta; spawning also has been recorded in Montezuma Slough near Suisun Bay and far upstream in the Sacramento River near Rio Vista (Radtke 1966, Wang 1986). The adhesive demersal eggs attach to hard substrates such as rocks, gravel, tree roots, and submerged branches. Based on data for a closely related species, delta smelt eggs probably hatch in 12–14 days. The planktonic larvae are transported downstream to the mixing zone. Within the mixing zone, the pelagic larvae are zooplanktivores and feed on copepods, cladocerans, and amphipods. The primary food for all life stages of the delta smelt are the nauplius, copepodite, copepodid, and adult stages of the euryhaline copepod *Eurytemora affinis*. Adult smelt consume *E. affinis* during all times of the year. The opossum shrimp (*Neomysis mercedis*) is secondarily important as food for adult smelt, and cladocerans (*Daphnia* sp., *Bosmina* sp.) are consumed seasonally by adult smelt.

The decline in the delta smelt population was concurrent with increased human changes to seasonal Delta hydrology, freshwater exports, and the accompanying changes in the temporal, spatial, and relative ratios of water diversions. These deleterious

critical habitat is made. Comments addressing the issue of listing this species are responded to here.

Written comments and oral statements obtained during the public hearings and comment periods are combined into general issues and discussed below.

Comment 1: Many commenters requested that the Service delay or not list the delta smelt because the scientific data currently available are insufficient to support such a decision. For example, one population index (fall midwater trawl abundance index) indicated that the number of delta smelt have increased during the past 5 years and are more abundant today than they were 10 years ago. Many of these respondents suggested that the Service follow the recommendation of the California Fish and Game Commission and decline to list the species until additional studies on distribution and abundance have been completed. Conversely, many commenters claimed that the available scientific data (including six other population indices) clearly demonstrate a marked decrease in the abundance of the species over historic levels.

Service Response: Section 4(b)(1)(A) of the Act, requires that a listing determination be based on the best scientific and commercial data available. As discussed in the section of his rule entitled Summary of Factors Affecting the Species, the Service has reviewed the results of several monitoring studies conducted by the California Department of Fish and Game and the University of California, Davis (Moyle and Herbold 1989, Stevens *et al.* 1990, Moyle *et al.* 1992), which demonstrate that after 1981 the delta smelt population has remained at consistently low levels. Seven abundance indices used to record trends in the status of the delta smelt show that this species has not previously suffered as consistently low population levels as those experienced in the last 10 years (Stevens *et al.* 1990). These same indices also show a pronounced decline from historical levels of abundance. The summer tow net abundance index is thought to be one of the more representative indices since data has been collected over a wide geographic area (from San Pablo Bay upstream through most of the Delta) for the longest period of time (since 1959). The summer tow net abundance index measures the abundance and distribution of larval delta smelt and provides data on the recruitment potential of the species. This index declined after 1981 and, except for one year (1986) has remained at extremely low levels since 1982 (*Moyle et al.* 1992). New data for the summer tow net index indicates the 1992 population has not increased from the consistently low levels recorded since 1987 (Sweetnam 1992a).

Results of the second longest running study (since 1967), the fall midwater trawl abundance index, have shown upward movement in the three of the last four years. This index measures the abundance and distribution of adult delta smelt in a large geographic area (San Pablo Bay upstream to Rio Vista on the Sacramento River and Stockton on the San Joaquin River) and provides an indication of their survivorship to the later months of their 1-year life span. The cause of this seemingly anomalous increase in survival of adult delta smelt cannot be determined with any certainty. Because the total number of delta smelt captured in each trawl tow is low compared to previous years, Dr. Moyle (University of California at Davis, *in litt.*, 1992) attributes the recent higher index values to the fact that the entire delta smelt population has been confined to a restricted area in the Sacramento River, from Sherman Island to Rio Vista. The higher index values may be an artifact of the increased probability of capturing schools of fish that are concentrated in a relatively restricted area.

Because this listing determination is based on the results of up to 33 years of long-term monitoring studies, the Service does not agree that additional studies will greatly alter the present findings. Preliminary indices for the months of September and October 1992 indicate that this year's survival of adult delta smelt is consistent with the low levels of abundance recorded since 1987 (Sweetnam 1992a). The September index represents a total of 61 adult delta smelt caught during the month. Most of these fish were collected in the lower Sacramento River. The October index represents a total of two adult delta smelt caught in 80 trawl tows during the entire month (D. Sweetnam, CDFG, pers. comm.). Other than those cited above, the Service has received no new data on the abundance or distribution of the delta smelt. However, if additional data gathered as a result of the California Department of Fish and Game's ongoing studies show that the species should not be listed, the Service is afforded the ability to delist the species (50 CFR 424.11(d)(3)).

Comment 2: One respondent maintained that the best scientific data available indicate that the delta smelt population has been severely underestimated. In an experimental test, the California Department of Fish and Game demonstrated that more smelt could be caught when a midwater trawl with a finer mesh size was used.

Service Response: The findings of this rule are based primarily on the relative abundance of the delta smelt population today as it compares to its abundance throughout the period of record. The manner in which the long-term delta smelt abundance indices are calculated does not allow precise population estimates to be determined. These indices are used for population trend analysis. Any correction factor (as a result of a change in mesh size) applied to current population estimates would have to be applied to historical values as well. When the correction factor is applied to all years of data, the results still show a 90 percent population decline during the past 20 years.

Comment 3: Numerous commenters suggested that the current threats facing the species and the alarming decline in its abundance merit the designation of the delta smelt as an endangered species rather than a threatened species.

Service Response: The Service has carefully assessed the best scientific and commercial information available regarding the past, present, and future threats faced by the delta smelt in determining to list this species. The available data indicate a significant population decline over the last 20 years. The current population has remained relatively stable over the last 5 years, although it has done so at low levels. No apparent recovery is occurring. Based on the evaluation of all available information on population dynamics and threats to this species, the preferred action is to list the delta smelt as a threatened species.

Comment 4: Several individuals claimed that the designs of the population monitoring studies were inadequate, and by their nature, bias the interpretation of the data collected with regard to distribution and overall abundance of the species.

Service Response: In the proposed rule, and the discussion in this final rule, under *Summary of Factors Affecting the Species*, the Service recognizes that "* * * much of the available data on the population dynamics of the delta smelt were obtained from studies focused on other fish species, such as striped bass (*Morone saxatilis*) and chinook salmon (*Oncorhynchus tshawytscha*). Consequently, the collection methods used in these studies were not designed to estimate the delta smelt population." Nevertheless, the Service and other scientists contend that the sampling techniques provide a repeatable, consistent measure of delta smelt population trends and distribution over

knowledgeable about the Federal listing process. For these reasons, the Service determined that these experts were uniquely qualified to review the available information and make an informed finding regarding the current status of the delta smelt. All information maintained in the Service's files on this subject is available for public review.

Comment 9: A few commenters claimed that listing the delta smelt would have negative environmental effects. Specifically, if Central Valley farmers must depend to a greater extent on groundwater for agricultural production, further overdraft of the groundwater table is likely.

Service Response: Section 4(a)(1) of the Act requires that a decision to list a species as endangered or threatened be based on the five factors described in the section of this final rule entitled Summary of Factors Affecting the Species. These five factors pertain only to the biology and habitat requirements of the species in question. Nevertheless, the Service is aware that replenishment of groundwater overdraft is one of the many uses of water diverted from the Delta. The effects of Delta water diversions and exports on delta smelt habitat is discussed in Factor A of the Summary of Factors section.

Comment 10: Many commenters suggested that the delta smelt should not be listed because of the effect such an action would have on California's economy. Several commenters stated that the proposed rule did not fully address the economic impact incurred in California as a result of the proposed listing.

Service Response: Under section 4(b)(1)(A) of the Act, a listing determination must be based solely on the best scientific and commercial data available. The legislative history of this provision clearly states the intent of Congress to "ensure" that listing decisions are "* * * based solely on biological criteria and to prevent nonbiological considerations from affecting such decisions * * *" H.R. Rep. No. 97–835, 97th Cong., 2d Sess. 19 (1982). As further stated in the legislative history, "* * * economic considerations have no relevance to determinations regarding the status of species * * *" *Id.* at 20. As stated previously, the Service is required to address economic considerations within the context of designating critical habitat. The Service may exclude areas from critical habitat due to economic or other relevant impacts, provided that such exclusion would not lead to the extinction of the species.

Comment 11: One commenter requested a six-month extension of the Federal Register publication of this final rule because of substantial disagreement among scientists regarding the sufficiency or accuracy of the scientific data.

Service Response: The Act requires the Secretary of the Interior, within 1 year of publishing a proposed listing, to issue a final rule, withdraw the proposed listing, or publish a notice that the 1-year period is being extended for up to 6 months (16 U.S.C. 1533(b)(6)(A)). The 1-year period may be extended if the Secretary finds "* * * substantial disagreement regarding the sufficiency or accuracy of the available data relevant to the determination or revision concerned." (16 U.S.C. 1533(b)(6)(B)(i)). This disagreement must be "* * * among scientists knowledgeable about the species * * *" (50 CFR 424.17(a)(1)(iv)). The Service did not find substantial disagreement among knowledgeable scientists during the review of materials pertaining to the status of the delta smelt. The Service received no information indicating that the delta smelt is more widespread or under lesser threats than was previously thought. Therefore, the Service has determined that the date of publication of this final rule cannot be extended.

Comment 12: The Service received a reply that maintained that since there were questions among the scientific community about the validity of the taxonomic classification of the delta smelt (*H. transpacificus*) as a distinct species from the Japanese smelt (*H. nipponensis*), federally listing would be a violation of the Act.

Service Response: There is no uncertainty among the scientific community regarding the validity of the taxonomic classification of the delta smelt. In the Background section of this final rule is a description of the taxonomic revisions that have led to the currently accepted scientific nomenclature for this species.

Comment 13: One respondent attested that recent California Department of Fish and Game fall midwater trawl surveys found the delta smelt to be the most abundant species of fish collected.

Service Response: Northern anchovy (*Engraulis mordax*) represent by far the greatest proportion of the fish species caught in midwater trawl tows in all but 3 years during the period of this monitoring program (Sweetnam 1992b). For those 3 years, longfin smelt (*Spirinchus thaleichthys*) and threadfin shad (*Dorosoma petenense*) were caught in the greatest numbers.

Summary of Factors Affecting the Species

After a thorough review and consideration of all information available, the Service has determined that the delta smelt should be classified as a threatened species. Procedures set forth at section 4 of the Endangered Species Act (16 U.S.C. 1533) and regulations (50 CFR part 424) promulgated to implement the listing provisions of the Act were followed. A species may be determined to be endangered or threatened because of one or more of the five factors described in section 4(a)(1). These factors and their application to the delta smelt (*Hypomesus transpacificus*) are as follows:

A. The Present or Threatened Destruction, Modification, or Curtailment of Its Habitat or Range.

The delta smelt was one of the most common and abundant pelagic fish caught by California Department of Fish and Game trawl surveys in the Delta during the early 1970's (Stevens and Miller 1983, Moyle *et al.* 1989, Stevens *et al.* 1990). Its distribution once ranged from western Suisun Bay upstream to Sacramento on the Sacramento River and to Mossdale on the San Joaquin River (Radtke 1966, Moyle 1976, Moyle *et al.* 1992). Smelt populations fluctuated a great deal in the past, but after 1981 began a precipitous decline. Over the last 20 years, the population has experienced a ten-fold decline in numbers, and since 1982, has remained at extremely low levels. Recent population abundance indices confirm that the species has not shown any significant signs of recovery (Moyle and Herbold 1989, Moyle *et al.* 1989, Stevens *et al.* 1990, Moyle *et al.* 1992, Sweetnam 1992a). This species' pelagic life history, dependence on pelagic microzooplankton, 1-year life span, and low fecundity are characteristics of a fish species that is affected greatly by perturbations to its reproductive habitat or larval nursery areas. Under existing levels of water development, the delta smelt is especially vulnerable during protracted drought periods. Deleterious effects of the present drought period would be exacerbated if additional alterations in hydrology caused by reductions of freshwater inflows to the Delta alter the timing and/or duration of water exports. A weak stock-recruitment relationship (i.e., little evidence of the effect of parent population size on subsequent recruitment) strongly suggests that environmental or habitat factors are severely limiting delta smelt abundance, even during those years

the Delta, east of Suisun Bay (Moyle *et al.* 1992). In 1982, the decline of the delta smelt population in response to the shifted location of the mixing zone was significant. In all respects, the upstream river channels are much less favorable for the spawning and survival of the smelt. The decline of the delta smelt population since 1981 has been concurrent with an increasing amount and proportion of freshwater diversions that confine the mixing zone to the narrow, deep, and less productive channels in the lower rivers.

B. Overutilization for Commercial, Recreational, Scientific, or Educational Purposes

Not known to be applicable; however, the delta smelt may be harvested as a non-target by-catch in commercial bait fisheries for other baitfish species. Some scientific collecting is conducted for the delta smelt; however, these activities do not appear to be adversely affecting this species. Native Americans historically harvested delta smelt for food, but modern Native Americans are not known to be harvesting this fish. No recreational or educational uses of this animal are expected to affect the delta smelt population.

C. Disease or Predation

Not known to be applicable. However, the introduced striped bass may have caused an increase in predation on all size classes of the delta smelt. An effort by the California Department of Fish and Game is underway to compensate for striped bass population mortalities caused by water export projects. The 1991 striped bass stock was very low relative to the population in the 1960's. The striped bass compensation program annually releases 1–2 million juvenile hatchery-reared striped bass in the estuary in an effort to rebuild the population. This year the Director of the California Department of Fish and Game decided not to release striped bass because of the potential harm they would cause to the federally threatened Sacramento River winter-run chinook salmon.

D. The Inadequacy of Existing Regulatory Mechanisms

Regulatory mechanisms currently in effect do not provide adequate protection for the delta smelt or its habitat. This species is not listed by the State of California. The California Fish and Game Commission ruled on August 30, 1990, that a petition to the State to list the species was unwarranted, rejecting the California Department of Fish and Game's recommendation to list the delta smelt as a threatened species under State authority (Stevens *et al.* 1990). State listing would have provided some measure of protection to the species because State agencies would have been required to consult with the California Department to Fish and Game if any project they funded or carried out would adversely affect the delta smelt. However, even if the State of California had listed the delta smelt, the species would not have been protected from the adverse effects of Federal actions.

Suisun Bay is the best known nursery habitat for this species' reproduction and larval survival, but the habitat has been deleteriously altered because of higher salinities in spring. These higher salinities are caused by the large number of freshwater diversions that allow brackish seawater to intrude farther upstream. At present, there are relatively few periods when freshwater outflow volumes through the Delta and Suisun Bay of any significance are mandated for wildlife or fisheries. Federal and State agencies had planned to increase 1991 and probably 1992 water supplies for out-of-stream uses at the expense of environmental protection of estuarine fish and wildlife resources in the fifth and potentially sixth years of drought (Morat 1991). Because of significantly higher than normal precipitation and subsequent higher instream flows during March, 1991, a State agency request for relaxation of Delta water quality standards was withdrawn. It is likely, should the severe California drought continue, that this water quality relaxation action will be requested again in the near future to favor out-of-stream water use over the need to protect aquatic habitats for fish and wildlife.

Present regulatory processes do not ensure that water inflows to Suisun Bay and the western Sacramento-San Joaquin estuary will be adequate to maintain the mixing zone near or in Suisun Bay to benefit delta smelt and other fish and wildlife. The California State Water Resources Control Board (Board) has the authority to condition or require changes in the amount of water inflow and the amount of water exported or diverted from the Delta. At the Board's Water Quality/Water Rights Hearings in 1987, a Service biologist testified that the delta smelt had been recommended for addition to the Federal Animal Notice of Review as a category 1 candidate species (Lorentzen 1987). The Board has not taken regulatory or legal action to protect this animal or its habitat during the 4 years since the Service expressed its concern for several species native to Sacramento-San Joaquin estuary. On December 9, 1992, the Board released a copy of Water Rights Decision 1630 (D–1630), San Francisco Bay/Sacramento-San Joaquin Estuary (California State Water Resources Control Board 1992). A meeting to consider adoption of D–1630 is scheduled for January 25, 1993. In whatever form it is finally adopted by the Board, D–1630 will establish minimum levels of public trust uses of the delta for up to 5 years. Subsequently, long-term standards will be prepared and adopted.

Implementation of the draft decision as prepared would result in improved habitat conditions for the delta smelt. The Service is presently in the process of analyzing the draft terms and conditions to determine to what extent delta smelt will be benefited, if the decision is adopted and implemented. However, even assuming immediate adoption and implementation of these interim terms and conditions, their adequacy as a regulatory mechanism to protect the delta smelt remains in question. The Service is aware that the salinity standards currently in effect (D–1485) are inconsistently implemented and frequently violated due to operational constraints. Institutional guarantees of compliance have been lacking in the past and are needed in the future.

Similarly, the Service is currently analyzing the potential effects on the delta smelt and other fish and wildlife resources in California as a result of the recent enactment of the Central Valley Project Improvement Act (Pub. L. 102–575). Two of the stated purposes of this act are to: "protect, restore, and enhance fish, wildlife, and associated habitats in the Central Valley and Trinity River basins of California" and "to contribute to the State of California's interim and long-term efforts to protect the San Francisco Bay/Sacramento-San Joaquin Delta Estuary". Section 3406(b)(2) dedicates annually 800,000 acre-feet of Central Valley Project water for various purposes including the benefit of federally listed species. While the Service is reasonably certain that the delta smelt will realize some benefit from implementation of this Act, the magnitude and timeliness of these protections may be inadequate to prevent the endangerment of the delta smelt. For example, many analysts predict that provisions within the Act will take many years for the courts to resolve. Finally, neither adoption of the State Water Resources Control Board's Decision 1630 or the Central Valley Project Improvement Act protect the delta smelt *per se*, or provide mechanisms to ensure the continued existence of the species.

Critical Habitat

Section 4(a)(3) of the Act requires that, to the maximum extent prudent and determinable, the Secretary designate critical habitat at the time a species is determined to be endangered or threatened. Section 4(b)(6)(C) further indicates that a concurrent critical habitat determination is not required if the Service finds that determination of endangered or threatened status is essential to the conservation of the involved species, or that critical habitat is not then determinable. The Service finds that determination of threatened status for the delta smelt is essential. Without a listing determination, the protections conferred the species pursuant to section 7, through a limitation on the commitment of resources on the part of concerned Federal agencies or applicants for Federal permits, could not be applied. Therefore, to ensure that the full benefits of section 7 and other conservation measures under the Act will apply to the delta smelt, prompt determination of threatened status is essential.

Section 4(b)(2) of the Act requires the Service to consider economic and other impacts of designating a particular area as critical habitat. The Service has contracted for an economic impacts analysis of designating critical habitat for the delta smelt. In addition, the Service is in the process of evaluating the information that was submitted during the comment period on the potential economic impacts of critical habitat designation. However, because of the complexities and extent of the activities being assessed, this evaluation will not be completed until later in 1993. Upon completion of this economic impact analysis, the Service will render a final determination. The decision on designation of critical habitat must be made by October 3, 1993, pursuant to section 4(b)(6)(C)(ii) of the Act.

Available Conservation Measures

Conservation measures provided to species listed as endangered or threatened under the Endangered Species Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain activities. Recognition through listing encourages and results in conservation actions by Federal, State, and private agencies, groups, and individuals. The Endangered Species Act provides for possible land acquisition and cooperation with the States and requires that recovery actions be carried out for all listed species. Such actions are initiated by the Service following listing. The protection required of Federal agencies and the prohibitions against taking and harm are discussed, in part, below.

Section 7(a) of the Act, as amended, requires Federal agencies to evaluate their actions with respect to any species that is proposed or listed as endangered or threatened and with respect to its critical habitat, if any is being designated. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR part 402. Section 7(a)(4) of the Act requires Federal agencies to confer informally with the Service on any action that is likely to jeopardize the continued existence of a proposed species or result in destruction or adverse modification of proposed critical habitat. If a species is subsequently listed, section 7(a)(2) requires Federal agencies to insure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of such a species or to destroy or adversely modify its critical habitat, if any is designated. If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency must enter into consultation with the Service. Federal actions that may affect the delta smelt include U.S. Army Corps of Engineers funding or issuance of permits for water pumping facilities or structures, levee construction or repairs, and channel dredging and dredge spoil disposal projects. Other examples include U.S. Bureau of Reclamation or California Department of Water Resources water export or water management operations or projects, and U.S. Environmental Protection Agency actions pertaining to the water quality standards of Suisun Bay, Suisun Marsh, and the Delta. Measures to protect the listed winter-run chinook salmon, for which the National Marine Fisheries Service has jurisdiction under the Act, also may affect the delta smelt and may require consultation with the Service.

Under section 4 of the Act, listing the delta smelt would provide for the development of a recovery plan, which would bring together Federal, State, and private efforts to develop conservation strategies for the species. The recovery plan would develop a framework of recovery activities, priorities, and funding requirements to accomplish conservation objectives and ensure the survival and recovery of the delta smelt.

The Act and its implementing regulations found at 50 CFR part 17.31 set forth a series of general prohibitions and exceptions that apply to all threatened wildlife not covered by a special rule. These prohibitions, in part, would make it illegal for any person subject to the jurisdiction of the United States to take (including harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt any such conduct), import or export, transport in interstate or foreign commerce in the course of commercial activity, or sell or offer for sale in interstate or foreign commerce any such species. It also is illegal to possess, sell, deliver, carry, transport, or ship any such wildlife that has been taken illegally. Certain exceptions apply to agents of the Service and State conservation agencies.

Permits may be issued to carry out otherwise prohibited activities involving endangered or threatened wildlife species under certain circumstances. Regulations governing permits are at 50 CFR part 17. Permits for threatened species are available for scientific purposes, to enhance the propagation or survival of the species, and/or for incidental take in connection with otherwise lawful activities. In some instances, permits may be issued during a specified period of time to relieve undue economic hardship that would be suffered if such relief were not available. For threatened species, permits are lawful for zoological exhibition, educational purposes, or special functions consistent with the purposes of the Act. Further information regarding regulations and requirements for permits may be obtained from the U.S. Fish and Wildlife Service, Office of Management Authority, Permits Branch, 4401 N. Fairfax Drive, room 432, Arlington, Virginia 22203–3507 (703/358–2104).

National Environmental Policy Act

The Service has determined that an Environmental Assessment, as defined under the authority of the National Environmental Policy Act of 1969, need not be prepared in connection with regulations adopted pursuant to section 4(a) of the Endangered Species Act of 1973, as amended. A notice outlining the Service's reasons for this determination was published in the Federal Register on October 25, 1983 (48 FR 49244).

References Cited

Bailey, H.C., D.J. Ostrach, and D.E. Hinton, 1991. Effect of rice irrigation water in Colusa Basin Drain on fertilization success and embryonic development in striped bass. Contract No. 9–169–250–0 Draft Report to California State Water Resources Control Board. 31 pp.

California Department of Water Resources, 1992. Data and computations used to determine 1993 water charges. Bulletin 132–92, Appendix B. California

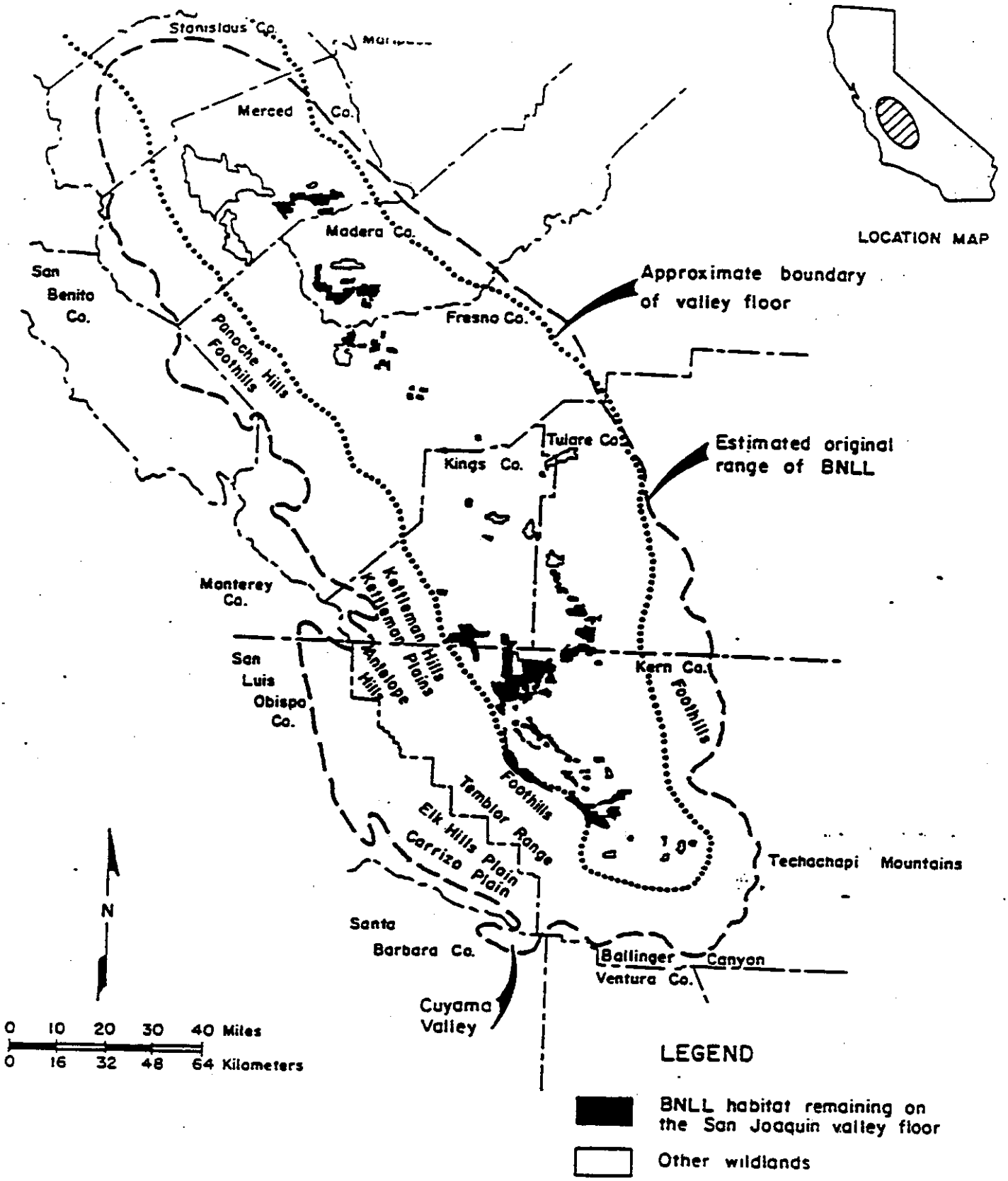


Figure 2. Geographic distribution of the BNLL, showing remaining valley floor habitats (1979).

BLUNT-NOSED LEOPARD LIZARD
(*Gambelia silus*)

CLASSIFICATION: Endangered (32 Federal Register 4001)

CRITICAL HABITAT: None designated.

The Revised Blunt-nosed Leopard Lizard Recovery Plan targets acquisition of at least 30,000 acres of leopard lizard valley floor habitats and protection of adjacent foothill and plain areas known to contain leopard lizard populations. Several portions of the San Joaquin Valley have been identified for this protection effort, including areas near Firebaugh, Tupman, Buttonwillow, Earlimart, and Kern and Pixley National Wildlife Refuges. Adjacent foothill and plain areas include the Carrizo and Elkhorn Plains and portions of the Cuyama Valley.

DESCRIPTION:

The blunt-nosed leopard lizard is a large, robust, lizard. Adults range in body length from approximately 3 to 5 inches. Including tail length, an adult blunt-nosed leopard lizard may exceed 15 inches. The back, sides, and tail are prominently marked with dark spots and pale cross-bars on a grayish tan background. The belly and undersides of the legs and tail are whitish. During the breeding season, adults may develop orange-red markings along the sides, under the belly, or along the tail. The species often conspicuously basks along the edges of secondary dirt roads, open alkaline soil areas, or embankments.

DISTRIBUTION:

The blunt-nosed leopard lizard was historically distributed throughout the San Joaquin Valley and adjacent interior foothills and plains, extending from central Stanislaus County south to extreme northeastern Santa Barbara County. The area occupied by this species has been significantly reduced and fragmented by agricultural, urban, and other man-induced actions. Preferred habitat consists of open grassland, saltbush shrubland, and alkaline sink communities.

SPECIAL CONSIDERATIONS:

The blunt-nosed leopard lizard is designated as an "endangered" species by the State of California. As such, it is afforded protection under State law. State agencies are required to consult with the California Department of Fish and Game regarding any proposed actions which may affect this species or its habitat.

REFERENCES FOR ADDITIONAL INFORMATION:

Chesemore, D. L. 1980. Blunt-nosed leopard lizard inventory, final report. Report for contract YA-553-CT0-51. U.S. Dept. of Interior, Bureau of Land Management, Bakersfield, CA.

Jones, L. 1980. Distributional study of the blunt-nosed leopard lizard, *Gambelia silus*, in the southern San Joaquin Valley, California. Report for contract no. YA-512-CT9-97. U.S. Dept. of Interior, Bureau of Land Management, Bakersfield, CA.

Montanucci, R. R. 1965. Observations on the San Joaquin leopard lizard, *Crotaphytus wislizenii silus* Stejneger. Herp. 21(4):270-283.

O'Farrell, T. P. and T. Kato. 1980. Relationship between abundance of blunt-nosed leopard lizards, *Crotaphytus silus*, and intensity of petroleum field development in Kern County, California. U.S. Dept. of Interior, Bureau of Land Management, Sacramento, CA. Rept. prepared through interagency agreement CA-910-IAO-8 with the Department of Energy, Nevada Operations Office.

Snow, C. 1972. Habitat management series for endangered species, Report No. 3, blunt-nosed leopard lizard, *Crotaphytus silus*. U.S. Dept. of Interior, Bureau of Land Management Technical Note T-N-169, Denver.

U.S. Fish and Wildlife Service. 1985. Blunt-nosed Leopard Lizard Revised Recovery Plan. U.S. Fish and Wildlife Service, Region 1, Portland, Oregon.

VALLEY ELDERBERRY LONGHORN BEETLE
(Desmocerus californicus dimorphus)

CLASSIFICATION: Threatened - Federal Register 45:FR52803 August 8, 1980.

CRITICAL HABITAT: Federal Register 17.95(c), May 7, 1980.

California. Sacramento County.

(1) Sacramento Zone. An area in the city of Sacramento enclosed on the north by the Route 160 Freeway, on the west and southwest by the Western Pacific railroad tracks, and on the east by Commerce Circle and its extension southward to the railroad tracks.

(2) American River Parkway Zone. An area of the American River Parkway on the south bank of the American River, bounded on the north by latitude 38 37'30" N, and on the South and east by Ambassador Drive and its extension north to latitude 38 37'30" N, Goethe Park, and that portion of the American River Parkway northeast of Goethe Park, west of the Jedediah Smith Memorial Bicycle Trail, and north to a line extended eastward from Palm Drive.

(3) Putah Creek Zone. California. Solano County. R 2 W T. 8 N. Solano County portion of Section 26.

DESCRIPTION:

Horn described the valley elderberry longhorn beetle in 1881 and it was redescribed in 1921 by Fisher. Morphological description: In general, longhorn beetles are characterized by somewhat elongate and cylindrical bodies with long antennae, often in excess of 2/3 of the body length. In contrast, males of VELB are stout-bodied and their elytra (thickened, hardened forewings) are coarsely punctured, with a metallic-green pattern of 4 oblong maculations, surrounded by a bright red- orange border. The border eventually fades to yellow on museum specimens. The maculations are fused on some males, more closely resembling the nominate subspecies. Antennae are about as long as the body or slightly shorter. Body length is about 13-21 mm.

Females are more robust, elytra are subparallel, and the dark pattern is not reduced. Antennae reach to about the middle of the elytra and body length is about 18-25 mm. Both sexes of VELB are readily identified due to their distinctive appearance. As noted earlier, males with fused maculations resemble the nominate subspecies, *Desmocerus californicus dimorphus*, Fisher, 1921.

DISTRIBUTION:

VELB is endemic to moist valley oak woodlands along the margins of rivers and streams in the lower Sacramento and upper San Joaquin Valley of California, where elderberry (*Sambucus* spp.), its foodplant, grows. During the past 150 years over 90

February 26, 1993

General Compensation Guidelines for the
Valley Elderberry Longhorn Beetle

The valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) was listed as a threatened species in 1980 (45 Federal Register 52807). This animal is fully protected under the Endangered Species Act of 1973, as amended (Act). The larvae of the beetle feed and mature within elderberry (*Sambucus* sp.) shrubs. Use of the plants by the early stages of this insect, a wood borer, is very rarely apparent. Frequently, the only exterior evidence of use of the shrub is the exit hole created by the larvae prior to the pupal stage. The beetle has been found in elderberry plants with stems possessing a diameter of one inch or greater. The range of the animal extends from Redding south to Bakersfield and from the western foothills of the Sierra Nevada to the eastern foothills of the coast range (Barr 1991; U.S. Fish and Wildlife Service 1984).

An adequate survey should be completed by a qualified biologist for the valley elderberry longhorn beetle and its elderberry foodplant if the proposed project site is located within the range of the animal. The report should include the precise location of all elderberry shrubs, their height and diameter, the presence of adult exit holes and the general condition of the plants. The diameter of the stems should be measured at ground level. A map should also be included with the report indicating the major vegetational communities present on site. The completed study should be sent to the U.S. Fish and Wildlife Service (Service) for review.

Take incidental to an otherwise lawful activity may be authorized by one of two procedures. If a Federal agency is involved with the permitting, funding, or carrying out of the project, then initiation of formal consultation between that agency and the Service pursuant to section 7 of the Act is required if it is determined that the proposed project may affect a federally listed species. Such consultation would result in a biological opinion that addresses the anticipated effects of the project to the listed species and may authorize a limited level of incidental take. If a Federal agency is not involved with the project, and federally listed species may be taken as part of the project, then an incidental take permit pursuant to section 10(a) of the Act would need to be obtained. The Service may issue such a permit upon completion of a satisfactory conservation plan for the listed species that would be affected by the project.

The following mitigations should be undertaken for the valley elderberry longhorn beetle:

Avoid Habitat Whenever Possible

Fence and flag each elderberry shrubs or group of these plants so that the construction crew can avoid them. There should be a setback of at least twenty feet from the dripline of each elderberry shrub. The area must be designated to prevent isolation of the beetle population from other populations located in adjacent areas. The area should be designated as habitat for the valley elderberry longhorn beetle in perpetuity.

Brief contractors on the requirements to avoid damaging the elderberry plants and the possible penalties for not complying with these provisions. These areas should be adequately signed with the following information: "This area is habitat of the valley elderberry longhorn beetle, a threatened species, and must not be disturbed. This species is protected by the Endangered Species Act of 1973, as amended. Violators are subject to prosecution, fines and imprisonment." The signs should be clearly readable from a distance of at least twenty feet.

Work crews should be informed about the status of the threatened valley elderberry longhorn beetle and the need to protect its elderberry host plant. All on-site personnel should receive instruction regarding the presence of the federally protected animal.

Transplant Elderberry Shrubs

Elderberry shrubs should be transplanted if they can not be avoided by the proposed project. All elderberry plants with a stem diameter of 1.0 inch or greater in size should be transplanted to a mitigation area. In some cases, a shrub that would be extremely difficult to remove because of access problems or one that is in such poor condition that it is unlikely to survive being transplanted may be exempted from this requirement at the Service's discretion.

A qualified biologist (monitor) should be on-site for the duration of the transplanting of the elderberry shrubs to insure that no unnecessary take of the valley elderberry longhorn beetle occurs. The biologist utilized should have the authority to stop all activities until appropriate corrective measures have been completed. The biologist should also be required to report violations immediately to the Service and the California Department of Fish and Game.

1. Timing.--Elderberry shrubs with stems equal to or greater than 1.0 inches in diameter should be transplanted when the plant is dormant (approximately November through the first two weeks in February) after they have lost their leaves and, thus, the plants essentially are not transpiring or actively growing. Planting during the non-growing season will reduce the shock to the plant and increase transplantation success.

2. Procedure to plant elderberry shrubs.

   a. Cut tree back to 3 to 6 feet from the ground or to 50 percent of its height (whichever is greater) by removing branches and stems above this height. The trunk and all stems greater than 1.0 inches in diameter (measured 1 to 6 inches from the ground surface) should be replanted.

   b. Excavate a hole 3 to 4 feet deep to receive the planting;

   c. Dig plant up using Vemeer spade, backhoe, front end loader, or other suitable equipment, taking as much of the root ball as possible, and replant immediately at the compensation site. Move plant only by the root ball. If the plant is to be moved and transplanted off site, wrap

the root ball in burlap and secure with wire. Dampen burlap with water, as necessary, to keep root ball wet;

d. The elderberry shrub should be planted in a water retention basin 40 feet by 40 feet in size (1600 square feet). After removing the burlap and wire (if any), plant the root ball so it is level with the existing ground. Compact the soil sufficiently so that settlement does not occur. Five seedling elderberry shrubs and associated native vegetation (see number 4 below) should be planted in each of the basins;

e. Saturate soil with water. Do not use fertilizers or other supplements or paint the tips of stems with pruning substance as the effects of these compounds on the beetle are unknown;

f. Monitor to ascertain if additional watering is necessary:

1. if sandy, well-drained soil, plants may need to be watered weekly or possibly twice monthly;

2. if clay, poorly-drained soil, it may not be necessary to water after the initial saturation.

A drip watering system and timer would be ideal. However, in situations where this is not possible, a water truck or other apparatus may be used.

Sixteen hundred (1600) square feet should be provided for each avoided elderberry shrub, each transplanted elderberry shrub, and every five transplanted elderberry shrubs and associated native plants (see sections 3 and 4 below). The mitigation area should be designated as habitat for the valley elderberry longhorn beetle in perpetuity. The mitigation area should be designated to prevent isolation of the beetle population from other populations located in adjacent areas. A conservation easement or fee title for the mitigation area should be given to a resource agency or appropriate private organization. The Service should be provided with a map and written details specifically identifying the mitigation area prior to the initiation of the mitigation program. The applicant should receive written approval from the Service that the mitigation area is acceptable prior to initiation of the mitigation program.

3. Procedure to plant additional stems.--Each stem 1.0 inches or greater in diameter that is moved or destroyed will be replaced with seedling elderberry plants in the mitigation area using a ratio from 2:1 to 5:1. This replacement requirement applies even if the elderberry shrub is transplanted. Replacement stock should be obtained from local sources. The approval of the Service should be obtained prior to initiating the compensation program. The ratio is determined as follows:

Ratio of 2:1 Elderberry shrubs with stem diameters 1.0 inch or greater and there are no adult emergence holes.

Ratio of 3:1 Elderberry shrubs with stem diameters 1.0 inch or greater. Beetles are present as evidenced by emergence holes, and occur in 50 percent or less of the shrubs.

Ratio of 5:1 Elderberry shrubs with stem diameters 1.0 inch or greater in size. Beetles are present as evidenced by emergence holes, and occur in 51 percent or greater of the shrubs.

4. Plant associated native plants: Recent studies have found that beetles are more abundant in more dense native plant communities with a mature overstory and mixed understory versus a young overstory and low understory. Therefore, a mix of native plants associated with the elderberry shrubs at the project site should be planted at a ratio of at least two specimens of all native tree and shrub species for every five elderberry shrubs. These plantings also must be monitored with the same survival criteria utilized for the elderberry plants. The saplings and seedlings, as appropriate, should be from native populations at the project site or from the immediate project vicinity. The approval by the Service of the native plant donor sites must be obtained prior to initiation of any of the revegetation work.

Example 1

Total number of elderberry shrubs on project site: 20
Associated native plants: interior live oak (*Quercus wislizenii*), foothill pine (*Pinus sabiniana*), and California buckeye (*Aesculus californica*)
Number of elderberry shrubs with evidence of the the valley elderberry longhorn beetle: 12
Number of stems equal or greater than 1 inch: 100
Compensation: Transplant the 20 elderberry shrubs that will be impacted, plant 500 elderberry seedlings (ratio of 5:1), plant 40 interior live oaks, 40 foothill pines, 40 California buckeyes
Total area required: 4.41 acres

Example 2

Total number of elderberry shrubs: 10
Associated native plants: interior live oak (*Quercus wislizenii*)
Number of elderberry shrubs with evidence of the valley elderberry longhorn beetle: 0
Number of stems greater or equal to 1.0 inch: 0
Compensation required - None

Example 3

Total number of elderberry shrubs: 5
Associated native plants: cottonwood (*Populus fremontii*)
Number of elderberry shrubs with evidence of the valley elderberry longhorn beetle: 0
Number of stems equal or greater than 1.0 inch: 15
Compensation required: Transplant the 5 elderberry shrubs, plant 30 elderberry seedlings (ratio 2:1), plant 6 cottonwoods
Total area required: .40 acre

Example 4

Total number of elderberry shrubs: 25
Associated native plants: none
Number of elderberry shrubs with evidence of the
the valley elderberry longhorn beetle: 7
Number of stems equal or greater than 1.0 inch: 150
Compensation required: Transplant the 25 elderberry shrubs, plant 450
stems (ratio 3:1)
Total area required: 4.22 acres

Provide Habitat for the Beetle in Perpetuity

Weeds and other plants that are not native to the mitigation area should be removed at least once a year or at the discretion of the Service or the California Department of Fish and Game. Mechanical means should be used; herbicides should be prohibited.

Measures should be taken to insure that no pesticides, herbicides, or other chemical agents enters the mitigation area. No spraying of these agents should be conducted within one hundred (100) feet of the area or if they have the potential to drift, flow or be washed into the area in the opinion of biologists or law enforcement personnel from the California Department of Fish and Game or the Service. The Service should be provided with written documentation that this condition will be carried out in perpetuity.

No dumping of trash or other material should occur within the mitigation area. Any trash or other material should be removed within ten (10) working days of discovery. The Service should be provided with written documentation that this condition will be carried out in perpetuity.

Biologists and law enforcement personnel from the California Department of Fish and Game and the Service should be given complete access to the project site to monitor transplanting activities. Personnel from both these agencies should be given complete access to the project and the mitigation area to monitor the valley elderberry longhorn beetle and its elderberry shrub habitat in perpetuity.

Permanent fencing should be placed completely around the mitigation area to prevent unauthorized entry by off-road vehicles, equestrians, or other parties that may damage or destroy the habitat of the beetle. The applicant should receive written approval from the Service that the fencing is acceptable prior to initiation of the mitigation program.

A minimum of two prominent signs should be placed and maintained in perpetuity at the mitigation area noting that the site is habitat of the federally threatened valley elderberry longhorn beetle and including information on the beetle's biology and ecology. The signs should be approved by the Service. They should be replaced or repaired within ten (10) working days if they are found to be damaged or destroyed.

Monitoring Program

The population of the adults of the threatened valley elderberry longhorn beetle, the general condition of the mitigation area, and the elderberry plants and associated native plants located at the mitigation area should be monitored by a qualified biologist annually for a period of ten years beginning with the date the mitigation program is initiated. Two visits between February 14 and June 30 of each year should be made beginning the year the mitigation is begun. The study should include a population census of the adult beetles, including the actual number of animals observed, their condition, behavior, and precise location at the site; a census of the elderberry shrubs and associated native plants, including the number of plants observed, their size, and condition; and a general assessment of the habitat, including any real or potential threats to the beetle, and its food plants, such as erosion, excessive grazing by livestock, off-road vehicle use, etc. Random-walk counts should be used; mark-recapture or other methods that involve handling or harassment shall not be utilized. The materials and methods that will be utilized for this study should be reviewed and approved by the Service. All appropriate Federal and State permits should be obtained prior to initiating the field studies.

A written report analyzing the data from the monitoring of the threatened valley elderberry longhorn beetle at the mitigation area and the elderberry shrubs and associated native plants located at the project site should be conveyed to the Service and the Department of Fish and Game (Supervisor, Environmental Service, Department of Fish and Game, 1416 Ninth Street, Sacramento, California 95814, and Staff Zoologist; California Natural Diversity Data Base, Department of Fish and Game, 1220 S Street, Sacramento, California 95814) by December 31 of each year for a ten year period beginning with the date the program is initiated. The report should include, but not be limited to, the raw data collected during the field surveys and a basic analysis of the population dynamics of the valley elderberry longhorn beetle at the compensation sites. The following should be analyzed for the beetle: estimated population size (using both open and closed population models), and spatial distribution. Maps showing where the individual adult beetles and exit holes were observed should be included. For the elderberry shrubs and associated native plants the following should be analyzed: the survival rate, condition, and size of the plants. Real and likely future threats should be addressed along with suggested mitigations (e.g. fencing access to off-road vehicles, more frequent removal of exotic vegetation, etc.). The original field notes, photographs, correspondence, and all other pertinent material, as well as a copy of the report should be deposited and accessioned into the Natural History Museum of Los Angeles County (Senior Curator, Entomology Section, Natural History Museum of Los Angeles County, 900 Exposition Blvd., Los Angeles, California 90007) by December 31 of each year for a ten year period beginning with the date the mitigation program is initiated. The Sacramento Field Office should be provided with the accession numbers given to this material by the Natural History Museum of Los Angeles County.

Success Criteria

A survival rate of 80% of the elderberry shrubs and associated native plants should be obtained at the end of the ten year monitoring program. The Service will make the determination as to the compensator's replacement responsibilities arising from circumstances beyond its control such as plants damaged or killed as the result of severe flooding or vandalism.

Future Revisions

Revegetating with elderberries and the responses of the beetle to such revegetation efforts is a relatively new procedure. As data become available on which to evaluate this technique, revisions to these guidelines are anticipated.

Service Contact

These guidelines were prepared by Chris Nagano, Sacramento Field Office, U.S. Fish and Wildlife Service, 2800 Cottage Way, Room E-1823, Sacramento, California 95825. Please refer any questions on these guidelines to him at the above address or call (916) 978-4866.

Literature Cited

Barr, C.B. 1991. The distribution, habitat, and status of the valley elderberry longhorn beetle *Desmocerus californicus dimorphus*. Sacramento Field Office, U.S. Fish and Wildlife Service, Sacramento, California

U.S. Fish and Wildlife Service. 1984. Recovery plan for the valley elderberry longhorn beetle. Endangered Species Program. Portland, OR.

MWD

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, SACRAMENTO
DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS
1325 J STREET
SACRAMENTO, CALIFORNIA 95814-2922

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U.S. MAIL

Semitropic Water Storage District
ATTN: Wilmar L. Boschman
P.O. Box 2
Wasco, CA 93280

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AUG 13 1993
S.W.S.D.

U.S. GOVERNMENT PRINTING OFFICE: 1982-361-646/8659

FROM: See return address on reverse. DATE 10 Aug 93

WRITER'S NAME/TELEPHONE NO.
Jeff Groska, Act Ch, San Joaquin Bsn Br (916) 557-6750

[X] YOUR [ ] OUR COMMUNICATION (Kind, reference symbol, date, subject, or other identification)
Notice of Preparation of a Draft Enviornmental Impact Report for the Proposed Semitropic Groundwater Banking Project.

ACTION TAKEN OR REQUESTED
[ ] REPLY WILL BE FURNISHED ON OR ABOUT _____
[ ] REQUEST DATE WHEN REPLY MAY BE EXPECTED
[ ] WE HAVE SENT YOUR COMMUNICATION TO (See below)
[X] RECEIPT ACKNOWLEDGED
[ ] FOR DIRECT REPLY
[ ] TO OBTAIN INFORMATION

WE HAVE REVIEWED THE APPLICATION, AND THE PROPOSED PROJECT WILL NOT CONFLICT WITH ANY PROJECT OR OTHER PROGRAMS WITHIN OUR JURISDICTION

[X] OTHER INFORMATION [ ] SUPPLIED OR [ ] REQUESTED
Thank you for coordinating with us.

TYPED NAME, GRADE, AND TITLE
WALTER YEP
Chief, Planning Division

SIGNATURE
Walter Yep

DA FORM 209, 1 Jan 70 REPLACES EDITION OF 1 NOV 66, WHICH WILL BE USED.

DELAY, REFERRAL, OR FOLLOW-UP NOTICE (AR 340-15)

Dirk Kuy

COPY

United States Department of the Interior

TAKE PRIDE IN AMERICA

FISH AND WILDLIFE SERVICE
Ecological Services
Sacramento Field Office
2800 Cottage Way, Room E-1803
Sacramento, California 95825-1846

In Reply Refer To:
1-1-93-TA-1183

August 25, 1993

RECEIVED
AUG 30 1993
S.W.S.D.

Mr. Wilmar L. Boschman
Engineer-Manager
Semitropic Water Storage
P.O. Box Z
Wasco, California 93280

Subject: Updated Species List for Proposed Semitropic Groundwater Banking Project, Semitropic Water Storage District, Northwest of Bakersfield, Kern County, California

Dear Mr. Boschman:

We have been informed that the species list provided to you on this project, dated July 30, 1993, was incomplete. Please replace that copy with this updated list.

for Wayne S. White
Field Supervisor

Enclosure

cc: National Marine Fisheries Service, Southwest Region, Attn: Jim Lecky, 501 West Ocean Boulevard, Suite 4200, Long Beach California 90802-4213
Mr. Ron Remple, California Department of Fish and Game, 1234 East Shaw Fresno, California 93710
FWS-SFO (BR Projects, J. Scammell-Tinling)

ENCLOSURE A

LISTED AND PROPOSED ENDANGERED AND THREATENED SPECIES AND CANDIDATE SPECIES THAT MAY OCCUR IN THE AREA OF THE PROPOSED SEMITROPIC GROUNDWATER BANKING PROJECT, SEMITROPIC WATER STORAGE DISTRICT, NORTHWEST OF BAKERSFIELD, KERN COUNTY, CALIFORNIA (1-1-93-TA-1183, JULY 30, 1993)

Listed Species

Fish

winter-run chinook salmon, *Oncorhynchus tshawytscha* (T)
delta smelt, *Hypomesus transpacificus* (T)

Reptiles

blunt-nosed leopard lizard, *Gambelia silus* (E)

Mammals

San Joaquin kit fox, *Vulpes macrotis mutica* (E)
Tipton kangaroo rat, *Dipodomys nitratoides nitratoides* (E)
giant kangaroo rat, *Dipodomys ingens* (E)

Invertebrates

valley elderberry longhorn beetle, *Desmocerus californicus dimorphus* (T)

Plants

California jewelflower, *Caulanthus californicus* (E)
Kern mallow, *Eremalche kernensis* (E)
Hoover's wooly-star, *Eriastrum hooveri* (T)
San Joaquin wooly-threads, *Lembertia congdonii* (E)

Proposed Species

None

Candidate Species

Fish

Sacramento splittail, *Pogonichthys macrolepidotus* (2■)
green sturgeon, *Acipenser medirostris* (2R)
longfin smelt, *Spirinchus thaleichthys* (2R■)

Amphibians

western spadefoot toad, *Scaphiopus hammondi hammondi* (2R)

Reptiles

northwestern pond turtle, *Clemmys marmorata marmorata* (2■)
southwestern pond turtle, *Clemmys marmorata pallida* (1■)
loggerhead shrike, *Lanius ludovicianus* (2)
western snowy plover, interior population, *Charadrius alexandrinus nivosus* (2■)

Birds

tricolored blackbird, *Agelaius tricolor* (2)
white-faced ibis, *Plegadis chihi* (2)
mountain plover, *Charadrius montanus* (2)

Mammals

Pacific western big-eared bat, *Plecotus townsendii townsendii* (2)
Nelson's antelope ground squirrel, *Ammospermophilus nelsoni* (2)
short-nosed kangaroo rat, *Dipodomys nitratoides brevinasus* (1)

Plants

heartscale, *Atriplex cordulata* (2)
Lost Hills saltbush, *Atriplex vallicola* (2)
slough thistle, *Cirsium crassicaule* (2)
dune larkspur, *Delphinium parryi* ssp. *blochmaniae* (2)
recurved larkspur, *Delphinium recurvatum* (2)
Smooth tarplant, *Hemizonia laevis* (2R)

(E)--Endangered (T)--Threatened (P)--Proposed (CH)--Critical Habitat
(1)--Category 1: Taxa for which the Fish and Wildlife Service has sufficient biological information to support a proposal to list as endangered or threatened.
(2)--Category 2: Taxa for which existing information indicated may warrant listing, but for which substantial biological information to support a proposed rule is lacking.
(1R)-Recommended for Category 1 status.
(2R)-Recommended for Category 2 status.
(■)--Listing petitioned.
(*)--Possibly extinct.

Semitropic Water Storage District
BUTTONWILLOW IMPROVEMENT DISTRICT
POND-POSO IMPROVEMENT DISTRICT
SEMITROPIC IMPROVEMENT DISTRICT
P.O. BOX Z
WASCO, CALIFORNIA 93280
TELEPHONE (805) 758-5113 • 327-7144
FAX NO. (805) 758-3219

FS/DFS	ADMIN	HC	WG	SP
		✓		
Sec. 4	EC		CC	
Sec. 7	FR-PL			
Sec. 10	CF-PN			
FSG	FERC			
STAFF				
Bill			WEL	
			7/8/93	
Peter				
FILE				

TO ALL CONCERNED PARTIES:

Notice of Preparation of a Draft Environmental Impact Report for the Proposed Semitropic Groundwater Banking Project

The Semitropic Water Storage District (SWSD) has determined that the above referenced project may have a significant impact on the environment and that an Environmental Impact Report (EIR) should be prepared to address the following issues: biological resources, topography, soils, surface storage, construction-related noise, land use, air quality and traffic impacts, groundwater quantity and quality, local groundwater effects from pumping and recharge, growth-inducement, and cumulative impacts. A brief project description and project map are attached for your information. In addition, an Initial Study Checklist and Explanation of Responses are also attached, indicating potential environmental impacts of the proposed project.

The purpose of this notice is to inform you that an EIR is being prepared for this proposed project and to solicit your comments regarding the scope of the environmental issues that should be addressed in the EIR. Pursuant to Public Resources Code Section 21080.4(a), your response must be submitted to SWSD no later than 30 days after receipt of this Notice.

A public scoping meeting will be held at the time and location shown on the attached notice. Your attendance at these meetings will provide you with additional opportunities to learn more about the project and to comment on the scope and content of the draft EIR.

If you have any questions regarding the proposed project or would like additional information, please contact Wilmar L. Boschman, Engineer-Manager, at (805) 327-7144 or 758-5113. Thank you for your cooperation in this matter.

Sincerely,

Wilmar L. Boschman
Engineer-Manager

RECEIVED
JUL 0 6 1993

CHAPTER 4 AGENCY AND SPECIAL INTEREST CONSULTATION AND COORDINATION

CHAPTER 4 AGENCY AND SPECIAL INTEREST CONSULTATION AND COORDINATION

4.1 AGENCY CONSULTATION AND COORDINATION

Semitropic and Metropolitan coordinated with public agencies during the Semitropic Groundwater Banking Project study, attempting to formulate a broadly accepted alternative which would avoid or minimize environmental effects. Specifically, the following objectives were emphasized:

- Avoid environmental impact to the extent practicable, and where not possible, mitigate such impacts.
- Attempt to integrate project mitigation needs with the ecological values of the region.

Semitropic and Metropolitan sought input from various resource agencies such as the United States Fish and Wildlife Service, the United States Army Corps of Engineers, California Department of Water Resources, California Department of Fish and Game, The Nature Conservancy, and The Center For Natural Lands Management to help identify acceptable mitigation measures associated with the Semitropic Groundwater Banking Project. Emphasis was placed on avoiding environmental impacts and formulating mitigations. Initial coordination efforts focused on briefings regarding the project and results of preliminary studies. Later meetings addressed more specific topics dealing with mitigation planning, and the development of mitigation and management agreements for mitigation. Briefings and consultations took place with resource agencies throughout the study.

Coordination efforts were undertaken to maintain communication and encourage input in the planning process from the cities of Shafter, Wasco, and Bakersfield; Kern County agencies; and surrounding water districts.

- Issuance of the Notice of Preparation (NOP) for the proposed project on July 1, 1993,
- A public scoping meeting as part of the NOP process on July 15, 1993, in Wasco, to determine issues of public concern to be addressed in the EIR,
- 10 meetings with surrounding agencies and interested groups on the EIR scoping process,
- 5 meetings with resource agencies on the EIR scoping process,
- Distribution of 90 copies of the Draft EIR for written public comment,
- 5 meetings with surrounding agencies and interested groups on the Draft EIR,
- 4 meetings with resource agencies on the Draft EIR,
- A public meeting on April 19, 1994, 9 miles west of the city of Wasco, to receive oral comments on the Draft EIR.

Table 4-1 lists the agencies and individuals covered.

TABLE 4-1

AGENCIES AND ORGANIZATIONS CONTACTED

FEDERAL AGENCIES

Bureau of Land Management, Bakersfield
Sam Fitton
Bureau of Reclamation, Fresno
Rosalie Faubion
Centers for Disease Control and Prevention, Atlanta, Georgia
U.S. Fish and Wildlife Service, Delano
Steven Clay
U.S. Fish and Wildlife Service, Sacramento
Peter Cross
U.S. Fish and Wildlife Service, Fresno
Dr. Daniel Williams.

STATE OF CALIFORNIA

California Department of Water Resources
Jack Erickson
California Department of Transportation, Fresno
Dan Singh
California Department of Conservation
Blake Remple
California Office of Historic Preservation
Steade Craigo
University of California, San Barbara

REGIONAL AGENCIES

Kern Council of Governments, Bakersfield
Robert Ball
San Joaquin Valley Unified Air Pollution Control District
Southern San Joaquin Valley Information Center
Katherine Pruett
San Joaquin Valley Endangered Species Recovery Planning Program
Dr. Patrick Kelley

KERN COUNTY AGENCIES

Kern County Building Inspection Department
Phillip Bryson
Kern County Engineering and Survey Services Department
Wayne Johnson

KERN COUNTY AGENCIES (Continued)

Kern County Environmental Health Service Department
Lydia V. Von Sydow, REA
Kern County Planning and Development Services
Frank Chmiel
Carolyn Ring
Kern County Transportation Department
Shannon Wright
Kern County Water Agency
Kenneth Turner

CITY AGENCIES

City of Wasco

Planning Department

Public Works Department
Carol Hosman

Wasco Chamber of Commerce and Agriculture
Diana Snow

City of Shafter

Planning Department

PUBLIC UTILITIES

American Refuse
Gloria Nava

Pacific Bell
Gloria Rose

Pacific Gas and Electric Company
Cliffon Kwok

South Tulare Ridgegrove Refuse
Maria Guerrero

TABLE 4-1

AGENCIES AND ORGANIZATIONS CONTACTED
(Continued)

ENVIRONMENTAL PUBLIC

California Burrowing Owl Consortium, Newark California

The Planning Center, Bakersfield

California Native Plant Society
Randy McCormick

Santa Barbara Botanic Garden

Rancho Santa Ana Botanic Garden
S. D. Boyd

California For Natural Lands Management
Sherry Teresa
Ket Smith

OTHER ORGANIZATIONS/INDIVIDUALS

American Indian Council of Central California
Pamela Baleras

Native American Heritage Commission
Larry Myers

Santa Rosa Rancheria
Clarence Atwell, Jr.

Table Mountain Rancheria
Vern Castro

Tule River Tribal Council
Floyd Rancho, Jr.

CHAPTER 5 DRAFT ENVIRONMENTAL IMPACT REPORT REVIEW AND COMMENT

CHAPTER 5 DRAFT ENVIRONMENTAL IMPACT REPORT REVIEW AND COMMENT

5.1 INTRODUCTION

The 45-day public review and comment period for the Draft EIR began on March 29, 1994, and ended on May 13, 1994. Semitropic mailed copies of the Draft EIR to 90 agencies, organizations and individuals. Additional public review copies were made available at The Semitropic Water Storage District, The Metropolitan Water District of Southern California, the Bakersfield Main Library, the Shafter Branch Library, and the Wasco Branch Library.

Semitropic publicized the availability of the Draft EIR by publishing a legal notice in The Bakersfield Californian (April 4), The Sacramento Bee (April 4), The Los Angeles Times (April 4), The Wasco Tribune (April 6), and The Shafter Press (April 6).

5.2. NOTICES OF DRAFT EIR AVAILABILITY

James Ragan Associates
2265 Westwood Blvd., Ste 179
Los Angeles, CA 90064

DECLARATION OF PUBLICATION
(C.C.P. 2015.5)

COUNTY OF SACRAMENTO
STATE OF CALIFORNIA

I am a citizen of the United States and a resident of the County aforesaid; I am over the age of eighteen years, and not a party to or interested in the above entitled matter. I am the printer and principal clerk of the publisher of The Sacramento Bee, printed and published in the City of Sacramento, County of Sacramento, State of California, daily, for which said newspaper has been adjudged a newspaper of general circulation by the Superior Court of the County of Sacramento, State of California, under the date of January 30, 1952, Action No. 88875; that the notice of which the annexed is a printed copy, has been published in each issue thereof and not in any supplement thereof on the following dates, to wit:

April 4, 1994

I certify (or declare) under penalty of perjury that the foregoing is true and correct and that this declaration was executed at Sacramento, California, on April 4, 1994.

Kate Mirich
(Signature)

NO 137 PUBLIC NOTICE
NOTICE OF AVAILABILITY OF DRAFT ENVIRONMENTAL IMPACT REPORT AND PUBLIC MEETING

A Draft Environmental Impact Report (Draft EIR) has been prepared in accordance with the California Environmental Quality Act for the proposed Semitropic Ground Water Banking Project.

The proposed Project is a long-term water storage project designed to recharge ground water and reduce overdraft, increase operational reliability and flexibility, and optimize the distribution and use of available water resources between the Semitropic Water Storage District in Wasco, California, and the Metropolitan Water District of Southern California: The Draft EIR addresses existing environmental conditions, potential impacts, and proposed mitigation measures associated with the proposed Project.

Copies of the Draft EIR are available for public review at the following locations: Semitropic Water Storage District, 1017 Central Ave., Wasco, California; The Metropolitan Water District of Southern California, 350 S. Grand Ave., Los Angeles, California; Bakersfield Main Library, 701 Truxtun Ave., Bakersfield, California; Shafter Branch Library, 236 James St., Shafter, California; and Wasco Branch Library, 1102 7th St., Wasco, California.

The closing date for receipt of public comments on the Draft EIR is May 13, 1994. Interested parties may provide their comments in writing and/or at a public meeting to be held on Tuesday evening, April 19, 7:00 p.m., at Semitropic School, on Highway 46 nine miles west of the City of Wasco.

Written comments should be sent to the attention of Mr. Wilmar L. Boschman, Engineer-Manager, Semitropic Water Storage District, P.O. Box Z, Wasco, CA 93280. Further information about the proposed Project can be obtained from Mr. Boschman at the above address. His telephone number is (805) 758-5113.

1 ti April 4, 1994

PROOF OF PUBLICATION

State of California ss
County of Kern

I am a citizen of the United States and a resident of the County aforesaid: I am over the age of 18 years, and not a party to or interested in the above entitled matter. I am the assistant principal clerk of the printer of The Bakersfield Californian, a newspaper of general circulation, printed and published daily in the City of Bakersfield, county of Kern, and which newspaper has been adjudged a newspaper of general circulation by the Superior Court of the County of Kern, State of California, under date of February 5, 1952, Case Number 57610; that the notice, of which the annexed is a printed copy, has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates, to wit:

April 4,

all in the year 1994

I certify (or declare) under penalty of perjury that the foregoing is true and correct.

Sue Tosti
Signature

Dated at Bakersfield, Ca
APRIL 4, 1994.

Sue Tosti

Proof of Publication of:

Aff# 15225

NOTICE OF AVAILABILITY OF DRAFT ENVIRONMENTAL IMPACT REPORT AND PUBLIC MEETING

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Written comments should be sent to the attention of Mr. Wilmer L. Boschman, Engineer-Manager, Semitropic Water Storage District, P.O. Box Z, Wasco, CA 93280. Further information about the proposed Project can be obtained from Mr. Boschman at the above address. His telephone number is (805) 758-5113.

Apr 4, 1994 (15225)

PROOF OF PUBLICATION

PROOF OF PUBLICATION

(2015.5 C.C.P.)

STATE OF CALIFORNIA,
County of Kern } ss.

I, the undersigned, am a citizen of the United States and a resident of the County of aforesaid; I am over the age of eighteen years, and not a party to or interested in the above entitled matter. I am the chief clerk/publisher of **The Wasco Tribune**, a newspaper of general circulation, printed and published weekly in the City of Wasco, County of Kern, and which newspaper has been adjudged a newspaper of general circulation by the Superior Court of the County of Kern; that the notice, of which the annexed is a printed copy, has been published in each regular and entire issue of the said newspaper and not in any supplement thereof on the following dates, to-wit:

April 6,1994

I certify (or declare) under penalty of perjury that the foregoing is true and correct.

Shirley Sirson
(Signature)

Executed on April 6, 19 94
at Wasco, California.

The WASCO TRIBUNE
P.O. Bin Y Phone (805) 758-3063
WASCO, CALIFORNIA 93280

PUBLIC NOTICE

NOTICE OF AVAILABILITY OF DRAFT ENVIRONMENTAL IMPACT REPORT AND PUBLIC MEETING

A Draft Environmental Impact Report (Draft EIR) has been prepared in accordance with the California Environmental Quality Act for the proposed Semitropic Ground Water Banking Project.

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The closing date for receipt of public comments on the Draft EIR is May [illegible], 1994. Interested parties may provide their comments in writing and/or at a public meeting to be held on Tuesday evening, April 19, 7:00 p.m., at Semitropic School, on Highway 46 nine miles west of the City of Wasco.

Written comments should be sent to the attention of M. Wilmar L. Boechman, Engineer-Manager, Semitropic Water Storage District, P.O. Box Z, Wasco, CA 93280. Further information about the proposed Project can be obtained from Mr. Boechman at the above address. His telephone number is (805) 758-5113.

Publish *Wasco Tribune* April 6, 1994.

Proof of Publication

(2015.5 C.C.P.)
(GENERAL FORM)

Legal Publication-Notice

re: DEIR & Public Meeting

STATE OF CALIFORNIA,)
)ss.
County of Kern.)

I, the undersigned, am a citizen of the United States and a resident of the County aforesaid; I am over the age of eighteen years, and not a party to or interested in the above entitled matter. I am the chief clerk/publisher of The Shafter Press a newspaper of general circulation, printed and published weekly, in the City of Shafter, County of Kern, and which newspaper has been adjudged a newspaper of general circulation by the Superior Court of the County of Kern; that the notice, of which the annexed is a printed copy, has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates, to-wit:

April 6, 1994

I certify (or declare) under penalty of perjury that the foregoing is true and correct.

Virginia Brownell
Signature

Date April 7, 1994, 19

The SHAFTER PRESS
P.O. Bin, "A" Phone 746-4942
SHAFTER, CALIFORNIA

PUBLIC NOTICE

NOTICE OF AVAILABILITY OF DRAFT ENVIRONMENTAL IMPACT REPORT AND PUBLIC MEETING

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Written comments should be sent to the attention of Mr. Wilmar L. Boschman, Engineer-Manager, Semitropic Water Storage District, P.O. Box Z, Wasco, CA 93280. Further information about the proposed Project can be obtained from Mr. Boschman at the above address. His telephone number is (805) 758-5133.

Publish *Shafter Press* April 6, 1994

JAMES RAGAN ASSOCIATES

2265 WESTWOOD BLVD., SUITE 179

LOS ANGELES, CA 90064

Affidavit of Publication

—of—

CLASSIFIED ADVERTISING

State of California, } *ss.*
County of Los Angeles

MICHELE BUTTELMAN *of said County and State, being duly sworn, says:*

That he is and at all times herein mentioned was a citizen of the United States, over 21 years of age, and not a party to nor interested in the above entitled matter; that he is a principal clerk of the printers and publishers of the LOS ANGELES TIMES a newspaper printed and published daily in the said Los Angeles County; that the

LEGAL NOTICE

in the above entitled matter of which the annexed is a printed copy, was published in said newspaper

THE LOS ANGELES TIMES

TIMES MIRROR SQUARE, LA, CA 90053

on the following days, to-wit:

MONDAY, APRIL 4, 1994

NOTICE OF AVAILABILITY OF DRAFT ENVIRONMENTAL IMPACT REPORT AND PUBLIC MEETING

A Draft Environmental Impact Report (Draft EIR) has been prepared in accordance with the California Environmental Quality Act for the proposed Semitropic Ground Water Banking Project.

The proposed Project is a long-term water storage project designed to recharge ground water and reduce over-draft, increase operational reliability and flexibility, and optimize the distribution and use of available water resources between the Semitropic Water Storage District in Wasco, California, and the Metropolitan Water District of Southern California. The Draft EIR addresses existing environmental conditions, potential impacts, and proposed mitigation measures associated with the proposed Project.

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The closing date for receipt of public comments on the Draft EIR is May 13, 1994. Interested parties may provide their comments in writing and/or at a public meeting to be held on Tuesday evening, April 19, 7:00 p.m., at Semitropic School, on Highway 46 nine miles west of the City of Wasco. Written comments should be sent to the attention of Mr. Wilmar L. Boschman, Engineer-Manager, Semitropic Water Storage District, P.O. Box E, Wasco, CA 93280. Further information about the proposed Project can be obtained from Mr. Boschman at the above address. His telephone number is (805) 758-5113.

5-7

Michele Buttelman

Subscribed and sworn to before me, this 7th *day of* April *19* 94

Mary L. Botman

Notary Public in and for the County of Los Angeles, State of California

MARY L. BOTMAN
COMM. # 913050
Notary Public — California
LOS ANGELES COUNTY
My Comm. Expires MAR 20, 1995

5.3 WRITTEN COMMENTS RECEIVED

We reproduce here copies of all written comments received. Margin numbers refer to EIR responses to the issues raised (see section 5.5.1 below).

Document 1

BUENA VISTA WATER STORAGE DISTRICT
525 N. MAIN - P.O. BOX 756
BUTTONWILLOW, CALIFORNIA 93206
PHONE (805) 324-1101
(805) 764-5510

DIRECTORS
WALLACE HOUCHIN - PRES
TERRY CHICCA - V. PRES.
GINO TORIGIANI - SEC
TOM HURLBUTT
FRANK RICCOMINI

MARTIN N. MILOBAR
ENGINEER-MANAGER
BETTY HARDEN
TREAS./ASST. SECRETARY

May 11, 1994

RECEIVED
MAY 13 1994
S.W.S.D.

Mr. Wilmar L. Boschman
Engineer Manager
Semitropic Water Storage District
P.O. Box Z
Wasco, California 93280

Re: SEMITROPIC GROUNDWATER BANKING PROJECT, DRAFT ENVIRONMENTAL IMPACT REPORT

Dear Mr. Boschman:

Enclosed are this District's comments on the above project. We have included both specific comments that are referenced by report section and paragraph for ease of reference, and a summary of the main points spoken to within the specific comments.

I had previously thought that a number of the points raised could have been discussed with you, via the ongoing monitoring group of which this District is a member, through a preliminary comment period. Since this did not occur, we are providing them at this time.

If you have any questions or comments regarding the above, please call me. We appreciate the opportunity to comment on this important project and anticipate working with you in the future.

Yours very truly,

BUENA VISTA WATER STORAGE DISTRICT

Martin Milobar

Martin Milobar
Engineer Manager

Document 1

RECEIVED
MAY 13 1994
S.W.S.D.

May 11, 1994

Mr. Wilmar L. Boschman
Engineer Manager
Semitropic Water Storage District

SEMITROPIC GROUNDWATER BANKING PROJECT, DRAFT ENVIRONMENTAL IMPACT REPORT - SPECIFIC COMMENTS BY BUENA VISTA WATER STORAGE DISTRICT:

SUMMARY

* **Page S-1, Background.** The availability of surplus KCWA SWP entitlement for purchase by groundwater member units will be greatly diminished in the future due to banking, transfer programs, and SWP shortages. Therefore, inclusion on these flows for overdraft correction are unrealistic and should be factored to possibly 1/3 of past quantities at best. Without this correction, your studies will show positive groundwater levels not representative of actual conditions. 1-1

* **Page S-11, Water Quality and Hydrology.** Long-term water quality impacts could also be associated with the "Banking" portion of the proposed project since groundwater extractions are concentrated along the district's canal system and are not shown to be evenly spread over the In Lieu service areas where the water is to be recharged. Further, more than just salinity levels should be analyzed. Movement of other harmful constituents should be carefully investigated. Also, long term averages do not address site specific groundwater level impacts that must be addressed as to actual extractions, aquifer parameters, and other pertinent criteria so that a proper localized analysis can be made. 1-2

* **Page S-14, Groundwater Concerns.** Monitoring activities and intentions are described. However, there is no mention of how the analysis of such monitoring will be implemented and actually play a part in determining the level of extractions that will be allowed due to surrounding impacts. Due to the concentration of Semitropic wells and the separation of the in lieu areas, it is very possible that such extraction impacts could limit the ability of the project to repay Metropolitan as to quantity during any particular year or period of years. A banking program of this magnitude should also address the possibility of a banking minimum balance that is not to be extracted for say 1-3

Document 1

a ten year period so that program operations could be analyzed with less chance of impacts and determined to be acceptable, or an extraction limit per acre on extraction areas should be considered to insure that impacts are prevented from occurring. 1-3

CHAPTER 3 - FORMULATION OF THE PROJECT ALTERNATIVES

* **Page 3-5, 3.3.6.2 Water Conservation Element.** Semitropic has been notified in writing about Buena Vista's concerns of the proposed Goose Lake Project, which concerns have not as yet been addressed. A suggested remedy, namely a perimeter drainage system, should be included as an integral component of the design and operation of the project. Monitoring is one component of the needed drainage system which will not stand alone as an answer to adjacent landowner's concerns since this is a well understood problem that must be solved prior to proceeding with such a facility. 1-4

* **Page 3-6, 3.3.7 Findings and Recommendations.** The statement that "Withdrawals of stored water would be prohibited if such withdrawals would cause the average groundwater levels over a three year period to be 15 feet lower than the average groundwater levels that would have prevailed without the project over the same three year period" infers that this criteria is proven to be acceptable and that it will not result in an adverse impact. Site specific impacts that will effect adjacent areas must be analyzed and the results of actual monitoring and interpretation of results must control the level of payback to Metropolitan W.D. 1-5

CHAPTER 4 - DESCRIPTION OF THE PROJECT ALTERNATIVES

* **Page 4-31, 4.3.5.2 Semitropic Operations.** See comment above denoted Page 3-6 regarding the "15 foot rule". This would not insure that neighbors would be protected from adverse impacts on groundwater elevations or on water quality degradation from localized drawdowns in the vicinity of Semitropic extraction wells.

* **Page 4-32, 4.3.5.3 Non-Banking Use of Facilities.** As stated within the EIR and referenced above, "...and Semitropic Pool Water that would be acquired from the KCWA during the next 22 years, based on a repeat of the historic 1-6

Document 1

hydrologic sequence from 1969 through 1992." is an unrealistic expectation, and will cause the results of modeling studies to be exaggerated on the positive as to groundwater levels. It is unrealistic to assume that the SWP will be able to produce historic deliveries and that contractor's demands during the build-up period will be repeated. KCWA pool supplies are also expected to diminish considerably. 1-6

CHAPTER 5 - EXISTING ENVIRONMENTAL CONDITIONS

* **Page 5-3, 5.2.2 Geology.** Regarding the permeability of fine grained layers of silt and clays, it is noted that, "nor do they provide a permeable medium for the downward transmission of surface water to the more permeable underlying material." Monitoring results in this area show that shallow water levels decline during the winter period when no irrigation is occurring due to the combination of less surface application and slow downward movement through intermittent sand and clay layers. Also, the groundwater aquifers in this general area are inter-connected and thus will be impacted by operations within all layers of the aquifer. These characteristics directly apply to the proposed Goose Lake Project and thus should be recognized and dealt with. They also apply to raised groundwater levels in this area since such condition could impede the normal downward movement of shallow waters from the upper soil profile and impact farming viability in this area. Therefore, this is a very important aspect of the groundwater of this area that must be analyzed. 1-7

* **Page 5-23, 5.4.1.2 Groundwater.** With regard to salt balance, a project objective should be as follows: (Reference - Issues Resolution Committee, Groundwater Management Rules - Draft) "Banking programs shall be operated with the objective that the average concentration of total dissolved salts in the recovered water will exceed the average concentration of total dissolved salts in the recharged water, at a minimum, by a percentage equal to or greater than the percentage of surface recharge losses." This would at least compensate for any salt load impact of the banking project itself and more adequately address this item. 1-8

Document 1

* **Page 5-28, 5.4.3 Water Quality Environment.** The movement of poor quality groundwater from the west to the east is noted. This movement could recur thus increasing the influx of such poorer quality groundwater into Buena Vista WSD. Thus the importance of not relying on average water level data from modeling studies or the confidence that is alluded to on the "15 foot rule" mentioned throughout this report. Again, site specific studies must be done to properly manage this project so that extraction limitations are known by the banking entities prior to making assurances that certain levels of payback can be accomplished. 1-9

* **Page 5-36, 5.4.4.4 Water Levels.** It is noted that, "The results indicate a reduction in subsurface inflow to Semitropic of about 14,000 acre feet per year (from an estimated maximum of 112,000 acre feet per year in 1978 to 98,000 acre feet per year under current conditions). This reduction has resulted from rising water levels, causing flatter water level gradients, all attributable to the importation of surface water and reduced groundwater pumping." We do note the level of groundwater inflow into Semitropic from all surrounding Districts caused by the continual overdraft within the area and the resultant lowered groundwater levels. However, surrounding districts would not attribute any annual variation in inflow solely to surface water deliveries into Semitropic, since groundwater levels in the entire area have fallen substantially during the drought period of 1987 through 1992, which changes directly impact groundwater movement. It is also likely that the level of use of project facilities for overdraft correction that is suggested in the report is overly optimistic, since all indications point to less available surface water supplies in the future. Figures 5-10, 11, & 12 show 1989 water levels and should also show 1992 water levels to depict the effects of the drought. 1-10

CHAPTER 6 - ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

* **Page 6-9, 6.4.2, Methodology.** It is noted that, " Impacts upon the groundwater basin were determined by comparing the No-Project condition with the two Project conditions. This was facilitated by hydrographs at selected locations representing the Project and No-Project conditions and contour plots of the average increases in groundwater elevations for the entire hydrologic period." This methodology is too dependant on average conditions to 1-11

Document 1

accomplish the objective of determining groundwater level and quality impacts to adjacent areas in an overdrafted groundwater basin. A more detailed analysis is warranted. 1-11

* **Page 6-10, 6.4.2.1, Groundwater Model.** As we are all aware, the DWR model used is general in nature and requires many important assumptions such as boundary conditions, which if in error, could drastically affect the results shown. It is important that the data and assumptions be presented with actual parameters values so that those who may be impacted could critique the assumptions and procedures performed and hopefully arrive at a level of comfort with the results attained provided there are site specific calculations done to evaluate the extraction areas and some correlations done to note the variations from the model's average groundwater levels and the calculated extraction area groundwater levels. Merely to state in general, the assumptions, and to assume that one would have confidence in the average hydrograph's results is not acceptable. 1-12

* **Page 6-14, 6.4.2.1, Semitropic Operations Model.** The assumptions made as to the future availability of SWP water appear to be too optimistic. Also, KCWA pool water may be practically non-existent. Therefore, the use of past SWP delivery patterns in this model will result in more optimistic groundwater levels than are likely to occur. It is also noted that "Semitropic wells are operated: (1) to replace MWD or SWID payback water, (2) to provide water directly to MWD or SWID, or <u>(3) to supplement surface water supplies to provide 50% of Semitropic's annual entitlement of 158,000 acre feet in all years.</u>" This guaranteed entitlement would seem to further aggravate the localized impacts to groundwater levels in the vicinity of the Semitropic extraction wells. The non project use of project wells is not clearly defined and shown to be evaluated. 1-13

The enclosed map of district wells shows that the in-lieu areas do not coincide with the extraction areas which could cause impacts not shown via the modeling studies due to averaging within each DAU. Also, the report speaks of 62 existing landowner wells that should be represented as to location so that extraction impacts could be properly analyzed. 1-14

Document 1

It is stated that, "Return flow was estimated as 30 percent of the applied water deliveries to each DAU." In an area where there are many permanent irrigation systems, this appears to be unusually high. Also, a 10 percent distribution loss with 75 percent to seepage also appears to be high. In total, it is assumed that 40% of deliveries will find their way back into the groundwater basin in a District with a pipeline distribution system and many permanent and efficient irrigation systems. These assumptions may cause an unrealistically high return flow to be included resulting in higher groundwater levels than may actually occur since return flow, in effect, reduces actual pumpage. 1-14

* **Page 6-14, 6.4.2.2, Groundwater Elevation.** See previous comments on the "15 foot rule". It appears that the averaging method suggested could indicate compliance while other Districts' areas adjacent to extraction areas could be impacted by unacceptable site specific groundwater level declines. 1-15

* **Page 6-15, 6.4.2.4, Salt Accumulation; 6.4.3, Salt Accumulation Impact Analysis.** See previous comments regarding this subject. 1-16

* **Page 6-16, 6.4.4, Groundwater Levels.** See comments re: Groundwater Model, above.

* **Page 6-16, 6.4.4.2, Groundwater Contour Maps.** As noted above re: section 5.2.2, Geology, there may be a significant impact on shallow groundwater levels in the area from Lerdo Hwy to Highway 46. This needs to be evaluated with respect to raised groundwater levels within Buena Vista Water Storage District. The report states that, "Overall, the Project would have a beneficial impact on groundwater elevations." However, it is not the overall condition that is the potential problem, it is the extraction year impacts that could result if the project is not managed in a way to avoid such impacts. This report seems to rely too heavily on average conditions and optimistic assumptions regarding availability of water supplies, modeling parameters, extractions averaged over areas, return flows, the "15 foot rule" and other aspects that would tend to represent only long term or "overall" conditions. More detail is needed to provide results that would be much more representative of what actual conditions may be during an extraction cycle. 1-17

Document 1

* **Page 6-28, 6.4.5, Production Well Interference.** This section attempts to address localized impacts to neighboring landowner wells but fails to address mitigation measures for other Districts' landowner wells. This is an important aspect to the success of the project, which should be properly addressed through use of defined aquifer parameters within the extraction areas. Indications of areas of interference with adjacent wells should then be addressed by mitigation measures such as curtailment of extractions, shifting of wells used, and limits on pumped payback, if necessary. 1-18

* **Page 6-29, 6.4.6, Water Quality and Water Levels.** The report states that, "Using the criterion that water must first be stored before it is withdrawn, average water levels with the Project would be as high or higher than without the Project." This type of statement does not recognize the complexities involved with banking operations within an overdrafted groundwater basin as it applies to the design, operation, and necessary mitigation measures that will be an important part of the project. Again, it does imply that the report relies on average, long term conditions. 1-19

* **Page 6-29, 6.4.7, Agricultural Drainage.** See comments above to section 5.2.2, Geology and 6.4.4.2, Groundwater Contour Maps. 1-20

* **Page 6-32, 6.4.8, Mitigation Measures.** This section addresses Semitropic's internal monitoring program and intentions in this regard. Inclusion of the above suggested, site specific analyses previously described would address impacts on neighboring areas, which could then be mitigated as appropriate. The ongoing monitoring program being developed with the surrounding District's should also be described along with any agreements or M.O.U.'s that may be applicable to this subject. 1-21

Document 1

RECEIVED
MAY 13 1994
S.W.S.D.

May 11, 1994

Wilmar L. Boschman
Engineer Manager
Semitropic Water Storage District

SEMITROPIC GROUNDWATER BANKING PROJECT, DRAFT ENVIRONMENTAL IMPACT REPORT - SUMMARY OF SPECIFIC COMMENTS BY BUENA VISTA WATER STORAGE DISTRICT:

1. The report does not clearly define water supply assumptions used. This information should be made available in detail. The D-1485 and the more recent D-1630 delta standards were referenced in the report. Additional environmental conditions are projected to cause further delta restrictions which should also be included in modeling water supply assumptions.

The assumed water demands versus probable supplies must recognize the changed conditions in the Delta. Locally, the assumption that during all years of SWP allocations of 80% or more, there will be 150,000 acre feet of pool water available appears to be much too optimistic. Changed conditions within the KCWA's member units due to SWP shortages necessitate that pool water will be at an historic minimum in the future, which detail should be incorporated into the water supply assumptions used. Water supply assumptions for both the base case and the with project case should be presented and justified with supporting data. The report further assumes that irrigation return flows are 30% and seepage losses are 10%, factored to 75% less 1000 acre feet for evaporation. This combined return flow does not appear to be representative of the District, which includes many efficient permanent irrigation systems and a lined canal and pipeline distribution system. If these estimates are, in reality, too high, then the resultant groundwater pumping by landowners depicted in the model will be too low, and thus show higher groundwater levels than will occur. 1-22

2. The procedure used to model the affected area may not accurately reflect the characteristics of the groundwater basin in sufficient detail for the proposed project's operations during a modeled banking period.

The DWR San Joaquin Basin model, with the changes incorporated as described during the workshop, relies on a calibration done some twenty years previous, which information should be updated. The groundwater parameters 1-23

Document 1

used should be listed and correspond with parameters determined from actual well log information for better accuracy. The DAU separation lines should be aligned so that the pumping areas are differentiated from the in lieu recharge areas. Therefore, inclusion of the suggested modifications described within items 2, 3, and 4, herein would more properly reflect what may be expected to occur and provide invaluable information for project participants and the District to formulate a successful program that will not be complicated with future problems due to unexpected groundwater basin impacts. 1-23

3. Groundwater quality impacts should not only address salinity. Other constituents from areas adjacent to the concentrated pumping areas should be analyzed as to possible movement and resultant water quality impacts. Also, average water level changes within a DAU do not recognize site specific draw-downs during pumping cycles which can result in the movement of saline groundwater from west to east thus resulting in a detrimental water quality impact on BVWSD.

Salinity is described as something that cannot be controlled. It is possible to incorporate the objective of balancing salt load with extracted salt load for the amounts banked. This should be incorporated into the project. Localized pumping areas should be analyzed using actual aquifer parameters during assumed extraction cycles while varying times of use. The results should be shown in the report along with the parameter values and justification for these values. Any excessive draw-downs shown should then be addressed with proper preventive and mitigation measures provided. It seems unrealistic that a banking program of this size would not ever result in any possibility of groundwater impacts, but that is what the report seems to imply. 1-24

4. The report should provide a more detailed tabulation which reflects all aspects of the banking/recovery process. This would show amounts banked, entitlement payback, pumped payback (summer, fall) and wells used (summer, fall) by type (landowner, District), losses (surface, underground), while distributed over the study period. 1-25

Document 1

This type of analysis, in combination with the site specific extraction area calculated draw-downs outlined in item 2 above, would provide the information necessary to properly determine the expected capability of the project to perform the banking functions being proposed. The analysis should address the location differences between the in lieu banking areas and the extraction areas and how the groundwater elevations reflect this difference through put and take periods during the hydrologic cycle. If this type of detailed analysis is not done, the proposed monitoring program may determine that the project is limited in its ability to repay water according to the response of the basin to extractions. The function of the EIR is exactly the above, so that surrounding landowners and districts do not find themselves in the position of assuming the burden of proof after commitments have been made which may not be achievable without groundwater impacts. 1-25

5. The suggested "15 foot - three year rule" does not lend itself to confidence from surrounding areas since it appears to be overly conservative and tends to imply that actual, site specific groundwater level changes are not to be the governing criteria as they should be.

It appears that a three year period with a +20 ft., a -40 ft., and a -25 ft. groundwater level declines compared to without project conditions, would average -15 ft. per year and satisfy the criteria. If the "without project" conditions for this example resulted in groundwater level declines of -20 ft. in the second and third years, the resultant total draw-downs may be very damaging to adjoining district's landowner wells. It is this District's opinion that this criteria is not acceptable and should not be implemented since actual groundwater impacts will be the ultimate criteria used by adjoining landowners regardless of the criteria adopted by Semitropic W.S.D. Rather, the surrounding District's monitoring program and developed operations guidelines should be the determining criteria for addressing what an impact is and the prevention and mitigation measures used to rectify such impacts. 1-26

Consideration should also be given to a minimum, non extractable quantity of banked water over some time period and possibly limits of extraction per acre or some such constraints so that bankers are not assured of production of groundwater that may not be possible without large impacts.

Document 1

6. The Goose Lake Project will cause harmful shallow groundwater level impacts to surrounding areas. This must be analyzed in detail and appropriate perimeter drainage facilities incorporated.

These concerns that have been previously conveyed are not addressed within the report. Also, the raised groundwater levels shown in the northern part of BVWSD could have serious impacts to the perched water conditions in the area. You should be aware that there are essentially saturated groundwater conditions from a few feet below ground surface through both the unconfined and the confined zones. Thus, raised groundwater levels in this area as shown in Figure 6-13 would result in preventing fall/winter declines in shallow water levels that allow the crop root zone to revive itself from summer water level conditions. This area has not been addressed in the report. 1-27

7. The stated groundwater monitoring activities are not up to date and do not address the intentions of the surrounding District's as to how impacts on surrounding areas will be addressed and included in the project's operations.

The groundwater monitoring association of surrounding Districts and Semitropic should be described stating that objectives are being developed to assure surrounding areas that they will not be impacted. Also, the report fails to address impact prevention and mitigation measures since, as currently modeled, the report determines that there is no need for such measures due to no indication of impacts. This further verifies that the above stated modeling and other adjustments should be incorporated so that mitigation measures for groundwater impacts are addressed within the EIR. 1-28

8. The report indicates that there are some 62, and eventually more, landowner wells that will be used in the project. These wells should be depicted on the enclosed map and included in the modeling studies as appropriate. The report states that District wells will also be used to insure that the CWSA receives no less than a 50% surface supply regardless of the degree and occurrence of SWP shortages. 1-29

Document 1

All potential well locations and uses should be evaluated as to groundwater level and quality impacts as described in the above items to insure that a representative analysis can be done which accurately depicts the project and any related impacts. The project does not seem to adequately represent non-project operations in sufficient detail and thus may not been able to determine the degree of occurrence of possible adverse groundwater impacts. 1-29

Document 2

BUTTONWILLOW LAND AND CATTLE COMPANY

Family Owned Since 1862

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RECEIVED
MAY 13 1994
S.W.S.D.

TO: Simitropic Water Storage District

FROM: Buttonwillow Land & Cattle Co.

DATE: May 13, 1994

SUBJECT: Semitropic Groundwater Banking Project EIR

It appears that there is a high potential for banked water to be repaid from locales that are some distance from where the banking took place, thus resulting in a redistribution of the underground water supply within the district. Redistribution is a practice that could result in an inordinate benefit to one locale at the expense of another locale. 2-1

Document 3

STATE OF CALIFORNIA—THE RESOURCES AGENCY PETE WILSON, Governor

DEPARTMENT OF FISH AND GAME
REGION 4
1234 E. Shaw Avenue
Fresno, CA 93710
(209) 445-6152

May 12, 1994

Mr Wilmar L. Boschman
Engineer Manager
Semitropic Water Storage District
P.O. Box Z
Wasco, California, 93280

Dear Mr. Boschman

Draft Environmental Impact Report for the
Semitropic Groundwater Banking Project
Kern County, California
(SCH No. 93072024)

We have reviewed the Draft Environmental Impact Report (DEIR) for Semitropic Water Storage and Metropolitan Water Districts' groundwater banking project in Kern County. Semitropic Water Storage District encompasses approximately 221,000 acres in north central Kern County approximately 20 miles northwest of Bakersfield.

The project would provide for delivery of a portion of Metropolitan Water District of Southern California (MWD) California Aqueduct water to Semitropic Water Storage District (SWSD) for surface irrigation use and "in-lieu" aquifer recharge in "put" years. SWSD would return water to MWD by: 1) allowing MWD to take SWSD California Aqueduct Water (SWSD needs would be met by groundwater pumping); or (2) by pumping SWSD groundwater and returning it to the California Aqueduct for delivery to MWD; or (3) a combination of 1 and 2.

The objectives of the program are to recharge groundwater and reduce overdraft, optimize the distribution of water within SWSD, and increase reliability and flexibility of water deliveries. Project components include 100 miles of new underground pipeline, 200 new turnouts, 42 new pumps, ten new pumping structures, nine booster pumps, 20 miles of canal lining, enlargement of 8.5 miles of canal and development of 52 new groundwater wells. No groundwater recharge facilities or surface storage elements are proposed. The project is scheduled for construction in 1994 with completion anticipated in 1997. The preferred Alternative D1 is designed to provide a surface-water distribution area of 86,000 acres, and a minimum absorption capability of about 259,000 acre-feet per year. 3-1

Department comments focus on two main areas. These are: impacts to wildlife in the SWSD; and impacts to fisheries in the Sacramento-San Joaquin Delta.

Document 3

Local (SWSD) Impacts

Lands within SWSD total about 221,000 acres, and are used to grow a variety of crops which provide some habitat value for wildlife. About 65 percent of agricultural land is irrigated. In addition, the District also includes approximately 43,000 acres of high quality habitat for several threatened or endangered species including San Joaquin kit fox, San Joaquin antelope squirrel, blunt-nosed leopard lizard and Tipton kangaroo rat. These lands have been identified by an interagency working group (DFG, U.S. Fish and Wildlife Service, Bureau of Land Management, Department of Water Resources, and Bureau of Reclamation) as being of preserve quality and potentially needed to recover these species. Additionally, Goose Lake provides the only significant wetlands habitat south of the Kern National Wildlife Refuge in the southern San Joaquin Valley.

The DEIR proposes measures to reduce the likelihood of take of threatened or endangered species during construction of the Project, and to mitigate for loss and disturbance of wildlife habitat due to construction of the Project. These measures are generally appropriate, but it is not clear that they would achieve the desired level of efficacy. We recommend that the Final EIR be revised so that:

1. More detailed, yet widely applicable flexible measures to avoid take are described in the Final EIR, rather than deferring such details to later state or federal permits or regulatory authority. 3-2

2. Measures to avoid take of listed species, and reduce impacts to wildlife habitat during operation and maintenance of the project are also described. 3-3

3. Measures to avoid take should include on-site monitoring, and regular reporting on compliance with and effectiveness of mitigation measures. 3-4

4. The burrowing owl is also covered by such measures, inasmuch as individual owls and their active nests are protected raptors, under the Fish and Game Code. 3-5

Department staff in Region 4 can assist the District in developing such measures prior to certification of the Final EIR.

The District intends to limit participation in the water banking program to lands with a significant history of use for agricultural production, including about 26,000 acres that has hitherto relied on pumped groundwater, as opposed to surface water supplies. The Project has the potential to cause changes in farming practices that could have positive or negative impacts on wildlife. This issue was not explored in the DEIR, and should be discussed in the Final EIR. 3-6

Document 3

In general, the DEIR concluded that the Project will have little effect on local land use and farming practices. Even if the Final EIR maintains these conclusions, means to verify impacts following project implementation should be provided. For example, mitigation monitoring measures should also include annual reporting of District water deliveries, and associated land use and farming activities. 3-7

Impacts to wildlife, including take of listed species, might occur as a result of provision of irrigation water or otherwise in association with the Project. The District is in a position to predict and document these impacts; to facilitate reasonable avoidance or mitigation for such impacts; and to facilitate or broker authorization for take of state and federally listed species by participants in the Project. We encourage the District to conduct such actions, and to support local efforts to plan for ecosystem management in conjunction with economic stability in the region. 3-8

We also recommend that the District include public or private lands dedicated to conservation purposes (including hunting) in the category of lands acceptable for inclusion in the water storage program. Active participation of individual sites would require review of individual cases to ensure that they were suitable and that there would be a null or positive effect on the Projects's impacts. Similar review of farmland sites is also appropriate. A record of decisions on inclusion of particular sites should be distributed to local government and affected agencies. 3-9

Effects of Delta Diversions on Fisheries

The DEIR notes that the shift in demand due to the project will increase diversions at the State Water Project Banks Pumping Plant from November through April. The largest increases in diversion are predicted to occur in March and April with increases ranging from 10 to 20 percent greater than diversions under the No Project Alternative. The modelling also shows a decrease of 5 to 20 percent in Delta diversions in May through October with the largest decreases in August through September. This effectively means that diversions will increase in winter and spring months and decrease in the summer and fall months. The increase in diversions would be larger than the decrease in diversions. 3-10

This change in Delta diversions will affect fish species, particularly those that are most sensitive to impacts due to diversion in March and April. Winter run chinook salmon migrate through the Delta with a peak from late January through April. Increases in SWP diversions during this time period due to the Project will have a significant adverse impact on winter run chinook salmon. The DEIR identifies this impact on page 6-76 and estimates that there would be an increase of 4 to 11.2 percent in the number of juvenile winter run chinook salmon taken at the SWP and CVP pumping plants in below normal to wet years.

Document 3

Mr. Wilmar L. Boschman
May 12, 1994
Page Four

The SWP and CVP are currently operating under the Biological Opinion issued by the National Marine Fisheries Service (NMFS) on February 12, 1993 and adopted by the Department of Fish and Game. This Opinion allows for incidental take of up to 1 percent of the estimated number of outmigrating winter run chinook salmon through the operations of the SWP and CVP pumping plants each year. This Biological Opinion requires reinitiation of formal consultation if the action which was the subject of the consultation, operations of the CVP and SWP, are modified in a manner that causes an effect to the listed species that was not considered in the Biological Opinion. Reinitiation of consultation is also required if the incidental take limit is exceeded. The SWP and CVP are currently near or over their incidental take limit for this year.

Based on the information in the DEIR, there will be a significant effect from the project on winter-run chinook salmon that was not anticipated in the Biological Opinion issued for the operations of the SWP and CVP. In light of this additional impact when, under current operations, the incidental take limit is already being approached or exceeded, the USBR and DWR must reinitiate consultation before they can pump the additional water required by the project. 3-11

The DEIR notes that there will be an increase in the cumulative impacts of water project operations on resident and migratory fish and invertebrates inhabiting the Bay/Delta Estuary. These species include the fall run chinook salmon where survival in some years could be reduced by 4 to 13 percent; the Delta smelt where smelt salvaged at the SWP would increase by up to one percent; the longfin smelt where there would be an average increase in number salvaged of 0.8 percent in wet years; and the Sacramento splittail where a reduction in abundance of up to 2.1 percent may occur in some years.

The Delta smelt is listed under the state and Federal Endangered Species acts. The effects of CVP and SWP operations on the Delta smelt are being considered in an on-going consultation between DWR and USBR, and DFG and USFWS. There is currently only a one-year opinion in place; therefore, incidental take of Delta smelt beyond that one-year period is not covered. This project would cause incidental take beyond the one-year period; therefore this impact is not covered by the current smelt opinion. 3-12

After identifying these impacts, the DEIR does not propose any mitigation but relies on the Four Pumps Agreement which only mitigates for direct losses of chinook salmon and striped bass at the SWP. For mitigation of indirect impacts in the Delta, the DEIR relies on other activities which have not yet been completed such as the Article VII discussions, the promulgation of the EPA standards, and the SWRCB regulatory processes to revise the Water Quality Control Plan. This does not meet the intent of CEQA because no mitigation is currently assured under the processes. 3-13

Document 3

In order to correct these deficiencies in the DEIR, measures should be included in the Project description to avoid impacts to the maximum extent feasible. Where impacts to Delta species cannot be avoided, mitigation measures should be proposed which fully offset direct and indirect impacts. Consultation with NMFS, USFWS, and DFG should also be reinitiated by DWR and the USBR on the potential for the project to increase impacts of the SWP and CVP pumping facilities on listed species. 3-14

Please contact Dr. Jeffrey Single, Environmental Specialist, at the address or telephone number listed on this letterhead, or Ms. Cindy Chadwick, Environmental Specialist at (916) 653-9743 should you desire further discussion of the Department's comments.

Sincerely,

George D. Nokes
Regional Manager

cc: Department of Water Resources
National Marine Fisheries Service
US Fish and Wildlife Service

Document 4

STATE OF CALIFORNIA-BUSINESS, TRANSPORTATION AND HOUSING AGENCY PETE WILSON, Governor

DEPARTMENT OF TRANSPORTATION
1352 West Olive Avenue
Post Office Box 12616
Fresno, California 93778

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RECEIVED
MAY 11 1994
S.W.S.D.

May 10, 1994

2132-IGR/CEQA
Draft EIR--Semitropic
Groundwater Banking Project

Mr. Wilmar Baschman
Semitropic Water District
P.O. Box Z
Wasco, CA 93280

Dear Mr. Baschman:

We have previously commented on the Notice of Preparation for the Draft EIR for this project (July 15, 1993). Our comments remain as stated. Please see the attached letter.

If you have any questions, please call Randy Treece at (209) 488-4153.

Sincerely,

Randall D. Treece

for MARC BIRNBAUM, Chief
Advance Planning & Program Development

Document 4

STATE OF CALIFORNIA-BUSINESS, TRANSPORTATION AND HOUSING AGENCY PETE WILSON, Governor

DEPARTMENT OF TRANSPORTATION
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July 15, 1993

2132-IGR/CEQA
6-KER-GEN
NOP for Draft EIR for
Semitropic Groundwater
Banking Project
SCH# 93072024

Mr. Wilmar Baschman
Semitropic Water District
P.O. Box 2
Wasco, CA 93280

Dear Mr. Baschman:

We have reviewed the Notice of Preparation for the above referenced project for the Semitropic Water District. The Groundwater Banking Project is located in north-central Kern County, about 20 miles northwest of the City of Bakersfield. We have the following comments.

This proposed project states it "will involve the construction and upgrade of various water conveyance facilities within the Semitropic Water Storage District." If the construction of any of these conveyance facilities will encroach on any State highway right of way, the Water District will be required to obtain an Encroachment Permit. 4-1 In addition, we would like to know the Water District plans on the temporary closure of roads and a brief appraisal on the additional vehicular traffic that will occur construction. 4-2 If you have any questions regarding the Encroachment Permit process or other matters above, please contact Bob James of our Permits Department at (209) 488-4289.

Sincerely,

Randall D. Treace
for MARC BIRNBAUM, Chief
Advance Planning & Program
Development

Document 5

DOOLEY
& HERR
ATTORNEYS AT LAW

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May 13, 1994

RECEIVED
MAY 13 1994
S.W.S.D.

Wilmar L. Boschman
Engineer-Manager
Semitropic Water Storage District
P. O. Box Z
Wasco, CA 93280

RE: Comments regarding the Draft Environmental Impact Report on the Semitropic Groundwater Banking Project

Dear Mr. Boschman;

These comments on the Draft Environmental Impact Report ("DEIR") on the Semitropic Groundwater Banking Project ("Project"), March 1994, are submitted on behalf of the North Kern Water Storage District ("North Kern") and pursuant to the provisions of California Public Resources Code Sections 21000 et seq.

The proposed Project has the potential to significantly affect the environment if feasible mitigation measures are not implemented. Proper avoidance and/or mitigation is contingent upon clearly defined Project construction and management criteria. These comments are intended to focus upon the areas of potential significant effect and offer constructive means of avoidance and mitigation. Importantly, North Kern does not believe it can be concluded that the Project will have no significant effect on the environment unless appropriate criteria are developed and avoidance and mitigation measures imposed. 5-1

The following comments are presented in the form of General and Specific comments. The General Comments are intended to provide overall context for the concerns of North Kern. The Specific Comments identify the portions of the DEIR that raise significant concerns or questions.

GENERAL COMMENTS

1. The Semitropic Groundwater Banking Project (Project) would provide Semitropic Water Storage District ("Semitropic") with an improved water system, including water wells, pipe lines, pumping plants and ancillary facilities, which would significantly increase the Semitropic's capability to:

Document 5

a. import water into Semitropic, including both Project water and non-Project water; 5-2

b. distribute water from place to place within Semitropic; and

c. export water from Semitropic, either by pumping groundwater into the California Aqueduct, or by foregoing delivery of some of the Semitropic's State Water Project supply and allowing such SWP supply to be delivered to Metropolitan, in accordance with the Project plans.

2. The Project would provide Metropolitan with a supplemental drought water supply.

3. The Project would have the capability of improving groundwater levels within Semitropic in the short-term, due to the "bank before extraction" ("put" before "take") criterion.

4. The Project would also have the capability of improving both short-term and long-term groundwater levels within Semitropic, due to the increased capability of importing Kern County Water Agency's periodically availability "pool water" and other non-Project water supplies. 5-3

5. The additional water wells, pipe lines, pumping plants and ancillary facilities of the Project which make it possible to improve water levels generally throughout Semitropic also make it possible to cause declines in water levels and water quality in some local areas within and neighboring Semitropic. 5-4

6. To avoid problems in such potentially affected local areas, two key provisions should be added to the Project design and operation information in the March 1994 Draft EIR;

a. Detailed criteria should be specified regarding the location and use of wells and other project facilities, including in lieu lands; and 5-5

b. There should be Project participation in comprehensive monitoring program as generally outlined in the December 15, 1993 "Points To Be Included In A Memorandum of Understanding Re Initial Phase of Ground Water Monitoring Program", authorized for joint participation by the Buena Vista, North Kern, Rosedale-Rio Bravo, Shafter-Wasco, Semitropic and Southern San 5-6

Document 5

Joaquin districts. A draft of such an MOU, "Memorandum of Understanding Regarding Operation and Monitoring of the Semitropic Water Storage District Groundwater Banking Project", dated May 13, 1994, has been prepared and is available for review and comment. 5-6

SPECIFIC COMMENTS

1. Mitigation Measures. Mitigation measures for the proposed Project, described in Section 6.4.8 on page 32 of the Draft EIR, cover only monitoring wells and monitoring well construction and location. To provide adequate assurance and thus be acceptable to potentially affected neighboring landowners, Project monitoring must be technically sound and be coordinated and/or directed by a "good and independent scorekeeper". The monitoring well criteria specified in Sections 6.4.8.1 and 6.4.8.2 may be generally adequate for the Project as a whole, but need to be made more specific for areas of concern near adjoining districts. In addition, at least by implication, Semitropic would be the coordinator/director of monitoring activities, as well as the Project operator. Clearly, Semitropic would not be a disinterested party and would therefore not be suitable to be the sole determining party in conducting, analyzing and reporting on monitoring activities. 5-7

2. Specific Deficiencies in Proposed Groundwater Monitoring. More specifically, the groundwater monitoring program described in the Draft EIR appears to be deficient, as follows:

   a. While the program would utilize data from ongoing programs of the Bureau of Reclamation and the Department of Water Resources, other than a general reference to the February 1992 Kern Water Bank Ground Water Monitoring Program (Draft Report), it is not clear to what extent additional groundwater information would be developed to pinpoint possible significant adverse impacts on neighboring lands. 5-8

   b. More detailed information appears to be needed regarding the hydrogeologic conditions of existing and new wells to be used in the monitoring/modeling program: well logs, results of test pumping, specifications for any newly constructed monitoring wells, etc.

Document 5

c. There is a serious concern that some of the assumptions used in the modeling of hypothetical Project operations may not adequately reflect the actual conditions in some specific areas neighboring the Semitropic district. In order to create confidence in the model's ability to properly define with-Project and without-Project conditions, additional data and/or modeling criteria should be included. 5-8

d. Before proceeding with the environmental review process, these serious concerns should be discussed formally and in detail, hopefully leading to a program which would allow the Project to proceed expeditiously and in a manner that provides assurance to potentially affected neighboring landowners that they would not be adversely affected by the Project.

3. Non-Banking Use of Project Facilities. Section 4.3.5.3. of the Draft EIR discusses Non-Banking use of Project facilities. The first category, with which neighboring landowners should have no objection, is the use of the Project facilities to allow Semitropic to acquire Agricultural Pool Water from Kern County Water Agency, when available. However, as stated at page 4-33,

> "The second category of Non-Banking use of the project facilities is to pump groundwater for the benefit of farmers with Semitropic. In this case, during years of significant SWP entitlement deficiencies or emergency, Semitropic would use the project facilities to provide water to farmers that may have groundwater quality problems, peaking capacity problems and other emergency conditions." 5-9

> "Non-banking activities would also be subject to the 15 foot; three year rule described above."

This second category is a very serious concern to neighboring landowners within North Kern. At the present time, Delta operational criteria imposed by the Clean Water Act, as administered by the U.S. Environmental Protection Agency, and by the Endangered Species Act, as administered by the National Marine Fisheries Service and the U.S. Fish and Wildlife Service, are severely restricting the

Document 5

ability of the State Water Project and the Federal Central Valley Project to divert waters from the Delta for the benefit of users downstream from the Delta pumping plants.

As long as such severe criteria are imposed by the federal administrative agencies, the State Water Resources Control Board and other State agencies, the SWP and the CVP will continue to be plagued by administratively imposed droughts, such as occurred during 1993. Under today's conditions, the SWP can dependably deliver only about half of its contractual commitments of 4.23 million acre-feet per year.

In light of this very real situation, it can be expected that there will be very frequent occurrences of "...years of significant SWP entitlement deficiencies...". Semitropic pumping operations may need to be modified and/or curtailed in order to avoid significant adverse impacts regarding groundwater levels and quality to any lands within or near the boundaries of Semitropic. The 15-foot, 3-year rule may not always provide adequate protection for potentially affected overlying landowners. Additional criteria may be appropriate. 5-9

4. Satisfaction of Groundwater Monitoring Concerns. It is believed that the concerns described in items 1, 2 and 3 above could be satisfied if the Project sponsors were to formally commit to a monitoring and data evaluation program as generally outlined in the December 15, 1993 "Points To Be Included In A Memorandum Of Understanding Re Initial Phase Of Ground Water Monitoring Program", authorized for joint participation by the Buena Vista, North Kern, Rosedale-Rio Bravo, Shafter-Wasco, Semitropic and Southern San Joaquin districts and as more specifically described in the May 13, 1994 Draft, Memorandum of Understanding Regarding Operation and Monitoring of the Semitropic Water Storage District Groundwater Banking Project. 5-10

5. Project Operating Criteria. Hypothetical Project operations are described in Chapter 6 of the Draft EIR. While individuals could have varying opinions regarding the applicability of some of the historically based Delta operational criteria to future operations of the State Water Project, the key to avoiding problems with Semitropic's neighbors is to have clear and unambiguous understandings regarding all of the significant criteria for actual operation of the Project. 5-11

Document 5

CONCLUSIONS

The Project has the potential to significantly affect groundwater conditions in neighboring districts. The criteria included and analyzed in the DEIR do not adequately describe how the Project will be operated so as to avoid or mitigate potential significant adverse impacts. 5-12

Commitment by Semitropic to participate in a comprehensive monitoring program as outlined by the December 15, 1993 "Points To Be Included In A Memorandum of Understanding Re Initial Phase of Ground Water Monitoring Program" and implemented by execution of an agreement in substantially the form of the May 13, 1994 Draft "Memorandum of Understanding Regarding Operation and Monitoring of the Semitropic Water Storage District Groundwater Banking Project" will establish a process whereby potentially significant effects of the Project can be avoided or mitigated. If such an agreement is adopted as a part of the mitigation for the Project, North Kern does not oppose certification of the Final Environmental Impact Report and approval of the Project. 5-13

If you have any questions or comments regarding these comments please feel free to call upon the staff of North Kern. Thank you for your cooperation.

Sincerely,

DOOLEY & HERR

Daniel M. Dooley

Daniel M. Dooley

Document 6

KERN COUNTY
WATER AGENCY

RECEIVED
MAY 16 1994
S.W.S.D.

Directors:

Fred L. Starrh
Division 1

Terry Rogers
Division 2

Peter Frick
President
Division 3

Michael Radon
Division 4

Adrienne J. Mathews
Division 5

Henry C. Garnett
Division 6

W. T. Baleh
Division 7

Thomas N. Clark
General Manager

John F. Stovall
General Counsel

May 13, 1994

Wilmar L. Boschman, Engineer-Manager
Semitropic Improvement District
P.O. Box Z
Wasco, CA. 93280

RE: Kern County Water Agency (Agency) comments on the Semitropic Groundwater Banking Project, Draft Environmental Impact Report, dated March, 1994

Dear Mr. Boschman:

Thank you for this opportunity to comment on the above referenced environmental document. Overall, the Agency supports the Ground Water Banking Project (Project) for the following four reasons:

- The Agency supports the use of the ground water basin for beneficial ground water management activities.
- The Project has the potential to bring additional non-banked SWP and other waters into the ground water basin which would benefit the ground water basin by reducing overdraft.
- The Project proposes reasonable construction and loss criteria.
- The Project provides for development of a reasonable ground water monitoring program that proposes formation of a committee consisting of surrounding districts, the Agency and DWR, to oversee the ground water monitoring program.

The enclosed comments, (Attachment A) relate to specific technical issues of the Draft Environmental Impact Report (DEIR) that we believe either need further clarification, or additional information.

There are several policy and contract related issues, outside the scope of the DEIR, that need to be resolved by agreement in order to allow for development of the Ground Water Banking Project. We will address these issues by separate letter.

Sincerely,

for Thomas N. Clark
General Manager

xc: KCWA Board of Directors
KCWA Member Units

Mailing Address:
P.O. Box 58
Bakersfield, CA 93302-0058
Phone: 805/634-1400
Fax: 805/634-1428

Document 6

ATTACHMENT "A"

KERN COUNTY WATER AGENCY
COMMENTS ON THE
SEMITROPIC GROUND WATER BANKING PROJECT
DRAFT ENVIRONMENTAL IMPACT REPORT

1. Page 2-16, second column, first paragraph; In the discussion of surface storage, the first sentence refers to Table 2-2, but Table 2-2 deals with ground water basin characteristics, please clarify. 6-1

2. Page 3-3, second column, second complete paragraph; This paragraph indicates that Semitropic WSD retains a minimum 15,000 acre-feet of SWP entitlement water in dry year but on page 6-13 this value is shown as 25,000 acre-feet. Which is correct? 6-2

3. Page 6-16, second column, first paragraph; The reference to Figures 6-2 through 6-7 should probably be Figures 6-4 through 6-9. 6-3

4. Table 6-7 on page 6-29 is titled "METROPOLITAN BANKING ACTIVITY" The Agency would like to see this Table expanded to include annual acre-feet of "puts" and "takes" by; Shafter-Wasco ID through the Interconnection, Semitropic SWP and pool water deliveries, and ground water pumping within the District. With this additional information, the Agency is better prepared to make an objective evaluation of the proposed Banking Project. 6-4

Document 7

ROSEDALE · RIO BRAVO
WATER STORAGE DISTRICT
849 Allen Road • P. O. Box 867 • Bakersfield, California 93302-0867 • (805) 589-6045 • FAX (805) 589-1867

Mr. Wilmar L. Boschman, Engineer Manager
SEMITROPIC WATER STORAGE DISTRICT
P.O. Box Z
Wasco, CA 93280

May 12, 1994

RECEIVED
MAY 13 1994
S.W.S.D.

Semitropic Groundwater Banking Project
Draft Environmental Impact Report (DEIR)

We have reviewed the DEIR for the proposed Semitropic Groundwater Banking Project. Although the project can provide short-term benefits to the groundwater basin, we have concerns regarding possible adverse impacts due to project operations. Our specific concerns relative to the project evaluation presented in the DEIR are as follows:

1. The assumptions relative to the amount of pool water available for purchase by Semitropic in the future, 150,000 AF each year with an 80% or better supply, seem to be very optimistic. Additionally, the non-banking extraction activities are not well defined. 7-1

2. We are not comfortable with the groundwater modeling results presented in the DEIR. The effects due to recharge and extraction are averaged out over relatively large areas. Potential localized impacts are not adequately addressed. 7-2

3. The banking analysis on which the model is based, shown in Table 6-7 on page 6-29, is not a balanced scenario. Considerably more water is put into storage over the study period than is extracted, and the groundwater "bank account" is never zeroed out. This may not represent realistic project operations. 7-3

4. The hydrographs included as Figures 6-4 through 6-11 indicate that the project without non-banking use has generally lower groundwater levels than the project with non-banking use. However, Table 6-8 shows predicted groundwater level changes for only the project with non-banking use. It also appears that the 3 year average difference calculations for Rosedale on page 6-31 are incorrect. 7-4

5. The report does not address possible water quality impacts due to DBCP, EDB, and nitrates. High concentrations of these constituents have previously been found in the groundwater in areas surrounding the project site. 7-5

6. We do not feel that the 15-foot/3-year rule is adequate to ensure that the project will not have an adverse impact on groundwater levels within and adjacent to Semitropic. The project should include a commitment to participate in a groundwater monitoring and evaluation program as 7-6

Document 7

outlined in the "Points To Be Included In A Memorandum of Understanding Re Initial Phase Of Groundwater Monitoring Program", dated December 15, 1993, and agreed to by the Buena Vista, North Kern, Rosedale-Rio Bravo, Shafter-Wasco, Semitropic, and Southern San Joaquin districts. The DEIR should include as a mitigation measure the requirement to execute a "Memorandum of Understanding" with the surrounding districts that defines a groundwater monitoring and evaluation program for the project and provides a process for modifying project operations as necessary to avoid potential adverse impacts. 7-6

We feel that there is much to learn about our groundwater basin and the impacts that may be caused by groundwater banking projects. Monitoring and evaluation of the project as it proceeds is very important in order to learn more about the basin and to verify that project impacts are kept to a minimum.

Rosedale-Rio Bravo Water Storage District

Mary Collup/ma

Mary Collup
Manager

cc: Boyle Engineering Corporation

BK-R01-002-94/mya

Document 8

San Joaquin Valley
Unified Air Pollution Control District

RECEIVED
MAY 16 1994
S.W.S.D.

May 11, 1994

Mr. Wilmar L. Boschman
Engineer-Manager
SEMITROPIC WATER STORAGE DISTRICT
P.O. Box Z
Wasco, CA 93280

Subject: **Draft Environmental Impact Report for the Semitropic Ground Water Banking Project (SCH# 93072024)**

Mr. Boschman:

The San Joaquin Valley Unified Air Pollution Control District (District) has reviewed your Draft Environmental Impact Report (EIR) and has the following comments and suggestions.

The District disagrees with the conclusion stated in Section 6.3.3.1 (page 6-6) of your EIR, "the overall regional and local air quality impacts from the construction phase of the proposed Project would be negligible." The District does not consider it appropriate to rate the significance of a single project based on its percentage increase on the entire inventory. All single projects would be judged small and insignificant. 8-1

The District is concerned about dust emissions during the construction phase of this project. Particulate matter emissions would be temporary but significant. These particulate emissions can be partially mitigated by complying with the District's PM_{10} Regulations and by adhering to simple additional procedures. The EIR should be modified to included the following feasible measures that will serve to mitigate project-related air quality impacts: 8-2

- The applicant shall comply with the San Joaquin Valley Unified Air Pollution Control District's Rule 8020 - *Fugitive Dust Requirements for the Control of Fine Particulate Matter (PM_{10}) from Construction, Demolition, Excavation, and Extraction Activities.* (copy included for reference)

Document 8

- Watering, pursuant to sections 5.1.1 and 5.2.1 of Rule 8020, should occur at least twice a day with complete coverage, preferably in the late morning and after work is done for the day.
- All material transported off-site should be either sufficiently watered or securely covered to prevent excessive amounts of dust.
- The area disturbed by clearing, earth moving, or excavation activities should be minimized at all times.
- Where acceptable to the Fire Department, weed control should be accomplished by mowing instead of discing, thereby leaving the ground undisturbed and with a mulch covering.

8-2

The District appreciates the opportunity to comment on this Environmental Impact Report. If you have any questions, please do not hesitate to contact me at (805) 861-3682. 8-3

Joe O'Bannon
Environmental Planner, Southern Region

Document 8

RULE 8020 FUGITIVE DUST REQUIREMENTS FOR CONTROL OF FINE PARTICULATE MATTER (PM_{10}) FROM CONSTRUCTION, DEMOLITION, EXCAVATION, AND EXTRACTION ACTIVITIES (Adopted October 21, 1993)

1.0 Purpose

The purpose of this Rule is to limit fugitive dust emissions from construction, demolition, excavation, and related activities.

2.0 Applicability

This Rule applies to any construction, demolition, excavation, extraction, and water mining related disturbances of soil, including land clearing, grubbing, scraping, ground excavation, land leveling, grading, cut and fill operations, travel on the site, travel on access roads to and from the site, and demolition activities. The Rule is also applicable to the initial construction of landfills prior to commencement of landfill operations. This Rule applies to new and existing operations and activities and becomes effective December 10, 1993.

3.0 Definitions

3.1 Excavation: any digging, trenching, quarrying, extraction, or tunneling.

3.2 Extraction: removal of minerals, aggregate, or fossil fuels from the earth by excavation; including mining, surface stripping, open pit excavation, or tunneling.

3.3 Visible Dust Emissions: visible dust of such opacity as to obscure an observer's view to a degree equal to or greater than an opacity of 40%, for a period or periods aggregating more than three (3) minutes in any one (1) hour, except as set forth in Rule 8030 section 5.1.2.

3.4 Water Mining: activities related to the production, diversion, storage or conveyance of water, including irrigation canals, but excluding irrigation ditches within agricultural fields.

4.0 Exemptions

In addition to the exemptions established in Rule 8010, the following exemptions are established for this Rule:

4.1 Any brush or timber clearing, grubbing, scraping, ground excavation, land leveling, or grading activity conducted for the purpose of preparing land for the growing of crops or the raising of fowl or animals. This does not exempt

grading, land leveling, or scraping for the purpose of constructing structures intended for agricultural use or for the purpose of water mining.

4.2 Activities for which mitigation programs for the control of fine particulate matter (PM_{10}) through the control of fugitive dust have been approved prior to the effective date of this Rule.

4.3 Blasting activities.

4.4 Construction or demolition activities for which bids have been awarded, building permits issued, or for which the construction or demolition work has commenced prior to the effective date of this Rule.

4.5 Maintenance or remodeling of existing buildings and additions to existing buildings where total building area is not increased by more than fifty percent, or 10,000 square feet, whichever is less. All additions to single family residential buildings.

4.6 Renovation of ground water recharge basins to restore permeability, but not including other water mining activities.

4.7 Solar drying and the harvesting of sedimentary calcium carbonate precipitates from settling/evaporation ponds for the purpose of process recycling and reuse of the precipitate.

5.0 Requirements

The provisions of Section 5.1 are applicable to inactive disturbed areas of a construction site. Section 5.2 applies to unpaved on-site roads and off-site unpaved access roads. Section 5.3 sets forth requirements for any area of a construction site on which land preparation activities are occurring. Section 5.4 sets forth requirements for the prevention and removal of mud and dirt carryout. Section 5.5 sets forth requirements for storage of construction vehicles, equipment, and materials.

5.1 All disturbed areas of a construction site, including storage piles of fill dirt and other bulk materials, which are not being actively utilized for construction purposes for a period of seven (7) calendar days or more, shall be stabilized using one or more of the following approved soil stabilization methods to effectively limit visible dust emissions. Where soil moisture or natural crusting is sufficient to limit visible dust emissions, no action is required. Disturbed areas shall be stabilized for the duration of the construction activity or until construction work resumes on the inactive disturbed area.

5.1.1 Where water is used as the dust suppressant, watering shall be applied to effectively limit visible dust emissions, or

5.1.2 Where a chemical dust stabilizer or suppressant is utilized, the stabilizer or suppressant shall be applied to effectively limit visible dust emissions, or

5.1.3 Where planting of trees and vegetative ground cover is utilized, vegetation shall be planted in sufficient density and watered with sufficient frequency to effectively stabilize the disturbed area and limit visible dust emissions.

5.2 All operations described in Section 2.0 shall effectively limit visible dust emissions from on-site unpaved roads and off-site unpaved access roads using one or more of the following stabilization methods. Road stabilization shall be maintained for the duration of the activity. Where soil moisture is sufficient to meet this requirement, no action is required.

5.2.1 Where water is used as the dust suppressant, watering shall be applied to effectively limit visible dust emissions.

5.2.2 Where a chemical dust stabilizer or suppressant is used, the stabilizer or suppressant shall be applied to effectively limit visible dust emissions.

5.3 No person shall undertake any land clearing, grubbing, scraping, excavation, land leveling, grading, cut and fill operations, or demolition activities, without utilizing appropriate dust control measures during the land preparation, demolition, excavation or extraction. Appropriate dust control measures may consist of the effective application of water or pre-soaking.

5.3.1 Operations employing use of wrecking balls or other wrecking equipment to raze or demolish buildings shall not be required to limit visible dust emissions from the employment of such equipment for wrecking operations, provided water is applied to the building surface as follows:

5.3.1.1 All exterior surfaces of the building up to six stories in height shall be wetted when commencing use of the wrecking ball or equipment and shall be maintained adequately wetted thereafter while operations continue.

5.3.1.2 Wetting shall not be required with use of wrecking balls when employed on that part of a building or structure in excess of six stories in height.

5.4 All operations described in Section 2.0 shall limit or expeditiously remove the accumulation of mud or dirt from public paved roads, including shoulders, adjacent to the site. Removal activities must comply with local requirements and procedures.

5.4.1 In addition to restrictions imposed by local agencies, the use of dry rotary brushes for removal of deposited mud/dirt carryout from a paved road is expressly prohibited, except where preceded or accompanied by sufficient wetting to limit the visible dust emissions.

5.4.2 For the purposes of this Section, the use of blower devices for removal of deposited mud/dirt carryout from subject paved roads is expressly prohibited.

5.4.3 Use of paved access aprons, gravel strips, wheel washers, or other measures designed to limit mud and dirt deposits on public paved roads are strongly encouraged to minimize the need for removal of mud and dirt from paved public roads.

5.5 All areas used for storage of construction vehicles, equipment, and materials shall comply with the provisions of the Rule 8070.

6.0 Alternative Compliance Plan

If special conditions exist which will unreasonably prevent compliance with the requirements in Section 5.0 of this Rule, the owner/operator may submit and request approval of an Alternative Compliance Plan in accordance with Section 6.0 of Rule 8010. The Alternative Compliance Plan must specify the special circumstances which unreasonably prevent compliance and provide an alternative program of control measures. Failure to implement control measures specified in an approved Alternative Compliance Plan constitutes a violation of this Rule.

Document 9

Shafter-Wasco Irrigation District

BOARD OF DIRECTORS

ROGER FRANTZ, President
ARTHUR PENNER, Vice President
LOWELL BERGMAN
ERIC A. MERZ
KEN PAUL

P.O. BOX 158
WASCO, CALIFORNIA 93280
Phones: Business Office (805) 758-5153
Fax (805) 758-6167
Water Department (805) 758-5369

Secretary-Manager
HARVEY R. WILLIAMS

CAROLYN WALDRIP - Treasurer

Legal Counsel
ERNEST A. CONANT
SCOTT K. KUNEY

May 13, 1994

RECEIVED
MAY 16 1994
S.W.S.D.

Wilmar L. Boschman
Semitropic Water Storage District
P.O. Box Z
Wasco, CA 93280

Subject: Semitropic Groundwater Banking Project

Dear Will:

This is to provide comment respecting the Draft Environmental Impact Report for the subject project.

We have been engaged in discussions with Semitropic and other neighboring water districts respecting the monitoring of project operations. This element is very important to our District and we have been pleased with the progress which has been made. Beyond monitoring, however, we would like to know if you will have the flexibility to move or adjust the locations of new wells further to the west. Recognizing the possibility that project operations may have to be adjusted to avoid potential groundwater impacts from some of the identified wells, will you have the flexibility to respond accordingly if alternate well locations are identified in the short term or the long term? 9-1

We appreciate the opportunity to provide comment on your proposed project, which we believe can be implemented for the benefit of the common groundwater basin.

Sincerely,

HARVEY R. WILLIAMS
Secretary-Manager

HRW:ao

Document 10

STATE OF CALIFORNIA

PETE WILSON, *Governor*

GOVERNOR'S OFFICE OF PLANNING AND RESEARCH
1400 TENTH STREET
SACRAMENTO, CA 95814

RECEIVED
MAY 20 1994
S.D.

May 13, 1994

MR. WILMAR BASCHMAN
SEMITROPIC WATER DISTRICT
P.O. BOX 2
WASCO, CA 92380

Subject: SEMITROPIC GROUNDWATER BANKING PROJECT SCH #: 93072024

Dear MR. WILMAR BASCHMAN:

The State Clearinghouse submitted the above named environmental document to selected state agencies for review. The review period is closed and none of the state agencies have comments. This letter acknowledges that you have complied with the State Clearinghouse review requirements for draft environmental documents, pursuant to the California Environmental Quality Act. 10-1

Please call Mari Lemos at (916) 445-0613 if you have any questions regarding the environmental review process. When contacting the Clearinghouse in this matter, please use the eight-digit State Clearinghouse number so that we may respond promptly.

Sincerely,

Michael Chiriatti, Jr.
Chief, State Clearinghouse

Document 10

Notice of Completion *Supplementary Document M*

Mail to: State Clearinghouse, 1400 Tenth Street, Sacramento, CA 95814 916/445-0613

See NOTE below

SCH # 93072024

Project Title: Semitropic Groundwater Banking Project

Lead Agency: Semitropic Water Storage District
Contact Person: Wilmar Bostman
Street Address: 1017 Central Avenue
Phone: (805) 758-5113
City: Wasco, California Zip: 93280
County: Kern

Project Location

County: Kern
City/Nearest Community: Wasco
Cross Streets: N/A
Zip Code: —
Total Acres: N/A
Assessor's Parcel No. N/A
Section: — Twp. — Range: — Base: —
Within 2 Miles: State Hwy #: TH-5, SH 46
Waterways: Poso Creek
Airports:
Railways: various
Schools: various

Document Type

CEQA: ☐ NOP ☐ Early Cons ☐ Neg Dec ☒ Draft EIR ☐ Supplement/Subsequent ☐ EIR (Prior SCH No.) ☐ Other

NEPA: ☐ NOI ☐ EA ☐ Draft EIS ☐ FONSI

Other: ☐ Joint Document ☐ Final Document ☐ Other

Local Action Type

☐ General Plan Update ☐ General Plan Amendment ☐ General Plan Element ☐ Community Plan ☐ Specific Plan ☐ Master Plan ☐ Planned Unit Development ☐ Site Plan ☐ Rezone ☐ Prezone ☐ Use Permit ☐ Land Division (Subdivision, Parcel Map, Tract Map, etc.) ☐ Annexation ☐ Redevelopment ☐ Coastal Permit ☐ Other

Development Type

☐ Residential: Units Acres
☐ Office: Sq.ft. Acres Employees
☐ Commercial: Sq.ft. Acres Employees
☐ Industrial: Sq.ft. Acres Employees
☐ Educational
☐ Recreational

☐ Water Facilities: Type Pipe/Pipes MGD varies
☐ Transportation: Type
☐ Mining: Mineral
☐ Power: Type Watts
☐ Waste Treatment: Type
☐ Hazardous Waste: Type
☐ Other

Project Issues Discussed in Document

☐ Aesthetic/Visual ☐ Agricultural Land ☐ Air Quality ☐ Archaeological/Historical ☐ Coastal Zone ☐ Drainage/Absorption ☐ Economic/Jobs ☐ Fiscal ☐ Flood Plain/Flooding ☐ Forest Land/Fire Hazard ☐ Geologic/Seismic ☐ Minerals ☐ Noise ☐ Population/Housing Balance ☐ Public Services/Facilities ☐ Recreation/Parks ☐ Schools/Universities ☐ Septic Systems ☐ Sewer Capacity ☐ Soil Erosion/Compaction/Grading ☐ Solid Waste ☐ Toxic/Hazardous ☐ Traffic/Circulation ☐ Vegetation ☐ Water Quality ☐ Water Supply/Groundwater ☐ Wetland/Riparian ☐ Wildlife ☐ Growth Inducing ☐ Landuse ☐ Cumulative Effects ☐ Other

Present Land Use/Zoning/General Plan Use

N/A

Project Description The proposed Semitropic Groundwater Banking Project consists of an expansion of the existing water supply distribution system within the Semitropic Water Storage District for purposes of banking Metropolitan Water District of Southern California State Water Project entitlemr.t water in the groundwater basin underlying Semitropic Water Storage District.

NOTE: Clearinghouse will assign identification number for all new projects. If a SCH # number already exists for a project (e.g. from a Notice of Preparation or previous

CLEARINGHOUSE CONTACT: MARI LEMOS
(916) 445-0613

STATE REVIEW BEGAN: 3-29-94
SEPT REV TO AGENCY: 5 4-6
AGENCY REV TO SCH: 5 9-11
SCH COMPLIANCE: 5 4-13

PLEASE NOTE SCH NUMBER ON ALL COMMENTS

PLEASE FORWARD LATE COMMENTS DIRECTLY TO THE LEAD AGENCY ONLY

IND/APCD: 11 (Resources: 4 / 2)

CKT	SNT	
		Resources
		Boating
		Coastal Comm
		Coastal Consv
		Colorado Rvr Bd
	S	Conservation
	S *	Fish & Game 4
		Forestry
	S	Parks & Rec/OHP
		Reclamation
		SCDC
	S	DWR
		Bus Transp Hous
		Aeronautics
		CHP
	S *	Caltrans # 6
		Trans Planning
		Housing & Devel
		Health & Welfare
		Drinking H20
		Medical Waste

CKT	SNT	
		State/Consumer Svcs
		General Services
		OLA (Schools)
	S	Cal/EPA
		ARB
		CA Waste Mgmt Bd
		SWRCB:--Grants
		SWRCB:--Delta
		SWRCB:--Wtr Quality
	S	SWRCB:--Wtr Rights
	S *	Reg. WQCB # 5(F)
		DTSC/CTC
		Yth/Adlt Corrections
		Corrections
		Independent Comm
		Energy Comm
	S	NAHC
		PUC
		Santa Mn Mtns
	S *	State Lands Comm
		Tahoe Rgl Plan
		Other:

* = sent by lead / ** = sent by SCH

Document 11

DUDLEY RIDGE WATER DISTRICT

DIRECTORS
JOHN HOWE, PRESIDENT
JOSEPH C. MacILVAINE
DONNIE ROSE
SCOTT HAMILTON
DENNIS ELAM

286 W. CROMWELL AVENUE
FRESNO, CALIFORNIA 93711-6162

PHONE (209) 449-2700
FAX (209) 449-2715

CLARENCE EMERZIAN
Assessor-Collector-Treasurer

DENNIS ELAM
Secretary

May 25, 1994

Mr. Wilmar L. Boschman
Semitropic Water Storage District
P.O. Box Z
Wasco, CA 93280

Subject: Semitropic Groundwater Banking Program
Draft EIR

Dear Wil:

We have reviewed the Draft Environmental Impact Report on the groundwater banking program between Semitropic Water Storage District and Metropolitan Water District of Southern California.

Our District has been supportive of efforts by State Water Project contractors to improve the reliability of their SWP water supplies. The proposed Semitropic Groundwater Banking Program provides benefits to both districts and represents the type of innovative programs necessary for many SWP contractors to manage their water supplies to better meet their service area needs. Accordingly, we support the development of the Semitropic Groundwater Banking Program. 11-1

Respectfully,

James R. Provost, Manager

JRP:las

cc: Dirk Reed, MWDSC

5.4 PUBLIC MEETING

To solicit oral comments on the Draft EIR, Semitropic held a public meeting on April 19, 1994, at the Semitropic School located within the Semitropic area 9 miles west of the City of Wasco on State Highway 46.

Semitropic publicized this meeting by including a full-page notice in the *Semitropic Water Storage District Newsletter*, Spring 1994, and a two-column by 7-inch display ad in; The Bakersfield Californian (April 11), The Wasco Tribune (April 13), and The Shafter Press (April 13). In addition, a meeting notice was mailed to all agencies, organizations, and inddividuals receiving the Draft EIR; and the legal notice announcing the availability of the Draft EIR (see 5.3 above) also announced the public meeting.

5.4.1 Public Meeting Notices

Public Meeting

Draft Environmental Impact Report on the Proposed Semitropic Groundwater Banking Project

☆ **Tuesday evening, April 19, 7:00 PM**

☆ **Semitropic School**
on Highway 46, nine miles west of Wasco

The **Semitropic Water Storage District** has prepared a Draft Environmental Impact Report (Draft EIR) for the proposed Semitropic Groundwater Banking Project.

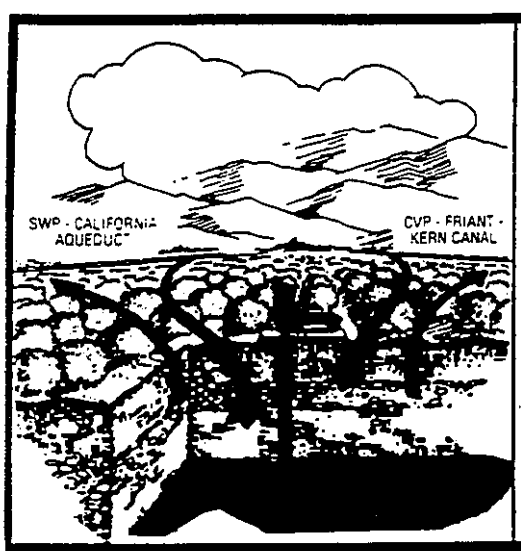
The proposed Project is a long-term water storage project designed to recharge groundwater and reduce overdraft, increase Semitropic's operational reliability and flexibility, and optimize the distribution and use of available water resources between Semitropic and the Metropolitan Water District of Southern California. The Draft EIR addresses existing environmental conditions, potential impacts, and proposed mitigation measures associated with the proposed Project.

Purpose of the April 19 Public Meeting. Semitropic is hosting the meeting to give organizations and individuals the opportunity to comment on the Draft EIR.

Copies of the Draft EIR are available for public review at:

- The Semitropic Water Storage District, 1017 Central Ave., Wasco.
- The Metropolitan Water District of Southern California, 350 S. Grand Ave., Los Angeles.
- Bakersfield Main Library, 701 Truxtun Ave., Bakersfield.
- Shafter Branch Library, 236 James St., Shafter.
- Wasco Branch Library, 1102 7th St., Wasco.

For more information, call **Wilmar Boschman**, Semitropic's Engineer-Manager (805/758-5113).



Semitropic NEWS
Water Storage District
SPRING, 1994

Public Meeting

DRAFT ENVIRONMENTAL IMPACT REPORT ON THE PROPOSED SEMITROPIC GROUND WATER BANKING PROJECT

- **Tuesday Evening, April 19 7:00 p.m.**
- **Semitropic School**

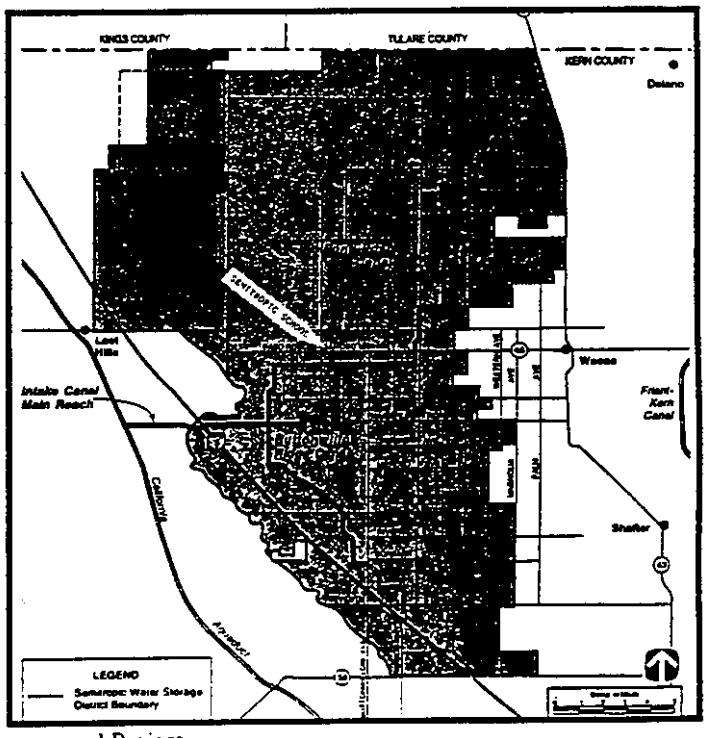
on Highway 46, nine miles west of Wasco

The Semitropic Water Storage District has prepared a Draft Environmental Impact Report (Draft EIR) for the proposed Semitropic Groundwater Banking Project, which is a long-term water storage project designed to recharge ground water and reduce overdraft, increase the Semitropic Water Storage District's operational reliability and flexibility, and optimize the distribution and use of available water resources between Semitropic and the Metropolitan Water District of Southern California. Specifically:

- Metropolitan would deliver a portion of its State Water Project entitlement water to Semitropic when the water is available.
- Semitropic would use this water in-lieu of pumping ground water for irrigation or to recharge the aquifer using spreading basins.
- Semitropic, on request, would return Metropolitan's previously stored water, either by pumping from the ground water basin through pumpback facilities into the California Aqueduct or by providing Metropolitan with an equivalent portion of Semitropic's State Water Project supply.

Implementation of the project would require establishment of an in-lieu service area and the construction of conveyance facilities, groundwater wells, and pumps.

The Draft EIR addresses existing environmental conditions, potential impacts, and proposed mitigation measures associated with the proposed Project.



The purpose of the April 19 public meeting is to give organizations and indiviuals the opportunity to comment on the Draft EIR. Semitropic also welcomes written comments. The closing date for the receipt of comments at Semitropic's address below is May 13, 1994.

Copies of the Draft EIR are available for public review at:

- Semitropic Water Storage District, 1017 Central Ave., Wasco.
- Metropolitan Water District of Southern California, 350 S. Grand Ave., Los Angeles.
- Bakersfield Main Library, 701 Truxtun Ave., Bakersfield
- Shafter Branch Library, 236 James St., Shafter.
- Wasco Branch Library, 1102 7th St., Wasco.

SPECIAL MEETING

Notice of Preparation of an Environmental Impact Report Semitropic Water Storage Project—Kern County, CA

Public scoping meeting: July 15, 7 p.m., Semitropic School

(Nine miles west of Wasco on Highway 46)

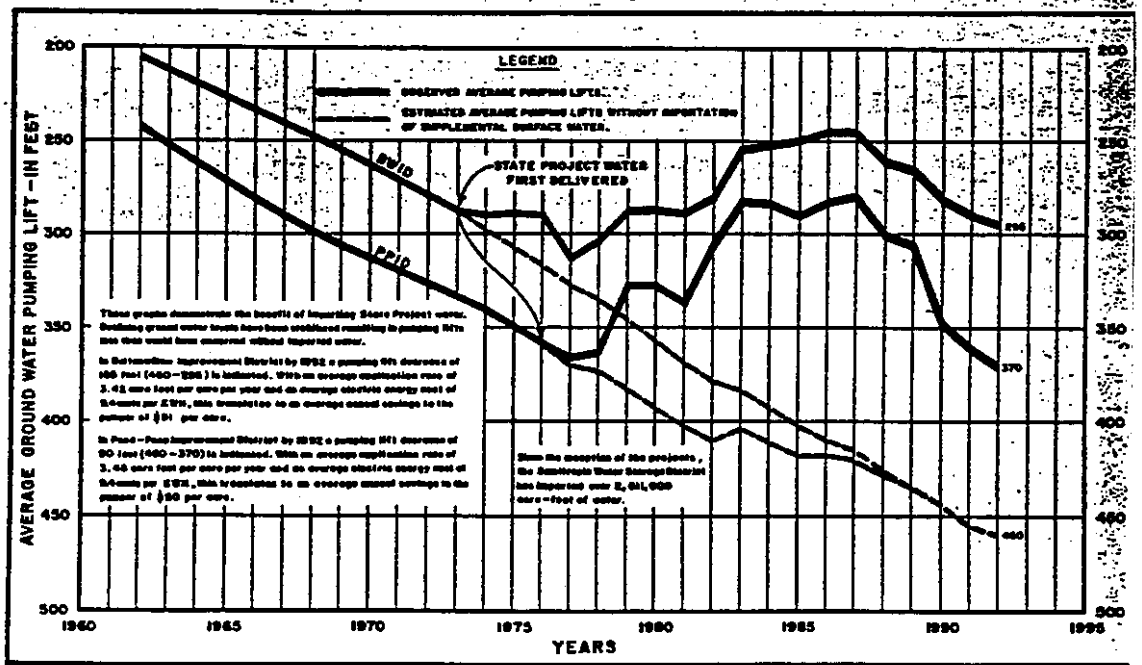
This is to advise that the Semitropic Water Storage District will serve as lead agency, and the Metropolitan Water District of Southern California (Metropolitan) will serve as the responsible agency under the California Environmental Quality Act (CEQA) in the preparation of joint Environmental Impact Report (EIR) for the Semitropic Water Storage Project. The proposed project will involve the construction, upgrade and conjunctive use of various water conveyance facilities. The new facilities include turnouts, wells pipelines and canal enlargements adding to the existing water transport capacity of the SWSD system.

An initial study has been prepared for this project to identify the range of possible environmental effects and identify those issues to be addressed in the EIR. Copies of the initial study are available upon request from SWSD at the address below.

A public scoping meeting will be held July 5, 1993, 7 p.m., at the Semitropic School (9 miles west of Wasco on Highway 46). If after review of the project information you desire to provide written comments as to the scope and content of the EIR, your response should be sent to the address indicated below at the earliest possible date but not later than August 15, 1993. For additional information please write or call Wilmar Boschman, Engineer/Manager, Semitropic Water Storage District, P.O. Box Z, Wasco, California 93280, (805) 327-7144 or (805) 758-5113.

Ground Water Pumping Lifts

When water is available, SWP deliveries dramatically raise pumping lifts, keep costs down for farmers as shown in the period 1976-1986.



AVERAGE GROUND WATER PUMPING LIFTS
IN THE
BUTTONWILLOW AND POND-POSO IMPROVEMENT DISTRICTS OF THE SEMITROPIC WATER STORAGE DISTRICT
1962 TO 1992

BOOKMAN-EDMONSTON ENGINEERING, INC. JUNE 1991

Public Meeting

ENVIRONMENTAL SCOPING
ON THE PROPOSED
SEMITROPIC GROUNDWATER BANKING PROJECT

NORTHWEST OF BAKERSFIELD
IN KERN COUNTY

☆ **Thursday evening, July 15, 7:00 PM**

☆ **Semitropic School**
on Highway 46, nine miles west of Wasco

The **Semitropic Water Storage District** announces its intention to prepare an Environmental Impact Report (EIR) on a groundwater banking project whereby:

- The **Metropolitan Water District of Southern California** would deliver a portion of its State Water Project supply to Semitropic when the water is available;
- Semitropic would use this water for irrigation in lieu of pumping groundwater or for recharging its aquifers; and
- Semitropic, on request, would return Metropolitan's water either by pumping from the groundwater basin underlying Semitropic or providing Metropolitan with an equivalent portion from Semitropic's State Water Project supply.

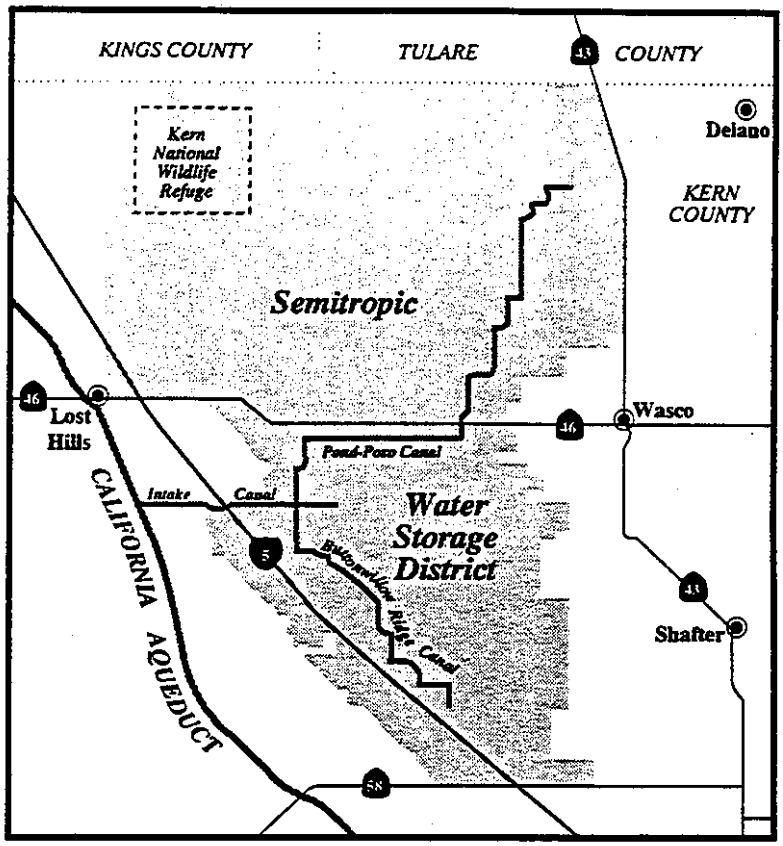
Implementation of the project would require the construction, upgrade, and conjunctive use of Semitropic's various water conveyance system facilities.

Purpose of the July 15 public meeting. Semitropic is hosting the meeting to give organizations and individuals the opportunity to comment on the environmental issues that the EIR should address.

Semitropic has issued a NOTICE OF PREPARATION OF A DRAFT EIR under the California Environmental Quality ACT. Copies of the Notice of Preparation will be available at the July 15 public meeting. Or call **Wilmar Boschman**, Semitropic's Engineer-Manager, to obtain a copy (805/758-5113).

Public Meeting

Draft Environmental Impact Report on the Proposed Semitropic Groundwater Banking Project



☆ **Tuesday Evening, April 19**
7:00 PM

☆ **Semitropic School**
on Highway 46, nine miles west of Wasco

The **Semitropic Water Storage District** has prepared a Draft Environmental Impact Report (Draft EIR) for the proposed Semitropic Groundwater Banking Project, which is a long-term water storage project designed to recharge groundwater and reduce overdraft, increase the Semitropic Water Storage District's operational reliability and flexibility, and optimize the distribution and use of available water resources between Semitropic and the Metropolitan Water District of Southern California. Specifically:

- Metropolitan would deliver a portion of its State Water Project entitlement water to Semitropic when the water is available.
- Semitropic would use this water in-lieu of pumping groundwater for irrigation or to recharge the aquifer using speading basins.
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Implementation of the project would require establishment of an in-lieu service area and the construction of conveyance facilities, groundwater wells, and pumps.

The Draft EIR addresses existing environmental conditions, potential impacts, and proposed mitigation measures associated with the proposed Project.

The purpose of the April 19 public meeting is to give organizations and individuals the opportunity to comment on the Draft EIR.

Semitropic also welcomes written comments. The closing date for the receipt of comments at Semitropic's address below is **May 13, 1994**.

Copies of the Draft EIR are available for public review at:

- The Semitropic Water Storage District, 1017 Central Ave., Wasco.
- The Metropolitan Water District of Southern California, 350 S. Grand Ave., Los Angeles.
- Bakersfield Main Library, 701 Truxtun Ave., Bakersfield.
- Shafter Branch Library, 236 James St., Shafter.
- Wasco Branch Library, 1102 7th St., Wasco.

For more information, contact **Wilmar Boschman**, Semitropic's Engineer-Manager, at the address and phone number below.

Semitropic Water Storage District

P.O. Box Z, Wasco, CA 93280
(805) 758-5113 Fax (805) 758-3219

5.4.2 Public Meeting Transcript

We reproduce here the official transcript of the public meeting. Margin numbers refer to EIR responses to the issues raised (see section 5.5.2 below).

Transcript

1 APPEARANCES

2

3

4 The Mediator: MR. JAMES F. RAGAN
5 James Ragan & Associates
2265 Westwood Boulevard
6 Suite 179
Los Angeles, California 90064

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Wasco, California
Tuesday, April 19, 1994; 7:06 p.m.
Semitropic School

JAMES RAGAN: I'm going to -- I'm going to use the microphone because of the air conditioner. We'll get started. My name is Jim Ragan and I am the public -- public involvement consultant to Semitropic Water Storage District and Metropolitan on this project. It's my role tonight to moderate this public meeting which is on the draft environmental impact report of the proposed Semitropic water -- groundwater water bank -- groundwater banking project.

I have to look at -- what we're going to do tonight, just -- we have a court reporter with us, Susan St. Laurent, and she'll be recording verbatim testimony of both presentations as well as any of the comments that you have, maybe some questions, and the -- that will become a part of the final environmental impact report. It will be a verbatim transcript.

We have a couple of presentations to start off. I mean, I know there aren't really that many of us here tonight, but I'm trying to conduct this formally just because of the court reporter -- the transcript as well as the air

1 conditioner. Ordinarily, I wouldn't probably be
2 using the microphone. So that after the
3 presentations, when you're commenting, if I ask
4 you to, come up, and we'll have a microphone to
5 maybe speak over there just so that we make sure
6 we get the comments down as part of the official
7 transcript.
8 I should say that, as you know probably
9 from seeing the notice of the meetings, that
10 there are two ways that you can comment on the
11 draft environmental impact report. One is
12 through the public meeting tonight, and the other
13 is -- and it's not an either/or situation. It's
14 an and/or situation. You can comment in writing
15 to Semitropic Water Storage District, and the
16 deadline for the receipt of comments is May
17 13th. So that even if you do comment tonight,
18 you still have the opportunity to comment in
19 writing. And send those directly to Semitropic,
20 and I think the notice also includes the places
21 where you can review the -- the full
22 environmental impact report.
23 They've promised me tonight that we're
24 not going to read the whole thing, though. So
25 that -- if you were somewhat confused by the --
26 the meeting, tonight is family night at
27 Semitropic School. That's why we're here rather
28 than the auditorium, where we were several months

ago. So all the other people are here as directly part of the -- the school open house.

So with that, I would like to introduce to you Will Boschman, who is the manager of Semitropic Water Storage District, who will give you an overview, and then he will introduce Dirk Reed, who is the project manager from the Metropolitan Water District side on this project. And then following their presentations, it will be open for your comments.

WILL BOSCHMAN: I would like to start with some introductions. Again, my name is Will Boschman, the manager of the Semitropic. We have some other people here that are representing Semitropic, and I would like to start with Vito Fabbri, the president. We have Ken Wegis in the back. He's also a board member. I think that represents our board tonight. We have George Conant, legal counsel.

ERNEST CONANT: Ernest.

WILL BOSCHMAN: Ernest Conant. First slip I've made already. And we have some Metropolitan people that -- I'll let Dirk Reed, who will be making a presentation a little bit later, let him introduce the people that he has bought with him, and also have Paul Teigen here with Bookman-Edmonston Engineering, who are part of the team that put this program together.

1 Just a little bit of background about
2 the -- this banking project. Some of you will
3 recall a few years ago we promoted and had public
4 meetings about another project. It was called
5 the Semitropic Element of the Kern Water Bank.
6 And a gentleman even this morning was
7 in my office and said -- asked me the simple
8 question, is this program we're talking about
9 today the same as it was at that time. I think
10 it's -- it's worth noting that this program
11 conceptually is the same as -- for those of you
12 that might recall, we had those meetings in
13 Wasco, and we also had a public election where
14 this program, along with others -- it was called
15 the 1992 project election, and we had landowners
16 of the district vote on a variety of projects,
17 and this was one of them.
18 Again, this one is very similar to the
19 Semitropic element program. The major change is
20 that Metropolitan Water District of Southern
21 California has replaced the State of California
22 as what we call our banking partner for this
23 groundwater banking program. And that's the --
24 the major change. The other is that this is a
25 little bit bigger, and I'll get to that later, as
26 far as facilities, how much additional
27 distribution system, additional capacity we
28 propose. It's somewhat bigger than the original

program.

Tonight we're here to talk about this report, as I've already mentioned. We have extra copies available for someone that would like to have one. All we ask is that you leave us your name that you would want a copy of it. Even right now, if you would raise your hand, you want a copy, I could hand you one, and give us your name later, if you wish. But you're certainly welcome to have copies.

In Chapter 15 of the report -- you'll notice that a lot of effort has gone into this. There's as many as 14 agencies and consultants have -- have formed a team to prepare this document. And in Chapter 15, there's just those that are listed in the order of 60-some people that have been involved in -- in preparing it.

So it is a very comprehensive review of the environmental effects on -- on our local situation and the construction and how it will operate. So it is a complete report to what -- what we believe to be a complete report.

The report looks at a lot of impacts, whether there are impacts, I should say, and how to address them. And I'll let that part be presented by Dirk later. I would like to cover a little bit about the benefits.

Why does Semitropic want to do this?

And one thing is that we want to maximize the use of our existing facilities. At this point in time, we have the capacity to move up to 230,000 acre-feet of water if we have it available. We're only entitled to 158,000 from the state. And if we have a shortage like this year, in 1994, we are only getting about 80,000 acre-feet from the state.

So there's a big hole, if you will, in our existing system that could be used if we had other water available. And even as strange as it may seem, in the year of shortage, there may be opportunities to bank water, and this existing system would allow us to take in more water than the existing system. It also provides for adding to the system, both capacity-wise and additional facilities, service to new lands. That's also part of it.

I want to use a bit of a sketch that conceptually kind of shows how -- how this program will work. Should I use the other mike?

JAMES RAGAN: Yeah. Right in front of you. Turn it on.

WILL BOSCHMAN: Maybe you can raise it. Can everybody kind of see that?

In a program like this, we tried to show this sort of schematic or sketch form. This California Aqueduct, that's where we get most of

our water from, and we're also somewhat connected with Friant-Kern, although that's not part of this -- this consideration, but we can take water in from the California Aqueduct in what we call a groundwater reservoir. And obviously we can't say that there's a fixed capacity. It's not like a surface run water where you only get so much in, it overflows.

JAMES RAGAN: I don't know that machine, but I have another machine.

(Discussion off the record.)

WILL BOSCHMAN: Okay. I guess we're back on.

The storage capacity, like I said, is not like a typical above-ground reservoir that has a spill. We have defined this project as a one-million acre-foot program, and that's what the study is based on. But even with putting in a million acre-feet, our water table still -- still may be, you know, I don't know, a hundred feet pumping lift. So there's just a lot of capacity if you just looked at our groundwater basin.

LARRY LUDY: Is that just in our district or is that through the Shafter-Wasco?

WILL BOSCHMAN: We're just looking within our boundaries. We know it has spread the effects outside, yeah.

There are two important features to this that we would like to point out. One is the capacity to get water in, and the other is to take it out. First of all, to put it in, we're saying that we have a guaranteed 91,000 acre-foot capacity that Metropolitan would have in any given year. And in order to do that, we need to add facilities to the existing distribution system in order to absorb that 91,000.

So some of the facilities that will be built -- and I'll get back to this more later, but this is a map that's in the folder or in the pocket of the environmental impact report. These yellow lands are the lands that we've targeted for additional service. So this 91,000 acre-feet is based on adding about 23,000 acres of land to the -- to the program.

LARRY LUDY: That capacity you're talking about, that's what they can bring into the districts or that what they can take out?

WILL BOSCHMAN: No. We're talking at this point only what they can bring in --

LARRY LUDY: Bring in.

WILL BOSCHMAN: -- put water into storage. So we're saying if we build that, they will have a home for 91,000 acre-feet in any year. In addition to that, this number could go as high as 315,000 acre-feet. The reason for the

big jump is that it depends on the kind of year. Say in a year such as we have this year, where we only have 80,000 acre-feet available, we can take 230,000 acre-feet, if we had it. We can add, what, 150,000 acre-feet to the 90, and that would be the amount for this year.

So it depends on how much water we're getting from the state as to how much in capacity we have in addition to this new service, the 90,000. So that's why the spread between 91 and 315,000. So it depends upon the kind of year, but they're assured if we built the whole facility, the whole program, they have a home for 91,000 acre-feet within a year.

Okay? The other very important part of it is it's always nice to take in water, but it's also our responsibility to return that water, and that's what we call our take capacity. And here, again, we have a 90,000-acre-foot guarantee. And you say, how can we guarantee water back to Metropolitan in any year? And to do that, we also have to build facilities, and this will be an actual delivery system from the basin into the Aqueduct.

And to do that, we would have wells as part of the project scattered throughout the district that would be discharging into our system, and we would reverse our system all the

way over here into the Goose Lake area, which is the low point of our system, and from there, we would pump it back into the Aqueduct. At this facility, a seventy-eight-inch pipeline is already in place. It's not considered part of the project because it's an existing condition. So there's a pipeline here that serves both as a penstock for a hydroturbine, but it also can be reversed to move water back out.

So the guarantee -- what we call a guaranteed return is based on an actual pumping of the water from the basin into the Aqueduct, and, again, to do that, we need to develop the facilities so in the year that they're asking for water, we can move it back and also make our farmers whole.

And remember, the project is designed so that the farmers will continue to operate, hopefully, with more reliable water supply than they do now. But we will not be taking water from farmers, if you will, in summer or from the farming operations to make this work. This also has a maximum number of 224,000 acre-feet.

And this is achieved by -- in a given year, we have, say, 80,000 acre-feet, like we have this year, available, and Metropolitan says, we would like to take some water this year, we have a need for water from out of our account.

They would take all but 25,000 acre-feet in this kind of a year, and they would just -- we would just leave it in the Aqueduct rather than actually pump it. So you wouldn't even see it other than that we would be pumping internally to serve our farmers' needs to make up that water that we would be giving up by our entitlement.

So that's how you get from a 90,000 -- they can have an almost -- essentially, 80 up to 224,000 acre-feet. It depends, again, on how much water that we get from the state that we could give up.

LARRY LUDY: So what's the water that they can take back in any given year? Is it 25,000 off the 91,000? Is that how much you would have to deliver back to Metropolitan, say, like, if you have a severe, you know, drought situation? I didn't quite understand.

WILL BOSCHMAN: They could take all of our entitlement except the 25,000 acre-feet.

LARRY LUDY: All of our current contract entitlement.

WILL BOSCHMAN: Right.

LARRY LUDY: I see.

WILL BOSCHMAN: That we have from the state. We keep our farmers whole by having money or water to pump on farm, or we pump on behalf of the farmers to make them whole and we provide

them that summertime water that they obviously need for farming.

I'm still trying to cover some of the benefits that we see in this program for our people. There's also -- in having this system, Metropolitan will have the first right to use that capacity that they've, in a sense, provided money for to build. In a year that they don't use all the capacity, we can then use that for our own needs, however we want to use it, and there's a fair potential, you know -- I think a very significant benefit for our -- our district to be able to import more water because of this system than we otherwise would.

Metropolitan isn't using it. We can buy other local water if it's available or other water that may become available in the future from other sources. Hard to say what kind of a year it would be, but the capacity would be there where we would be able to use that.

That amount of water is estimated as programed to be about 800,000 acre-feet in excess of what we would currently be able to take under our existing system. What we do is take a look at the history of rainfall and snow in the mountains and relate that to the -- or project that to the future and make some projections how much water would be available.

1 Even considering all of the current
2 regulations that we're -- we're having to live
3 with in the delta and delivery system,
4 considering all that, we think we can -- the
5 numbers indicate that we could import on the
6 order of 800,000 more than we otherwise would.
7 This is water that would go directly to overdraft
8 correction. We don't owe anybody for that
9 water.
10 So I think it's a very significant
11 benefit to moderate the decline of our water
12 table, especially considering the years of -- of
13 more and more shortages that we will face in the
14 state system. That seems to be kind of the
15 indicator for the future, that we'll be seeing
16 more years of shortages than we have in the
17 past.
18 As the water is brought in for storage,
19 if you will, our water table, no doubt, will
20 increase. We've already noticed that in some
21 years that we have imported water of the last
22 year. For example, we imported our maximum year,
23 and our water table, in a sense, bounced up to
24 20 feet. And last year is what I indicated --
25 what our water-level monitoring indicated in
26 January, that it had that kind of a significant
27 impact in one year of maximum import. So it has
28 some very real benefits by way of a raised water

1 table because the water is brought in.
2 And I always like to say that the
3 bottom line, really, for why we should do this is
4 simply to minimize the increase in cost of our
5 water to our farmers. Right now, our costs are
6 increasing maybe like this. With this program,
7 we hope to do something that's less, a lesser
8 increase. And if we can't show that for our
9 farmers, we don't think we should be doing this.
10 But we're convinced that it will have a
11 significant impact on the cost of water on farm
12 in Semitropic.
13 And I've always said, if I -- if we
14 can't boil it down to that, we shouldn't be doing
15 this. That can come in direct costs, annual
16 costs for water, but also in the reduced
17 groundwater pumping costs during the period of
18 this program, groundwater pumping costs because
19 of a raised water table. So lesser pumping
20 lifts.
21 So going through considering the
22 benefits of this, I think those are the
23 significant things, and at this point, I would
24 like to turn it over to Dirk Reed, who has been
25 the main mover in trying to get this
26 environmental impact report on the street, and
27 coordinated all the effort. He knows the book
28 inside and out, and I'll have him come and give

us a summary of the report.

DIRK REED: Okay. What I would like to do real briefly is introduce a few people that worked on the documentation. Not just the EIR, but also trying to pull together all of the -- the facts and all the figures about what needs to happen, and that is Warren Hagstrom, who's been very instrumental in pulling together everything, working through the state, and then also working throughout resource agencies.

Debbie Dresner, who's the environmental coordinator, is the person that has her hands on all the field surveys out there, trying to make sure that we could get through this process. So many times you hear about projects that just don't make it for various things, either permit problems, endangered species problems. She is the one that's been trying to take care of that.

Sitting in the back of the room is Bob Harding. He's the one that's been trying to pull together some of the agreements, working on some of the agreements with Semitropic, and trying to get all the legal stuff in line so that we can make this project work.

One of the things I would like to do -- one of the things I would like to do very quickly is walk through the document, and -- geez.

JAMES RAGAN: Don't stand over there.

1 DIRK REED: Okay. One of the things I
2 would like to do quickly is walk through the
3 document. That's what we have done, what we need
4 to do, and going through so many different
5 things. Real quickly, I would like to mention,
6 though, I am from Metropolitan, but I have been
7 brought in to assist in putting this together,
8 supplying the technical expertise in pulling this
9 together, working with Semitropic.
10 Semitropic is the lead agency as
11 defined under CEQA. Under the law, they're
12 responsible for this project. They're
13 responsible for implementation of this project.
14 They're responsible for construction, operations,
15 and right down to even certifying the
16 documentation and pulling in the issue and
17 monitoring the plan for this. Semitropic is the
18 lead agency and responsible for everything
19 associated with it.
20 Metropolitan, on the other hand, is
21 responsible for supplying part of its entitlement
22 to Semitropic for storage, and then when
23 Metropolitan needs -- needs the water to meet its
24 demands, requesting from Semitropic some of the
25 water could be returned to Metropolitan. Again,
26 Semitropic would be responsible for everything
27 else associated with the project.
28 What I would like to do very quickly is

walk through a few items in the document, go through the project purpose. Will went through a few of the aspects about it. I would like to go through some of the other ones. I would also like to go through the alternatives that were considered, kind of show you what was looked at as part of the project process, as part of the environmental process.

I will also go through the selection criteria, what we looked at on weeding out some of the alternatives that we looked at, and then go through some of the issues and then go into a little bit more detail about the schedule. That's where we've been in the last nine months and where we're going in the near future, in the next 30 to 60 days.

Some of the objectives that we looked at for the project, the first one -- the first one Will went through quite a bit, talking about the -- optimizing the available resources. That's water resources. In other words, what we're looking at there is bringing in whatever water is available on the supply side, bringing it in, and put it into storage so it would be used later, in other words, trying to optimize the use of available groundwater resources with available supply, improving supply reliability both for Metropolitan and Semitropic.

The second one we want to try to do here with this project is minimize the decline of the groundwater basin, trying to reduce the groundwater overdraft. In essence, you're talking something similar to the first, but also bringing in some additional water, as Will mentioned, to get it into the groundwater basin to get the groundwater basin brought back up.

The third one is to improve Semitropic's system reliability. What you could look at in that respect is, in case Semitropic had a problem with some of its distribution facilities, had a system outage, they could turn on these facilities and supply water to their customers in the service area and continue to meet the demands while they rehabilitate the facilities and bring them back on-line.

These are the main three objectives that we looked at to pull together this project.

To achieve some of these objectives, we evaluated the alternatives based on some -- several criteria, shown here. Basically, again, three criteria. One of them, technical feasibility, related to project cost. If it got too expensive, it's not a good project for Semitropic and not a good project for Metropolitan.

Second one, operational effectiveness,

if it didn't lend itself where Semitropic would use it readily for either outages in their facilities or move water around, then it didn't lend itself very well as a project alternative.

And a third one, as everyone realizes, is environmental resources. In this day and age with the endangered species that we have, if it has a lot of impact on endangered species or a sensitive species, it's just not going to happen. It's not going to be, not in this day and age.

I would like to just quickly walk through the alternatives, and these are some broad alternatives that are discussed in the EIR. You can read a lot more about this in there. There's a whole chapter that discusses alternatives, how they are evaluated, how they were ranked, and how they were eliminated.

First one is required under CEQA, the no-project alternative -- if we don't do anything, what happens to the environment and what happens to Semitropic and the landowners. That's discussed in the documentation.

The second one that we looked at, desalination of agricultural drain water. In other words, if we try to collect water, desalinate it, provide it for use in the Semitropic area, what are we looking at to meet

the objectives.

And then the third one is called the Semitropic Groundwater Banking Project, and that's the one that's gone into a lot of detail later in the document and discussed in a lot of detail on impacts and mitigation measures later in the document.

A little bit about the first two here. As you can imagine, the first one, the no-project alternative, didn't meet any of the objectives. Well, it met the -- it didn't affect the environmental resources, but it didn't meet the other two objectives that we were trying to look at on optimizing use of water resources and minimizing decline of the groundwater basin. All it did was, it did nothing.

The second one, desalination of agricultural drain water, did meet these objectives, but it was very costly. We're talking $1,500-per-acre-foot priced water. Very costly to Semitropic and Metropolitan to provide that kind of water.

And then the third one, Semitropic groundwater project, banking project, met all of the objectives and it met all the criteria on cost. Very cost effective for both Semitropic and Metropolitan.

A little bit about the impacts. What I

would like to do is go into some of the resources that were affected, in particular, biological resources first and then groundwater resources, because those are -- the two items that have most concern for either -- for you and the resource agencies is the biological resources and the groundwater resources.

First what I would like to do is discuss the biological resources. What was affected by the project? When we began this study about nine months ago, working with Will and the engineers on the project, we laid out facilities that would do what we needed to do, supply water to the new and in-lieu service area. What we were looking at is a pretty substantial impact to sensitive or endangered species.

These kind of impacts to these species would've probably meant that the project was not feasible. You're talking 224 acres of impact to the Tipton kangaroo rat. The resource agencies wouldn't probably allow that without substantial mitigation, if that, and then the cost of the project would've went up dramatically.

What they've then did is looked at ways to eliminate, reduce, minimize those impacts to those species, and that's what we looked at on the preferred project -- going out, looking at

ways to move the pipeline over in the roadway, looking at that to minimize the effects.

And you can see that the alignment or the facilities that are discussed in the document does have substantial reduction in impacts to the endangered species, expensive special interest, and then some of the sensitive habitats we had substantial reductions in the impacts. This means a lot in having a project that is implementable through the resource agency's eyes on impact.

I'm going to mention real quickly some of the mitigation that's provided for in the document. You can probably go into that. For instance, the endangered species, because of the reduction in impacts, there is no mitigation required. We're not providing mitigation in the document for these -- for these species. For the special interest species, we've got none for the San Joaquin ground squirrel, but we do have some left for the owls and a little bit left for the turtle on the project, and what we're trying to do is minimize our effect there.

We're going to go out -- we've got to buy 14 acres, set it aside and walk away from it and get back into supplying the water. Again, this is kind of important for the resource agencies. What we've ended up with here is a

project that is doable, that can be implemented.

The other major concern area is the groundwater, and I have a black and white here showing the groundwater resources to the effect -- what we've got on here is two different kinds of bars. One of them has to do with the Metropolitan -- the banking operation, and the other bar, the crosshatched bar, has to do with pool water, in other words, additional water being brought into the Semitropic service area to reduce the overdraft, bringing the groundwater basin back up.

What we've looked at is a series of years. We've looked at 1922 -- we've modeled, I should say, 1922 -- 1922 through 1992 on the State Water Project, trying to see how much water would be available to bring in the storage either through Metropolitan or through pool water being -- through Metropolitan or for pool water coming into the service area.

What we looked at is, we found out that the last 25 years were the most dramatic. If you think about it, 1969 to 1992, we had a lot of wet years, we had some very dry years, such as 1977, and then we had the five-year drought -- I guess it's longer than that -- six-year drought in the 1990s. So that allowed us to develop a maximum envelope of what the effects on the groundwater

1 basin would be.
2 But in looking at that last 25 years,
3 the maximum drought conditions that we've seen
4 and the maximum wet conditions that we've seen,
5 we've been able to put quite a bit of water into
6 Semitropic Water Storage District in the
7 groundwater basin. Shown in the darker color
8 here is the banking water going in, what's
9 accumulated up to about 800,000 acre-feet of
10 water coming in to and being banked in the
11 groundwater basin here.
12 The crosshatched areas -- that's
13 additional water coming in -- also get up to
14 about 800,000 acre-foot of additional water being
15 brought in to the groundwater basin and to be
16 used in correction of the overdraft, groundwater
17 overdraft. This is all due to the new facilities
18 that are being proposed in this document, in the
19 EIR that's right in front of you.
20 I would like to briefly discuss the
21 schedule, let you know where we've been and where
22 we're going on the project. About a year ago, we
23 started looking at -- looking at the area, doing
24 some of the surveys, doing some of the biological
25 cultural surveys, putting together the draft EIR
26 and where we're heading -- that's in this time
27 frame. And where we're headed now is the board
28 adoption. That means Semitropic board adopting

1 the document, certifying the document, and
2 beginning to implement the project. And that's
3 out here in the June time frame.
4 What I would like to do, though, is
5 look at this scoping part of it, the EIR public
6 process part of it in a little bit more detail so
7 that you understand where things are going.
8 Back in July of 1993, there was a
9 notice of preparation released. What that
10 accomplished was, it announced to the public, the
11 resource agencies that Semitropic and
12 Metropolitan is preparing an EIR.
13 On July 15th, next door over here, we
14 had a public meeting to accept comments on what
15 we should look at, what we should analyze in the
16 document, what things we need to look at in a lot
17 of detail. We also had about ten meetings with
18 surrounding agencies and interested groups in the
19 area, trying to get a handle on also what we need
20 to look at in more detail as part of the
21 documentation process.
22 We had -- five meetings were held with
23 resource agencies such as DWR, Fish & Game, Fish
24 & Wildlife Service, to walk them through what we
25 were trying to do with the project. And what we
26 ended up with on this entire scoping process is,
27 ten comment letters were received to help us
28 scope the document from the surrounding agencies

1 and the state.
2 Where we are now is we're in the draft
3 EIR public-review process. What we're looking at
4 there is -- on March the 29th, the draft EIR was
5 released to the public for comment. April 19th,
6 right now, we're doing the public meeting on the
7 draft EIR to accept comments from the public on
8 the documentation itself.
9 We've had -- we're holding five
10 meetings with surrounding agencies. We had one
11 of them this afternoon at 1:30 over at
12 Kern County Water Agency, and we're holding five
13 meetings with resource agencies -- again, this is
14 Fish & Wildlife Service, Fish & Game, Department
15 of Water Resources -- to get them up to speed on
16 what's inside the document and what we tried to
17 cover and how we've covered these issues.
18 One thing of importance I want to
19 mention -- and Jim mentioned it -- is the
20 May 13th date. That is the close-of-comment
21 period. If you want to supply comments in
22 writing, we need to receive those by May 13th so
23 that we can get them incorporated into the
24 overall process. What we're going to try to do
25 is, in the June -- first part of June, Semitropic
26 is going to try to take this documentation to --
27 to the board for certification and adoption of
28 the project so that they can begin pulling

1 together all of the agreements and get the
2 project implemented.
3 With that, I'll turn it back over to
4 Jim and then -- and then let him go into more
5 about the project.
6 JAMES RAGAN: Okay. Now you've heard
7 on the presentations, and now it's your
8 opportunity to comment or ask some questions. I
9 must say, I think the primary purpose of the
10 meeting is for you to make comments on the EIR,
11 the statements that were made, but certainly if
12 there are some questions that maybe you're not
13 quite sure on, I'm sure that Will or Dirk or
14 someone else will try to answer them.
15 What I'm also going to ask is, Paul,
16 I'm going to ask you to maybe hold that out. I
17 think it'll reach. It's not on now, but I'll
18 turn it on. And come down to the microphone just
19 to make sure that we get your comments and your
20 questions on the record. And, also, if you will,
21 when you come to the microphone, if you state
22 your name, I think that will be very helpful for
23 the record as well.
24 So with that -- just anyone -- we had
25 asked on the cards when you signed in if you
26 wanted to speak, and I was -- my reason for that
27 was that if anyone said yes, I would let you
28 speak or I would ask you to speak first, but at

least the cards that I have, no one said yes. One person said maybe, but I'll let that person decide himself. So now if you'll just raise your hand or come the mike, and let's go.

RICK WEGIS: Yeah. My name is Rick Wegis. Just a question on the Goose Lake project that was -- I understood it was supposed to be a holding facility for -- as a lake and then pumped in, pumped out. I wonder what happened with that, what were the benefits of it, what killed it, and where are we with that now. I guess it's banned, and -- I don't know.

JAMES RAGAN: Will, I guess that's your --

WILL BOSCHMAN: Yeah. What Rick was referring to is part of the election of the 1992 improvements project. That program has to do with the -- well, he mentioned the Goose Lake area, which on this map is this area in white, which is here, which we had proposed to build some temporary holding ponds, if you will. They would be reservoirs that would be less than six feet deep, and they would simply be a place to put water quickly and then move it out for irrigation purposes, for groundwater-storage purposes later.

That program is not part of this EIR. We had applied -- this being in the wetlands

1 area, I think what Rick was referring to, maybe,
2 is that we have applied for a -- what they call a
3 Section 404 permit from the Corps of Engineers.
4 When you're doing something in a designated
5 wetlands area, you need that permit. We applied
6 for a permit to build levees.
7 The district has acquired 160 acres
8 here in Section Point 4. It's native ground --
9 it was farmed at one time years and years ago,
10 but it looks today like it's native and
11 undisturbed. But, anyway, it was designated
12 wetlands. We had to apply for a permit to build
13 a levee around the 160 acres to make it a holding
14 pond. It is currently used for a duck-hunting
15 club. It has some very low levees, about 18
16 inches, water ponded up to 18 inches.
17 It really didn't meet our objective,
18 but we thought that we could build that program
19 simply to do two things. One is to enhance the
20 wildlife and wetlands and make more of an
21 attraction for duck hunting and wildlife and that
22 kind of thing. So we made the application.
23 We've got a lot of comments back, more than we
24 anticipated. Generally, the comments were
25 negative from various agencies, like, throughout
26 the state.
27 And at this point, we're pondering what
28 to do with it, whether we should withdraw the

application, because after all, there is only 160 acres, and the overall program that the landowners voted on really talked about a larger program, about three or four different sections that were going to be built.

So at this point, we don't know where it's going. We've got a lot of negative comments recently. So we have until the 29th to either respond to them or withdraw our application.

JAMES RAGAN: But as you said, it's not part of this project.

WILL BOSCHMAN: Not part of this program.

JAMES RAGAN: Okay. Other comments?

DENNIS PALLA: Can I do more than one?

JAMES RAGAN: Pardon?

DENNIS PALLA: Can I do more than one?

JAMES RAGAN: Yeah.

DENNIS PALLA: My name is Dennis Palla. What is the guarantee of the takeout by Metropolitan? Is it a one-for-one water going in, water going out? I saw basically the 91,000 and 90,000. That's fairly close.

WILL BOSCHMAN: That's a good question. I am sorry I didn't mention it earlier. It is what we call a bucket-for-bucket except for one provision, and that is we recognize losses. And by losses, we mean it

could be in the transportation of water coming into the district and to where it's actually delivered. It could be what we call aquifer losses or water that moves into areas where you can't recover it. So it would be -- whatever we meter at the Aqueduct less losses, that's what we would owe Metropolitan in payback.

DENNIS PALLA: Is that thousand acre-feet considered an estimate of the losses, then?

WILL BOSCHMAN: To give you a feel for that, in '93, we had an agreement for 50,000 acre-feet, and we used ten percent as the overall losses. So we took in 50,000, we now owe them 45,000.

DENNIS PALLA: Okay.

WILL BOSCHMAN: The contract that we're working on, it allows for some flexibility in the future years that would look at the real world as best we know how. If losses change, for example, we are convinced that amount of losses we assumed or aquifer losses or water moving out of the area is different than what we would assume, we would adjust in the future to, as best we can, the real world. But it will always be part of the formula. Whatever the loss is, as best we can determine, that is what we will bring it.

JAMES RAGAN: You said you --

DENNIS PALLA: Yeah. Following up on that 91,000 compared to the 90,000 and then there was a -- another amount there that said that the maximum outtake would be 224,000 acre-feet, is that in any given year, that that would be the max that they could take out in any given year, and is that irrespective of the total that's been banked to date?

WILL BOSCHMAN: It is a guarantee on what's banked. Whatever --- they can never take out more than what they brought in after the loss.

JAMES RAGAN: You were saying moving 25,000, did I hear?

WILL BOSCHMAN: Yes. Right. We would -- we would take -- they would not take our last 24,000, if that's what you mean. The takeout capacity, again, is dependent upon how much we have from the state to be able to give up. That basically determines the big swing from 90 to the 200-some thousand.

DENNIS PALLA: So the takeout is only going to be implemented through reduction and in the allotment that's currently allowed for the districts? In other words, is it ever going to actually be pumped out of the bank? Because basically what you said is you have a reduction in your allotted amount from the state.

WILL BOSCHMAN: Operationally, we would prefer to use the entitlement first and so would Metropolitan, but if it's a situation where that just doesn't work, we don't have enough water to give up, then we would use the pump back --

DENNIS PALLA: Okay.

WILL BOSCHMAN: -- and actually move back. That's sort of the bottom-line guarantee.

DENNIS PALLA: But the takeout could never exceed what has been banked to date?

WILL BOSCHMAN: Never.

DENNIS PALLA: Okay. You mentioned 800,000 possible extra acre-feet for overdraft banking or to build the bank back up because of overdrafting. Where is that water currently going now? I assume that's based on a very wet year with excessive water, or what are you basing that figure on?

WILL BOSCHMAN: Let me use '93 for example. '93 was a full water supply. In Kern County, we had districts that couldn't use their full supply, mainly the west-side districts. All of their excess became available locally in a pool, and Semitropic took everything it could. I mean, we put water everywhere last year, spreading, trying to get water underground as best we know how.

In addition to that, we moved water

1 into North Kern and used some of their
2 facilities. We moved some water into Rosedale.
3 We also moved 20,000 acre-feet out of district,
4 first time ever, into the Kern River Spreading
5 Basin, where the Kern County Water Agency and
6 other facilities have some facilities.
7 They might be rare, but when they come,
8 they're very significant, and we hope to
9 capitalize on that. And even above that, there
10 was more available after we did all that last
11 year. But it's those kind of years where we
12 think will be very significant and a lot more
13 water.
14 DENNIS PALLA: But what you're talking
15 about in this project would be excessive water
16 that Metropolitan doesn't use. Correct? That
17 would be put into the bank.
18 WILL BOSCHMAN: On their behalf, it
19 would be water that they don't use in that
20 particular year.
21 DENNIS PALLA: So then currently water
22 that they don't use in excessive water years,
23 where does that go?
24 WILL BOSCHMAN: Can we have Dirk or
25 someone address it?
26 DIRK REED: Well, we'll -- Metropolitan
27 themselves has several other places they can
28 store water. You've probably heard of some of

them.

THE REPORTER: I can't hear you with your head turned that way.

DIRK REED: Okay. Metropolitan has several facilities that it's proposing. Some of them you've probably heard of. Domenigoni Valley Reservoir Project will be on-line in about eight years. We have several groundwater basins in Southern California, roughly five million acre-feet of storage that we use ourselves today.

We're looking at this being another place that might be able to take water when we have it available and store water that we could use later. Again, it's just another option, and in the document, we went through a lot of that. There's roughly three and a half million acre-feet that we're looking at trying to enhance either in Southern California or up here in Semitropic to take water that we have, Metropolitan has, available for storage when it's available and then use it when we need it in later years.

DENNIS PALLA: Okay. Thank you.

JAMES RAGAN: Thank you. Anyone else? Yes. Right behind you, Paul.

LARRY LUDY: My name is Larry Ludy. At a meeting in Wasco here a while back, we talked

about the certain safeguards, you know, like as to maybe our current level, what we have in our account. This whole idea of banking in this district, I don't -- it has so many holes in it and there's so many things that can happen that it seems like, unless we have certain safeguards, that we could really run into some problems down the road.

JAMES RAGAN: Can you say what you think some of those --

LARRY LUDY: Safeguards should be?

JAMES RAGAN: Well, what the holes are.

LARRY LUDY: Well, all the outlying districts, the cost of water is changing dramatically in those districts and the farm in the SSMUD district, which is adjacent to this district. Our water costs has gone up, oh, a thousand percent, from three and a half dollars an acre-foot to -- this year it's 38 and a half dollars an acre-foot.

So -- and I saw it last year. You're seeing a lot more people who are pumping with diesel fuel right now than -- than you used to. And I think you're going to see that trend continue at least for the -- for the near term, and that's probably happening in several districts, because the SSMUD district down here

1 also adjoins Semitropic.
2 So I wonder what kind of problems we're
3 going to have there. Hopefully, we don't see any
4 more development in this district with all these
5 endangered species acts, but, you know, there's
6 probably some holes there where we'll see a
7 little more farm land developed.
8 I hope farming gets better and people
9 start -- if it does, people will probably start
10 farming a little more intensively, using more
11 water. There's a lot of land by me that --
12 that's just sort of being dryland farmed, but it
13 has the potential to go into full production
14 if -- if things get -- get a little better.
15 Population growth, did you really
16 address that? The person's thinking in this
17 environmental impact report by -- I don't know,
18 what is it? -- 2020 -- hopefully I'll be around
19 at that time. I may want to retire at that
20 time. But there's supposed to be approximately
21 50 million people in this state. I think our
22 population is something like 30 million now.
23 So we're looking at what, what's that,
24 50 percent increase in population. And what's
25 the Metropolitan Water District -- I don't
26 think -- are they going to have any surplus water
27 at that time? Will they need all this water
28 back? Maybe -- you know, these questions I have

may be addressed in that environmental impact report, but I -- it seems like, you know --

JAMES RAGAN: Well, I think it's also important that you do state them to make sure, in fact, that they're not. But, I mean, in preparing the responses on -- on the comments like yours and others that are received as part of the final document, they're -- all the comments they have to -- they have to address so that you'll see them addressed in the final document if they're not addressed now. Other comments, questions? Yes, sir.

KANE TOTZKE: Hi. My name is Kane Totzke. I'm a planner with the Kern County Water Agency. We had a meeting this afternoon at the agency on this -- on this subject, and my comment -- well, first of all, I got a comment -- you mentioned, Mr. Ragan, earlier in the comments, written comments reviewed by the twenty --

JAMES RAGAN: 13th.

KANE TOTZKE: 13th of May.

JAMES RAGAN: 13th of May.

KANE TOTZKE: Not the 23rd.

DIRK REED: 13th is May of when they're due.

KANE TOTZKE: Yeah. I didn't get a cover letter with my document. Yeah. But my

comments were touched on briefly today, and they are in regard to the table that shows the groundwater storage account accounting, and it's really just a friendly reminder to the district that what the agency would like to see is a groundwater model run that analyzes impacts when all the water but the assigned losses are withdrawn from the banked water. We bring this up because we're being asked to address the same issue in our development of local use of our facilities and just to head off any -- any potential concerns at a later date.

We think it would -- it would be beneficial, at least for the agency, to see what these impacts may be, you know, when you bring the account down to just what your projected losses are going to be. That's basically my comment.

JAMES RAGAN: Thank you. Other comments?

LARRY LUDY: And of my questions on population growth figures, there are -- some of those questions, are they taken into account in the environmental impact report? You know, this other -- what is it? -- 20 million people, they're going to --

DIRK REED: Yes.

LARRY LUDY: -- require a lot of

water.

DIRK REED: One of the chapters in here -- and I'm trying to remember very quickly what chapter it is. Towards the back, Chapter 10, Growth Inducing Impacts, goes into a lot of detail about population in California, population in Southern California, and not just population, but the use of water. A lot of discussion in here about reclamation, conservation, and how water is going to be used and reused. And that's discussed quite a bit in this chapter. It goes out to, I believe -- the year 2020 is where we went out to in this document on population projection, and I can't remember the number, but you're probably right. It's quite large.

LARRY LUDY: Yeah.

DIRK REED: Quite a few people.

JAMES RAGAN: As I recall, that chapt -- it also mentioned your retirement.

LARRY LUDY: Maybe I can sell my land to MWD for a decent price.

JAMES RAGAN: Yeah. Will?

WILL BOSCHMAN: Yeah. I would like to address another one of Larry's concerns. I think Larry, like I say, farms in several districts, neighboring districts, and they have been very close to our program. And I wanted to just

1 inform that you we have worked with five
2 neighboring districts all around us as much as
3 almost two years now. They've expressed concern,
4 and we were starting -- talking about this kind
5 of thing. So we have worked with them over these
6 last 50 years, and, more importantly, the last
7 six months, we've come to kind of an agreement of
8 working together. And we have hired a consultant
9 that is a groundwater geologist that will be part
10 of -- has been part of the program, the
11 preparation of the report. It will also be --
12 have more input from the final comments to close
13 off the period.
14 And I should've said earlier that we
15 are planning monitoring wells along our
16 boundaries, and part of the --
17 JAMES RAGAN: On the front. Right in
18 front.
19 WILL BOSCHMAN: I can't get it up very
20 high. But, Larry, these wells are in your area
21 of operation, and these are the tentative
22 selection of locations for monitoring wells that
23 will be there just to see what's going on in the
24 groundwater table. We're not -- we started with
25 what we're already doing, by monitoring existing
26 wells, wells that our neighbors are doing,
27 Shafter-Wasco, North Kern, and Southern
28 San Joaquin.

We've had meetings almost monthly in the last six months to talk about that. Our consultant has been helping us to analyze what has been done in the past and also formulate a plan for ongoing monitoring or review of water quality and water table, the impacts, those kind of things.

And as far as -- I think it's important to remember that -- you asked the question about them taking so much water to meet people's needs. It will be a contractual limitation that they cannot take more water than they've put in, and even after accounting for losses, that's the only water they can take. And there's a regulation to how much they can take in one year, like I talked about earlier. I hope that addressed --

LARRY LUDY: Our contract amount listed 25,000 acre-feet.

WILL BOSCHMAN: Yes.

LARRY LUDY: That's a lot. That's approximately 125,000 acre-feet that they could take.

WILL BOSCHMAN: Okay. Let me explain that a little bit. On this map, the blue lands will be what give you contract entitlements. When Metropolitan takes this water, that water comes from the water on the lands that we have a

contract with. So we have to make them whole in that year, and the money that we get will help us develop enough pumping capacity -- maybe it's even on farm in the blue lands so that when we see we're not -- we don't have surface water this year, we want to help you pay for water on farm, maybe, or we will use district wells or part of the project to make you whole in that year.

So from a water standpoint, you shouldn't see a difference than if you would have taken state water. We would ask you to pump from the groundwater, of course, with costs, recognition. Also, we would help with our own wells to make up that water that we give up in that year.

LARRY LUDY: Well, the difference would be, if you don't raise the groundwater level, the guys out there who are relying strictly on their pumps, which I do on the ranch I own, then I'll be competing with the district when you're drawing the water down and who's also asking me to pay the same amount of tax as the fellas who are getting water, which to me is a little bit inequitable right now.

You know, I don't know. I see a lot of good benefits from this, don't get me wrong. But I see a lot of danger signs that -- you know, that -- that could be a potential nightmare some

1 day. Hopefully that won't happen, you know, but
2 I don't know. There's a lot of questions that I
3 can think of that I don't have answers to.
4 WILL BOSCHMAN: Speaking a little bit
5 on behalf of the board, and I personally have
6 been very concerned about the year that you're
7 worried about too. And we have -- we've spent a
8 lot of time thinking about the -- and worrying
9 about, frankly, the year that they take it out,
10 and -- and we need to be prepared either with
11 money or water to make our farmers whole in that
12 year. And we will be monitoring levels in the
13 district so that we spread the pumping so it
14 doesn't come all from an area where they're more
15 severely impacted than others. We're trying to
16 moderate that.
17 LARRY LUDY: But this whole system is a
18 little inequitable, especially to the guys in the
19 area that aren't going to receive any water. How
20 are you going to make us whole that aren't
21 connected to the system? It doesn't connect
22 everybody. I know there's got to be limitations
23 why it won't, but there's those guys on the
24 fringe who aren't getting any benefit or who
25 aren't getting the water in those years that
26 you're talking about. How are they going to be
27 made whole at that time?
28 You know, hopefully the groundwater

level does come up, and we've been seeing it, but there's -- you know, I don't know. There's -- there's -- there's still holes in this thing. You know, it seems like that there should be a -- an account balance where they can't withdraw from a certain level. Just use feet. Say once these pumps start reaching 400 feet, that they can't withdraw below that.

It seems like that that's the way it should be set up, because if we start having to pump, say, from five or six hundred feet in today's economy, that would ruin most of us cotton farmers, hay farmers, beet farmers. It would -- it would put us out of business. We would be in bad trouble right now if we didn't have diesel fuel as an alternative to electricity.

JAMES RAGAN: Let me just intercede here and intervene here a little bit, because I got a note about five minutes ago, and maybe there this will somewhat address the concerns.

I think it's very important to get the concerns out and get them addressed, but there is a commitment to prepare a public involvement report, which will include your comments, all the comments that were made at this meeting as well as the written comments and the responses to those comments in writing. And that report will

be circulated to you, I mean, to everybody who commented, and I'm -- ten days prior to the time that Semitropic's board will actually be considering the certification so that there -- you have an additional opportunity even before the -- your formal consideration of certification or -- to see whether or not the extent to which those comments are addressed, and, clearly, that's one of the purposes of this meeting is to make sure that those comments are addressed. Other comments, questions?

DENNIS PALLA: Yeah. Dennis Palla again. The man from the Kern County water district, I don't know if I understood that. Maybe he could explain it in laymen's terms, but --

KANE TOTZKE: I'll give it a shot.

JAMES RAGAN: You'll have to come up. This cord isn't as long.

DENNIS PALLA: He said something about -- why don't you say what you said again.

KANE TOTZKE: The table that was presented earlier showed that, puts the takes for the in-lieu bank water. And at the end of the -- I think it was the 25-year study period, there was -- I -- I believe it was 28 percent was the number that came out today that was left in the ground at the end of that study period.

What we're concerned with, and others are concerned with, is if the impacts aren't fully analyzed in the EIR report, then somebody could come back later and say, hey, look, you're going beyond the scope of your EIR, you may not be able to withdraw that water because you didn't analyze the impacts. There's that concern, and that's all we're trying to get a look at.

DENNIS PALLA: So what impacts are you speaking of?

KANE TOTZKE: Groundwater.

DENNIS PALLA: Actual overdraft and things of that sort?

KANE TOTZKE: Yeah. Changes in groundwater.

DENNIS PALLA: That's what I thought. Now, what if -- what if we're looking at dry years and a series of dry years, like what we've just had, and -- and the farmers have had to pump extensively because of shortages in supply through the canal system, and the overdraft is significant and the water table is going down, down, down, but yet Metropolitan has supplied in previous years -- let's say we're looking at a 20-year period.

In previous years they have supplied quite a bit and haven't taken the equal amount that they've put in, and then at some point in

time, they decide, you know, I want the maximum that I can take in any given year. You know, are we looking at the possibilities of extensive overdraft at that point in time? And what is that going to do to the water table? And are we going to be in a position, like the other gentleman is saying, that the water table has gotten down so low that their taking out of the water bank would cause us to actually, you know, have to extend our wells or something of that sort? Are those types of things looked at?

JAMES RAGAN: Let me see if I can -- your concern is one of -- in that -- in that particular situation in which you would actually be left worse off than you are today. Is that the -- I mean, without the project. Is that the concern that I'm hearing?

DENNIS PALLA: Yeah.

LARRY LUDY: That's what I said.

KANE TOTZKE: And I certainly didn't mean to imply that. That's not what I meant when I made my comment.

DIRK REED: What I would like to do real quickly is -- is briefly -- is briefly go into a few details about this, and I know we're not going to get into all of the details about it because there was a lot of information, but Paul Teigen with Bookman-Edmonston, who did a lot

of modeling for us, has a few graphics to explain that in more detail.

We did pick a 25-year period in our modeling exercise. We did take the last -- the drought period. We took the wettest period. We attempted to model the maximum extreme envelope that we felt could happen. We looked at all 70 years of record that we have, and we picked the worst the 70 years.

So, again, we think that we've developed a maximum envelope, and we delineated that. In the document, we showed what would happen in the putting of water into the basin and the taking of water out of the basin, and that's what we tried to do. Given, I guess, that there is some water that still is remaining, well, we think again that we've developed the worst condition and the worst take that we could foresee as part of this project. And that's what we've attempted to do.

What I will like to do, if I can, Jim, is let Paul get up and go through a little bit about modeling, what we see in the modeling, how much the groundwater basin came up through the banking process, and how much the groundwater came up through the pool water coming into the service area and that part of it. Why don't you go ahead, Paul.

PAUL TEIGEN: Basically, what's on the overhead right now is the raw data that went into the groundwater modeling. Again, we're looking into the future, the projected year going to 2020. We match it up with the historic hydrologic cycle. 1993 was an actual year. Forty-four -- almost 45,000 acre-feet was put into the bank in the 1993. So we start there with an account balance.

The hydrologic sequence starts in 1969, goes through 1992, and in order to be able to get to 2020, we just wrapped a hydrology around the -- picked it up again in 1922 and then on out. This is the projected amount of water in any given year that Metropolitan would be putting into the bank account. There's a lot of years in the middle here where a lot of water goes in in any given year.

This is the projected amount of water that Metropolitan would take out of the bank. This, again, 1977, is extremely dry year. It was projected that 90,000 acre-feet would be taken out and taken down to Southern California. And the last six-year drought, there are five years of extraction, 51,000, the maximum extractions were 110,000 acre-feet.

We limited the amount of water that Metropolitan could take out in these years to

conform to a rule that was developed to protect the landowners in the surrounding agencies from extreme fluctuation in the groundwater basin. The rule is -- is that they can't take out more water than what on average for a three-year period caused the water -- groundwater elevations to be lower than they would have been without the project.

And I'll show you some graphics about that. This is the accumulated water that Metropolitan had in the basin for purposes of this analysis. It got up to a maximum of 908,000 acre-feet. Water was coming in and out. At the end of the planning period, there was 463,000 acre-feet left in the bank. Again, this is just a snapshot in time, a series of years, looking at what would've happened if history repeated itself. Water coming in and going out.

It's assumed that this water -- the program will go beyond 2020, and the water eventually would be drawn out of the groundwater basin. Again, we have a rule in place that the groundwater basin cannot be impacted more than 15 feet in a three-year period on average. So even when that last water comes out, that rule has to be conformed to.

This water that's shown here is the additional pool water that Semitropic was able to

1 purchase because the new facilities that are
2 built for this project are in place. In other
3 words, in this particular year, maybe 83,000
4 acre-feet of water was assumed to be purchased by
5 Semitropic because in that particular year,
6 Metropolitan didn't have water to put into the
7 bank.
8 So that capacity in that new facility,
9 in those new facilities, was available to
10 Semitropic to purchase additional pool water that
11 they wouldn't otherwise have been able to
12 purchase because there would have been no
13 capacity to bring the water in.
14 And then this column shows the buildup
15 of the additional pooled water that Semitropic is
16 able to purchase as a result of this project, and
17 the maximum for this particular period is a
18 little over 700,000 acre-feet of water that
19 Semitropic was able to get that they otherwise
20 wouldn't have been able to get. And that stays
21 in the basin and increased groundwater levels to
22 the people that pump groundwater.
23 LARRY LUDY: If you put those two
24 (inaudible) --
25 THE REPORTER: I couldn't hear his
26 question.
27 JAMES RAGAN: Would you repeat that,
28 Paul?

PAUL TEIGEN: He was making an observation that if you put the two figures together, you have over a million acre-feet of water in the basin into the planning period that you otherwise wouldn't have had in the basin without the project.

Okay. In our modeling, we took a look at the -- the groundwater basin as a whole, and we looked at -- at specific locations in the basin. And we looked at each year what the impact at the specific location was when water is coming in.

Generally, the groundwater elevation rises above where it otherwise would have been. When water goes out, the water table is drawn down on a temporary basis, further than perhaps it would have been without the project. That's a temporary effect, draw the water out, and in six months to a year, it flows back into the area.

But what we were looking at is during the time of maximum pumping, the landowner is pumping, district pumping for this project, looking at what was happening at that particular location during those conditions.

We took a look at these specific locations so we could let the neighbors know what was happening in their area as a result of this banking program. So we located -- we looked at

1 specific locations for North Kern, Shafter-Wasco,
2 Rosedale-Rio Bravo, Buena Vista, and then we
3 looked at two locations within Semitropic and the
4 Buttonwillow area, and also in the Pond-Poso
5 area. The Pond-Poso area is where most of the
6 wells are located for withdrawing water.
7 And just to show you the impact on that
8 specific location that we saw in the previous
9 draft. The blue line is if you didn't have the
10 project. This is what would happen on a
11 year-to-year basis in the groundwater basin if
12 that sequence of hydrology repeated itself into
13 the future. You've got major shifts in the
14 groundwater elevations from year to year just
15 based on what pumping is normally occurring in
16 the basin.
17 The orange line is looking at the case
18 where we're only -- the project has two aspects
19 to it. It has the banking aspect that
20 Metropolitan is bringing in water, storing it,
21 and then taking it out later. The other aspect
22 of the project is a non-banking activity, which
23 is when Semitropic brings in pool water in excess
24 of what they could have done without the
25 project. That's referred to in the document as
26 non-banking project, and it's authorized under
27 the document. So Semitropic can do that
28 activity.

there's that series of five years where we have some fairly large withdrawals. The groundwater basin -- or the groundwater elevation is compared to, without the project, lower than because of those withdrawals, but then as you see, once those withdrawals stop, the basin bounces back up, there's still water in the bank, there's still the pool water in the bank -- or in the groundwater basin that causes the groundwater elevation to come back up above where it would have been without the project.

Now, that's in the Pond-Poso area, where the biggest pumping activity occurs. If you look at the other extreme in the furthest area away from the center of activity, there's minimal impact on the groundwater basin either on a beneficial basis or on a negative basis.

If you look at the average over the 25-year planning period, what happens to the groundwater basin, on average, the groundwater basin improves by 30 feet in the area of biggest impact. This means that, on average, during this 25-year period, your groundwater elevations were 30 feet higher than they would have been without the program. So on an average basis, with the program, you're saving money because the groundwater elevations are nearer to the surface, and you're not spending as much pumping.

1 And then, also, Semitropic and other
2 non-banking activity that Semitropic can do is
3 use well facilities in a dry year to shift water
4 around the -- the Semitropic service area to help
5 alleviate groundwater-quality problems that
6 farmers may have pumping their own water, or
7 capacity problems, that kind of thing.
8 So, basically, what the orange line
9 refers to is only that part of the project
10 concerned with Metropolitan's banking
11 activities. And when -- when Metropolitan puts
12 water in, the groundwater elevations increase in
13 these kind of years. In 1977, water was taken
14 out, it lowered it. The groundwater table
15 bounced back, and Metropolitan's putting more
16 water in in these years.
17 There's a lot of water in storage for
18 Metropolitan. The groundwater elevations
19 compared to if you didn't have the project are
20 quite a bit higher, saving farmers that are using
21 the groundwater money in pumping.
22 If you add to that the non-banking
23 activities, you see the -- what groundwater
24 elevation's coming up even further as a result of
25 the fact that Semitropic was able to purchase
26 more water and put it in the groundwater basin
27 and keep it there.
28 In the drought years, what happens is

Now, the three-year 15-foot rule that I referred to is -- it's basically a theoretical comparison. You're only going to know one of the -- the -- one of the parts of the equation. If you have the project implemented, you're going to have brought water in and maybe pumped some out, and so you'll know this groundwater elevation. We can do a theoretical calculation as to where the groundwater table would have been without the project, and we'd make a comparison on an annual basis between the two.

And what the three-year 15-foot rule does, basically says that in a three-year period, the average of the differences between these project and no-project groundwater elevations can't be -- the elevations cannot be, on average, 15 feet less than without the project. Otherwise, you just stop pumping at that location.

In this particular case, the first in Pond-Poso, the first figure is a positive 4.3 feet because water was put into the bank and so the groundwater table was improved. Down here, in the years when you're withdrawing the water and the water is temporarily below the no-project case, it got down to, on average, 13.9 feet below where it otherwise would have been.

What this rule does is make sure that

the fluctuation in the groundwater table doesn't go beyond a certain point and cause a significant increase in cost of pumping groundwater for the farmers.

So, basically, the program has a self-correcting part to it to make sure that really significant impacts don't occur.

JAMES RAGAN: Thank you. Other comments, questions? Okay. I thank you very much, and I remind you what I had said before, that the -- another reason for maybe -- making sure you signed an attendance copy is that you receive a copy of the public involvement report. And I remind you that the deadline for written comments is May 13th, and those are mailed to Semitropic. That's correct?

DIRK REED: Yes.

JAMES RAGAN: Thank you very much for coming.

(8:29 p.m.)

--ooOoo--

STATE OF CALIFORNIA)
) ss.
COUNTY OF KERN)

I, Susan L. St. Laurent, a Certified Shorthand Reporter for the State of California, hereby certify that I was present and reported in stenotypy all the proceedings in the foregoing-entitled matter; and I further certify that the foregoing is a full, true, and correct statement of such proceedings and a full, true, and correct transcript of my stenotype notes thereof.

Dated at Bakersfield, California, on May 2, 1994.

Susan L. St. Laurent

Susan L. St. Laurent, CSR No. 9035

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5.5 RESPONSES TO COMMENTS

5.5.1 Responses to Written Comments

Document 1 BUENA VISTA WATER STORAGE DISTRICT

1-1 Assumptions were made respecting the future availability of pool water inasmuch as the future availability cannot be predicted with any certainty. For purposes of evaluation, it was assumed that 150,000 acre-feet would be available whenever the SWP allocation was equal to or greater than 80 percent of entitlement. The Kern County Water Agency stated in a document entitled "Concepts for a Kern County State Water Project Water Supply Plan" dated May 12, 1994, that Westside member units have entitlement water in excess of their in-district needs when SWP allocations are 65 percent or greater. If, under actual operations, less pool water is imported than under the modeled condition, then the benefits attributable to this additional import would be commensurately less. To determine the amount of water Metropolitan might store in the groundwater basin underlying Semitropic, operations studies and groundwater model studies were undertaken. In particular, SWP deliveries to state contractors was determined by using DWRSIM (Version 6.36). Basic assumptions behind the DWRSIM modeling effort was that existing State Contractors capable of receiving SWP water would continue to request their entitlement, Metropolitan requests, on the other hand would increase from 1.6 million acre-feet to 2.0 million acre-feet overtime. To evaluate the amount of water that could be delivered by the SWP, DWRSIM relied on historical hydrology 1922-1992, existing SWP facilities and existing and limited future Delta constraints (D-1630), not historical deliveries. The modeling that was accomplished utilized the best information available, and predicted what some future effects to SWP deliveries might take place, in the event of new Delta standards. Detailed information pertaining to DWRSIM (Version 6.36) is available in Preliminary Water Supply Impact Assessment of Revised Draft D-1630, March 24, 1993, from DWR.

1-2 Groundwater levels with the Project will generally be higher than without the Project. These higher groundwater levels will be as a result of both banking and non-banking activities. Higher groundwater levels will lower the difference in the hydraulic gradient driving groundwater into Semitropic. This will reduce the movement of poor quality groundwater into Semitropic's service area.

Hydrographs shown on pages 6-18 through 6-25 do not reflect long-term averages, rather the conditions at specific locations under a given hydrology. In addition, the storage and recovery activities modeled and shown in the hydrographs were chosen because they show the largest impacts possible to the groundwater levels. Respecting "site specific groundwater level impacts," reference is made to the response to comment 1-11.

1-3 During the time the Draft EIR was being drafted, the Groundwater Monitoring Committee was in the process of developing consensus respecting a monitoring plan. A draft program has been prepared which addresses the analysis of the data collected under the program. As stated in the comment, it is possible that adherence to the 3-year/15-foot Rule will result in modification of Project operations including, if required, limiting the return of banked water in a given year.

Further, the comment suggests that a minimum storage balance or an extraction limit on a unit area basis be included in the Project. The 3-year/15-foot Rule was included as part of the Project in-lieu of the suggested or other measures. However, in practice, the recovery of banked water in a particular area could well be limited by the Rule, but only after first projecting that a significant adverse impact would likely result, and not by setting a fixed limitation in advance of actual operations. Reference is made to Exhibit E of the May 13, 1994 "Memorandum of Understanding, Regarding Operation and Monitoring of the Semitropic Water Storage District Groundwater Banking Project" attached hereto as Exhibit 5.

1-4 Section 3.3.6 of the Draft EIR describes Semitropic's 1992 Improvements Project, however, the Goose Lake Unit of the Water Conservation Element is not part of the Semitropic Groundwater Banking Project. Accordingly, excepting the referenced description, the Goose Lake Unit is not addressed in the Draft EIR.

1-5 The referenced criteria, the 3-year/15-foot Rule, is designed to preclude a significant adverse impact on groundwater levels. However, Semitropic is committed to a monitoring program, as developed in consultation with North Kern and other neighboring districts, which has placed a priority on the assessment of interference impacts. Further, the Project includes, at page 6-28 of the Draft EIR, provisions respecting well interference.

With regard to potential water quality impacts in localized areas, the Groundwater Monitoring Committee will monitor such potential impacts through the monitoring program so that there will be no significant adverse impacts. The monitor wells which were constructed this year, near the boundary between Semitropic and Buena Vista, will be important in this regard.

1-6 Respecting KCWA pool water assumptions and basic operation groundwater modeling assumptions, reference is made to the response to comment 1-1.

1-7 The section of text quoted in the comment specifically referred to a thin veneer of material deposited to a maximum depth of 50 feet within Semitropic in Jerry Slough, Goose Lake, and overflow lands north of Semitropic Ridge. The presence of shallow groundwater in Semitropic largely correlates to these areas, and is consistent with these deposits being relatively impermeable.

The comment also states that "the groundwater aquifers in this general area are interconnected and thus will be impacted by operations within all layers of the aquifer." Again, the presence of shallow groundwater conditions corresponding to the relatively impermeable deposits noted above, and the substantial water level differences between shallow monitoring wells and the deeper production wells, are consistent with hydrologically separate bodies of groundwater.

The comment indicates that "monitoring results in this area show that shallow water levels decline during the winter period when no irrigation is occurring due to the combination of less surface application and slow downward movement through intermittent sand and clay layers." This description appears to show that this shallow groundwater body is responding to changes in irrigation application, rather than water level conditions in deeper aquifers (i.e., if the shallow groundwater body is hydraulically connected with the deeper aquifers, then the recovery in levels in these deeper aquifers would tend to impede or reverse the downward percolation of water in the shallow groundwater body, which is the opposite of the observed effect.)

The comments also refer to the Goose Lake Project which is not a part of this Project.

1-8 The annual potential salt accumulation shown in Table 6-6 (at page 6-28 of the Draft EIR) satisfies the stated objective respecting the banking portion of the Project, which is the focus of the referenced "Issues Resolution Committee, Groundwater Management Rules -Draft". However, increased imports (for overdraft correction) under the non-banking aspect of the Project would have the potential to increase the salt load/import.

1-9 Groundwater levels with the Project will generally be higher than without the Project. These higher groundwater levels will be as a result of both banking and non-banking activities. Higher groundwater levels will lower the difference in the hydraulic gradient driving groundwater through Buena Vista and into Semitropic. This could retard the movement of poorer quality groundwater not only into Semitropic's service area, but also through Buena Vista.

Hydrographs shown on pages 6-18 through 6-25 do not reflect long-term averages, rather the conditions at specific locations under a given hydrology. In addition, the storage and recovery activities and the hydrology modeled and shown in the hydrographs were chosen because they show the largest impacts possible to the groundwater levels. This "worst case" scenario reveals the impacts to the specific locations with the assurance that impacts to those locations are not significant under the defined levels of payback to Metropolitan.

1-10 The comment correctly notes that reductions in subsurface inflow relate directly to the flattening of the hydraulic gradient, and that this flattening deals with the relative water levels between Semitropic and neighboring areas, not just the water level changes within Semitropic. The comment is therefore correct that "all" of the change in underflow is not due to activities within Semitropic. The text of the EIR should have stated that "a portion" of the change in underflows is due to activities within Semitropic.

A description of the probable future availability of supplemental water for overdraft correction is presented in the response to comment 1-1. The water levels shown in schematic cross sections in Figures 5-10, 11, and 12 are intended to show that water levels in Semitropic are generally lower than those in neighboring Districts. This relationship has not changed. More recent water level information is shown on the

hydrographs of selected wells (Figure 5-13) and on the plot of average groundwater pumping lifts (Figure 5-15).

1-11 The presentation of groundwater level impacts in the Draft EIR uses a combination of hydrographs at specific locations and contour plots of the average increases in groundwater elevations. These two types of representation are complementary and, taken together, provide indications of both the change in groundwater levels with time (as shown in hydrographs) and the overall pattern of water level changes (as shown in contour maps). It should be noted that the study methodology itself does not rely on average conditions, since pumpage and recharge estimates vary every year of the analysis period and in each DAU. Rather, it is only the presentation of study results that, the combination of water level hydrographs at specific sites and average contour maps is used to summarize project impacts.

1-12 The groundwater model relies on a calibration performed by DWR and documented in the September 1985 report, "Ground Water Study, San Joaquin Valley, Third Progress Report." In that calibration, groundwater levels simulated by the groundwater model were compared with groundwater contours determined from water level measurements. The results of that calibration are presented in the September 1985 report. The boundary conditions used for the groundwater model are no-flow boundaries on the western, southern and eastern rims of the Valley in Kern County. These no-flow boundaries represent the boundary between alluvial materials in the San Joaquin Valley and relatively impermeable rocks in the Coast Range, San Emigdio Mountains, Tehachapi Mountains and Sierra Nevada. These no-flow boundaries are considered to be appropriate for use in model simulations. The model's northern boundary is an assumed constant-head boundary that lies approximately twenty miles to the north of Semitropic's northern boundary. Although representation of the northern boundary as a location of constant-heads is an approximation, the large distance of this northern boundary from the study area is considered sufficient to minimize any impacts on study area simulation. As described previously, copies of the model's parameters are available at the Semitropic's office for review by any interested parties.

1-13 Respecting the future availability of SWP water and KCWA pool water, reference is made to the response to comment 1-6.

Non-banking use of Project extraction facilities will be subject to the same constraints as extractions for the purpose of returning previously banked water. In particular, pumping at Project wells is also subject to being terminated or modified if such pumping would cause well interference problems with neighboring wells.

1-14 The modeling studies are believed to provide an adequate assessment of the impacts of Project operations. However, the Monitoring Program is designed to monitor actual project operations and, if necessary, operations would be modified to avoid significant adverse impacts. The landowner wills for which the District currently has use agreements are shown on Exhibit 4 attached hereto. These wells were reflected in the

operations studies and groundwater modeling which were conducted. Return flows of 30 percent of applied water is a reasonable estimate based upon the January 1983 "Report on Investigation of Optimization and Enhancement of the Water Supplies of Kern County", which indicates the irrigation efficiency in Semitropic is about 66%. Furthermore, return flows are computed based upon the total applied water, not surface water deliveries. Therefore, the same return flows were modeled for both with and without project conditions and will not effect the difference between with and without project water levels.

An average distribution system loss of 10 percent is reasonable based upon Semitropic delivery records which indicate an annual range of 7 to 20 percent, depending upon the magnitude of deliveries.

It was assumed that 34.5 percent of water deliveries will find their way back into the groundwater basin, not 40 percent as indicated in the comment. The 34.5 percent is computed as effective seepage plus return flow, where effective seepage is 7.5 percent of deliveries (75 percent of 10 percent losses) and return flows are 27 percent of deliveries (30 percent of deliveries after 10 percent losses).

1-15 The Monitoring program will include monitoring of well interference effects/impacts. This will assure that, to the extent localized problems are evidenced, that they are not averaged out and ignored.

1-16 Groundwater levels with the Project will generally be higher than without the Project. These higher groundwater levels will be as a result of both banking and non-banking activities. Higher groundwater levels will lower the difference in the hydraulic gradient driving groundwater through Buena Vista and into Semitropic. This will reduce the movement of poorer quality groundwater not only into Semitropic's service area, but also through Buena Vista.

1-17 As described in the response to the comment 5-2, Section 5.2.2.2, available data indicates that the rate of downward movement of shallow groundwater is controlled by underlying impermeable layers in those areas, not the water level in the deeper, primary groundwater production zones. The comment then presents a concern over average conditions as opposed to extraction year conditions. As described in responses to several other comments, the groundwater model uses aerially varying estimates of hydrologic and geologic factors and uses time varying estimates of hydrology. In reference to the shallow groundwater conditions, any extraction year impacts would have the effect of lowering groundwater levels, and so, minimizing any conceivable potential impact on increases in shallow groundwater levels.

As described in other responses, the Draft EIR analysis relies on a groundwater modeling analysis using a model that has been calibrated against water level measurements. The analysis using the groundwater model uses time-varying estimates of recharge and extraction that are based on the results of operations model studies for representative

hydrologic periods. The groundwater model aquifer parameters vary within the study area and the hydrologic estimates also vary from DAU to DAU to reflect differences in in-lieu recharge and extraction intensity. Finally, the 3-year/15-foot Rule provides a real time method for verifying that the project does not significantly affect area groundwater users. Based on these considerations, it is felt that the Draft EIR adequately describes potential project impacts.

1-18 Section 6.4.5, Production Well Interference, applies to all neighboring wells, whether located in Semitropic or in an adjacent District. Should pumping of a Project well or wells be significantly affected, through well interference, the pumping lift of any existing active well, Semitropic would either stop pumping or compensate the owner. The Monitoring Committee would establish the significance criteria respecting well interference by conducting pumping tests of project wells following installation of monitor wells and considering other hydrologic information.

1-19 The comment expresses concern with a statement which refers to average conditions and the comment indicates that the report depends on consideration of average, long-term conditions. The referenced statement has been taken out of context and does not characterize the analysis completed for the Draft EIR. The analyses for the DEIR include consideration of variations of conditions over time through the use of historical hydrology and consider the areal distribution of these effects. Areal and time specific summaries of study results are presented, such as the hydrographs shown in Figures 6-4 through 6-11. Areal specific information is shown on the water level maps of Figures 6-12 and 6-13. The statement quoted in the comment simply summaries the observations from these specific data.

The program has been developed using the groundwater model and this model provides a practical means to reflect the operational complexities of the banking program and identify project impacts on water levels. A monitoring program is being developed in coordination with neighboring districts to address specific, localized impacts.

The comment expresses concern with a statement which refers to average conditions and the comment indicates that the report depends on consideration of average, long-term conditions. The referenced statement has been taken out of context and does not characterize the analysis completed for the DEIR. The analyses for the DEIR included consideration of variations of conditions over time through the use of historical hydrology and considered the areal distribution of these effects. Areal and time specific summaries of study results are presented, such as the hydrographs shown in Figures 6-4 through 6-11. Areal specific information is shown on the water level maps of Figures 6-12 and 6-13. The statement quoted in the comment simply summarizes the observations from these specific data.

The program has been developed using the groundwater model and this model provides a practical means to reflect the operational complexities of the banking program and identify project impacts on water levels. A monitoring program is being developed in coordination with neighboring districts to address specific, localized impacts.

1-20 As stated in Section 6.4.7, Agricultural Drainage (at page 6-32 of the Draft EIR), "As no change in irrigation patterns would occur with Project implementation, there would be no impact." Also, reference responses to comments 1-7 and 1-17.

1-21 During the time the Draft EIR was being drafted, the Groundwater Monitoring Committee was in the process of developing consensus respecting a monitoring plan. Semitropic is committed to implementing a groundwater monitoring program, as established by the Groundwater Monitoring Committee, which will have specific data requirements, determine the location and number of monitoring wells, determine the number and location of existing wells that will be included in the Monitoring Program, determine the appropriate evaluation methodology, and prepare an annual report that assesses Project impacts. The formal arrangements are generally outlined in the December 15, 1993 "Points To Be Included In A Memorandum of Understanding Re: Initial Phase of Ground Water Monitoring Program " and are more specifically described in the May 13, 1994 Draft "Memorandum of Understanding Regarding Operation and Monitoring of the Semitropic Water Storage District Groundwater Banking Project".

1-22 The baseline assumptions behind DWRSIM (Version 6.36) were generally discussed in the Draft EIR. The DWRSIM is a widely accepted model for determining available SWP supplies, changes in reservoir storage, and changes in Delta flow conditions. The Department of Water Resources has made this model available for anyone to use. For exact details concerning the model reference is made to Preliminary Water Supply Impact Assessment of Revised Draft D-1630, March 24, 1993, available from DWR. Respecting the operational studies, reference is made to the response to comment 1-6. Respecting the availability of KCWA pool water, reference is made to the response to comment 1-1. Respecting irrigation return flow assumptions and seepage loss assumptions, reference is made to the response to comment 1-14.

1-23 The groundwater model used to project impacts of groundwater levels for the Semitropic Groundwater Banking Project relies on a calibration described in the September 1985 report, "Ground Water Study, San Joaquin Valley, Third Progress Report." A detailed listing of the aquifer parameters included in the model is not considered to be appropriate for inclusion in the report, however such a listing is available directly from Semitropic Water Storage District. The aquifer parameters included in the model were developed through a multi-step process that included analysis of available well log data. Data interpreted from well logs were then adjusted to improve the match during the calibration period between measured and simulated groundwater levels. In general, the relationship between well log information and actual aquifer parameters is not always clear. Well logs reflect unknown field interpretations of drill cuttings that are performed by drilling technicians with unknown training under uncertain conditions. Available well logs at

closely adjacent sites frequently contradict each other in ways that do not appear to be related to real geologic processes. In short, information available from well logs does not provide an absolute indication of aquifer parameters and was used primarily as a guide to the estimation of aquifer parameters in the model.

The DAU division lines in the model were identified to provide a reasonable representation of the recharge and extraction impacts of the proposed Semitropic Groundwater Banking Project. Although it is nearly always possible to specify the location of recharge and extraction more exactly, the DAU division lines presented in the Draft EIR are considered adequate to document the potential water level impacts of the Project.

1-24 Groundwater levels with the Project will generally be higher than without the Project. These higher groundwater levels will be as a result of both banking and non-banking activities. Higher groundwater levels will lower the difference in the hydraulic gradient driving groundwater through Buena Vista and into Semitropic. This could retard the movement of poorer quality groundwater not only into Semitropic's service area, but also through Buena Vista.

The Draft EIR does not describe salinity as "something that cannot be controlled." Balancing the salt load of Semitropic's service area is not an objective of the Project, nor is it an objective of any of the water storage districts surrounding Semitropic that import water for irrigation. The salt balance calculated for the Draft EIR shows the amount of potential salt accumulation as a result of the Project. State Water Project water delivered to the Project has an average TDS of 250 PPM, one-half the average TDS of 500 PPM for the groundwater in and around Semitropic. Delivery of this water to Semitropic does not degrade water quality in Semitropic.

Finally, the Project has been specifically designed not to cause any negative impacts on the groundwater basin, and the report does not "imply" this, rather it is a basic premise of the Project. Significant negative impacts to the groundwater basin would not be acceptable to Semitropic, its neighboring districts, or Metropolitan.

1-25 Tabulations suggested in the comment have been prepared and are attached hereto as Exhibit No's 1 and 2. Exhibit No. 1 provides annual banking activity, including Semitropic water deliveries and groundwater pumping. Exhibit No. 2 provides demands, groundwater pumping, and Semitropic deliveries assumed for the Project with banking and non-banking use of facilities and no project conditions for each DAU. Respecting the analysis of groundwater level impacts, the groundwater modeling is believed to adequately assess these impacts. Notwithstanding this observation, the 3-year/15-foot Rule and the Monitoring Program have been included in the Project to avoid the realization of potentially significant adverse impacts, whether the result of modeling assumptions, analysis methods, or unforeseen conditions.

1-26 "Site specific groundwater level changes" will not be ignored as this comment tends to suggest. The 3-year/15-foot Rule will apply to "site specific" or localized areas. While the comment does not recognize the utility of the 3-year/15-foot Rule, it is believed that this criteria will allow some flexibility in Project operations, recognize (to some extent) the water level benefits of the Program, and does not subject those who rely on pumped groundwater to fluctuations in water levels which are significantly greater than annual and seasonal fluctuations which are experienced under without-Project conditions.

1-27 The Goose Lake Unit of the Water Conservation Element of Semitropic's 1992 Improvements Project is not a part of this Project or Draft EIR. Reference is made to response to comment 1-7.

1-28 Respecting groundwater monitoring, reference is made to the response to comment 1-21.Contrary to the subject comment, the Project does address impact prevention and mitigation measures. In particular, the Draft EIR states (at pages 6-14 and 6-15) that "To protect groundwater pumpers within surrounding districts and Semitropic from significant adverse groundwater elevation impacts, but to also give the banking program credit for improving groundwater elevations during storage years, a rule for operating during withdrawal years has been developed as a significance criterion to ensure that the Project would have no significant adverse impacts. The rule states that withdrawals will be stopped or modified at specific locations if such withdrawals would cause the average groundwater levels over a 3-year period to be 15 feet less than what the average would have been without the Project over the same 3-year period."

1-29 The landowner wells for which Semitropic currently has use agreements are shown on Exhibit 4 attached hereto. These wells were reflected in the operations modeling and groundwater modeling. Non-Project operations are represented in the same detail as Project operations. Both are considered adequate for purposes of analyses in the DEIR.

Document 2 BUTTONWILLOW LAND AND CATTLE COMPANY

2-1 Reference is made to response to comment 5-4 of the North Kern Water Storage District letter.

Document 3 CALIFORNIA DEPARTMENT OF FISH AND GAME, REGION 4

3-1 As described in the Draft EIR, the preferred alternative is Alternative D2, not Alternative D1 as indicated in your letter. The remaining responses are based on Alternative D2 as being the preferred alternative.

3-2 The preferred alternative, Alternative D2, is designed to avoid potential take of state and federally listed threatened and endangered species, as noted in Tables 6-9 through 6-11 of the Draft EIR. Under Alternative D2, only land that is currently irrigated can become

part of the project. Where infrastructure is needed, such as pipelines and pumps, the footprints for these facilities will not be located at sites which contain any threatened or endangered species. Implementation of the mitigation measures to reduce the likelihood that no unanticipated take of currently listed threatened or endangered species occurs is discussed in the Mitigation Monitoring Plan of the Final EIR. As noted in the Findings for the Semitropic Groundwater Banking Project, implementation of the mitigation measures documented in the Draft EIR and in the Mitigation Monitoring Plan will reduce impacts on biological resources to below a level of significance.

3-3 Operation and maintenance of the project will not require disturbance of threatened or endangered species habitat. All activities will be confined to existing roadway, canals, and facilities to be constructed as part of this project. Only areas which are currently irrigated will receive surface water supplies from the Project.

3-4 The Mitigation Monitoring Plan includes on-site monitoring to ensure effectiveness of the mitigation measures and to reduce the likelihood of take of listed, threatened or endangered species. During construction, a qualified individual will inspect construction areas prior to ground-disturbing activities to determine whether threatened or endangered species have moved into Project sites. If the presence of such species is noted at the time of the inspection, appropriate measures to redirect construction will occur to avoid or reduce the likelihood of such take. Since such take is unanticipated at this time, the

Mitigation Monitoring Plan describes the procedures to be followed if a potential for take occurs at the time construction.

3-5 Alternative D2 avoids all burrowing owls burrows located in natural habitat. As discussed in the Draft EIR, fourteen burrows were discovered in the existing canal berms. These burrows may be affected by construction, operation, or maintenance of the Project. To offset that potential impact, the acquisition of fourteen acres of native habitat will be purchased prior to construction in this area, as described in the Draft EIR.

3-6 The purpose of the Project is to provide surface water in-lieu of groundwater for lands in active agricultural production. The Project will not change current farming practices on those lands because these lands are already being farmed. As a result, it is not anticipated that the Project will have either positive or negative impacts on existing wildlife use due to changes in farming practices.

3-7 As discussed in comment 3-6 and in the Draft EIR, the Project will not affect existing land use and farming practices. Therefore, no mitigation measures are required for land-use since no changes will occur as a result of the Project.

3-8 As discussed in comments 3-1 through 3-4, no take of listed species is anticipated as a result of the Project. The Semitropic Water Storage District recognizes the obligation to consult with the Department of Fish and Game on unanticipated Project impacts to threatened or endangered species and is committed to this coordination. The mitigation

program described in the Final EIR clearly states the objectives of wildlife mitigation for other sensitive species, and the Final EIR contains approaches for accomplishing these objectives in the Mitigation Monitoring Plan, which support local efforts to plan for ecosystem.

3-9 Water storage for the Semitropic Groundwater Banking Project will be accomplished through irrigation of lands currently in active agricultural production, as discussed in comment 3-6. Because the Semitropic Water Storage District recognizes the efforts of local organizations to plan for ecosystem management, mitigation lands to offset impacts to wildlife as a result of the Project will be acquired along the Semitropic ridge in native habitat located within Semitropic's boundaries. These mitigation lands will managed by organizations dedicated to conservation purposes.

3-10 As noted in the Draft EIR Chapter 2, section 2.4.1, Metropolitan has a number of locations that could be used to store water (Table A and B). Based on distribution system modeling, which optimized surface and groundwater storage, the annual replenishment requirements for Metropolitan's service area is approximately 1,100,000 acre-feet per year. Of that amount, 694,000 acre-feet per year can be met through the use of surface reservoirs, Table A. The remaining 406,000 acre-feet per year could be met using groundwater conjunctive-use opportunities, Table B. It is important to note that without the Semitropic Groundwater Banking Project, Metropolitan currently has available sufficient groundwater capabilities, within it's service area, to meet this annual groundwater requirement.

Potential impacts in the Delta related to changes in timing of Metropolitan's requests were modeled using DWRSIM (Version 6.36) with D-1630 constraints. The use of this DWRSIM version was accomplish to reflect as best as possible, any new standards adopted and implemented for protecting the Bay Delta. DWRSIM (Version 6.36) does not currently account for the provisions of the Biological Opinions for Chinook Salmon and Delta smelt; accordingly Delta diversions were not restricted pursuant to these opinions. As a result, the changes in diversions modeled from summer and fall to winter and spring demonstrate the worst case impacts to fisheries without the winter or fall constraints on the Delta operations.

3-11 The SWP and CVP are currently operating under a long-term Biological Opinion for winter run Chinook Salmon. This Opinion allows for the incidental take of Chinook Salmon through the operations of the State Water Project (SWP) Delta facilities by DWR. As previously stated, DWR would operate these facilities, attempting to meet SWP contractor demands, within the restrictions placed on these facilities. The Semitropic Groundwater Banking Project, as with all projects connected to the SWP, will require DWR to operate it's facilities within any constraints placed upon it resulting from ESA consultations.

TABLE A
PROJECTED METROPOLITAN, DWR AND SDCWA
RESERVOIR STORAGE IN ACRE-FEET

Reservoir	Storage			
	Total	Dead	Allocated for Others	Available to MWD
Pyramid Lake (DWR)	171,200	4,800	5,300	161,100
Castaic Lake (DWR)	323,700	18,600	11,400	293,800
Elderberry Forebay (DWR)	28,200	200	0	28,000
Silverwood Lake (DWR)	75,000	4,000	24,900	46,100
Lake Perris (DWR)	124,000	3,500	0	120,000
Lake Mathews (Metropolitan)	182,000	3,500	0	178,500
Lake Skinner (Metropolitan)	44,000	200	0	43,800
Eastside (Metropolitan)	800,000	0	0	800,000
SDCWA Reservoirs New Storage	100,000	0	0	100,000
TOTAL	**1,848,100**	**35,300**	**41,600**	**1,771,200**

TABLE B
ENHANCED CONJUNCTIVE USE
MAJOR GROUNDWATER BASIN CHARACTERISTICS

BASIN	CONJUNCTIVE USE STORAGE (acft)	SPREADING OR INJECTION CAPACITY			ADDITIONAL PRODUCTION (acft/year)
		WET	NORMAL (acft/year)	DRY	
ULARA	100,000	35,000	50,000	75,000	50,000
CENTRAL AND WEST	150,000	20,000	52,000	101,000	88,000
SAN GABRIEL	150,000	100,000	100,000	240,000	45,000
CHINO	300,000	18,000	31,700	31,700	20,000
ORANGE COUNTY	200,000	90,000	135,000	245,000	120,000
RAYMOND	100,000	11,900	11,900	11,900	25,000
NORTH LAS POSAS	350,000	9,800	9,800	9,800	30,000
ELSINORE	100,000	9,800	9,800	9,800	22,000
TEMECULA	100,000	9,800	9,800	9,800	22,000
SEMITROPIC	1,000,000	90,000	130,000	160,000	140,000
TOTAL	**2,550,000**		**540,000**		**562,000**

3-12 Metropolitan recognizes that there currently is a one-year Opinion for Delta smelt in place, and that DWR is involved in on-going consultation for Delta smelt. However, the DWR is involved in ongoing consultation with the Bureau of Reclamation and the Fish and Wildlife Service. Constraints on SWP operations will continue to exist, to protect Delta smelt as a result of these consultations. The existing Opinion allows for the incidental take of Delta smelt through the operations of the State Water Project (SWP) Delta facilities by DWR. As previously stated, DWR would operate these facilities attempting to meet SWP contractor demands, within the restrictions placed on these facilities. The Semitropic Groundwater Banking Project, as with all projects will be required to operate within any constraints placed upon DWR's facilities resulting from ESA consultations.

3-13 As stated in the Draft EIR, the modeling of Delta effects was accomplished using the state-of-the-art models available (DWRSIM, Version 6.36). This model accounted for D-1630 constraints, but did not include provisions of the biological opinions for winter-run Chinook Salmon (NMFS,1993) or Delta smelt (USFWS & CDFG, 1993 and 1994) consisting of both the reasonable and prudent operational measures and take limits. If these provisions were included in the modeling assumptions, then delta diversions would have been further restricted. Because the Project is not intended to superceed these Biological Opinions, and the Project is intended to be operated within constraints placed on SWP diversion from the Delta, no direct impacts above those allowed by these Opinions would result. On the issue of CEQA compliance, since the intent of CEQA is first avoidance (to the extent feasible) of impacts, the formulation and operation of this Project would meet this intent.

3-14 The benefits of the Project will vary somewhat depending on water available from DWR or the amount of water that would be stored inside or outside Metropolitan's service area. As described in the EIR, the preferred Alternative D2, is designed to avoid potential take of State and Federally listed threatened and endangered species. The Project as described in the EIR, Response to Comments, Findings, and Mitigation Monitoring Plan would avoid, minimize, or reduce impacts with mitigation that has been provided, below a level of significance. By undertaking the project as defined and relying on water supplied by DWR through the SWP, an additional consultation with NMFS, USFWS, and CDFG would not be required.

Document 4 STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

4-1 Semitropic Water Storage District will obtain the required Caltrans encroachment permits for any facilities within state highway right-of-way (similar to the procedures followed during construction of the District's present facilities that cross Interstate 5, and State Highway 46).

4-2 No temporary closures of rural (Kern County) roads are contemplated. All construction activities that have the potential to effect roadways will be in accordance with the

requirements mandated by Kern County. Regarding the potential for additional traffic impact to state and local roadways, this subject has been addressed in the Draft EIR and the impact is insignificant.

Document 5 DOOLEY & HERR, ATTORNEYS AT LAW (North Kern Water Storage District)

5-1 The Semitropic Board of Directors, in certifying the Final EIR for the Semitropic Groundwater Banking Project, will also consider the Findings, as required under CEQA. As noted in the Findings for the project, implementation of the mitigation measures documented in the Draft EIR, Response to Comments and the Mitigation Monitoring Plan will reduce impacts to a level below significance.

5-2 The proposed project has three objectives:

- Optimize the use and distribution of water resources;
- Recharge groundwater and reduce overdraft; and
- Preserve operational reliability and flexibility of water delivery.

To accomplish these objectives, facilities are proposed to be constructed and water stored in the groundwater basin underlying Semitropic. As part of the project condition, the water stored in the groundwater basin falls into one of two categories 1) Metropolitan bank water or; 2) Non-banking (KCWA Pool Water). As part of the no-project condition, existing facilities would continue to operate as they have in the past.

5-3 Please refer to the response to comment 3-10. Metropolitan has several places that it could store water, one of which is the groundwater basin underlying Semitropic. This banked water would be placed into storage and later returned to Metropolitan, upon request. The effect of this proposed banking scenario would be a temporary rise in the groundwater levels. As for non-banking water (with Project), KCWA pool water, long-term groundwater levels would increase.

5-4 The Project is designed to bank water before water can be withdrawn and to allow Semitropic, as a result of Project facilities, to purchase additional quantities of Kern County Water Agency (KCWA) Agricultural Pool water (pool water). All of the water that is banked will be withdrawn and if, in the unlikely event, no additional pool water were purchased, the ground water elevations would be no worse off over time than if the project had not been implemented. If additional pool water, as is likely, is purchased, then groundwater elevations will be permanently improved as a result of the project. During times of withdrawal of banked water, groundwater elevations may be temporarily lower than they would otherwise have been without the project. The 3-year/15-foot Rule provides a mechanism by which such temporary impacts are limited and will not become

significant. In specific localized areas there may be a mismatch between water delivered for banking and withdrawals. If this were to happen, the 3-year/15-foot Rule would not allow withdrawals to continue. Therefore, local imbalances cannot continue to the point that the impacts become significant.

As is discussed in the Draft EIR, the Groundwater Banking Project will increase groundwater elevations which will have, in general, a beneficial effect on groundwater quality. However, with regard to potential water quality impacts in local areas, the Groundwater Monitoring Committee will monitor such potential impacts through the monitoring program so that there will be no significant adverse impacts.

5-5 The criteria for location and use of wells and other project facilities, including in-lieu lands is detailed and specified in the Draft EIR. In the case of wells, the criteria is that project wells be located no closer than 1/4 mile from farmers or other project wells and that the well sites that were chosen be free from threatened and endangered species. The location of other project facilities are mostly dictated by the location of existing facilities such as canals and pipelines and the location of proposed in-lieu lands. Other facilities were also located, to the extent possible, to minimize or eliminate impacts on threatened and endangered species. The criteria for location of in-lieu lands were that the owners had to have submitted an expression of interest in having their land become part of the in-lieu area, there has to be a history of the land being farmed and, to the extent possible, the land is located to provide that water delivered for banking is generally recharged to the east of where it is extracted in an attempt to minimize impacts on neighboring districts to the east.

5-6 It is agreed that there should be Project participation in a comprehensive monitoring program as described in the December 15, 1993 "Points To Be Included In A Memorandum of Understanding Re: Initial Phase of Ground Water Monitoring Program". Semitropic has actively participated with interested districts and agencies in Kern County in the development of a comprehensive monitoring program since the inception of the Semitropic Groundwater Banking Project. In that regard, representatives of Semitropic and North Kern Water Storage District have negotiated to each District's satisfaction the Draft "Memorandum of Understanding Regarding Operation and Monitoring of the Semitropic Water Storage District Groundwater Banking Project" dated May 13, 1994.

5-7 It is agreed that there should be an "independent scorekeeper" for the monitoring program. Semitropic supports and is committed to implementing the Groundwater Monitoring Committee that is referenced in the Draft "Memorandum of Understanding Regarding Operation and Monitoring of the Semitropic Water Storage District Groundwater Banking Project" dated May 13, 1994. It has always been Semitropic's preference that the monitoring program be managed by a Groundwater Monitoring Committee composed of interested districts and agencies in Kern County. The perceived implication to the contrary is in error.

5-8 At the time the Draft EIR was being completed, the Groundwater Monitoring Committee was in the early stages of determining the scope and duties of the monitoring program and the Committee. Since the Draft EIR was completed, the committee has developed a consensus of how the monitoring program should be developed. One of the principal concerns of the Committee is that the monitoring program be flexible so that it can be responsive to conditions or requirements that cannot now be foreseen. Semitropic is committed to implementing a groundwater monitoring program as established by the Groundwater Monitoring Committee which will have specific data requirements, determine the location and number of monitoring wells, determine the number and location of existing wells that will be used in the monitoring program, determine the appropriate evaluation methodology using data and issue an annual report that assesses project impacts.

5-9 Non-banking use of project facilities will be subject to the 3-year/15-foot Rule as is stated in the Draft EIR. Pumping at project wells is also subject to being terminated or modified if such pumping would cause well interference problems with neighboring wells. As stated in the response to comment 5-4, the Groundwater Monitoring Committee will monitor potential water quality impacts through the monitoring program so that there will be no significant adverse impacts.

5-10 It is agreed. Semitropic will formally commit to a monitoring and data evaluation program as generally outlined in the December 15, 1993 "Points To Be Included In A Memorandum of Understanding Re: Initial Phase of Ground Water Monitoring Program" and as more specifically described in the May 13, 1994 Draft "Memorandum of Understanding Regarding Operation and Monitoring of the Semitropic Water Storage District Groundwater Banking Project". This will be done by a resolution by the Semitropic Water Storage District Board of Directors as part of the certification process for the Final EIR.

5-11 Agreed.

5-12 The Semitropic Board of Directors, in certifying the Final EIR for the Semitropic Groundwater Banking Project, will also consider the Findings as required under CEQA. As noted in the Findings for the project, implementation of the mitigation measures documented in the Draft EIR, Response to Comments and the Mitigation Monitoring Plan will reduce impacts to a level below significance.

5-13 It is agreed, Semitropic will commit to adopting, substantially in the form of the May 13, 1994 "Memorandum of Understanding Regarding Operation and Monitoring of the Semitropic Water Storage District Groundwater Banking Project" as part of the mitigation for the Semitropic Groundwater Banking Project. This will be done as part of the certification process of the Final EIR as stated in the response to comment 5-10.

Document 6 KERN COUNTY WATER AGENCY

6-1 Correct, The call out for Table 2-2 under surface reservoirs should be deleted, Table A, of the response to comment 3-10 shows the correct information.

6-2 Correct, This number should be 25,000 acre-feet.

6-3 Correct, These references should be, Figures 6-4 through 6-9.

6-4 Table 6-7 (at page 6-29) of the Draft EIR has been expanded as suggested and is attached hereto as Exhibit 1.

Document 7 ROSEDALE-RIO BRAVO WATER STORAGE DISTRICT

7-1 Assumptions were made respecting the future availability of pool water inasmuch as the future availability cannot be predicted with any certainty. For purposes of evaluation, it was assumed that 150,000 acre-feet would be available whenever the SWP allocation was equal to or greater than 80 percent of entitlement. The Kern County Water Agency stated in a document entitled "Concepts for a Kern County State Water Project Water Supply Plan" dated May 12, 1994, that Westside member units have entitlement water in excess of their in-district needs when SWP allocations are 65 percent or greater. If, under actual operations, less pool water is imported than under the modeled condition, then the benefits attributable to this additional import would be commensurately less.

Use of Project facilities for non-banking extraction activities is also a part of the Project and, as such, will be held to the same standard, i.e., the 3-year/15-foot Rule.

7-2 The groundwater model analysis presented in the Draft EIR relies on hydrology estimates that vary by DAUs. The DAUs were defined for the study to reasonably represent variations in recharge and extraction intensity that could affect groundwater levels. While it is always possible to provide finer discretization of hydrologic inputs to the model, the discretization applied in the DEIR studies is considered appropriate for representation of potential project impacts. In addition to the modeling analysis presented in the Draft EIR, the 3-year/15-foot Rule provides a site-specific approach to insuring that actual, localized water level impacts are not excessive.

7-3 The comment correctly makes the observation that, over the period of study, more water was banked than was returned. While all of the water banked was not withdrawn over the study period, the scenario evaluated was believed the worst condition, for evaluating impacts -- the rate of withdrawal of previously banked water. Also, the Project will be held to the 3-year/15-foot Rule, irrespective of the balance in storage.

7-4 In Table 6-8, the 3-year average difference column is correctly computed as the difference in average groundwater levels for the 3-year period including the current year and two previous years. Attached as Exhibit 3 is a revised Table 6-8 which includes groundwater levels corresponding to without non-banking use only.

7-5 Groundwater levels with the Project will generally be higher than without the Project. These higher groundwater levels will be as a result of both banking and non-banking activities. Higher groundwater levels will lower the difference in the hydraulic gradient which drives groundwater and constituents such as DBCP, EDB and nitrates into Semitropic.

Any water pumped back into the California Aqueduct will have to meet the Department of Water Resources' (DWR) water quality standards. If water pumped back into the Aqueduct does not meet DWR's standards, then it will not be pumped into the Aqueduct.

7-6 Semitropic will formally commit to a monitoring and data evaluation program as generally outlined in the December 15, 1993 "Points To Be Included In A Memorandum of Understanding Re: Initial Phase of Ground Water Monitoring Program" and as more specifically described in the May 13, 1994 Draft "Memorandum of "Understanding Regarding Operation and Monitoring of the Semitropic Water Storage District Groundwater Banking Project". This will be done by a resolution by the Semitropic Water Storage District as part of the certification process for the Final EIR.

Also, it is agreed that there will be things to be learned from actual Project operations. This is the reason that the Groundwater Monitoring Committee has insisted that there be flexibility in the Monitoring Program.

Document 8 SAN JOAQUIN VALLEY, UNIFIED AIR POLLUTION CONTROL DISTRICT

8-1 As stated in the Draft EIR, the worst case, estimated maximum daily pollutant rates for PM_{10}, NO_x and CO, is about 6.0, 1.3 and 1.2 tons per day, respectively. Fugitive dust generated by the operation of vehicles on unpaved roads and from soil handling is the dominant source for PM_{10} emissions. These increases in local ambient concentrations

should not cause any additional violations of Federal or State ambient air quality standards.

8-2 To minimize the potential effect of Project construction on the environment, specific portions of Rule 8020 (adopted October 21, 1993, Section 1 through 6) as attached to comment 8-2, will be incorporated into this Draft EIR as mitigation measures (Refer to Mitigation Monitoring Plan).

8-3 The District appreciates the comments received from the Air Pollution Control District, and will coordinate with your staff as the need arises when construction nears.

Document 9 SHAFTER-WASCO IRRIGATION DISTRICT

9-1 As with all large projects, implementation which occurs over several years, may require some refinement. This refinement could be caused by several factors such as; a) new information available, b) new mitigation monitoring methods or techniques, or c) in order to further minimize the potential environmental affects. If refinements in the project are necessary, the environmental effects will be evaluated through subsequent documentation, in accordance with CEQA.

Document 10 GOVERNOR'S OFFICE OF PLANNING AND RESEARCH

10-1 Comment noted. No response is necessary.

Document 11 DUDLEY RIDGE WATER DISTRICT

11-1 Comment noted. No response is necessary.

EXHIBIT NO. 1

SUMMARY OF SEMITROPIC BANKING ACTIVITY
(values in 1,000 acre-feet)
Page 1 of 2

		MWD Put						MWD Take			SWID Put			SWID Take		
		Semitropic														
Project Year	Hydro. Year	Irrig.	Spread	SWID	Total Put	Loss	Net Put	Ent. Exchg.	Pump Back	Total	SWSD Irrig.	Loss	Net Put	MWD Put	Ground Water	Total
1993	1993	32	18	0	50	6	44	0	0	0	0	0	0	0	0	0
1994	1969	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1995	1970	0	0	0	0	0	0	0	0	0	3	0	3	0	0	0
1996	1971	0	0	0	0	0	0	0	0	0	5	0	5	0	0	0
1997	1972	0	0	0	0	0	0	0	0	0	0	0	0	0	7	7
1998	1973	20	18	0	38	4	34	0	0	0	10	1	9	0	0	0
1999	1974	0	0	0	0	0	0	38	0	38	10	1	9	0	0	0
2000	1975	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0
2001	1976	145	0	10	155	6	149	0	0	0	0	0	0	10	0	10
2002	1977	0	0	0	0	0	0	0	90	90	0	0	0	0	9	9
2003	1978	0	0	0	0	0	0	13	0	13	10	1	9	0	0	0
2004	1979	47	18	0	65	6	59	0	0	0	10	1	9	0	0	0
2005	1980	109	18	0	127	14	113	0	0	0	10	1	9	0	0	0
2006	1981	209	0	6	215	16	199	0	0	0	0	0	0	6	0	6
2007	1982	110	18	0	128	13	115	0	0	0	10	1	9	0	0	0
2008	1983	95	18	0	113	12	101	0	0	0	10	1	9	0	0	0
2009	1984	109	18	0	127	14	113	0	0	0	0	0	0	0	0	0
2010	1985	117	0	10	127	5	122	0	0	0	0	0	0	9	0	9
2011	1986	0	0	0	0	0	0	0	0	0	10	1	9	0	0	0
2012	1987	0	0	0	0	0	0	26	25	51	0	0	0	0	10	10
2013	1988	0	0	0	0	0	0	27	83	110	0	0	0	0	0	0
2014	1989	0	0	0	0	0	0	81	29	110	0	0	0	0	0	0
2015	1990	0	0	0	0	0	0	60	50	110	0	0	0	0	0	0
2016	1991	0	0	0	0	0	0	0	64	64	0	0	0	0	10	10
2017	1992	0	0	0	0	0	0	0	0	0	0	0	0	0	10	10
2018	1922	0	0	0	0	0	0	0	0	0	10	1	9	0	0	0
2019	1923	0	0	0	0	0	0	0	0	0	9	1	8	0	0	0
2020	1924	0	0	0	0	0	0	0	0	0	0	0	0	0	10	10
Total		993	126	26	1145	96	1049	245	341	586	108	11	97	25	56	81

EXHIBIT NO. 1

SUMMARY OF SEMITROPIC BANKING ACTIVITY
(values in 1,000 acre-feet)
Page 2 of 2

		Water Deliveries to Semitropic						Semitropic Groundwater Pumping				
Project Year	Hydro. Year	SWP Ent.	SWP Pool	SWID Put	MWD Put	Ground Water	Total	Ent. Exchg.	Pump Back	Non-Bank	SWID Take	Total
1993	1993	158	55	0	50	0	263	0	0	0	0	0
1994	1969	158	48	0	0	0	206	0	0	0	0	0
1995	1970	117	0	3	0	0	120	0	0	0	0	0
1996	1971	158	150	5	0	0	313	0	0	0	0	0
1997	1972	117	0	0	0	0	117	0	0	0	7	7
1998	1973	158	132	10	38	0	338	0	0	0	0	0
1999	1974	120	150	10	0	0	280	0	0	0	0	0
2000	1975	158	150	1	0	0	309	0	0	0	0	0
2001	1976	74	0	0	155	0	229	0	0	0	0	0
2002	1977	0	0	0	0	79	79	0	90	79	9	178
2003	1978	145	150	10	0	0	305	0	0	0	0	0
2004	1979	147	143	10	65	0	365	0	0	0	0	0
2005	1980	158	69	10	127	0	364	0	0	0	0	0
2006	1981	120	0	0	215	0	335	0	0	0	0	0
2007	1982	158	60	10	128	0	356	0	0	0	0	0
2008	1983	158	51	10	113	0	332	0	0	0	0	0
2009	1984	158	98	0	127	0	383	0	0	0	0	0
2010	1985	112	0	0	127	0	239	0	0	0	0	0
2011	1986	134	150	10	0	0	294	0	0	0	0	0
2012	1987	25	0	0	0	54	79	26	25	28	10	89
2013	1988	25	0	0	0	54	79	27	83	27	0	137
2014	1989	25	0	0	0	81	106	81	29	0	0	110
2015	1990	25	0	0	0	60	85	60	50	0	0	110
2016	1991	19	0	0	0	60	79	0	64	60	10	134
2017	1992	79	0	0	0	0	79	0	0	0	10	10
2018	1922	158	150	10	0	0	318	0	0	0	0	0
2019	1923	158	150	9	0	0	317	0	0	0	0	0
2020	1924	93	0	0	0	0	93	0	0	0	10	10
Total		3115	1706	108	1145	388	6462	194	341	194	56	785

EXHIBIT NO. 2

GROUNDWATER MODEL INPUT
WITH PROJECT
WITH BANKING AND NON-BANKING USE OF FACILITIES
TOTAL DISTRICT
(values in 1,000 acre-feet)

			G. W. Pumping			SWSD Water Delivery			
Hydro Year	Season Winter	Farm Demand	SWSD	Land-owner	Total	FWSA	TWSA	ILSA	Total
1993	Summer	112	0	68	68	31	18	0	49
1993	Winter	335	0	160	160	124	72	0	196
1994	Summer	105	0	68	68	29	12	0	41
1994	Winter	314	0	166	166	117	49	0	166
1995	Summer	117	0	96	96	24	0	0	24
1995	Winter	352	0	265	265	96	0	0	96
1996	Summer	121	0	65	65	34	19	9	62
1996	Winter	364	0	140	140	135	78	38	251
1997	Summer	128	2	107	109	23	0	0	23
1997	Winter	384	5	300	305	94	0	0	94
1998	Summer	109	0	52	52	30	18	16	64
1998	Winter	328	0	99	99	122	70	65	257
1999	Summer	117	0	67	67	33	19	5	57
1999	Winter	352	0	152	152	130	75	18	223
2000	Summer	126	0	71	71	35	20	5	60
2000	Winter	380	0	159	159	141	81	25	247
2001	Summer	126	0	85	85	35	2	11	48
2001	Winter	377	0	212	212	140	0	43	183
2002	Summer	117	105	103	207	16	0	0	16
2002	Winter	350	73	293	367	63	0	0	63
2003	Summer	105	0	50	50	29	17	15	61
2003	Winter	314	0	96	96	117	67	60	244
2004	Summer	118	0	56	56	33	19	17	69
2004	Winter	355	0	107	107	132	76	70	278
2005	Summer	118	0	56	56	33	19	17	69
2005	Winter	353	0	107	107	131	76	69	276
2006	Summer	122	0	62	62	34	15	18	67
2006	Winter	366	0	125	125	136	61	71	268
2007	Summer	115	0	55	55	32	19	17	68
2007	Winter	347	0	105	105	128	74	67	269
2008	Summer	107	0	51	51	30	17	15	62
2008	Winter	322	0	98	98	119	69	63	251
2009	Summer	124	0	59	59	35	20	18	73
2009	Winter	373	0	113	113	138	80	73	291
2010	Summer	124	0	80	80	34	5	13	52
2010	Winter	370	0	198	198	137	0	54	191
2011	Summer	118	0	65	65	33	19	7	59
2011	Winter	355	0	145	145	132	76	28	236
2012	Summer	120	40	106	146	16	0	0	16
2012	Winter	360	49	303	352	63	0	0	63
2013	Summer	120	89	106	195	16	0	0	16
2013	Winter	361	47	304	352	63	0	0	63
2014	Summer	124	48	104	152	21	0	0	21
2014	Winter	370	62	294	356	85	0	0	85
2015	Summer	126	61	110	171	17	0	0	17
2015	Winter	377	49	315	364	68	0	0	68
2016	Summer	119	76	105	182	16	0	0	16
2016	Winter	358	58	301	358	63	0	0	63
2017	Summer	116	3	102	105	16	0	0	16
2017	Winter	349	7	292	299	63	0	0	63
2018	Summer	106	0	50	50	29	17	15	61
2018	Winter	317	0	95	95	118	68	62	248
2019	Summer	122	0	65	65	34	20	10	64
2019	Winter	367	0	140	140	136	79	39	254
2020	Summer	123	3	106	109	19	0	0	19
2020	Winter	368	7	301	309	74	0	0	74
Total		13223	784	7555	8341	3832	1446	1053	6331

EXHIBIT NO. 2

GROUNDWATER MODEL INPUT
NO PROJECT

DAU 155
(values in 1,000 acre-feet)
Page 2 of 22

Hydro Year	Season	Farm Demand	Groundwater Pumping			SWSD Water Delivery			
			SWSD	Land-owner	Total	FWSA	TWSA	ILSA	Total
1993	Winter	27	0	14	14	9	5	0	14
1993	Summer	81	0	30	30	38	19	0	57
1994	Winter	25	0	13	13	9	5	0	14
1994	Summer	76	0	26	26	36	20	0	55
1995	Winter	28	0	22	22	7	0	0	7
1995	Summer	85	0	58	58	29	0	0	29
1996	Winter	29	0	16	16	10	5	0	15
1996	Summer	88	0	33	33	41	20	0	61
1997	Winter	31	2	24	26	7	0	0	7
1997	Summer	93	3	67	70	29	0	0	29
1998	Winter	26	0	13	13	9	6	0	15
1998	Summer	79	0	26	26	37	22	0	59
1999	Winter	28	0	14	14	10	5	0	15
1999	Summer	85	0	30	30	40	22	0	61
2000	Winter	31	0	17	17	11	4	0	15
2000	Summer	92	0	37	37	43	18	0	61
2001	Winter	30	2	26	29	5	0	0	5
2001	Summer	91	3	75	78	18	0	0	18
2002	Winter	28	2	28	30	0	0	0	0
2002	Summer	84	3	84	88	0	0	0	0
2003	Winter	25	0	12	12	9	6	0	15
2003	Summer	76	0	23	23	36	23	0	58
2004	Winter	29	0	15	15	10	5	0	15
2004	Summer	86	0	30	30	40	22	0	62
2005	Winter	28	0	15	15	10	5	0	15
2005	Summer	85	0	30	30	40	22	0	62
2006	Winter	29	1	23	24	7	0	0	7
2006	Summer	88	3	62	65	29	0	0	29
2007	Winter	28	0	14	14	10	5	0	15
2007	Summer	84	0	29	29	39	22	0	61
2008	Winter	26	0	13	13	9	6	0	15
2008	Summer	78	0	25	25	36	23	0	59
2009	Winter	30	0	16	16	11	4	0	15
2009	Summer	90	0	36	36	42	18	0	60
2010	Winter	30	2	24	26	7	0	0	7
2010	Summer	89	3	65	68	27	0	0	27
2011	Winter	29	0	15	15	10	5	0	15
2011	Summer	86	0	30	30	40	22	0	62
2012	Winter	29	2	26	29	3	0	0	3
2012	Summer	87	3	76	79	12	0	0	12
2013	Winter	29	2	26	29	3	0	0	3
2013	Summer	87	3	76	79	13	0	0	13
2014	Winter	30	2	24	26	6	0	0	6
2014	Summer	89	3	66	69	26	0	0	26
2015	Winter	30	2	26	28	5	0	0	5
2015	Summer	91	3	72	75	21	0	0	21
2016	Winter	29	0	28	28	1	0	0	1
2016	Summer	86	0	82	82	5	0	0	5
2017	Winter	28	0	24	24	5	0	0	5
2017	Summer	84	0	67	67	19	0	0	19
2018	Winter	26	0	12	12	9	6	0	15
2018	Summer	77	0	24	24	36	23	0	59
2019	Winter	29	0	15	15	10	5	0	16
2019	Summer	88	0	32	32	42	21	0	62
2020	Winter	30	2	24	27	6	0	0	6
2020	Summer	89	3	68	72	23	0	0	23
Total		3191	49	1898	1953	1045	394	0	2157

EXHIBIT NO. 2

GROUNDWATER MODEL INPUT
NO PROJECT

DAU 255
(values in 1,000 acre-feet)
Page 3 of 22

Hydro Year	Season	Farm Demand	Groundwater Pumping			SWSD Water Delivery			
			SWSD	Land-owner	Total	FWSA	TWSA	ILSA	Total
1993	Winter	8	0	2	2	5	1	0	6
1993	Summer	23	0	0	0	20	4	0	24
1994	Winter	7	0	2	2	5	1	0	6
1994	Summer	21	0	0	0	19	4	0	23
1995	Winter	8	0	4	4	4	0	0	4
1995	Summer	24	0	10	10	15	0	0	15
1996	Winter	8	0	2	2	5	1	0	6
1996	Summer	24	0	1	1	22	4	0	26
1997	Winter	9	0	5	5	4	0	0	4
1997	Summer	26	0	12	13	15	0	0	15
1998	Winter	7	0	2	2	5	1	0	6
1998	Summer	22	0	9	9	19	5	0	24
1999	Winter	8	0	2	2	5	1	0	6
1999	Summer	24	0	0	0	21	5	0	26
2000	Winter	8	0	3	3	6	0	0	7
2000	Summer	25	0	2	2	23	4	0	26
2001	Winter	8	0	6	6	2	0	0	2
2001	Summer	25	1	17	18	9	0	0	9
2002	Winter	8	0	8	8	0	0	0	0
2002	Summer	24	0	24	24	0	0	0	0
2003	Winter	7	0	2	2	5	1	0	6
2003	Summer	21	0	0	0	19	5	0	24
2004	Winter	8	0	2	2	5	1	0	6
2004	Summer	24	0	0	0	21	5	0	26
2005	Winter	8	0	2	2	5	1	0	6
2005	Summer	24	0	0	0	21	5	0	26
2006	Winter	8	0	5	5	4	0	0	4
2006	Summer	25	0	11	11	15	0	0	15
2007	Winter	8	0	2	2	5	1	0	6
2007	Summer	23	0	0	0	21	5	0	25
2008	Winter	7	0	2	2	5	1	0	6
2008	Summer	22	0	0	0	19	5	0	24
2009	Winter	8	0	2	2	6	0	0	6
2009	Summer	25	0	2	2	22	4	0	26
2010	Winter	8	0	5	5	4	0	0	4
2010	Summer	25	0	12	13	14	0	0	14
2011	Winter	8	0	2	2	5	1	0	6
2011	Summer	24	0	0	0	21	5	0	26
2012	Winter	8	0	7	7	2	0	0	2
2012	Summer	24	1	18	19	7	0	0	7
2013	Winter	8	0	7	7	2	0	0	2
2013	Summer	24	1	18	19	7	0	0	7
2014	Winter	8	0	5	5	3	0	0	3
2014	Summer	25	1	13	14	14	0	0	14
2015	Winter	8	0	6	6	3	0	0	3
2015	Summer	25	0	15	16	11	0	0	11
2016	Winter	8	0	7	7	0	0	0	0
2016	Summer	24	0	22	22	2	0	0	2
2017	Winter	8	0	6	6	3	0	0	3
2017	Summer	23	0	14	14	10	0	0	10
2018	Winter	7	0	2	2	5	1	0	6
2018	Summer	21	0	0	0	19	5	0	24
2019	Winter	8	0	2	2	5	1	0	7
2019	Summer	25	0	0	0	22	5	0	26
2020	Winter	8	0	6	6	3	0	0	3
2020	Summer	25	1	14	15	12	0	0	12
Total		887	5	322	330	551	83	0	2157

EXHIBIT NO. 2

GROUNDWATER MODEL INPUT
NO PROJECT

DAU 455
(values in 1,000 acre-feet)

Hydro Year	Season	Farm Demand	Groundwater Pumping			SWSD Water Delivery			
			SWSD	Land-owner	Total	FWSA	TWSA	ILSA	Total
1993	Winter	15	0	5	5	7	3	0	10
1993	Summer	44	0	6	6	28	14	0	42
1994	Winter	14	0	5	5	7	4	0	10
1994	Summer	41	0	5	5	26	15	0	41
1995	Winter	15	0	11	11	5	0	0	5
1995	Summer	46	0	27	27	22	0	0	22
1996	Winter	16	0	6	6	8	4	0	11
1996	Summer	48	0	7	7	30	15	0	45
1997	Winter	17	0	12	12	5	0	0	5
1997	Summer	51	0	32	32	21	0	0	21
1998	Winter	14	0	4	4	7	4	0	11
1998	Summer	43	0	3	3	27	17	0	44
1999	Winter	15	0	5	5	7	4	0	11
1999	Summer	46	0	5	5	29	16	0	46
2000	Winter	17	0	7	7	8	3	0	11
2000	Summer	50	0	9	9	32	13	0	45
2001	Winter	17	0	14	14	3	0	0	3
2001	Summer	50	1	38	39	13	0	0	13
2002	Winter	15	0	15	15	0	0	0	0
2002	Summer	46	0	46	47	0	0	0	0
2003	Winter	14	0	4	4	7	4	0	11
2003	Summer	41	0	2	2	26	17	0	43
2004	Winter	16	0	5	5	7	4	0	11
2004	Summer	47	0	6	6	30	16	0	46
2005	Winter	16	0	5	5	7	4	0	11
2005	Summer	47	0	5	5	30	16	0	46
2006	Winter	16	0	11	11	5	0	0	5
2006	Summer	48	0	29	29	22	0	0	22
2007	Winter	15	0	5	5	7	4	0	11
2007	Summer	46	0	5	5	29	16	0	45
2008	Winter	14	0	4	4	7	4	0	11
2008	Summer	42	0	3	3	27	17	0	44
2009	Winter	16	0	6	6	8	3	0	11
2009	Summer	49	0	9	9	31	13	0	44
2010	Winter	16	0	12	12	5	0	0	5
2010	Summer	49	0	31	32	20	0	0	20
2011	Winter	16	0	5	5	7	4	0	11
2011	Summer	47	0	6	6	30	16	0	46
2012	Winter	16	0	14	14	2	0	0	2
2012	Summer	48	1	39	40	9	0	0	9
2013	Winter	16	0	14	14	2	0	0	2
2013	Summer	48	1	39	40	9	0	0	9
2014	Winter	16	0	12	12	5	0	0	5
2014	Summer	49	1	32	33	19	0	0	19
2015	Winter	17	0	13	13	4	0	0	4
2015	Summer	50	0	36	37	15	0	0	15
2016	Winter	16	0	15	15	0	0	0	0
2016	Summer	47	0	44	44	3	0	0	3
2017	Winter	15	0	12	12	4	0	0	4
2017	Summer	46	0	33	33	14	0	0	14
2018	Winter	14	0	4	4	7	4	0	11
2018	Summer	42	0	3	3	27	17	0	44
2019	Winter	16	0	6	6	8	4	0	12
2019	Summer	48	0	7	7	31	16	0	46
2020	Winter	16	0	12	12	4	0	0	4
2020	Summer	49	1	34	35	17	0	0	17
Total		1744	5	784	792	770	291	0	2157

EXHIBIT NO. 2

GROUNDWATER MODEL INPUT
NO PROJECT

DAU 501
(values in 1,000 acre-feet)
Page 5 of 22

Hydro Year	Season	Farm Demand	Groundwater Pumping			SWSD Water Delivery			
			SWSD	Land-owner	Total	FWSA	TWSA	ILSA	Total
1993	Summer	0	0	0	0	0	0	0	0
1993	Winter	2	0	1	1	0	0	0	0
1994	Summer	0	0	0	0	0	0	0	0
1994	Winter	1	0	0	0	0	0	0	0
1995	Summer	0	0	0	0	0	0	0	0
1995	Winter	2	0	2	2	0	0	0	0
1996	Summer	0	0	0	0	0	0	0	0
1996	Winter	2	0	1	1	0	0	0	0
1997	Summer	0	0	0	0	0	0	0	0
1997	Winter	2	0	2	2	0	0	0	0
1998	Summer	0	0	0	0	0	0	0	0
1998	Winter	1	0	0	0	0	0	0	0
1999	Summer	0	0	0	0	0	0	0	0
1999	Winter	2	0	0	0	0	0	0	0
2000	Summer	0	0	0	0	0	0	0	0
2000	Winter	2	0	1	1	0	0	0	0
2001	Summer	0	0	0	0	0	0	0	0
2001	Winter	2	1	2	3	0	0	0	0
2002	Summer	0	0	0	0	0	0	0	0
2002	Winter	2	1	2	3	0	0	0	0
2003	Summer	0	0	0	0	0	0	0	0
2003	Winter	1	0	0	0	0	0	0	0
2004	Summer	0	0	0	0	0	0	0	0
2004	Winter	2	0	1	1	0	0	0	0
2005	Summer	0	0	0	0	0	0	0	0
2005	Winter	2	0	1	1	0	0	0	0
2006	Summer	0	0	0	0	0	0	0	0
2006	Winter	2	0	2	2	0	0	0	0
2007	Summer	0	0	0	0	0	0	0	0
2007	Winter	2	0	0	0	0	0	0	0
2008	Summer	0	0	0	0	0	0	0	0
2008	Winter	1	0	0	0	0	0	0	0
2009	Summer	0	0	0	0	0	0	0	0
2009	Winter	2	0	1	1	0	0	0	0
2010	Summer	0	0	0	0	0	0	0	0
2010	Winter	2	1	2	3	0	0	0	0
2011	Summer	0	0	0	0	0	0	0	0
2011	Winter	2	0	1	1	0	0	0	0
2012	Summer	0	0	0	0	0	0	0	0
2012	Winter	2	1	2	3	0	0	0	0
2013	Summer	0	0	0	0	0	0	0	0
2013	Winter	2	1	2	3	0	0	0	0
2014	Summer	0	0	0	0	0	0	0	0
2014	Winter	2	1	2	3	0	0	0	0
2015	Summer	0	0	0	0	0	0	0	0
2015	Winter	2	1	2	3	0	0	0	0
2016	Summer	0	0	0	0	0	0	0	0
2016	Winter	2	0	2	2	0	0	0	0
2017	Summer	0	0	0	0	0	0	0	0
2017	Winter	2	0	2	2	0	0	0	0
2018	Summer	0	0	0	0	0	0	0	0
2018	Winter	1	0	0	0	0	0	0	0
2019	Summer	0	0	0	0	0	0	0	0
2019	Winter	2	0	1	1	0	0	0	0
2020	Summer	0	0	0	0	0	0	0	0
2020	Winter	2	1	2	3	0	0	0	0
Total		51	8	34	42	0	0	0	2157

EXHIBIT NO. 2

GROUNDWATER MODEL INPUT
NO PROJECT

DAU 502
(values in 1,000 acre-feet)
Page 6 of 22

Hydro Year	Season	Farm Demand	Groundwater Pumping			SWSD Water Delivery			
			SWSD	Land-owner	Total	FWSA	TWSA	ILSA	Total
1993	Winter	7	0	3	3	4	1	0	5
1993	Summer	22	0	3	3	17	4	0	21
1994	Winter	7	0	2	2	4	1	0	5
1994	Summer	21	0	3	3	16	4	0	20
1995	Winter	8	0	5	5	3	0	0	3
1995	Summer	23	0	12	12	13	0	0	13
1996	Winter	8	0	3	3	5	1	0	6
1996	Summer	24	0	4	4	18	4	0	22
1997	Winter	8	0	6	6	3	0	0	3
1997	Summer	25	0	14	14	13	0	0	13
1998	Winter	7	0	2	2	4	1	0	5
1998	Summer	22	0	3	3	16	5	0	21
1999	Winter	8	0	3	3	4	1	0	6
1999	Summer	23	0	3	3	18	5	0	22
2000	Winter	8	0	3	3	5	0	0	6
2000	Summer	25	0	4	4	19	4	0	23
2001	Winter	8	0	7	7	2	0	0	2
2001	Summer	25	0	18	18	8	0	0	8
2002	Winter	8	0	8	8	0	0	0	0
2002	Summer	23	0	23	23	0	0	0	0
2003	Winter	7	0	2	2	4	1	0	5
2003	Summer	21	0	2	2	16	5	0	21
2004	Winter	8	0	3	3	4	1	0	6
2004	Summer	23	0	3	3	18	5	0	22
2005	Winter	8	0	3	3	4	1	0	6
2005	Summer	23	0	3	3	18	5	0	22
2006	Winter	8	0	5	5	3	0	0	3
2006	Summer	24	0	13	13	13	0	0	13
2007	Winter	8	0	3	3	4	1	0	6
2007	Summer	23	0	3	3	17	5	0	22
2008	Winter	7	0	2	2	4	1	0	5
2008	Summer	21	0	2	2	16	5	0	21
2009	Winter	8	0	3	3	5	0	0	6
2009	Summer	25	0	4	4	19	4	0	22
2010	Winter	8	0	5	6	3	0	0	3
2010	Summer	24	0	14	14	12	0	0	12
2011	Winter	8	0	3	3	4	1	0	6
2011	Summer	23	0	3	3	18	5	0	22
2012	Winter	8	0	7	7	1	0	0	1
2012	Summer	24	0	19	19	5	0	0	5
2013	Winter	8	0	7	7	1	0	0	1
2013	Summer	24	0	19	19	6	0	0	6
2014	Winter	8	0	6	6	3	0	0	3
2014	Summer	24	0	14	15	11	0	0	11
2015	Winter	8	0	6	6	2	0	0	2
2015	Summer	25	0	17	17	9	0	0	9
2016	Winter	8	0	7	7	0	0	0	0
2016	Summer	24	0	22	22	2	0	0	2
2017	Winter	8	0	6	6	2	0	0	2
2017	Summer	23	0	15	15	9	0	0	9
2018	Winter	7	0	2	2	4	1	0	5
2018	Summer	21	0	2	2	16	5	0	21
2019	Winter	8	0	3	3	5	1	0	6
2019	Summer	24	0	4	4	18	5	0	23
2020	Winter	8	0	6	6	3	0	0	3
2020	Summer	24	0	15	16	10	0	0	10
Total		871	0	382	385	461	83	0	2157

EXHIBIT NO. 2

GROUNDWATER MODEL INPUT
NO PROJECT

DAU 503
(values in 1,000 acre-feet)
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Hydro Year	Season	Farm Demand	Groundwater Pumping			SWSD Water Delivery			
			SWSD	Land-owner	Total	FWSA	TWSA	ILSA	Total
1993	Winter	10	0	10	10	0	0	0	0
1993	Summer	31	0	30	30	0	0	0	1
1994	Winter	10	0	9	9	0	0	0	0
1994	Summer	29	0	28	28	0	0	0	1
1995	Winter	11	0	11	11	8	0	0	8
1995	Summer	32	0	32	32	0	0	0	0
1996	Winter	11	0	11	11	0	0	0	0
1996	Summer	33	0	32	32	0	0	0	1
1997	Winter	12	0	12	12	8	0	0	8
1997	Summer	35	0	35	35	0	0	0	0
1998	Winter	10	0	10	10	0	0	0	0
1998	Summer	30	0	29	29	0	0	0	1
1999	Winter	11	0	10	10	0	0	0	0
1999	Summer	32	0	31	31	0	0	0	1
2000	Winter	12	0	11	11	0	0	0	0
2000	Summer	35	0	34	34	0	0	0	1
2001	Winter	11	0	11	11	5	0	0	5
2001	Summer	34	0	34	34	0	0	0	0
2002	Winter	11	0	11	11	0	0	0	0
2002	Summer	32	0	32	32	0	0	0	0
2003	Winter	10	0	9	9	0	0	0	0
2003	Summer	29	0	28	28	0	0	0	1
2004	Winter	11	0	11	11	0	0	0	0
2004	Summer	32	0	31	31	0	0	0	1
2005	Winter	11	0	10	10	0	0	0	0
2005	Summer	32	0	31	31	0	0	0	1
2006	Winter	11	0	11	11	8	0	0	8
2006	Summer	33	0	33	33	0	0	0	0
2007	Winter	11	0	10	10	0	0	0	0
2007	Summer	32	0	31	31	0	0	0	1
2008	Winter	10	0	10	10	0	0	0	0
2008	Summer	29	0	28	28	0	0	0	1
2009	Winter	11	0	11	11	0	0	0	0
2009	Summer	34	0	33	33	0	0	0	1
2010	Winter	11	0	11	11	8	0	0	8
2010	Summer	34	0	33	33	0	0	0	0
2011	Winter	11	0	11	11	0	0	0	0
2011	Summer	32	0	31	31	0	0	0	1
2012	Winter	11	0	11	11	3	0	0	3
2012	Summer	33	0	33	33	0	0	0	0
2013	Winter	11	0	11	11	3	0	0	3
2013	Summer	33	0	33	33	0	0	0	0
2014	Winter	11	0	11	11	7	0	0	7
2014	Summer	34	0	33	33	0	0	0	0
2015	Winter	11	0	11	11	6	0	0	6
2015	Summer	34	0	34	34	0	0	0	0
2016	Winter	11	0	11	11	1	0	0	1
2016	Summer	33	0	33	33	5	0	0	5
2017	Winter	11	0	11	11	5	0	0	5
2017	Summer	32	0	32	32	0	0	0	0
2018	Winter	10	0	9	9	0	0	0	0
2018	Summer	29	0	28	28	0	0	0	1
2019	Winter	11	0	11	11	0	0	0	0
2019	Summer	33	0	32	32	0	0	0	1
2020	Winter	11	0	11	11	6	0	0	6
2020	Summer	34	0	33	33	0	0	0	0
Total		1209	0	1184	1184	73	0	0	2157

EXHIBIT NO. 2

GROUNDWATER MODEL INPUT
NO PROJECT

DAU 665
(values in 1,000 acre-feet)

Hydro Year	Season	Farm Demand	Groundwater Pumping			SWSD Water Delivery			
			SWSD	Land-owner	Total	FWSA	TWSA	ILSA	Total
1993	Winter	15	0	15	15	0	0	0	0
1993	Summer	46	0	45	45	0	0	0	0
1994	Winter	14	0	14	14	0	0	0	0
1994	Summer	43	0	42	42	0	0	0	0
1995	Winter	16	0	16	16	0	0	0	0
1995	Summer	48	0	48	48	0	0	0	0
1996	Winter	17	0	16	16	0	0	0	0
1996	Summer	50	0	49	49	0	0	0	0
1997	Winter	17	0	17	17	0	0	0	0
1997	Summer	52	0	52	52	0	0	0	0
1998	Winter	15	0	15	15	0	0	0	0
1998	Summer	45	0	44	44	0	0	0	0
1999	Winter	16	0	16	16	0	0	0	0
1999	Summer	48	0	47	47	0	0	0	0
2000	Winter	17	0	17	17	0	0	0	0
2000	Summer	52	0	51	51	0	0	0	0
2001	Winter	17	0	17	17	0	0	0	0
2001	Summer	52	0	52	52	0	0	0	0
2002	Winter	16	0	16	16	0	0	0	0
2002	Summer	48	0	48	48	0	0	0	0
2003	Winter	14	0	14	14	0	0	0	0
2003	Summer	43	0	42	42	0	0	0	0
2004	Winter	16	0	16	16	0	0	0	0
2004	Summer	48	0	48	48	0	0	0	0
2005	Winter	16	0	16	16	0	0	0	0
2005	Summer	48	0	48	48	0	0	0	0
2006	Winter	17	0	17	17	0	0	0	0
2006	Summer	50	0	50	50	0	0	0	0
2007	Winter	16	0	16	16	0	0	0	0
2007	Summer	47	0	47	47	0	0	0	0
2008	Winter	15	0	14	14	0	0	0	0
2008	Summer	44	0	43	43	0	0	0	0
2009	Winter	17	0	17	17	0	0	0	0
2009	Summer	51	0	50	50	0	0	0	0
2010	Winter	17	0	17	17	0	0	0	0
2010	Summer	51	0	51	51	0	0	0	0
2011	Winter	16	0	16	16	0	0	0	0
2011	Summer	48	0	48	48	0	0	0	0
2012	Winter	16	0	16	16	0	0	0	0
2012	Summer	49	0	49	49	0	0	0	0
2013	Winter	16	0	16	16	0	0	0	0
2013	Summer	49	0	49	49	0	0	0	0
2014	Winter	17	0	17	17	0	0	0	0
2014	Summer	51	0	51	51	0	0	0	0
2015	Winter	17	0	17	17	0	0	0	0
2015	Summer	51	0	51	51	0	0	0	0
2016	Winter	16	0	16	16	0	0	0	0
2016	Summer	49	0	49	49	0	0	0	0
2017	Winter	16	0	16	16	0	0	0	0
2017	Summer	48	0	48	48	0	0	0	0
2018	Winter	14	0	14	14	0	0	0	0
2018	Summer	43	0	43	43	0	0	0	0
2019	Winter	17	0	17	17	0	0	0	0
2019	Summer	50	0	49	49	0	0	0	0
2020	Winter	17	0	17	17	0	0	0	0
2020	Summer	50	0	50	50	0	0	0	0
Total		1804	0	1792	1792	0	0	0	2157

EXHIBIT NO. 2

GROUNDWATER MODEL INPUT
NO PROJECT

DAU 755
(values in 1,000 acre-feet)
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Hydro Year	Season	Farm Demand	Groundwater Pumping			SWSD Water Delivery			
			SWSD	Land-owner	Total	FWSA	TWSA	ILSA	Total
1993	Winter	14	0	14	14	0	0	0	0
1993	Summer	42	0	42	42	0	0	0	0
1994	Winter	13	0	13	13	0	0	0	0
1994	Summer	40	0	40	40	0	0	0	0
1995	Winter	15	0	15	15	0	0	0	0
1995	Summer	44	0	44	44	0	0	0	0
1996	Winter	15	0	15	15	0	0	0	0
1996	Summer	46	0	46	46	0	0	0	0
1997	Winter	16	0	16	16	0	0	0	0
1997	Summer	48	0	48	48	0	0	0	0
1998	Winter	14	0	14	14	0	0	0	0
1998	Summer	41	0	41	41	0	0	0	0
1999	Winter	15	0	15	15	0	0	0	0
1999	Summer	44	0	44	44	0	0	0	0
2000	Winter	16	0	16	16	0	0	0	0
2000	Summer	48	0	48	48	0	0	0	0
2001	Winter	16	0	16	16	0	0	0	0
2001	Summer	48	0	48	48	0	0	0	0
2002	Winter	15	0	15	15	0	0	0	0
2002	Summer	44	0	44	44	0	0	0	0
2003	Winter	13	0	13	13	0	0	0	0
2003	Summer	40	0	40	40	0	0	0	0
2004	Winter	15	0	15	15	0	0	0	0
2004	Summer	45	0	45	45	0	0	0	0
2005	Winter	15	0	15	15	0	0	0	0
2005	Summer	45	0	45	45	0	0	0	0
2006	Winter	15	0	15	15	0	0	0	0
2006	Summer	46	0	46	46	0	0	0	0
2007	Winter	15	0	15	15	0	0	0	0
2007	Summer	44	0	44	44	0	0	0	0
2008	Winter	14	0	14	14	0	0	0	0
2008	Summer	41	0	41	41	0	0	0	0
2009	Winter	16	0	16	16	0	0	0	0
2009	Summer	47	0	47	47	0	0	0	0
2010	Winter	16	0	16	16	0	0	0	0
2010	Summer	47	0	47	47	0	0	0	0
2011	Winter	15	0	15	15	0	0	0	0
2011	Summer	45	0	45	45	0	0	0	0
2012	Winter	15	0	15	15	0	0	0	0
2012	Summer	45	0	45	45	0	0	0	0
2013	Winter	15	0	15	15	0	0	0	0
2013	Summer	46	0	46	46	0	0	0	0
2014	Winter	16	0	16	16	0	0	0	0
2014	Summer	47	0	47	47	0	0	0	0
2015	Winter	16	0	16	16	0	0	0	0
2015	Summer	48	0	48	48	0	0	0	0
2016	Winter	15	0	15	15	0	0	0	0
2016	Summer	45	0	45	45	0	0	0	0
2017	Winter	15	0	15	15	0	0	0	0
2017	Summer	44	0	44	44	0	0	0	0
2018	Winter	13	0	13	13	0	0	0	0
2018	Summer	40	0	40	40	0	0	0	0
2019	Winter	15	0	15	15	0	0	0	0
2019	Summer	46	0	46	46	0	0	0	0
2020	Winter	16	0	16	16	0	0	0	0
2020	Summer	47	0	47	47	0	0	0	0
Total		1672	0	1672	1672	0	0	0	2157

EXHIBIT NO. 2

GROUNDWATER MODEL INPUT
NO PROJECT

DAU 855
(values in 1,000 acre-feet)
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Hydro Year	Season	Farm Demand	Groundwater Pumping			SWSD Water Delivery			
			SWSD	Land-owner	Total	FWSA	TWSA	ILSA	Total
1993	Winter	9	0	3	3	5	0	0	6
1993	Summer	26	0	3	3	21	4	0	25
1994	Winter	8	0	3	3	5	0	0	6
1994	Summer	24	0	3	3	20	4	0	24
1995	Winter	9	0	5	5	4	0	0	4
1995	Summer	27	0	12	12	16	0	0	16
1996	Winter	9	0	3	3	6	0	0	7
1996	Summer	28	0	4	4	23	4	0	27
1997	Winter	10	0	6	6	4	0	0	4
1997	Summer	30	0	15	15	16	0	0	16
1998	Winter	8	0	3	3	5	1	0	6
1998	Summer	25	0	3	3	21	5	0	25
1999	Winter	9	0	3	3	6	1	0	7
1999	Summer	27	0	3	3	22	4	0	27
2000	Winter	10	0	4	4	6	0	0	7
2000	Summer	29	0	4	4	24	4	0	28
2001	Winter	10	0	7	7	3	0	0	3
2001	Summer	29	0	20	20	10	0	0	10
2002	Winter	9	0	9	9	0	0	0	0
2002	Summer	27	0	27	27	0	0	0	0
2003	Winter	8	0	3	3	5	1	0	6
2003	Summer	24	0	2	2	20	5	0	25
2004	Winter	9	0	3	3	6	1	0	7
2004	Summer	27	0	3	3	22	4	0	27
2005	Winter	9	0	3	3	6	1	0	7
2005	Summer	27	0	3	3	22	4	0	27
2006	Winter	9	0	6	6	4	0	0	4
2006	Summer	28	0	14	14	16	0	0	16
2007	Winter	9	0	3	3	5	1	0	7
2007	Summer	27	0	3	3	22	4	0	26
2008	Winter	8	0	3	3	5	1	0	6
2008	Summer	25	0	2	2	20	5	0	25
2009	Winter	10	0	3	3	6	0	0	7
2009	Summer	29	0	4	4	24	4	0	27
2010	Winter	10	0	6	6	4	0	0	4
2010	Summer	29	0	15	15	15	0	0	15
2011	Winter	9	0	3	3	6	1	0	7
2011	Summer	27	0	3	3	22	4	0	27
2012	Winter	9	0	8	8	2	0	0	2
2012	Summer	28	0	22	22	7	0	0	7
2013	Winter	9	0	8	8	2	0	0	2
2013	Summer	28	0	22	22	7	0	0	7
2014	Winter	10	0	6	6	4	0	0	4
2014	Summer	29	0	16	16	14	0	0	14
2015	Winter	10	0	7	7	3	0	0	3
2015	Summer	29	0	19	19	12	0	0	12
2016	Winter	9	0	9	9	0	0	0	0
2016	Summer	28	0	25	25	3	0	0	3
2017	Winter	9	0	7	7	3	0	0	3
2017	Summer	27	0	17	17	11	0	0	11
2018	Winter	8	0	3	3	5	1	0	6
2018	Summer	25	0	2	2	20	5	0	25
2019	Winter	9	0	3	3	6	1	0	7
2019	Summer	28	0	4	4	23	4	0	27
2020	Winter	9	0	7	7	3	0	0	3
2020	Summer	28	0	17	17	13	0	0	13
Total		1019	0	424	424	585	74	0	2157

EXHIBIT NO. 2

GROUNDWATER MODEL INPUT
NO PROJECT

DAU 955
(values in 1,000 acre-feet)
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Hydro Year	Season	Farm Demand	Groundwater Pumping			SWSD Water Delivery			
			SWSD	Land-owner	Total	FWSA	TWSA	ILSA	Total
1993	Winter	6	0	6	6	0	0	0	0
1993	Summer	19	0	19	19	0	0	0	0
1994	Winter	6	0	6	6	0	0	0	0
1994	Summer	18	0	18	18	0	0	0	0
1995	Winter	7	0	7	7	0	0	0	0
1995	Summer	20	0	20	20	0	0	0	0
1996	Winter	7	0	7	7	0	0	0	0
1996	Summer	21	0	21	21	0	0	0	0
1997	Winter	7	0	7	7	0	0	0	0
1997	Summer	22	0	22	22	0	0	0	0
1998	Winter	6	0	6	6	0	0	0	0
1998	Summer	19	0	19	19	0	0	0	0
1999	Winter	7	0	7	7	0	0	0	0
1999	Summer	20	0	20	20	0	0	0	0
2000	Winter	7	0	7	7	0	0	0	0
2000	Summer	22	0	22	22	0	0	0	0
2001	Winter	7	0	7	7	0	0	0	0
2001	Summer	22	0	22	22	0	0	0	0
2002	Winter	7	0	7	7	0	0	0	0
2002	Summer	20	0	20	20	0	0	0	0
2003	Winter	6	0	6	6	0	0	0	0
2003	Summer	18	0	18	18	0	0	0	0
2004	Winter	7	0	7	7	0	0	0	0
2004	Summer	21	0	21	21	0	0	0	0
2005	Winter	7	0	7	7	0	0	0	0
2005	Summer	20	0	20	20	0	0	0	0
2006	Winter	7	0	7	7	0	0	0	0
2006	Summer	21	0	21	21	0	0	0	0
2007	Winter	7	0	7	7	0	0	0	0
2007	Summer	20	0	20	20	0	0	0	0
2008	Winter	6	0	6	6	0	0	0	0
2008	Summer	19	0	19	19	0	0	0	0
2009	Winter	7	0	7	7	0	0	0	0
2009	Summer	22	0	22	22	0	0	0	0
2010	Winter	7	0	7	7	0	0	0	0
2010	Summer	21	0	21	21	0	0	0	0
2011	Winter	7	0	7	7	0	0	0	0
2011	Summer	21	0	21	21	0	0	0	0
2012	Winter	7	0	7	7	0	0	0	0
2012	Summer	21	0	21	21	0	0	0	0
2013	Winter	7	0	7	7	0	0	0	0
2013	Summer	21	0	21	21	0	0	0	0
2014	Winter	7	0	7	7	0	0	0	0
2014	Summer	21	0	21	21	0	0	0	0
2015	Winter	7	0	7	7	0	0	0	0
2015	Summer	22	0	22	22	0	0	0	0
2016	Winter	7	0	7	7	0	0	0	0
2016	Summer	21	0	21	21	0	0	0	0
2017	Winter	7	0	7	7	0	0	0	0
2017	Summer	20	0	20	20	0	0	0	0
2018	Winter	6	0	6	6	0	0	0	0
2018	Summer	18	0	18	18	0	0	0	0
2019	Winter	7	0	7	7	0	0	0	0
2019	Summer	21	0	21	21	0	0	0	0
2020	Winter	7	0	7	7	0	0	0	0
2020	Summer	21	0	21	21	0	0	0	0
Total		762	0	762	762	0	0	0	2157

EXHIBIT NO. 2

GROUNDWATER MODEL INPUT
NO PROJECT

TOTAL DISTRICT
(values in 1,000 acre-feet)

Hydro Year	Season	Farm Demand	Groundwater Pumping			SWSD Water Delivery			
			SWSD	Land-owner	Total	FWSA	TWSA	ILSA	Total
1993	Summer	112	0	73	73	31	12	0	43
1993	Winter	335	0	182	182	124	46	0	170
1994	Summer	105	0	68	68	29	12	0	41
1994	Winter	314	0	166	166	117	49	0	165
1995	Summer	117	0	96	96	24	0	0	24
1995	Winter	352	0	265	265	96	0	0	96
1996	Summer	121	0	80	80	34	12	0	46
1996	Winter	364	0	198	198	135	49	0	184
1997	Summer	128	2	107	109	23	0	0	23
1997	Winter	384	6	300	305	94	0	0	94
1998	Summer	109	0	69	69	30	14	0	44
1998	Winter	328	0	168	168	122	56	0	177
1999	Summer	117	0	76	76	33	13	0	46
1999	Winter	352	0	186	186	130	54	0	184
2000	Summer	126	0	85	85	35	11	0	46
2000	Winter	380	0	213	213	141	44	0	185
2001	Summer	126	3	112	115	15	0	0	15
2001	Winter	377	8	324	331	59	0	0	59
2002	Summer	117	2	117	119	0	0	0	0
2002	Winter	350	7	350	357	0	0	0	0
2003	Summer	105	0	66	66	29	14	0	43
2003	Winter	314	0	159	159	117	57	0	173
2004	Summer	118	0	77	77	33	13	0	46
2004	Winter	355	0	188	188	132	53	0	185
2005	Summer	118	0	76	76	33	13	0	46
2005	Winter	353	0	187	187	131	54	0	185
2006	Summer	122	2	100	102	24	0	0	24
2006	Winter	366	4	280	284	96	0	0	96
2007	Summer	115	0	74	74	32	14	0	46
2007	Winter	347	0	182	182	128	54	0	183
2008	Summer	107	0	68	68	30	14	0	44
2008	Winter	322	0	164	164	119	56	0	175
2009	Summer	124	0	83	83	35	11	0	46
2009	Winter	373	0	209	209	138	44	0	182
2010	Summer	124	2	103	106	22	0	0	22
2010	Winter	370	7	290	296	90	0	0	90
2011	Summer	118	0	77	77	33	13	0	46
2011	Winter	355	0	188	188	132	53	0	185
2012	Summer	120	3	111	114	10	0	0	10
2012	Winter	360	8	323	331	41	0	0	41
2013	Summer	120	3	111	114	10	0	0	10
2013	Winter	361	8	323	331	42	0	0	42
2014	Summer	124	3	104	107	21	0	0	21
2014	Winter	370	8	294	301	85	0	0	85
2015	Summer	126	2	110	113	17	0	0	17
2015	Winter	377	7	315	322	68	0	0	68
2016	Summer	119	0	116	116	4	0	0	4
2016	Winter	358	0	344	344	15	0	0	15
2017	Summer	116	0	102	102	16	0	0	16
2017	Winter	349	0	292	292	63	0	0	63
2018	Summer	106	0	67	67	29	14	0	44
2018	Winter	317	0	161	161	118	56	0	174
2019	Summer	122	0	80	80	34	13	0	47
2019	Winter	367	0	198	198	136	52	0	188
2020	Summer	123	3	106	109	19	0	0	19
2020	Winter	368	8	301	309	74	0	0	74
Total		13223	96	9264	9358	3428	970	0	2157

EXHIBIT NO. 2

GROUNDWATER MODEL INPUT
WITH PROJECT
WITH BANKING AND NON-BANKING USE OF FACILITIES
DAU 502
(values in 1,000 acre-feet)

Hydro Year	Season	Farm Demand	Groundwater Pumping			SWSD Water Delivery			
			SWSD	Land-owner	Total	FWSA	TWSA	ILSA	Total
1993	Winter	7	0	2	2	4	2	0	6
1993	Summer	22	0	1	1	17	6	0	23
1994	Winter	7	0	2	2	4	1	0	5
1994	Summer	21	0	3	3	16	4	0	20
1995	Winter	8	0	5	5	3	0	0	3
1995	Summer	23	0	12	12	13	0	0	13
1996	Winter	8	0	2	2	5	2	0	7
1996	Summer	24	0	1	1	18	7	0	25
1997	Winter	8	0	6	6	3	0	0	3
1997	Summer	25	0	14	15	13	0	0	13
1998	Winter	7	0	2	2	4	2	0	6
1998	Summer	22	0	1	1	16	6	0	22
1999	Winter	8	0	2	2	4	2	0	6
1999	Summer	23	0	1	1	18	7	0	25
2000	Winter	8	0	2	2	5	2	0	7
2000	Summer	25	0	2	2	19	7	0	26
2001	Winter	8	0	4	4	5	2	0	7
2001	Summer	25	0	8	8	19	1	0	20
2002	Winter	8	11	6	17	2	0	0	2
2002	Summer	23	8	15	23	9	0	0	9
2003	Winter	7	0	2	2	4	1	0	5
2003	Summer	21	0	1	1	16	6	0	22
2004	Winter	8	0	2	2	4	2	0	6
2004	Summer	23	0	1	1	18	7	0	25
2005	Winter	8	0	2	2	4	2	0	6
2005	Summer	23	0	1	1	18	7	0	25
2006	Winter	8	0	3	3	5	1	0	6
2006	Summer	24	0	3	3	18	5	0	23
2007	Winter	8	0	2	2	4	2	0	6
2007	Summer	23	0	1	1	17	7	0	24
2008	Winter	7	0	2	2	4	2	0	6
2008	Summer	21	0	1	1	16	6	0	22
2009	Winter	8	0	2	2	5	2	0	7
2009	Summer	25	0	2	2	19	7	0	26
2010	Winter	8	0	4	4	5	4	0	9
2010	Summer	24	0	8	8	18	1	0	19
2011	Winter	8	0	2	2	4	2	0	6
2011	Summer	23	0	1	1	18	7	0	25
2012	Winter	8	6	6	12	2	0	0	2
2012	Summer	24	4	16	20	9	0	0	9
2013	Winter	8	9	6	15	2	0	0	2
2013	Summer	24	4	16	20	9	0	0	9
2014	Winter	8	6	6	11	3	0	0	3
2014	Summer	24	6	14	20	11	0	0	11
2015	Winter	8	6	6	12	2	0	0	2
2015	Summer	25	4	17	21	9	0	0	9
2016	Winter	8	7	6	13	2	0	0	2
2016	Summer	24	5	16	21	9	0	0	9
2017	Winter	8	0	6	6	2	0	0	2
2017	Summer	23	1	15	17	9	0	0	9
2018	Winter	7	0	2	2	4	1	0	5
2018	Summer	21	0	1	1	16	6	0	22
2019	Winter	8	0	2	2	5	2	0	7
2019	Summer	24	0	2	2	18	7	0	25
2020	Winter	8	0	6	6	3	0	0	3
2020	Summer	24	1	15	17	10	0	0	10
Total		871	78	289	369	519	138	0	657

EXHIBIT NO. 2

GROUNDWATER MODEL INPUT
WITH PROJECT
WITH BANKING AND NON-BANKING USE OF FACILITIES
DAU 503
(values in 1,000 acre-feet)

Hydro Year	Season	Farm Demand	Groundwater Pumping			SWSD Water Delivery			
			SWSD	Land-owner	Total	FWSA	TWSA	ILSA	Total
1993	Winter	10	0	10	10	0	0	0	0
1993	Summer	31	0	29	29	0	0	0	0
1994	Winter	10	0	9	9	0	0	0	0
1994	Summer	29	0	28	28	0	0	0	0
1995	Winter	11	0	11	11	8	0	0	8
1995	Summer	32	0	32	32	0	0	0	0
1996	Winter	11	0	11	11	0	0	0	0
1996	Summer	33	0	32	32	0	0	0	0
1997	Winter	12	0	12	12	8	0	0	8
1997	Summer	35	0	35	35	0	0	0	0
1998	Winter	10	0	10	10	0	0	0	0
1998	Summer	30	0	29	29	0	0	0	0
1999	Winter	11	0	10	10	0	0	0	0
1999	Summer	32	0	31	31	0	0	0	0
2000	Winter	12	0	11	11	0	0	0	0
2000	Summer	35	0	33	33	0	1	0	1
2001	Winter	11	0	11	11	0	3	0	3
2001	Summer	34	0	34	34	0	1	0	1
2002	Winter	11	0	11	11	5	0	0	5
2002	Summer	32	0	32	32	0	0	0	0
2003	Winter	10	0	9	9	0	0	0	0
2003	Summer	29	0	27	27	0	0	0	0
2004	Winter	11	0	10	10	0	0	0	0
2004	Summer	32	0	31	31	0	0	0	0
2005	Winter	11	0	10	10	0	0	0	0
2005	Summer	32	0	31	31	0	0	0	0
2006	Winter	11	0	11	11	0	0	0	0
2006	Summer	33	0	32	32	0	0	0	0
2007	Winter	11	0	10	10	0	0	0	0
2007	Summer	32	0	30	30	0	0	0	0
2008	Winter	10	0	9	9	0	0	0	0
2008	Summer	29	0	28	28	0	0	0	0
2009	Winter	11	0	11	11	0	0	0	0
2009	Summer	34	0	33	33	0	1	0	1
2010	Winter	11	0	11	11	0	6	0	6
2010	Summer	34	0	33	33	0	2	0	2
2011	Winter	11	0	10	10	0	0	0	0
2011	Summer	32	0	31	31	0	0	0	0
2012	Winter	11	0	11	11	5	0	0	5
2012	Summer	33	0	33	33	0	0	0	0
2013	Winter	11	0	11	11	5	0	0	5
2013	Summer	33	0	33	33	0	0	0	0
2014	Winter	11	0	11	11	7	0	0	7
2014	Summer	34	0	33	33	0	0	0	0
2015	Winter	11	0	11	11	6	0	0	6
2015	Summer	34	0	34	34	0	0	0	0
2016	Winter	11	0	11	11	5	0	0	5
2016	Summer	33	0	32	32	0	0	0	0
2017	Winter	11	0	11	11	5	0	0	5
2017	Summer	32	0	32	32	0	0	0	0
2018	Winter	10	0	9	9	0	0	0	0
2018	Summer	29	0	28	28	0	0	0	0
2019	Winter	11	0	11	11	0	0	0	0
2019	Summer	33	0	32	32	0	0	0	0
2020	Winter	11	0	11	11	6	0	0	6
2020	Summer	34	0	33	33	0	0	0	0
Total		1209	0	1175	1175	60	14	0	74

EXHIBIT NO. 2

GROUNDWATER MODEL INPUT
WITH PROJECT
WITH BANKING AND NON-BANKING USE OF FACILITIES
DAU 655
(values in 1,000 acre-feet)
Page 15 of 22

Hydro Year	Season	Farm Demand	G. W. Pumping			SWSD Water Delivery			
			SWSD	Land-owner	Total	FWSA	TWSA	ILSA	Total
1993	Winter	15	0	15	15	0	0	0	0
1993	Summer	46	0	45	45	0	0	0	0
1994	Winter	14	0	14	14	0	0	0	0
1994	Summer	43	0	42	42	0	0	0	0
1995	Winter	16	0	16	16	0	0	0	0
1995	Summer	48	0	48	48	0	0	0	0
1996	Winter	17	0	16	16	0	0	0	0
1996	Summer	50	0	49	49	0	0	0	0
1997	Winter	17	0	17	17	0	0	0	0
1997	Summer	52	0	52	52	0	0	0	0
1998	Winter	15	0	15	15	0	0	0	0
1998	Summer	45	0	44	44	0	0	0	0
1999	Winter	16	0	16	16	0	0	0	0
1999	Summer	48	0	47	47	0	0	0	0
2000	Winter	17	0	17	17	0	0	0	0
2000	Summer	52	0	51	51	0	1	0	1
2001	Winter	17	0	17	17	0	3	0	3
2001	Summer	52	0	52	52	0	1	0	1
2002	Winter	16	0	16	16	0	0	0	0
2002	Summer	48	0	48	48	0	0	0	0
2003	Winter	14	0	14	14	0	0	0	0
2003	Summer	43	0	42	42	0	0	0	0
2004	Winter	16	0	16	16	0	0	0	0
2004	Summer	48	0	48	48	0	0	0	0
2005	Winter	16	0	16	16	0	0	0	0
2005	Summer	48	0	47	47	0	0	0	0
2006	Winter	17	0	16	16	0	0	0	0
2006	Summer	50	0	49	49	0	0	0	0
2007	Winter	16	0	16	16	0	0	0	0
2007	Summer	47	0	46	46	0	0	0	0
2008	Winter	15	0	14	14	0	0	0	0
2008	Summer	44	0	43	43	0	0	0	0
2009	Winter	17	0	17	17	0	0	0	0
2009	Summer	51	0	50	50	0	1	0	1
2010	Winter	17	0	17	17	0	6	0	6
2010	Summer	51	0	51	51	0	2	0	2
2011	Winter	16	0	16	16	0	0	0	0
2011	Summer	48	0	48	48	0	0	0	0
2012	Winter	16	0	16	16	0	0	0	0
2012	Summer	49	0	49	49	0	0	0	0
2013	Winter	16	0	16	16	0	0	0	0
2013	Summer	49	0	49	49	0	0	0	0
2014	Winter	17	0	17	17	0	0	0	0
2014	Summer	51	0	51	51	0	0	0	0
2015	Winter	17	0	17	17	0	0	0	0
2015	Summer	51	0	51	51	0	0	0	0
2016	Winter	16	0	16	16	0	0	0	0
2016	Summer	49	0	49	49	0	0	0	0
2017	Winter	16	0	16	16	0	0	0	0
2017	Summer	48	0	48	48	0	0	0	0
2018	Winter	14	0	14	14	0	0	0	0
2018	Summer	43	0	43	43	0	0	0	0
2019	Winter	17	0	16	16	0	0	0	0
2019	Summer	50	0	49	49	0	0	0	0
2020	Winter	17	0	17	17	0	0	0	0
2020	Summer	50	0	50	50	0	0	0	0
Total		1804	0	1787	1787	0	14	0	14

EXHIBIT NO. 2

GROUNDWATER MODEL INPUT
WITH PROJECT
WITH BANKING AND NON-BANKING USE OF FACILITIES
DAU 755
(values in 1,000 acre-feet)

			G. W. Pumping			SWSD Water Delivery			
Hydro Year	Season	Farm Demand	SWSD	Land-owner	Total	FWSA	TWSA	ILSA	Total
1993	Winter	14	0	14	14	0	0	0	0
1993	Summer	42	0	42	42	0	0	0	0
1994	Winter	13	0	13	13	0	0	0	0
1994	Summer	40	0	40	40	0	0	0	0
1995	Winter	15	0	15	15	0	0	0	0
1995	Summer	44	0	44	44	0	0	0	0
1996	Winter	15	0	11	11	0	0	4	4
1996	Summer	46	0	31	31	0	0	17	17
1997	Winter	16	0	16	16	0	0	0	0
1997	Summer	48	0	48	48	0	0	0	0
1998	Winter	14	0	3	3	0	0	11	11
1998	Summer	41	0	2	2	0	0	46	46
1999	Winter	15	0	15	15	0	0	0	0
1999	Summer	44	0	44	44	0	0	0	0
2000	Winter	16	0	15	15	0	0	0	0
2000	Summer	48	0	45	45	0	0	4	4
2001	Winter	16	0	11	11	0	0	6	6
2001	Summer	48	0	27	27	0	0	22	22
2002	Winter	15	0	15	15	0	0	0	0
2002	Summer	44	0	44	44	0	0	0	0
2003	Winter	13	0	4	4	0	0	11	11
2003	Summer	40	0	2	2	0	0	42	42
2004	Winter	15	0	4	4	0	0	12	12
2004	Summer	45	0	2	2	0	0	50	50
2005	Winter	15	0	4	4	0	0	12	12
2005	Summer	45	0	0	0	0	0	49	49
2006	Winter	15	0	4	4	0	0	13	13
2006	Summer	46	0	0	0	0	0	51	51
2007	Winter	15	0	4	4	0	0	12	12
2007	Summer	44	0	0	0	0	0	48	48
2008	Winter	14	0	3	3	0	0	11	11
2008	Summer	41	0	0	0	0	0	45	45
2009	Winter	16	0	4	4	0	0	13	13
2009	Summer	47	0	0	0	0	0	52	52
2010	Winter	16	0	8	8	0	0	8	8
2010	Summer	47	0	17	17	0	0	33	33
2011	Winter	15	0	13	13	0	0	2	2
2011	Summer	45	0	38	38	0	0	8	8
2012	Winter	15	0	15	15	0	0	0	0
2012	Summer	45	0	45	45	0	0	0	0
2013	Winter	15	0	15	15	0	0	0	0
2013	Summer	46	0	46	46	0	0	0	0
2014	Winter	16	0	16	16	0	0	0	0
2014	Summer	47	0	47	47	0	0	0	0
2015	Winter	16	0	16	16	0	0	0	0
2015	Summer	48	0	48	48	0	0	0	0
2016	Winter	15	0	15	15	0	0	0	0
2016	Summer	45	0	45	45	0	0	0	0
2017	Winter	15	0	15	15	0	0	0	0
2017	Summer	44	0	44	44	0	0	0	0
2018	Winter	13	0	3	3	0	0	11	11
2018	Summer	40	0	2	2	0	0	44	44
2019	Winter	15	0	11	11	0	0	5	5
2019	Summer	46	0	30	30	0	0	18	18
2020	Winter	16	0	16	16	0	0	0	0
2020	Summer	47	0	47	47	0	0	0	0
Total		1672	0	1078	1078	0	0	660	660

EXHIBIT NO. 2

GROUNDWATER MODEL INPUT
WITH PROJECT
WITH BANKING AND NON-BANKING USE OF FACILITIES
DAU 855
(values in 1,000 acre-feet)

			G. W. Pumping			SWSD Water Delivery			
Hydro Year	Season	Farm Demand	SWSD	Land-owner	Total	FWSA	TWSA	ILSA	Total
1993	Winter	9	0	3	3	5	1	0	6
1993	Summer	26	0	2	2	21	6	0	27
1994	Winter	8	0	3	3	5	0	0	5
1994	Summer	24	0	3	3	20	4	0	24
1995	Winter	9	0	5	5	4	0	0	4
1995	Summer	27	0	12	12	16	0	0	16
1996	Winter	9	0	3	3	6	2	0	8
1996	Summer	28	0	2	2	23	6	0	29
1997	Winter	10	0	6	6	4	0	0	4
1997	Summer	30	0	15	15	16	0	0	16
1998	Winter	8	0	2	2	5	1	0	6
1998	Summer	25	0	1	1	21	6	0	27
1999	Winter	9	0	3	3	6	2	0	8
1999	Summer	27	0	2	2	22	6	0	28
2000	Winter	10	0	3	3	6	2	0	8
2000	Summer	29	0	2	2	24	7	0	31
2001	Winter	10	0	4	4	6	2	0	8
2001	Summer	29	0	8	8	24	9	0	33
2002	Winter	9	4	7	10	3	0	0	3
2002	Summer	27	0	17	17	11	0	0	11
2003	Winter	8	0	2	2	5	1	0	6
2003	Summer	24	0	1	1	20	6	0	26
2004	Winter	9	0	3	3	6	2	0	8
2004	Summer	27	0	2	2	22	6	0	28
2005	Winter	9	0	3	3	6	2	0	8
2005	Summer	27	0	2	2	22	6	0	28
2006	Winter	9	0	3	3	6	1	0	7
2006	Summer	28	0	3	3	23	5	0	28
2007	Winter	9	0	3	3	5	2	0	7
2007	Summer	27	0	2	2	22	6	0	28
2008	Winter	8	0	2	2	5	1	0	6
2008	Summer	25	0	1	1	20	6	0	26
2009	Winter	10	0	3	3	6	2	0	8
2009	Summer	29	0	2	2	24	7	0	31
2010	Winter	10	0	4	4	6	4	0	10
2010	Summer	29	0	8	8	23	1	0	24
2011	Winter	9	0	3	3	6	2	0	8
2011	Summer	27	0	2	2	22	6	0	28
2012	Winter	9	0	7	7	3	0	0	3
2012	Summer	28	0	18	18	11	0	0	11
2013	Winter	9	0	7	7	3	0	0	3
2013	Summer	28	0	18	18	11	0	0	11
2014	Winter	10	0	6	6	4	0	0	4
2014	Summer	29	0	16	16	14	0	0	14
2015	Winter	10	0	7	7	3	0	0	3
2015	Summer	29	0	19	19	12	0	0	12
2016	Winter	9	0	7	7	3	0	0	3
2016	Summer	28	0	18	18	11	0	0	11
2017	Winter	9	0	7	7	3	0	0	3
2017	Summer	27	0	17	17	11	0	0	11
2018	Winter	8	0	2	2	5	1	0	6
2018	Summer	25	0	1	1	20	6	0	26
2019	Winter	9	0	3	3	6	2	0	8
2019	Summer	28	0	2	2	23	6	0	29
2020	Winter	9	0	7	7	3	0	0	3
2020	Summer	28	0	17	17	13	0	0	13
Total		1019	4	331	334	656	135	0	791

EXHIBIT NO. 2

GROUNDWATER MODEL INPUT
WITH PROJECT
WITH BANKING AND NON-BANKING USE OF FACILITIES
DAU 955
(values in 1,000 acre-feet)

			G. W. Pumping			SWSD Water Delivery			
Hydro Year	Season	Farm Demand	SWSD	Land-owner	Total	FWSA	TWSA	ILSA	Total
1993	Winter	6	0	6	6	0	0	0	0
1993	Summer	19	0	19	19	0	0	0	0
1994	Winter	6	0	6	6	0	0	0	0
1994	Summer	18	0	18	18	0	0	0	0
1995	Winter	7	0	7	7	0	0	0	0
1995	Summer	20	0	20	20	0	0	0	0
1996	Winter	7	0	7	7	0	0	0	0
1996	Summer	21	0	21	21	0	0	0	0
1997	Winter	7	0	7	7	0	0	0	0
1997	Summer	22	0	22	22	0	0	0	0
1998	Winter	6	0	6	6	0	0	0	0
1998	Summer	19	0	19	19	0	0	0	0
1999	Winter	7	0	7	7	0	0	0	0
1999	Summer	20	0	20	20	0	0	0	0
2000	Winter	7	0	7	7	0	0	0	0
2000	Summer	22	0	22	22	0	0	0	0
2001	Winter	7	0	7	7	0	0	0	0
2001	Summer	22	0	22	22	0	0	0	0
2002	Winter	7	0	7	7	0	0	0	0
2002	Summer	20	0	20	20	0	0	0	0
2003	Winter	6	0	6	6	0	0	0	0
2003	Summer	18	0	18	18	0	0	0	0
2004	Winter	7	0	7	7	0	0	0	0
2004	Summer	21	0	21	21	0	0	0	0
2005	Winter	7	0	7	7	0	0	0	0
2005	Summer	20	0	20	20	0	0	0	0
2006	Winter	7	0	7	7	0	0	0	0
2006	Summer	21	0	21	21	0	0	0	0
2007	Winter	7	0	7	7	0	0	0	0
2007	Summer	20	0	20	20	0	0	0	0
2008	Winter	6	0	6	6	0	0	0	0
2008	Summer	19	0	19	19	0	0	0	0
2009	Winter	7	0	7	7	0	0	0	0
2009	Summer	22	0	22	22	0	0	0	0
2010	Winter	7	0	7	7	0	0	0	0
2010	Summer	21	0	21	21	0	0	0	0
2011	Winter	7	0	7	7	0	0	0	0
2011	Summer	21	0	21	21	0	0	0	0
2012	Winter	7	0	7	7	0	0	0	0
2012	Summer	21	0	21	21	0	0	0	0
2013	Winter	7	0	7	7	0	0	0	0
2013	Summer	21	0	21	21	0	0	0	0
2014	Winter	7	0	7	7	0	0	0	0
2014	Summer	21	0	21	21	0	0	0	0
2015	Winter	7	0	7	7	0	0	0	0
2015	Summer	22	0	22	22	0	0	0	0
2016	Winter	7	0	7	7	0	0	0	0
2016	Summer	21	0	21	21	0	0	0	0
2017	Winter	7	0	7	7	0	0	0	0
2017	Summer	20	0	20	20	0	0	0	0
2018	Winter	6	0	6	6	0	0	0	0
2018	Summer	18	0	18	18	0	0	0	0
2019	Winter	7	0	7	7	0	0	0	0
2019	Summer	21	0	21	21	0	0	0	0
2020	Winter	7	0	7	7	0	0	0	0
2020	Summer	21	0	21	21	0	0	0	0
Total		762	0	762	762	0	0	0	0

EXHIBIT NO. 2

GROUNDWATER MODEL INPUT
WITH PROJECT
WITH BANKING AND NON-BANKING USE OF FACILITIES
DAU 155
(values in 1,000 acre-feet)

Hydro Year	Season	Farm Demand	Groundwater Pumping			SWSD Water Delivery			
			SWSD	Land-owner	Total	FWSA	TWSA	ILSA	Total
1993	Winter	27	0	12	12	9	7	0	16
1993	Summer	81	0	21	21	38	29	0	67
1994	Winter	25	0	13	13	9	5	0	14
1994	Summer	76	0	26	26	36	20	0	56
1995	Winter	28	0	22	22	7	0	0	7
1995	Summer	85	0	58	58	29	0	0	29
1996	Winter	29	0	8	8	10	8	5	23
1996	Summer	88	0	4	4	41	31	21	93
1997	Winter	31	2	24	26	7	0	0	7
1997	Summer	93	4	67	71	29	0	0	29
1998	Winter	26	0	7	7	9	7	5	21
1998	Summer	79	0	3	3	37	28	19	84
1999	Winter	28	0	8	8	10	8	5	23
1999	Summer	85	0	5	5	40	30	18	88
2000	Winter	31	0	9	9	11	8	5	24
2000	Summer	92	0	4	4	43	33	21	97
2001	Winter	30	0	16	16	11	1	5	17
2001	Summer	91	0	34	34	43	4	21	68
2002	Winter	28	53	24	76	5	0	0	5
2002	Summer	84	38	67	105	19	0	0	19
2003	Winter	25	0	7	7	9	7	4	20
2003	Summer	76	0	3	3	36	27	18	81
2004	Winter	29	0	8	8	10	8	5	23
2004	Summer	86	0	4	4	40	31	20	91
2005	Winter	28	0	8	8	10	8	5	23
2005	Summer	85	0	4	4	40	30	20	90
2006	Winter	29	0	10	10	10	6	5	21
2006	Summer	88	0	11	11	41	25	20	86
2007	Winter	28	0	8	8	10	7	5	22
2007	Summer	84	0	4	4	39	30	19	88
2008	Winter	26	0	7	7	9	7	4	20
2008	Summer	78	0	4	4	36	28	18	82
2009	Winter	30	0	9	9	11	8	5	24
2009	Summer	90	0	4	4	42	32	21	95
2010	Winter	30	0	16	16	10	2	5	17
2010	Summer	89	0	33	33	42	8	21	71
2011	Winter	29	0	8	8	10	8	5	23
2011	Summer	86	0	4	4	40	31	20	91
2012	Winter	29	26	25	51	5	0	0	5
2012	Summer	87	19	69	89	19	0	0	19
2013	Winter	29	43	25	67	5	0	0	5
2013	Summer	87	19	70	89	19	0	0	19
2014	Winter	30	26	24	50	6	0	0	6
2014	Summer	89	28	66	94	26	0	0	26
2015	Winter	30	26	26	52	5	0	0	5
2015	Summer	91	19	72	91	21	0	0	21
2016	Winter	29	32	24	56	5	0	0	5
2016	Summer	86	25	69	94	19	0	0	19
2017	Winter	28	2	24	26	5	0	0	5
2017	Summer	84	6	67	73	19	0	0	19
2018	Winter	26	0	7	7	9	7	4	20
2018	Summer	77	0	3	3	36	27	18	81
2019	Winter	29	0	8	8	10	8	5	23
2019	Summer	88	0	4	4	42	32	21	95
2020	Winter	30	2	24	27	6	0	0	6
2020	Summer	89	6	68	74	23	0	0	23
Total		3191	376	1259	1635	1168	596	393	2157

EXHIBIT NO. 2

GROUNDWATER MODEL INPUT
WITH PROJECT
WITH BANKING AND NON-BANKING USE OF FACILITIES
DAU 255
(values in 1,000 acre-feet)

			G. W. Pumping			SWSD Water Delivery			
Hydro Year	Season	Farm Demand	SWSD	Land-owner	Total	FWSA	TWSA	PPID ILSA	Total
1993	Winter	8	0	2	2	5	2	0	7
1993	Summer	23	0	0	0	20	6	0	26
1994	Winter	7	0	2	2	5	1	0	6
1994	Summer	21	0	0	0	19	4	0	23
1995	Winter	8	0	4	4	4	0	0	4
1995	Summer	24	0	10	10	15	0	0	15
1996	Winter	8	0	2	2	5	2	0	7
1996	Summer	24	0	0	0	22	7	0	29
1997	Winter	9	0	5	5	4	0	0	4
1997	Summer	26	0	12	12	15	0	0	15
1998	Winter	7	0	2	2	5	2	0	7
1998	Summer	22	0	0	0	19	6	0	25
1999	Winter	8	0	2	2	5	2	0	7
1999	Summer	24	0	0	0	21	7	0	28
2000	Winter	8	0	2	2	6	2	0	8
2000	Summer	25	0	0	0	23	7	0	30
2001	Winter	8	0	3	3	6	2	0	8
2001	Summer	25	0	5	5	22	1	0	23
2002	Winter	8	18	6	23	3	0	0	3
2002	Summer	24	13	14	28	10	0	0	10
2003	Winter	7	0	2	2	5	1	0	6
2003	Summer	21	0	0	0	19	6	0	25
2004	Winter	8	0	2	2	5	2	0	7
2004	Summer	24	0	0	0	21	7	0	28
2005	Winter	8	0	2	2	5	2	0	7
2005	Summer	24	0	0	0	21	7	0	28
2006	Winter	8	0	2	2	5	1	0	6
2006	Summer	25	0	0	0	22	5	0	27
2007	Winter	8	0	2	2	5	2	0	7
2007	Summer	23	0	0	0	21	7	0	28
2008	Winter	7	0	2	2	5	2	0	7
2008	Summer	22	0	0	0	19	6	0	25
2009	Winter	8	0	2	2	6	2	0	8
2009	Summer	25	0	0	0	22	7	0	29
2010	Winter	8	0	3	3	5	4	0	9
2010	Summer	25	0	5	5	22	1	0	23
2011	Winter	8	0	2	2	5	2	0	7
2011	Summer	24	0	0	0	21	7	0	28
2012	Winter	8	4	6	10	3	0	0	3
2012	Summer	24	12	15	27	10	0	0	10
2013	Winter	8	18	6	24	3	0	0	3
2013	Summer	24	12	15	27	10	0	0	10
2014	Winter	8	8	5	13	3	0	0	3
2014	Summer	25	13	13	26	14	0	0	14
2015	Winter	8	14	6	20	3	0	0	3
2015	Summer	25	12	15	28	11	0	0	11
2016	Winter	8	18	6	24	3	0	0	3
2016	Summer	24	13	15	28	10	0	0	10
2017	Winter	8	0	6	6	3	0	0	3
2017	Summer	23	0	14	14	10	0	0	10
2018	Winter	7	0	2	2	5	1	0	6
2018	Summer	21	0	0	0	19	6	0	25
2019	Winter	8	0	2	2	5	2	0	7
2019	Summer	25	0	0	0	22	7	0	29
2020	Winter	8	0	6	6	3	0	0	3
2020	Summer	25	0	14	14	12	0	0	12
Total		887	155	241	397	617	138	0	755

EXHIBIT NO. 2

GROUNDWATER MODEL INPUT
WITH PROJECT
WITH BANKING AND NON-BANKING USE OF FACILITIES
DAU 455
(values in 1,000 acre-feet)

Hydro Year	Season	Farm Demand	Groundwater Pumping			SWSD Water Delivery			
			SWSD	Land-owner	Total	FWSA	TWSA	ILSA	Total
1993	Winter	15	0	4	4	7	5	0	12
1993	Summer	44	0	0	0	28	22	0	50
1994	Winter	14	0	5	5	7	4	0	11
1994	Summer	41	0	5	5	26	15	0	41
1995	Winter	15	0	11	11	5	0	0	5
1995	Summer	46	0	27	27	22	0	0	22
1996	Winter	16	0	4	4	8	6	0	14
1996	Summer	48	0	0	0	30	24	0	54
1997	Winter	17	0	12	12	5	0	0	5
1997	Summer	51	0	32	32	21	0	0	21
1998	Winter	14	0	3	3	7	5	0	12
1998	Summer	43	0	0	0	27	21	0	48
1999	Winter	15	0	4	4	7	6	0	13
1999	Summer	46	0	0	0	29	23	0	52
2000	Winter	17	0	4	4	8	6	0	14
2000	Summer	50	0	0	0	32	25	0	57
2001	Winter	17	0	9	9	8	8	0	16
2001	Summer	50	0	21	21	32	3	0	35
2002	Winter	15	7	12	19	4	0	0	4
2002	Summer	46	5	33	38	14	0	0	14
2003	Winter	14	0	3	3	7	5	0	12
2003	Summer	41	0	0	0	26	20	0	46
2004	Winter	16	0	4	4	7	6	0	13
2004	Summer	47	0	0	0	30	23	0	53
2005	Winter	16	0	4	4	7	6	0	13
2005	Summer	47	0	0	0	30	23	0	53
2006	Winter	16	0	5	5	8	5	0	13
2006	Summer	48	0	4	4	31	18	0	49
2007	Winter	15	0	4	4	7	6	0	13
2007	Summer	46	0	0	0	29	22	0	51
2008	Winter	14	0	3	3	7	5	0	12
2008	Summer	42	0	0	0	27	21	0	48
2009	Winter	16	0	4	4	8	6	0	14
2009	Summer	49	0	0	0	31	24	0	55
2010	Winter	16	0	9	9	8	1	0	9
2010	Summer	49	0	21	21	31	6	0	37
2011	Winter	16	0	4	4	7	6	0	13
2011	Summer	47	0	0	0	30	23	0	53
2012	Winter	16	1	13	14	4	0	0	4
2012	Summer	48	5	35	39	14	0	0	14
2013	Winter	16	7	13	20	4	0	0	4
2013	Summer	48	5	35	39	14	0	0	14
2014	Winter	16	3	12	15	5	0	0	5
2014	Summer	49	5	32	37	19	0	0	19
2015	Winter	17	5	13	19	4	0	0	4
2015	Summer	50	5	36	41	15	0	0	15
2016	Winter	16	7	13	19	4	0	0	4
2016	Summer	47	5	34	39	14	0	0	14
2017	Winter	15	0	12	12	4	0	0	4
2017	Summer	46	0	33	33	14	0	0	14
2018	Winter	14	0	3	3	7	5	0	12
2018	Summer	42	0	0	0	27	21	0	48
2019	Winter	16	0	4	4	8	6	0	14
2019	Summer	48	0	0	0	31	24	0	55
2020	Winter	16	0	12	12	4	0	0	4
2020	Summer	49	0	34	34	17	0	0	17
Total		1744	60	585	643	867	455	0	1322

EXHIBIT NO. 2

GROUNDWATER MODEL INPUT
WITH PROJECT
WITH BANKING AND NON-BANKING USE OF FACILITIES
DAU 501
(values in 1,000 acre-feet)

Hydro Year	Season	Farm Demand	Groundwater Pumping			SWSD Water Delivery			
			SWSD	Land-owner	Total	FWSA	TWSA	ILSA	Total
1993	Summer	0	0	0	0	0	0	0	0
1993	Winter	2	0	0	0	0	0	0	0
1994	Summer	0	0	0	0	0	0	0	0
1994	Winter	1	0	0	0	0	0	0	0
1995	Summer	0	0	0	0	0	0	0	0
1995	Winter	2	0	2	2	0	0	0	0
1996	Summer	0	0	0	0	0	0	0	0
1996	Winter	2	0	0	0	0	0	0	0
1997	Summer	0	0	0	0	0	0	0	0
1997	Winter	2	0	2	2	0	0	0	0
1998	Summer	0	0	0	0	0	0	0	0
1998	Winter	1	0	0	0	0	0	0	0
1999	Summer	0	0	0	0	0	0	0	0
1999	Winter	2	0	0	0	0	0	0	0
2000	Summer	0	0	0	0	0	0	0	0
2000	Winter	2	0	0	0	0	1	0	1
2001	Summer	0	0	0	0	0	3	0	3
2001	Winter	2	0	2	2	0	1	0	1
2002	Summer	0	13	0	13	0	0	0	0
2002	Winter	2	9	2	11	0	0	0	0
2003	Summer	0	0	0	0	0	0	0	0
2003	Winter	1	0	0	0	0	0	0	0
2004	Summer	0	0	0	0	0	0	0	0
2004	Winter	2	0	0	0	0	0	0	0
2005	Summer	0	0	0	0	0	0	0	0
2005	Winter	2	0	0	0	0	0	0	0
2006	Summer	0	0	0	0	0	0	0	0
2006	Winter	2	0	0	0	0	0	0	0
2007	Summer	0	0	0	0	0	0	0	0
2007	Winter	2	0	0	0	0	0	0	0
2008	Summer	0	0	0	0	0	0	0	0
2008	Winter	1	0	0	0	0	0	0	0
2009	Summer	0	0	0	0	0	0	0	0
2009	Winter	2	0	0	0	0	1	0	1
2010	Summer	0	0	0	0	0	6	0	6
2010	Winter	2	0	2	2	0	2	0	2
2011	Summer	0	0	0	0	0	0	0	0
2011	Winter	2	0	0	0	0	0	0	0
2012	Summer	0	3	0	3	0	0	0	0
2012	Winter	2	9	2	10	0	0	0	0
2013	Summer	0	13	0	13	0	0	0	0
2013	Winter	2	8	2	10	0	0	0	0
2014	Summer	0	6	0	6	0	0	0	0
2014	Winter	2	9	2	11	0	0	0	0
2015	Summer	0	10	0	11	0	0	0	0
2015	Winter	2	9	2	10	0	0	0	0
2016	Summer	0	13	0	13	0	0	0	0
2016	Winter	2	9	2	11	0	0	0	0
2017	Summer	0	0	0	0	0	0	0	0
2017	Winter	2	0	2	2	0	0	0	0
2018	Summer	0	0	0	0	0	0	0	0
2018	Winter	1	0	0	0	0	0	0	0
2019	Summer	0	0	0	0	0	0	0	0
2019	Winter	2	0	0	0	0	0	0	0
2020	Summer	0	0	0	0	0	0	0	0
2020	Winter	2	0	2	2	0	0	0	0
Total		51	111	24	134	0	14	0	14

EXHIBIT NO. 3

FIFTEEN FOOT: THREE-YEAR RULE CALCULATION
CONFINED AQUIFER SUMMER GROUNDWATER ELEVATIONS
(Elevation in Feet)

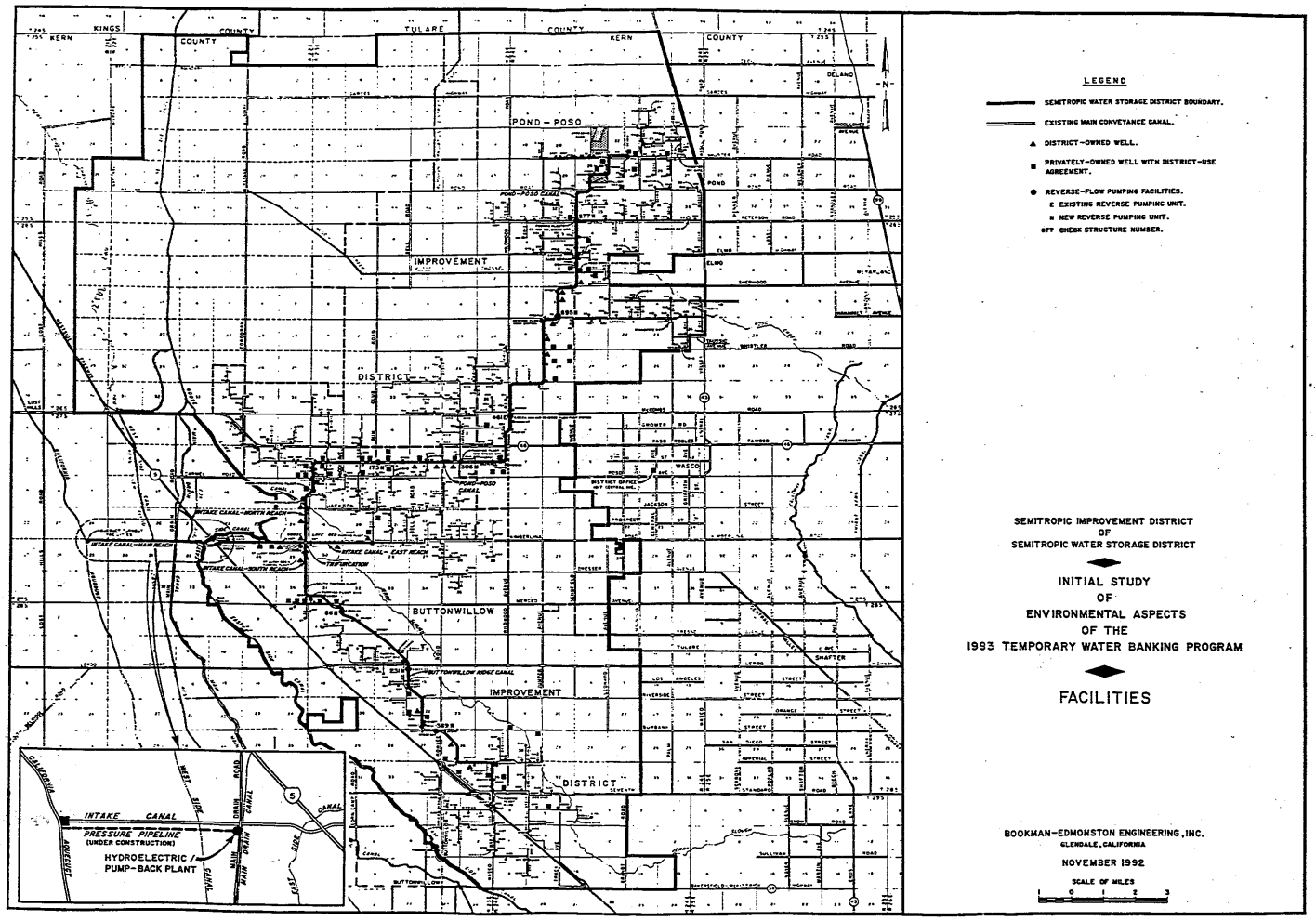
	NORTH KERN 130					POND POSO 137					SHAFTER–WASCO 140				
		Without Non–Bank		With Non–Banking			Without Non–Bank		With Non–Banking			Without Non–Bank		With Non–Banking	
Year	No. Proj.	Elevation	3 Yr. Ave. Difference	Elevation	3 Yr. Ave. Difference	No. Proj.	Elevation	3 Yr. Ave. Difference	Elevation	3 Yr. Ave. Difference	No. Proj.	Elevation	3 Yr. Ave. Difference	Elevation	3 Yr. Ave. Difference
1993	72.6	77.6		77.6		23.2	33.9		33.9		38.9	44.0		44.0	
1994	76.9	78.1		78.1		29.2	30.4		30.4		54.6	55.5		55.5	
1995	47.8	48.9	2.4	48.9	2.4	−19.7	−18.6	4.3	−18.6	4.3	26.1	26.9	2.3	26.9	2.3
1996	50.8	51.8	1.1	68.7	6.7	2.1	3.2	1.1	37.1	12.4	35.3	36.1	0.8	56.7	7.7
1997	19.6	20.2	0.9	23.1	7.5	−53.7	−53.6	0.8	−51.1	12.9	1.6	2.1	0.7	4.3	8.3
1998	50.9	61.3	4.0	69.3	13.3	9.4	28.9	6.9	43.3	23.8	39.3	51.4	4.5	70.4	18.4
1999	53.0	55.5	4.5	72.7	13.9	7.3	9.4	7.2	39.0	22.7	39.3	41.1	4.8	55.6	16.7
2000	44.6	46.8	5.0	70.3	21.3	−6.5	−4.6	7.8	36.1	36.1	30.8	32.5	5.2	54.5	23.7
2001	1.7	31.4	11.5	39.2	27.6	−73.8	−15.1	20.9	−8.2	46.6	−12.4	26.5	14.1	32.9	28.4
2002	−22.9	−31.8	7.7	−30.4	18.6	−100.9	−122.1	13.1	−125.3	27.9	−34.1	−44.4	10.1	−42.1	20.3
2003	37.0	39.7	7.8	59.2	17.4	−2.7	−0.5	13.2	32.6	25.5	30.0	32.5	10.4	63.6	23.6
2004	35.3	49.6	2.7	64.4	14.6	−7.1	18.7	2.3	39.6	19.2	26.5	49.2	5.0	68.7	22.6
2005	46.2	68.8	13.2	78.4	27.8	−2.6	37.7	22.8	46.7	43.8	35.7	71.7	20.4	80.3	40.1
2006	9.5	52.8	26.7	61.7	37.8	−56.9	23.3	48.8	31.6	61.5	0.5	60.7	39.6	68.9	51.7
2007	42.4	73.8	32.4	82.3	41.4	−4.1	43.8	56.1	51.7	64.5	34.4	77.6	46.5	85.7	54.8
2008	51.2	81.7	35.1	89.9	43.6	6.6	50.4	57.3	57.8	65.2	45.8	87.3	48.3	95.0	56.3
2009	44.2	81.8	33.2	91.2	41.9	−10.1	46.5	49.4	56.7	57.9	36.6	87.8	45.3	96.8	53.6
2010	15.5	58.9	37.2	67.2	45.8	−57.4	7.8	55.2	15.7	63.7	8.4	60.9	48.4	68.7	56.6
2011	47.2	70.8	34.9	93.4	48.3	−4.2	17.3	47.8	53.8	66.0	42.5	64.0	41.7	86.6	54.9
2012	−1.3	6.1	24.8	19.2	39.5	−78.1	−83.7	27.0	−69.3	46.6	−6.3	1.6	27.3	11.7	40.8
2013	−16.0	−16.9	10.0	−5.8	25.6	−91.5	−108.8	−0.5	−96.9	20.5	−18.3	−19.3	9.5	−10.3	23.4
2014	−17.7	−23.6	0.2	−14.3	11.4	−86.7	−112.1	−16.1	−104.0	−4.6	−17.1	−23.9	0.0	−15.6	9.2
2015	−36.6	−42.5	−4.2	−33.3	5.6	−105.9	−127.2	−21.3	−118.9	−11.9	−34.3	−41.5	−5.0	−33.3	3.5
2016	−47.1	−53.5	−6.1	−45.6	2.7	−120.2	−137.8	−21.4	−131.5	−13.9	−46.0	−50.5	−6.2	−43.7	1.6
2017	−48.4	−46.0	−3.3	−37.7	5.2	−107.4	−108.0	−13.2	−100.5	−5.8	−42.2	−37.2	−2.2	−29.5	5.3
2018	−15.6	−9.7	0.6	12.5	13.4	−43.6	−37.2	−3.9	−1.0	12.7	−5.7	2.2	2.8	36.7	19.1
2019	−20.4	−14.2	4.8	13.7	24.3	−57.6	−51.1	4.1	−7.4	33.2	−13.9	−6.0	6.9	24.5	31.2
2020	−62.4	−57.1	5.8	−43.8	26.9	−122.8	−118.5	5.7	−106.5	36.4	−56.2	−49.1	7.6	−37.3	33.2

EXHIBIT NO. 3

FIFTEEN FOOT: THREE-YEAR RULE CALCULATION
CONFINED AQUIFER SUMMER GROUNDWATER ELEVATIONS
(Elevation in Feet)
Page 2 of 3

	NORTH ROSEDALE 142					BUTTONWILLOW 148					ROSEDALE 213				
		Without Non-Bank		With Non-Banking			Without Non-Bank		With Non-Banking			Without Non-Bank		With Non-Banking	
Year	No. Proj.	Elevation	3 Yr. Ave. Difference	Elevation	3 Yr. Ave. Difference	No. Proj.	Elevation	3 Yr. Ave. Difference	Elevation	3 Yr. Ave. Difference	No. Proj.	Elevation	3 Yr. Ave. Difference	Elevation	3 Yr. Ave. Difference
1993	40.2	41.6		41.6		23.4	31.4		31.4		41.3	43.0		43.0	
1994	50.3	50.8		50.8		40.1	40.8		40.8		51.0	51.5		51.5	
1995	38.5	38.8	0.7	38.8	0.7	-4.9	-4.5	3.0	-4.5	3.0	36.4	36.6	0.8	36.6	0.8
1996	36.8	37.1	0.4	42.7	2.2	19.3	19.8	0.5	44.7	8.8	34.0	34.2	0.3	38.8	1.8
1997	20.3	20.7	0.3	22.0	2.6	-36.4	-35.0	0.8	-32.9	9.8	12.4	12.7	0.2	14.1	2.2
1998	35.1	38.1	1.2	45.8	6.1	29.7	40.7	4.3	72.1	23.8	34.3	36.1	0.8	41.7	4.6
1999	36.5	37.4	1.4	41.4	5.8	26.7	28.1	4.6	39.7	19.6	35.7	36.5	1.0	40.5	4.6
2000	32.2	32.9	1.5	39.2	7.5	15.1	16.2	4.5	38.1	26.1	30.9	31.5	1.1	37.4	6.2
2001	10.3	23.5	4.9	26.8	9.5	-53.9	5.9	20.8	11.0	33.6	1.0	15.3	5.2	18.0	9.4
2002	-5.3	-6.1	4.4	-1.6	9.1	-81.6	-93.5	16.3	-90.2	26.4	-17.1	-17.5	4.8	-10.8	9.9
2003	24.7	26.2	4.6	37.5	11.0	23.4	24.8	16.4	65.4	32.8	25.1	26.3	5.0	34.1	10.8
2004	25.3	33.0	2.8	41.9	11.0	18.5	46.2	5.7	73.0	29.3	25.2	30.2	1.9	37.8	9.3
2005	35.4	48.6	7.5	53.3	15.8	24.0	73.2	26.1	79.7	50.7	37.1	46.9	5.3	50.9	11.8
2006	20.6	42.9	14.4	47.3	20.4	-24.6	65.3	55.6	71.3	68.7	17.5	38.1	11.8	41.5	16.8
2007	36.3	54.3	17.8	58.6	22.3	25.1	80.2	64.7	86.3	70.9	37.8	52.1	14.9	55.4	18.5
2008	48.8	66.2	19.2	70.4	23.5	40.9	91.0	65.0	96.7	71.0	53.9	66.9	16.0	70.3	19.3
2009	47.7	68.3	18.7	73.0	23.1	25.1	89.2	56.4	96.7	62.9	51.0	66.9	14.4	70.8	17.9
2010	36.5	58.2	19.9	62.6	24.3	-18.2	47.3	59.9	53.1	66.2	37.0	56.3	16.1	59.8	19.7
2011	52.0	64.1	18.1	71.9	23.8	33.9	50.8	48.8	71.8	60.3	55.9	65.9	15.1	72.5	19.7
2012	30.1	39.3	14.3	44.6	20.2	-41.0	-32.9	30.2	-35.4	38.3	26.2	33.7	12.3	39.1	17.4
2013	18.5	23.8	8.9	28.9	14.9	-52.8	-60.0	5.9	-61.2	11.7	12.7	16.3	7.0	21.5	12.8
2014	14.2	18.2	6.2	23.1	11.3	-41.7	-63.4	-6.9	-57.0	-6.0	11.5	14.5	4.7	18.3	9.5
2015	0.4	2.7	3.9	7.5	8.8	-61.2	-86.9	-18.2	-80.8	-14.4	-4.6	-3.6	2.5	0.4	6.9
2016	-9.5	-6.4	3.1	-0.5	8.3	-79.5	-87.1	-18.3	-88.4	-14.6	-15.4	-13.4	2.0	-6.1	7.0
2017	-14.3	-8.3	3.8	-3.5	9.0	-60.9	-55.8	-9.4	-49.9	-5.8	-19.0	-13.8	2.7	-9.8	7.8
2018	-1.8	4.7	5.2	18.6	13.4	5.4	12.2	1.4	56.4	17.7	0.6	6.1	4.2	16.3	11.4
2019	-6.8	-0.2	6.4	11.9	16.6	-8.0	-1.1	6.3	31.5	33.8	-4.1	1.6	5.5	12.0	13.7
2020	-29.3	-22.6	6.6	-15.2	17.7	-74.3	-65.0	7.7	-55.7	36.4	-33.3	-27.5	5.7	-21.1	14.7

Exhibit 4


KINGS COUNTY
KERN COUNTY
TULARE COUNTY
KERN COUNTY
POND - POSO
IMPROVEMENT
DISTRICT
WASCO
BUTTONWILLOW
IMPROVEMENT
DISTRICT
SHAFTER
DELANO
INTAKE CANAL
PRESSURE PIPELINE
(UNDER CONSTRUCTION)
HYDROELECTRIC
PUMP-BACK PLANT
LEGEND
SEMITROPIC WATER STORAGE DISTRICT BOUNDARY.
EXISTING MAIN CONVEYANCE CANAL.
DISTRICT-OWNED WELL.
PRIVATELY-OWNED WELL WITH DISTRICT-USE AGREEMENT.
REVERSE-FLOW PUMPING FACILITIES.
E EXISTING REVERSE PUMPING UNIT.
N NEW REVERSE PUMPING UNIT.
877 CHECK STRUCTURE NUMBER.
SEMITROPIC IMPROVEMENT DISTRICT
OF
SEMITROPIC WATER STORAGE DISTRICT
INITIAL STUDY
OF
ENVIRONMENTAL ASPECTS
OF THE
1993 TEMPORARY WATER BANKING PROGRAM
FACILITIES
BOOKMAN-EDMONSTON ENGINEERING, INC.
GLENDALE, CALIFORNIA
NOVEMBER 1992
SCALE OF MILES
0 1 2 3

5/13/94

MEMORANDUM OF UNDERSTANDING REGARDING OPERATION AND MONITORING OF THE SEMITROPIC WATER STORAGE DISTRICT GROUNDWATER BANKING PROJECT

This Memorandum of Understanding is entered into by and among Semitropic Improvement District of Semitropic Water Storage District ("SWSD"), North Kern Water Storage District ("NKWSD"), Shafter Wasco Irrigation District ("SWID"), Southern San Joaquin Municipal Utility District ("SSJMUD"), Buena Vista Water Storage District ("BVWSD") and Rosedale-Rio Bravo Water Storage District ("RRBWSD"), hereinafter collectively referred to as the "Parties", on _____, 1994.

RECITALS

WHEREAS, SWSD and Metropolitan Water District of Southern California (MWD) have proposed to enter into an agreement whereby certain facilities will be constructed to allow for the importation and storage of water in underground aquifers for later extraction and use for the benefit of SWSD and MWD ("Project"), as more fully described in Exhibit A attached hereto and incorporated herein by this reference, and other entities may also participate in the Project and such other entities and MWD are hereinafter collectively referred to as "Banking Partners." and SWSD and Banking Partners are hereinafter referred to collectively as "Project Sponsors"; and

WHEREAS, pursuant to the California Environmental Quality Act ("CEQA"), SWSD

and MWD have prepared a Draft (Final) Environmental Impact Report ("EIR") for the Project which identifies certain potential impacts; and

WHEREAS, the lands within NKWSD, SWID, SSJMUD, BVWSD and RRBWSD lie adjacent to the lands of SWSD, all of which lands are shown on the map _____, Exhibit B attached; (could use a standard KCWA 11"x17" colored map)

WHEREAS, each of the Parties overlies a common groundwater basin which is overdrafted and each of the Parties has for many years imported water from various sources for direct irrigation and to enhance the quantity and quality of the groundwater underlying the respective Parties and as a result of such programs the groundwater conditions underlying each of the Parties are significantly improved over those which would exist without such water importation programs; and

WHEREAS, some, but not all, of the Parties have achieve a balance between natural groundwater recharge and importation of surface water supplies on the one hand and consumptive use of water on the other; and

WHEREAS, in recent years, water banking, extraction and transfer programs in Kern County, and throughout the state, have become increasingly numerous and complex, and it is appropriate and desirable to mitigate any short-term and long-term impacts of these programs upon potentially affected overlying landowners within SWSD and/or neighboring districts; and

WHEREAS, the Parties desire that the design, operation and monitoring of the Project be conducted and coordinated in a manner to insure that the beneficial effects of the Project are maximized and that the Project will not result in significant adverse impacts in water levels or water quality on any lands of the Parties or otherwise interfere with the existing and

ongoing programs of the Parties to this agreement; and

WHEREAS, the Parties recognize that the monitoring program to be established pursuant to this Memorandum of Understanding will be larger in scope than other groundwater monitoring programs heretofore conducted in the San Joaquin Valley of California and will incorporate features new to San Joaquin Valley groundwater monitoring programs; and

WHEREAS, because of such larger scope and new features, it is expected that this monitoring program will be developed through a combination of technical analyses and empirical studies of selected data, to be modified and improved over time; and

WHEREAS, representatives of several of the Parties have heretofore participated in the preparation of a comprehensive draft report, Kern Water Bank, Ground Water Monitoring Program, February 1992, many of the technical aspects of which are expected to be incorporated in the groundwater monitoring program to be established and refined pursuant to this Memorandum of Understanding; and

WHEREAS, under date of December 15, 1993, the Parties authorized their joint participation in "Points To Be Included In A Memorandum of Understanding Re Initial Phase of Ground water Monitoring Program", included as Exhibit C hereof and incorporated herein by this reference; and

WHEREAS, pursuant to said Exhibit C, Kenneth D. Schmidt has been engaged to perform certain work related to said initial phase of Ground Water Monitoring Program, including the preparation of two monitoring well maps, "Well Location, Water Quality Network", and "Well Location, Water Level Network". These maps depict the location and

types of wells anticipated to be used in the initial phase of groundwater monitoring; said maps are expected to be modified from time to time as the monitoring program is developed and operated; copies of said monitoring well maps in their current form (3/10/94) are included as Exhibits D-1 and D-2 hereto and incorporated herein by this reference:

NOW THEREFORE, BE IT RESOLVED that based upon the mutual covenants contained herein, the Parties hereto agree as follows:

1. Project Design and Construction. SWSD has completed a preliminary designed of the Project for the above-described purposes which is described at Exhibit A hereto, which represents the maximum facilities for the Project. SWSD will construct and operate all or a portion of the Project consistent with such design. Any significant modifications of the facilities and/or operation of the Project as described at Exhibit A and in the EIR will be subject to additional environmental documentation.

2. Project Operation. The project shall be operated to achieve the maximum water storage and withdrawal benefits for SWSD and its Banking Partners, consistent with avoiding significant adverse impacts regarding groundwater levels and quality to any lands within or near the boundaries of SWSD.

3. Project Monitoring. The Parties agree to participate in a comprehensive monitoring program, and as members of a Monitoring Committee, as hereinafter more particularly described, in order to reasonably determine groundwater level and water quality information under Project and non-Project conditions. The program will more particularly require the following:

a. Monitoring Committee. A Monitoring Committee shall be established,

comprised of one representative of each of the Parties and one ex officio non-voting representative of the Banking Partners. The Committee shall:

(1) Engage the services of suitable professional groundwater specialist;

(2) Establish a groundwater evaluation methodology;

(3) Meet and confer monthly or at other intervals deemed to be appropriate in furtherance of the monitoring program;

(4) Specify such additional monitoring wells and ancillary equipment as are deemed to be necessary or desirable for the purposes hereof, subject to 3(c)(1) below.

(5) Prepare annual water balance studies which will designate all sources of water and the use thereof within the study area.

(6) Develop procedures, review data, and recommend Project operational criteria for the purpose of avoiding, to the extent practical, the creation of significant adverse impacts including, but not limited to, the 15-foot, three-year rule, all as provided further at paragraphs 4 and 5 below.

b. Collection and Sharing of Data. The Parties will make available to the Monitoring Committee copies of all relevant groundwater level and groundwater quality data currently collected and prepared by each Party. SWSD shall annually report by areas of interest its water deliveries for banking and other purposes and groundwater withdrawals for banking and other purposes. The costs of such data collection and preparation shall continue to be borne by the respective Parties.

c. Monitoring Costs.

(1) The costs of the initial monitoring wells and ancillary equipment identified on Exhibits D-1 and D-2 shall be borne by the Project Sponsors, in a manner to be determined by them. The costs of up to additional monitoring wells and ancillary equipment, to be constructed as deemed by the Monitoring Committee to be appropriate and desirable for monitoring of Project operations, shall also be borne by the Project Sponsors, in a manner to be determined by them. The cost of any additional monitoring wells and ancillary equipment shall be borne as may be determined by separate agreement of the Parties;

(2) Each of the Parties shall be responsible for the personnel costs of its representatives on the Monitoring Committee;

(3) All other groundwater monitoring costs, including employment of the professional groundwater specialist, collection, evaluation and analyses of data as adopted by the Monitoring Committee shall be allocated among and borne by the Parties as follows:

BVWSD	____%
NKWSD	____%
RRBWSD	____%
SWSD	____%
SWID	____%
SSJMUD	____%
Total	100%

The total costs to be shared under this paragraph 3c(3) shall be $ ____ per year

adjusted every three (3) years in accordance with the Consumers Price Index. [Note: There is not agreement at this time regarding the allocation of any additional monitoring costs under this paragraph 3(c)(3). Both SWSD and the other Parties are understandably concerned about being burdened with expenses for monitoring activities which they may find to be not reasonably necessary or desirable. This issue needs further consideration prior to adoption of this MOU.]

4. Modification of Project Operations. The Monitoring Committee may make recommendations to SWSD for modifications in Project operations based upon evaluation(s) of data which indicate that a significant imbalance between the delivery of water for banking and/or nonbanking purposes and withdrawal of water for such purposes has been created in an area of interest. In order to avoid significant imbalance in any area of interest, SWSD shall modify, to the extent reasonable, prudent and practical, project operations within a reasonable period of time after receiving a recommendations from the Monitoring Committee. The Monitoring Committee and its members shall not act in an arbitrary, capricious or unreasonable manner.

5. The Fifteen-Foot/Three-Year Rule. Notwithstanding the generality of paragraph number 4, above, SWSD agrees that it will not make withdrawals from any particular area of SWSD if such withdrawals have caused or would cause the average groundwater levels in such area or affected neighboring areas to be 15 feet or greater amount lower than what the average groundwater levels would have been without-Project over a 3-year period all as further defined at Exhibit E hereto.

6. Long-Term Monitoring Program. The Parties recognize that the monitoring

program to be implemented hereunder will be larger in scope than any similar program heretofore conducted in the southern San Joaquin Valley of California and accordingly is fraught with the potential for a number of unknown conditions regarding geologic, engineering, legal and economic issues. The Parties agree to use their best efforts to develop a program

which is practicably applicable in addressing such matters in the short-term and more refined and useful in the longer term.

GENERAL PROVISIONS

7. Dispute Resolution. All disputes regarding any provision of this agreement shall first be submitted to the Monitoring Committee for review and analysis. The Monitoring Committee shall meet and review all relevant data and facts regarding the dispute and, if possible, recommend fair and equitable resolution of the dispute. The Monitoring Committee and its members shall not act in an arbitrary, capricious or unreasonable manner. In the event (1) the Monitoring Committee fails to act as herein provided, (2) any party disputes the Monitoring Committee's recommended resolution, or (3) any party fails to implement the Monitoring Committee's recommended resolution, any party to this agreement may seek any legal or equitable remedy available and provided by paragraph 8 hereof.

8. Reservation of Rights. Nothing contained in this agreement shall preclude any party hereto from asserting any rights or seeking any remedies which they may have at law or equity, including, but not limited to, an action seeking specific performance of the provisions of this agreement. [Do we want binding arbitration, at lease for resolution of factual

disputes?]

9. Term. The term of this agreement shall extend for so long as the Project agreement remains in force and effect. The Project Sponsors, hereby acknowledge their intent to design and operate the Project herein defined in order to avoid any significant adverse ~~a~~effects of the Project for as long as the Project facilities are managed and operated for their intended purpose.

Additionally, the Parties acknowledge that this agreement may be extended or modified in both nature and scope in order to address changes in the nature of the Project or the implementation of new and similar groundwater banking and/or monitoring programs in the area and recognize that such other similar programs must be subject to scrutiny similar to that herein provided.

10. Complete Agreement/Incorporation Into Banking Agreements. This agreement constitutes the whole and complete agreement of the Parties regarding the Project and related monitoring activities and replaces any previous agreement, written or oral, of the Parties except and to the extent such agreements are specifically referenced herein and incorporated by such reference. SWSD shall incorporate this agreement by reference into any banking agreement it enters into with a Banking Partner.

11. Notice Clause. All notices required by this agreement shall be sent via first class United States mail to the following and shall be deemed delivered three days after deposited in the mail:

W. L. Boschman
Semitropic Water Storage District
P. O. Box Z
Wasco, CA 93280-0877

Martin Milobar
Buena Vista Water Storage District
P. O. Box 756
Buttonwillow, CA 93206

Dana Munn
North Kern Water Storage District
1415 18th Street
Suite 705
Bakersfield, CA 93301

Mary Collup
Rosedale-Rio Bravo Water Storage District
P. O. Box 867
Bakersfield, CA 93302-0867

Harvey Williams
Shafter-Wasco Irrigation District
P. O. Box 158
Wasco, CA 93280

Stanley Nelson
Southern San Joaquin Municipal
P. O. Box 279
Delano, CA 93216

Notice of changes in the representative or address of a Party shall be given in the same manner.

12. California Law Clause. All provisions of this agreement and all rights and obligations of the Parties hereto shall be interpreted and construed according to the laws of the State of California.

13. Amendments. This MOU may be amended by written agreement of the Parties. In addition, recognizing that the Parties may not now be able to contemplate all the implications of the Project, the Parties agree that on the tenth anniversary of implementation of the Project, if facts and conditions not envisioned at the time of entering into this contract

are present, the Parties will negotiate in good faith amendments to this MOU, subject to concurrence of any banking Partner which has a contract with SWSD incorporating the terms of this MOU, as provided in paragraph 10 hereof. [If the Parties and/or Banking Partner(s) cannot agree on whether conditions have changed necessitating an amendment and/or upon appropriate amendments to the MOU, such limited issues shall be submitted to a single arbitrator acceptable to all Parties and any affected Banking Partner(s), whose decision shall be final.]

This agreement is executed on this ____ day of _____, 1994, at _____, California.

_____

Semitropic Water Storage District

_____

Buena Vista Water Storage District

_____

North Kern Water Storage District

_____

Rosedale-Rio Bravo Water

Storage District

Shafter Wasco Irrigation District

Southern San Joaquin Municipal
Utility District

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EXHIBIT A

See pages 4-10 through 4-38 of DEIR

EXHIBIT B

Available from Semitropic Water Storage District upon request.

EXHIBIT C

POINTS TO BE INCLUDED IN A MEMORANDUM OF UNDERSTANDING RE INITIAL PHASE OF GROUND WATER MONITORING PROGRAM

1. Objective.

The Initial Phase of Ground Water Monitoring Program will focus on potential impacts from the Proposed Semitropic/MWD and Shafter-Wasco/Semitropic water banking and extraction programs but will also be concerned with impacts of other ongoing ground water management programs of the participating agencies.

2. Participating Districts.

Suggested participants include Semitropic Water Storage District and the water agencies which adjoin its boundaries, as follows:

Buena Vista Water Storage District
North Kern Water Storage District
Rosedale-Rio Bravo Water Storage District
Semitropic Water Storage District
Shafter-Wasco Irrigation District
Southern San Joaquin Municipal Utility District

3. Employment of Consultant.

Mr. Kenneth D. Schmidt, Principal, Kenneth D. Schmidt & Associates, will be engaged to perform the work hereinafter described, under the general direction of representatives of the participating districts.

The upper limit of costs authorized by this MOU is $10,000.00.

4. Scope of Work.

(a) Review and comment on drafts of the monitoring program currently being prepared by Bookman-Edmonston Engineering, Inc., as part of the Draft Environmental Impact Report for the Semitropic Groundwater Banking Project.

(b) Review of current ground water monitoring programs of each of the participating districts.

(c) Obtain and review applicable ground water data and analyses from other agencies, such as the California Department of Water Resources, the U. S. Bureau of Reclamation, Kern County Water Agency and nonparticipating local districts.

(d) Preliminary determination, in coordination with the program proponents, of the "zone of influence" or area of potentially significant

ground water impacts from the proposed Semitropic Groundwater Banking Program and/or the Shafter-Wasco/Semitropic Interconnection and Water Banking Program.

(e) In coordination with the program proponents, prepare a description of immediate needs for an initial ground water monitoring program and description of scope of work needed for longer term monitoring, including use of appropriately calibrated ground water models. Comments will be made regarding data collection, data evaluation and data analysis.

5. Administrative Agent and Allocation of Costs.

Semitropic Water Storage District will serve as administrative agent under this MOU.

Costs will be allocated as follows:

Buena Vista Water Storage District	10%
North Kern Water Storage District	10%
Rosedale-Rio Bravo Water Storage District	10%
Semitropic Water Storage District	50%
Shafter-Wasco Irrigation District	10%
Southern San Joaquin Municipal Utility District	10%
Total	100%

It is understood that this MOU would apply only to the initial scope of work as hereinabove set forth and that the authorized expenditures hereunder would be limited to a maximum of $10,000.00. It is further understood that the basis of participation in any extension of the work authorized hereunder may be modified from the above-listed percentage shares.

Funding for future monitoring activities might be obtained from a combination of the following two components:

(a) "Banker's Factor". This would be a charge on each banking program based on the magnitude and complexity of the respective programs. It is recommended that, collectively, the bankers (and extractors) would provide most of the funds for the monitoring program(s).

(b) "Area Factor". This would be a charge, hopefully a small charge, on a uniform per acre basis, applied to the areas of irrigated lands within the respective participating agencies.

6. Cooperation of Participating Agencies.

It is expected that all participating districts would provide data from their existing programs to Mr. Schmidt's office and that the costs of such data collection and dissemination would continue to be borne by the respective districts.

It is also expected that representatives of the participating districts would continue to share thoughts and ideas among themselves and with Mr. Schmidt regarding implementation of the initial monitoring program and any extension thereof.

7. Authorized Participation.

By signature of their authorized representatives, the respective districts agree to participate in the initial phase of ground water monitoring as described above.

BUENA VISTA WATER STORAGE DISTRICT

By _____

Date _____

NORTH KERN WATER STORAGE DISTRICT

By _____

Date _____

ROSEDALE-RIO BRAVO WATER STORAGE DISTRICT

By _____

Date _____

SEMITROPIC WATER STORAGE DISTRICT

By _____

Date _____

SHAFTER-WASCO IRRIGATION DISTRICT

By _____

Date _____

SOUTHERN SAN JOAQUIN MUNICIPAL UTILITY DISTRICT

By _____

Date _____

****

EXHIBIT D-1

Available from Semitropic Water Storage District upon request.

EXHIBIT D-2

Available from Semitropic Water Storage District upon request.

5.6 GRAPHICS OF PUBLIC MEETING

SEMITROPIC WATER STORAGE PROJECT

Semitropic Water Storage District

MWD
METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

SEMITROPIC GROUNDWATER BANKING PROJECT

ALTERNATE SELECTION CRITERIA

- **TECHNICAL FEASIBILITY**
  - Project Cost
  - Constructibility
- **OPERATIONS EFFECTIVENESS**
  - System Flexibility
  - Maintenance
- **ENVIRONMENTAL RESOURCES**
  - Endangered Species
  - Social Concerns

Semitropic Water Storage District

SEMITROPIC GROUNDWATER BANKING PROJECT

ALTERNATIVE ANALYSIS

- NO-PROJECT
  - MET NO OBJECTIVES
- DESALINATION OF AGRICULTURAL DRAINAGE WATER
  - DID NOT MEET COST OBJECTIVES
- SEMITROPIC GROUNDWATER BANKING PROJECT
  - MET ALL OBJECTIVES

Semitropic Water Storage District

SEMITROPIC GROUNDWATER BANKING PROJECT

POTENTIAL ISSUES

- BIOLOGICAL RESOURCES
- TRAFFIC
- CULTURAL RESOURCES
- SOCIO/ ECONOMICS
- NOISE
- WATER QUALITY
- AIR QUALITY
- GROUNDWATER RESOURCES
- UTILITIES / SERVICE
- FAULTS AND SEISMICITY
- TOPOGRAPHY & GEOLOGY
- BAY DELTA ESTUARY
- VISUAL AESTHETICS
- LAND USE

Semitropic Water Storage District

SEMITROPIC GROUNDWATER BANKING PROJECT

OBJECTIVES

- OPTIMIZE USE OF WATER RESOURCES
  - OPTIMIZE USE OF GROUNDWATER RESOURCES TO IMPROVE SUPPLY RELIABILITY
- MINIMIZE DECLINE OF GROUNDWATER BASIN
  - REDUCE GROUNDWATER OVERDRAFT AND COST
- IMPROVE OVERALL SYSTEM RELIABILITY
  - MAINTAIN MINIMAL DELIVERIES IN THE EVENT OF SYSTEM OUTAGE

Semitropic Water Storage District

SEMITROPIC GROUNDWATER BANKING PROJECT

BIOLOGICAL RESOURCES

THREATENED & ENDANGERED SPECIES	ORIGINAL PROJECT	PREFERRED PROJECT
TIPTON KANGAROO RAT	224 ACRES	0 ACRES
SAN JOAQUIN KIT FOX	212 ACRES	0 ACRES
KERN MALLOW	12.5 ACRES	0 ACRES
HOOVER'S ERIASTRUM	33 ACRES	0 ACRES
OTHER SPECIAL INTEREST SPECIES		
SAN JOAQUIN GROUND SQUIRREL	37 ACRES	0 ACRES
BURROWING OWL	270 ACRES	14 BURROWS
WESTERN POND TURTLE	48.5 ACRES	48.5 ACRES
HABITAT		
VALLEY SALTBUSH SCRUB	57.5 ACRES	1.5 ACRES
VALLEY SINK SCRUB/ ALKALI	46.0 ACRES	0 ACRES
COTTONWOOD WILLOW/ DIST. HERBACEOUS	.25 ACRES	.14 ACRES

Semitropic Water Storage District

SEMITROPIC GROUNDWATER BANKING PROJECT

BIOLOGICAL RESOURCES

	PREFERRED PROJECT	MITIGATION
THREATENED & ENDANGERED SPECIES		
TIPTON KANGAROO RAT	0 ACRES	NONE REQUIRED
SAN JOAQUIN KIT FOX	0 ACRES	NONE REQUIRED
KERN MALLOW	0 ACRES	NONE REQUIRED
HOOVER'S ERIASTRUM	0 ACRES	NONE REQUIRED
OTHER SPECIAL INTEREST SPECIES		
SAN JOAQUIN GROUND SQUIRREL	0 ACRES	NONE REQUIRED
BURROWING OWL	14 BURROWS	SET ASIDE 14 ACRES
WESTERN POND TURTLE	48.3 ACRES	REVISED CONSTRUCTION SCHEDULE
HABITAT		
VALLEY SALTBUSH SCRUB	1.5 ACRES	REVEGETATION OF PROJECT IMPACT
COTTONWOOD WILLOW/ DIST. HERBACEOUS	.14 ACRES	REVEGETATION OF PROJECT IMPACT
VALLEY SINK SCRUB/ ALKALI	0 ACRES	NONE REQUIRED

Semitropic Water Storage District

SEMITROPIC GROUNDWATER BANKING PROJECT

DRAFT ENVIRONMENTAL IMPACT REPORT

MEETING OUTLINE

I PROJECT PURPOSE

II ALTERNATIVES CONSIDERED

III SELECTION CRITERIA

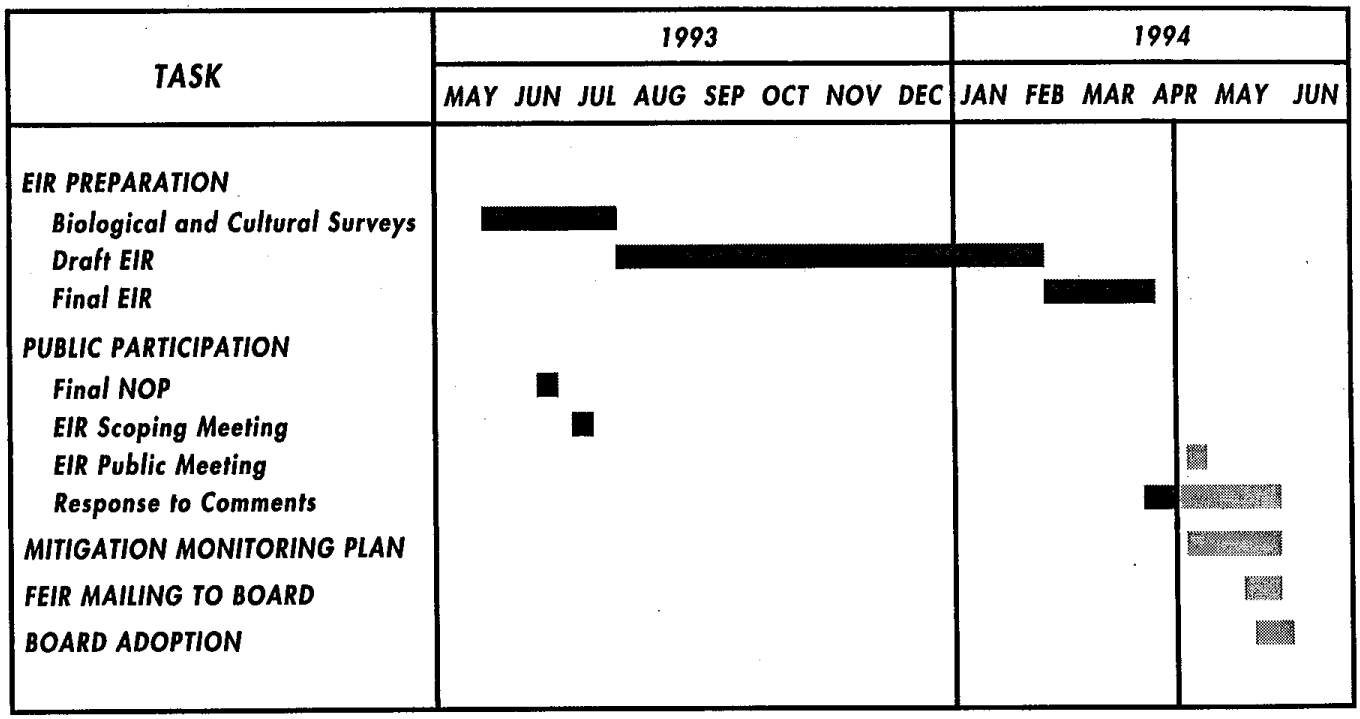
IV POTENTIAL ISSUES

V PROJECT SCHEDULE

Semitropic Water Storage District

SEMITROPIC GROUNDWATER BANKING PROJECT

ENVIRONMENTAL IMPACT REPORT SCHEDULE



Semitropic Water Storage District

SEMITROPIC GROUNDWATER BANKING PROJECT

PUBLIC INVOLVEMENT

EIR SCOPING PROCESS

JULY 1, 1993 - NOTICE OF PREPARATION RELEASED

JULY 15, 1993 - PUBLIC SCOPING MEETING

10 - MEETINGS HELD WITH SURROUNDING AGENCIES AND INTERESTED GROUPS

5 - MEETINGS HELD WITH RESOURCE AGENCIES

10 - COMMENT LETTERS RECEIVED CONCERNING NOP

DRAFT EIR PUBLIC REVIEW PROCESS

MARCH 29, 1994 - DRAFT EIR RELEASED TO THE PUBLIC

APRIL 19, 1994 - PUBLIC MEETING DRAFT EIR

5 - MEETINGS HELD WITH SURROUNDING AGENCIES AND INTERESTED GROUPS

4 - MEETINGS HELD WITH RESOURCE AGENCIES

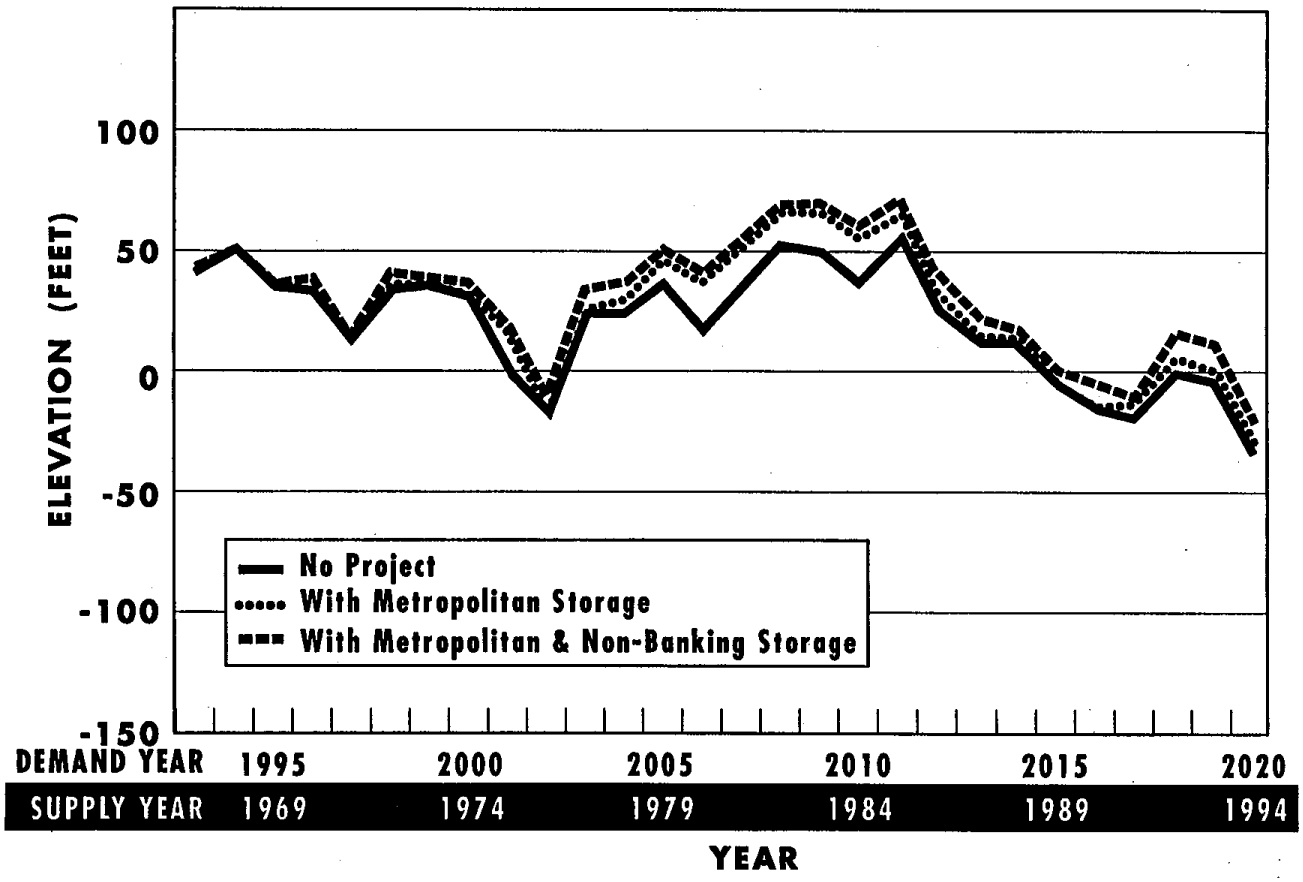
MAY 13, 1994 - CLOSE OF COMMENT PERIOD

Semitropic Water Storage District

SEMITROPIC GROUNDWATER BANKING PROJECT

ROSEDALE - RIO BRAVO WATER STORAGE DISTRICT - CONFINED AQUIFER

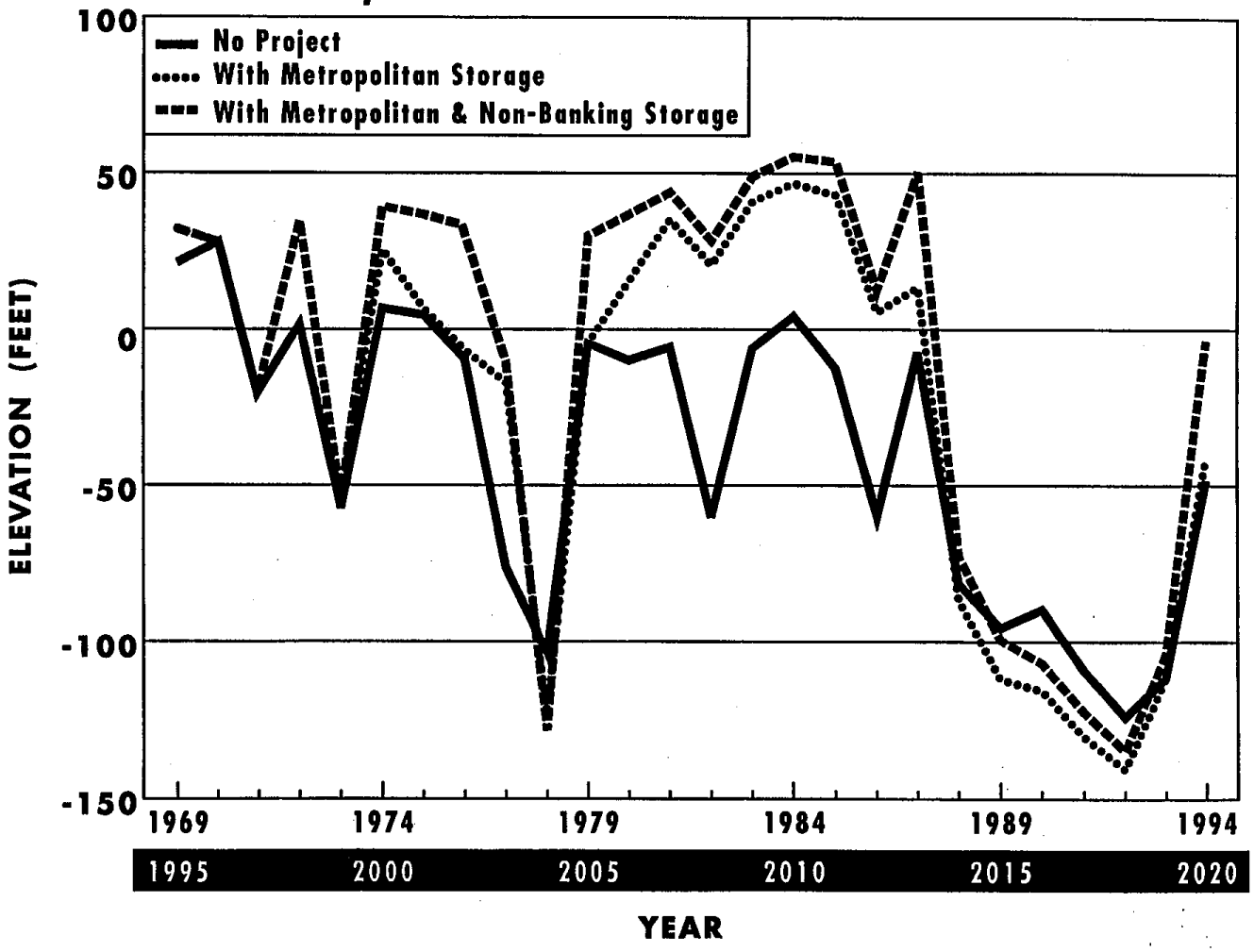
Summer Water Levels

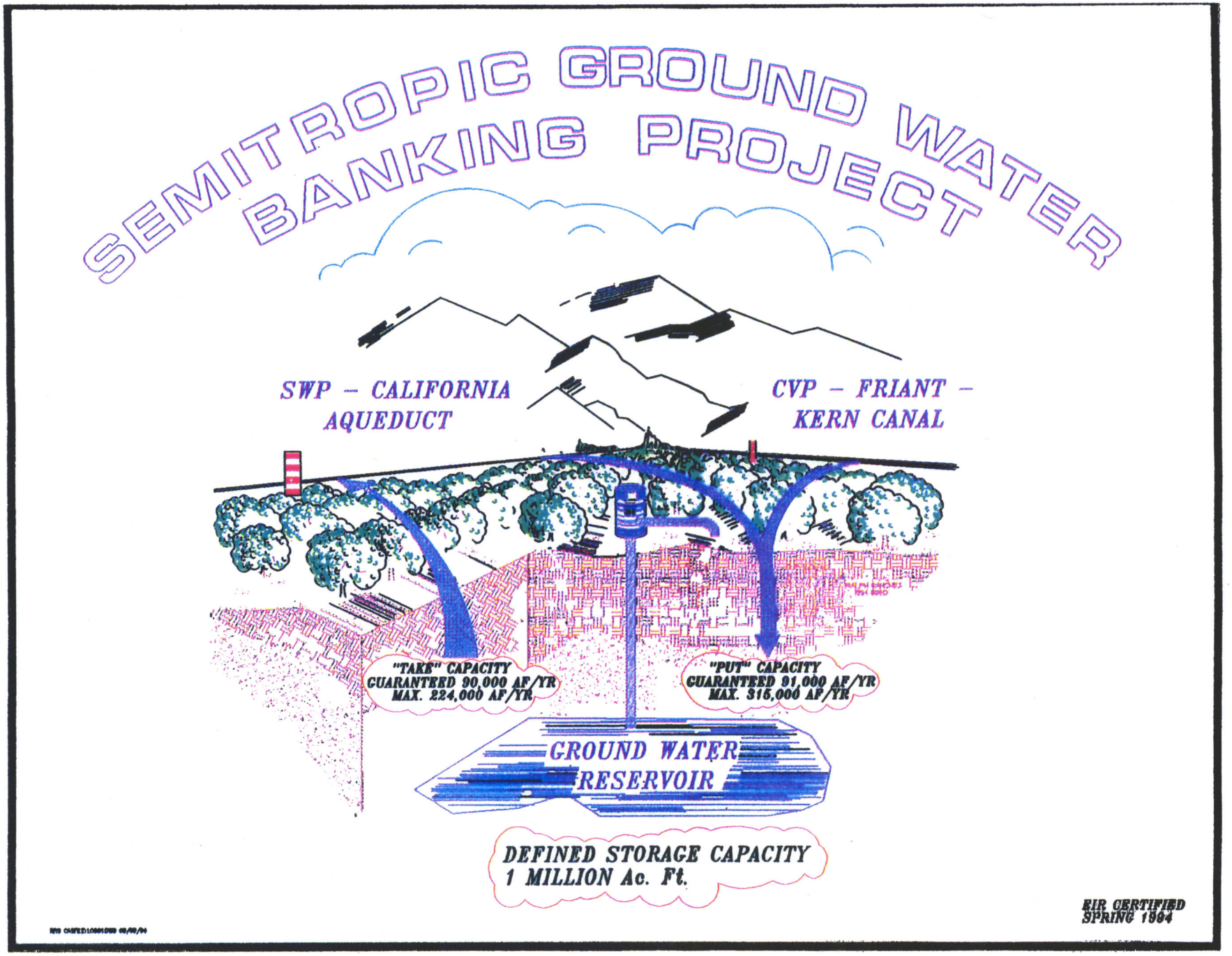


SEMITROPIC GROUNDWATER BANKING PROJECT

Pond Poso Improvement District – Confined Aquifer

Projected Summer Water Levels




SEMITROPIC GROUND WATER BANKING PROJECT
SWP – CALIFORNIA AQUEDUCT
CVP – FRIANT – KERN CANAL
"TAKE" CAPACITY GUARANTEED 90,000 AF/YR MAX. 224,000 AF/YR
"PUT" CAPACITY GUARANTEED 91,000 AF/YR MAX. 315,000 AF/YR
GROUND WATER RESERVOIR
DEFINED STORAGE CAPACITY 1 MILLION Ac. Ft.
EIR CERTIFIED SPRING 1994

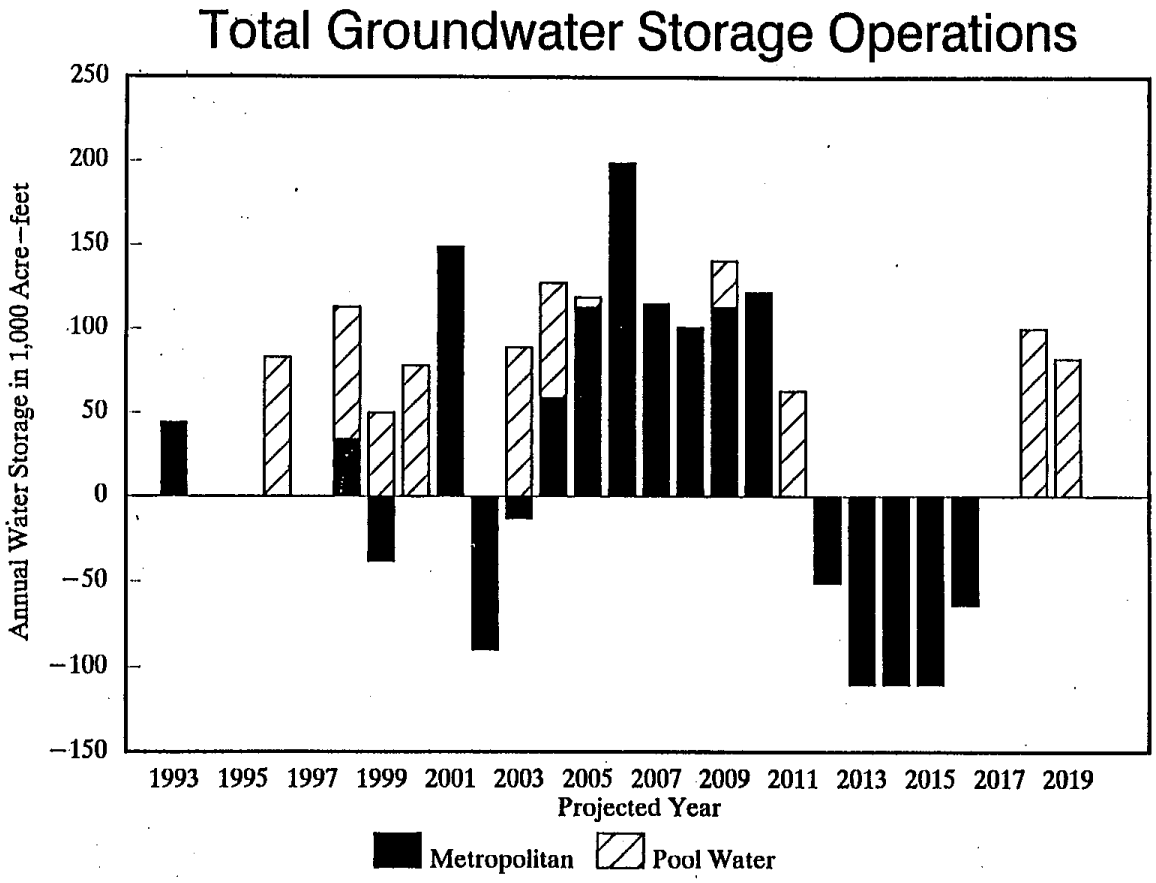

Total Groundwater Storage Operations
250
200
150
100
50
0
−50
−100
−150
Annual Water Storage in 1,000 Acre−feet
1993 1995 1997 1999 2001 2003 2005 2007 2009 2011 2013 2015 2017 2019
Projected Year
Metropolitan
Pool Water

TABLE 6-8
FIFTEEN FOOT: THREE-YEAR RULE CALCULATION
CONFINED AQUIFER SUMMER GROUNDWATER ELEVATIONS
(Elevation in Feet)

	NORTH KERN			POND POSO			SHAFTER-WASCO			NORTH ROSEDALE		
Year	No Project	Project With Non-Banking	3 Yr. Ave. Difference	No Project	Project With Non-Banking	3 Yr. Ave. Difference	No Project	Project With Non-Banking	3 Yr. Ave. Difference	No Project	Project With Non-Banking	3 Yr. Ave. Difference
1993	72.6	77.6		23.2	33.9		38.9	44.0		40.2	41.6	
1994	76.9	78.1		29.2	30.4		54.6	55.5		50.3	50.8	
1995	47.8	48.9	2.4	-19.7	-18.6	4.3	26.1	26.9	2.3	38.5	38.8	0.7
1996	50.8	68.7	6.7	2.1	37.1	12.4	35.3	56.7	7.7	36.8	42.7	2.2
1997	19.6	23.1	7.5	-53.7	-31.1	12.9	1.6	4.9	8.3	20.5	22.0	2.6
1998	50.9	69.3	13.3	9.4	43.3	23.8	39.5	70.4	18.4	35.1	45.8	6.1
1999	53.0	72.7	13.9	7.3	39.0	22.7	39.3	55.6	16.7	36.5	41.4	5.8
2000	44.6	70.5	21.3	-6.5	56.1	36.1	30.8	54.5	23.7	32.2	39.2	7.5
2001	1.7	39.2	27.6	-73.8	-8.2	46.6	-12.4	32.9	28.4	10.3	26.8	9.5
2002	-22.9	-50.4	18.6	-100.9	-125.3	27.9	-34.1	-42.1	20.3	-3.5	-1.6	9.1
2003	37.0	59.2	17.4	-2.7	32.6	23.5	30.0	63.6	23.6	24.7	37.5	11.0
2004	35.3	64.4	14.6	-7.1	39.6	19.2	26.5	68.7	22.6	23.3	41.9	11.0
2005	35.3	78.4	37.8	-2.6	46.7	43.8	35.7	80.3	40.1	35.4	33.3	15.8
2006	9.5	61.7	37.8	-54.9	31.6	41.3	0.5	68.9	51.7	20.6	47.3	20.4
2007	42.4	82.3	41.4	-0.1	51.7	64.5	34.4	83.7	54.8	36.3	58.6	22.3
2008	51.3	89.9	43.6	6.6	57.8	65.3	43.8	95.0	56.3	48.8	70.4	21.5
2009	44.2	91.2	41.9	-10.1	56.7	57.9	36.6	96.0	53.6	47.7	73.0	23.1
2010	15.5	67.2	45.8	-37.4	15.7	63.7	8.4	68.7	56.6	36.5	62.6	24.3
2011	47.2	93.4	48.3	-4.2	53.8	66.0	42.5	86.6	54.9	52.0	71.9	23.8
2012	-1.5	19.2	39.5	-78.1	-69.3	46.6	-6.3	11.7	40.8	30.1	44.6	20.3
2013	-16.0	-5.8	25.6	-91.5	-96.9	20.5	-18.3	-10.3	23.4	18.5	28.9	14.9
2014	-17.7	-14.3	11.4	-86.7	-104.0	-4.6	-17.1	-15.6	9.2	14.2	23.1	11.3
2015	-36.6	-33.3	3.6	-103.9	-118.9	-11.9	-34.3	-33.3	3.5	0.4	7.5	8.8
2016	-47.1	-45.6	2.7	-120.2	-131.5	-13.9	-46.0	-43.7	1.6	-9.5	-0.5	8.3
2017	-48.4	-37.7	5.2	-107.4	-100.5	-5.8	-42.2	-29.5	5.3	-14.3	-3.5	9.0
2018	-15.6	12.5	13.4	-43.6	-1.0	12.7	-5.7	36.7	19.1	-1.8	18.6	13.4
2019	-20.4	15.7	24.3	-57.6	-7.4	33.3	-13.9	24.5	31.2	-6.8	11.9	18.6
2020	-47.4	-43.8	26.9	-121.8	-106.5	36.4	-36.2	-37.3	33.3	-29.3	-13.2	17.7

TOTAL GROUNDWATER STORAGE OPERATIONS

Projected Year	Hydro. Year	Net MWD Put	MWD Take	Acct. Bal.	Addn'l. Pool Water	Accum. Pool Water
1993	1993	44	0	44	0	0
1994	1969	0	0	44	0	0
1995	1970	0	0	44	0	0
1996	1971	0	0	44	83	83
1997	1972	0	0	44	0	83
1998	1973	34	0	78	79	162
1999	1974	0	38	40	50	212
2000	1975	0	0	40	78	290
2001	1976	149	0	189	0	290
2002	1977	0	90	99	0	290
2003	1978	0	13	86	89	379
2004	1979	59	0	145	69	448
2005	1980	113	0	258	6	454
2006	1981	199	0	457	0	454
2007	1982	115	0	572	0	454
2008	1983	101	0	673	0	454
2009	1984	113	0	786	28	482
2010	1985	122	0	908	0	482
2011	1986	0	0	908	63	545
2012	1987	0	51	857	0	545
2013	1988	0	110	747	0	545
2014	1989	0	110	637	0	545
2015	1990	0	110	527	0	545
2016	1991	0	64	463	0	545
2017	1992	0	0	463	0	545
2018	1922	0	0	463	100	645
2019	1923	0	0	463	82	727
2020	1924	0	0	463	0	727