FINAL

VENTURA COUNTY WATER MANAGEMENT PLAN

November 1994

VOLUME I
GOALS, POLICIES AND PROGRAM RECOMMENDATIONS

Prepared by
Ventura County Resource Management Agency
Ventura County Public Works Agency

Table of Contents

Figures

WATER MANAGEMENT PLAN
CHAPTER 1, VOLUME I, GOALS, POLICIES
AND PROGRAM RECOMMENDATIONS

EXECUTIVE SUMMARY

I. INTRODUCTION

Water is an important resource in Ventura County. The proper management of this limited resource is vital to meet the current and future demands of urban, industrial, agricultural and in-stream water uses. This Ventura County Water Management Plan addresses water supply sources including groundwater, surface, imported and reclaimed water as well as alternative resources such as conjunctive use and desalination. Demand management programs which are addressed include drought planning, mandatory rationing and several water conservation programs. A variety of water quality issues affect Ventura County water resources. Quality issues discussed in this plan include wastewater and package treatment plants, seawater intrusion, septic tanks, urban stormwater runoff, abandoned water wells, agricultural runoff, aggregate resource management and naturally occurring contaminants. The purpose of this Water Management Plan is part of a continuing County effort to maintain and improve the management and quality of county water resources.

Chapter 1 of this volume briefly describes the history of water management planning, water supply, demand and quality issues, and county water management structure and responsibilities. Chapter 2 of this volume outlines the goals, policies and programs proposed in this plan and includes a matrix which identifies all water issues, responsible agencies, programs, time frames for completion, implementation feasibility, result of inaction and possible funding sources. Chapter 3 describes the 1980 plan recommendations, the status of those recommendations and lists the 1994 recommended programs. In a separate document, Volume II, the Technical Appendix, further describes the legislative background and provides more detail on water supply, demand management and quality issues. Volume III, Comments and Responses, includes all comments and responses made during the public review period of the Draft Water Management Plan (July 1993).

II. HISTORY OF 208 WATER QUALITY MANAGEMENT PLANS

The Federal Water Pollution Control Act, commonly known as the Clean Water Act, was originally enacted in 1948. The Act was amended by the Federal Water Pollution Control Act Amendments of 1972 (Public Law 92-500) by Congress with the primary purpose of "restoring and maintaining the chemical, physical and biological integrity of the Nation's water" and "to achieve a level of water quality by July 1983, which provides for recreation in and on the water; and for the propagation of fish and wildlife." Section 208 of the amendments and the requirements of the Code of Federal Regulations (CFR's) specified general designation procedures, time constraints, grant funding criteria, and minimum

plan content requirements. Ventura County was designated as a 208 planning area in 1974.

Funded by a Federal 208 grant, Ventura County undertook a comprehensive assessment of its water quality problems between 1975 and 1978. The initial 208 Water Quality Management Plan (WQMP) was adopted in 1978 by 23 local agencies. The plan recommended short term programs to remedy those water quality problems which required immediate attention, as well as governmental action aimed at enhancing water quality over the long term. The Ventura Regional Sanitation District was the lead agency for the initial 1975 to 1978 effort. In October of 1978, the Board of Supervisors of Ventura County was designated by the State to implement the Plan, as well as the continuing planning program.

From 1979 to 1980, the Ventura County Water Quality Planning Program continued by identifying additional water quality issues, updating the Population/Land Use forecasts and reevaluating the 1978 Water Quality Management Plan's Regional Goals and Policies. As a result of these efforts, the 1978 plan was updated, revised and adopted by the County Board of Supervisors as the 208 Areawide Water Quality Management Plan (1979-1980). Additional information on the contents of the 1978 and 1980 Areawide Water Quality Management Plans are provided in Volume II, The Technical Appendix.

Following review of the Areawide Water Quality Management Plan the County Board of Supervisors adopted Resolution No. 431 establishing a countywide plan for the protection, preservation and enhancement of countywide water resources. The resolution (see Appendix B at the end of this volume) summarizes the direction given by the Board to address seawater intrusion, water conservation, two specific water reclamation projects, local state water entitlements, and the Sespe water rights issue. The status of these projects and issues are addressed in Chapter 3, Program Implementation Status. Additional background information is available in the 1978 and 1980 Areawide Water Quality Management Plans at the County Resource Management or Public Works Agencies.

Today, in 1994, the County continues the Water Quality Management Planning Program effort by updating the 1980 plan to include the developments of water management planning during the last fourteen years. This update is referred to as the Water Management Plan Update as requested by the Water Management Plan Review Subcommittee which included representatives of the Countywide Planning Program (CPP) and Association of Water Agencies (AWA). This document fulfills the requirements of Section 208 of the Clean Water Act. This plan has been updated with the intention to include: 1) compliance with current legislation; 2) update of technical data base to provide an adequate information base for decision making; 3) to provide a comprehensive planning document to be consistent with other regional plans; and 4) a plan formatted to assure easy

referencing and updating. Chapter 2 of this volume details the specific goals, policies and program recommendations of this Water Management Plan. Chapter 3 summarizes the implementation status of 1980 Plan recommendations. Volume II, the Technical Appendix, addresses in more detail, legislative history of water management planning and water supply, demand management and quality issues.

The following discussion of water supply and demand issues and related program recommendation are also intregal to meeting the quality needs of the County.

III. CURRENT WATER SUPPLY AND DEMAND

The discussion below briefly summarizes current countywide water supply and demand patterns. Ventura County's water supplies are obtained primarily from three sources: surface water, groundwater, and imported water. Surface water supplies approximately 10.5% of the countywide water demand, groundwater 67%, imported water 22% and reclaimed water .5%. Countywide water demand is about 425,500 acre feet per year (AF/Y), per capita use is approximately .23 AF/Y. Approximately 74% of the county's residents receive some or all of their domestic water from imported supplies. In 1992, approximately 68% of the water demand was used by agriculture, 22% by residential and 10% by commercial and industrial uses.

Currently, countywide water demand is greater than locally available water. This condition has resulted in the overdraft of groundwater resources and increasing dependence on imported water supplies. Overdrafted groundwater aquifers have resulted in seawater intrusion of aquifers, rendering portions of the local aquifer system degraded, useless and/or in need of expensive treatment. State imported supplies depend on snowpack and rainfall. As witnessed in the fifth year of drought, state water purveyors had no choice but to mandate cutbacks making state water a somewhat unreliable source. Local surface water supplies also suffer during drought and cannot supply water at volumes previously supplied. These conditions point to the fact that even several water sources cannot be relied upon to meet countywide water demands during drought.

Although currently in 1994 while some water officials have determined the drought over, other experts disagree, saying that California could have full reservoirs and an adequate supply of water and still be in the midst of a drought (MWD, 1994). This condition can exist because there really are two types of drought; meteorological drought and institutional drought. A meteorological drought occurs when rain or snow for a set period of months or years falls below normal. Institutional drought develops when demand exceeds the physical capabilities of the water distribution system regardless of weather patterns. Political, legal and economic limitations may also hinder delivery of available supplies. Although conditions, both Statewide and locally, have improved

dramatically since the meteorological drought of the late 1980's and early 1990's, the need to continue planning efforts to ensure an adequate and reliable water supply in the short term, long term and during both meteorological and institutional drought conditions still exists.

Ensuring adequate water supplies is essential, however, demand management is also a critical component in any strategic water management plan. Water demand management, more commonly referred to as the efficient use of water, can prevent and/or delay the need to develop new water supply projects which can be expensive and take years to complete. The efficient use of water can result in immediate water savings and eliminate wasteful and unnecessary use of water. Due to the simplicity of efficiency programs, most are less expensive, easier and faster to implement than water supply projects. In addition, demand management programs usually don't require exhaustive engineering studies or environmental review.

IV. PRIORITY SUPPLY PROJECTS AND DEMAND MANAGEMENT PROGRAMS

The previous 1980 Water Management Plan Board recommendations combined water demand management (water conservation) and water supply projects in a priority list. The priority list for this update has been divided into two categories; demand management programs and supply projects. The purpose of the two categories is to illustrate the distinct differences between demand management programs and the development of supply projects. Since the previous 1980 Board recommendation, demand management programs have evolved dramatically and are considered a separate and distinct element in short and long range water management planning. It is still recommended that demand management programs remain a high priority.

The following list (Figure 1.1) of supply projects and demand management programs could provide for a diverse network of water resources and demand management techniques to meet the varied water needs of the county. Supply projects and demand management programs are listed in columns side by side to illustrate the need to balance the supply and demand factors of water resource management. The order in which the projects are listed is designed to provide a general priority list. One project listed above another indicates only that the project would "overall" be more easily, inexpensively or in some manner more efficient at meeting a water quantity or quality need, however, the list should not be rigidly interpreted. These projects were evaluated subject to a variety of factors including cost, quality, storage and other factors. These factors are addressed in Volume II, Technical Appendix, of this plan in the water supply and demand chapter.

A brief description, of each program or project is included below. For more information refer to Volume II, the Technical Appendix.

FIGURE 1.1 RECOMMENDED DEMAND MANAGEMENT PROGRAMS AND SUPPLY PROJECTS

DEMAND MANAGEMENT PROGRAMS	SUPPLY PROJECTS*
DROUGHT PLANNING Programs to be implemented during drought to reduce water demands, including new development offsets, plumbing retrofits, require new development to use reclaimed water, water efficient landscaping, etc. Costs are paid back through water savings. Tiered rate structures and water allocations limit water use by providing an economic incentive to use water efficiently. Moratoriums prohibit new water connections, preventing additional water demands. Moratoriums are considered temporary measures.	CONJUNCTIVE USE Conjoining resources, includes sharing, storage and banking. Usually considers highest and best use of water based on quality. Costs vary, less than new projects. Quality varies. Requires cooperation among water districts and applicable agencies. Most recent example is State Project Water injected into Lower Aquifer System north of Moorpark by Calleguas Municipal Water District.
OVERDRAFT AND SEAWATER INTRUSION ABATEMENT PROGRAMS To reduce overdraft and seawater intrusion, groundwater pumpers in the Oxnard Plain are required to reduce extractions, allocations are based on historic use. An 80% irrigation efficiency is acceptable. However, pumpers could pay fines and still use water inefficiently.	RECLAIMED WATER Treated wastewater suitable for beneficial uses such as wetlands, agriculture, golf course, park and other landscape irrigation. Costs and quality vary depending on source. Requires distribution infrastructure. Requires cooperation among water treatment agencies, end users and others.
COUNTYWIDE WATER CONSERVATION PROGRAM The Conservation program consists of public education programs to encourage efficient use of water for urban, agricultural, business and industrial uses. Information disseminated through a variety of mediums; school presentations, news releases, seminars, etc. Program reaches all sectors. No fees.	DESALINATION Desalination of brackish or seawater removes salt to produce water of a quality acceptable for urban, agricultural or industrial use. Costs vary - can be high. Quality depends on required end use. Requires disposal of brine.

FIGURE 1.1 RECOMMENDED DEMAND MANAGEMENT PROGRAMS AND SUPPLY PROJECTS (continued)

DEMAND MANAGEMENT PROGRAMS	SUPPLY PROJECTS*
U C COOP Assists farmers in learning about efficient irrigation practices through seminars, pilot demonstration projects and other mediums. Program reaches farmers countywide. Requires change in practices.	STATE PROJECT WATER Current imported water entitlement of 20,000 AFY. A high quality source could meet potable water demands. Cost high due to required delivery system. Not a reliable source during drought.
RESOURCE CONSERVATION DISTRICT Provides a limited number of water audits, assists farmers in efficient irrigation practices through a variety of mediums. Program reaches farmers countywide. No fees, however, service is on a first come first serve basis until funds are gone (DWR funds annually).	GROUNDWATER TREATMENT (Salt Balance Pumping) Treatment of groundwater currently not used due to poor quality (high salt or other mineral content). Cost and yield vary. Quality depends on end use required.
INSTREAM USE Determine Instream flow requirements to restore and maintain, the instream beneficial uses, such as fish and wildlife habitat, etc. Coordination with State Fish and Game.	GRAVEL BASIN STORAGE PROJECT Pilot project would use a reclaimed sand and gravel mining site as a groundwater recharge and storage basin. Costs and yield unknown. May assist in abating seawater intrusion and enhance supply.

As illustrated in above table, many projects and programs could be implemented to provide a diverse network of supply sources and demand management programs to provide a comprehensive approach to countywide water resource management.

The order in which the above programs are listed is not meant to be a strict priority listing. It may be that after more thorough study of alternatives, ranking order may change.

NOTE: The Vern Freeman Diversion Project was completed in early 1991.

*

V. QUALITY ISSUES SUMMARY

Water quality issues that are addressed in this plan include point and non-point sources. Point sources are those that are from a well defined source of origin such as a wastewater treatment plant. While non-point sources are more difficult to define and originate from more widespread sources such as urban stormwater runoff. Point sources include wastewater treatment plants and package treatment plants. Non-point source pollution issues include seawater intrusion, individual sewage disposal systems (septic tanks), urban stormwater runoff, abandoned water wells, agricultural runoff, aggregate resource management and naturally occurring contaminants. In addition, the restoration and protection of surface water and groundwater is also addressed. Erosion control and emergency flood control issues which were included in the 1980 plan are discussed briefly in this Volume I as both issues are considered to be resolved following adoption and implementation of the Hillside Erosion Control Ordinance and 1980 Board directed recommendations regarding emergency flood control.

The following is a very brief description of each quality issue addressed in the plan. Refer to Volume II which presents a chapter on each issue in more detail. Following analysis of the water quality issues addressed above, several quality issues have been identified as first priority issues; abandoned water wells and their relationship with seawater intrusion, individual sewage disposal systems (in some areas) urban stormwater runoff, agricultural runoff and instream water use requirements.

Abandoned wells can act as conduits for surface pollutants, subsurface pollutants and poor quality groundwater to enter useable aquifers. Currently it appears water from seawater intruded or high chloride content aquifers is the most significant pollutant entering and degrading the groundwater basins. Aquifers beneath the Oxnard Plain include some areas intruded by seawater or contaminated with high chlorides. Some wells are perforated in both the upper intruded aquifers and the lower uncontaminated aquifers. Perforation of a well in both aquifers could create the potential for the well to act as a conduit for seawater or other contaminated groundwater to enter the lower aquifers resulting in degradation of the lower aquifers.

Seawater intrusion of local groundwater aquifers is a critical problem in the Oxnard coastal plain area. The overdrafting of aquifers has resulted in the depletion of water supplies, lowering of water levels and water degradation from seawater intrusion. Although preliminary results from the United States Geological Survey (USGS) Regional Aquifer System Analysis (RASA) Study indicates that the area intruded by seawater is considerably less than previously thought, nevertheless a large area of the Oxnard Plain aquifers contain high chloride levels rendering the groundwater resource unusable.

Individual sewage disposal systems (septic tanks) still exist in some areas of the County. With the use of advanced systems, failures have been reduced. However in several areas of the County, septic tank use has become a groundwater quality issue. In areas where groundwater provides the local drinking water source, septic tanks may be the single or one of several sources of high nitrates. In recent years, high nitrate levels in El Rio wells were rendered unusable for several months.

Urban stormwater runoff can be a significant source of water pollution. Urban stormwater runoff consists of stormwater or other sources of flowing water, which wash away pollutants that have been previously deposited on urban surfaces. Pollution sources in urban runoff include oil and grease, diesel emissions and leakage, car exhaust, pesticides, fertilizers and many other sources. Stormwater runoff is collected by a network of ditches, drain pipes, and gutters which collect runoff from streets, parking lots and other surfaces and is discharged into rivers, creeks, streams, lagoons, bays and eventually the ocean. The runoff can result in the contamination of these receiving waters.

Agricultural runoff can also result in the contamination of receiving waters. Agricultural runoff is water used for agricultural irrigation that runs off the irrigated land into receiving waters and/or percolates into groundwater basins. Approximately 100,000 acres of farmland in the County is irrigated agriculture and therefore has the potential of contributing to the agricultural runoff problem. Agricultural runoff is considered a non-point pollution source due to the pesticides, fertilizers and sediment the water carries with it from many agricultural sites throughout the County. In addition to the irrigation runoff, a substantial portion of agricultural runoff is a result of storm flows which can carry tons of sediment. This polluted runoff can degrade groundwater and surface resources that provide water for a variety of uses, including urban, commercial, agricultural, recreational and environmental uses such as wetlands. Once contaminated, these water bodies may require expensive treatment or cause a loss of beneficial uses if treatment is not a feasible alternative. Mugu Lagoon, a wetland which provides life sustaining habitat for certain plant and animal species (including several threatened and endangered species) is a prime example of a contaminated area that cannot be treated. Dredging to remove contaminated sediment would cause further environmental damage to the habitat.

Issues determined to be second priority issues are considered significant, but not in need of immediate program recommendation implementation include wastewater treatment plants and package treatment plants, aggregate resource management, and naturally occurring contaminants. Recommendations are made to address these issues and reduce the associated problems.

Although several wastewater treatment plants in the County need to improve their level of treatment, on a Countywide level, treated wastewater effluent is not considered a first priority water quality issue. The majority of wastewater

treatment plants comply with the effluent discharge requirements of their respective National Pollutant Discharge Elimination System (NPDES) Permits.

Package treatment plants are similar to conventional wastewater treatment plants but with smaller capacity, generally no more than 100,000 gallons per day. Package plants can provide sanitary sewer services to relatively remote areas without the need for extending costly sewer lines and serve areas where septic tanks are no longer an appropriate means of sewage disposal. However, such plants may induce urban growth in open space and rural areas by providing such a service and must be monitored on a daily basis to ensure proper functioning. When proposed package plants are analyzed on a case by case basis and conditioned appropriately, the use of package plants are not considered a priority water quality issue.

Aggregate resources, including sand, gravel and crushed rock represent a significant volume of mineral resources extracted within the County. These resources play an important role in surface and groundwater hydrology and quality. The aggregate material acts as a sponge and filter to hold water in the riverbed as it percolates into groundwater basins below, cleansing the water as it percolates. The mining of these resources can cause water quality degradation of groundwater and the loss of water resources. Currently, the County uses a Conditional Use Permit (CUP) process to regulate mining operations. All discretionary permits for mining include conditions to mitigate potential environmental impacts including water quality degradation and water losses. Although the CUP process appears effective, it may be necessary to strengthen the monitoring capabilities of the County to ensure compliance with imposed conditions.

Naturally occurring groundwater contamination is caused from mineralization. Mineralization is the addition of inorganic substances usually dissolved from surface or aquifer material to groundwater. Some inorganic substances include chloride, sodium and boron. As greater amounts of these elements are dissolved in groundwater, quality falls outside potable elements. Highly mineralized groundwater is unsuitable for many human uses. Mineralization is measured in "total dissolved solids" or TDS. TDS is measured in milligrams per liter (mg/l). California State standards for community drinking water limits TDS to 1,000 mg/l per California Title 22. In several groundwater basins in the County, TDS levels regularly range from 1,000 to 2,000 mg/l with some measuring as high as 2,700 mg/l. Although no recommendations can actually solve the problem of naturally occurring contamination, recommendations are made to treat or blend the lower quality water so it can be used for potable purposes.

The following Figure 1.2, Recommended Quality Programs, provides a brief review of each quality issue and summarizes the intent of the program recommendation being proposed to address the various quality issues.

FIGURE 1.2 RECOMMENDED WATER QUALITY PROGRAMS

FIRST PRIORITY ISSUES	SECONDARY PRIORITY ISSUES
ABANDONED WATER WELLS Abandoned wells act as conduits for surface and subsurface pollutants and poor quality groundwater to enter useable aquifers aggravating the seawater intrusion problem. Recommendation is to revise existing well ordinance to strengthen County enforcement. Prevent continued groundwater degradation.	WASTEWATER TREATMENT PLANT EFFLUENT Majority of wastewater treatment plants currently comply with effluent discharge requirements of National Pollutant Discharge Elimination System (NPDES) permits. Recommendations are to assist where feasible plant modifications to improve discharge effluent quality.
SEAWATER INTRUSION Overdrafting of aquifers has resulted in the depletion of water supplies, lowering water levels and water degradation from seawater intrusion. Recommendations include continuance of monitoring programs, conservation of existing supplies, support existing seawater intrusion abatement program, Support Fox Canyon GMA groundwater extraction reduction ordinance and projects providing supplemental water and intrusion abatement.	PACKAGE TREATMENT PLANTS Package treatment plants are similar to wastewater treatment plants, but with smaller capacity. Although such plants may induce urban growth and must be monitored daily they can replace septic systems which are contributing to public health and safety problems. Recommendations are made to size and restrict plants for single-purpose facilities.
INDIVIDUAL SEWAGE DISPOSAL SYSTEMS (SEPTIC TANKS) In areas where groundwater provides the local drinking water source, the use of individual sewage disposal systems (septics) have become a groundwater quality issue. In recent years, high nitrate levels in El Rio rendered wells unusable for several months. Recommendations include update of County sewer policy, continue monitoring problem areas, identify areas where septics directly or indirectly contribute to groundwater contamination. Additional recommendations are made for specific problem areas such as Santa Rosa Valley and El Rio.	AGGREGATE RESOURCE MANAGEMENT The mining of aggregate resources from riverbeds can degrade groundwater quality and cause water losses. Recommendations are made to strengthen conditions and monitoring capabilities and, if deemed necessary, further restrict the depth to which aggregate can be mined, although each project will be addressed on a case by case basis.

FIGURE 1.2 RECOMMENDED WATER QUALITY PROGRAMS (continued)

FIRST PRIORITY ISSUES	SECONDARY PRIORITY ISSUES
URBAN STORMWATER RUNOFF Urban stormwater runoff wash away pollutants into the stormwater system which is discharged into rivers, creeks and eventually the ocean resulting in contamination of these receiving waters. Recommendations include a public education program and litter ordinance to reduce pollutant generation, improved street sweeping, programs to reduce specific pollutants, increase on-site ponding, reduce impervious surfaces and evaluate new technologies for treating specific pollutants in stormwater runoff.	NATURALLY OCCURRING CONTAMINATIONS Naturally occurring contamination from minerals render groundwater basins useable due to high TDS and nitrate levels. Recommendations are to treat and/or blend this lower quality water to provide a potable source.
AGRICULTURAL RUNOFF Agricultural runoff is agricultural irrigation water that runs off the irrigated land into receiving waters. The runoff is considered a non-point pollution source due to pesticides, fertilizers and sediment that enter receiving waters. Calleguas Creek, which empties into the Mugu Lagoon, provides habitat for plant and animal species (including several threatened and endangered) has been identified as impaired from such contamination. Recommendations include support of existing water conservation programs, ordinances, toxic substances, monitoring programs and increased opportunities for disposal of pesticides and herbicides that are no longer legal.	

This chapter is a summary of all water supply, demand management and quality issues which are addressed in more detail in Volume II of the Water Management Plan, Technical Appendix. In Volume II, Technical Appendix, programs are listed at the end of each water issue discussion. In this chapter, overall goals are provided for general water management.

Policies have been formulated to provide a course of action or method and to direct support or promotion of a project or action; protection of a resource; and prevention or reduction of detrimental effects. Generally, policies have not been specifically quantified or written in compulsory terms (unless already mandated).

Unlike some issues such as air quality or land use, water management in Ventura County falls under the purview of many entities. This plan is a comprehensive review of a resource which may be managed or controlled by the County, cities, special districts, agencies, and mutual companies. What may be an appropriate policy for one district, may be inappropriate for another. Also, the level of significance and degree of policy implementation will vary from district to district throughout the County. For this reason, and at the request of reviewing agencies, the policies are written to provide some degree of flexibility and choice.

The policies are to be carried out by the County, cities and water districts. The responsible agencies are specified in the corresponding programs for each water issue. The programs presented in this plan are an action or coordinated set of actions to carry out the overall goals and policies in the plan.

The goals, policies and programs were developed through coordination with responsible agencies, the Countywide Planning Program Advisory Committee, the Association of Water Agencies and public review and comment. Many of the policies and programs listed are existing and ongoing programs, some are not mandatory and will be carried out at the discretion of the responsible agency, depending upon economic and technical feasibility.

A Water Management Plan Program Implementation Matrix (Figure 1.3) follows this summary which identifies all water issues, responsible agencies, programs, time frames for completion, implementation feasibility, and result of inaction and possible funding sources.

OVERALL REGIONAL WATER RESOURCES AND QUALITY GOALS:

1. Protect the County's water resources for use by urban, agricultural, industrial, recreational, educational or other in-stream uses.

2. Restore and maintain the chemical, physical and biological integrity of surface and groundwater resources.

3. Manage the County's water resources to maximize water use efficiency through adequate water supplies and water demand management.

4. Provide adequate water of a quality which at minimum conforms to or surpasses State and Federal standards.

WATER RESOURCES AND QUALITY; GOALS, POLICIES AND PROGRAMS

I. WATER SUPPLY

A. Conjunctive Use

Policies:

1. Encourage conjunctive use projects to conjoin resources, including sharing, storage, banking, injection and extraction projects.

2. Promote the highest and best use of water based on quality.

Programs:

1. Coordinate or support conjunctive use projects on a case by case basis by assisting water agencies, districts and cities to implement projects to conjoin water resources including, sharing, storage, banking, injection and extraction projects (County Pubic Works Agency, {PWA}, Water Resources Division, cities, Association of Water Agencies {AWA}, water districts).

B. Reclamation

Policy:

1. Where feasible, require the use of reclaimed water for beneficial uses such as wetlands, agriculture, golf course, park and other landscape irrigation or industrial uses.

Programs:

1. Provide assistance to wastewater treatment agencies, water districts and agencies and end users and others to support and coordinate reclaimed water projects (PWA, Water Resources Division, AWA, Wastewater Agencies).

2. Assist, where appropriate, in the marketing of the use of reclaimed water to dispel public fears, (PWA, Water Resources Division, AWA, wastewater agencies) etcetera.

C. Groundwater

Policies:

1. Protect existing groundwater resources and prevent or discourage new development (agricultural or urban), which would degrade groundwater, from locating on aquifer recharge areas.

2. Continue to support and encourage County, Fox Canyon Groundwater Management Agency (GMA) and United Water Conservation District programs which address overdraft.

3. Promote treatment of groundwater currently not used due to poor quality except where overdraft would occur.

Programs:

1. Explore mechanisms to discourage development from locating on groundwater recharge areas where such development could degrade groundwater or interfere with recharge capabilities (PWA, Water Resource Division, Resource Management Agency {RMA}, Planning and Environmental Health Division, Fox Canyon GMA, Ojai Basin GMA).

2. Coordinate with the Regional Water Quality Control Board to determine the designation of the Forebay as a sole source aquifer (PWA, Water Resources Division, RMA, Environmental Health and Planning Divisions, Fox Canyon GMA, cities).

3. Require land use design which will capture water for groundwater recharge and maintain aquifer recharge areas (PWA, Water Resources Division, RMA Planning Division, Fox GMA, Ojai Basin GMA).

* Also, see Water Conservation and Seawater Intrusion and other quality issue recommendations related to groundwater use and quality.

D. Desalination

Policy:

1. Encourage regional and/or individual desalination projects where appropriate to increase existing water supplies.

Program:

1. Monitor, coordinate, and where appropriate, assist water agencies and jurisdictions in the coordination and/or development of desalination projects (PWA Water Resources Division, AWA, cities).

E. Imported State Water

Policy:

1. Promote the obtainment of the current imported water entitlement of 20,000 AFY.

Program:

1. Coordinate and assist, where appropriate, water agencies and government entitles in obtaining the current imported water entitlement of 20,000 AFY (PWA Water Resources Division, AWA, United WCD, Casitas MWD, City of Ventura).

F. Instream Uses/Surface Water

Policies:

1. Promote the development and maintenance of minimum instream flow requirements for county rivers, creeks and wetlands to restore and maintain beneficial uses.

2. Protect existing surface water resources, prevent or discourage development and/or activities which would degrade surface water quality (see policies for urban stormwater runoff and agricultural runoff).

Programs:

1. Coordinate with the State Department of Fish and Game's Stream Flow Evaluation Unit to determine instream flow requirements to

maintain and restore instream beneficial uses, such as fish, wildlife habitat, recreation, education and scientific interests (RMA Planning, Ventura County Flood Control District {VCFCD}, State Fish and Game).

2. Develop programs to prevent the transport of pollutants from entering receiving waters, see program recommendations for urban stormwater runoff and agricultural runoff (RMA Planning, PWA Water Resources, VCFCD, cities).

II. WATER DEMAND MANAGEMENT

The following policies and programs address both agricultural and urban water demands.

A. Drought Planning

Policies:

1. Promote drought planning by water districts, agencies and governmental jurisdictions in order to provide reasonably priced quality water in the event of a drought (program recommendation d. and h. are to be implemented during a declared water shortage emergency only.

2. Encourage tiered rate structures and water allocation to limit water use by providing an economic incentive to use water efficiently (Program recommendation 3. to be implemented during a declared water shortage emergency only).

Programs:

1. Implement recommendations in Board adopted Drought Action Plan as listed below (RMA Planning Division, cities, Water District).

   a. Require new development to offset the additional water demand the new development would generate (through retrofit programs).

   b. Require ultra-low-flow plumbing retrofits at time of property sale or improvement.

   c. Subsidize an ultra-low-flow plumbing retrofit program.

d. Limit new discretionary and ministerial development during drought emergencies.

e. Initiate conservation program and measures to reduce water use at City and County facilities.

f. Require specified new and existing uses (such as golf courses, cemeteries, etc.) to use only reclaimed or other non-potable water.

g. Mandate water efficient landscaping and irrigation systems for new development and changes of use for existing discretionary development.

h. Defer installation of required landscape during drought.

i. Allow for graywater use through existing standards and consider amendments of County Building Code Ordinance to include the use of graywater for residential landscape irrigation (Uniform Plumbing Code, Appendix G, 1994).

j. Mandate water conservation and water waste ordinance to minimize water waste by defining and prohibiting water waste practices. Assess penalties for water waste.

k. Require meters on all connections to monitor water use, and assist in enforcing existing and proposed water allocations.

2. Reasonable tiered rate structures should be implemented by all water purveyors to encourage efficient water use practices (Water districts, cities).

3. Water allocations should be established based on historical use and/or efficient water use for all land uses (Water districts, cities).

4. Moratoriums on new water hookups should be implemented only after the declaration of a water supply emergency (Water districts, cities).

B. Countywide Water Conservation Programs

Policy:

1. Continue and enhance existing Countywide Water Conservation Program efforts to educate the public through current programs, and new programs should be encouraged.

Programs:

1. Continue countywide water conservation education program and enhance by expanding program and coordination with water agencies and cities throughout the County (RMA Planning Division, cities AWA).

C. University of California Cooperative Extension Program and Resource Conservation District Programs

Policy:

1. The University of California Cooperative Extension Program (UC COOP) and Resource Conservation District (RCD) efforts should continue and be enhanced to educate agricultural water uses countywide.

Programs:

1. Continue support and coordination with UC COOP and RCD agricultural public education efforts (UC COOP, RCD).

D. The Fox Canyon Groundwater Management Agency

Policy:

1. Preserve groundwater resources within the Fox Canyon Groundwater Management Agency (GMA) boundaries.

Program:

1. Continue support of GMA Ordinance No. 5.3 and other programs to preserve groundwater resources within agency boundaries (Fox Canyon GMA).

E. Ojai Basin Groundwater Management Agency

Policy:

1. Preserve groundwater within the Ojai Basin Groundwater Management Agency boundaries.

Program:

1. Continue support of the Ojai Basin Groundwater Management Agency and their goals of preserving groundwater within agency boundaries for the protection of agricultural, municipal and industrial uses (Ojai Basin, GMA).

III. WATER QUALITY ISSUES

Point Source Pollution

A. Waste Water Treatment Plants

Policy:

1. Support State Regional Water Quality Control Board enforcement efforts to ensure wastewater treatment plants comply with discharge requirements.

Program:

1. Encourage, and assist where feasible, the improvement of wastewater treatment facilities to improve the quality of wastewater discharge effluent to comply with NPDES permit requirements (PWA Water Resources, Ventura Regional Sanitation District, wastewater districts, cities).

*Also, see recommendations addressed above for water supply/reclamation.

B. Package Treatment Plants

Policies:

1. Package plants are discouraged where development of such plants would cause current adopted population limits to be exceeded, or would encourage step out development.

2. Package plants are encouraged where development of such plants are a cost effective and an equitable means of public services, would reinforce orderly, controlled phased development, but would not result in duplication of public services.

Programs:

1. Encourage the use of package plants to replace existing septic systems where septic systems are contributing to public health and safety problems (RMA Environmental Health Division).

2. All proposed package plants shall be consistent with the goals and policies of the County General Plan (RMA Planning Division).

3. Package plants should be sized and explicitly restricted to serve only the single-purpose site and its facilities and be consistent with Regional Quality Control Board criteria (RMA Planning and Environmental Health Divisions).

4. The water quality impacts of proposed package plants shall be analyzed as part of the environmental document prepared for projects on a case by case basis (RMA Planning Division).

5. Continue to use existing criteria for package plant evaluation. The 1980 208 Plan does not explicitly prohibit package plants, nor does it contain explicit policies or criteria on how such plants should be evaluated. New package plants could be approved under the current 1994 208 Plan if they meet four criteria:

   - Package plants would not cause the current population limits of the 208 Plan to be exceeded;

   - Package plants are a cost-effective and equitable means of distributing public services;

   - Package plants would not result in a duplication of public services; and

   - Package plants would reinforce existing policies and plans for orderly, controlled, and phased development, and would not encourage step-out development.

Non-Point Source Pollution Issues

A. Seawater Intrusion Abatement

Policies:

1. Continue to support and encourage County, Fox Canyon Groundwater Management Agency (GMA), United Water Conservation District (UWCD) and United State Geological Survey (USGS), Seawater Intrusion Monitoring abatement projects.

2. Protect, and where feasible, enhance aquifer recharge areas.

3. New wells in the Oxnard Plain pressure basins shall not be allowed if they would increase seawater intrusion in the underlying aquifers.

4. Support and encourage projects that increase recharge to and/or decrease extractions from intruded aquifers.

Programs:

1. Continually assess the seawater intrusion conditions:

   a. Continue existing groundwater monitoring programs including the annual seawater intrusion monitoring study. Modify monitoring as necessary. Where lateral seawater intrusion in suspected, stable isotope analysis of samples should be performed (PWA Water Resources Division, United WCD, USGS, Fox Canyon GMA).

   b. Monitor progress on the USGS, Regional Aquifer Systems Analysis (RASA) study and UWCD/USGS seawater intrusion modeling studies scheduled for completion in 1993-94. Develop and implement necessary follow-up programs (UWCD, USGS, PWA Water Resources Division).

2. Conserve Existing Water Supplies

   a. Continue to support all water conservation programs and encourage full implementation of best management practices for urban, agriculture and industrial uses (PWA Water Resources Division, RMA Planning Division, UWCD, Fox Canyon GMA).

b. Support the beneficial recycling of wastewater and appropriate water conservation measures while recognizing the extent to which some treated wastewater is already recycled following discharge (PWA Water Resources Division, RMA Planning, AWA, wastewater districts, cities).

3. Protect and Enhance Existing Water Supplies

a. Support County and UWCD full implementation of the Oxnard Plain Seawater Intrusion Abatement Project according to adopted operating criteria (PWA Water Resources Division UWCD).

b. Continue to enforce Ventura County Well Ordinance NO. 3991 which prohibits construction of Upper Aquifer System (UAS) wells in areas where they would cause overdraft or seawater intrusion and requires the proper destruction of wells (PWA Water Resources Division). See Section D on Abandoned Water Wells for recommendations which are also applicable to the seawater intrusion problem.

c. Support the Fox Canyon Groundwater Management Agency adopted groundwater management plan and ordinances designed to eliminate overdraft and seawater intrusion (Fox Canyon GMA).

d. Support projects which will provide supplemental water and/or assist in stabilizing safe yield extraction while at the same time with regard for environmental concerns including but not limited to (PWA Water Resources Division, Fox Canyon GMA):

- The five stage Lower Aquifer System Contingency Plan. (See Volume II Chapter 4.2).

- GMA Ordinance 5.3 which limits and controls groundwater pumping with the goal of eliminating groundwater overdraft by year 2010.

B. <u>Individual Sewage Disposal Systems/County Service Area 32 (Septic Tanks).</u>

<u>Policies</u>:

1. Installation of on-site septic system shall meet all applicable State and County regulations.

2. The Environmental Health Division shall continue to take all administration, fiscal and legal measures necessary to provide the services of County Service Area 32.

Programs:

1. Update County's sewer policy to include latest Regional Water Quality Control Board policies regarding the use of septic systems on subdivided lots (PWA Water Resources Division, RMA Environmental Health Division).

2. Continue to monitor areas where septic system problems exist and encourage public sewering wherever feasible (PWA Water Resources Division, RMA Environmental Health Division).

3. Identify areas where septic systems directly or indirectly contribute to groundwater contamination and investigate methods to eliminate and/or reduce the introduction of nitrates to groundwater (PWA Water Resources Division, RMA Environmental Health Division).

4. Specific Problem Area Options (RMA Environmental Health, PWA Water Resources).

Santa Rosa Valley

- Discourage individual disposal systems and require future discretionary development to connect to a sewage treatment plant;

- Consider larger minimum lot sizes where individual septic systems are permitted in areas where groundwater is used as a drinking water source.

El Rio/Nyeland Acres

- Designation of a Groundwater Protection Area

- Collection, treatment and disposal of domestic wastewater

- Obtain imported State Water supplied from Oxnard for drinking water, will require annexation

- Obtain use of additional areas for groundwater recharge to increase local available water supplies
- Determine sources, implement blending of high and low nitrate well waters
- Tie nitrate blending system to the Oxnard-Hueneme water system

C. Urban Stormwater Runoff

Policies:

1. Reduce, and prevent where feasible, the generation of pollutants that contribute to the urban stormwater runoff problem.

2. Treat or contain runoff containing pollutants or contaminants at the source where feasible.

3. Reduce, and prevent where feasible, the transport of pollutants from the site of pollution generation to the stormwater system and receiving waters.

4. Implement permit requirements of the National Pollution Discharge Elimination System (NPDES) as outlined in the Ventura Countywide Stormwater Quality Management Program.

5. Maintain, restore or enhance the beneficial uses of receiving waters affected by urban stormwater runoff.

6. Assess whether a pollutant control option simply transfers pollution from one medium to another, or whether it actually reduced pollution at the source.

Programs:

1. General Public Outreach and Education using VCFCD prepared material through: displays at community events, stenciling of a "No Dumping" message on catch basins by municipal staff and volunteer groups, speaking at engagements, and incorporating a stormwater message into educational materials on existing programs. For cost reduction, the NPDES permit seeks to achieve stormwater pollution control through modifications to existing programs whenever possible.

2. Initiation of a "Clean Business" Approach to Pollution Control including: on-site field investigations of automobile service businesses and restaurants, on-site education about observed pollutant sources and control measure, on-site feedback from the business owners/employees, follow-up inspections, awards and incentives for businesses that achieve adequate pollutant control, and development of new ordinances, if necessary, to enforce practicable controls.

3. Development of standard reporting and evaluation procedures for existing infrastructure management practices to determine the effectiveness of the existing programs and better track observations of illicit discharge.

4. Each co-permittee has identified priority areas within their jurisdiction for controlling illicit discharges to the storm drain system. These areas will be investigated, dischargers will be educated, and if necessary, enforcement action for control will be taken. Simi Valley and Oxnard have begun inspections for stormwater pollutants in some of their priority areas.

5. Implementation of planning procedures for development projects to address pollutant sources during development. Educational material will be prepared and workshops conducted for the land development community as the procedures are revised.

6. Development of model stormwater pollution prevention plan (SWPPP) for construction sites as a training tool to educate contractors, their employees, and public agency inspectors on proper steps to take to reduce pollution entering the storm drain system at construction sites.

7. During three storms per year, outfall monitoring will be conducted at selected sites to characterize stormwater runoff from different urban land uses in Ventura County. Results of the sampling will be analyzed to produce pollutant load estimates, identify long-term runoff quality trends, evaluate receiving water quality impacts, and assess management program effectiveness. The monitoring program is presently being conducted at five urban locations. Three additional locations will be required by the NPDES permit for fiscal year 1994/95.

8. Administration of the Ventura County Hillside Erosion Program by the Resource Conservation District (RCD).

9. Administration, financial accounting and preparation of annual reports and other documents for submittal to the Los Angeles Regional Water Quality Control Board (LARWQCB) by VCFCD as required by the permit.

10. Planning for full implementation phase - Preparation of Countywide program approaches and material for use in implementing the NPDES program in subsequent years (after 1994-1995) for the duration of permit.

D. Abandoned Water Wells

Policy:

1. Prevent the unauthorized abandonment of wells through active enforcement and strengthen current enforcement capabilities.

Program:

1. Revise existing well ordinance 3991 to strengthen County policing authority to enforce the timely destruction of well in violation of the ordinance. The revised ordinance should include the following elements (PWA Water Resources Division):

   a. Provide the authority to require well destruction or rehabilitation as a condition upon sale of property or change of ownership.

   b. Process new well applications only after the applicant has demonstrated that all existing wells on all property they own are not in violation of the well ordinance.

   c. Assess penalties if compliance with the ordinance is not met within a reasonable time frame.

   d. Institute property liens if compliance with ordinance is not met within a reasonable time frame.

   e. Prioritize wells for destruction based on degree of potential for groundwater degradation.

E. Agricultural Runoff

Policy:

1. Reduce and where feasible, prevent agricultural runoff from entering groundwater basins and receiving waters through the promotion of water use efficiency and implementation of best management practices to reduce pesticide and fertilizer use.

Programs:

The water demand management programs addressed earlier are also recommended here to promote water use efficiency.

1. Continue to support the Countywide Water Conservation Program efforts to educate the agricultural sector of the county through current programs, and new programs should be encouraged (RMA Planning).

2. The University of California Cooperative Extension Program and Resource Conservation District Mobile Lab efforts should continue and be enhanced to educate agricultural water users countywide (UC COOP, Resource Conservation District).

3. The Fox Canyon Groundwater Management Agency should continue to implement Groundwater Extraction Reduction Ordinance #5.3 and water allocations to promote efficiency and therefore less runoff (Fox Canyon GMA).

4. Explore development of reasonable tiered rate structures to be implemented by water purveyors in order to encourage efficient water use where practicable (PWA Water Resources, AWA, water districts, cities).

5. Recommendations in the County Drought Action Plan Summary should be implemented by government agencies and water purveyors (see recommendations for Drought Planning).

6. The County should encourage the Regional Water Quality Control Board (RWQCB) to release five year studies summarizing the results of the State Mussel Watch and Toxic Substances Monitoring Programs so this information can be utilized to determine necessary measures to reduce pollutants contributing to agricultural runoff and develop measures to assist in the enhancement of Mugu Lagoon and related tributaries (Regional Water Quality Control Board).

7. The County should encourage and promote the enhancement of activities conducted by the Resource Conservation District's Soil Conservation Service Division (Resource Conservation District).

8. The County should encourage the joint Mugu Lagoon Implementation Plan currently being conducted by the Resource Conservation District, Soil Conservation Service and California State Coastal Conservancy. (Resource Conservation District, Soil Conservation Service and State Coastal Conservancy). The County could assist in implementing measures developed as a result of the Plan (Various responsible agencies depending on specific project).

   In addition to the above recommendations that mostly relate to the Best Management Practices (BMP's) for water conservation and improved agricultural practices, the County should investigate methods of ensuring that such BMP's are implemented.

9. Promote the use of BMP's (PWA Water Resource, Flood Control District, RMA Planning).

10. Increased frequency of hazardous waste material disposal events for growers to dispose of pesticides and herbicides that are no longer legal (PWA Water Resources coordinate with Solid Waste Division and Environmental Health).

11. Create a receiving waters protection area to discourage land and water uses that would adversely impact receiving water quality (PWA Flood Control and Water Resources Division, RMA Planning Division).

F. Aggregate Resource Management (Sand and Gravel Mining)

Policies:

1. Prohibit certain subsequent land uses and practices of reclaimed recharge areas that would be inconsistent with the protection of groundwater and surface water quality and recharge capabilities.

Program Recommendations:

1. Consider revision of the "red line" to reflect the historic high water table (not just the average) and prohibit mining below this line (PWA Water Resources Division, PMA Planning Division).

2. Enhance monitoring and conditional use permit compliance (PWA Water Resources Division, RMA Planning Division).

3. Discourage subsequent land uses within reclaimed recharge areas that would adversely impact groundwater quality or aquifer recharge capabilities (PWA Water Resources Division, RMA Planning Division).

4. Identify alternative upland mining sites to be developed where feasible, to reduce sand and gravel activities in riverbeds and recharge areas (PWA Water Resources Division, RMA Planning Division).

5. Promote sand gravel mining operations that would enhance recharge, retention for later surface use and as a tool to enhance conservation of river flows when available (PWA Water Resources).

G. Naturally Occurring Contaminants

Policy:

1. Implement, where feasible, methods to utilize currently unusable groundwater supplies (that are not in overdraft) to increase available water supplies.

Programs:

1. Identify sources, and develop projects to blend highly mineralized groundwater (if not overdrafted) with existing good quality sources of water to create additional higher quality useable water supplies (PWA Water Resources Division, water districts, cities).

2. Identify and develop, where practical, desalination or other treatment methods to reduce the mineral content of currently unusable groundwater to improve available water supplies (PWA Water Resources Division).

NOTE: See the following Figure 1.3 Water Management Plan Program Implementation Matrix which identifies the responsible agencies, implementation time frames, implementation feasibility, result of inaction and possible funding sources for the program recommendations addressed above.

WATER MANAGEMENT PLAN PROGRAM IMPLEMENTATION MATRIX

The following matrix (Figure 1.3) provides a summary of all program recommendations made in this Water Management Plan. The matrix identifies each water supply, demand management and quality issue addressed in Volume II of the Technical Appendix. For each water issue, the responsible agencies, recommended programs, implementation time frames, implementation feasibility, result of inaction and possible funding sources are identified.

FIGURE 1.3
WATER MANAGEMENT PLAN PROGRAM IMPLEMENTATION MATRIX

WATER ISSUE	RESPONSIBLE AGENCY/ DIVISION	PROGRAMS	IMPLEMENTATION TIME FRAME	IMPLEMENTATION FEASIBILITY	RESULT OF INACTION	FUNDING
I. Water Supply A. Conjunctive Use	Public Works Agency - Water Resources Division, Water Districts, Cities	1. Coordinate conjunctive use projects by assisting water agencies, districts and cities, to implement projects to conjoin resources, including sharing, storage, banking, injection and extraction projects.	Existing program. Ongoing, length depends on specific projects.	Current staff available. Some institutional barriers exist, requires water districts, agencies, cities cooperation.	Limits potential future water resources.	Current staff funding available. May require additional public funds.*
B. Reclamation	PWA Water Resources Division and Water Districts, Wastewater Agencies	1. Provide assistance to wastewater treatment agencies, water districts and agencies, end users and others to coordinate reclaimed water projects. 2. Assist, where appropriate, marketing the use of reclaimed water (to dispel public fear).	Existing program. Ongoing, length depends on specific projects. New program.	Current staff available	Limits potential future water resources	Current staff funding available
C. Groundwater	PWA Water Resources Division, RMA Planning, Environment Health, cities, Fox Canyon GMA, Ojai Basin GMA	1. Explore mechanisms of discouraging development which could degrade groundwater quality from locating on recharge area. 2. Coordinate with RWQCB to designate Forebay as sole source aquifer. 3. Require land use design which will capture water for groundwater recharge and maintain aquifer recharge areas.	New program. 6 months New program. New program. Depends on specific projects.	May require regulatory changes. Requires additional staff time. Current staff available. Incorporate into permit process.	Potential degradation of groundwater quality would decrease available water supply.	Current staff funding available. Program proponents.
D. Desalination	PWA Water Resources Division, Water Districts, Cities	1. Monitor, coordinate and assist, where appropriate, water agencies, districts, cities and end user and others in the development of desalination projects.	New program. Ongoing, length depends on specific projects.	Institutional barriers, requires water agencies, districts, cities and other agency cooperation.	Limits potential future water resources.	Current staff funding available.
E. Imported State Water	PWA Water Resources Division, Water Districts, Casitas MWD, United WCD, City of Ventura	1. Coordinate and assist, where appropriate, water agencies and government entities in obtaining the current imported water entitlement of 20,000 AF/Y.	Existing program. 1 year to coordinate. Water obtainment depends on method of delivery.	Current staff available. Institutional barriers, requires cooperation among water districts and government entities.	Limits potential of obtaining current and future 20,000 AFY entitlement.	Current staff funding available.
F. Instream Uses-Surface Water	PWA, Flood Control, Water Districts, Cities, State Fish & Game, Fed. Fish & Wildlife	1. Coordinate with Fish and Game's Stream Flow Evaluation Unit to determine instream flow requirements to maintain and restore instream beneficial uses. 2. Develop programs to prevent transport of pollutants from entering receiving waters, see urban stormwater runoff and agricultural runoff.	New program. May be a year or two before Fish & Game is ready.	Current staff available. Require cooperation among water districts and government entities.	Potential lack of instream water for beneficial uses. Possible loss of habitats for fish, wildlife, etc.	Coordinate funding with Fish & Game and Fish and Wildlife.

FIGURE 1.3
WATER MANAGEMENT PLAN PROGRAM IMPLEMENTATION MATRIX

WATER ISSUE	RESPONSIBLE AGENCY/ DIVISION	PROGRAMS	IMPLEMENTATION TIME FRAME	IMPLEMENTATION FEASIBILITY	RESULT OF INACTION	FUNDING
II. Water Demand Management A. Drought Planning	Cities, water districts	1. Continue implementation of drought plan recommended programs, which include drought planning programs (to prepare for drought) and those to be implemented only during a declared drought emergency.	Existing program. Ongoing. Depends on specific projects.	Economic barriers, requires additional staff. Institutional barriers, requires cooperation among water districts, agencies and government entities.	Limits potential future water resources.	Depends on project.
	Countywide districts; Water Agencies-Districts-Cities	2. Reasonable tiered rate structures should be implemented to encourage efficient water use practices. 3. Water allocation should be established based on historical use and/or efficient water use for all land uses. 4. Moratorium on new water hookups should be implemented only after the declaration of a water supply emergency.	New program for some agencies. 3 months New program for some agencies. 3 months Emergency measure only.	Economic barriers require staff to revise rates and billing system. Political barriers, property owner resistance. Political barriers; property owner resistance.	Inefficient use of water due to lack of economic incentives. Potential lack of water for existing uses.	Funding through revised water rates. N/A N/A
B. Water Conservation Programs	RMA Planning, Cities, Water Districts	1. Continue and enhance existing Countywide Water Conservation Program efforts to educate the public regarding water use efficiency, and coordination with cities and water agencies.	Existing Program.	Some current staff available, additional staff required to enhance program.	Limits potential for water use efficiency.	Some funding exists through current general fund. Expanded program would require additional public funds.*
	University of California Cooperative Extension	2. Continue and enhance University of California Cooperative Extension program efforts to educate agricultural water users.	Existing Program.	Existing program level is funded. Enhanced program would require additional funds.	Limits potential for water use efficiency.	UC COOP
	Resource Conservation District	3. Continue and enhance Resource Conservation District program efforts to educate agricultural water users.	Existing Program.	Existing program level is funded. Enhanced program would require additional funds.	Limits potential for water use efficiency.	RCD,*
	Fox Canyon Groundwater Management Agency	4. The Fox Canyon Groundwater Management Agency should continue to implement ordinances and programs to preserve groundwater resources within the agency boundaries.	Existing Program.	Program is funded through pumping fee.	Potential continued overdraft of groundwater basins.	Existing extraction fees.
	Ojai Basin Groundwater Management Agency	5. Continue support of the Ojai GMA and their goals of preserving groundwater within agency boundaries.	Existing Program	Program funded through pumping fee.	Potential overdraft of groundwater basins.	Extraction fees.
III. Water Quality						

FIGURE 1.3
WATER MANAGEMENT PLAN PROGRAM IMPLEMENTATION MATRIX

WATER ISSUE	RESPONSIBLE AGENCY/ DIVISION	PROGRAMS	IMPLEMENTATION TIME FRAME	IMPLEMENTATION FEASIBILITY	RESULT OF INACTION	FUNDING
Issues Point Source Pollution A. Wastewater Treatment Plants	PWA Water Resources Division, Ventura Regional Sanitation District, Wastewater Districts, Cities	1. Assist where feasible, wastewater treatment plant modifications to improve discharge effluent quality. Also, see recommendations addressed above for water supply/reclamation.	New Program. Ongoing length depends on specific projects.	Economic barriers require additional staff time.	Limits potential for effluent quality to improve.	User fees
B. Package Treatment Plants	RMA Environmental Health Division RMA, Planning and Environmental Health Divisions RMA Planning Division	1. Encourage communities served by existing septic systems which are contributing to public health and safety problems to be replaced with package plants where groundwater is the drinking water source. 2. Package plants should be sized and explicitly restricted to serve only the single-purpose site and its facilities and be consistent with RWQCB criteria (listed in Chapter 4.1.B of Vol. II). 3. Water quality impacts of proposed package plants shall be analyzed as part of the environmental document prepared for the project on a case by case basis.	Length depends on specific projects. N/A Length depends on specific projects.	Political barriers, property owner resistance (to user fees). Incorporate into the Conditional Use Permit Process. Incorporate into the Conditional Use Permit Process.	Continued degradation of groundwater quality. Potential for growth inducement. Potential for continued degradation of groundwater.	Require user fees. Project proponent. Project proponent.
Non Point Pollution A. Seawater Intrusion	PWA Water Resources Division United Water Conservation District United States Geological Survey Fox Canyon GMA	1. Continually assess the seawater intrusion conditions. a. Continue County, UWCD and USGS groundwater monitoring programs. b. Appropriately modify water level and water quality monitoring in coastal area. c. Monitor progress on the USGS Regional Aquifer System Analysis	Existing program. Ongoing. New program. Depends on specific projects, number and depth of wells. Existing program. Ongoing.	Existing staff available. Also implemented by UWCD. Economic barriers requires capital construction operation and staff funding. Existing staff available.	Lack of sufficient information limits appropriate decision-making, could contribute to groundwater degradation. Cont'd groundwater degradation from overdrafting & resulting seawater intrusion.	Currently funded staff. USGS, extraction fees. Undetermined. Depends on project.

FIGURE 1.3
WATER MANAGEMENT PLAN PROGRAM IMPLEMENTATION MATRIX

WATER ISSUE	RESPONSIBLE AGENCY/ DIVISION	PROGRAMS	IMPLEMENTATION TIME FRAME	IMPLEMENTATION FEASIBILITY	RESULT OF INACTION	FUNDING
		Study and UWCD/USGS seawater intrusion modeling studies scheduled for completion in 1994.			Continued groundwater degradation.	General Fund or USGS, to be determined by project type.
	PWA, Water Resources, RMA Planning UWCD, Fox Canyon GMA,	d. Develop and implement necessary follow-up programs. (see c. above.)	New program. Length depends on specific projects to be developed.	Depends on projects, possible economic barriers.	Continued groundwater degradation.	Would require public funds.*
		2. Conserve existing water supplies.				
	PWA, Water Resources, Wastewater Districts, Water Districts, Cities	a. Support all water conservation programs and encourage full implementation of best management practices for urban, agricultural and industrial uses.	Ongoing, length depends on specific projects.	Existing program limited by funding.	Continued groundwater degradation.	Water user fees.
		b. Support beneficial recycling of wastewater and appropriate water conservation measures while recognizing extent to which some treated water is already recycled following discharge.	Length depends on projects.	Depends on project.		
	PWA Water Resources UWCD	3. Protect and enhance existing water supplies.			Continued groundwater degradation.	Currently funded (program) available.
		a. Support County and UWCD full implementation of the Seawater Intrusion Abatement Project criteria.	Ongoing	Existing Programs		
(Cont'd.) Seawater Intrusion	(Cont'd.) PWA Water Resources Division, UWCD, Fox Canyon GMA	b. Continue to enforce Ventura County well ordinance No. 3991 which prohibits construction, repair or modification of Upper Aquifer System (UAS) wells in areas where they could cause overdraft or seawater intrusion and requires the proper destruction of wells. (See Section D, Abandoned Water Wells for recommended actions also applicable to the seawater intrusion problem.)	Ongoing	Existing Programs	Continued groundwater degradation.	Current funds (program) available.
	Fox Canyon GMA	c. Support Fox Canyon GMA adopted groundwater management plan and	Ongoing	Current staff available.	Continued groundwater degradation.	Current extraction fees.

FIGURE 1.3
WATER MANAGEMENT PLAN PROGRAM IMPLEMENTATION MATRIX

WATER ISSUE	RESPONSIBLE AGENCY/ DIVISION	PROGRAMS	IMPLEMENTATION TIME FRAME	IMPLEMENTATION FEASIBILITY	RESULT OF INACTION	FUNDING
		ordinances designed to eliminate overdraft and seawater intrusion.				
	PWA Water Resources Division, Fox Canyon GMA, UWCD	d. Support projects which will provide supplemental water and/or assist in stabilizing safe yield extractions including:				
		· The Fox Canyon GMA Five Stage Lower Aquifer System Contingency Plan.	Existing programs. Ongoing	Existing staff available.	Continued groundwater degradation.	Existing funds available.
		· Fox Canyon GMA ordinances which limit and control groundwater pumping with the goal of eliminating groundwater overdraft by year 2010.	Existing programs. Ongoing	Existing staff available.	Continued groundwater degradation.	Existing funds available.
		· UWCD's Gravel Basin Storage Project will provide additional spreading grounds.	UWCD will begin project in late summer of 1994.	Unknown, pilot project will determine implementation feasibility.	Continued groundwater degradation.	UWCD funded.
B. Individual Sewage Disposal Systems/County Service Area 32 (Septic Tanks)	RMA, Environmental Health Division, PWA, Water Resources Division	1. Update the County's sewer policy to include the latest Regional Water Quality Control Board policies regarding use of septic systems on subdivided lots in areas where groundwater is a drinking water source.	New program. 3 months	Incorporate into permit process. Property owner resistance.	Continued groundwater degradation.	May req. add'l public funds.*
		2. Continue to monitor areas where septic systems problems exist. Encourage public sewering where feasible.	Existing program. Ongoing	Existing staff available.	Continued groundwater degradation.	N/A
		3. Identify areas where septic systems directly or indirectly contribute to groundwater contamination, determine appropriate methods to eliminate and/or reduce the introduction of nitrates to groundwater.	New program. 2 months to identify areas. Measures would be ongoing.	Depends on specific projects, temporary reassignment of staff duties.	Continued groundwater degradation.	Will depend on project type. May req. add'l public funds.*
		4. Specific Problem Area Options				
	PWA Water Resources Division	a. Santa Rosa Valley	New program. N/A	Incorporate into review process; Economic barriers, property owner resistance.	Continued groundwater degradation.	User fee.
	RMA Planning and	· Discourage individual disposal systems, require future discretionary				

FIGURE 1.3
WATER MANAGEMENT PLAN PROGRAM IMPLEMENTATION MATRIX

WATER ISSUE	RESPONSIBLE AGENCY/ DIVISION	PROGRAMS	IMPLEMENTATION TIME FRAME	IMPLEMENTATION FEASIBILITY	RESULT OF INACTION	FUNDING
	Environmental Health Divisions PWA Water Resources Division	development to connect to sewage treatment plant. · Consider larger minimum lot size where individual septic systems are currently permitted on lots where groundwater is used as a drinking water source. b. El Rio/Nyeland Acres · Designation of Groundwater Protection Area, develop map. · Collection treatment & disposal of domestic wastewater.	New program. 3 months New program. 2 months New program. Ongoing	Amend Zoning Ordinance, existing staff available. Require short term staffing. Economic barriers.	Continued groundwater contamination. Continued groundwater degradation. Continued groundwater degradation.	May req. add'l public funds.* May req. add'l public funds.* User fees.
(Cont'd.) B. Individual Sewage Disposal Systems/County Service Area 32 (Septic Tanks)	RMA Environmental Health Division, PWA Water Resources Division	· Obtain use of imported State water supplied from Oxnard for drinking water; will require annexation. · Obtain use of additional areas for groundwater recharge to increase local available water supplies. · Determine sources, implement; blending of high and low nitrate well waters. · Tie nitrate blending system to the Oxnard-Hueneme water system.	New program. 1 year New program. Ongoing, length depends on sites and required negotiations. New program. 3 mos. to determine sources; blending would be ongoing. New program. 1 year	Property owner resistance economic barriers. Requires annexation. Economical, political, and institutional barriers; requires capital and property owner and water district cooperation. Economical, political, and institutional barriers; requires capital and property owner and water district cooperation. Economical, political, and institutional barriers; requires capital and property owner and water district cooperation.	Continued groundwater degradation. Limits groundwater recharge capabilities. Limits potential available water supplies. Limits potential available water supply.	Water user fees. Annexation fees. May require additional public funds.* May require additional public funds.* Water user fees. May require additional public funds.*
C. Urban Stormwater Runoff	Ventura County - Flood Control District (VCFCD), County of Ventura, and Cities as co-permittees	1. Develop Public Education Program a. Develop/distribute brochures. b. Develop educational materials for in-school presentations. c. Displays at community events, Group/Club presentation development	New program to be ongoing. Brochures developed/ongoing 3 months/on demand display developed/on demand	Economic barriers. Requires additional staff or reassignment of duties. Not revenue offset. Requires behavioral changes by public.	Continued degradation of local surface, groundwater and coastal waters. Contamination - could cause health impacts to human, animals and plants.	Fund through benefit assessment fund, and may require additional public funds.*

FIGURE 1.3
WATER MANAGEMENT PLAN PROGRAM IMPLEMENTATION MATRIX

WATER ISSUE	RESPONSIBLE AGENCY/ DIVISION	PROGRAMS	IMPLEMENTATION TIME FRAME	IMPLEMENTATION FEASIBILITY	RESULT OF INACTION	FUNDING
		and presentations. d. Curb/Drainage Stenciling.	2 years or until complete			
		2. Programs for Industrial Commercial Businesses: Initiation of a "Clean Business" program, on-site investigations of automobile service businesses and restaurants, on-site education about observed pollutant sources and control measure, on-site feedback from the business owners/employees, follow-up inspections, awards, incentives for businesses, development of new ordinances, if necessary, to enforce practicable controls.	New program to be ongoing 2 years to continue	Requires behavioral changes. Incorporate into review process.	Continued business related pollution generation.	Benefit Assessment fees.
		3. Develop standard reporting and evaluation procedures for existing infrastructure management practices to determine effectiveness of existing programs and track observations of illicit discharge.	New program. 2 years to continue	Incorporate in to review process. Staff availability.	Continued business related pollution generation.	Benefit Assessment fees.
		4. Co-permittee identified priority areas will be investigated, dischargers educated, if necessary, enforcement action will be taken. Simi Valley and Oxnard have begun inspections for stormwater pollutants in some of their priority areas.	New program to be ongoing. 2 years or until priority areas are addressed. May take more than several years.	Will depend on co-permittee staff availability.	Continued degradation of local surface, groundwater, coastal water.	Benefit Assessment fees - may require enforcement fines.
(Cont'd.) Urban Stormwater Runoff	VCFCD, County of Ventura, and Cities as co-permittees	5. Implementation of planning procedures for development projects to address pollutant sources during development. Educational material will be prepared, workshops conducted for land development community as procedures are revised.	New program. 1 year	Incorporate into review process, will require additional review time.	Continued urban runoff.	Benefit Assessment fees.
		6. Development of model stormwater pollution prevention plan (SWPPP) for construction sites to educate contractors, their employees, and public agency inspectors on steps to reduce pollution entering the storm drain system at construction sites.	New program. 2 years	Incorporate into review process. Requires behavioral changes, possible political, economic barriers by developers.	Continued construction site urban runoff generation.	Benefit Assessment fees.
		7. During three storms per year, outfall monitoring will be conducted at selected sites to characterize stormwater runoff from different	Ongoing, 2 years.	Staff available.	Continued degradation of	Benefit Assessment fees.

FIGURE 1.3
WATER MANAGEMENT PLAN PROGRAM IMPLEMENTATION MATRIX

WATER ISSUE	RESPONSIBLE AGENCY/ DIVISION	PROGRAMS	IMPLEMENTATION TIME FRAME	IMPLEMENTATION FEASIBILITY	RESULT OF INACTION	FUNDING
		urban land uses in Ventura County. Results of sampling analyzed to produce pollutant load estimates, identify long-term runoff quality trends, evaluate receiving water quality impacts, and assess management program effectiveness. Current monitoring programs are being conducted at five urban locations, three additional locations required by fiscal year 1994/95.			surface, groundwater, coastal waters. Contamination - could cause health impacts to humans, animals and plants.	May require additional public funds*
		8. Financing for Resource Conservation District (RCD) for the administration of the Ventura County Hillside Erosion Program.	Ongoing	No barriers except for continued funding, program has been implemented.	Increase in erosion/sedimentation, worsening existing urban runoff problem.	
		9. Program administration, financial accounting and preparation of annual reports and other documents for submittal to the Los Angeles Regional Water Quality Control Board (LARWQCB) by VCFCD as required by the permit.	Ongoing	May require additional staff.	Program is required by NPDES permit. Inaction would result in the assessment of fines by RWQCB.	
(Cont'd.) Stormwater Runoff	VCFCD, County of Ventura and Cities as co-permittees	10. Planning for full implementation phase - Preparation of Countywide program approaches and material for use in implementing the NPDES program in subsequent years (after 1994-1995) for the duration of the permit.	2 years, many portions of the full implementation phase will be ongoing.	May require additional staff.	Required by NPDES permit, no action - fines by RWQCB.	Benefit Assessment fees.
D. Abandoned Water Wells	PWA Water Resources Division, Fox Canyon GMA	1. Revise existing well ordinance # 3991 to strengthen county enforcement authority.	New program. 2 months	Economic barriers. High well destruction expense. Reassignment of staff duties.	Continued degradation of groundwater quality with the potential result of rendering the groundwater useless and in need of expensive treatment.	Well destruction fees; new well construction fees. Include bill on tax assessment.
		2. Implement revised ordinance.	New program.	Political barriers - property owner resistance.		
		a. Process new well applications only after applicant demonstrates no wells in violation on any property owned.	At time of new well application-may cause additional processing time-1 year			Possible Regional Water Quality Control Board grants available.
		b. Assess penalties if compliance is not met within a reasonable time frame.	1 year			
		c. Provide authority to require well destruction as condition upon sale or change of ownership.	Ongoing			

FIGURE 1.3
WATER MANAGEMENT PLAN PROGRAM IMPLEMENTATION MATRIX

WATER ISSUE	RESPONSIBLE AGENCY/ DIVISION	PROGRAMS	IMPLEMENTATION TIME FRAME	IMPLEMENTATION FEASIBILITY	RESULT OF INACTION	FUNDING
		3. Notify property owners of abandoned wells and new ordinance. a. Prioritize and identify wells, prepare letters. b. Conduct mailings. c. Conduct seminar. d. Assist property owners through well destruction permit process.	New program. 2 months 1 month 1 month 2 years	Property owner resistance.	Continued degradation of groundwater quality with the potential result of rendering the groundwater useless and in need of expensive treatment.	May require public funds.*
E. Agricultural Runoff	PWA, Flood Control, Water Resources UC COOP, RCD	1. Continue support of Countywide Water Conservation Program, University of California Cooperative Extension and Resource Conservation District Mobile Lab water use efficiency and best management practices public education efforts.	Existing program to be ongoing.	Existing staff available, enhancement of programs would require additional staff and funds.	Continued inefficient use of water.	General Fund/UC COOP, RCD? May req. add'l public funds.*
	PWA, Flood Control, Water Resources Div.	2. Support and/or implement all water conservation programs, ordinances, drought programs and tiered rate structures as recommended in programs above for water demand management etc.	New and existing programs. Length depends on specific project.	Existing staff available, enhancement of programs would require additional staff and funds.	Continued inefficient use of water.	Ordinance fines, water user fees. May req. add'l funds.*
	PWA, Flood Control	3. County to encourage the Regional Water Quality Control Board to release five year studies summarizing results of State Mussel Watch and Toxic Substances Monitoring Programs, so information can be used to determine necessary measures to reduce pollutants contributing to agricultural runoff and develop measures to assist in the enhancement of Mugu Lagoon and related tributaries.	1 year for study release. New program from resulting data would determine projects and related time frames.	Depends on specific projects.	Continued degradation of Mugu Lagoon and related tributaries from agricultural runoff.	May req. add'l public funds.*
		4. Support enhancement of Resource Conservation District's Soil Conservation Service activities.	New and existing programs. Depends on projects.	Coordinate w/RCD, SCS, could incorporate into public education program.	Continued degradation from soil erosion, sedimentation.	RCD
		5. Encourage joint Mugu Lagoon Implementation Plan currently conducted by the Resource Conservation District, Soil Conservation District	New and existing programs. Depends on resulting data and	Depends on resulting data and related project development.	Lack of sufficient data to make appropriate decisions would limit	Depends on specific projects. RWQCB or add'l public funds.*

FIGURE 1.3
WATER MANAGEMENT PLAN PROGRAM IMPLEMENTATION MATRIX

WATER ISSUE	RESPONSIBLE AGENCY/ DIVISION	PROGRAMS	IMPLEMENTATION TIME FRAME	IMPLEMENTATION FEASIBILITY	RESULT OF INACTION	FUNDING
	Coordinate with Solid Waste division and RMA Environmental Health	and California State Coastal Conservancy. County to assist where feasible, in implementing measures developed as a result of the plan. 6. Increase frequency of hazardous waste/materials disposal events for growers to dispose of pesticides and herbicides that are no longer legal.	related project development. Existing program to be ongoing. Needs enhancement.	Coordinate with necessary government agencies.	potential to develop measures to address agricultural runoff impacts to the Lagoon and related tributaries. Potential for improper disposal of hazardous materials.	May require additional public funds.*
(Cont'd.) E. Agricultural Runoff	PWA, Flood Control, Water Resources, RMA Planning	7. Create a receiving water protection area. Develop land and water use criteria.	New program. Develop map and criteria for use 3 months.	Economic barriers; requires additional staff time. Political barriers, property owner resistance.	Continued degradation of water quality by agricultural runoff.	May require public funds.*
F. Aggregate Resource Management (Sand & Gravel Mining)	PWA, Water Resources Div., RMA Planning Div.	1. Consider the revision of the "red line" to reflect historic high water table (not just average) and prohibit mining below this line. 2. Enhance monitoring and condition compliance. 3. Discourage subsequent land uses within reclaimed recharge areas that would adversely impact groundwater quality or aquifer recharge areas. 4. Identify alternative upland mining sites to be developed where practical to reduce mining operations in river beds and recharge areas.	New program. 2 months to develop revised "red line." Ongoing to prohibit mining below line. New program to be ongoing. New program. 3 months to develop map and develop criteria for prohibiting certain land uses. New program. 1 year	Incorporate into review process political barriers, resistance by mining operators. Requires additional staff time. Incorporate into permit process. Political barriers, property owner resistance. Incorporate into permit process; identify as mining site alternatives.	Potential degradation of water resources from mining operations. Potential degradation of water resources. Potential degradation of water resources. Potential degradation of water resources.	May require public funds.* Fines to be assessed for non-compliance. Project proponent. May require public funds.*
G. Naturally Occurring Contaminants	PWA, Water Resources Division	1. Identify sources, develop projects to blend highly mineralized groundwater with existing good quality water sources to create additional useable water supplies (see Vol. II Alternative Sources - Chapter 4, Salt balance pumping). 2. Identify, and where practical, develop desalination or other treatment methods to reduce mineral content of currently unusable groundwater to increase available water supplies.	New program. 1 year New program. 1 to ? years; depends on project.	Economic barriers; Requires additional staff. Institutional barriers, requires cooperation among water agencies, districts and users. Economic barriers, require capital and operational costs. Institutional barriers; requires cooperation among water districts, cities, etc.	Continued mineralization of groundwater resources, limits potential available water supplies. Continued mineralization of groundwater resources, limits potential available water supplies.	Water user fees. May require public funds.* Water user fees. May require public funds.*

WATER MANAGEMENT PLAN
CHAPTER 3, VOLUME I, GOALS, POLICIES
AND PROGRAM RECOMMENDATIONS

PROGRAM IMPLEMENTATION STATUS

This chapter summarizes the status of programs which were examined in the 1980 208 Plan. A brief description of the problem, 1980 program recommendations, program implementation status and 1994 Water Management Plan program recommendations are included. The proposed 1994 programs either continue, redirect or further promote the 1980 programs. Complete descriptions of these programs (with the exception of the Erosion Control and Emergency Flood Control elements) are addressed in Volume II of the Water Management Plan, Technical Appendix.

New issues that are addressed in Volume II, the Technical Appendix which are not addressed below include Wastewater and Package Treatment Plants, Aggregate Resource Management (sand and gravel mining), and Naturally Occurring Contaminants.

I. ALTERNATIVE WATER RESOURCES

A. 1980 Plan Recommendations

Following analysis and review of water supply sources identified in the 1980 Water Management Plan, the County Board of Supervisors adopted Resolution No. 431 establishing a countywide plan for the protection, preservation and enhancement of countywide resources. The Board adopted the following priority listing of water development projects as its Countywide Water Plan:

1. Completion of both Phase I and Phase II of the joint County-U.W.C.D. Seawater Intrusion Abatement Project at the earliest date.

2. Adoption and Implementation of a Countywide Water Conservation Plan.

3. Development of Reclaimed Water from the Simi Valley Treatment Facility to be used for agricultural purposes in the Las Posas Valley.

4. Development of Reclaimed Water from the Thousand Oaks/Hill Canyon Treatment Facility to be used for agricultural purposes on the Oxnard Plain.

5. Development of the 20,000 acre-feet water entitlement from the State Water Project, which is held by the Casitas Municipal Water District; United Water Conservation District; and the City of Ventura, at the earliest date.

6. Resolution of the Sespe Water Rights Issue in favor of United Water Conservation District's efforts to regain these water rights, at the earliest date.

B. Program Implementation Status

The priority list described above recommended two demand management programs and four supply projects. The demand management programs included Seawater Intrusion Abatement Project Phases I and II and the Countywide Water Conservation Program. Both programs have been implemented and continue to be key elements in the management of countywide water resources. The Seawater Abatement project Phase I included the creation of the Pumping Trough Pipeline and Lower Aquifer System Wells and the removal of Upper Aquifer System wells. Phase II included improvement of the Freeman Diversion Project. The Water Conservation Program is a comprehensive education and demonstration program that serves urban, agricultural and industrial water users countywide.

The status of supply projects are discussed below in the order in which they were recommended.

The development of reclaimed water from the Simi Valley Treatment Facility to be used for agricultural purposes in the Las Posas Valley was actively pursued by County staff. Although coordination efforts by County staff did not result in final negotiation plans for the project, the City of Simi Valley is now planning a reclamation project with reclaimed water to be used in Simi Valley.

The development of reclaimed water from the Thousand Oaks - Hill Canyon Treatment Facility is currently being negotiated. Facility plans have been completed. Camrosa Water District will sell water to instream water users (approximately 7,000 AF/y) and build a pipeline to sell an unspecified amount (whatever remains after instream users) to the Pleasant Valley County Water District where it will be distributed for agricultural irrigation on the Oxnard Plain. Negotiations are currently taking place to implement the project.

During the height of the drought in the early 1990's, development of the State Water Project entitlement of 20,000 acre-feet of water, jointly held by the City of Ventura, Casitas Municipal Water District, and the United Water Conservation District was being evaluated to determine a method of delivery. Portions of the 1990 through 1993 entitlements have been delivered through an interim delivery method by the United Water Conservation District. Currently, obtainment of the jointly held entitlement is no longer being actively pursued while other options (i.e., Desalination, etc.) are evaluated.

Regarding the Sespe Water Rights issue, several bills in the House and the Senate have been proposed to designate all or portions of the Sespe River "Wild and Scenic." A Wild and Scenic designation for the entire 55 miles of the river would prohibit water development projects such as dams within the boundaries of the designation. Although none of the bills have been adopted, due to the environmental issues surrounding proposed water development projects on the river, and expense of supply projects, no projects are currently or likely to be approved. On October 8, 1991, the Ventura County Board of Supervisors voted 5:0, to preserve the upper 51 miles of the Sespe River as a wild and scenic river. No tall dams could be built on the Sespe. An option would remain for low diversion structures (without reservoir) on the lowest four miles of the creek.

The previous Board recommendation combined demand management and supply projects in the priority list. The priority list for this update has been divided into two categories; demand management programs and supply projects. The purpose of the two categories is to illustrate the distinct differences between demand management programs and the development of supply projects. Since the previous Board recommendation, demand management programs have evolved dramatically and are considered a separate and distinct element in short and long range water management planning.

A brief description, of each program recommendation is included below. For more information refer to Volume II, the Technical Appendix, Chapter 4, Supply and Demand chapter.

C. 1994 Program Recommendations

WATER SUPPLY

Conjunctive Use

1. Coordinate conjunctive use projects by assisting water agencies, districts and cities to implement projects to conjoin water resources including, sharing, storage, banking, injection and extraction projects.

Reclamation

1. Provide assistance to wastewater treatment agencies, water districts and agencies and end users and others to coordinate reclaimed water projects.

2. Assist, where appropriate, the marketing of the use reclaimed water (to dispel public fears, etc.).

Groundwater

1. Explore mechanisms to discourage development from locating on recharge areas where such development could degrade groundwater or interfere with recharge capabilities.

2. Coordinate with the Regional Water Quality Control Board to determine the designation of the Forebay as a sole source aquifer.

3. Require land use design which will capture water for groundwater recharge and maintain aquifer recharge areas.

* Also, see Water Conservation and Quality Issue recommendations related to groundwater use and quality.

Desalination

1. Monitor, coordinate, and where appropriate, assist water agencies and jurisdictions in the coordination and/or development of desalination projects.

Imported State Water

1. Coordinate and assist, where appropriate, water agencies and government entitlement holders in obtaining the current imported water entitlement of 20,000 AFY.

Instream Uses

1. Coordinate with State Fish and Game's Stream Flow Evaluation Unit to determine instream flow requirements to maintain and restore the instream beneficial uses.

DEMAND MANAGEMENT (CONSERVATION) PROGRAMS

Drought Planning

1. Implement recommendations in Board adopted Drought Action Plan (see previous Chapter 2 of this Volume or Chapter 4 of Volume II for a detailed list of Drought Plan recommendations.

2. Reasonable tiered rate structures should be implemented by all water purveyors to encourage efficient water use practices.

3. Water allocations should be established based on historical use and/or efficient water use for all land uses.

4. Moratoriums on new water hookups should be implemented only after the declaration of a water supply emergency.

Countywide Water Conservation Programs

1. Continue countywide water conservation education program and enhance by expanding program and coordination with water agencies and cities throughout the county.

University of California Cooperative Extension Programs and Resource Conservation District Programs

1. Continue support and coordination with UC COOP and RCD agricultural public education efforts.

The Fox Canyon Groundwater Management Agency

1. Continue support of GMA Ordinance No. 5 and other programs to preserve groundwater resources within agency boundaries.

The Ojai Basin Groundwater Management

1. Continue support of the Ojai Basin Groundwater Management Agency and their goals of preserving groundwater within agency boundaries.

II. SEAWATER INTRUSION

A. 1980 Plan Recommendations

The 1980 208 study recognized seawater intrusion as a critical problem in the Oxnard Coastal Plain area. Seawater intrusion occurs when extractions exceed replenishment of groundwater basins and causes seawater to travel laterally inland into the aquifers. The practice of overdrafting has resulted in the depletion of water supplies, lowering of water levels and water quality degradation from seawater intrusion. Degraded water quality has caused some areas to become unusable, further reducing countywide water supplies. The 1980 Plan recommendations are included in the list below.

1. Implementation of Phases I and II of the Seawater Intrusion Abatement Program. (Phase I - LAS Wells and Pumping Trough Pipeline, Phase II Vern Freeman Diversion Project).

2. Formation of a Groundwater Management Agency.

3. Implementation of the Lower Aquifer System (LAS) Contingency Plan.

B. Program Implementation Status

Phases I and II of the Seawater Intrusion Abatement Programs have been implemented successfully. Phase I of the Seawater Intrusion Abatement Project consists of a Pumping Trough Pipeline to deliver water diverted from the Santa Clara River for irrigation of crops in the pumping trough area. Lower Aquifer System (LAS) wells were drilled along the pipeline route to provide irrigation water when surface water is unavailable. Thirty-seven Upper Aquifer System (UAS) wells in the pumping trough area were removed from service to decrease the demand on the UAS. The 37 wells had been pumping an average of 12,700 AF/Y annually.

Phase II of the Seawater Intrusion Abatement Project includes the Vern Freeman Diversion Project. The diversion project has been financed, constructed and implemented through coordination between the United Water Conservation District (UWCD), the County Public Works Agency, United States Bureau of Reclamation and the State Department of Water Resources. The diversion structure is constructed on the Santa Clara River in Saticoy. The project diverts river flow which would otherwise eventually reach the ocean. Water is diverted from the Santa Clara River for delivery to users on the Oxnard Plain through the Pumping Trough

Pipeline, or percolation into groundwater basins through spreading grounds. Diverted water from the river percolates into the aquifer to prevent further intrusion by seawater. The water is used by those who have halted use of their shallow wells which previously pumped Oxnard Aquifer System (UAS) water.

The Fox Canyon Groundwater Management Agency (GMA) was created through State legislation in 1982 to manage groundwater resources in the area overlying the Fox Canyon Aquifer zone. The objective of the GMA is to control and reduce groundwater overdraft. The GMA area of responsibility includes the Oxnard, Mugu, Hueneme, Fox Canyon and Grimes Canyon aquifers.

The GMA staff has prepared a groundwater management plan to control overdraft. A major element of the plan is an extraction reduction ordinance which was adopted by the GMA Board in September 1990. The ordinance requires pumpers within the Fox Canyon GMA boundaries to reduce their pumpage by 25% over the next 25 years, beginning with a 5% reduction by 1992. If groundwater users can prove 80% efficiency, reductions shall not be required. The plan has a variety of programs including groundwater extraction limitation ordinances, which includes the prohibition of drilling new wells in areas subject to seawater intrusion, encouragement of waste water reclamation and water conservation, seawater intrusion abatement, monitoring and meter programs. The Vern Freeman Diversion Project, the role of the GMA, and the prohibition of new Oxnard aquifer wells are further discussed in Chapter 4.2 of Volume II, The Technical Appendix.

Implementation of Planning Stage 1 of the Lower Aquifer System Contingency Plan is currently being implemented due to evidence of seawater intrusion of the LAS. Planning Stage 1 includes additional monitoring, restrictions on LAS wells, voluntary conservation and use of reclaimed water, pumping restrictions and development of alternative water supplies. See Volume II, Chapter 4.2.A, Table 4.11 which illustrates the Lower Aquifer System Contingency Plan, and the five Planning Stages.

C. <u>1994 Program Recommendations</u>

1. Continually assess the seawater intrusion conditions.

   a. Continue existing groundwater monitoring programs including the annual seawater intrusion monitoring study. Modify monitoring as needed and where necessary,

additional monitoring wells should be constructed. Where lateral seawater intrusion is suspected, stable isotope analysis of samples should be performed.

b. Monitor progress on the USGS, Regional Aquifer Systems Analysis (RASA) study and UWCD/USGS seawater intrusion modeling studies scheduled for completion in 1994. Develop and implement necessary follow-up programs.

2. Conserve Existing Water Supplies

a. Continue to support all water conservation programs and encourage full implementation of best management practices for urban, agriculture and industrial uses.

b. Support the beneficial recycling of wastewater and appropriate water conservation measures while recognizing the extent to which some treated wastewater is already recycled following discharge.

3. Protect and Enhance Existing Water Supplies

a. Continue County and UWCD full implementation of the Oxnard Plain Seawater Intrusion Abatement Project according to adopted operating criteria. Following UWCD/USGS findings, examine need to re-evaluate operating criteria.

b. Increase enforcement of Ventura County Well Ordinance Number 3991 which prohibits construction, repair or modification of Upper Aquifer System (UAS) wells in areas where they would cause overdraft or seawater intrusion and requires the proper destruction of wells.

c. Support the Fox Canyon Groundwater Management Agency adopted groundwater management plan and ordinances designed to eliminate overdraft and seawater intrusion.

d. Support projects which will provide supplemental water and/or assist in stabilizing safe yield extraction while at the same time with regard for environmental concerns including but not limited to:

- The five stage Lower Aquifer System Contingency Plan.
- GMA Ordinance 5 which limits and controls groundwater pumping with the goal of eliminating groundwater overdraft by year 2010.
- United WCD's proposed Gravel Basin Storage Pilot (Seawater Intrusion Abatement) Project.

III. EROSION CONTROL

A. 1980 Plan Recommendations

The 1980 208 Plan identified an erosion control problem in the Casitas Pass area due to runoff from hillside agricultural practices which was creating a surface water quality problem. The Plan also noted that this type of agricultural practice could become a problem in other areas of the County if adoption and implementation of a new hillside erosion ordinance did not occur. The ordinance was recommended to identify problem areas, establish standards and define procedures for hillside agricultural practices.

B. Program Implementation Status

Hillside Erosion Control Ordinance No. 3539 was adopted April 7, 1981, by the County Board of Supervisors. The purpose of the ordinance is to reduce nonpoint source water pollution, reduce degradation of water quality, improve water quality, control erosion and production of sediment, and to reduce related environmental damage by establishing minimum standards and providing regulations within new agricultural developments for the construction and maintenance of fills, excavations, cut and clearing of vegetation, revegetation of cleared areas, terraces, diversions, improved irrigation and drainage control in critical erosion areas, as well as for the protection of exposed soil surfaces in order to promote the safety, public health, convenience, and general welfare of the community.

The ordinance provides for the approval of Hillside Erosion Control Plans in the "critical erosion area" designated on the official Erosion Hazard Maps, Southern Ventura County, on file with the Public Works Agency and the Ventura County Resources Conservation District.

C. 1994 Program Recommendations

Continue implementation of County Hillside Erosion Control Ordinance.

IV. INDIVIDUAL SEWAGE DISPOSAL SYSTEMS, (SEPTIC TANKS) COUNTY SERVICE AREA 32

A. 1980 Plan Recommendations

The 1980 208 Plan identified a number of areas where Individual Sewage Treatment Systems where either failing on a regular basis or causing some degree of off site pollution. These areas included Nyeland Acres, the North Coastal area, Kelly Estates/Ventu Park, Santa Susana Knolls, Live Oak Acres, Oxnard Plain (Cypress Road), Lake Sherwood, North Avenue, the Santa Monica Mountains and South Coastal Region.

The County's Environmental Health Division determined the Santa Monica Mountains area had severe limitations for the use of septic systems. It was found that much of the area's bedrock was fractured and creviced, further compounding already severe conditions and complicating the use of traditional septic systems.

The 1980 Plan recommendations to decrease contamination problems related to septic system use are listed below:

1. Initiate proceedings to expand County Service Area (CSA) 27 encompass those areas of the Santa Monica Mountains experiencing septic tank problems. The basic concept in organizing the CSA was to abate public nuisances and enforce proper septic system maintenance procedures to include regular pumping, repairs and redesign of failing septic systems.

2. Explore specific consideration of opportunities to minimize future septic tank problems in the County's ongoing revision of the Plumbing Code.

B. Program Implementation Status

During the years following adoption of the 208 Plan, the Ventura County Board of Supervisors created CSA 32. CSA 32 superseded CSA 27 mentioned above and currently serves the entire County of Ventura. CSA 32 is authorized to inspect and repair septic systems in the event of failure.

Additionally, the County updated its building codes to allow technologically advanced individual sewage disposal systems. Advanced systems including the sand filter and mound technologies that are now used in areas where traditional systems are known to fail.

Since adoption of the 208 Plan, Ventura County has actively implemented the 1980 recommendations and encouraged the sewering of areas previously served by septic systems. It should be noted that the Cypress Road area (Oxnard), Live Oak Acres (Oak View), Ventu Park (Newbury Park), Santa Susana Knolls area, Nyeland Acres and the Lake Sherwood area have all been sewered. Additionally, the North Avenue was sewered upon annexation to the City of San Buenaventura. Currently, the City of Camarillo is extending sewer lines to the Camarillo Heights area. Accordingly, numerous septic systems are no longer contributing to the overall degradation of groundwater quality.

The Santa Monica Mountains and the South Coastal region still remain on septics, but the use of advanced sewage disposal systems has generally reduced failures to a minimum. Further, the County has established County Service Area 32 in case of septic system failure. However, monitoring of these systems is still a necessity. In recent years there has been concern regarding septic system use in the Santa Rosa Valley and El Rio/Nyeland Acres areas where older systems still exist and the close proximity of groundwater basins which provide drinking water. Specific program recommendations are made to address these issues.

C. <u>1994 Plan Recommendations</u>

General Program Recommendations

1. Update the County's sewer policy to include the latest Regional Water Quality Control Board policies regarding the use of septic systems on subdivided lots.

2. Continue to monitor areas where septic system problems exist and encourage public sewering wherever feasible.

3. Clearly identify areas where septic systems directly or indirectly contribute to groundwater contamination and determine methods to eliminate and/or reduce the introduction of nitrates to groundwater.

4. Specific Area Program Options

   Santa Rosa Valley

- Discourage individual disposal systems and require future discretionary development to connect to a sewage treatment plant;
- Consider larger minimum lot sizes where individual septic systems are permitted in areas where groundwater is used as a drinking water source.

El Rio/Nyeland Acres

- Designation of a groundwater protection area;
- Collection, treatment and disposal of domestic wastewater;
- Obtain imported State Water supplies from Oxnard for drinking water, will require annexation;
- Obtain use of additional areas for groundwater recharge to increase locally available water supplies;
- Determine sources, implement blending of high and low nitrate well waters;
- Tie nitrate blending system to the Oxnard-Hueneme water system.

V. URBAN STORMWATER RUNOFF

A. 1980 Plan Recommendations

The 1980 208 Plan did not find that there was a significant Countywide problem with urban stormwater runoff. When the plan was prepared only a small percent of the total drainage area of the County was urban. It did find, however, that there was a potential problem in the Calleguas-Conejo system and the Mugu Lagoon from increased urbanization and the scheduled concreting of these channels which would reduce the self-cleaning effect of natural channels.

The following recommendations were made as part the 1980 208 plan to decrease the pollutant load of urban stormwater runoff.

1. Public awareness program and litter ordinance
2. Improved street cleaning and resumption of street cleaning of urban county roads

3. Improved roof, sidewalk, and drainage facility cleaning

4. Reduced fertilizer and pesticide applications

5. Reduction of vehicle miles traveled

6. Development of increased on-site infiltration through storage (ponding)

B. Program Implementation Status

Due to several factors, the above recommendations were not implemented. As a result of Proposition 13, funds were no longer available for public awareness, litter and street sweeping programs. Also at the time, urban stormwater runoff was not considered a priority problem compared to other water quality issues such as seawater intrusion, overdrafting of groundwater basins and other problems.

Although the recommendations above were not implemented, with the adoption of the 1980 Water Quality Management Plan, the County Board of Supervisors did direct the Ventura County Flood Control District (VCFCD) staff to implement three actions as described below.

1. The Board directed staff to enter into a cooperative and informal agreement with other agencies such as the Chemistry Department of Moorpark College to create a voluntary water sampling and testing program and to consider the expansion of existing budget request for VCFCD Sampling Programs to specifically include this program. The Flood Control District entered into an agreement with the Chemistry Department of Moorpark College to carry out a sampling program Students volunteered to take samples in Moorpark and from the Arroyo Simi. To obtain an accurate "urban runoff" sample, samples need to be taken before the first .35 of an inch of rain falls. This amount is referred to as the "first flush" and is believed to be the amount of rainfall necessary to flush the storm water system of accumulated debris and pollution. Unfortunately, the first storms began during the night while the volunteers were asleep and did not collect samples during the first flush. The volunteer program which used unpaid students was considered unsuccessful so the agreement was canceled.

2. The Board of Supervisors directed staff to coordinate with the National Urban Runoff Program (NURP). The National Urban Runoff Program began in the late 1970's and evolved into what is

known today as the National Pollution Discharge Elimination System (NPDES) permit. It took approximately 10 years for the law to be written. The program rules were approved by the EPA in 1990. The VCFCD is currently in the beginning stages of implementing its Stormwater Quality Management Program as part of its NPDES permit requirements. The program is explained in more detail in the Technical Appendix, Chapter 4.2.C.

3. The Board of Supervisors directed staff to incorporate consideration of impacts from urban runoff on Mugu Lagoon and other areas whenever decisions regarding concreting of stormwater channels are made. The VCFCD immediately began analyzing urban runoff impacts whenever concreting of stormwater channels may have affected Mugu Lagoon and other areas. This analysis is conducted through the environmental review process.

   In addition, many County and city existing management practices are in place that contain, directly or indirectly, elements of effective stormwater quality protection. Examples include programs for resident and businesses to recycle automotive fluids, paints, car batteries, and other substances. Programs for municipal infrastructure such as street sweeping, programs for land development and construction sites include the environmental review process, including California Environmental Quality Act requirements. These programs are described in more detail in Volume II, Technical Appendix.

C. 1994 Plan Recommendations

Since the 1980 plan was prepared, urban stormwater runoff is now considered one of the most significant sources of water pollution.

The Federal NPDES Stormwater Regulation identifies local municipalities as responsible for complying with the legislation requirements. The VCFCD, the County of Ventura and the 10 cities in the County are currently in the beginning stages of implementing their Stormwater Quality Management Program as part of NPDES permit requirements. The Countywide NPDES application was filed with the Los Angeles Regional Water Quality Control Board (LARWQCB) in April of 1994 and a permit was issued on August 22, 1994. The application included existing data in the Municipal Separate Storm Sewer System (MS4), receiving waters, stormwater management programs, preparation of a monitoring plan to characterize the stormwater discharges, and the preparation of an

implementation plan for a comprehensive Municipal Stormwater Management Program (MSWMP).

The following recommendations are programs included in the NPDES permit application filed by the County of Ventura and cities of Ventura County for the Countywide Stormwater program for fiscal year 1994/95.

1. General Public Outreach and Education using VCFCD prepared material through: displays at community events, stenciling of a "No Dumping" message on catch basins by municipal staff and volunteer groups, speaking at engagements, and incorporating a stormwater message into educational materials on existing programs. For cost reduction, the NPDES permit seeks to achieve stormwater pollution control through modifications to existing programs whenever possible.

2. Initiation of a "Clean Business" Approach to Pollution Control including: on-site field investigations of automobile service businesses and restaurants, on-site education about observed pollutant sources and control measure, on-site feedback from the business owners/employees, follow-up inspections, awards and incentives for businesses that achieve adequate pollutant control, and development of new ordinances, if necessary, to enforce practicable controls.

3. Development of standard reporting and evaluation procedures for existing infrastructure management practices to determine the effectiveness of the existing programs and better track observations of illicit discharge.

4. Each co-permittee has identified priority areas within their jurisdiction for controlling illicit discharges to the storm drain system. These areas will be investigated, dischargers will be educated, and if necessary, enforcement action for control will be taken. Simi Valley and Oxnard have begun inspections for stormwater pollutants in some of their priority areas.

5. Implementation of planning procedures for development projects to address pollutant sources during development. Educational material will be prepared and workshops conducted for the land development community as the procedures are revised.

6. Development of model stormwater pollution prevention plan (SWPPP) for construction sites as a training tool to educate

contractors, their employees, and public agency inspectors on proper steps to take to reduce pollution entering the storm drain system at construction sites.

7. During three storms per year, outfall monitoring will be conducted at selected sites to characterize stormwater runoff from different urban land uses in Ventura County. Results of the sampling will be analyzed to produce pollutant load estimates, identify long-term runoff quality trends, evaluate receiving water quality impacts, and assess management program effectiveness. The monitoring program is presently being conducted at five urban locations. Three additional locations will be required by the NPDES permit for fiscal year 1994/95.

8. Administration of the Ventura County Hillside Erosion Program by the Resource Conservation District (RCD).

9. Administration, financial accounting and preparation of annual reports and other documents for submittal to the Los Angeles Regional Water Quality Control Board (LARWQCB) by VCFCD as required by the permit.

10. Planning for full implementation phase - Preparation of Countywide program approaches and material for use in implementing the NPDES program in subsequent years (after 1994-1995) for the duration of permit.

VI. ABANDONED WATER WELLS

A. 1980 Plan Recommendations

The 1980 Plan included an abandoned water well assessment. The assessment was designed to estimate the extent of abandoned well related problems on the Oxnard Plain. The Oxnard Plain was selected because the area was believed to have the greatest potential for groundwater pollution for a variety of reasons. Aquifers beneath the Oxnard Plain included areas intruded by seawater. Some wells were thought to be perforated in both the upper intruded aquifer and the lower uncontaminated aquifers. Perforation of a well in both aquifers could create the potential for the well to act as a conduit for seawater to enter the lower aquifers resulting in degradation of groundwater quality. These conditions, both separately and together created a great potential for contamination of the groundwater basins (unfortunately, these conditions still exist today).

1980 Plan Recommendations to address the abandoned water well problem included the directives listed below.

1. The Environmental Health Division of the Resource Management Agency was to continue to require well owners to properly destroy abandoned wells whenever such wells are located per Water Well Ordinance 3991.

2. Potential effects of abandoned wells are to be taken into account in planning for seawater intrusion abatement.

3. Exploration of funding sources for further study of the abandoned well problem.

B. Program Implementation Status

The most recent abandoned water well survey was conducted in mid 1981 by the Ventura County Environmental Health Division. The survey resulted in the proper destruction of a half a dozen abandoned wells and an update of an active well map. The Active Water Well Map that was started in 1977 has been kept up to date by the Public Works Agency Water Resources Division. Because wells have a limited useful life, the map assists in identifying wells that will eventually become inactive and need to be properly destroyed.

Following adoption of the 1980 Plan, administration of the Well ordinance overseeing the proper destruction of abandoned wells was transferred from the Environmental Health Division of the Resource Management Agency to the Water Resources Division of the Public Work Agency.

Since the last study, some abandoned water wells have been converted to serve a useful purpose in the Ventura County water level data collection program. Once determined not to be a pollution source to groundwater, abandoned wells can serve as monitoring wells to identify groundwater levels and groundwater quality. Abandoned wells on the Oxnard Plain provide key water quality data for the annual seawater intrusion report prepared by the County PWA Water Resources Division.

Abandoned water wells on the Oxnard Plain have resulted in degraded groundwater quality and some infrequent flowing groundwater conditions. Preliminary review of a recent USGS survey indicates that improperly sealed wells may act as major contributors to the degradation of local groundwater resources. The total dissolved solid (TDS) content of groundwater resources beneath the Oxnard Plain have been rising over

the years. Although much of the degradation is caused by direct seawater intrusion, it has now become evident that abandoned wells are worsening the seawater intrusion conditions. Abandoned wells act as conduits creating an interzonal connection between freshwater and brackish (seawater intruded zones).

C. 1994 Program Recommendations

In addition to recommendations made in the 1980 Water Quality Management Plan, as addressed above, the following 1994 recommendations are made to address local abandoned water well problems.

1. Revise existing well ordinance 3991 to strengthen county policing authority to enforce the timely destruction of wells in violation of the ordinance. The revised ordinance should include the following elements:

   a. Provide the authority to require well destruction as a condition upon sale of property or change of ownership.

   b. Process new well applications only after the applicant has demonstrated that all existing wells on the property they own are not in violation of the well ordinance.

   c. Assess penalties if compliance with the ordinance is not met within a reasonable time frame.

   d. Institute property liens if compliance with ordinance is not met within a reasonable time frame.

   e. Prioritize wells for destruction.

VII. AGRICULTURAL RUNOFF

A. 1980 Plan Recommendations

The 1980 208 Plan contains an evaluation by the Soil Conservation Service (SCS) on the effects of agricultural runoff from surface and subsurface flows into the Revolon Slough and downstream to Mugu Lagoon. The SCS was directed to choose sampling sites, collect water samples, conduct analysis, evaluate the samples based on sediment and chemical constituent content. SCS projected the effects agricultural runoff from the entire drainage area would have on Revolon Slough and to determine if projected impacts on Mugu Lagoon could be mitigated

through the use of best management practices indicated in the 208 Plan. The study completed by SCS in May 1982, was entitled Agricultural Water Quality in Ventura County.

The 1980 SCS Study recommended the following program.

1. Implementation of a Resource Management System (RMS) for irrigated cropland which included the following components;

    a. Soil Management Subsystem

    b. Irrigation Subsystem

    c. Water Management Subsystem

    d. Excess Water Removal Subsystem

    These RMS's were specifically designed to address local soil capabilities and land uses and most have been implemented. The RMS approach is a combination of conservation practices that will protect the resource base by meeting tolerable soil losses, maintaining acceptable water quality, and maintaining acceptable ecological and management levels for soil and water. The individual conservation practices within the RMS's were adopted in the Ventura County 208 Plan as Best Management Practices (BMP). The SCS recommended that the University of California Cooperative Extension (UC COOP), the Ventura County Resource Conservation District (RCD) and the SCS present workshops and other methods to educate growers. The SCS Study also mentioned the Water Conservation Plan that was being written at the time by the Ventura County Resource Management Agency, Planning Division which cited the UC COOP, the RCD and SCS or agencies to provide on-farm technical assistance in irrigation water management.

B. <u>Program Implementation Status</u>

The University of California Cooperative (UC COOP) Extension Farm Advisor's Office educates growers primarily by conducting applied research projects and providing the findings of such projects to growers. Information is provided to growers through newsletters, seminars, and field demonstrations.

The Ventura County Resource Conservation District (RCD) Mobile Irrigation Management Laboratory provides a variety of proactive educational services to growers within the County. The program has been funded by the RCD, United WCD, Calleguas MWD, Casitas MWD and the Metropolitan WCD. The program has been voluntary and free of charge to those that are audited, however funding will not be available beginning in June 1994. Countywide several hundred farms have been audited, all on a voluntary basis.

One of the 1980 recommendations was to develop a Countywide Water Conservation Program and Management Plan. Both were developed and are still in existence today promoting urban and agricultural water conservation. The Water Conservation Program uses a regional approach by working in cooperation with the efforts of the UC COOP, the RCD Mobile Irrigation Management Laboratory and the Fox Canyon Groundwater Management Agency (GMA) in implementing agricultural water conservation programs.

C. 1994 Plan Recommendations

The following recommendations are made in support of existing water demand management and conservation programs as well as other measures to reduce agricultural runoff.

1. Continue to support the Countywide Water Conservation Program efforts to educate the agricultural sector of the county through current programs, and new programs should be encouraged.

2. The University Cooperative Extension Program and Resource Conservation District Mobile Lab efforts should continue and be enhanced to educate agricultural water users countywide. New funding sources should be sought.

3. The Fox Canyon Groundwater Management Agency should continue to implement Groundwater Extraction Reduction Ordinance #5.3 and water allocations to encourage water efficiency.

4. Explore development of reasonable tiered rate structures to be implemented by water purveyors in order to encourage efficient water use practices where practical.

5. Recommendations in the County Drought Action Plan Summary should be implemented by government agencies and water purveyors.

6. The County should encourage the RWQCB to release five year studies summarizing the results of the State Mussel Watch and Toxic Substances Monitoring Programs so this information can be utilized to determine necessary measures to reduce pollutants contributing to agricultural runoff and develop measures to assist in the enhancement of Mugu Lagoon and related tributaries.

7. The County should encourage and promote the enhancement of activities conducted by the Resource Conservation District's Soil Conservation Service.

8. The County should encourage the joint Mugu Lagoon Implementation Plan currently being conducted by the Soil Conservation Service and California State Coastal Conservancy. The County could assist in implementing measures that will be developed as a result of the Plan.

In addition to the above recommendations that mostly relate to the BMP's for water conservation and improved agricultural practices, the County should investigate methods of ensuring these BMPs are implemented.

9. Promote the use of BMPs.

10. Increased frequency of hazardous waste material disposal events for growers to dispose of pesticides and herbicides that are no longer legal.

11. Create a receiving water protection area to discourage land and water uses that would adversely impact receiving water quality.

VIII. EMERGENCY FLOOD CONTROL MEASURES

A. 1980 Plan Recommendations

The 1980 208 Plan studied the effects of emergency flood control measures upon water quality and riparian habitats. Emergency restoration work in flood control channels was identified as having short term impacts on water turbidity, flora and fauna, and channel configuration. However, no evidence of long term significant effects on

either water quality or riparian habitat caused by emergency flood control work was found.

Following review of several alternative solutions suggested in the 1980 Plan, the Board of Supervisors adopted the following directives.

1. Directed staff to establish policy guidelines which reflect environmental considerations for performing emergency flood control work in natural streams.

2. Directed staff to establish a program to implement and participate in an annual on-site field work shop and to request participation of State Fish and Game and Federal Fish and Wildlife Service.

B. Program Implementation Status

The Ventura County Flood Control District (VCFCD) is responsible for providing flood control protection to life and property during emergency conditions. The VCFCD must, under emergency provisions, act immediately in order to ensure adequate flood control protection. In most instances only a narrow window of time, usually 3-5 months exists in which to design and construct emergency flood control facilities. For example, following a summer or fall fire there are only several months to construct debris basins before the rainfall season begins. Under such time constraints, due to the emergency nature of implementing such projects, it is often impractical to adhere to standard formal review processes and coordinate with all necessary government agencies (typically State Fish and Game, Army Corp of Engineers, Regional Water Quality Control Board) and implement the emergency project in a timely manner. The VCFCD notifies State Fish and Game of any streambed alteration plans before the work commences and communicates verbally to effect mitigation measures to reduce environmental impacts, as much as possible, at the beginning of the emergency project. Streambed alteration agreements are usually not finalized until after the project has begun.

The State Fish and Game 1601, Streambed Alteration Agreements are in most instances very detailed. For example a recent agreement, State Fish & Game Agreement No. 5-769-93, Fagan Canyon-Debris Basin contains sixty eight (68) conditions to mitigate temporary and permanent impacts. These include a restoration plan, to specify the location and species of native vegetation to be planted and the non-native plants to be removed per mitigation measures. The total area of permanent impacts was projected to be 0.88 acres. To mitigate permanent impacts the VCFCD agreed to restore 0.65 acres of riparian habitat in a location immediately

downstream of the project site. Most of the conditions relate to how this restoration will be implemented. To mitigate the difference (0.23 acres), VCFCD agreed to augment the restoration site(s) in Adams Canyon by this amount or remove 0.46 (2 @ 0.23) acres of non-native vegetation from within the Fagan or Adams drainage(s) at a Fish and Game approved location(s).

Although emergency flood control projects are statutorially exempt from California Environmental Quality Act (CEQA) requirements per sect. {15}269, the VCFCD does comply with conditions and agreements set forth by State Fish and Game Department, the Regional Water Quality Control Board (RWQCB), Army Corp of Engineers and other agencies in order to mitigate the environmental impacts related to flood control projects.

In regards to the 1980 208 Plan recommendations, no official policy guidelines perse have been developed to reflect environmental considerations when performing emergency control work in natural streams, and no annual on-site field workshops have commenced.

However the intent of the recommendations are carried out through the VCFCD coordination with all necessary agencies either before, during and/or following completion of the emergency project. Although not formally guided by local policy or annual workshops, the VCFCD does agree to conditions through the Streambed Alteration Agreement and other permits which address environmental protection and compliance with the conditions, while also performing the obligation of flood control protection.

C. 1994 Program Recommendations

Continue current VCFCD emergency flood control practices of coordination and informal communication with regulatory agencies to address environmental impacts of emergency projects during the planning and implementation phases. This will reduce the need for additional mitigation measures to be implemented following completion of the project. Continue practice of coordination with necessary agencies following completion of emergency projects to address any issues which could not be adequately addressed during the planning and implementation phases.

APPENDIX A

COUNTY WATER MANAGEMENT STRUCTURE AND RESPONSIBILITIES

Within the structure of Ventura County government a multitude of water projects and programs are managed by a variety of County agencies. A brief overview of the responsibilities of the County agencies is addressed below. To assist in the overview of County water management, Figure 1.4 illustrates the complexity and multitude of water projects and programs. A more detailed discussion of agency responsibilities in regard to specific water supply, demand or quality issues is addressed in Volume II, Technical Appendix, Chapters 3 and 4.

A. Board of Supervisors

As Figure 1.4 illustrates, the Board of Supervisors are the elected officials which make and adopt countywide water quality and management policy. The Board is the responsible authoritative body to adopt this Water Management Plan Update and its goals, policies and program recommendations to manage and ensure maintenance and improvement of County water resources.

B. Local Agency Formation Commission

The Local Agency Formation Commission (LAFCO) responsibilities are to ensure efficient water distribution systems and to determine water district boundaries.

C. Chief Administrative Office

The Chief Administrative Office (CAO) water management related responsibilities includes monitoring of federal and state water related and other legislation. The CAO also oversees Community Development Block Grants which often consist of water system improvement projects.

D. Fire Department

Water supply, water pressure and the ability to provide adequate fire flow in unincorporated areas is overseen by the Fire Department in coordination with other County agencies and water purveyors.

Figure 1.4
County Water Management Structure and Responsibilities

E. Public Works Agency

The County Public Works Agency has several departments which manage a multitude of water resource projects: four Water Works Districts, Flood Control District, and the Water Resources and Development Department.

1. Water Works Districts - Four Water Works Districts exist in the County: Piru, Moorpark, North Coast and Nyeland Acres. The Districts assist in operations (i.e., extraction, distribution and other supply activities). The Water Works Districts also assist in the implementation of capital projects.

2. Flood Control District - Duties of the Flood Control District consist of a variety of flood control related projects and programs. Duties include flood forecasting, design, operation and maintenance of flood control systems, management of surface water to prevent flooding, erosion control, maintenance of data base, including rainfall and other flood related factors; and State and Federally mandated programs such as the National Pollutant Discharge Elimination System (NPDES) program for management of urban stormwater runoff.

3. Water Resources and Development Department - The Water Resources and Development Department manages a variety of water quality, supply, and demand related projects and programs. The Water Resources and Development Department is the lead agency for this Water Management Plan Update, and has been instrumental in overseeing the implementation of many of the 1980 plan programs. The department provides staff support for the Fox Canyon Groundwater Management Agency (GMA) whose responsibility is to manage the groundwater water resources within the GMA boundaries.

   All proposed projects requiring water are reviewed by the Water Resources and Development Department. During the application process, when projects require the preparation of Environmental Impact Reports (EIRs) and/or Conditional Use Permits (CUPs), the Department reviews the application, EIRs (or other environmental documents) and CUPs to ensure the project water-related infrastructure (i.e., distribution facilities) can meet the demands of the project.

   Other responsibilities include recording of abandoned water wells, issuance of water well permits, management of mineral resources, and alternate water resource research. Further discussion of these issues is presented in Volume II, Technical Appendix, Chapters 3 and 4.

F. Resource Management Agency

Within the Resource Management Agency, two divisions play a vital role in water management while another indirectly affects countywide water management issues. The Planning and Environmental Health Divisions are respectively charged with implementing a variety of water supply, demand and quality programs. The two divisions, as illustrated in Figure 1.3, each have several subsections which play a vital role in the management of the County water resources. The Air Pollution Control District (APCD) plays an indirect but very important role by enforcing compliance of air quality standards in the County. Air pollutants regulated by the APCD reduce the amounts of pollutants in the air and therefore water by keeping the pollutants out of the water cycle. The Water Management Plan is consistent with the Air Quality Management Plan and is discussed in Chapter 3.

1. Planning Division

Within the Planning Division, five sections deal directly with water management: Regional Programs, General Plan, Commercial and Industrial Permits, Residential Permits, and Land Use Permits.

a. Regional Programs - Water management responsibilities of the Regional Programs Section include this Water Management Plan Update, Water Conservation, Association of Water Agencies, Agricultural Advisory Committee, and Population Dwelling Unit and Employment Forecasting.

- Water Management Plan - Planning staff provided coordination and preparation of this Water Management Plan for the Public Works Agency and conducts 208 plan consistency findings for development projects (See Section J).

- Water Conservation - The Water Conservation Program uses a variety of mediums to educate the urban, industrial and agricultural sections of the County on efficient water use practices.

- Population Dwelling Unit and Employment Forecasting -Population forecasting is periodically conducted, in part, to plan for future resource demands, including water demand.

b. General Plan - The General Plan Section participates in water management planning through the processing of General Plan amendments to maintain an up-to-date data

base. The General Plan includes regional water goals, policies and programs.

c. Commercial and Industrial, Residential, and Land Use Permit Sections

Staff planners process permits for commercial, industrial, residential, and other land uses review proposed projects for their potential water demand and water related impacts. EIRs and other environmental documents are reviewed for adequacy to ensure project consistency with County water quality management goals, policies and programs. Permit processing identifies project water use, and includes design review to assure efficient water use. Development conditions, such as efficient landscape water use and plumbing devices are enforced.

2. Environmental Health

The Environmental Health Division is the implementing agency of State Water Quality laws related to protecting public health and safety (see Volume II, Chapter 1, Legislative History). Among other health protection legislation the Department is responsible for enforcing the federal Clean Water Act and amendments, and the Safe Drinking Water Act, and the State legal requirements of the Porter-Cologne Act and the Safe Drinking Water and Toxics Enforcement Act (commonly known as Proposition 65). Water management within the Environmental Health Division consists of five programs: Drinking Water, Hazardous Materials, Underground Tank Cleanup, Liquid Waste, and Solid Waste.

a. Drinking Water - Drinking water programs include those programs which oversee water resources that have not been humanly used prior to their extraction from groundwater basins, surface sources or delivered through the State water project. These drinking water programs include the inspection, monitoring and permitting of small water purveyors with less than 15 connections, approval of individual water supply for proposed projects and contamination abatement. The cross connection control program strives to ensure and protect drinking water quality in drinking water distribution systems by preventing the contamination of potable water distribution lines from wastewater/sewage lines, industrial process waters, medical process waters, non-approved and potentially degraded water sources, irrigation waters/agricultural fertilizers,

pesticides, and reclaimed water systems. In addition, public information as required by Proposition 65 is provided.

b. Hazardous Materials Program - The Hazardous Materials Program regulates hazardous materials through five programs; regulation of hazardous waste generators, regulation of underground tanks that store hazardous substances, emergency response to hazardous spills, hazardous material volume reduction and review of Hazardous Materials Business/Contingency Plans. Hazardous Materials Emergency Plans are administered by the Sheriff's Office of Emergency Services.

   Regulation of hazardous wastes is conducted through inspection and surveillance of businesses to assure proper storage and disposal of hazardous materials. Underground tanks that store hazardous substances are issued permits and inspected by staff to ensure compliance with State hazardous material legislation. County staff provides emergency response assistance to accidental spills and releases of hazardous substances. Hazardous material volume reduction services are provided by County staff to assist industry through education to use alternative production processes and reduce the materials used to reduce the volume of hazardous materials that need to be stored and also reduce the amount of hazardous waste to be disposed of following production. The review of Hazardous Materials Business Plans and update of area Hazardous Materials Emergency Plans are new programs recently taken over from the County Fire Department.

c. Leaking Underground Tank Cleanup Program - The Leaking Underground Tank Cleanup Program oversees the assessment and cleanup operations of hazardous materials spills from underground storage tanks.

d. Liquid Waste - The Liquid Waste Program involves the issuance of permits regulating onsite sewage disposal systems to prevent contamination of water resources. County Service Area 32 is a program to remedy failing on-site sewage disposal systems through monitoring and maintenance.

e. Solid Waste - The Solid Waste Program includes monitoring, inspection, and issuance of permits of solid waste disposal facilities to prevent the contamination of water resources.

G. Fox Canyon Groundwater Management Agency

The goal of the Fox Canyon GMA is to decrease and ultimately eliminate the overdraft condition of the aquifers within the Fox Canyon GMA boundaries. Overdraft occurs when the amount of water extracted from a groundwater basin exceeds the rate of recharge. Past and current extraction practices have reduced the overall supply of groundwater resources which may have contributed to seawater intrusion problems. Staff has drafted Ordinance No. 5, which outlines an extraction reduction program aimed at the long-term resolution of supply and seawater intrusion problems. Further discussion of these programs and projects are provided in Volume II, the Technical Appendix.

H. Ojai Basin Groundwater Management Agency

The goal of the Ojai Basin GMA is to manage, preserve and prevent groundwater overdraft conditions of the aquifers within the Ojai Basin GMA boundaries for the protection of short term and long term agricultural, municipal and industrial water uses within the Ojai Basin GMA boundaries.

I. Association of Water Agencies

County Planning Division staff provides support to the Association of Water Agencies (AWA). Intended to represent water districts, purveyors, and other water interests in the County, AWA works together to identify and address the varied water problems facing County water interests. The AWA Board of Directors includes twelve officers representing various water interests.

J. 208 Consistency Findings

Proposed development projects, including 201 (wastewater plant improvement and/or expansion) projects have been subject to 208 Water Quality Management Plan (1980) consistency review to ensure that such projects are in compliance with Ventura County water related goals, policies and programs. Once this Ventura County Water Management Plan (1994) is adopted, development projects, including 201 projects will be subject to consistency review with this plan. In addition, projects which apply for State Revolving Fund loans from the Regional Water Quality Control Board or other government agencies will also continue to be subject to project findings of consistency. Subsequent to approval by the Board of Supervisors the following criteria will be used to assess consistency.

1. Consistency with population forecasts as adopted by the Ventura County Board of Supervisors. Consistency evaluation will consider

both the actual total population projections used, and the phasing of the population to the year 2010.

2. Consistency with proposed project(s) with the estimated waste load needs as indicated in the Ventura County Water Management Plan (if applicable).

3. General consistency of proposed project(s) vis-a-vis the locally adopted land use maps (local agencies will be requested to review and comment during review periods).

4. General impact of the proposed project(s) upon the water quality of the planning area.

5. General consistency of the proposed 201 project(s) with the Ventura County Water Management Plan water supply projects, demand management programs and water quality goals.

6. General consistency of the proposed project(s) with the water quality goals and objectives and policies and program recommendations of the Ventura County Water Management Plan.

7. Other issues raised through the public participation process.

Appendix B - Resolution 431

Appendix B - Resolution 431 (continued)

APPENDIX C
STATUS OF SUPPLY PROJECTS AS RECOMMENDED IN 1980 BY BOARD OF SUPERVISORS

The priority list described in Appendix B recommended two demand management programs and four supply projects. The demand management programs included Seawater Intrusion Abatement Project Phases I and II and the Countywide Water Conservation Program. Both programs have been implemented and continue to be key elements in the management of countywide water resources. The Seawater Abatement project Phase I included the creation of the Pumping Trough Pipeline and Lower Aquifer System Wells and the removal of Upper Aquifer System wells. Phase II included improvement of the Freeman Diversion Project. The Water Conservation Program is a comprehensive education and demonstration program that serves urban, agricultural and industrial water users countywide.

The status of supply projects, as recommended in Appendix B, are discussed in the order in which they were recommended.

- The development of reclaimed water from the Simi Valley Treatment Facility to be used for agricultural purposes in the Las Posas Valley was actively pursued by County staff. Although coordination efforts by County staff did not result in final negotiation plans for the project, the City of Simi Valley is now planning a reclamation project with reclaimed water to be used in Simi Valley.

- The development of reclaimed water from the Thousand Oaks - Hill Canyon Treatment Facility is currently being negotiated. Facility plans have been completed. Camrosa Water District will sell water to instream water users and build a pipeline to sell an unspecified amount (whatever remains after instream uses, approximately 7,000 AF/Y) of water to Pleasant Valley users. Calleguas Municipal Water District will finance and operate the treatment facility.

- During the height of the drought in the late 1980's development of the State Water Project entitlement of 20,000 acre-feet of water, jointly held by the City of Ventura, Casitas Municipal Water District, and the United Water Conservation District was being evaluated to determine a method of delivery. Portions of the 1990 through 1993 entitlements have been delivered through an interim delivery method by the United Water Conservation District. Currently, obtainment of the entitlement is no longer being pursued, while other options (i.e., desalination, etc.) are evaluated.

- Regarding the Sespe Water Rights issue, several bills in the House and the Senate have been proposed to designate all or portions of the Sespe River "Wild and Scenic." A Wild and Scenic designation for the entire 55 miles of the river would prohibit water development projects such as dams within the boundaries of the designation. Although none of the bills have been adopted, due to the environmental issues surrounding proposed water development projects on the river, none are currently or likely to be approved. On October 8, 1991, the Ventura County Board of Supervisors voted unanimously 5:0, to preserve the top 51 miles of the Sespe River as a wild and scenic river. No tall dams could be built on the Sespe. An option would remain for low diversion structures (without reservoir) on the lowest four miles of the creek.

ACKNOWLEDGEMENTS

Prepared by:

Ventura County Resource Management Agency,
Planning Division and Public Works Agency,
Water Resources and Development and Flood Control Division

in conjunction with

Countywide Planning Program and Association of Water Agencies Water Management Plan Review Subcommittee

Planning

Keith Turner, Director
Nancy Settle, Supervisor
Jane Haggarty-King, Program Manager
Lynn Anderson-Rodriguez
Ron Vogelbaum
Deborah Weinstock

Graphics

Kay Clark, Supervisor
Shelah Bernstein
Yvonne Tello

Word Processing

Karen Avers, Supervisor
Kathy Evans
Nancy FaGaines
Thava Merrett

Water Resources and Development

John Crowley, Deputy Director
Bob Quinn, Manager
Lowell Preston, Manager
John Turner
Richard Farnsworth
LaVern Hoffman
Glen Luscombe
Ron Jones

Flood Control

Alex Sheydayi, Deputy Director
Delores Taylor
Vicki Musgrove

Countywide Planning Program and Association of Water Agencies Water Management Plan Review Subcommittee

Mark Capron	*Subcommittee Chairman*
Carla Bard	*CPP*
Janet Beymer	*Environmental Coalition*
Frank Brommenshenkel	*AWA Board Member (Former AWA President)*
David Burkhart	*VRSD/TCSD*
Mark Capelli	*Friends of Ventura River*
Alasdair Coyne	*Keep the Sespe Wild*
Frank Depasquale	*Supervisor, District 1*
Phyllis Dwire	*League of Women Voters*
Ben Faber	*UC Cooperative/Farm Advisor*
Jane Haggarty-King	*RMA-WMP Update Planner*
LaVern Hoffman	*PWA Water Resources Department*
Sheri Klittich	*Resource Conservation District*
John Kozar (Mary Ann Krause)	*City of Fillmore, Public Works*
Susan Lacey/Steve Offerman	*AWA/Board of Supervisors*
Richard Laubacher/Fred Gientke	*AWA/United WCD*
Connie Lawrason	*CTAC*
Cynthia Leake	*Sierra Club*
Peter Lezak	*Innovative Water Management*
Maura Macaluso	*City of Ventura*
Pat Miller	*AWA/Calleguas MWD*
Dave Pommer	*AWA/Farm Bureau*
Nancy Settle	*RMA-Regional Programs*
Mike Simmons	*Soil Conservation District*
Lee Waddle III	*Innovative Water Management*
Dana Young	*AWA Managing Director*

References

Metropolitan Water District of California, Aqueduct 2000, March-April 1994, Volume 60, A Drought By Any Other Name

Birosik, S. California Regional Water Quality Control Board, Los Angeles Region (Region 4), December 1988, Pesticide Contamination in Mugu Lagoon and its Tributaries

California Department of Food and Agriculture, Nitrate Working Group, February 1989, Nitrate and Agriculture in California

Chou, R., California Regional Water Quality Control Board, California EPA personal communication

Douge, T.A., Roth, R.L., and Gardner, B.R., May 1991, Nitrogen Fertilizer Management in Arizona, College of Agriculture, University of Arizona, Tucson, Arizona

Faber, Ben, Ventura County Farm Advisory, personal communication.

Geraghty and Miller Inc., prepared for United Water Conservation District, April 1991, Feasibility Study for Abatement of Nitrate in Groundwater, City of Industry, California

Jordan, Q.S., and Jordan, C.M., 1992, Contamination of Soil and Groundwater by Soil Herbicides, Paper No. 439

State Water Quality Control Board, Los Angeles, Ventura County (Region 4), California EPA, June 1991, Toxic Substances Monitoring program 1988-1989

United States Department of Agriculture, Soil Conservation Service, May 1982 Agricultural Water Quality in Ventura County/Impairment to Surface and Groundwater, Somis, California

United States Department of Agriculture, Soil Conservation Service, November 1992, Mugu Lagoon Watershed, Local Implementation Plan of Work, Davis, California

United States Department of Agriculture, Soil Conservation Service, January 1989, Field Office Technical Guide, Field Office Somis, Ventura County

United States Environmental Protection Agency, Office of Water, Office of Pesticides and Toxic Substances, 1990, National Pesticide Survey

University of California, Division of Agricultural Services, June 1982, Pesticides in Soil and Groundwater Proceedings of a Conference, Davis, California

University of California, California Water Resources Center, April 1980, Nitrogen Fertilizer Management of Vigorous Lemons and Nitrate - Pollution Potential of Groundwater, Contribution No. 182

Ventura County, Resource Management Agency, February 1991, Ventura County Drought Action Plan Summary, Ventura County