

GROUNDWATER MANAGEMENT -

BUILDING CONSENSUS

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ABSTRACT

Located in western Riverside County, in southern California, the Eastern Municipal Water District (EMWD) covers over 555 square miles with a population of nearly 400,000. Only about 20% of the total water sold by EMWD for municipal use is groundwater, the remaining 80% is imported. With the increasing uncertainty of imported water, both in terms of cost and availability, EMWD has identified groundwater resources management, reclaimed water reuse, and conservation as priorities.

The West San Jacinto Groundwater Management Plan was adopted by EMWD's Board of Directors on June 8, 1995. This is the first and most comprehensive plan adopted in southern California under the authority of California State Assembly Bill 3030, now part of the State Water Code. The plan area covers 256 square miles, nearly half of EMWD's service area. Groundwater quality is marginal in many of the subbasins, such that agricultural and municipal uses are restricted. Potential water shortages, increasing costs, and water quality problems provide the need for a comprehensive groundwater management plan. Plan objectives include meeting future water demands, increasing the reliability of water, minimizing water costs, maximizing reclaimed water use, protecting and/or enhancing basin-wide water quality, protecting local water rights, enhancing basin yields, and maximizing groundwater basin storage. Initially, public reaction, particularly from the farming community, was one of concern and suspicion that the District would try to put a limit on groundwater production by farmers, would try to finance the plan through a replenishment assessment or "pump tax" on groundwater produced and would try to force the farmers to use lower quality reclaimed water rather than groundwater. Ten public meetings with presentations were held along with six information workshops and fourteen individual meetings. In all, over one hundred interested parties - property owners, cities, agencies, groups, and attorneys - attended meetings and/or provided comments.

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Prior to adoption, the plan was modified to more accurately address concerns. Finally a plan evolved that most of the agricultural community supported, some enthusiastically. As a result, protest at the adoption hearing was minimal, far less than 1%, with only one individual speaking against adoption and many speaking in favor.

The West San Jacinto Groundwater Management Plan is an historic development that will ensure water for domestic and agricultural users, help protect the interests of existing groundwater producers, provide a framework for new water supply projects for the benefit of the groundwater producers and the public, and ensure the economic viability of the region.

INTRODUCTION - EMWD

When the Eastern Municipal Water District (EMWD) was formed in 1950, local farmers needed to secure a source of water to supplement groundwater supplies which were declining in some basins, and were expected to decline in others as agricultural development expanded. EMWD became a member agency of the Metropolitan Water District of Southern California (MWD) to secure access to imported water from Northern California and the Colorado River. At that time, the District covered an area of 86 square miles. In the intervening 46 years, EMWD's service area has expanded considerably to over 555 square miles (See Fig. 1) and the character of the District has changed from a rural agricultural area to one of mixed urban development and continued agricultural use with increasing urbanization. Projections to the year 2010 indicate that while agricultural use will decline slightly, municipal demand will increase dramatically. In the absence of a management plan, increased demand would have to be met with imported water at an increasing cost; some projections show MWD's price increasing to over \$600.00 per AF by 2010. With increased demand and future increases in the cost of imported water, the development of local water resources becomes even more important. There is not enough water in the San Jacinto basin to meet current needs, let alone projected increases.

THE NEED FOR GROUNDWATER MANAGEMENT

Most western states have instituted state control of groundwater. California and Texas remain the only two western states without statewide controls. There is no comprehensive law in California that determines the right to groundwater. Some form of control is on the horizon. However, most feel local control is better than dictates from Sacramento, the state capitol, five hundred miles to the north.

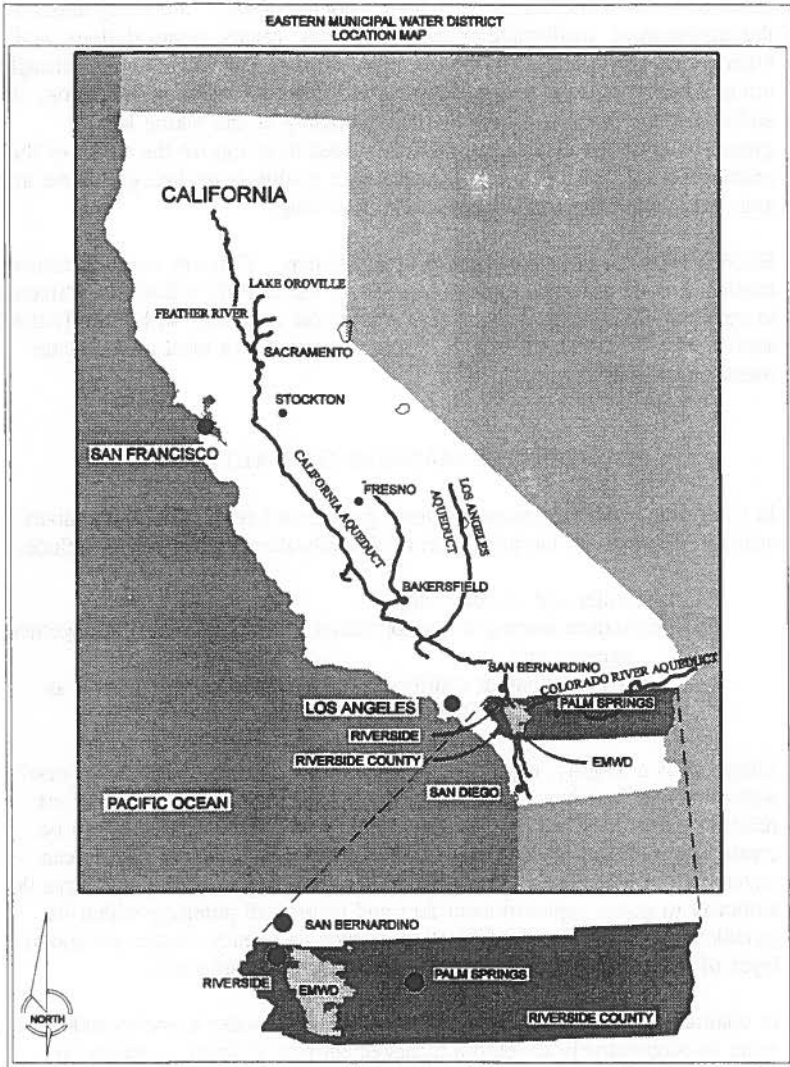


Fig. 1. Location of EMWD service area.

Why is any form of control or management needed? Water demands are increasing in the area; imported water is not as reliable as local resources; the need for water is increasing; increased amounts of water are being allotted for the environment; inadequate or out-dated pipes, canals, pump stations, and other transmission facilities threaten delivery; weather uncertainties (droughts) are an ever-present danger; and the cost of imported water is increasing. In addition, there is the potential for others coming in and taking local groundwater to use elsewhere; there is a need to recognize the rights of the existing groundwater pumpers; groundwater quality is declining in some areas; and, the amount of groundwater is also declining.

EMWD exists to meet the needs of its customers. Concern over the future availability and cost of imported water have led EMWD's Board of Directors to conclude that it is imperative that local water resources within the District's service area be protected through the development of a local groundwater management plan.

GROUNDWATER MANAGEMENT ALTERNATIVES

In California, water agencies and local producers have several alternatives available to them for the protection of groundwater basins. These include:

- 1) Litigation and adjudication;
- 2) Legislation leading to the formation of a groundwater management agency; and,
- 3) Using provisions of California Water Code §10750 (known as Assembly Bill 3030 or AB 3030).

Litigation is a lengthy, expensive process which does not create any "new" water nor alleviate future economic impacts due to production limitations resulting from court rulings. A groundwater management agency can be created through special legislation at the state level. Such an agency can develop and implement a groundwater management plan and would have the authority to assess replenishment fees and control all pumping within its jurisdiction. However, the formation of such an agency creates yet another layer of bureaucracy and increases costs for local water users.

In contrast, the AB 3030 approach allows existing water agencies and private users to cooperatively develop a management plan tailored to maximize benefits to all users. A plan developed using this approach could protect the historic production levels of private groundwater users, while allowing public agencies to use their facilities and access to supplemental supplies to recharge suitable basins for public use. Over-drafted basins could be protected from uncontrolled pumping without impacting historic private production or

recharged using supplemental water from public agencies. Private producers in over-drafted basins who need to increase pumping beyond historic production levels would have the option of participating in a replenishment program and would share the same benefits as public agencies.

There are four major reasons why EMWD took the lead in developing a groundwater management plan. They are:

- 1) The groundwater subbasins in the management area are unregulated and have no legal means of being protected from over-pumping or from being used by agencies from outside the area other than lengthy and expensive litigation;
- 2) As a member agency of MWD and as a regional water reclamation agency, EMWD has access to inexpensive supplemental water supplies (reclaimed water and lower-cost, off-season water from MWD), that could be used to replenish local groundwater basins for use by all groundwater producers. These supplemental supplies cannot be fully utilized without an effective management plan in place;
- 3) EMWD already has in place much of the major regional infrastructure (pipelines, pumping plants, surface storage) that will be required to optimally manage local water resources; and,
- 4) If EMWD and local groundwater producers fail to develop a management plan, it is probable that state regulatory agencies will do it resulting in a loss of control of local resources.

EMWD, like other water purveyors, was not happy to be in a position where it could be accused of social engineering. However, the District believed it was obligated by its values and beliefs and social responsibility to address the issues of water supply reliability and rising costs in an effort to meet its mission, which is "to provide safe and reliable water and wastewater management services to our community in an economical, efficient, and responsible manner, now and in the future."

STEPS IN THE AB 3030 PROCESS

State Assembly Bill 3030 was passed by the State Legislature in 1992 to encourage local agencies to work cooperatively to manage groundwater resources within their jurisdictions. The process, as now outlined in State Water Code §10750, is as follows:

1. A public hearing on a Resolution of Intent to draft a groundwater management plan is held by the Local Agency.

After the hearing, the Local Agency drafts the Resolution. The Resolution of Intent is published.

2. The Draft Groundwater Management Plan is prepared and must be completed within two years.
3. A second public hearing is held at the time of Plan adoption. Landowners may protest adoption of the Plan. The Plan can be adopted if there is no majority protest. A majority is made up of land owners representing land equaling more than fifty percent of the assessed land valuation in the plan area.

THE WEST SAN JACINTO GROUNDWATER MANAGEMENT PLAN

The Goal of the West San Jacinto Groundwater Basin Management Plan (Plan) is to:

Maximize the use of groundwater for all beneficial uses in such a way as to lower the cost of water supply and to improve the reliability of the total water supply for all water users in the West San Jacinto Groundwater Basin Management Area.

Criteria for the Plan were developed. The Plan had to meet future water demands; minimize dependence on imported water; provide for adequate, safe water supply quality; minimize cost; and, be implementable.

The Plan area covers some 164,200 acres. Approximately 98,000 acres overlie groundwater subbasins and the remaining 66,200 acres overlie non-waterbearing areas. The Plan area includes approximately 45,200 acres of agricultural land and about 24,700 acres of urbanized land. The total population in the Plan area is approximately 225,000 with most of the population located in the Perris North Subbasin. Figure 2 shows the nine subbasins in the Plan area.

During development of the Plan, cooperative agreements with local water agencies were executed; data was collected and compiled; and a Draft Environmental Impact Report, with public meeting, was completed. Some of the management elements that were incorporated into the Plan follow:

1) Groundwater Basin Manager - the decision-making body for the Plan is the EMWD Board of Directors. They are supported by an Advisory Committee made up of seven members representing the cities, water purveyors, and private groundwater producers.

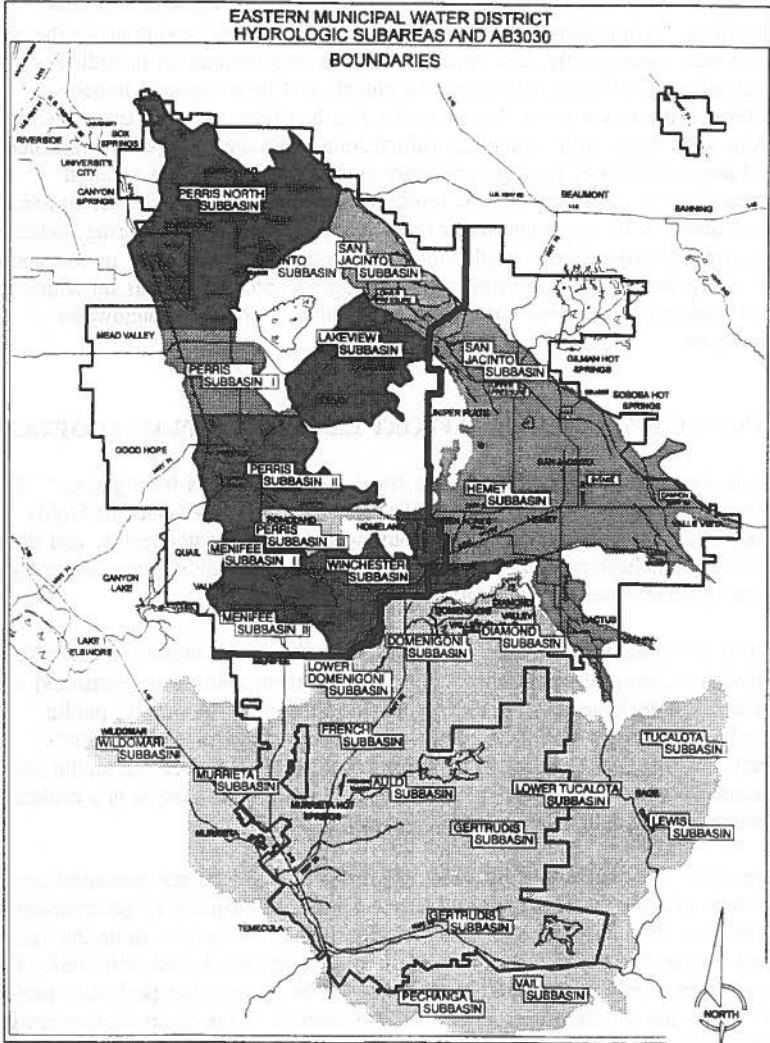


Fig. 2. Groundwater Subbasins in the Management Plan area: Perris North; Perris South I, II, and III; Menefee I and II; Winchester; Lakeview; and San Jacinto Lower Pressure.

2) Groundwater Monitoring - In order to implement any sound groundwater management plan it is necessary to have adequate data on which to base decisions. A monitoring program is necessary to collect and compile the water level and water quality data required for plan implementation including evaluation of different management elements and their regional impacts. Although there was some data available that had been gathered over the years, there were areas with little or no information available. Proper management and augmentation of local groundwater supplies also require a detailed understanding of conditions and trends within the local groundwater basins. In conjunction with the groundwater quality and water level monitoring, accurate metering of groundwater production is necessary to allow for an understanding of how groundwater conditions are changing and provide a basis on which to make informed decisions on how best to manage available groundwater resources.

PUBLIC INVOLVEMENT EFFORT LEADING TO PLAN ADOPTION

Mark Twain once said, "Whiskey is for drinking, water is for fighting." This is certainly true in the arid southwest where there are few issues as highly charged or emotionally intense as groundwater, groundwater rights, and the fear of groundwater management or interference with one's groundwater by some governmental or regulatory agency.

Public involvement is a process, or processes, by which interested and affected individuals, organizations, agencies and government entities are consulted and included in decision-making. In addition to informing the public, public involvement programs solicit community response regarding the public's needs, values, and evaluations of proposed solutions. Before the public can become involved, they must be informed. Therefore, education is a critical element of any public involvement program.

The shifts in social values by which governmental actions are measured and the loss of governmental credibility have affected all aspects of government at all levels. Many agencies, which once considered themselves to be the "good guys," now find themselves being challenged, questioned, and criticized. The benefits of a public involvement program can far surpass the particular project for which the program was designed. The overall image of an agency can be positively affected and the program originator viewed as an aware, concerned, and responsible agency. Additionally, public input can provide unanticipated perspectives and information which can greatly enhance any project. The use of a public involvement program is analogous to preventive medicine. If any proposed project is controversial, or contains potentially misunderstood or controversial elements, the use of a public involvement program can redirect opposition into positive participation.

Initially, public reaction to the proposed groundwater management plan, particularly from the agricultural community, was one of concern and suspicion that the District would try to put a limit on groundwater production by farmers, would try to finance the plan through a replenishment assessment or "pump tax" on groundwater produced, and would try to force the farmers to use lower quality reclaimed water rather than groundwater. Farmers also questioned the reliability of the reclaimed water supply. Although the law only requires two public meetings, one for the Declaration of Notice of Intent and the other at Plan Adoption, EMWD initiated an aggressive public involvement program. Thirty meetings were conducted by EMWD within a twenty-two month period to inform and provide data to the public. Any individual or group that wanted to meet was accorded a meeting. Ten public meetings with presentations were held along with six information workshops and fourteen meetings with cities, agencies, regulators, private groundwater producers, downstream water rights holders, and attorneys. The information workshops provided a forum in which to share the groundwater data developed during the initial stages of development, to test possible elements or concepts to be included in the Plan, and to receive public input regarding concerns, perceptions, and needs. In all, over one hundred interested parties - property owners, cities, agencies, regulators, and attorneys - attended meetings and/or provided comments.

In addition, a programmatic Environmental Impact Report (EIR) was prepared. The rationale for preparing this type of EIR was that it would provide a more comprehensive consideration of environmental effects, mitigation measures and alternative actions than would be practical in each project-specific EIR. The programmatic EIR characterized the overall program, addressing broad policy alternatives and program-wide mitigation measures. It sets the stage for, but does not eliminate, further California Environmental Quality Act reviews. Finally, the programmatic EIR served to give agencies and the public an overview of the entire groundwater management planning process, identifying the key points at which agency and public input will drive the development and implementation of the Plan.

Prior to adoption, the Plan was modified to more accurately address concerns and give farmers written assurance that the Plan did not and would not seek to impose any limit on groundwater production, would not charge a pump tax, that the urban sector would underwrite the costs of implementation, and that participation in the groundwater/reclaimed water exchange program would be voluntary. Finally a Plan evolved that most of the agricultural community supported, some of them enthusiastically. As a result of all of the above, protest at the adoption hearing was minimal, far less than 1%, with only one individual speaking against adoption and many speaking in favor - including the attorney representing the farmers who originally opposed any groundwater management plan. By informing and involving the public, support for the

adoption of the Plan was assured and perception of the District as a trustworthy, aware, and concerned service agency was achieved.

PLAN IMPLEMENTATION - THE FIRST YEAR

The Implementation Phase began immediately following adoption of the Plan on June 8, 1995. During the first year of implementation, the Advisory Committee was formed; Guidelines and Procedures to govern the Committee's operation were developed; groundwater subbasins in the plan area were prioritized; an Advisory Committee Newsletter was established; groundwater resources were evaluated and monitoring programs were implemented including groundwater monitoring of water levels in 106 wells semi-annually and water quality in 65 wells annually; the Extraction Monitoring Program was implemented including evaluation and installation of 11 groundwater production meters and reading of those plus eight additional meters and estimation of groundwater production in the remaining wells in the Lakeview Subbasin; the Lakeview Subbasin Interim Stabilization Plan was developed and a working committee was formed; and geophysical and other groundwater-related studies and surveys within the Plan area were compiled and summarized.

Advisory Committee - The Advisory Committee is comprised of one representative each from the Nuevo Water Company, Moreno Valley Mutual Water Company, EMWD, the City of Perris and the City of Moreno Valley; and two members elected by and representing the private groundwater producers. This Committee assures the continued representation of the public and private groundwater producers in the Plan area. Following adoption of Procedures and Guidelines, the Advisory Committee prioritized the nine groundwater subbasins within the Plan area to better focus efforts on Plan implementation. Such prioritization was necessary to be able to address immediate problems with limited financial and personnel resources. The prioritized areas are: A) Lakeview/Nuevo, B) Perris North, C) Perris South, D) Perris South/Winchester, E) San Jacinto Lower Pressure, and F) Sun City/Menifee. See Fig. 3. The Advisory Committee Newsletter keeps private groundwater producers and interested individuals apprised of plan implementation and other issues of interest.

Data Gathering and Research - Groundwater quality for the subbasins was characterized by generating Stiff diagrams of the water quality from the wells sampled in the 1995 Groundwater Monitoring Program. Water levels were measured semi-annually on one hundred and six wells, and sixty-five wells were tested for water quality. Water level and quality (TDS and nitrate-NO₃) contours were prepared from the data collected in that effort. Thirteen lithologic profiles were prepared based on drillers' log information to indicate

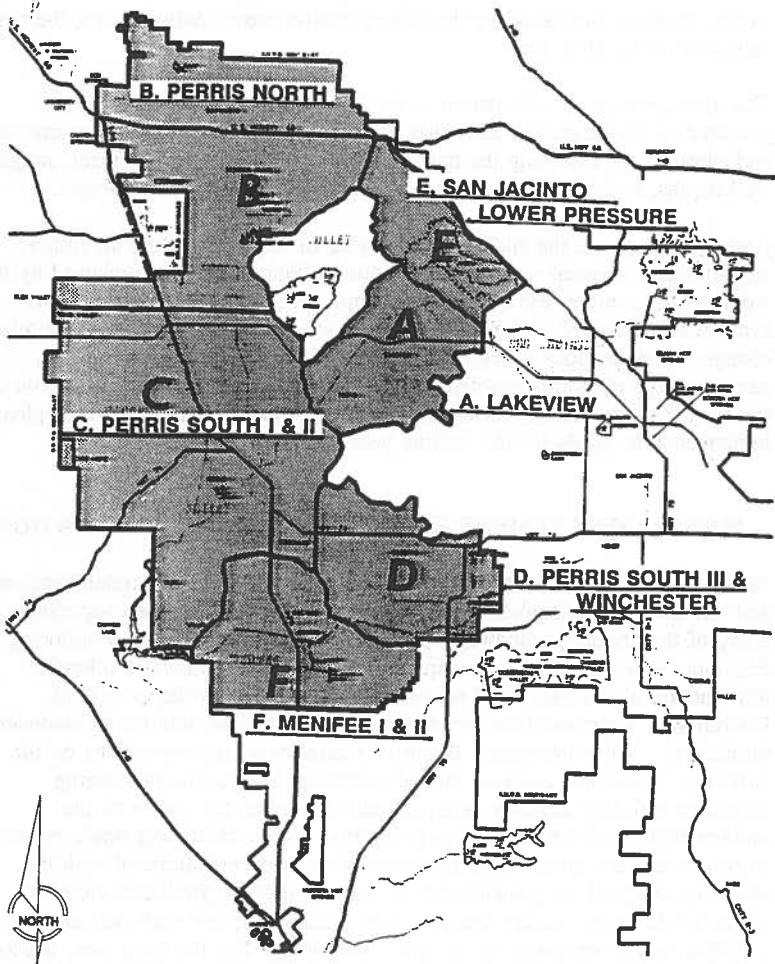


Fig. 3. West San Jacinto Groundwater Basin Management Plan Prioritized Areas: A) Lakeview, B) Perris North, C) Perris South I & II, D) Perris South III and Winchester, E) San Jacinto Lower Pressure, and F) Menifee I & II.

the relative permeability of the groundwater subbasins. The Lakeview Subbasin is estimated to have the highest permeability and the San Jacinto Lower Pressure Subbasin has the lowest relative permeability among the nine subbasins in the Plan area.

The hydrogeological information in the Plan area, based on several geophysical investigations and other groundwater-related studies, was compiled and summarized including the maximum estimated depth to basement, range of well depths, and range of estimated production rates for each subbasin.

Annual Report - At the end of the first year of implementation, an Annual Report was developed in compliance with the Plan and it was reviewed by the Advisory Committee and unanimously approved. The report reviews and evaluates data compiled during the prior year; summarizes groundwater-related changes from previous years, revises groundwater monitoring programs, summarizes groundwater-related studies; provides a technical document on the status of the groundwater subbasins for future planning; and, identifies plan implementation goals for the coming year.

PUBLIC INVOLVEMENT EFFORTS DURING IMPLEMENTATION

Public Involvement efforts continued during the first year of implementation and will continue throughout plan implementation. Getting the cooperation of many of the private groundwater producers in the Groundwater Monitoring Program (water level and water quality) was not too difficult. Following introduction of field staff and education about the monitoring programs, District staff maintained contact and shared information with the groundwater producers. When necessary, the private producers' representatives on the Advisory Committee assisted, shared information about the monitoring programs and their benefits, and generally smoothed the way with the implementation of the monitoring programs. Every effort was made by staff to ensure that the sampling or sounding of wells never interfered with the operating plans of the groundwater producers; that the producers received copies of the water quality analyses from their wells; and staff was always available to answer questions or offer assistance. For the most part, the local producers were cooperative and were pleased to participate. These programs were carried out over the entire Plan area.

The Extraction Monitoring Program proved to be a greater challenge. The program was initiated in the Lakeview/Nuevo area which received the highest priority for action from the Advisory Committee. This was due to the declining water levels, changing hydraulic gradient and expanding groundwater degradation from the adjacent Perris South I Subbasin. In addition to the water quality and water level monitoring, the monitoring of groundwater

production was essential to provide information necessary for any future activities in that subbasin. This subbasin covers a little over twenty square miles. A field survey was conducted and twenty-seven production wells were identified. An information meeting was held and all groundwater producers in the area were invited. Presentations on the present conditions in the subbasin, the monitoring programs, the management plan, and groundwater rights were given. The Question and Answer Session was, at times, quite lively. Assurances were made as to the intentions of the District, the voluntary nature of the program was stressed, and private pumpers who had been cooperating with the District in the water level and water quality monitoring programs spoke of their experiences. Options for dealing with this declining and degrading basin were discussed, including the "do nothing" option. As a result, of the twenty-seven wells identified, it was learned that already eight had owner-installed meters, eleven were provided with meters paid for and installed by EMWD, and the remaining eight wells are not metered - either because it was not physically possible to do so or because the well owner chose not to participate. Production from those wells is currently being estimated based on crop and acreage or the number of cows in the case of dairies. District personnel read all the meters monthly, as well as monitor irrigated areas to develop the estimated production figures. Currently, more than 72% of the groundwater production in this subbasin is metered. The voluntary metering and sharing of the production data of the majority of wells in a single subbasin is a rather unique achievement and the data thus gathered is demonstrating that the subbasin is, in fact, over-drafted.

Recommendations resulting from the efforts of the first year include continuing and expanding the Groundwater Quality and Water Level Monitoring Programs by selectively increasing the number of wells; expanding the Extraction Monitoring Program to the Perris North and South I Subbasins; instituting geophysical studies to correlate the data obtained in the existing studies to develop a comprehensive view of the entire Plan area; evaluating Lakeview Subbasin hydrogeologic characteristics; completing development of the Lakeview Interim Stabilization Program; participating in the Mystic Lake management program; identifying potential participants for the Groundwater Exchange Program; using the results of the Reclaimed Water Master Plan currently being developed by EMWD's Planning Department to refine the Groundwater Exchange Program; testing the feasibility of aquifer storage and recovery (ASR) in the Perris South I Subbasin by conducting an ASR demonstration project; and, initiating extraction well site selection for future desalination projects. Implementation of many of these recommendations has already begun and it is anticipated that all will be accomplished. These recommendations are included in the annual report.

The Extraction Monitoring Program in the Perris North and South I subbasins was initiated at the end of 1996. As was done in the Lakeview subbasin, an

information meeting for all groundwater producers was held and the Plan, status of the subbasins, and the monitoring programs were described. Information handouts on the Plan, the programs, and groundwater rights were made available. The voluntary nature of the program was stressed. The meeting was a success and meters are currently being installed on wells in the area. At the present time, it appears that over 75% of the groundwater production within the two subbasins will be metered.

To continue public education and participation efforts, the annual report was distributed to all participants in the groundwater monitoring and extraction monitoring programs, as well as to Riverside County's Department of Health Services and Flood Control and Conservation District; California's Regional Water Quality Control Board, Department of Fish and Game, and Department of Water Resources; March Air Force Base; the University of California at Riverside; and, adjacent and downstream water agencies.

CONCLUSION

Benefits of the West San Jacinto Groundwater Management plan include decreased reliance on imported water, cost savings and cost avoidance, potential for creation of "new" water, water quality improvement, protection of local resources, maximization of beneficial use of resources, protection of groundwater rights, and allowing for continuing support of agriculture through the provision of irrigation water. By decreasing local dependence upon imported water supplies, the management area has a more secure, less costly water supply. However, benefits of the Plan reach beyond the local area. Other areas of the state benefit by having that imported supply not used in the management area available for their use. By involving the local communities and respecting and recognizing the land owners and water rights holders, this cooperative effort is assured success. In fact, the Plan efforts have already been recognized as successful as evidenced by the receipt of the California Water Resources Association 1995 Edmund G. "Pat" Brown Water Resources Leadership Award.

The Plan would not currently be in existence nor would it have been successful thus far without the efforts involved in the public involvement program. The focus of the program was on communicating EMWD's willingness to modify the Plan to accommodate the concerns of the private groundwater producers as well as educating the public on the hazards of not implementing a plan. The need for a plan, the problems existing in the groundwater subbasins, anticipated future problems if nothing is done, assurances not to interfere with the rights of the private producers, and the cooperative nature of Plan development were essential. Most importantly, an element of trust was developed and it is considered critical to follow through with implementation

in a manner consistent with that trust. Eleven precepts to follow when conducting public meetings developed and they would be of use to anyone, particularly with regard to public meetings on potentially controversial issues.

Always ...

- ... be completely truthful.
- ... follow through and do what you say you will do.
- ... keep focused on the goal of the meeting.
- ... talk to your audience, not over their heads.
- ... discuss the "do nothing" option.
- ... be sympathetic about real or imagined past misdeeds, but keep them in the past.
- ... give your critics an out, allow them to save face.
- ... be pleasant, keep a smile on your face, and don't get angry.
- ... be professional, don't take attacks personally.
- ... listen, be receptive to better ideas, and be flexible.
- ... be agreeable to additional meetings with individuals or groups.

The award-winning West San Jacinto Groundwater Management Plan has been successful because of its cooperative nature and because all interested and affected parties were able to provide input that was respected, considered, and frequently implemented. It is an historic development that will ensure water for domestic and agricultural users, help protect the vested interests of existing groundwater producers, provide a framework for new water supply projects for the benefit of the private groundwater producers and the public, and ensure the economic viability of the region.

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