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SANTA MARIA VALLEY
WATER CONSERVATION DISTRICT

P. O. BOX 364 -:- PHONE (805) 925-5212
SANTA MARIA, CALIFORNIA 93456

May 2, 1995

To All Parties Interested in the Proposed Joint Groundwater Management Plan:

The board of directors of the Santa Maria Valley Water Conservation District, at their April 20, 1995 meeting, voted to hold a meeting on May 11, 1995, at the hour of 2:00 P.M., at the City of Santa Maria Public Works Department conference room, 810 West Church Street, for the purpose of receiving additional comments to the proposed groundwater management plan.

At the April 20th meeting, a redraft dated April 18, 1995 of the April 6, 1995 plan was presented to the meeting. In addition to this redraft, a number of written and oral comments were presented to the meeting.

The directors, on April 20th, voted to appoint a committee to review the April 18th plan in light of the comments received and, if they deemed it appropriate, to redraft the plan. The redrafted plan was to be submitted to all interested parties so they could comment on the redrafted plan at the May 11th meeting.

Enclosed to each of you is a copy of the redrafted plan dated April 27, 1995, which embodies the changes made by the committee.

The directors will be pleased to receive oral or written comments on the proposed plan at their May 11th meeting.

Yours very truly,

Maurice F. Twitchell,
Secretary

MFT:gn
Encl.

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AB 3030 Groundwater Management Plan
For the Santa Maria Valley Water Conservation District
Santa Maria Groundwater Basin

(3.4)

4/27/95

Preamble and Basic Mission Statement

It has been and will continue to be the mission of the Santa Maria Valley Water Conservation District (District), in developing, adopting and implementing a Groundwater Management Plan to preserve and protect the quality and quantity of groundwater in the District and to maximize the usable supply of groundwater for the benefit of all users in the Basin.

It is the intention of the District's Board (Board) to:

1. Continue and expand these activities by adopting a Groundwater Management Plan (Plan) under the authority conferred by the Legislature in AB 3030.

2. Create a basin-wide Plan for managing the water of the Basin. The Plan will include storage and water quality related matters. The District intends to undertake planning and execution of yield enhancement and conservation programs. These activities are to be for the benefit of all groundwater users in the Basin.

Recitals and Findings

The District is an entity empowered to adopt and implement a Groundwater Management Plan under Water Code §10750 and following. The District is a 'local public agency' 'providing flood control' and 'groundwater replenishment' within the meaning of these terms in Water Code § 10750 and following. The District is not a 'local agency' as defined in Water Code §10752 (g).

By adopting this Plan, the District intends to enable itself to exercise all powers over groundwater management granted by Water Code §10750 and following and by other provisions of law.

The Plan is to be Basin wide in the sense that it will consider all technical facts throughout the Basin. Groundwater management, enforcement of regulations, and assessement for costs under the Plan will be limited by the statutory constraints of Water Code §10753 (b) (1) to areas not served by a 'local agency' as defined at Water Code §10752 (g) unless those entities agree to become part of the Plan.

Prior to the adoption of this Plan, the District conducted informal workshops and formal noticed hearings. On the basis of the testimony the Board finds the following:

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1. That by maximining the yield of the Basin as a whole and by enhancing water quality the public and private interest within the District will be served.

2. That the boundries of the Basin, the yield, storage, and demand on the Basin are difficult to ascertain. Uncertainty and differences of both common and expert opinion remain as to these facts. The question of whether the basin is in a state of overdraft is open

3. Broad consensus exists that projects could be undertaken which could benefit the water users of the basin. Such projects may include but are not limited to the following: Inflatable dams, stream bed grading, spreading basins, below ground dams, injection wells, watershed burn projects, conservation measures

Adoption of Resolution

It is therefore resolved that:

1. Under the authority of Water Code § 10753 (b), the SMVWCD acts to create a Groundwater Management Plan (Plan) pursuant to Water Code §10750 and following sections. The Plan will encompass all of the Santa Maria Grounwater Basin the exact limits of which will be fixed during the course of the Plan. The Plan consists of those activities described below under the section entitled 'Activities of the Plan'. Funding will be as allowed by law.

2. The Board will, at an appropriate future time, adopt a Program or Programs to implement the Plan as contemplated in Water Code § 10752 (e)

Activities of the Plan

While not intending to be limited to the activities and topics discussed below, the Board intends the following actions which actions are the Board's Plan as contemplated by Water Code § 10752 (d). Modification of the Plan shall be accomplished by the Board as needed.

1. Boundries of the Basin Conduct investigations to determine the natural hydraulic boundries of that groundwater basin which is recharged principally by the Santa Maria River and its tributaries and plan for the entire Basin.

2. State of the Basin Determine whether the Basin is in overdraft or not. The term 'overdraft' will be as defined by the law of California. The study of the Basin will be consistent with and will explain observed water level data as has been historically collected by the District. If an overdraft is found to exist, the District will pursue appropriate policies to address the overdraft and its implications

3. Project Development Evaluate projects which will further the goals of the Plan considering costs and benefits, effects on people and their economic activities, and environmental impacts as required by law.

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4. Project Execution Carry out projects, with the District acting alone or in cooperation with other private and public entities, as might be agreed with such other entities and as allowed by law.

5. Regulatory Activities Review the regulatory activities of other agencies concerned with water. If the regulatory activities of other agencies are found by the District to be inadequate to protect the groundwater of the Basin, the District may act to the full extent of its powers to protect the groundwater.

6. Groundwater Banking Use the storage capacity of the Basin to the maximum feasible and lawful extent in accordance with the following principles.

   a. Plan and administer, in a coordinated and orderly fashion, for the storage of out-of-basin water, if feasible.

   b. Cooperate with other entities, public and private, to store water for use in the basin

   c. Determine, prior to any action taking place, whether storage capacity is available and, if available, how much storage capacity exists and where.

   d. If storage space is found to exist, the use of this space for water derived from within the basin is to be given priority over storage of out of basin water both now and in the future.

   e. Act, alone or with others, to assure that all banking and storage throughout the Basin will be conducted in harmony with the District's Groundwater Management Plan.

7. Education Develop means to inform the general public of the activities of the Board and the reasons for those activities.

8. Land Use Planning Make available the Board's technical findings to those who are involved in land use planning. Act affirmatively to inform land use decision makers of pending land use actions which affect the Plan.

9. Benefits of the Plan Manage the water and water storage of the Basin for the benefit of users of Basin water. To achieve this goal the District will take all necessary steps to protect the resources in its groundwater basin.

10. Coordination with Other Agencies Attempt to harmonize the Plan and activities carried out under the Plan with actions by others within those areas of the Basin exempt from the District's Plan. To carry out this goal, the Board may enter into joint powers agreements, memoranda of understanding, and other agreements as appropriate with other entities when benefical and feasable. Meetings to harmonize and coordinate planning will be held as required by law or more often.

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Summary

The District is adopting a Groundwater Management Plan, generalized in nature, with the goal of determining the technical facts and then adopting plans and policies and projects to enhance the quantity and quality of the groundwater.

The Plan will be for the whole Basin with exact boundries to be determined based on further technical study. Local entities providing water service (City of Santa Maria and City of Guadalupe) will not be subject to the Plan unless they agree to participate.

As contemplated by the state law authorizing local groundwater management, the District will, in the future, adopt specific Programs and develop specific projects to implement the generalized goals stated in this Plan.

If an overdraft is found to exist, the Plan will be directed toward addressing that situation. The Plan addresses issues relating to storage of out-of-Basin water.

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SANTA MARIA VALLEY
WATER CONSERVATION DISTRICT

P. O. BOX 364 -:- PHONE (805) 925-5212
SANTA MARIA, CALIFORNIA 93456

March 17, 1995

To All Parties Interested in the Proposed Joint Groundwater Management Plan:

Enclosed are copies of the attendance sheet and the notes for the March 9, 1995 committee meeting.

This letter will advise you that the board of directors of the Santa Maria Valley Water Conservation District will hold a special meeting on Thursday, April 6, 1995, at the hour of 2:00 P.M. at the City of Santa Maria Public Works Department conference room, 810 West Cook Street, for the primary purpose of discussing a groundwater management plan to be adopted by the district.

It is anticipated that the directors will welcome and receive public comment, including members of the ad hoc committee. However, the primary purpose of the meeting will be for the directors to discuss their ideas for a groundwater management plan for the district.

All members of the committee are invited to attend.

At the last meeting of the committee, it was tentatively decided to hold a directors' meeting on March 23, 1995 at the county hearing room at the County Government Center on Betteravia Road. However, it turns out that the County Government Center is not within the boundaries of the district. Therefore, it would be illegal to hold a directors' meeting at the county building. It would also be illegal to hold a meeting at the Bonita Packing conference room previously utilized for committee meetings for the reason that the second story conference room is not handicapped accessible.

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The directors of the district appreciate the help of the City of Santa Maria Public Works Department and Bonita Packing in allowing the district and the joint committee to utilize their facilities.

Yours very truly,

Maurice F. Twitchell,
Secretary

MFT:gn
Encl.

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SANTA MARIA VALLEY GROUNDWATER MANAGEMENT PLAN
MEETING NOTES
March 9, 1995

The meeting was convened by Maurice Twitchell at 2:00 pm in the Bonita Packing conference room. The discussion focused on reviewing progress on the groundwater management plan so far and deciding which direction to take next. The decision at hand was specifically whether the Santa Maria Valley Water Conservation District (District) should proceed independently to develop a plan, which other entities may join later if desired.

1. Maurice Twitchell provided a brief history of the groundwater management plan development process:

   Upon passage of AB 3030, in September 1993 the District initiated development of a plan. Under the direction of Supervisor Mike Stoker and with consensus of the Board, the County decided to provide technical support for this effort. The District decided to use the Santa Maria Valley Water Resources Report, which was expected to be completed by early 1994. The report, which was actually completed in May 1994, stressed broad participation during development.

   The District opened up the groundwater management plan to a committee process, involving other interests such as Cal Cities Water. The committee process was initiated in August 1884. Discussion was intended to get all viewpoints out and understood; nothing would be final until the plan was approved. After eight months of discussion, the process is at an impasse; a portion of the agricultural community believes this plan should not go forward as a joint process.

   Twitchell proposed two options:
   1) Continue to act as an ad hoc committee as joint authors of a plan, or;

   2) Work together as long as possible, then go separate ways for actual plan development.

2. Peter Adam and Larry Ferini proposed that the District proceed independently to develop a plan. They had offered to revise the draft plan provided by the County, but decided it was not feasible as they disagreed with too many points in the draft. Peter Adam stated that the law says a groundwater plan may cover just a portion of a basin, and the District should retain local control by writing, adopting and implementing their own plan. If other entities want to participate later, they may do so through MOUs.

   Debate followed considering the merits of a joint vs. individual plans. The debate divided between agricultural interests in favor of the District proceeding alone; members of the urban communities favoring a joint process.

   Several points were made in favor of the District developing a separate plan. It was felt that joint concerns could be addressed through MOU's. Most of the information needed to formulate a plan have already been gathered; the plan just needs to be assembled.

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Comments were made on the lack of input from the urban interests. Several participants expressed the view that the basin has functioned fine for over 60 years without management and that there's no need to interfere with the way groundwater has been managed. Concern was expressed that both water rights and property rights could be impacted by the management plan.

It was also pointed out that benefits created within the District, such as spreading grounds, benefit the entire basin, so theoretically any plan developed within the District would have basinwide benefits.

In favor of a joint process continuing, participants said that open meetings and gathering input from all concerned parties is important. It was also pointed out that, as per the Brown Act, even if the District develops their own plan, meetings on the plan would have to be noticed, public meetings.

Roger Brett addressed the reasons for a seeming lack of direction from urban interests. He thinks that it is premature for Cal Cities to propose projects (i.e. banking of State Water in the basin) until the plan is created. Until this happens, there are no institutional relationships in place to protect them.

3. Maurice Twitchell asked the question of whether the people of the District will be better served if a limited plan is adopted or if a joint plan is adopted basinwide. He proposed that the District could develop a broad, flexible plan which could be later adopted by the cities and Cal Cities Water.

   Maynard Silva and Dwayne Chisam agreed that the District could develop its own plan, which could then be taken to their city councils, who would consider the plan and decide whether to participate. Silva and Chisam stated that they would be willing to make suggestions to the plan so that it would be possible for the cities to adopt it also.

   Several District board members then stated their support for the District to proceed with developing its own plan. Meetings of the Board concerning the groundwater plan will be noticed as per the Brown Act and the cities will continue to receive information on these meetings.

4. Rob Almy addressed the letter to the District's board written by Peter Adam and Larry Ferini stating their formal objection to the meeting minutes prepared by Water Agency staff. Adam and Ferini had stated in the letter that they found the minutes to be biased and inadequate. Almy reiterated that minutes were taken as a means to create a summary of the substantial effort being put in by the committee. The minutes can be corrected or expanded, but participants must provide feedback to county staff who prepare the minutes if they believe comments are appropriate.

   Several participants protested that the committee was never formally asked to adopt the minutes and that this type of record can be used against them later. A recommendation was made to call them "notes" or "Agency staff summary", not minutes, or not to take

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them at all. Almy stated that the county will continue to take notes at the meeting and distribute these for comment.

5. The participating board members recommended (no vote was taken) that the District draft its own plan with any input given. They will take comments on the draft plan, and other entities may get involved later if they so chose.

6. The next meeting for the District to begin discussions of an AB 3030 plan will be held on March 23, 1995. The location is yet to be announced.

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AB 3030 MEETING – MARCH 9, 1995

Name & Initials	Signed
LON FLETCHER	CACHUMA RCD.
OWEN PICE	SMVWCD
Richard E. Adam	SMVWCD
Jeanne Sparks	5th Dist, SBCo.
Robert Almy	S.B. Co. Water Agency
MAYNARD SILVA	CITY OF GUADALUPE
JIM McHugh	Newhall Land
Stewart Johnston	
ROGER W. BRETT	Orcutt Citizens MSD
Mikel Hartsock	So. Calif. Water Co.
DWAYNE CHISAM	City of Santa Maria
HERB GERFEN	Joint Wtr. Comm.
Lisa Souza Bognuda	Nipomo C.S.D.
JAMES O. DALE – INTERESTED PARTY	ORCUTT
PETER L. Adam.	Santa Maria
RICHARD QUANDT	GSVA
John Frye	Newhall Land & Farming
DARYL SOUZA	SMVWCD
Darcy Ashton	SB Co Water Agency

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SANTA MARIA VALLEY
WATER CONSERVATION DISTRICT

P. O. BOX 364 -:- PHONE (805) 925-5212
SANTA MARIA, CALIFORNIA 93456

February 27, 1995

To All Parties Interested in the Proposed Joint Groundwater Management Plan:

The next meeting of the ad hoc group for the formulation of a joint groundwater management plan for the Santa Maria Valley will be held on Thursday, March 9, 1995, at 2:00 P.M., at the Bonita Packing conference room, 1850 West Stowell Road, in Santa Maria.

The purpose of the meeting will be to discuss the revised draft of the proposed groundwater management plan and an alternate plan to be submitted by Peter Adam and Larry Ferini.

Enclosed to each of you are copies of the attendance sheet and minutes of the February 9, 1995 meeting.

Also enclosed is a draft of the proposed plan put together by Santa Barbara County Water Agency. The enclosed draft reflects the changes suggested at the February 9th meeting.

Peter Adam and Larry Ferini plan to submit a suggested alternate plan. However, as of the date of this mailing, I have not received a copy. If their plan is ready by the March 9th meeting, it can be passed out and discussed at that time.

Yours very truly,

Maurice F. Twitchell
Leg. Asst.

Maurice F. Twitchell,
Secretary

MFT:gn
Encls.

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AB 3030 MEETING FEBRUARY 9. 1995

Maurice Twitchell	SMVWCD
MARVIN TEIXEIRA	TEIXEIRA FARMS
PETER C. Adam	Adam Bros Farming Inc
Owen Stric	S.M.O.W.C.D.
Richard E Adam	SMVWCD
A.C. Teixeira	SMVWCD
Dorothy Laine	CWA
Jim Mehigh	Newhall Land
Olga Howard	Orcutt resident
Duane Chrisman	City of Santa Maria
ROGER BRETT	CALIF CITIES H2O
Scott Slater	Cal Cities/Habitat Assoc
MAYNARD SILVA	CITY OF GUADALUPE
Darcy Aston	SB Co. Water Agency
Robert Almy	S.B. Co. Water Agency
Matt Naftaly	" " " "
Dan Lum	SMWCD

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SANTA MARIA VALLEY GROUNDWATER MANAGEMENT PLAN
MEETING MINUTES
February 9, 1995

The meeting was convened by Maurice Twitchell at 2:00 pm in the Bonita Packing conference room. The discussion focused on the preliminary draft of the groundwater management plan compiled by county staff from past meeting minutes and existing reports.

1. Corrections to previous minutes:
Scott Slater will provide a draft of an MOU for the committee, not Rob Almy as stated in the minutes of 12JAN95. Scott will provide these at our next meeting.

2. Examples of completed AB 3030 plans:
The Association of California Water Agencies (ACWA) has copies of completed plans that can be used as a model. Maurice Twitchell will contact ACWA to get copies.

Buellton and Santa Ynez groundwater plan committees have not gotten as far as we have; they have only gathered baseline data so far and so cannot help with examples.

3. Comments on draft plan:

Plan title:
Dick Adam expressed reservations over the use of the word "joint" in the title. He wants to protect his constituents. To do this, the SMVWCD should implement their own plan, and create MOUs with other agencies only for the purpose of implementing mutually beneficial projects.

Scott Slater pointed out that the committee agreed to draft a plan that will be the District's plan; if it's acceptable to other agencies then they can also adopt it.

Governance:
Dick Adams has concerns about the use of committees to make decisions on policy under the management plan; he fears committees will "dictate" policy. Scott Slater's view is that the draft plan should be "governance neutral", i.e. we assume that the plan applies only to the SMVWCD, so the term "committees" applies only to SMVWCD members. Later, if they want to include others, they can do so through MOUs.

Rob Almy added that each agency can adopt a plan with two or more committees, for example: a policy committee which decides which projects to get involved in, and a technical committee which looks at monitoring. Appropriate committees can then work out agreements between agencies and implement specific projects.

Scott Slater suggested that in effect, all agencies could individually adopt essentially the same plan, then governance would not be an issue. Joint projects could then be implemented through MOUs. Scott will provide draft MOUs outlining ways for agencies to interrelate.

Maurice Twitchell reiterated the goal of a June target date for sending a draft of the plan to the

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governing boards of each agency. With this in mind, the committee agreed to go through the plan page by page to make corrections and comments. One general comment was to use original citations for data, rather than citing only the Santa Maria Valley Water Resources Report, which utilized many sources such as USGS.

II. Goals for the Basin

The committee agreed that there had been no consensus on basin goals. One of the subcommittees had suggested some goals; Peter Adam will provide a copy of this. Maurice Twitchell suggested that it might be better not to have any stated goals in the plan, as these might be used as the basis for litigation later. He recommends that we keep the plan as basic as possible to avoid later lawsuits.

Richard Quandt pointed out that the County has recently adopted the Groundwater Section of the Conservation Element of the general plan, which contains policies and goals that could be used in the Santa Maria plan, i.e. 1)insure an adequate supply as to both quantity and quality; 2) eliminate prolonged overdraft; 3) maintain accurate and current information on groundwater levels.

The committee continued to review the plan, with wide ranging comments and corrections. Peter Adam and Larry Ferini requested a copy of the plan on computer disk so that they can make revisions which will then be shared with the committee at the next meeting. County staff agreed to make the changes specified during this meeting and send the disk to Larry. County staff will also retain a "first draft" version of the plan which will be modified to reflect concerns of the urban water purveyors. These two drafts of the plan can be compared and reconciled at subsequent meetings of this committee.

ADJOURNMENT/NEXT MEETING:

The meeting was adjourned at 5:00 pm. The next meeting will be held on Thursday, March 9, at 2:00 pm at the Bonita Packing Conference Room.

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GROUNDWATER MANAGEMENT PLAN FOR THE SANTA MARIA VALLEY GROUNDWATER BASIN
DRAFT #2
14 February 1995

I.
INTRODUCTION

A. General.
This Groundwater Management Plan is adopted by the SANTA MARIA VALLEY WATER CONSERVATION DISTRICT pursuant to authority of the Groundwater Management Act of 1992 (Water Code Sections 10750, et seq.) for the purpose of assuring long term reliability and quality of the groundwater in the Santa Maria Valley groundwater basin.

B. Purpose.
The objective of the plan is to ensure that sufficient water resources are available to satisfy the present and projected beneficial uses of water within the plan area. The plan is designed to protect groundwater quality within the basin and to balance long-term average annual replenishment with extractions and other losses to the basin as may be consistent with the public interest. (Source: Slater handout/16 AUG 94)

C. References.
The sources of information for this plan are the Santa Maria Valley Water Resources Report, Santa Barbara County Water Agency. April 1994; information presented in a series of public meetings (Appendix A); and additional studies as specified in this plan.

II.
CONDITION OF THE BASIN

A. Monitoring network and results

The Santa Maria Valley Water Conservation District, the Santa Barbara County Water Agency, City of Santa Maria and California Cities Water monitor water levels in the Santa Maria groundwater basin through monitoring wells or active agricultural or municipal wells. This information is published annually in USGS groundwater reports. These wells are listed in Appendix B.
(Source: Santa Maria Valley Water Resources Report)

B. Estimated storage

The total usable groundwater stored in the basin is not precisely known, but is estimated to be 1.5 million acre feet.
(Source: Santa Maria Valley Water Resources Report)

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C. Historical variations in groundwater level

Data collected indicates that groundwater levels have declined from historic high levels measured in 1918. Groundwater levels in 1991 suggest total storage was about 1.1 million AF lower than those initially recorded in 1918. Groundwater levels fluctuated roughly 0.6 MMAF due to exceptionally wet and dry cycles of rainfall. Most groundwater levels recorded in 1991 and 1992 were the lowest in recorded history. Water levels have risen through 1994.
(Source: Santa Maria Valley Water Resources Report)

D. Historical variations in groundwater pumpage

Currently, municipal and industrial use accounts for roughly one quarter of the total water used in the valley. Municipal and industrial water use is clearly related to population, and population in the Santa Maria Valley nearly doubled between 1970 and 1990. The expected increase in water use may be somewhat offset by a projected decrease in per capita demand due to increased water efficiency. Per capita M & I water use declined by approximately 12.5% during the 1980's, and it has been assumed that future efficiency would remain at 10% below 1970 (baseline) per capita use. However, per capita rates could drop further as additional urban and agricultural best management practices are implemented.

Agricultural water use varies by crop requirements, soil characteristics, precipitation, temperatures and irrigation efficiency. In 1944, irrigated lands totalled about 35,000 acres with an estimated groundwater pumpage of 71,000 AF. After World War II (1945 to 1958), irrigation pumpage increased to levels estimated by the USGS as varying between a low of 93,000 AFY in 1951 to a high of 139,000 AFY in 1958, and averaging almost 109,000 AFY. The estimate for 1990 agricultural pumpage, using Department of Water Resources cropped acreage estimates and University of California Cooperative Extension, Farm Advisor water duty factors, is 130,619 AF.

(Source: Santa Maria Valley Water Resources Report)

E. Known contamination problems, federal/state response

Within the Santa Maria groundwater basin there has been some groundwater contamination. The City of Santa Maria has shut down one well because of PCB contamination; two more are out of service due to high nitrate concentrations (above the 45 ppm limit). There are many potential sources of these nitrate contaminants. A number of these sources are subject to control by the Regional Water Quality Control Board.

In response to increasing fertilizer costs and technological improvements in nitrogen application rate and residuals monitoring, farmers have cut back significantly on their contribution to groundwater nitrate levels. Many large-scale farming operations have built their own monitoring

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laboratories. The Cachuma Resource Conservation District hopes to add nitrate monitoring to their irrigation efficiency evaluation services (Mobile Lab) when they can secure sufficient funding. Septic systems and wastewater treatment plants could be other point source contributors to nitrate levels.

Currently, wells located along the coast near the mouth of the Santa Maria River do not indicate the presence of sea water intrusion. However, the Santa Maria aquifer extends offshore and it is possible that encroachment is occurring further to the west below the Pacific ocean. Both the prevailing groundwater gradient (east to west) and the indications of underflow out, support the conclusion that encroachment is not taking place.

(Source: Minutes 20 OCT 94)

III.
FUTURE DEMANDS ON THE BASIN

A. Potential changes in water usage

NOT ADDRESSED

B. Potential changes in land use

NOT ADDRESSED

C. Environmental concerns

NOT ADDRESSED

D. Impacts on the basin

NOT ADDRESSED

IV.
ELEMENTS OF THE GROUNDWATER MANAGEMENT PLAN

A. Control of saline water intrusions

Background:

Sea water intrusion is presently monitored by monitoring wells near the Pacific Ocean maintained by the United States Geological Survey. These wells, and other evidence, indicate there is presently no sea water intrusion. The freshwater aquifer extends an unknown distance beneath the Pacific Ocean. If intrusion is occurring, it is most likely in this zone.

Management Strategies:

Periodically review existing monitoring wells and adequacy of monitoring plan. If

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appropriate, formulate additional monitoring or remedial action upon changed conditions or development of additional monitoring techniques. Particular attention should be paid to the need for additional monitoring wells either north or south of the existing wells.
(Source: Minutes 17 NOV 94)

B. Identification and management of well head protection areas and recharge areas.

Background:

The main recharge area for the Santa Maria groundwater basin has been identified as the portion of the Santa Maria Valley east of Black Road and north of the Orcutt uplands. Well head protection areas are set by state and county water well construction standards. The main source of recharge is the Santa Maria River, which is naturally maintained by periodic flows and scouring. Twitchell Reservoir is an integral part of the water supply, capturing flood flows and providing a supplemental source of groundwater recharge. Water conserved in the reservoir (up to 135,615 AF) is released down the Santa Maria River where it percolates into the groundwater basin. No well head protection areas exist or appear warranted at this time.

(Source: Santa Maria Valley Water Resources Report)

Management Strategies:

If state and county standards and enforcement appear to be or become inadequate, propose remedial measures to the governing authority, or adopt appropriate regulations not prohibited or preempted by law.

C. Regulation of the migration of contaminated groundwater

Background:

Contamination of groundwater and migration of contaminated groundwater is presently regulated by county, state and federal authority. The USGS currently monitors water quality in certain wells in the groundwater basin and publishes the data annually.

Management Strategies:

Monitor the effectiveness of such regulation and, if appropriate, propose modification of standards, enforcement or monitoring appropriate for the Santa Maria groundwater basin.

Evaluate effectiveness of existing monitoring programs, specifically focussing the effect of sewage effluent disposal, solid waste disposal and agricultural chemicals upon groundwater quality within the Santa Maria groundwater basin. If appropriate, propose modifications to monitoring programs or disposal procedures that are found to be beneficial or necessary for the Santa Maria groundwater basin.

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D. Administration of well abandonment and well destruction program.

Background:

Well abandonment and well destruction are regulated by Santa Barbara County Environmental Health Services.

Management Strategies:

Evaluate the effectiveness of regulations and implementation and, if appropriate, propose modifications of standards, enforcement or monitoring found to be appropriate for the Santa Maria Groundwater basin. Continue to monitor effectiveness of program.

E. Mitigation of conditions of overdraft

Background:

The condition of overdraft in the basin is a controversial issue. Long term dewatering of some areas has occurred, however, the various estimates of dewatering are small compared to the total volume in storage and observed wet/dry cycle fluctuations. This issue needs to be better understood in order to protect the availability of water and protect/improve water quality. Past estimates of the overdraft ranged from 12,000 AFY (USGS, 1945) to 20,000 AFY (SBCWA, 1994).

Management Strategies:

The level and effects of groundwater overdraft in the Santa Maria groundwater basin will be determined by further studies conducted through this groundwater management plan. After the degree of overdraft is determined and its adverse impacts assessed, appropriate methods of mitigating this overdraft will be proposed, and if adopted could be implemented.

Possible mitigation methods for conditions of overdraft fall into two categories: supply side options and demand side options discussed below.

a. SUPPLY SIDE OPTIONS

1. Injection/Percolation of Supplemental Water

Supplemental water such as State Water Project (SWP) water or water imported from outside the basin can be percolated into the groundwater basin through infiltration ponds or injected into new or existing unused wells. Alternatively, this supplemental water may supplant some existing pumping i the basin.

Further Study: A master plan for injecting or other use of supplemental water should be developed for the Santa Maria groundwater basin; one possibility is to locate injection wells near identified pumping troughs to mitigate localized overdraft problems and to control migration of injected water for water quality reasons.

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2. Watershed Management

This option consists of increasing available stormwater runoff by managing the watershed. Controlled burn programs can be designed to minimize excessive debris accumulation and to increase available runoff.

Further Study: The Sisquoc and Cuyama watersheds should be analyzed to determine the typical runoff percentage increases that would result from a controlled burn program. To the extent opportunities to expand vegetation management in a way to demonstrably increase runoff, benefitting entities should pursue such measures.

3. Enhanced Recharge

Any specific proposed option for enhanced recharge will be evaluated for its feasibility and cost per acre foot. Enhanced recharge opportunities fall into four basic types:

- **Recharge related to development (Flood Retention/Percolation Basins):** As land is developed, the increase in impervious area increases storm runoff. The County, cities, airport and County Flood Control are actively involved in controlling excessive runoff created by development, collecting it in retention basins and increasing infiltration to the groundwater basin. Special recharge zones may also be adopted to require developers to offset lost recharge acreage with retention/infiltration ponds or other improvements. Particular attention should be paid to the location of ponds to maximize recharge to main basin aquifer zones.

- **Mining reclamation:** Converting abandoned sand and gravel mining pits to recharge basins can reduce reclamation costs and, depending on design, increase groundwater recharge.

  Further Study: Studies should be done to determine whether increased recharge through mining reclamation can be accomplished without undermining of bridge supports on the Santa Maria River or causing other adverse impacts to surrounding land uses.

- **Flood flow diversion:** Flood flows can be diverted for temporary storage and subsequent release for spreading and basin recharge during low flow periods. One option is to divert Sisquoc River water to a new reservoir on or near the Cuyama River.

  Further Study: Options for flood flow diversion should be evaluated for cost per acre foot relative to existing natural recharge, as Santa Maria River's alluvial formations are already an efficient infiltration basin.

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- **Modification of Existing stream channel**: Existing river channels can be modified by installing inflatable dams or contouring the river to slow or divert flood flows.

4. Sewage Effluent

Treated effluent from the Santa Maria and Laguna wastewater treatment plants is currently percolated through infiltration ponds to the groundwater basin. The location of the Santa Maria infiltration ponds appears to help maintain water pressure in the down-gradient confined groundwater aquifer and maintain pumping levels for downstream agricultural pumpers. It also helps to prevent seawater intrusion that could be induced if declining water levels in the confined zone and in areas to the east were to occur.

Further Study: The Laguna infiltration ponds and spray disposal areas are above a perching zone, so most of the runoff may eventually spill to the ocean without benefitting or contaminating local groundwater basin users. Geological information should be gathered through a monitoring program to establish whether or not there is hydrologic continuity between the Orcutt "Sand Hills" material and the main aquifers. If the aquifers are separate, options to capture the potential benefits from the treated Laguna discharge include relocating the infiltration ponds to a more strategic location or reusing the treated effluent directly to replace water pumped from the ground.

The effectiveness of directly using tertiary treated sewage and the associated water and cost savings from reduced groundwater pumping should be compared against the cost and effectiveness of percolating secondary treated sewage.

5. Groundwater/Seawater Desalination

Currently, the high cost of desalination, environmental constraints and the imminent availability of State Water Project (SWP) water make this option economically infeasible. However, such an option may be considered in the future if water demand, water quality regulatory requirements and costs make it economically feasible.

6. Surface Water Reservoir

The Round Corral dam site on the Sisquoc River was identified in the U. S. Bureau of Reclamation's 1945 Santa Barbara County-wide "Comprehensive Basin Plan" as a potential surface reservoir site. The resulting reservoir would have a maximum safe yield of 8,000 AF/year.

Further Study: A permitting reconnaissance is necessary before considering this option as the environmental regulations developed after 1945 have changed the economic and permitting feasibility of building a surface reservoir in the state.

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7. Conjunctive Use

Conjunctive use involves bringing in supplemental water and either injecting the surplus supplemental water during wet years and withdrawing it during drought years, or using supplemental water when it is available and reserving the groundwater for the drought years when the supplemental water is not available. See Section H below for information on facilitating conjunctive use projects.

8. Cloud Seeding

The current cloud seeding program increases the available water within the Santa Maria basin. Therefore, the County's cloudseeding program is considered part of the existing water supply baseline. The program currently balances water supply augmentation and public safety (flooding) concerns. No increased operational opportunities exist at the current time.

9. Twitchell Reservoir Operational Modifications

Additional storage potential could be created in Twitchell Reservoir by surcharging above the spillway. Under normal circumstances, the Army Corps of Engineers and USBR regulations do not allow surcharging of the flood control pool for water conservation purposes prior to March 15 during any given year. However, operations could be modified to allow surcharge of the flood control pool based on the likelihood of the occurrence of flooding. Operated in this manner, the yield of the project could increase significantly.

b. DEMAND SIDE OPTIONS

1. Urban Conservation

Water purveyors in the Santa Maria basin, the Cities of Santa Maria and Guadalupe, and California Cities Water Company, have implemented many of the statewide urban water efficiency Best Management Practices (BMPs). The BMPs currently not implemented are considered economically infeasible, or provide benefits that cannot be quantified at this time. However, as water prices increase and more information is made available on the economic impact of additional BMPs, more practices may become feasible. In Santa Maria, where the wastewater effluent recharges the groundwater basin, there would be less benefit from increased conservation than in Orcutt where most of the infiltrated wastewater effluent may flow to the ocean before it is used again. However, increased water efficiency would have water quality benefits in both Santa Maria and Orcutt.

2. Agricultural Conservation

The Cachuma Resource Conservation District's mobile lab provides analysis and technical

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assistance locally to increase agricultural water irrigation efficiency. Efficiency rates of 80 percent are an achievable goal. The primary water supply benefits are reducing excessive evapotranspiration and salt concentration. The primary driving force to implement agricultural conservation will be the associated savings in energy and fertilizer costs. The cities and agencies involved in this plan could provide financial support to the mobile lab and publicize its services to local growers.

Further Study: Information needs to be gathered concerning the impact of agricultural water conservation on the level of return flows into the groundwater basin.

(Source: Minutes 03 NOV 94)

F. Monitoring of groundwater levels in storage

An expanded groundwater monitoring program is needed to improve understanding of the Santa Maria Valley groundwater dynamics. This program requires adding more wells to the County's current well monitoring program. Key issues to be monitored and evaluated include:

- o Seawater intrusion potential
- o Annual basin outflow to the ocean
- o Basin geology and groundwater flow patterns and rates
- o Groundwater recharge sources and quantities
- o Water table fluctuations seasonally and annually
- o Water quality trends
- o Sources of water quality degradation
- o Groundwater pumping estimates (gross and net)
- o Opportunities for groundwater banking
- o Basin safe yield
- o The likely groundwater table fluctuations within the long term safe yield for wet and drought years
- o How basin could be managed to optimize the basin safe yield
- o Best locations for groundwater recharge, available storage capacity and new wells from an overall basin management perspective
- o More groundwater data and monitoring are needed to understand the amount of interconnection between the shallow, deep and confined aquifers, and if the existing multiple completion wells are affecting the yield and water quality of any aquifer.

The enhanced groundwater monitoring program could begin with a detailed study. The basic steps would be:

1. Based on goals for basin, define what additional data is required.
2. Add strategically placed existing wells to current well monitoring program.

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3. Determine whether existing wells could be added to the monitoring program or whether dedicated monitoring wells are needed in certain areas of the basin
4. Drill additional monitoring wells in key locations and/or to monitor groundwater at specific depths.
5. Collect data at regular intervals. This may involve monitoring some wells monthly for two years then annually thereafter.
6. Analyze basin groundwater data and answer questions identified (see Appendix C) in AB3030 plan.
7. Finalize strategy and programs to bring basin into balance.
8. Continue monitoring program.
9. Verify that the trends expected from the detailed study are what actually occur.
10. Monitor the success or inadequacy of programs and actions to bring the groundwater basin production and recharge into balance.
11. Revise basin management projects and actions as needed to meet continuing basin management goals.

(Source: Cosby Scoping Memo, 20 DEC 94)

G. Facilitating conjunctive use operations.

Conjunctive use can involve bringing in supplemental water and either: 1) injecting the surplus supplemental water during wet years and withdrawing it during drought years, or 2) using supplemental water when it is available and reserving the groundwater for the drought years when the supplemental water is not available. Any increases in ocean discharge due to banking of supplemental water could be charged to the beneficiary or "owner" of the stored supplemental water. Estimates of subsurface inflow and outflow are made using studies of the geologic composition of the basin and the gradient of the aquifer. The cross sectional area of the aquifer is known and the ability of the aquifer to transmit water is used to determine the flow at different storage volumes. For the Santa Maria groundwater basin, the groundwater underflow loss to the Pacific Ocean has been estimated to be significant (as high as 16,000 AFY in 1918 with a very full basin).

Further Study: Guidelines must be developed regarding the timing, amount and rate of the withdrawals. More information is needed on the basin's storage capacity in order to determine if there is any adverse impact of water banking on natural recharge.

Other issues to be studied include whether in-basin water transfers could be used to increase use of the higher quality groundwater in the basin's east end, the cost effectiveness of this measure, and the possible pairs of willing participants which could benefit from these transactions.

(Source: Minutes 03 NOV 94; Santa Maria Valley Water Resources Report)

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H. Identification of well construction policies

Background:

Well construction policies are regulated by the state and the County Environmental Health Services.

Management Strategies:

Monitor the effectiveness of regulations and, if appropriate, propose modifications of standards, enforcement or monitoring found to be appropriate for the Santa Maria groundwater basin.

(Source: Minutes 20 OCT 94)

I. The construction and operation by the local agency of groundwater contamination cleanup, recharge, storage, conservation, water recycling and extraction projects.

NOT ADDRESSED

J. The development of relationships with state and federal regulatory agencies.

The MOU process allows cooperation with any interested state/federal agencies. The Department of Water Resources imports State Water Project water. The U.S. Bureau of Reclamation owns but SMWCD operates Twitchell Dam.

K. The review of land use plans and coordination with land use planning agencies to assess activities that create a reasonable risk of groundwater contamination.

NOT ADDRESSED

V.
BASIN MANAGEMENT COMMITTEE

A. Representation, responsibilities and funding.

The Santa Maria Valley Groundwater Management Plan will be administered through a Memorandum of Understanding (MOU) between the Santa Maria Valley Water Conservation District, the City of Santa Maria, the City of Guadalupe, California Cities Water, agricultural interests and the Santa Barbara County Water Agency. Committees will be established to make decisions regarding necessary studies and projects. Decisions on individual signatory participation in and funding of each project will be made on a case by case basis.

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Further study: Discussion and direction regarding the administration and cost of the monitoring program are needed.
(Source: Minutes 12 JAN 95)

B. Annual status report and review.

NOT ADDRESSED

C. Procedure for amendment of plan.

NOT ADDRESSED

VI.
FUTURE PROJECTS

A. Identification of potential recharge projects.

1. Enhanced Recharge of Laguna Sanitation Effluent

The Laguna Sanitation District currently discharges about 2400 AF of effluent a year. This effluent is spray irrigated on land underlaid by a perched zone, so the effluent provides little, if any, benefit towards recharging the Santa Maria Valley groundwater basin. There is the possibility of providing additional treatment and thereby allowing direct recharge of the Laguna effluent.

The Regional Water Quality Control Board classifies groundwater recharge into four categories:

1. Surface spreading - Organics Removed
2. Surface spreading - Reclaimed water (Tertiary Treatment)
3. Surface spreading - Oxidized and disinfected
4. Direct recharge by injection - Organics removal

There are also requirements that the reclaimed water be no more than 20 percent of the total recharge to the groundwater and that the recharged water travel a minimum distance between the infiltration and extraction sites.

There are two constituents of Laguna effluent that will be of primary concern to the Regional Board: TDS (including chloride levels) and nitrates. The nitrates could be handled by nitrification in a biofilter (such as artificial wetlands) and subsequent de-nitrification although the existing treatment plant may handle this process adequately.

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There are four basic options for addressing TDS levels:

1. Reduce TDS in Source Water. This would require California Cities to switch to its higher cost but lower TDS wells.

2. Ban Residential Water Softeners. State law forbids residential water softener bans. A current lawsuit by one of Southern California's major water districts may take the issue of conflicting state laws (water softeners versus discharge standards) to the California Supreme Court, but this lawsuit may take years to resolve.

3. Partial Demineralization. To reduce the TDS below the 1000 ppm limit would require treating a fraction of the wastewater effluent (probably 25 to 30 percent) by reverse osmosis or ion exchange and blending back the two effluent streams before final discharge. This would be the most expensive option.

4. Dilution. This alternative would involve blending the wastewater effluent with the runoff from the Orcutt surface runoff recharge system designed by Flood Control or with the runoff in one of the local creeks. This would be the easiest alternative, but the unreliability of runoff water could cause problems. Even though the Regional Board allows dischargers to measure the 20 percent mix requirement on an annual basis, the widely variable runoff quantities from year to year may make it difficult to consistently meet the dilution requirement.

The feasibility study for using the Laguna Sanitation District effluent to enhance groundwater recharge will consider alternatives 1, 3 and 4. Participants may include representatives from the Laguna Sanitation District, County Flood Control District, California Cities Water Company, the Water Conservation District and AB 3030 committee.

B. Supplemental sources of water

State Water Project: The Coastal Branch project and Mission Hills extension, which will bring State Water Project water into the Santa Maria Valley, is targeted for completion in mid-1996. Currently, the Cities of Santa Maria and Guadalupe are scheduled to receive 16,200 AFY and 500 AFY of State Water, respectively. The Southern California Water Company currently has the option to receive 500 AFY of water. The amount of water actually received by each entity depends upon the availability of project water.

Additional water may be available for purchase from other Coastal Branch contractors, particularly during early years of operation. This could be the basis of a groundwater banking scheme or be a means of improving water quality on a short term (5 - 10 year) basis.

Source: Santa Maria Valley Water Resources Report

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C. Seasonal storage projects

NOT ADDRESSED

VII.
IMPLEMENTATION OF PLAN

A. Action Plan

NOT ADDRESSED

B. Schedule

NOT ADDRESSED

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PROPOSED APPENDICES (To be developed)

Appendix A:	Minutes of Santa Maria Valley Groundwater Plan Meetings
Appendix B:	List of monitoring wells (County, City of Santa Maria, California Cities Water)
Appendix C:	Glossary of hydrologic terms

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Santa Barbara County Flood Control & Water Conservation District and Water Agency

123 E. Anapamu Street, Santa Barbara, California 93101
(805) 568-3440 Fax: (805) 568-3434

Phillip M. Demery
Public Works Director

Thomas D. Fayram
Deputy Director, Water Resources

February 22, 1995

TO: Santa Maria Valley Groundwater Management Committee

FROM: Rob Almy/Darcy Aston
Santa Barbara County Water Agency

RE: Santa Ynez Upland Basin management strategies

Attached is a copy of the Santa Ynez Upland Basin Advisory Committee's goals and strategies for groundwater management. The committee has established general guidelines for protecting the quality and quantity of water within the basin. This document is enclosed in response to the request by committee members to see examples of what is being done by other groundwater management plan efforts. This plan is still in draft form. If you have any questions about the Santa Ynez Uplands Basin plan, please call Alana Knaster at the Mediation Institute, (818) 591-9526.

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STETSON ENGINEERS INC.

• 2171 E. Francisco Blvd., Suite K • San Rafael, California 94901 • (415) 457-0701 • FAX: (415) 457-1638

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• 2651 W. Guadalupe Rd., Suite A209 • Mesa, Arizona 85202 • (602) 839-5910 • FAX: (602) 839-6560

MEMORANDUM

Reply to:

TO: Alana Knaster DATE: January 24, 1995

FROM: Oliver S. Page JOB NO.: 1126-16

Re: Establishment of Criteria to Implement Water Conservation Strategies - Santa Ynez Upland Basin

The Advisory Committee for the management of the ground-water resources of the Santa Ynez Upland basin has set general goals to protect and enhance the quantity and quality of water within the basin. Toward that end, they have established strategies for keeping the basin in balance. These strategies are grouped into three action phases as summarized below

Phase	Conditions and General Goals
I	The goal of this phase is to return the basin to a condition of balance by implementing measures on a voluntary basis that would reduce water consumption.
II	Activities under this phase would be implemented if Phase I measures fail to return the basin to a condition of balance due to severe drought, underestimated overdraft, or if the conservation goals under Phase I are not attained. Involves implementing voluntary and some mandatary conservation measures that reduce water consumption.
III	This phase is implemented if severe prolonged drought condition and/or severe overdraft not reversed by Phase II measures.

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Basin Monitoring

The goal of Phase I is to return the basin to a condition of balance by implementing measures on a voluntary basis that would reduce consumption. A target date for returning the basin to balance is the year 2000. In order to implement management strategies, the Advisory Committee needs to determine what constitutes returning the basin to balance. In general, when a basin is pumped at a rate greater than safe yield, water levels decline, ground-water storage is depleted and natural discharge is reduced.

Although it is often difficult to definitively quantify safe yield and overdraft, a basin's condition can be generally indicated by water-levels and changes in water levels in selected monitoring wells. Interpretation of water-level changes in conjunction with rainfall conditions can provide a good indication of the "health" of the basin or general indication of the status of overdraft. Actual changes in ground water in storage can be calculated from water-level changes and can provide an indication of overdraft.

The County currently has a water-level measuring program in the Santa Ynez Upland basin in which it measures, on an annual basis, the water levels in 45 wells. The

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2. In a few instances, two County measured wells are located immediately adjacent to each other and reflect nearly identical water level responses. In these cases, only one well was selected.

3. A few County measured wells for some reason were not measured in both 1993 and 1994. For the time being, these wells are excluded from the basin management monitoring program.

Based upon past experience with the County well measuring program, it can be expected that some wells will not be measurable every year, some wells will be dropped from the program and some wells will be added. This is not expected to impact the proposed basin management monitoring plan.

Proposed Basin Management Monitoring Program

A basin management monitoring program is proposed herein for consideration by the Advisory Committee. From a physical standpoint, the ground-water users of the Santa Ynez Upland basin are in a fortunate position in that because of the large quantity of ground-water in storage, the Advisory Committee has time and latitude to refine a monitoring program and resulting action alternatives. For example, if it is found that implementation of action conservation strategies are not accomplishing the Advisory Committee's goals, there is time to implement more stringent

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In most cases where water-level data are available these data indicate that the historical high water levels occurred in the late 1930's to early 1940's before ground-water development in the area was significant. However, recovery to these earliest high water levels as the Phase I goal is not practical or realistic. A new equilibrium has been established in the basin in connection with recent ground-water use. It is therefore recommended that recovery target levels to meet Phase I goals be based upon mid-1980 water-level highs. These target elevations for each monitoring well are shown on Table 2. Also shown on Table 2 is a Phase II action level, a level that when reached (water-level decline) would trigger Phase II strategies. Phase II action water levels reflect the water level at the wells at the end of the recent drought of the mid and late 1980's.

Utilizing the target recovery levels and the Phase II action levels shown on Table 2 and annual measured water levels, the applicable required strategy phase can be assigned to each well as shown on Table 2 for the 1994 water levels (example using the latest water-level data). Also shown on Table 2 is the required water level recovery needed to obtain the Phase I goal of basin recovery.

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included in the report would be the latest precipitation data and other information to assist the Advisory Committee in managing the basin.

The above suggested plan requires minimal analyses of available water-level data and is fairly simplistic. Because wells measured by the County's are not uniformly located throughout the basin and the measured water levels in some wells may represent an anomalous condition (i.e., well recently pumped before County measurement, etc.) water-level data are likely statistically skewed. A more rigorous alternative analysis would involves contouring the annual County water level measurements and comparing the average annual basin water-level with an average target recovery level and an average basin Phase II action level. This alternative methodology would require hydrogeologic interpretation, particularly in areas of no water level measurements or apparent anomalous water-level measurements.

Both the proposed management action plan and the plan requiring a more rigorous analysis could be applied to sub-management areas. In other words, different levels of conservation actions could be instituted in different parts of the basin.

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Table 2

BASIN MANAGEMENT ACTION REQUIREMENTS (1994)
SANTA YNEZ UPLANDS
(Feet)

Well #	Target Recovery Elevation	Phase II Action Elevation	1994 Elevation	Required Recovery	Indicated Action Level
6/29-6G1	830	821	823	7	Phase I
-7L1	674	661	668	6	Phase I
-8P1	693	686	686	7	Phase II
-9J1	789	775	789	0	No Action
6/30-1R3	751	731	749	2	Phase I
-7G6	537	511	510	27	Phase II
-9N1	617	601	604	13	Phase I
-11G1	628	602	610	18	Phase I
6/31-1P3	551	525	526	25	Phase I
-3A1	604	596	600	4	Phase I
-4A1	530	521	521	9	Phase II
-10F1	507	499	504	3	Phase I
-11D4	536	528	529	7	Phase I
-13D1	504	492	499	5	Phase I
7/29-29R2	1032	959	1007	25	Phase I
7/30-16B1	1068	1040	1065	3	Phase I
-19H1	948	942	947	1	Phase I
-19P1	853	844	848	5	Phase I
-22E1	916	913	913	3	Phase II
-27H1	847	837	847	0	No Action
-29D1	894	858	883	11	Phase I
-29N2	546	514	526	20	Phase I
-30M1	649	632	652	0	No Action
-33M2	552	519	529	23	Phase I
-35R1	653	606	616	37	Phase I
7/31-22A3	833	790	823	10	Phase I
-23P1	812	753	808	4	Phase I
-34M1	512	504	505	7	Phase I
-35K1	662	642	645	17	Phase I
-36L2	677	660	678	0	No Action
8/30-30R1	1244	1233	1233	11	Phase II
8/31-25K1	1185	1171	1177	8	Phase I
-25Q1	1200	1170	1175	25	Phase I

No Action	4
Phase I	24
Phase II	5

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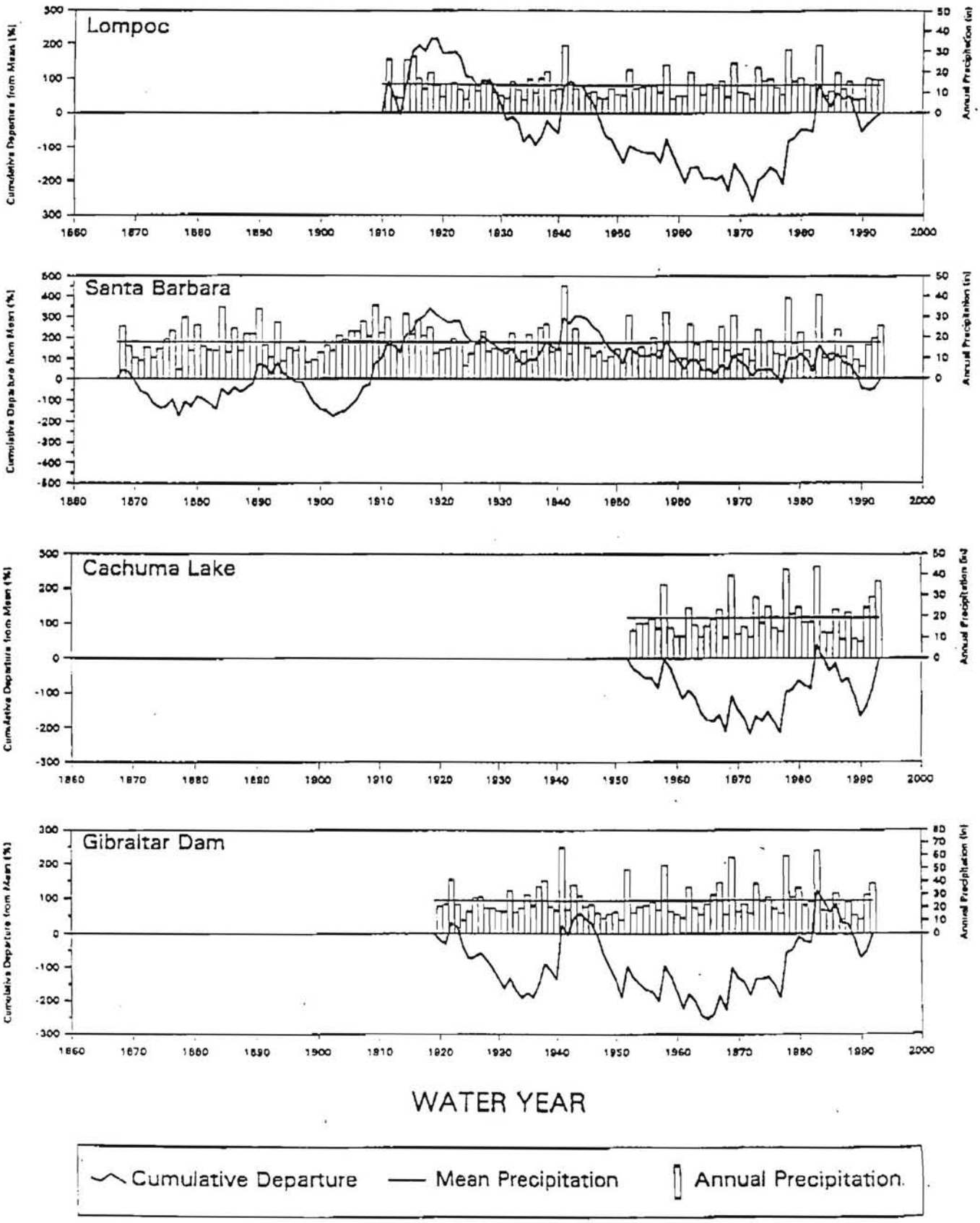
FIGURE 2



ANNUAL PRECIPITATION AND CUMULATIVE DEPARTURE FROM MEAN, LOMPOC, SANTA BARBARA, CACHUMA LAKE, AND GIBRALTAR DAM, CA

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SANTA MARIA VALLEY
WATER CONSERVATION DISTRICT

P. O. BOX 364 -:- PHONE (805) 925-5212
SANTA MARIA, CALIFORNIA 93456

December 30, 1994

To All Parties Interested in the Proposed Joint Groundwater Management Plan:

The next meeting of the ad hoc group for the formulation of a joint groundwater management plan for the Santa Maria Valley will be held on Thursday, January 12, 1994, at 2:00 P.M., at the Bonita Packing conference room, 1850 West Stowell Road, in Santa Maria.

The Bonita Packing office building is located on West Stowell Road, between Blosser Road and Black Road.

Please note that the meeting date has been changed from the tentatively scheduled January 5th date to January 12th. A number of participants felt that it would be convenient to allow a full week after the holidays before resuming committee meetings.

The committee meeting adjourned without an agreement as to the subject for the January meeting. I have discussed this matter with several members of the committee. All have agreed that, since there is no scheduled subject for discussion, the meeting should be devoted to a general discussion of how a joint water management plan for the entire Santa Maria Valley groundwater basin, if agreed to and adopted, should be administered. Most of the possible elements of the plan have been discussed. With the background previously presented, it is time to discuss the structure of a basin wide plan. Once the governmental structure for administering a plan is known in general terms, it should be easier to determine whether a joint plan should be adopted and to agree upon the elements of such a plan.

Enclosed to each of you are minutes of the November 17, 1994 committee meeting. The minutes for the December 8, 1994 meeting are not yet available. These minutes were again prepared by Pam Cosby of the Santa Barbara County Water Agency.

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Also enclosed to each of you is a copy of the attendance sheet of the December 8th meeting.

Yours very truly,

Maurice F. Twitchell,
Secretary

MFT:gn
Encls.

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SANTA MARIA VALLEY GROUNDWATER MANAGEMENT PLAN
MEETING MINUTES
November 17, 1994
FINAL

I. OPENING

The ad hoc group formulating the groundwater management plan convened about 3 p.m. in the Bonita Packing conference room.

II. FACILITATING CONJUNCTIVE USE OPERATIONS

A. City of Santa Maria

Maurice Twitchell explained that Dwayne Chisam from the City of Santa Maria had to meet with the Regional Water Quality Control Board on the City's Wastewater Treatment Plant permit and could not attend. Consequently, Santa Maria's presentation on conjunctive use of SWP water will be delayed to a later meeting.

B. California Cities

The next discussion topic was some questions remaining from the California Cities presentation at the November 3 meeting on their conjunctive use plans. Scott Slater and Roger Brett answered the questions as follows:

- o Banked Water Storage. The combined amount of State Water Project (SWP) water that California Cities and the other water purveyors are likely to store is a total of 30,000 to 100,000 acre feet (AF) for everyone. This water would be accumulated over several years.

- o Rejected Natural Recharge. One major concern was whether filling the groundwater basin with imported water would increase the amount of rejected natural recharge from local sources such as the Santa Maria River. California Cities said that the basin should be carefully managed so that normal local recharge is not reduced. If recharged waters are rejected, then the groundwater banking agreement should spell out that the stored imported water is "spilled" first and replaced by the local recharge. This is one consequence of assuming that the injected water floats on top of the local groundwater.

- o Percentage of Injected Water Recovered. The next question was what percentage of the injected SWP water can be recovered. Scott explained that the banking agreement should quantify an agreed upon percentage. In the Fox Canyon Groundwater Management Agency, the percentage is 100 percent. A lower

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percentage may be appropriate for the Santa Maria Basin if some of the injected water is not recoverable.

- o Impacts on Local Groundwater Users. Generally groundwater banking is considered environmentally positive. Groundwater tables will rise, reducing pumping costs. The injected SWP water will also mingle with native groundwater and improve water quality by lowering TDS. One of the Committee members' main concerns is the potential impact of a purveyor pumping all the stored water out during a short drought period, causing water tables to drop suddenly and water quality to degrade. This potential problem could be avoided if the groundwater management plan limits the rate of banked water withdrawals each year or during droughts.

- o Meet and Confer. Section 10753.4 of the State Water Code requires that local agencies adopting AB 3030 groundwater management plans within the same groundwater basin meet at least annually to coordinate their programs. This would apply if the SMVWCD and the M&I purveyors adopt separate plans.

III. NIPOMO MESA BASIN

The Department of Water Resources recently completed a $350,000 study of the southern San Luis Obispo County groundwater basins as part of a South County Area Plan EIR. Susan Ostrow with the San Luis Obispo County Planning Commission agreed to make a copy available to the Santa Maria Valley groundwater committee. As shown in the composite geologic map from that study (Attachment A), San Luis Obispo considers the north side of the Santa Maria River to be part of the Santa Maria groundwater basin while Santa Barbara County assumes the Santa Maria basin ends at the river. According to the report, the outflow in 1987 from the Nipomo Mesa Subunit was 300 AF/Y to Arroyo Grande Valley, 2800 AF/Y to the Santa Maria Valley, and 350 AF/Y to the ocean. Since the Nipomo Basin Subunit is in overdraft, there was some concern among committee members that Nipomo wanted to pump Santa Maria groundwater and export it to Nipomo. Susan assured everyone that that was not the case. Her interest in attending was to see how Santa Maria pumpers are handling the AB 3030 process and to suggest sharing technical data as possible.

IV. CALCULATING SANTA MARIA GROUNDWATER OUTFLOW TO THE OCEAN

Next, Rob Almy explained how groundwater outflow to the ocean is calculated. To calculate the Santa Maria groundwater outflow, three things need to be known:

1. Area of basin cross-section
2. Transmissivity/permeability of aquifer material
3. Water table gradient

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Each of these parameters can be estimated based on existing data. However, drilling additional monitoring wells near the ocean would allow a more precise estimate of the groundwater outflow to the ocean each year. The U.S.G.S. estimated that the annual outflow was 16,000 AF in 1918 and 8,000 AF in 1958. A current 1994 estimate is 6,000 AF per year. Essentially this means that the Santa Maria basin is being managed to maximize the safe yield. Each year 10,000 AF more water is being captured for use that historically would have flowed to the ocean. Compared to the available storage of more than 1 million AF and the total annual water consumption, the outflow each year is small.

Monitoring wells near the ocean would also help watch for potential seawater intrusion because a monitoring well will contain several piezometers, each completed to a different depth. Seawater intrusion due to a reverse hydraulic gradient typically appears first in the lower part of the aquifer. This is because seawater is heavier than fresh water and the line of contact runs diagonally from a point farther inland at the bottom than at the top. (See Figure 1.) If the upper zone monitoring well shows rising chloride levels before the lower zone wells do, then something else like contamination from surface water return flows is occurring. Another reason that seawater intrusion may occur in the upper aquifer first was demonstrated in Castroville. There the lower aquifer is confined and the upper aquifer is more heavily pumped than the lower aquifer.

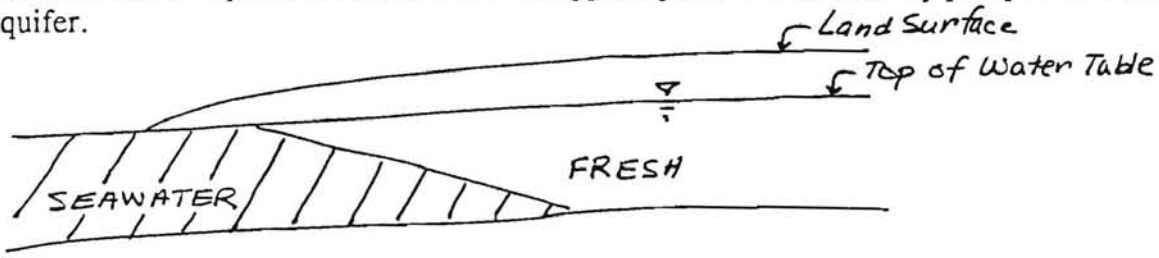

FIGURE 1

The two U.S.G.S. seawater intrusion monitoring wells for the Santa Maria basin are in the sand dunes just over the San Luis Obispo County line near the Union Oil facilities. Each well has four piezometers with depths ranging from 47 feet to almost 700 feet. Since the aquifer extends to about 2000 feet below the surface, seawater intrusion could still be occurring undetected at a depth deeper than 700 feet. Deeper monitoring wells would be required to be certain that seawater intrusion is not occurring.

A question was asked regarding the interaction between injecting water into the groundwater basin and the ocean outflow. Rob explained that mounding the injected water in the eastern part of the basin near Fugler Point, for instance, may not affect the water table gradient or increase the ocean outflow. Locating an injection well closer to the ocean near Black Road would more likely increase the ocean outflow.

Rob referred to the U.S.G.S. Santa Maria groundwater basin analysis in U.S.G.S. publication 1819. He will send a copy to Maurice Twitchell so interested parties can obtain a copy if they would like one.

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V. FOX CANYON GROUNDWATER MANAGEMENT AGENCY WORKSHOP

Pam Cosby reminded committee participants that the special workshop on the Fox Canyon Groundwater Management Agency (FCGMA) experience from the agricultural perspective will be held on December 8, 1994 from 1 to 4 p.m. at the Minami Center in Santa Maria. A flyer describing the discussion topics and listing the speakers is provided as Attachment B.

Pam and Scott Slater shared some of the lessons learned from the FCGMA:

- The results of the U.S.G.S. studies indicated that sources and rates of recharge were significantly different than had been assumed. The management plan may have to be modified to match the new understanding of the different aquifers and overpumping pressures.

- The basin management plan needs to address water quality as well as quantity.

- The agricultural pumpers have the choice of basing their pumping allocation on either their historical pumping rates (reduced every five years in 5 percent increments to 75 percent of their historical pumping rate by 2010) or to demonstrate an irrigation efficiency of at least 80 percent. If they choose the efficiency option, then the pumper can pump as much water as they need for their crops. The 80 percent efficiency is measured as crop consumptive water demand divided by the total water pumped (applied water rate). The consumptive water use for each crop type is estimated weekly and annually by a Fox Canyon consultant based on the evapotranspiration (ET) rate for the particular crop and on the rainfall and evaporation rates measured at the closest monitoring station to the property. Several monitoring stations are located throughout the Fox Canyon basin area.

  Most of the agricultural pumpers have chosen the efficiency option since they can focus on the needs of their crops rather than historical pumping rates. More importantly, the emphasis on water use efficiency has allowed the farmers to significantly reduce their energy and fertilizer costs. Overall agricultural water demand has dropped considerably, thus reducing total groundwater pumping and helping to bring the Fox Canyon basin into balance.

VI. LAGUNA WASTEWATER TREATMENT PLANT EFFLUENT

R. C. Upham, Manager of the Laguna Sanitation District, discussed the existing wastewater effluent disposal system for their treatment plant. About 2400 AF/Y is spray irrigated over 500 acres of pasture land. The irrigation site overlies a perched aquifer, so the wastewater effluent cannot directly enter the groundwater basin as it does at the Santa Maria Wastewater Treatment Plant site. In recent years the effluent TDS level has averaged about 1090 TDS and peaked at

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slightly over 1200 ppm, primarily due to the high TDS of the Orcutt water supply and the prevalence of self-regenerating water softeners.

The group discussed ways that the Laguna wastewater effluent could be reused to help reduce the basin overdraft. If the effluent water quality was better, the Regional Water Quality Control Board might allow direct recharge of the effluent. There are three basic ways to improve effluent quality: 1) Improve the source water quality, 2) Prohibit regenerative water softeners, and 3) Increase wastewater treatment. California Cities controls the first alternative, improving source water quality, by their selection of water sources. Adding the expected 500 AF of State Water Project (SWP) water will reduce TDS by only 18 ppm, an insignificant improvement. Switching to different wells could improve the water quality during low water use periods, however, there would be a significant increase in water production costs.

Last year the Laguna Sanitation District tried to implement the second alternative by banning water softeners within their district. In response to a successful legal challenge, the District had to rescind the residential softener ban. Santa Maria, which also had its water softener ban challenged in the same court action, rescinded its residential water softener ban but was able to retain its large industrial/commercial water softener ban. Since that ban went into effect in September 1993, the Santa Maria wastewater treatment plant's TDS levels have dropped significantly.

Implementing the third alternative, increasing wastewater treatment, would be costly for the Sanitation District. In addition, any alternative involving direct use or recharge of the wastewater effluent would require Regional Board approval. Even so, the groundwater committee participants expressed an interest in piping treated Laguna plant effluent to unconfined areas of the Santa Maria Valley for direct use or groundwater recharge.

The City of Guadalupe treats about 400 AF/Y of wastewater and has similar problems with its effluent quality although the TDS level is slightly lower than Laguna's.

VII. OVERDRAFT AND PERENNIAL YIELD ESTIMATES

The last item was a presentation by Brian McCord with Pacific Engineering on how overdraft and perennial yield estimates are made. Copies of his overhead slides are provided as Attachment C. Brian based his Master of Science thesis on a hydrological analysis of the Sisquoc groundwater basin, one of eight storage units within the Santa Maria Valley.

As shown on page C-1 of Attachment C, there are three methods of calculating the amount of overdraft in a groundwater basin: A) the Groundwater Storage Method, B) using a Hydrologic Equation, and C) Computer Modelling.

A. Groundwater Storage Method

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The first method, the Groundwater Storage Method, begins with exploring the surface and subsurface geology of the basin and estimating the basin's cross-sectional area. Brian used the original U.S.G.S. study by Worts (pages C-2 to C-4) and modified them using available oil and water well logs to show projected faults (page C-5). Next he designated each Sisquoc Basin boundary as impermeable or as a flux/underflow boundary (page C-6). Then using measured well levels (C-7), he calculated the basin's specific yield. The basin specific yield is the percentage of the total basin storage that can be pumped out. The remaining water that can't be pumped out is called the specific retention. Finally, the storage increase or decrease was calculated based on the well water levels in different years and the basin cross-sectional area.

B. Hydrologic Equation

The basic hydrologic equation method is to estimate the basin inflow (recharge) and outflow, then subtract the inflow from the outflow (page C-1). The precipitation that goes to recharge is estimated as rainfall minus evapotranspiration. It is hard to estimate since recharge is affected by the rainfall duration, intensity and other factors. Blaney of the U.S.G.S. assumed arbitrary maximum infiltration rates for each vegetative type, and specifically that all annual rainfall over 12 inches for irrigated land, 15 inches for grassland, and 18 inches for marsh land would go to basin recharge.

Stream recharge is the largest recharge source in the Santa Maria Valley. Stream flow entering the basin less flow leaving the basin is the recharge. The U.S.G.S. stream gauging stations provide some of the needed data (page C-8). Other sources of recharge are artificial recharge such as wastewater effluent and estimates of underflow from adjacent groundwater basins.

Outflow is the combined amount of basin underflow to adjacent basins, evapotranspiration (which depends on land use and crop type,) surface flow out of the basin, and pumping rates. Pumping rates are hard to determine for the Santa Maria Valley since there are few well meters. The U.S.G.S. used the Southern California Edison electrical demand for the valley and assumed that a certain percentage of the electricity was used for pumping wells. Alternatively, the pumping rate can be estimated based on the consumptive water demand and estimated return flow for the irrigated crop land.

Once both the inflow (recharge) and outflow are estimated, the net recharge or overdraft is calculated by taking the difference between the two. For best results, hydrologists typically estimate the overdraft by both the groundwater storage and hydrologic equation methods. If the overdraft estimates agree, than the hydrologist can have confidence in his/her estimates. If they do not agree, then there is a problem with one or both of the two overdraft estimates.

C. Computer Modelling

Computer models can vary from computerized versions of the two other methods to complex models such as contaminate transport or vulnerability models. Once the computer model is set up, the modeller calibrates the model to make the calculated results match actual empirical field

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data. The computer models can also be modified to look at water quality as well as water quantity. An example would be the gross salt balance approach to see the effect of groundwater use and reuse on water quality.

Rob Almy suggested that a sensitivity analysis be used to identify which modelling assumptions have the most impact on model results. It is also important to identify what pumping period will be used as the baseline. Pumping data for the Santa Maria basin beginning in 1918 is assumed to start with a full basin since that was the end of a long wet period when the groundwater aquifer would have been fully recharged.

D. Conclusions Regarding the Santa Maria Basin

Brian believes that there is more recharge coming into the Santa Maria Basin from the Sisquoc Basin then has previously been assumed. Cat Canyon and Bradley Canyons could be large storage areas south of the Sisquoc basin. It also appears that the best recharge areas would be Fugler Point to the 101 Freeway and the area from Gary Road to Betteravia Road. This is also the deepest section of the aquifer. Richard Adams pointed out that he has annecdotal evidence that the water table in the area near Betteravia Road and east of the 101 Freeway has higher water tables levels now than 30 years ago. This would be useful to investigate.

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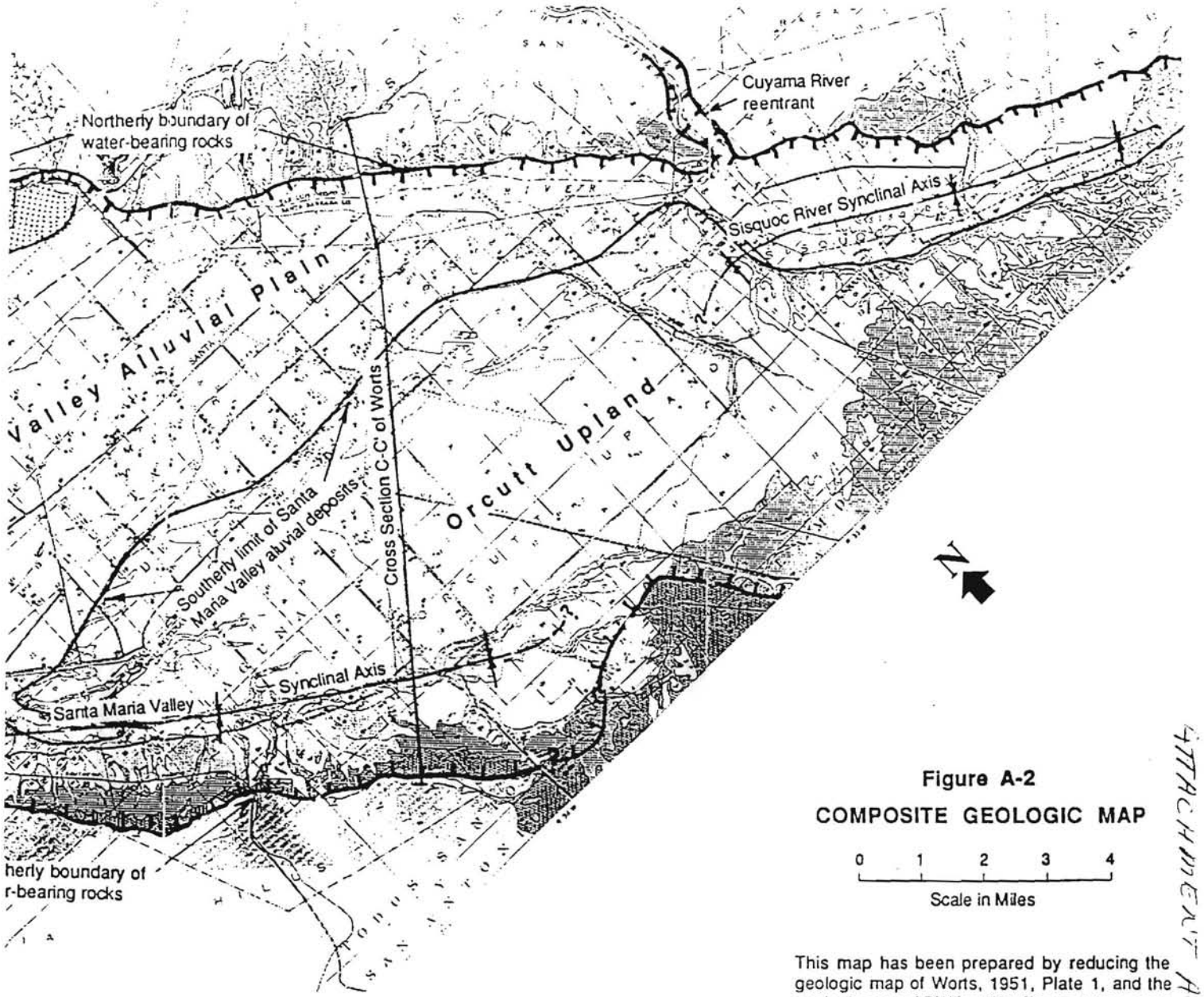

Figure A-2

COMPOSITE GEOLOGIC MAP

This map has been prepared by reducing the geologic map of Worts, 1951, Plate 1, and the geologic map of DWR, 1979, Figure 4, to a scale of 1"=2 mi. and combining them at the Santa Barbara/San Luis Obispo County line, the southern limit of the DWR map. Major structural features, stratigraphic units, and lines of cross section discussed in the text of this report are enhansed for ease of identification.

ATTACHMENT A

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ATTACHMENT B

GROUNDWATER MANAGEMENT WORKSHOP
THE FOX CANYON GROUNDWATER MANAGEMENT AGENCY EXPERIENCE

PURPOSE: At a joint meeting of the Santa Maria, Santa Ynez Uplands, and Buellton Groundwater Management Committees, several persons involved with the formation and ongoing administration of the Fox Canyon Groundwater Management Agency (GMA) will share their perspectives on the local groundwater management process.

DATE AND TIME: Thursday, December 8, 1994
1 to 4 p.m.

LOCATION: Minami Center
600 West Enos
Santa Maria, California

(From the 101 Freeway, take the Stowell Road exit and head west. Turn left on Depot Road. The Minami Center is located at the intersection with Enos.)

SPEAKERS:

SAM McINTYRE
ProAg, Inc., Fox Canyon GMA Board member representing large agricultural water pumpers.

MIKE CONROY
Conroy Farms, Inc., Fox Canyon GMA Board member representing small agricultural water pumpers.

REX LAIRD
Ventura County Farm Bureau, Involved with initial GMA formation.

TOPICS:

- Groundwater management from an agricultural perspective.
- How their viewpoints have changed from the initial groundwater management discussions to today.
- Benefits of locally controlled groundwater management
- How GMA regulations have affected their farming operations
- Success of agricultural efficiency program
- Developing cooperation among agricultural and urban water users

There will be plenty of time for questions and answers from the audience.

FOR MORE INFORMATION:

Call Pam Cosby, Santa Barbara County Water Agency, at (805) 568-3545.

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HYDROGEOLOGIC BASIN ANALYSIS

Overdraft and Perennial Yield Estimates

GROUNDWATER STORAGE METHOD

1. Determine Volume of Storage
2. Measure Standing Water Levels
3. Calculate Storage Increase/Decrease

HYDROLOGIC EQUATION

1. Determine Inflow Element Quantities
   - A. Precipitation
   - B. Stream Recharge
   - C. Artificial Recharge
     (Recycled Water, Return Flow, etc)
   - D. Underflow

2. Determine Outflow Element Quantities
   - A. Underflow
   - B. Evapotranspiration
   - C. Pumping
   - D. Surface Flow

3. Subtract Inflow from Outflow

COMPUTER MODELLING

1. Calibration
2. Validation

C-1

ATTACHMENT C

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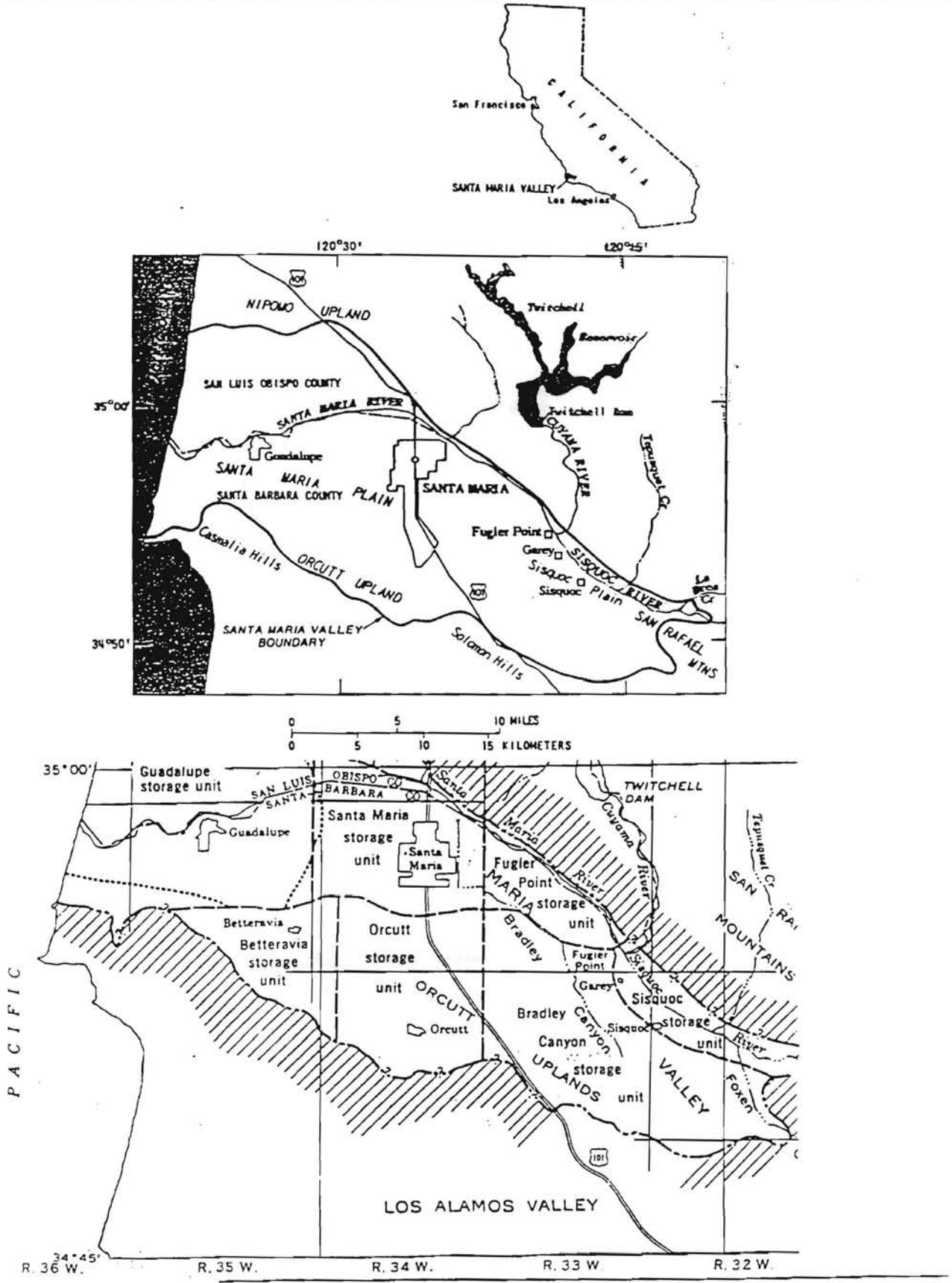

Figure 1 Location Of Sisquoc Storage Unit
After Miller and Evensen (1966)

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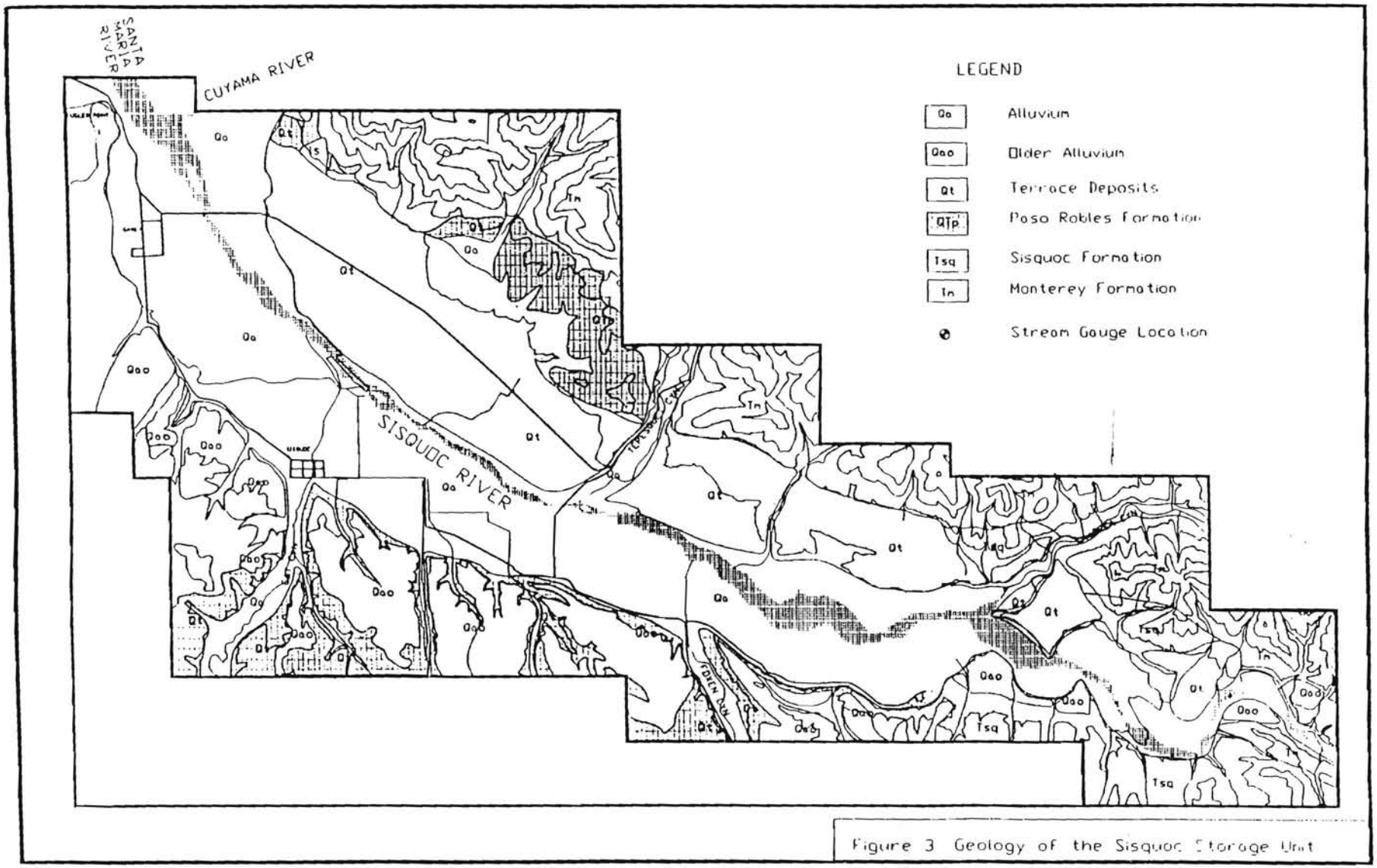

Figure 3 Geology of the Sisquoc Storage Unit

C-3

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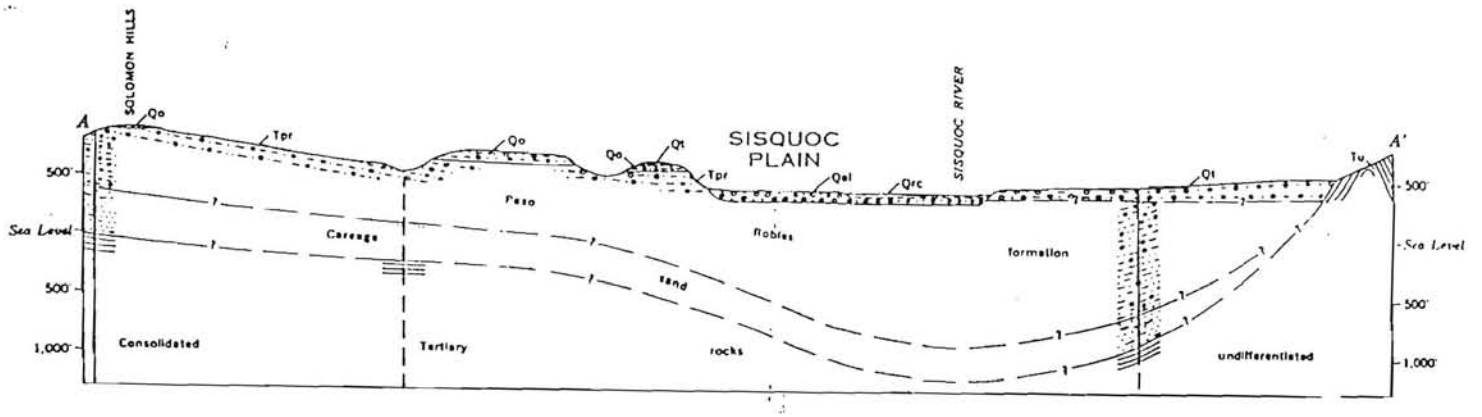
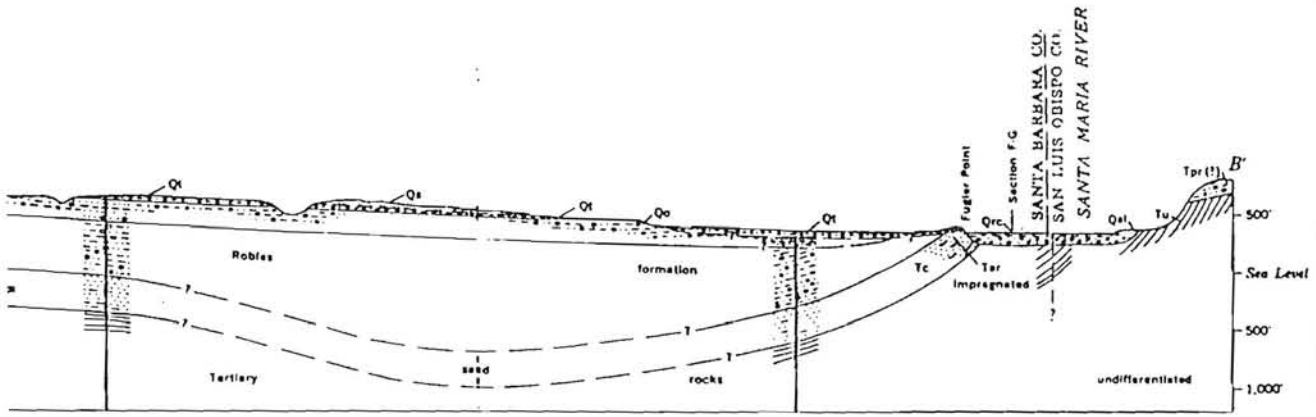
Worts (1951)

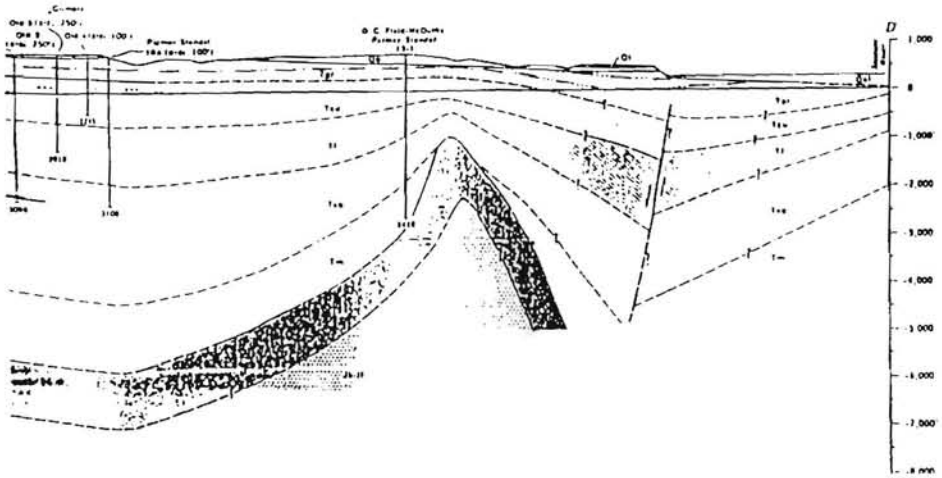


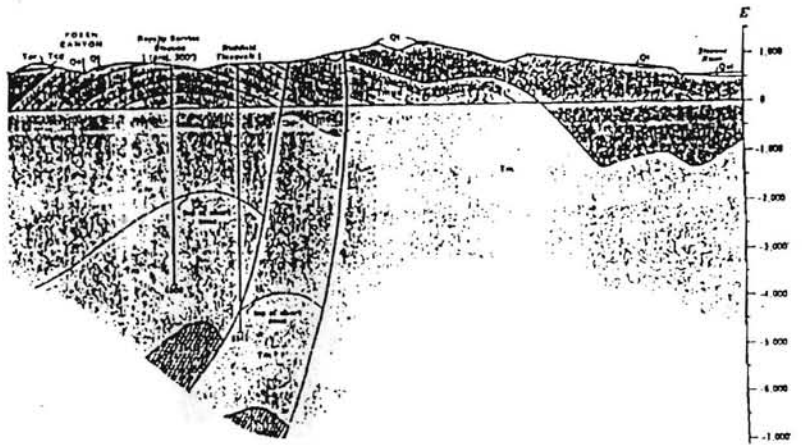
EXPLANATION

Qs, Dune sand; Qrc, River-channel deposits; Qal, Alluvium;
Qt, Terrace deposits; Qo, Orcutt formation;
Tpr, Paso Robles formation; Tc, Careaga sand;
Tu, Consolidated Tertiary rocks undifferentiated;
Jk, Franciscan and Knoxville (?) formations

Oil wells shown by vertical lines; dashed where projected







Woodring and Bramlette (1950)

Figure 5 Geologic Cross Sections From Worts (1951) and Woodring and Bramlette (1950)

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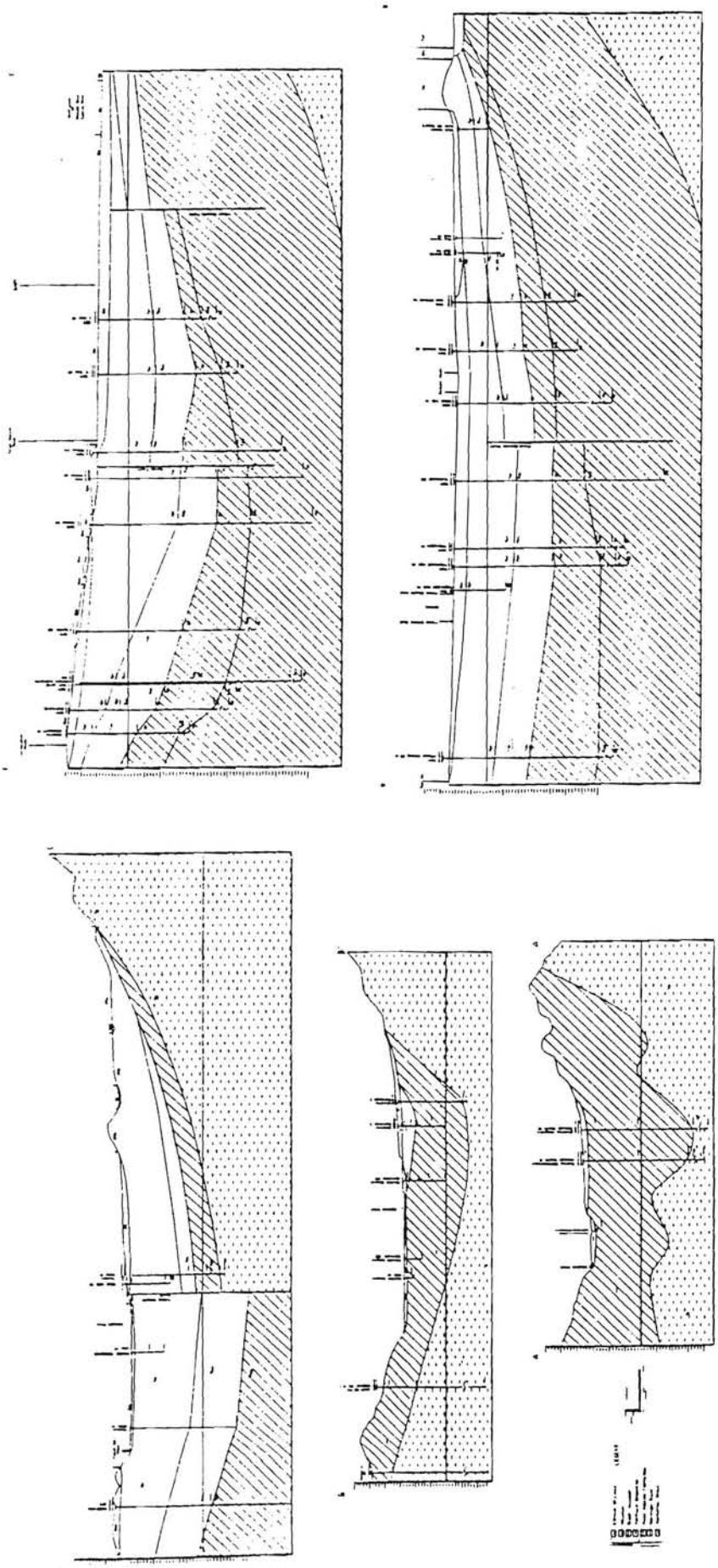

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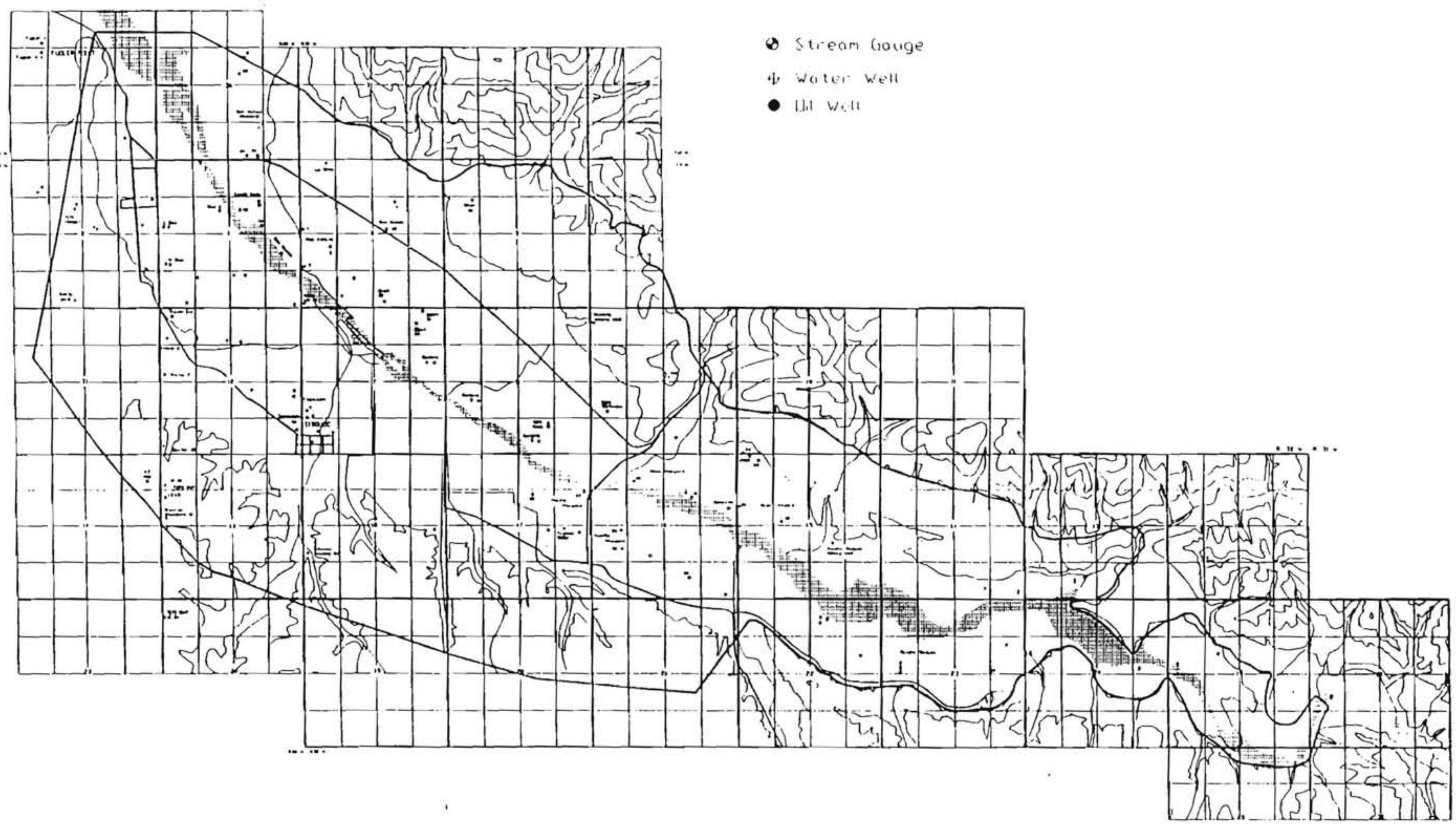

Figure 13 Sisquoc Storage Unit Boundry

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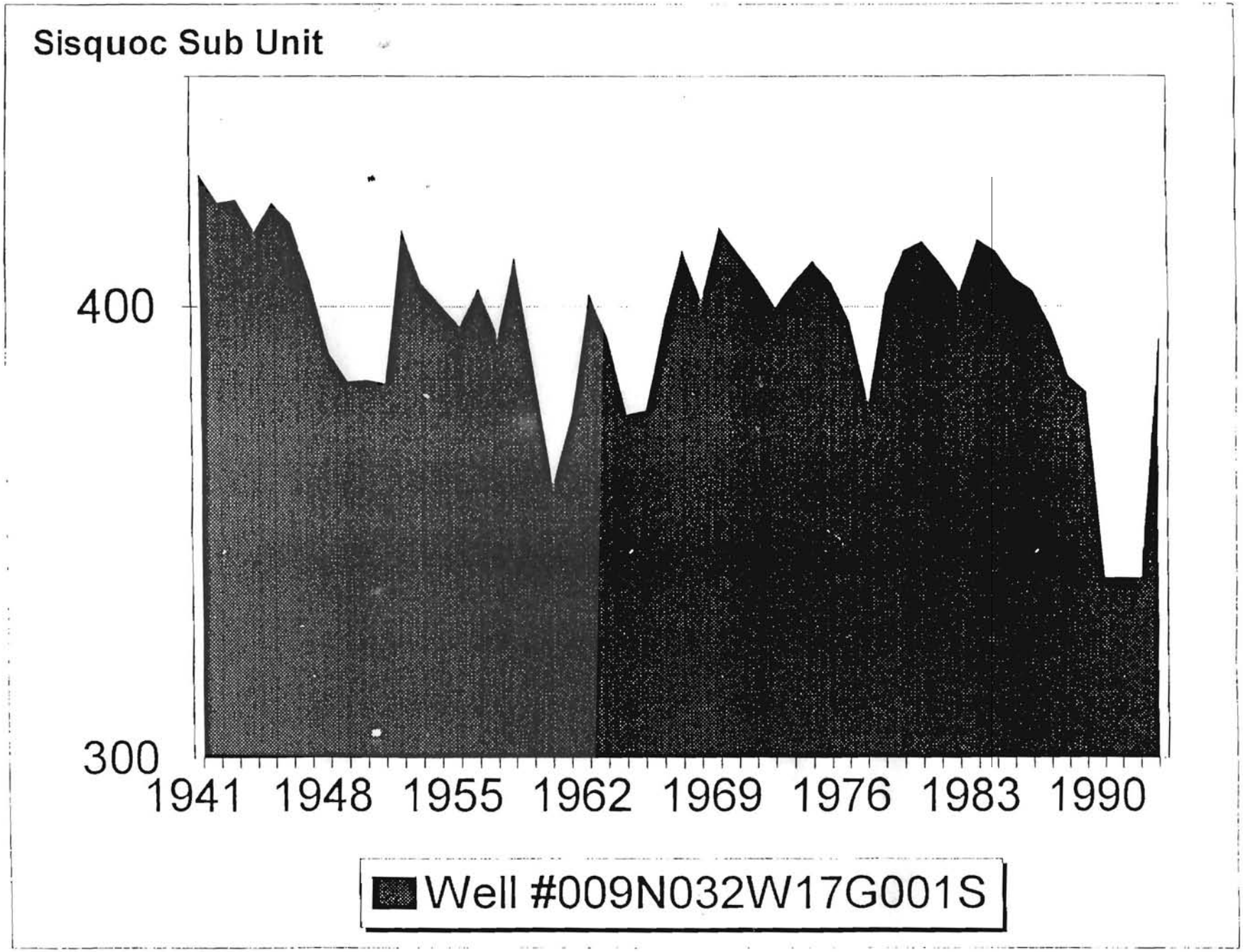

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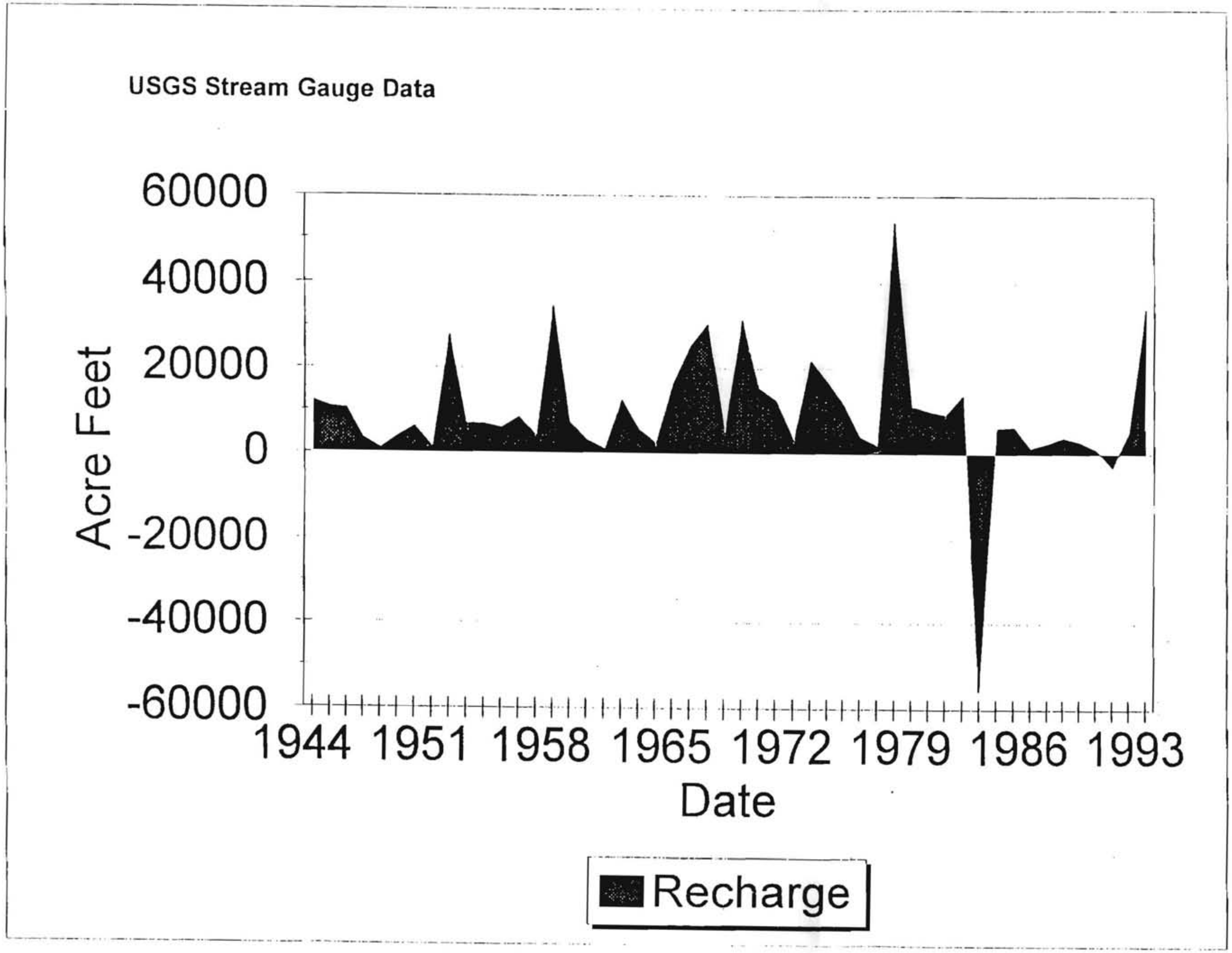

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