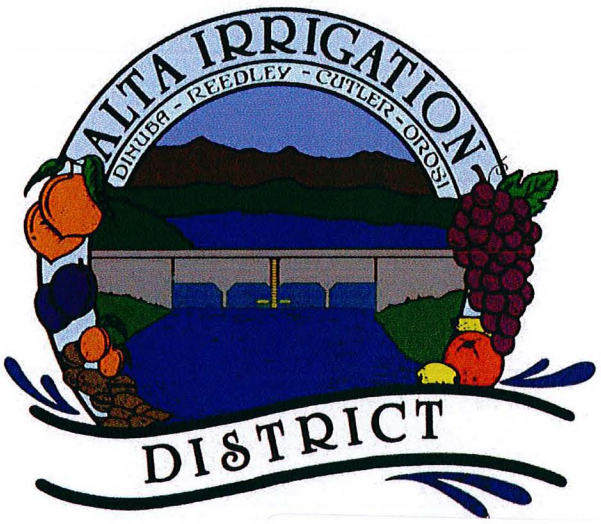
AMENDED
GROUNDWATER MANAGEMENT PLAN



ADOPTED JUNE 10, 2010

ALTA IRRIGATION DISTRICT

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GROUNDWATER MANAGEMENT PLAN

I. INTRODUCTION

A. General

The Kings River ("River"), which provides the surface water supply for the Alta Irrigation District, a California Irrigation District ("District"), is one of the largest streams entering the San Joaquin Valley. The River's watershed covers 1,742 square miles, ranging in elevation from 500 to 14,000 feet above sea level. The majority of the watershed area is located in the high Sierra Mountains and receives heavy snowfall in the winter months. Usually, this snow melts slowly. Thus in average years, the River does not reach its highest stage until the middle of May or early June. The current yearly average runoff for the Kings River is 1,689,700 acre-feet. However, the average runoff does not guarantee this volume will be developed in any given year. The variation with the amount of runoff is great, not only from year to year, but also from month to month. As a result of this great variation, there were alternating periods of flood and drought in the drainage area of the River until Pine Flat Dam was completed in 1954.

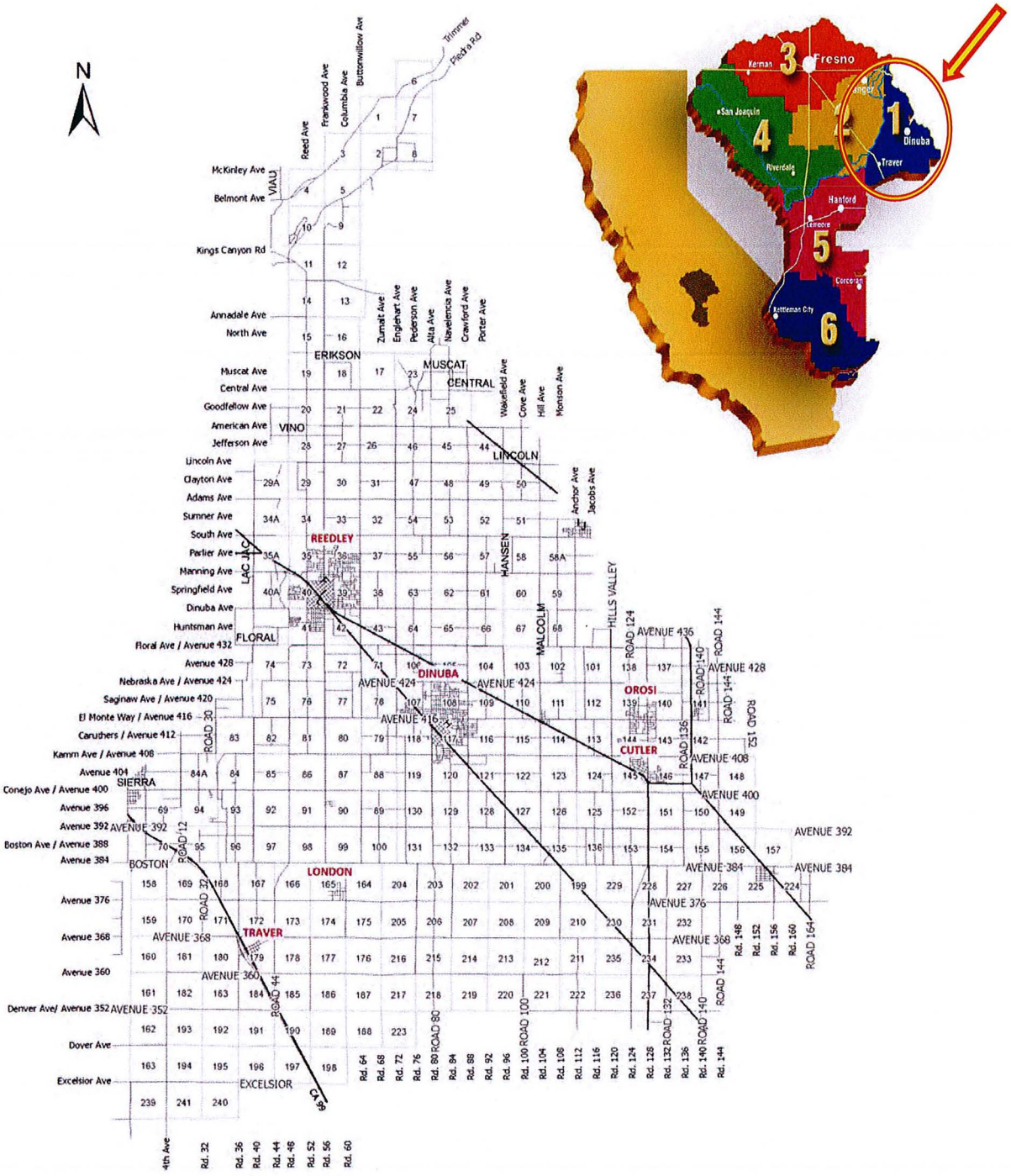
Rainfall occurs primarily in the winter months with virtually no rainfall in the summer months. The average annual rainfall within the District for the fifty-year period preceding 1956 was 11.39 inches with the annual crop use per acre ranging from 24 to 36 inches. As a result, the agricultural crops within the District cannot and do not depend upon rainfall for all their irrigation needs; instead, they depend upon surface water deliveries and deep well pumps.

Historical water deliveries to the service area of the District were initiated in 1882 by a private water company called the "76" Land and Water Company. In 1887, the California legislature passed the Wright Act, which conferred on farming communities the powers of municipalities to purchase, construct and operate irrigation works. On July 7, 1888, sixty-six landowners interested in developing a new public irrigation district filed petitions with the Tulare County Clerk. The District would now comprise 130,000 acres in Tulare, Fresno and Kings Counties and would become the Alta Irrigation District. The present communities of Dinuba, Reedley, Traver, Cutler, and Orosi lie within these boundaries.

Historically, the District enjoyed a shallow water table. In the early 1900's the distance from the ground surface to the groundwater table averaged less than ten feet. However, each successive drought period during the last fifty years has caused an increase in the agricultural groundwater pumping. Consequently the water table has

dropped significantly. As agricultural land is paved over for urbanization, the competition for control of water resources among agricultural, urban and environmental interests will significantly increase.

B. Map of District



C. Purpose and Goals

The Alta Irrigation District has long recognized the importance of groundwater to its service area. On August 14, 1994 its Board of Directors initially adopted a Groundwater Management Plan (***see APPENDIX, AB 3030 Groundwater Management Plan, Attachment A***). Later they amended that Plan in order to be in compliance with SB 1938 (***see APPENDIX, Notice of Intent, Attachment B***). The District intends to continue using the existing AB 3030 Groundwater Management Plan and to include in it the information required by SB 1938 under WC 10753.7 as allowed for in Section 10750.9(b), (hereinafter referred to as the "Plan").

The Plan being adopted under SB 1938 incorporates and advocates a regional perspective on groundwater management planning by establishing basin-wide management objectives for the Plan to achieve. In addition, the proposed Plan would require additional monitoring of groundwater levels, subsidence and water quality to evaluate and determine proposed management actions.

The principal action item in the Plan will be gathering and evaluating additional data concerning quantity and quality of groundwater so the District can develop and implement management actions and best management practices on a local and regional basis. Those actions will enhance the valuable groundwater resource by at least reducing the long-term groundwater level decline in the area and by addressing groundwater quality issues that impact potable water supplies. The District is now pursuing many of the action items already identified in the plan and will, when the Plan is adopted, begin pursuing additional actions. Other action items will require further study prior to implementation.

Water users in the District use conjunctively both surface water and groundwater so the District well understands that both surface water and groundwater are necessary to meet the water demands of the area and are critical to achieving a successful water management program. The goals developed and implemented through the Plan will be designed to achieve and maintain this primary single purpose in all groundwater and surface water management actions. Activities to accomplish this goal may range from addressing water quality issues to importing additional water supplies. Specific actions recommended for implementation are discussed in Section VI.

The proposed Plan will reduce duplication of activities by local agencies, which will utilize it in their long-term planning activities within the District. The Plan will be flexible by allowing updates to be made as needed, based on the additional information that is gathered through the monitoring programs.

The District is funding preparation of the Plan. Future activities required to fully implement the Plan may require additional funding sources. SB 1938 allows for the levying of groundwater assessments or fees under certain circumstances and according to specific procedures. Prior to instituting a fee structure, the District must hold an election on whether or not to impose these levies. A majority of the votes cast at the election will be required to implement any levy to provide additional funding.

D. Reasons for Updating Plan

Historically, the use of groundwater within the State of California has not been regulated except in basins where the groundwater extraction rights have been adjudicated by the courts or special management districts have been authorized by the state legislature. Groundwater accounts for approximately one-third of the water used within the state and will become even more important in the future with the growth of competing demands on groundwater resources. The District's primary role as a regional water resource agency is to sustain and improve its conjunctive use programs to enhance surface and groundwater supply and quality. The principal reason for updating the Plan will be to institute regionally-based management actions that will address the issues of long-term water supply and water quality using, for example, groundwater banking. This approach will require more intensive monitoring efforts along with implementation of action items as part of a regional management plan. This Plan will enable the District to make a comprehensive effort either through participating in the Upper Kings Basin Integrated Regional Water Management Plan Joint Powers Authority ("JPA") or adopting principles linking the various SB 1938 plans in the Kings Sub-basin. The JPA is more fully discussed in Section V of this Plan. The Kings Sub-basin is defined under Bulletin 118 ***(see APPENDIX, Kings Sub-basin, Bulletin 118, Attachment C)***. The JPA's primary focus will be to monitor water quality, depth to groundwater and subsidence on a regional basis. Localized trends will be addressed through the SB 1938 Plans of various agencies.

E. Advisory Committee

To initiate the groundwater management plan, the District formed a regionally diverse advisory committee comprised of representatives of the following agencies: City of Dinuba, City of Reedley, County of Tulare, Alta Irrigation District, Kings River Conservation District, Cutler Public Utility District, Orosi Public Utility District and Community Water Center. Upon adoption of the Plan by the Alta Irrigation District Board of Directors, the SB 1938 Advisory Committee will be terminated. The purpose of the SB 1938 Advisory Committee is to incorporate localized community interest and input from public agencies that overlie Alta Irrigation District's sphere of interest.

F. Public Participation

All meetings of the SB 1938 Advisory Committee would be noticed on the District's website and any member of the public can attend the meeting or email comments on the website pertinent to the Plan (***see APPENDIX, Attached Meeting Notices and Minutes, Attachment D***). In addition, all information received from the public will be noted and reviewed at those public meetings and in the minutes of such meetings.

II. EXISTING CONDITIONS

A. Groundwater Basin

The Alta Irrigation District overlies a portion of a groundwater sub-basin designated as the Kings Sub-basin. The California Department of Water Resources has designated this basin to be a critically overdrafted groundwater basin. The District has been monitoring groundwater levels for at least the last seventy-five years. The results of this monitoring effort are consistent with the findings of the Department of Water Resources. The water level measurements taken within the District show a continued downward trend in the groundwater elevations within the District's boundaries. This average overdraft is approximately 22,000 acre feet per year.

The total water supply available to the District is extremely variable and dependent on the snowpack that occurs in the Sierra Nevada Mountain Range to the east. The pumping within the groundwater basin is inversely proportional to the surface water supply made available from runoff within the Kings River Watershed.

The boundaries of the District include land within three counties, two incorporated cities and numerous unincorporated urban water districts. All of the urban communities, along with many individual residences scattered throughout the District, are dependent on the groundwater supply to meet their domestic demands. Surface water is currently not available to meet those needs. The conjunctive use of both the groundwater and surface supplies is necessary to meet the irrigation requirements within the District. This irrigation demand represents by far the largest water use within the basin.

The District recognizes that the continuation of the agricultural, municipal and industrial developments within the basin is dependent on maintaining an adequate water supply. With the conjunctive use that already occurs within the District, adequate surface water supplies are necessary to achieve a water balance. However,

additional facilities to develop new water supplies can be constructed to increase water resources within the District.

B. Geology

The District is located in the eastern portion of the San Joaquin Valley and southern half of the Great Valley geomorphic province of California. The District is part of the valley, which is a nearly flat northwest to southeast trending alluvial plain. Alluvial sediments are found within the District and are bounded on the east by granitic rocks of the Sierra Nevada. The alluvium within the District is a heterogeneous mix of clay, silt, sand and gravel (USGS, 1968). The soils within the District are complex with the unconsolidated alluvial fans being made up of varied textured material. The upper soils vary from very heavy clays near the base of the Sierra Nevada (on the east side of the District) to relatively coarse sand near the western boundary along the Kings River. Much of the area is underlain by hardpan that restricts the vertical percolation of the water. These areas are typically ripped and/or soil amendments are applied to improve the vertical percolation. Throughout the District there are isolated locations of coarse grained material with high percolation rates. These are typically found at locations where old streambeds historically meandered throughout the District.

Along the east side of the District, the basement complex is shallow and the aquifer depth is very limited. The granite bedrock slopes quickly westward within the District resulting in a deeper aquifer along the western boundary of the District. The bedrock depth is approximately 500 feet below the ground surface along the eastern perimeter of the District and increases to 5,500 feet near its southwest limits. The coarse, sandy materials that are found along the west side of the District are reflected in the higher specific yields for those soils, which are typically 50 percent to 100 percent greater than for the finer textured clay materials found on the east side of the District. This same correlation is also found in the deeper soils, which are much less permeable and have significantly lower specific yields than the upper soils. Therefore, the specific yields from wells drilled into the deeper portions of the aquifer are considerably less than the yields from shallower wells.

C. Hydrology

The hydrology of this area is principally impacted by the snowpack that occurs within the Kings River Watershed and to a limited extent by both the local runoff from the foothills lying just easterly of the District and the precipitation that occurs within the District. The water table within the District is unconfined and typically flows in a southwesterly direction. Groundwater extractions are made for agricultural,

municipal and industrial purposes. These extractions are very significant during periods when there is little surface water available to augment the water needs within the District. The groundwater levels, during those periods, experience a significant decline. Surface water made available to the irrigation canals and pipelines through diversion from the Kings River provides a stabilizing factor on the groundwater levels. This surface water supply reduces the amount of pumping, provides recharge and is the principal contributing factor that influences the groundwater conditions. This effect is evident in years of below normal runoff when a rapid decline in the groundwater level is experienced. Based on the District's fall 2009 groundwater measurements, the average depth to groundwater level was 53.16 feet.

D. Climate

The area is semi-arid with mild winters and hot, dry summers. The average rainfall, based on District records, is approximately 11 inches per year. The majority of this rainfall occurs from November through April. With the long, hot summers that normally occur in the valley, there is about 6 feet of evaporation per year with the majority of that evaporation occurring during the period May through October. The winds in the area are principally from the northwest with a southeast wind usually indicating that a rainstorm is imminent.

E. Surface Water Supplies

The District is located east of the Kings River in the Central San Joaquin Valley. To the east of the District are the Sierra Nevada Foothills. The District is composed primarily of alluvial fans sloping to the southwest with elevations ranging from about 425 feet at the northern point to 270 feet in the southwest corner. The incorporated communities within the district are Reedley (population 23,000) and Dinuba (population 21,700). There are also several unincorporated communities, housing clusters and individual rural residences.

The primary economy within the District is agriculture or businesses related to agriculture. The primary crops grown within the region are grapes, nectarines, plums, peaches and citrus. Due to the relatively high land prices and high production costs in for hand labor, spraying and fertilizer, the average parcel size is approximately 36 acres. There are approximately 4,000 agricultural parcels within the district.

Initially, agricultural production in the region was primarily dry land farming; but with the development of a dependable surface water supply and groundwater wells and a willingness of farmers to take the risk of raising high value crops, the cropping

pattern changed to perennial crops and the need for a stable water supply became paramount.

The estimated average irrigation crop demand within the District is 325,000 acre feet and the average surface water supply is 148,416 acre feet; therefore, there is a strong reliance on an alternate water supply: groundwater.

The District diverts water from the Kings River at the "Cobbles Weir" and measures water into the District at a computer-controlled headgate ("Headgate") located near the community of Piedra. Downstream of the Headgate are 78 ditch laterals serving approximately 4,000 agricultural parcels. The total length of canals and pipelines is between 350 and 400 miles. The canal widths vary from 4 to 100 feet; lengths range from 3,000 feet to nearly 18 miles ***(see APPENDIX, KRCD Surface Water Study Table 111-1, Attachment E)***.

The range of annual diversions from the Headgate during a recent twenty-year period were as follows: 248,042 acre feet in 1993 (highest annual diversion); 58,284 acre feet in 1990 (lowest annual diversion) and 150,261 acre feet was the average annual diversion. The average time period for each water run within said twenty-year period is 115 days; the shortest water run being 48 days; and the longest water run being 183 days ***(see AID Twenty-Year Diversion Table as Table 1)***. The District's diversion and storage rights are based upon riparian and appropriative claims as well as contractual agreements and licenses granted by the State Water Resources Control Board. Such agreements control the use of District's rights in conjunction with the rights of the other twenty-seven (27) entities storing and diverting water from the Kings River. All the twenty-eight (28) entities comprise the Kings River Water Association. It is typical for weather patterns and the resulting volume of water in storage to vary significantly from year to year, thus illustrating the necessity of water storage in the production of perennial crops.

Table 1: AID Twenty –Year Diversion Table

Year	HG Diversion	Days Ran
2009	150,834	107
2008	131,685	89
2007	76,225	54
2006	211,646	161
2005	212,052	165
2004	128,426	91
2003	137,603	100
2002	133,219	99
2001	124,465	92
2000	166,411	139
1999	147,120	117
1998	172,176	182
1997	214,341	156
1996	221,084	152
1995	235,729	178
1994	122,697	92
1993	248,042	183
1992	66,624	58
1991	107,017	81
1990	58,284	48
1989	89,807	69

F. Water Management Strategies

Alta Irrigation District operates an "arranged delivery system" allowing farmers to order water on or off within the system with at least 24 hour's notice. Primarily, water orders are called in between 7:00 a.m. and 3:00 p.m. each day; with a subsequent coordinating meeting each morning and afternoon to determine changes within the system. All water use is measured on a daily basis. The District uses a calibrated submerged orifice to determine the instantaneous flow rate. The District is in the process of updating its distribution system by requiring cumulative flow meters on all turnouts when open canals are replaced by pipelines.

Daily water measurements are the basis of the District's levying a volumetric surcharge, which pays for all water-run related costs (***see APPENDIX, Table 9 FUTURE DISTRICT OPERATIONAL BUDGET, Engineer's Report Proposition***

218 Procedures, December 2005, Attachment F). The conjunctive use pattern of utilizing surface water in wet years and relying more on groundwater in dry years helps to maintain sufficient water supplies to irrigate the predominantly permanent crops. The most beneficial use of surface water is to motivate farmers to avoid using their groundwater pumps, thus leaving in place and conserving the groundwater to be utilized only when needed.

In 1990, Alta Irrigation District commissioned the Kings River Conservation District to complete a "Surface Water Study" to study and review the District's surface water delivery system. A system water balance was evaluated in wet and dry years to determine seepage evaporation, evapotranspiration (ET) of bank vegetation, and operational spillage. The study showed that seepage (estimated to be approximately 23 percent of the District's total diversion) was the most significant loss in the system.

The water flow in the District's canals and pipelines is measured by means of overflow weirs, undershot gates, parshall flumes or a current meter. The District has developed rating tables that are used to set the proper flow rate in each of the canals and pipelines. However, the District may reallocate water from the different laterals if the demand warrants such reallocation.

The District has instituted a water allocation formula to equitably distribute water to farmers based on the estimated snowpack runoff. The formula is based on four days per twenty acres utilizing one cubic foot per second per entitlement percentage. Approximately eighty percent of the District's irrigable acres receive one hundred percent entitlement; the remaining acreage is entitled to receive seventy-five percent, fifty percent, twenty-five percent, or no surface water entitlement. Historically, the lower water entitlement areas either were not farmed or were being farmed to low value crops. The allocation formula is set by the Board of Directors and can be adjusted by lengthening or shortening the number of irrigation days per twenty acres. Typically, in less than average water years, water is held in storage until peak demand occurs in May, June and July.

Water regulating reservoirs used by the District have been designed to better maintain constant flows in the lower areas of the district. In 1991, the district developed the fifty-seven acre Button Ponding Basin, which is fed by five tributary canals. The flow rates of those canals have been prone to fluctuate between midweek and weekend days. All the inflow entering the regulating basin is now being stored for downstream agricultural deliveries when needed. Additional regulating reservoirs are being evaluated for future construction.

In any conjunctive use area, groundwater recharge is a critical part of the overall Plan. For many years, the District has maintained recharge basins along the southwesterly perimeter of its boundaries. They are located in areas of highly permeable soils. In addition, some effective recharge results simply from conveying water through the District's canals, even though the majority of the soil types are such that the recharge capability of the soil is very limited.

The District has been conducting extensive research to locate additional recharge sites in the eastern portion of the District, since that area is severely impacted in dry years due to the low specific yields and the limited water storage depth of the aquifers. In 1987, the District was selected for funding through the Proposition 44 program to develop a groundwater recharge basin in an area that had limited groundwater resources. The site appeared to have soil types that would be conducive to recharge efforts. An in-depth geological study was undertaken and it was determined that the site would not be effective for groundwater recharge. The District has continued its efforts to locate sites for developing percolation basins in the eastern part of the District, but it is not likely that a suitable location will be found.

To proceed with a groundwater recharge program, additional surface water supplies are necessary to fully implement the Plan. The District's average annual water supply is already committed. The surface water necessary to conduct an extensive program is available only in wet years when additional water supplies or floodwaters are available on the Kings River. The District's goal has been and will be to make beneficial use of those waters by recharging the underground. For the most part, District conveyance facilities are currently available to transport these waters to the basin locations. Unfortunately, the prospects for locating effective recharge basin sites within the areas of greatest need are not promising.

The District will also be negotiating with cities interested in jointly funding new recharge sites. If suitable sites are located within or adjacent to the boundaries of a municipal jurisdiction, the possibility of a joint use facility would be evaluated. The potential exists for water to be delivered to all or part of the site for recharge purposes during a portion of the year, with consideration given to other uses during the remainder of the year.

As a complement to the District's local recharge program, one of the action items is to evaluate "groundwater banking". This could be accomplished by assisting the recharge efforts of other districts that have access to better groundwater recharge sites. Floodwaters would be recharged (banked) in a district thereby improving groundwater levels in its service area. The amount of water banked would be quantified on an annual basis and an agreement developed so that the District would

have rights to extract or receive a stipulated portion of the water banked through the joint agreement. In both the short and long terms, this approach appears to be the most effective way for the District to benefit the Basin Plan Area. In addition, investigations will continue on potential local recharge sites.

In 2009, the District did aggressively implement groundwater management projects to address issues of localized overdraft. The District and the City of Dinuba developed a recharge project to collect storm water and other surplus water supplies in a series of basins comprising 28 acres. The project will be effective in utilizing local supplies to mitigate groundwater pumping within the City of Dinuba. The District implemented the Harder Pond Banking Project to recharge stormwater and other surplus water supplies in the westerly portion of the District. The project will enable the District to direct water supplies to designed recharge areas and by means of extraction wells, to make more efficient downstream agricultural deliveries. The District is also moving forward with the Traver Pond Banking Project, which will also allow water to be recharged and extracted for downstream agricultural deliveries. The Harder and Traver Banking Projects are designed to conserve and thus generate the two million gallons per day of potable surface water for the proposed surface water treatment plant to serve Cutler and Orosi (***see APPENDIX, Water Banking Annual Report, Attachment G***).

Water banking is an important tool available to the District enabling it to better utilize available water supplies. The water banked will always exceed the extraction amount. The water remaining in the ground will bolster the groundwater in the immediate area of the banking project. The water extracted will be utilized to supplement the surface water deliveries, thereby reducing downstream groundwater extractions.

Additional locations for future banking projects will continue to be evaluated by the District. Where suitable locations are found and it is determined additional water is available to effectively utilize the site, the District will seek additional funding. Expansion of the Harder and Traver Pond sites will also be considered.

III. WATER QUALITY

A. Surface Water Quality

The surface water supply for the District consists principally of diversions from the Kings River. The snowpack and rainfall within the Kings River watershed produce extremely high quality water with very low amounts of dissolved salts. This has allowed consistently high agricultural yields to occur on the heavier soils, which

are not freely drained, without causing a serious drainage problem. The surface water also provides an excellent source of water for recharging the District's groundwater supply. It is important that the District maintain the high quality of this water. To this end, the District has been active in identifying any surface water discharges within the Basin that may negatively impact water quality. These will be continually monitored and may require a discharger to obtain a permit through the NPDES process. Anyone causing overland surface flows that are found to be detrimental to the District's water supply, groundwater or surface water, will be put on notice that they must either eliminate the discharge or clean those flows to avoid compromising the quality of the District's water supply.

The District regulates municipal storm water discharges into District facilities by enforcing the terms of permits granted by the District to those dischargers. The permits specify the exact area being drained and/or flow allowed to be discharged. Permit conditions require that the quality of this discharged water meet the existing and future standards set by the Regional Water Quality Control Board. The right to discharge can be terminated at any time the conditions of the permit are not met by the discharger.

B. Groundwater Quality/Source Water Quality Protection

Except for dibromochloropropane (DBCP) and nitrates, the quality of groundwater in the District is high because its source is excellent Kings River surface water flowing from the western slope of the Sierras. This results in having excellent quality water for recharge within the Kings River Watershed. When the groundwater is used for domestic purposes, construction of ground level treatment facilities to remove specific contaminants or the drilling of deeper uncontaminated wells have been required. The nitrate contamination is usually the result of agricultural fertilizer, domestic sewage, livestock wastes, or from natural sources. In some isolated locations, nitrate levels in groundwater have also caused problems for the agricultural pumpers. Since DBCP is no longer used for nematode control, concentration levels are expected to drop over time. In addition, some wells require chlorination because of bacteriological concerns. The groundwater management plan will include locally cost effective recommended procedures to maintain the existing excellent water quality (***see Best Management Practices, Section VI.B.15, page 23***). In the Kings Sub-basin, typical contaminates of concern in the water used for domestic purposes are DBCP and nitrates.

Groundwater wells are prevalent throughout the District. The wells are used by cities, agricultural producers, industrial developments and individual homeowners. With the many water production wells, there is a risk that cross-aquifer contamination

can occur. The greatest potential for groundwater contamination within the basin is cross-aquifer flow through improperly abandoned wells and the improper sealing of new wells. Therefore, it is necessary that proper sealing of new wells and abandonment of old wells always be accomplished. At a minimum, the water well standards of Tulare, Kings & Fresno Counties along with Bulletin 74 requirements must be met. In addition, it may be advantageous to require construction standards that exceed those presently mandated by either the county or state. With the continual raising of standards for drinking water, maintaining the quality of the groundwater becomes ever more important.

Water quality is an important aspect of groundwater management. Contamination of the groundwater, resulting in a limitation on its use, is equivalent to a reduction in total water supply with a negative impact on the water balance for the Kings Sub-basin. This loss of supply will require obtaining additional supplies or incurring additional costs for treatment of the contamination.

C. Well Abandonment

An objective of the Plan is to maintain superior water quality within the District. This is of extreme importance because the municipal, industrial and agricultural users need a dependable high quality water supply. A reduction in the quality of the groundwater is tantamount to a loss of water supply, since the quality problem will require additional funding for the construction of treatment facilities. This cleanup will be necessary to allow the water to be integrated into the system.

One of the action items listed in the Plan recommends increased monitoring of groundwater quality in selected areas. This monitoring information will be collected and utilized to evaluate the best management practices available to reduce and/or eliminate the contamination. In addition, the action items recommend working with the Department of Water Resources and the counties of jurisdiction in upgrading water well standards. Since the natural minerals occur in low concentrations, the major thrust of the water quality monitoring and recommended practices will be to prevent chemical contamination.

The quality of both surface and groundwater within the District must be maintained. The Plan provides a mechanism that will help achieve those long-term goals. The initial action of increasing the amount of monitoring will provide the additional data needed to proceed with future programs to maintain water quality.

D. Water Quality Monitoring and Protocols

The District performed general groundwater quality testing for nitrates and DBCP for a three-year period: 1997, 1998 and 1999. The reason for performing the general water quality sampling was to determine and prioritize areas of interest. In the future, the District will need to study how and why nitrate and DBCP levels are exceeding relevant water quality standards (***see Section VI. PLANNED ACTIONS AND REPORTS, B. Management Actions, 14. Regional Monitoring***).

E. Goals, Objectives and Strategies

There is little potential for increasing the water supply through wastewater reclamation in this basin. The majority of the wastewater is currently being utilized for the irrigation of agricultural crops or groundwater recharge with only a minor portion being consumed through evaporation basins. The District will continue to work with the wastewater treatment agencies, where practical, to reduce the amount of effluent disposed of through evaporation. In addition, the District will continue to promote the past practices of reusing all wastewater effluent within the local basin, in order to maintain the total water balance within the area. In a water deficient region such as the District, the reuse of the wastewater effluent is a key element of establishing and maintaining a water balance.

IV. WATER MAPPING

A. Depth to Groundwater / Water Quality Mapping

The District has been monitoring groundwater levels for the last seventy-five (75) years. This is accomplished through water level measurements taken in the late fall and early spring. A map of the District showing the well locations has been attached (***see APPENDIX, Map of Well Locations, Attachment H***). As wells are lost, new wells are substituted to maintain the continuity of the grid pattern. From these readings, groundwater contour maps have been made depicting both the water elevation and changes in groundwater levels. Groundwater level readings are obtained utilizing an electric well sounder.

Based on the water level readings, the overall trend has shown a declining groundwater level within the District. This decline has been periodically interrupted by a short-term groundwater recovery during wet years when surface water supplies are abundant and groundwater pumping is reduced. Based on this long-term data, it has been determined that it would take approximately 22,000 acre-feet per year of additional surface water to correct the overdraft situation that presently exists. Based

on average porosity and specific yield considerations, this amount of overdraft results in a decline in the groundwater storage of one foot for every 7,000 acre-feet of overdraft. This storage can be regained if sufficient surface water supplies are made available to reduce the amount of groundwater pumping that is necessary to meet the water demands. In addition, the overdraft results in additional pumping costs to overcome the increased lift. As the water table continues to drop, the pumping occurs from lower portions of the aquifer, which have lower porosity and specific yield factors than those found in the upper portions of the unconfined aquifer. The long-term impact is a greater incremental reduction in the available groundwater storage capacity per acre-foot of overdraft. Using the historical data collected and the transmissivity of the aquifer, a determination can be made of the estimated quantity of inflow and/or outflow of groundwater within the limits of the District. This data also will allow the District to evaluate areas that are more severely impacted during periods of sustained drought due to the low yield of the wells and the limited depth of the aquifer. This is an important water management tool that is useful to the District in developing long-term planning decisions.

The collection of this data will be continued with the Plan. The information that has been prepared from this data in the past includes the following:

1. Maps of spring and fall water elevations.
2. Maps of spring and fall depth to groundwater.
3. Maps showing the changes in groundwater levels over time.

In addition, the groundwater reports can include estimates of changes in groundwater storage, water delivered, water use, and overdraft. This information will allow the District to better evaluate the effectiveness of various management actions as stated in Section VI.

The District will use the results of water quality monitoring that is being proposed as one of the action items to augment the information obtained through the historical water level readings. The District will take water quality samples in critical areas adjacent to urban centers and known locations of contamination. By correlating the water quality tests and the groundwater level measurements, the District will improve its ability to effectively manage the groundwater by utilizing monitoring data and applying it to a management action. For example, this information can provide the additional data needed to establish programs to reduce the movement of any contaminants. Typically, the urban centers have a higher concentration of wells resulting in a cone of depression within and surrounding the community. This can accelerate the movement of contaminants towards the urban well fields. Using the information gathered through the Plan, the District could pursue an additional future

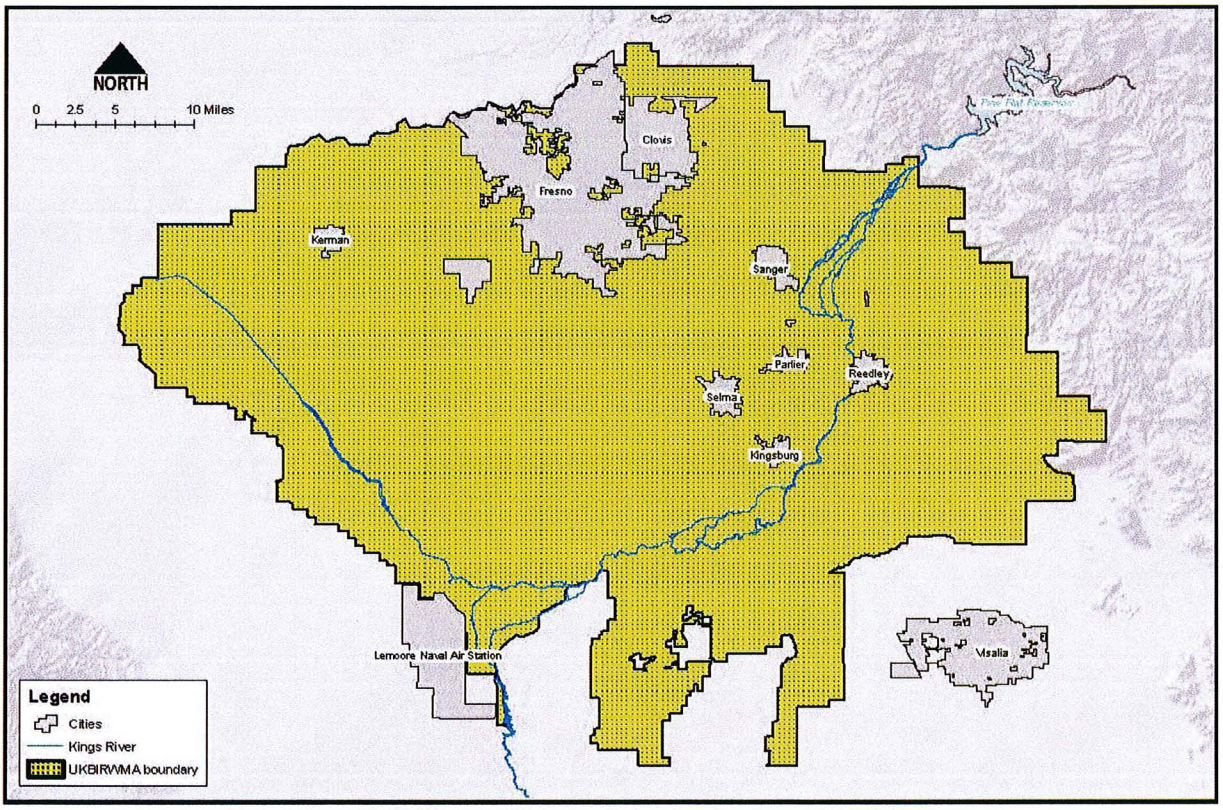
action item; namely, the analysis of the potential benefits of creating a hydraulic barrier or modification of the local pumping regime to reduce or impede the migration of any contamination.

V. BASIN MANAGEMENT OBJECTIVES

A. Upper Kings IRWMP

The Upper Kings Water Forum in 2003 and 2004 reviewed criteria to determine and identify concerns, issues and purposes for an integrated planning process to be undertaken by the Upper Kings Integrated Regional Water Management Plan ("IRWMP"). The intent was to develop a framework enabling urban, agricultural and environmental interests to formulate a consensus on regional problems, issues and conflicts. The IRWMP was established on July 27, 2007.

B. Map of JPA Service Area



C. Goals and Management Objectives

As identified in the IRWMP, the constituents established goals to address the primary problems and issues in the region, which are:

1. Halt, and ultimately reverse, the current overdraft and provide for sustainable management of surface and groundwater;
2. Increase the water supply reliability , enhance operational flexibility, and reduce system constraints;
3. Improve and protect water quality;
4. Provide additional flood protection; and
5. Protect and enhance aquatic ecosystems and wildlife habitat.

Additionally, the Upper Kings Basin IRWMP established water management objectives, which are to:

1. Define local and regional opportunities for groundwater recharge, water reuse/reclamation, and drinking water treatment;
2. Develop large scale regional conjunctive use projects and artificial recharge facilities to:
    a. Enhance operational flexibility of existing water facilities, consistent with existing agreements, entitlements, and water rights;
    b. Improve the ability to store available sources of surface water in the groundwater basin;
    c. Capture storm water and flood water currently lost in the region;
    d. Provide multipurpose groundwater recharge facilities that provide flood control, recreation and ecosystem benefits; and
    e. Integrate the fishery management plan;
3. Promote 'in-lieu' groundwater recharge to reduce reliance on groundwater through reclamation and reuse of treated wastewater, surface water treatment and delivery for municipal drinking water, and delivery of untreated water for agricultural use;
4. Negotiate and develop institutional arrangements and cost sharing for water banking, water exchange, water reclamation, and water treatment;
5. Design programs to improve water conservation and water use efficiency by all water users;
6. Identify interconnections or improvement of conveyance systems to provide multiple benefits; and
7. Enhance wildlife habitat through surface water reclamation, recharge, and treatment facilities.

D. Local Agency Coordination

To plan and implement regional goals and management objectives, the IRWMP has adopted regional planning objectives (***see APPENDIX, IRWMP Chapter 5 Goals and Objectives, Attachment I***) and has provided a framework and forum to mediate conflicts among urban, agricultural and environmental interests in the region.

Currently, the Upper Kings Basin Water Forum has established an Upper Kings Basin Water Forum Joint Powers Authority ("JPA") to provide for more structure and governance in the administration and implementation of the IRWMP on September 10, 2009. The current JPA member agencies are attached (***see APPENDIX, JPA Member Agencies, Attachment J***).

VI. PLANNED ACTIONS & REPORTS

A. Historical Trends

District will prepare bi-annual reports compiling, recording and reviewing:

1. Annual monitoring data, which will include as a minimum, water quality, depth to groundwater, trends, findings and changes
2. Attainment/nonattainment of goals
3. Actions, coordination, activities and disputes with other agencies
4. Recommendations

B. Management Actions

The District will continue to pursue the thirteen (13) action items identified in the AB 3030 Plan, which will be implemented according to the Rules and Regulations (***see APPENDIX, AB 3030 Groundwater Management Plan, Attachment A***), as amended from time to time. However, this Plan will provide the additional elements required to satisfy the requirements of an SB 1938 Plan. To have a successful Plan, it is not necessary to implement all of the action items identified. The last three items would be implemented only as a last resort due to the occurrence of emergency conditions within the Basin Plan Area. It is important that all the potential action items be identified and contingency plans developed in case any one of them becomes necessary. It is recommended that the District implement items one (1) through six (6) immediately and/or as it is now continuing to pursue them. Upon approval of the Plan, the District should begin investigations into items seven (7), eight (8) and fifteen (15), and submit a staff report regarding their status within one year. Action items nine (9) thru fourteen (14) will require additional staff study, board approval, public hearing and a possibly, a funding source. If funding is necessary to implement a portion of the Plan, then an election will be required prior to instituting an assessment or other levy. The District believes that through the management activities listed in the Plan, the District can preserve the groundwater resource and avoid the drastic steps identified in the last three action items.

1. Water Monitoring: The District shall continue to monitor water levels every six months. In addition, it will also assist in water quality sampling. Further, the District will prepare maps depicting the information gathered during the monitoring phase, as well as reports quantifying the water demands, surface water and groundwater supplies. This monitoring and reporting will assist the District in evaluating the effectiveness of the various elements of the program. The monitoring process will soon detect any migration of contaminated plumes thereby allowing ample additional time for plans to be developed and implemented before presently unaffected portions of the basin are impacted. The District will coordinate and assist in implementing a management program to address groundwater quality issues, especially in the east side of the District.

2. Direct Recharge: The District will continue to use surface waters when available to recharge the underground by sinking those waters in its basins. Basin sites will be located in the areas of greatest need. The District will actively seek the cooperation of other government entities in construction of such sites.

3. Indirect/In-lieu Recharge: The District has approximately 250 miles of unlined canals. The indirect recharge is accomplished through the seepage that occurs in some reaches of the canals. In addition, during winter months many of the natural channels carry surface runoff that recharges the groundwater. These old channels are typically located in the more permeable soils. The effective amount of this recharge varies from year to year and is dependent upon the amount of runoff that occurs. Additional water supplies will be pursued for groundwater recharge in natural channels and during non-irrigation seasons in the District's canals. By providing surface water to the area, the District has reduced the amount of groundwater pumping that would have otherwise occurred, resulting in an effective in-lieu recharge program. The District will continue efforts to maximize the amount of surface water available to users within its boundaries.

4. Water Conservation - Water Regulation: The District has a long-standing practice of conjunctive water use. Conjunctive use is the integration of surface and groundwater supplies to meet the total water demand. In the past, a cooperative program termed the "mobile lab" has been operated by the Kings River Conservation District in cooperation with local irrigation districts to measure applied water efficiencies. The purpose of this program has been to promote on-farm water conservation. The District has strongly supported programs that conserve water along with enhancing crop production.

Through the construction of water regulating basins, the District has been able to conserve and more efficiently utilize water within its system. The most recent

regulating basin was constructed on a 50-acre site in the southeast portion of the District.

The Alta Irrigation District, the cities and the unincorporated water purveyors, all have water conservation plans. The Plan will encourage agricultural, industrial and residential users to implement water conservation measures throughout the basin. Existing and new irrigation methods, reuse of industrial water and domestic water saving devices will all be encouraged. The water use requirements of new developments will also be evaluated to insure compatibility with this water deficient basin.

5. No Net Exportation of Groundwater: Since the District is located within an over-drafted basin, it is prudent to utilize groundwater resources within the District's boundaries. Effluent discharged by the City of Reedley ("Agency") from its sewer treatment plant into the Kings River should not be considered to be prohibited exportation of groundwater if such effluent recharges or benefits underground supplies available to landowners in the District.

6. Intra-district Water Transfer: Water transfers within the District have taken place on a routine basis. Each year the District evaluates the water transfer policy and specifies the circumstances warranting internal water transfers. Approximately 60 transfers are approved each year within the District.

7. Well Drilling and Abandonment: Portions of the groundwater have been contaminated, principally by volatile organic chemicals or nitrates. This contamination is most prevalent in the upper aquifers. Interaquifer mixing can occur through inadequate seals or improperly abandoned wells. Working through the Department of Water Resources and the county of jurisdiction, the District will seek to upgrade standards for construction and abandonment of water wells to reduce the potential for aquifer contamination.

8. Groundwater Banking: Given the scarcity of suitable recharge sites within the District, the District will cooperate with other agencies that have soil types more suitable for recharge basins. The District could then recharge (bank) surface water within their boundaries for withdrawal at a later time. This arrangement can provide benefit to the groundwater basins for both the District and the cooperating agency. The District benefits because it has few areas suitable for recharge. The participating agency receives the benefit of reduced pumping lifts during the time the water is banked and retains a percentage of the banked water that is not extracted by the District. In spite of having only limited recharge areas, the District does have two banking projects within its own boundaries and under its own management: the

Harder Pond and Traver Pond projects. In the future, the District will continue to expand its own water banking potential to address water resource issues. The intent of both banking projects is to address groundwater quality issues in the easterly areas of the District by using surface water to mitigate groundwater pumping for drinking water purposes.

9. Inter-district Water Transfer: Water transfers between different water districts are currently taking place. In the past, the District has completed such transfers on a limited basis. This mechanism would be used to increase the total water supply within the District or to augment the water supply in specific areas of the basin during critically dry years.

10. Reduction in Groundwater outflow: The direction and quantity of groundwater flow is susceptible to changes that occur to the hydraulic gradient. The groundwater level measurements taken twice a year within the District will identify the direction of groundwater flow. Typically, this outflow has been to the west and southwest creating hydraulic barriers by mounding of the groundwater can lead to a reduction in the amount of water that leaves the District. This can be an especially effective procedure along the perimeter of the District. Likewise, increased pumping by landowners along the perimeter of the basin can increase the groundwater outflow. The District will continue its efforts to assure that all necessary steps are taken to reduce the amount of such groundwater outflow.

11. Pumping Restrictions: Pumping restrictions would definitely reduce the amount of groundwater use. This is a controversial item so pumping restrictions would be the last item the District would consider. This step could have severe economic implications since the local economy that has been developed with a reliance on groundwater would be detrimentally impacted. Initially, any program requiring pumping restrictions would be voluntary rather than mandatory. From a practical standpoint, only if the urban water supplies are being severely restricted, will mandatory agricultural pumping restrictions be implemented.

12. Additional Water Supply and Storage: The generation of additional water supplies would enhance the local groundwater levels. Present political realities prevent developing additional water by building dams and surface water storage projects. As a result, additional water supplies will most likely come through water conservation efforts, recycling and storm water supplies. The limiting factor to securing additional water supplies is addressing actual or perceived environmental considerations.

13. Redistribution of Surface Water: There is a tremendous difference in the aquifer characteristics within the District. These affect both storage capability and yield. The impacts of recent droughts are evidenced by the continued lowering in groundwater levels for those areas with limited aquifer depth versus portions of the basin that are located over a deeper and higher yielding aquifer. During critically dry years, all or a disproportionately high percentage of the available surface water may need to be directed to the severely impacted areas. Increased pumping could then occur in those areas having better groundwater conditions to offset the redistribution of the available surface water supply.

14. Regional Monitoring: The District will help urban, agricultural and environmental interests to better monitor and implement management strategies affecting the region and basin. Currently, Alta Irrigation District is a founding member of the Upper Kings Basin Integrated Regional Water Management Authority ("JPA") representing portions of Fresno, Kings and Tulare Counties. The JPA would be the means to address the monitoring of groundwater levels, water quality, subsidence, impacts of changes in surface water quality or groundwater pumping that may impact groundwater quality and address regional trends on a basin or sub-basin basis.

15. Implement Locally Cost Effective Best Management Practices:

District will:

A. Lead a coordinated effort to increase groundwater pumping for irrigation purposes in the impacted area. This could result in a reduction in surface water deliveries to lands lying easterly of the communities. Increased pumping would extract the contaminated water for surface irrigation of crops and create a cone of depression to pull any contaminants away from domestic wells;
B. Hold workshops with the farm advisor to encourage more effective utilization of fertilizers;
C. Actively encourage implementation of Fresno and Tulare County's program for locating and properly abandoning of groundwater wells;
D. Work and coordinate efforts with interested parties, i.e., extension service, academic experts, etc., to identify potential sources of contamination;
E. Develop a program with the farm operators and testing laboratories to evaluate nitrate applications on individual parcels;

F. Use various media sources to disseminate information on fertilizer application, problems and availability of programs to assist farm operators;
G. Search out funding sources to help develop programs for farm operators; and
H. Lead a coordinated effort to alter surface water supplies/groundwater pumping available to the lands near those communities to more effectively manage groundwater movement to minimize the degradation of water quality.

C. Current and Future Monitoring Results

The District intends to compile, review and analyze monitoring data on an annual basis and to develop a bi-annual report to synthesize the data and trends. Incidental information that may be of landowner interest will be posted on the District's website.

D. Summary of Coordinated Actions with Water Management & Land Use Agencies

District shall endeavor to enter into a Memorandum of Understanding with Water Management and Land Use Agencies within the District (***see APPENDIX, MOU, Attachment K***).

E. Implementation Schedule

1. Management Action Item Number 1, (Monitoring Groundwater Levels) will continue. The District will actively pursue the implementation of programs to address groundwater quality issues.

2. Management Action Item Number 2, (Direct Recharge) will continue to be implemented.

3. Management Action Item Number 3, (Indirect/In Lieu Recharge) will continue as a basic District operation.

4. Management Action Item Number 4, (Water Conservation – Water Regulation) District will continue to promote water conservation activities and water ruse programs.

5. Management Action Item Number 5, (No Net Exportation of Groundwater) is a basic philosophy of the District that will continue.

6. Management Action Item Number 6, (Intra-District Water Transfer) is a basic philosophy of the District that will continue.

7. Management Action Item Number 7, (Well Drilling and Abandonment) is critical to maintaining groundwater quality. The District will work with agencies of jurisdiction to upgrade the standard.

8. Management Action Item Number 8, (Groundwater Banking) is a basic philosophy of the District that will continue. Currently the District is working on the Traver Pond Banking Project which is to be completed and operational on or before December 31, 2011. Currently the land has been purchased and the environmental documents are being prepared for review and comment. The District will be actively pursuing additional areas for groundwater banking in cooperation with other entities.

   Management Action Item Number 8 (Groundwater Banking) and the groundwater quality issues identified in Management Action Item Number 1 (Water Monitoring), will be addressed in a planning grant for the Orosi Water Supply Study. That grant is expected to be authorized by December 31, 2010. The estimated time to complete the planning grant is eighteen months. Listed below are the identified items to be addressed in the planning grant:

   a. Identify location for surface water treatment plant
   b. Identify Pipeline alignments and right-of-way requirements
   c. Environmental documentation
   d. 30% design level plans for project
   e. Develop organizational structure and service area
   f. Finalize Orosi and Cutler treatment plant capacity requirements
   g. Meet with adjacent communities regarding potential water needs and treatment plant capacity
   h. Identify water supply, transfer requirements and conveyance facility agreements
   i. File application for regional water supply permit
   j. Adoption of funding

Within the next five years, the Plan proposes to commence construction of a regional surface water treatment plant to serve the northeast portion of the District.

9. Management Action Item Number 9, (Inter-District Water Transfer) the District will pursue these opportunities as they develop and are beneficial to the Districts water management plan.

10. Management Action Item Number 10, (Reduction in Groundwater Outflow) this activity will continue to be studied and evaluated by the District for possible future implementation.

11. Management Action Item Number 11, (Pumping Restrictions) this activity will continue to be studied and evaluated by the District for possible future implementation.

12. Management Action Item Number 12, (Additional Water Supply and Storage) this activity will continue to be studied and evaluated by the District for possible future implementation.

13. Management Action Item Number 13, (Redistribution of Surface Water) this activity will continue to be studied and evaluated by the District for possible future implementation.

14. Management Action Item Number 14, (Regional Monitoring) is a basic philosophy of the District that will continue. Additionally the District will be implementing a subsidence network along with monitoring of groundwater and groundwater depths through the JPA on or before December 31, 2010.

15. Management Action Item Number 15, (Implement Locally Cost Effective Best Management Practices) is a basic philosophy of the District that will continue. Ongoing efforts in this regard will continue. Additional Best Management Practices will be implemented as they are deemed prudent and economically feasible.

F. Dispute Resolution

Under current law, a district with an adopted groundwater management plan, i.e., AB 3030, SB 1938, or an amended AB 3030 plan, is the groundwater authority for the lands within such defined boundaries. Alta Irrigation District has an existing

obligation to manage groundwater, as defined under AB 3030, which under this Plan would also comply with the provisions of SB 1938 and the resulting obligations for implementation thereof. The Plan provides that disputes would be addressed by the Board of Directors of Alta Irrigation District.

VII. RE-EVALUATION OF PLAN

A. Amendment of Plan

Prior to amending the Plan, the District shall hold a hearing, after publication of notice pursuant to Section 6066 of the Government Code, on whether or not to adopt a resolution of intention to draft an amendment to the Plan. After the conclusion of the hearing, and if the District adopts a resolution of intention to amend the Plan, the District shall publish the resolution of intention in the same manner that notice for the hearing was published.

B. Schedule to Update the Plan

The District will review, and if necessary, update the Plan every five years on years ending in zero and five. Prior to adopting a resolution of intention to update the Plan, the District administering the Plan shall hold a hearing, after publication of notice pursuant to Section 6066 of the Government Code, on whether or not to adopt a resolution of intention to draft a resolution of intention to adopt an update to the Plan. After the conclusion of the hearing, and if the District adopts a resolution of intention to update the Plan, the District shall publish the resolution of intention in the same manner that notice for the hearing was published.

APPENDIX
SCHEDULE OF ATTACHMENTS

Attachment A	**AB 3030 Groundwater Management Plan (1994)**
Attachment B	**Notice of Intent to Adopt a SB 1938 Groundwater Management Plan (July 10, 2008)**
Attachment C	**Bulletin 118, Department of Water Resources**
Attachment D	**SB 1938 Advisory Meeting Notice and Minutes**
Attachment E	**Table 111-1, KRCD Surface Water Study (1991)**
Attachment F	**Table 9, Future District Operating Budget - Engineer's Report Proposition 218 Procedures (2005)**
Attachment G	**Water Banking Annual Report (2009)**
Attachment H	**Map of Monitoring Well Locations**
Attachment I	**Section 5 Goals and Objectives, Upper Kings Basin IRWMP**
Attachment J	**Member Agencies Upper Kings Basin IRWMP Authority**
Attachment K	**Memorandum of Understanding with Overlapping Local Agencies**

ATTACHMENT A

AB 3030 Groundwater Management Plan (1994)

Groundwater Management Plan

Adopted August 14, 1994

By

ALTA IRRIGATION DISTRICT

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GROUNDWATER MANAGEMENT PLAN

I. INTRODUCTION

A. General

The Kings River ("River"), which provides the surface water for the Alta Irrigation District, a California Irrigation District ("District"), is one of the largest streams entering the San Joaquin Valley. The River's watershed covers 1,742 square miles, ranging in elevation from 500 to 14,000 feet above sea level. The majority of the watershed area is in the high Sierra Mountains and receives heavy snowfall in the winter months. This snow melts slowly. Thus in average years, the River does not reach its highest stage until the middle of May or early June. The current yearly average runoff for the Kings River is 1,689,700 acre feet. However, the average runoff does not guarantee this quantity in any given year. Variation is great, not only from year to year, but also from month to month. As a result of this great variation, there were alternating periods of flood and drought in the drainage area of the River until Pine Flat Dam was completed in 1954.

Rainfall occurs primarily in the winter months with virtually no rainfall in the summer months. The average annual rainfall for the fifty-year period preceding 1956 was 11.39 inches with the annual crop use per acre ranging from 24 to 36 inches. As a result, the agricultural crops within the District do not depend upon rainfall for their irrigation needs; but instead depend upon surface water deliveries and deep well pumps.

Historical water deliveries were initiated in 1882 by a private water company called the "76" Land and Water Company. In 1887, the California legislature passed the Wright Act, which conferred on farming communities the powers of municipalities to purchase, construct and operate irrigation works. On July 7, 1888, sixty-six landowners interested in developing a new public irrigation district filed petitions with the Tulare County Clerk. The District would now comprise 130,000 acres in Tulare, Fresno and Kings Counties and would become the Alta Irrigation District. The present communities of Dinuba, Reedley, Traver, Cutler, and Orosi lie within these boundaries.

Historically, the district had a shallow water table; in the early 1900's the distance from the ground surface to the groundwater table averaged less than ten feet with each successive drought period resulting in an increase in the agricultural groundwater pumping, the water table has dropped significantly over the last fifty years. As agricultural land is paved over for urbanization, the competition for control

of water resources among agricultural, urban and environmental interests will be significantly increased.

B. Purpose and Goals

The Alta Irrigation District has long recognized the importance of groundwater to the area. With the new state Legislation, AB 3030 (Section 10750, et. seq. California Water Code), an opportunity is available to the District to prepare and implement a Groundwater Management Plan ("Plan") on a local basis in-lieu of a mandated plan administered by the State of California Department of Water Resources. While this legislation allows for separate plans to be developed by each water purveyor, such as cities and special districts, within the irrigation district, a well conceived Plan covering the entire District will be more manageable and will have the potential to provide greater benefit. Separate plans prepared by the individual communities will not be effective, since groundwater does not recognize political boundaries. In addition, the availability of groundwater pumped to serve a community can be impacted by activities that take place a considerable distance beyond local boundaries. There is common use of the groundwater resource and it is hoped that this coordinated Plan will be of benefit to competing interests using the groundwater resource. The coordination will be accomplished through the establishment of Memorandums of Understanding between the District and the local agencies.

The proposed Plan recognizes that the conjunctive use of the water supplies within the District must be continued. To achieve this delicate hydrologic equilibrium requires the management of both surface and groundwater supplies. The long-term continuation of this balance will be the principal benefit to be derived from the Plan. Retaining all existing surface and groundwater supplies within the District is critical to maintaining this delicate balance.

The principal action item in the Plan will be gathering and evaluating additional data concerning the quantity and quality of groundwater. Action items will be developed to enhance the valuable groundwater resource by promoting those actions necessary to reduce the long-term groundwater level decline in the area. Many of the action items identified are currently being conducted or will begin with adoption of the Plan. Other action items will require further study prior to implementation.

Through the proposed Plan, duplication of activities by local jurisdictions will be reduced and the adopted Plan can be utilized in the long-term planning activities of all the agencies within the District. The Plan will be flexible allowing updates to be

made as needed, based on the additional information that is gathered through the monitoring programs.

The Plan preparation is being funded by the Alta Irrigation District. The water quality sampling and testing costs will be shared among the City of Reedley, City of Dinuba, Alta Irrigation District and other local agencies. Future activities required to fully implement the Plan may require funding sources in addition to those outlined. AB 3030 allows for the levying of groundwater assessments or fees under certain circumstances and according to specific procedures. Prior to instituting a fee structure, the District must hold an election on whether or not to proceed with the enactment of the assessments. A majority of the votes cast at the election will be required to implement an additional funding assessment.

C. Institutional Requirements

Historically, the use of groundwater within the state of California has not been regulated except in a few basins where the rights have been adjudicated by the courts or special management districts have been authorized by the state legislature. Groundwater accounts for approximately one-third of the water used within the state. With the continued increasing demand being placed on the limited water supplies of the state, groundwater usage is being scrutinized to a much greater extent.

II. EXISTING CONDITIONS

A. Groundwater Basin

The Alta Irrigation District overlies a portion of a larger groundwater basin designated as the Kings River Basin. The California Department of Water Resources has designated this basin to be a critically over drafted groundwater basin. The District has been monitoring groundwater levels for at least the last seventy-five years. The results of this monitoring effort are consistent with the findings of the Department of Water Resources. The water level measurements taken within the District show a continued downward trend in the groundwater elevations within the District's boundaries. This average overdraft is approximately 22,000 acre feet per year.

The total water supply available to the District is extremely variable and dependent on the snowpack that occurs in the Sierra Nevada mountain range to the east. The pumping within the groundwater basin is inversely proportional to the surface water supply made available by runoff within the Kings River watershed.

The boundaries of the District include land within three counties, two incorporated cities and numerous unincorporated urban water districts. All of the urban communities, along with many individual residences scattered throughout the District, are dependent on the groundwater supply to meet their domestic demands. Surface water is currently not available to meet those needs. The conjunctive use of both the groundwater and surface supplies is necessary to meet the irrigation requirements within the District. This irrigation demand represents by far the largest water use within the basin.

The District recognizes that the continuation of the agricultural, municipal and industrial developments within the basin is dependent on maintaining an adequate water supply. With the conjunctive use that already occurs within the District, adequate surface water supplies are necessary to achieve a water balance. Both the groundwater and surface supplies are already fully developed and cannot be augmented by increased groundwater production.

B. Geology

The District is located in the eastern portion of the San Joaquin Valley and southern half of the Great Valley geomorphic province of California. The District is part of the valley which is a nearly flat northwest to southeast trending alluvial plain. Alluvial sediments are found within the District and are bounded on the east by granitic rocks of the Sierra Nevada. The alluvium within the District is a heterogeneous mix of clay, silt, sand and gravel (USGS, 1968). The soils within the District are complex with the unconsolidated alluvial fans being made up of varied textured material. The upper soils vary from very heavy clays near the base of the Sierra Nevada (on the east side of the District) to relatively coarse sand near the western boundary along the Kings River. Much of the area is underlain by hardpan that restricts the vertical percolation of the water. These areas are typically ripped and/or soil amendments are applied to improve the vertical percolation. Throughout the District there are isolated locations of coarse grained material with high percolation rates. These are typically found at locations where old stream beds historically meandered throughout the District.

Along the east side of the District, the basement complex is shallow and the aquifer depth is very limited. The granite bedrock slopes quickly westward within the District resulting in a deeper aquifer along the western boundary of the District. The bedrock depth is approximately 500 feet below the ground surface along the eastern perimeter of the District and increases to 5,500 feet near its southwest limits. The coarse, sandy materials that are found along the west side of the District are reflected in the higher specific yields for those soils which are typically 50 percent to100

percent greater than for the finer textured clay materials found on the east side of the District. This same correlation is also found in the deeper soils which are much less permeable and have significantly lower specific yields than the upper soils. Therefore, the specific yields from wells drilled into the deeper portions of the aquifer are considerably less than the yields from shallower wells.

C. Hydrology

The hydrology of this area is principally impacted by the snowpack that occurs within the Kings River watershed and to a limited extent by both the local runoff from the foothills lying just easterly of the District and the precipitation that occurs within the District. The water table within the District is unconfined and typically flows in a southwesterly direction. Groundwater extractions are made for agricultural, municipal and industrial purposes. These extractions are very significant during periods when there is little surface water available to augment the water needs within the District. The groundwater levels, during those periods, experience a significant decline. Surface water made available to the irrigation canals and pipelines through diversion from the Kings River provides a stabilizing factor on the groundwater levels. This surface water supply reduces the amount of pumping, provides recharge and is the principal contributing factor that influences the groundwater conditions. This effect is evident in years of below normal runoff when a rapid decline in the groundwater level is experienced. Based on the District's fall 1993 groundwater measurements, the average groundwater level was 53.16 feet below ground.

D. Climate

The area is semi-arid with mild winters and hot, dry summers. The average rainfall, based on District records, is approximately 11 inches per year. The majority of this rainfall occurs from November through April. With the long, hot summers that normally occur in the valley, there is about 6 feet of evaporation per year with the majority of that evaporation occurring during the period May through October. The winds in the area are principally from the northwest with a southeast wind usually indicating that a rain storm is imminent.

E. Surface Water Management

Alta Irrigation District operates a "demand" system allowing farmers to order water on or off within the system. Primarily, water orders are called in between 7:00 a.m. and 8:00 a.m. each morning; with a subsequent coordinating meeting each morning to determine changes within the system. The conjunctive use pattern of utilizing surface water in wet years and relying more on ground water in dry years

helps to maintain sufficient water supplies to the District's significant acreage of permanent crops. The most beneficial use of surface water is to turn off the farmer's groundwater pump, thus conserving the groundwater to be utilized when needed.

All primary canal and pipeline measuring locations are measured daily prior to 7:00 a.m. Each farmer's delivery is measured at least once a day. The District uses a calibrated submerged orifice to determine the instantaneous flow rate. The District is in the process of updating its distribution system by requiring cumulative flow meters on all turnouts when open canals are replaced by pipelines.

In 1990, Alta Irrigation District commissioned the Kings River Conservation District to complete a "Surface Water Study" to study and review the District's surface water delivery system. A system water balance was evaluated in wet and dry years to determine seepage evaporation, evapotranspiration (ET) of bank vegetation, and operational spillage. The study showed that seepage (estimated to be approximately 23 percent of the District's total diversion) was the most significant loss in the system (see Exhibit "A").

The water flow in the District's canals and pipelines is measured by means of overflow weirs, undershot gates, parshall flumes and a current meter. The District has developed rating tables to set the proper flow rate in each of the canals and pipelines. However, the District may reallocate water from the different laterals if the demand warrants such reallocation.

The District has instituted a water allocation formula to equitably distribute water to farmers. The formula is based on four days per twenty acres utilizing one cubic foot per second per entitlement percentage. Approximately eighty percent of the District's irrigable acres receive one-hundred percent entitlement; the remaining acreage is entitled to receive seventy-five percent, fifty percent, twenty-five percent, or no surface water entitlement. Historically, the lower water entitlement areas either were not farmed or were being farmed to low value crops. The allocation formula is set by the Board of Directors and can be adjusted by lengthening or shortening the number of irrigation days per twenty acres. Typically, in less than average water years, water is held in storage until peak demand occurs in May, June and July.

Water regulating reservoirs have been designed to better maintain constant flows in the lower areas of the district. In 1991 the district developed the fifty-seven acre Button Ponding Basin which is fed by five tributary canals. The flow rates within the canals served by the pond, have been prone to large fluctuation between mid-week and weekend days. All the inflow is now funneled into the ponding basin with a single discharge point: the result being that on weekend's additional water *is*

stored in the basin; and on weekdays, when there is normally higher demand, additional water is used from the storage basin. Additional regulating reservoirs are being evaluated for future construction.

F. Surface Water supply

The District *is* located east of the Kings River in the Central San Joaquin Valley (see Exhibit "B"). To the east of the District are the Sierra Nevada Foothills. The District is composed primarily of alluvial fans sloping to the southwest with elevations ranging from about 425 feet at the northern point to 270 feet in the southwest corner. The incorporated communities within the district are Reedley (population 18,000) and Dinuba (population 13,700). There are also several unincorporated communities, housing clusters and individual rural residences.

The primary economy within the District is agriculture or agriculturally related business. The primary crops grown within the region are grapes (22,056 acres), nectarines (14,394 acres), plums (12,285 acres), and peaches (10,080 acres). Due to the relatively high land prices and high production costs in terms of hand labor, spraying and fertilizer costs, the average parcel size is approximately 36 acres. There are approximately 4,000 farm parcels within the district.

Initially, agricultural production in the region was primarily dry land farming; but with the development of a dependable surface water supply and a willingness of farmers to risk high value crops, the cropping pattern changed to perennial crops and need for a stable water supply became apparent.

The estimated crop demand within the District is 325,000 acre feet and the average surface water supply is 148,416 acre feet; therefore, there is a strong reliance on an alternate water supply; i.e., groundwater.

The District diverts water from the Kings River at the "Cobbles Weir" and measures water into the District at a computerized headgate ("Headgate") located near the community of Piedra. Downstream of the Headgate are 78 ditch laterals serving approximately 4,000 farm parcels. The total length of canals and pipelines is between 350 and 400 miles. The canal widths vary from 4 to 70 feet; lengths range from 3,000 feet to nearly 18 miles (see Exhibit "D")

The annual diversions from the Headgate during a recent twenty-year period were as follows: 253,269 acre feet in 1980 (highest annual diversion); 38,721 acre feet in 1977 (lowest annual diversion) and 148,446 acre was the average annual diversion.

The average time period for each water run within such twenty-year period is 112 days; the shortest water run being 28 days; and the longest water run being 195 days (see Exhibit "C"). The District's diversion and storage rights are based upon riparian and appropriative claims as well as contractual agreements and licenses granted by the state Water Resources Control Board. Such agreements stipulate the use of District's rights in conjunction with the rights of the other twenty-seven (27) entities storing and diverting water from the Kings River: the twenty-eight (28) entities comprise the Kings River Water Association. It is typical for weather patterns and the resulting water storage to vary significantly from year to year, thus illustrating the value of water storage in the production of perennial crops.

III. WATER QUALITY

A. Groundwater Quality

Overall, the quality of the groundwater within the basin is very good. This is the result of the excellent quality of the basin recharge waters originating in the Kings River watershed. The most prevalent water quality problems occurring within this basin are caused by synthetic chemicals. The predominant chemical contamination is DBCP. When the groundwater is used for domestic purposes, construction of ground level treatment facilities to remove the contaminants or the drilling of deeper uncontaminated wells has been required. The contamination has not resulted in any problems when the well water is used for irrigation purposes. Additional contaminates of the water used for domestic purposes include nitrate and bacteriological. The nitrate contamination is usually the result of agricultural fertilizer, domestic sewage, or livestock wastes. In some isolated locations, nitrate levels in groundwater have also caused problems for the agricultural pumpers. The groundwater management plan will include recommended procedures to maintain the existing excellent water quality. Initially, this will include additional water quality monitoring.

Groundwater wells are prevalent throughout the District. The wells are used by cities, agricultural producers, industrial developments and individual homeowners. With the many water production wells, there is a risk that cross aquifer contamination can occur. The greatest potential for groundwater contamination within the basin is cross aquifer contamination through abandoned wells and the improper sealing of new wells. Therefore, it is necessary that proper sealing of new wells and abandonment of old wells is always accomplished. At a minimum, the water well standards of Tulare, Kings & Fresno Counties along with Bulletin 74 requirements must be met. In addition, it may be advantageous to require construction standards that exceed those presently mandated by either the county or state. With the continual raising of

standards for drinking water, maintaining the quality of the groundwater becomes ever more important.

B. Surface Water Quality

The surface supply for the District consists principally of diversions from the Kings River. The snowpack and rainfall within the Kings River watershed produce extremely high quality water with very low amounts of dissolved salts. This has allowed consistently high yields to occur on the heavier soils that are not freely drained without the development of a serious drainage problem. The surface water also provides an excellent source of water for recharging the District's groundwater supply. It is important that the quality of this water be maintained. To this end, the District has been active in identifying surface water discharges within the Basin that may impact water quality. These will be continually monitored and may require the issuance of permits through the NPDES process. Anyone causing overland surface flows that are found to be detrimental to the District's water supply will be put on notice that they must either eliminate or clean those flows to avoid impacting the quality of the District's water supply.

Municipal storm water discharges into District facilities are regulated by permits between the discharger and the District. The permits are specific as to area being drained and/or flow allowed to be discharged. Permit conditions require that the quality of this water meet the existing and future standards set by the Regional Water Quality Control Board. The right to discharge can be terminated at any time the conditions of the permit are not met by the discharger.

C. Water Quality Requirements/Objectives

A primary objective of the Plan is to maintain the water quality within the District. This is of extreme importance because the municipal, industrial and agricultural users need a dependable high quality water supply. A reduction in the quality of the groundwater is tantamount to a loss of water supply, since the quality problem will require additional costs for the construction of treatment facilities. This cleanup will be necessary to allow the water to be integrated into the system.

One of the action items listed in the Plan recommends increased monitoring of groundwater quality in selected areas. This monitoring information will be collected and utilized to evaluate the best management practices to reduce and/or eliminate the contamination. In addition, the action items recommend working with the Department of Water Resources and the counties of jurisdiction in upgrading certain provisions of the water well standards. Since the natural minerals occur in low

concentrations, the major thrust of the water quality monitoring and recommended practices will be to prevent chemical contamination.

The quality of both surface and groundwater within the District must be maintained. The Plan provides a mechanism that will help achieve those long-term goals. The initial action of increasing the amount of monitoring will provide the additional data needed to proceed with future programs to maintain water quality.

D. Wastewater Reclamation

There is little potential for increasing the water supply through wastewater reclamation in this basin. The majority of the wastewater is currently being utilized for the irrigation of agricultural crops or groundwater recharge with only a minor portion being consumed through evaporation basins. The District will continue to work with the wastewater agencies, where practical, to reduce the amount of effluent disposed of through evaporation. In addition, the District will continue to promote the past practices of reusing all wastewater effluent within the local basin, in order to maintain the total water balance within the area. In a water deficient region such as the Alta Irrigation District, the reuse of the wastewater effluent is a key element of establishing a water balance.

IV. GROUNDWATBR CONDITIONS

A. Groundwater Mapping

The District has been monitoring- the groundwater level for the last seventy-five (75) years. This is accomplished through water level measurements taken in the late fall and early spring. A map of the District showing the well locations has been attached (see Exhibit "E"). As wells are lost, new wells are substituted to maintain the continuity of the grid pattern. From these readings, groundwater contour maps have been made depicting both the water elevation and changes in groundwater levels. This mapping has shown drastic differences between various regions of the District during the last drought period.

Based on the water level readings, the overall trend has shown a declining groundwater level within the District. This decline has been periodically interrupted by a short-term groundwater recovery. Based on this long-term data, it has been determined that it would take approximately 22,000 acre-feet per year of additional surface water to correct the overdraft situation that presently exists. Based on average porosity and specific yield considerations, this results in a decline in the groundwater storage of one foot for every 7,000 acre-feet of overdraft. This storage can be

regained if sufficient surface water supplies are made available to reduce the amount of groundwater pumping that is necessary to meet the water demands. In addition, the overdraft results in additional pumping costs to overcome the increased lift. As the water table continues to drop, the pumping occurs from lower portions of the aquifer which have lower porosity and specific yield factors than those found in the upper portions of the unconfined aquifer. The long-term impact is a greater incremental reduction in the available groundwater storage per acre foot of overdraft. Using the historical data collected and the transmissivity of the aquifer, a determination can be made of the estimated quantity of inflow and/or outflow of groundwater within the limits of the District. This data also will allow the District to evaluate areas that are more severely impacted during periods of sustained drought due to the low yield of the wells and the limited depth of the aquifer. This is an important water management tool that is useful to the District in developing long term planning decisions.

The collection of this data will be continued with the Plan. The information that has been prepared from this data in the past includes the following:

1. Maps of spring and fall water elevations.
2. Maps of spring and fall depths to groundwater.
3. Maps showing the changes in groundwater levels over time.

In addition, the groundwater reports can include estimates of changes in groundwater storage, water delivered, water use, and overdraft. This will allow an evaluation of the management activities to be made.

The water quality monitoring that is being proposed as one of the action items will be used to augment the information obtained through the historical water level readings. The water quality samples will be taken *in* critical areas adjacent to urban centers and known locations of contamination. With the compilation of the quality tests and the groundwater level measurement, the District will improve its ability to effectively manage the groundwater.

This information can provide the additional data needed to establish programs to reduce the movement of the contaminates. Typically, the urban centers have a higher concentration of wells resulting in a cone of depression within and surrounding the community. This can accelerate the movement of contaminates towards the urban well fields with the information gathered through the Plan, an additional future action item could include the analysis of the potential benefits of creating a hydraulic barrier or modification of the local pumping regime to reduce or impede the migration of the contamination.

B. Groundwater Recharge

In any conjunctive use area, groundwater recharge is a critical part of the overall Plan. For many years, the District has maintained recharge basins along the southwesterly perimeter of its boundaries. They are located in areas of highly permeable soils. In addition, some amount of affective recharge is also obtained through the District's 700 miles of canals, even though the majority of the soil types are such that the recharge capability of the soil is very limited.

The District has been conducting extensive research to locate additional recharge sites in the eastern portion of the District, since that area is severely impacted in dry years due to the low specific yields and the limited depth of the aquifers. In 1987, the District was selected for funding through the Proposition 44 program to develop a groundwater recharge basin in an area that had limited groundwater resources. The site appeared to have soil types that would be conducive to recharge efforts. An in-depth geological study was undertaken and it was determined that the site would not be effective for groundwater recharge. The District has continued in their efforts to locate additional sites, but so far a suitable location has not been found.

To proceed with a groundwater recharge program, additional surface water supplies are necessary to fully implement the Plan. The District's average annual water supply is already committed. The surface water necessary to conduct an extensive program is available only in wet years when additional water supplies or flood waters are available on the Kings River. The District's goal has been and will continue in the future to make beneficial use of those waters by recharging the underground. For the most part, District conveyance facilities are currently available to transport these waters to the basin locations. Unfortunately, the prospects for locating effective recharge basin sites within the areas of greatest need are not promising.

The District will also be looking at joint recharge sites with the cities. If suitable sites are located within the boundaries of a municipal jurisdiction, the possibility of a joint use facility would be evaluated. The potential exists for water to be delivered to all or part of the site for recharge purposes during a portion of the year, with consideration given to other uses during the remainder of the year.

As a complement to the District's local recharge program, one of the action items is to evaluate "groundwater banking". This could be accomplished by assisting the recharge efforts of other districts that have access to better groundwater recharge sites. Flood waters would be recharged (banked) in a particular district thereby improving their groundwater levels. The amount of water banked would be quantified

on an annual basis and an agreement developed so that the District would have .rights to a stipulated portion of the water banked through the joint agreement. In both the short and long terms, this approach appears to be the most effective way for the Basin Plan Area to proceed. In addition, investigations will continue on potential local recharge sites.

V. ACTION ITEMS

A. Groundwater Management Program

There have been thirteen (13) action items identified for the Plan and those items will be implemented according to the Rules and Regulations (see Exhibit "Fit), as amended from time to time. To have a successful Plan, it is not necessary to implement all of the action items identified. The last three items would be required only as a last resort due to the occurrence of emergency conditions within the Basin Plan Area. It is important that all the potential action items be identified and contingency plans developed in case anyone of them becomes necessary. It is recommended that items one (1) through six (6) be implemented immediately. Investigations into items seven (7) and eight (8) should begin upon approval of the Plan with a staff report regarding their status provided within one year. Action items nine (9) through thirteen (13) will require additional staff study, board approval and public hearings. If funding is necessary to implement a portion of the Plan, then an election will be required prior to instituting an assessment. It is felt that through the management activities listed in the Plan, the District can preserve the groundwater resource and avoid the drastic steps identified in the last three action items.

1. Water Monitoring: The District shall continue to monitor water levels every six months In addition, it will also assist in sampling for water quality testing. Further, the District will prepare maps depicting the information gathered through the monitoring phase, as well as reports quantifying the water demands, surface water and groundwater supplies. These summaries will assist the District in evaluating the effectiveness of the various elements of the program. The migration of contaminated plumes can be detected earlier though the monitoring process allowing additional time for plans to be developed and implemented before additional portions of the basin are impacted.

2. Direct Recharge: The District will continue to use surface waters when available to recharge the underground by sinking those waters in its basins. Basin sites will be located in the areas of greatest need. The District will actively seek the cooperation of other government entities in construction of such sites.

3. Indirect/In-lieu Recharge: The District has approximately 250 miles of unlined canals. The indirect recharge *is* accomplished through the seepage that occurs in some reaches of the canals. In addition, during winter months many of the natural channels carry surface runoff that recharges the groundwater. These old channels are typically located in the more permeable soils. The effective amount of this recharge varies from year to year and is dependent upon the amount of rainfall that occurs. Additional water supplies will be pursued for groundwater recharge in natural channels and during non-irrigation seasons in the District's canals. By providing surface water to the area, the District has reduced the amount of groundwater pumping, resulting in an effective in-lieu recharge program. The District will continue efforts to maximize the amount of surface water available to users within its boundaries.

4. Water Conservation - Water Regulation: The District has a long standing practice of conjunctive water use. Conjunctive use is the integration of surface and groundwater supplies to meet the total water demand. Recently, a cooperative program called the "mobile lab," has been operated by the Kings River Conservation District with support from the local irrigation districts. The purpose of this program has been to promote on-farm water conservation. The District has strongly supported programs that conserve water along with enhancing crop production. Through the construction of water regulating basins, the District has been able to conserve and more efficiently utilize water within its system. The most recent regulating basin was constructed on a 50-acre site in the southeast portion of the District. The Alta Irrigation District, the cities and the unincorporated water purveyors, all have water conservation plans. Water conservation efforts will be encouraged throughout the basin for agricultural, industrial and residential users. Existing and new irrigation methods, reuse of industrial water and domestic water saving devices will all be encouraged. The water use requirements of new developments will also be evaluated to insure compatibility with this water deficient basin.

5. No Exportation of Groundwater: Since the District is located within an overdrafted basin, it is prudent to utilize groundwater resources within the District's boundaries. Effluent discharged by the City of Reedley ("Agency") from its sewer treatment plant into the Kings River should not be considered to be prohibited exportation of groundwater if such effluent recharges or benefits underground supplies available to landowners in the District.

6. Intra-district Water Transfer: Water transfers within the District have taken place on a routine basis. Each year the District evaluates the water transfer policy and specifies the circumstances warranting internal water transfers. Approximately 60 transfers are approved each year within the District.

7. Well Drilling and Abandonment: Portions of the groundwater have been contaminated principally by volatile organic chemicals or nitrates. This contamination is most prevalent in the upper aquifers. Interaquifer mixing can occur through inadequate seals or improperly abandoned wells. Working through the Department of Water Resources and the county of jurisdiction, the District will seek to upgrade standards for construction and abandonment of water wells to reduce the potential for aquifer contamination.

8. Groundwater Banking: With the scarcity of suitable recharge sites within the District, the Alta Irrigation District will look to other agencies that have soil types more suitable for recharge basins. The District could then recharge (bank) surface water within the boundaries of the Agency for withdrawal at a later time. This arrangement can provide benefit to the groundwater basins for both the and the cooperating Agency. The District benefits since otherwise it has few areas suitable for recharge and the participating Agency receives the benefit of reduced pumping lifts during the time the water is banked.

9. Inter-district Water Transfer: Water transfers between different water districts are currently taking place. New legislation is being proposed that will enhance the water transfer process. In the past, the District has completed such transfers on a limited basis. This mechanism would be used to increase the total water supply within the District or to augment the water supply in specific areas of the basin during critically dry years.

10. Reduction in Groundwater outflow: The direction and quantity of groundwater flow is susceptible to changes that occur to the hydraulic gradient. The groundwater level measurements taken twice a year within the District will identify the direction of groundwater flow. Typically, this outflow has been to the west and southwest creating hydraulic barriers by mounding of the groundwater can lead to a reduction in the amount of water that leaves the District. This can be an especially effective procedure along the perimeter of the District. Likewise, increased pumping by landowners along the perimeter of the basin can increase the groundwater outflow. The District will continue its efforts to assure that all necessary steps are taken to reduce the amount of such groundwater outflow.

11. Pumping Restrictions: Pumping restrictions would definitely reduce the amount of groundwater use. This is a controversial item and pumping restrictions would be the last item to be considered. This step could have severe economic implications since the local economy that has been developed with a reliance on groundwater would be detrimentally impacted. Initially, any program requiring pumping restrictions would be voluntary rather than mandatory. From a practical

standpoint, only if the urban water supplies are being severely restricted, will mandatory agricultural pumping restrictions be implemented.

12. Additional Water supply and Storage: The generation of additional water supplies would enhance the local groundwater. Present political realities prevent developing additional water by building dams and water storage projects. As a result, additional water supplies will most likely come through water conservation efforts, recycling and storm water supplies. The limiting factor to securing additional water supplies is addressing actual or perceived environmental considerations.

13. Redistribution of Surface Water: There is a tremendous difference in the aquifer characteristics within the District. This is evident in both storage capability and yield. The impact of the recent and apparently ongoing drought is evidenced by the larger drop in water level for those areas with limited aquifer depth versus portions of the basin that are located over a deeper and higher yielding aquifer. During critically dry years, all or a disportionately high percentage of the available surface water may need to be directed to the severely impacted areas. Increased pumping could then occur in those areas having better groundwater conditions to offset the redistribution of the available surface water supply.

B. Memorandum of understanding

The District shall endeavor to enter into a Memorandum of Understanding with public or private entities providing water service in accordance with Water Code section 10755.2. It is hoped that such local agencies will adopt and implement this Plan within their boundaries to provide a coordinated groundwater management program in accordance with that section.

IN WITNESS WHEREOF, the Alta Irrigation District has executed this Groundwater Management Plan as of **October 14, 1994.**

"DISTRICT"

ALTA IRRIGATION DISTRICT, a
California Irrigation District

BY _____
Norman Waldner, President

BY _____
Janelle M. Cochran, Secretary

MEMORANDUM OF UNDERSTANDING
BETWEEN
ALTA IRRIGATION DISTRICT
AND
LOCAL AGENCY

ARTICLE I – AGREEMENT

The articles and provisions contained herein constitute a bilateral and binding agreement by and between ALTA IRRIGATION DISTRICT, a California Irrigation District ("District") and LOCAL AGBNCY, A Public Agency ("Agency").

ARTICLE II – RECOGNTION

The District has developed a Groundwater Management Plan ("Plan") with input from several local agencies which are water purveyors with overlapping spheres of influence within the District. It is the intent of District to allow and encourage such agencies to coordinate efforts and be a part of the District's Plan by means of a separate Memorandum of Understanding ("MOU") between each agency and District.

ARTICLE III - PURPOSE

It is the purpose of this MOU, entered willingly, between District and Agency, to document the interests and responsibilities of both parties in the adoption and implementation of a coordinated Plan. It is also hoped that such MOU will promote and provide a means to establish an orderly process to share information, develop a course of action and resolve any misunderstandings or differences that may arise.

ARTICLE IV - COORDINATION

There shall be an annual coordinating meeting ("Meeting") between the District and the Agency. District shall give notice to the Agency thirty (30) days prior to date of the Meeting. If there are concerns or questions regarding the Plan, Agency shall transmit its concerns in writing to District seven (7) days prior to the Meeting.

ARTICLE IV - OBLIGATIONS

The Plan shall be binding on the parties hereto unless superseded by the MOU or amendment thereto. It is agreed between both parties that District shall pay one-third of the cost and expense of water quality testing I sampling and monitoring and Agency shall pay prorated portion of two-thirds of such cost provided that the total annual cost payable by each party shall not exceed six thousand eight hundred dollars ($6,800). Within one year from the date hereof, the parties shall establish procedures and arrangements to carry out such sampling, testing and monitoring.

ARTICLE VI – AREA OF PLAN

The plan shall be effective in all areas within the Agency boundaries. The Plan shall also be effective in any area annexed to the Agency Subsequent to the adoption of the Plan.

ARTICLE VII – TERM

The initial term of the MOU shall commence on the date hereof and continue for five (5) years, and shall continue year to year thereafter, unless terminated by written notice given at least one (1) year prior to such termination.

"DISTRICT"

ALTA IRRIGATION DISTRICT, a California Irrigation District

By_____
Norman Waldner, President

By_____
Janelle M. Cochran, Secretary

"AGENCY"

LOCAL AGENCY, a Public Agency

By_____

By_____

Reference: Kings River Conservation District (KRCD)

Table III-1
Alta I.D. Canal Seepage for Wet (1984) and Dry (1990) Years

Canal Name	Length (mi)	Seepage (cfs)	1984 Seepage (AF)	1984 Seepage % of Diversion	1990 Seepage (AF)	1990 Seepage % of Diversion
Alta Main	8.9	11.2	3,592	1.7%	1,071	1.8%
A.B. Clark	4.4	2.5	810	0.4%	242	0.4%
A.N. Smith	1.8	0.2	62	0.0% *	18	0.0% *
A.W. Clark	2.9	0.6	186	0.1%	56	0.1%
Andrews	2.5	0.4	130	0.1%	39	0.1%
Ballard	2.8	0.2	79	0.0% *	23	0.0% *
Banks	17.7	4.4	1,409	0.7%	151	0.3%
Bowhay	3.1	1.1	336	0.2%	100	0.2%
Bump & Edmison	1.8	0.2	64	0.0% *	19	0.0%
Button	15.0	4.2	1,345	0.6%	281	0.5%
Buttonwillow	11.0	8.9	2,830	1.3%	844	1.4%
Caesar	5.3	4.4	1,397	0.7%	417	0.7%
California Vineyard	6.9	6.1	1,938	0.9%	578	1.0%
Carey-Hunter	7.7	2.8	885	0.4%	263	0.5%
Carpenter	1.2	0.0	10	0.0% *	3	0.0% *
Clapp	1.5	0.0	5	0.0% *	2	0.0% *
Clements	4.0	2.1	667	0.3%	199	0.3%
Clough	3.9	1.6	502	0.2%	15	0.0% *
Cross Creek W.W.	1.9	0.4	129	0.1%	4	0.0% *
Curtis Cutoff	1.5	0.5	155	0.1%	46	0.1%
Lower Curtis Cutoff	0.9	0.2	73	0.0% *	22	0.0% *
Upper Curtis Cutoff	1.0	0.1	19	0.0% *	6	0.0% *
Dinuba Town	8.8	4.7	1,507	0.7%	449	0.8%
East Branch	15.5	18.0	5,753	2.7%	1,715	2.9%
East Gould	1.5	0.1	31	0.0% *	9	0.0% *
East Reedley	5.5	1.8	563	0.3%	168	0.3%
East Section 20	1.2	0.1	20	0.0% *	6	0.0% *
Elter	2.5	0.1	38	0.0% *	11	0.0% *
Floyd	1.5	0.1	42	0.0% *	13	0.0% *
Frane	1.4	0.0	3	0.0% *	1	0.0% *
Gordon	1.0	0.1	41	0.0% *	12	0.0% *
Grove	1.7	0.0	16	0.0% *	5	0.0% *
Haden & Boone	2.7	0.4	141	0.1%	42	0.1%
Hogan	2.1	0.1	37	0.0% *	11	0.0% *
Horsman	5.0	1.7	550	0.3%	164	0.3%
J.T. Williams	2.4	0.0	9	0.0% *	3	0.0% *
Jack	1.2	0.3	103	0.0% *	31	0.1%
Kennedy School House	5.0	0.3	82	0.0% *	24	0.0% *
Kennedy Waste Way	7.3	3.7	1,168	0.5%	347	0.6%
King	4.4	3.1	979	0.5%	206	0.4%
Kirk	1.7	0.3	84	0.0% *	25	0.0% *
Knestric	5.6	0.8	254	0.1%	76	0.1%
Loper	3.2	0.5	162	0.1%	48	0.1%
Lovell	2.0	0.4	136	0.1%	41	0.1%
McBriar	2.0	0.0	8	0.0% *	2	0.0% *
McClanahan	5.9	4.8	1,527	0.7%	446	0.8%
Mc Gee	1.9	0.2	54	0.0% *	16	0.0% *
Monson	7.0	3.5	1,128	0.5%	336	0.6%
Montague	1.3	0.2	52	0.0% *	16	0.0% *
Mt. Campbell	3.7	1.5	466	0.2%	139	0.2%
Nichols-Cann	1.9	0.0	6	0.0% *	2	0.0% *
Nuss	1.2	0.0	2	0.0% *	1	0.0% *
Orosi School House	3.2	0.9	279	0.1%	83	0.1%
Parenti	1.3	0.0	4	0.0% *	1	0.0% *
Parks	1.5	0.2	78	0.0% *	23	0.0% *
Peck	0.6	0.0	2	0.0% *	0	0.0% *
Red Williams	1.5	0.2	67	0.0% *	10	0.0% *
Reedley Main	3.0	2.9	917	0.4%	273	0.5%
Reo	1.5	0.2	63	0.0% *	19	0.0%
Rice-Brubaker	2.2	0.3	99	0.0% *	30	0.1%
Sandridge	2.9	0.4	140	0.1%	42	0.1%
Segrue	0.3	0.0	1	0.0% *	0	0.0% *
Smith Mountain	9.3	3.1	977	0.5%	291	0.5%
Sontag	6.7	0.2	59	0.0% *	14	0.0% *
Tout	6.0	1.4	439	0.2%	131	0.2%
Traver Creek	10.1	12.1	3,878	1.8%	1,156	2.0%
Traver Canal	12.3	21.6	6,910	3.2%	1,788	3.1%
Uphill	0.6	0.0	2	0.0% *	0	0.0% *
Van Noy	2.2	0.3	96	0.0% *	18	0.0% *
Wahtoke	5.1	0.7	224	0.1%	67	0.1%
Weise	1.0	0.3	80	0.0% *	2	0.0% *
West Gould	4.9	0.9	281	0.1%	84	0.1%
West Reedley	5.6	1.4	442	0.2%	132	0.2%
West Section 20	1.8	0.1	26	0.0% *	8	0.0% *
Wilson	10.7	7.0	2,220	1.0%	662	1.1%
Wilson Hunter	1.5	0.5	151	0.1%	45	0.1%
Wilson School House	3.4	0.9	287	0.1%	85	0.1%
Windsor	1.3	0.0	3	0.0%	1	0.0%
TOTAL	316.7	154	49,306	23.1%	13,727	23.6%

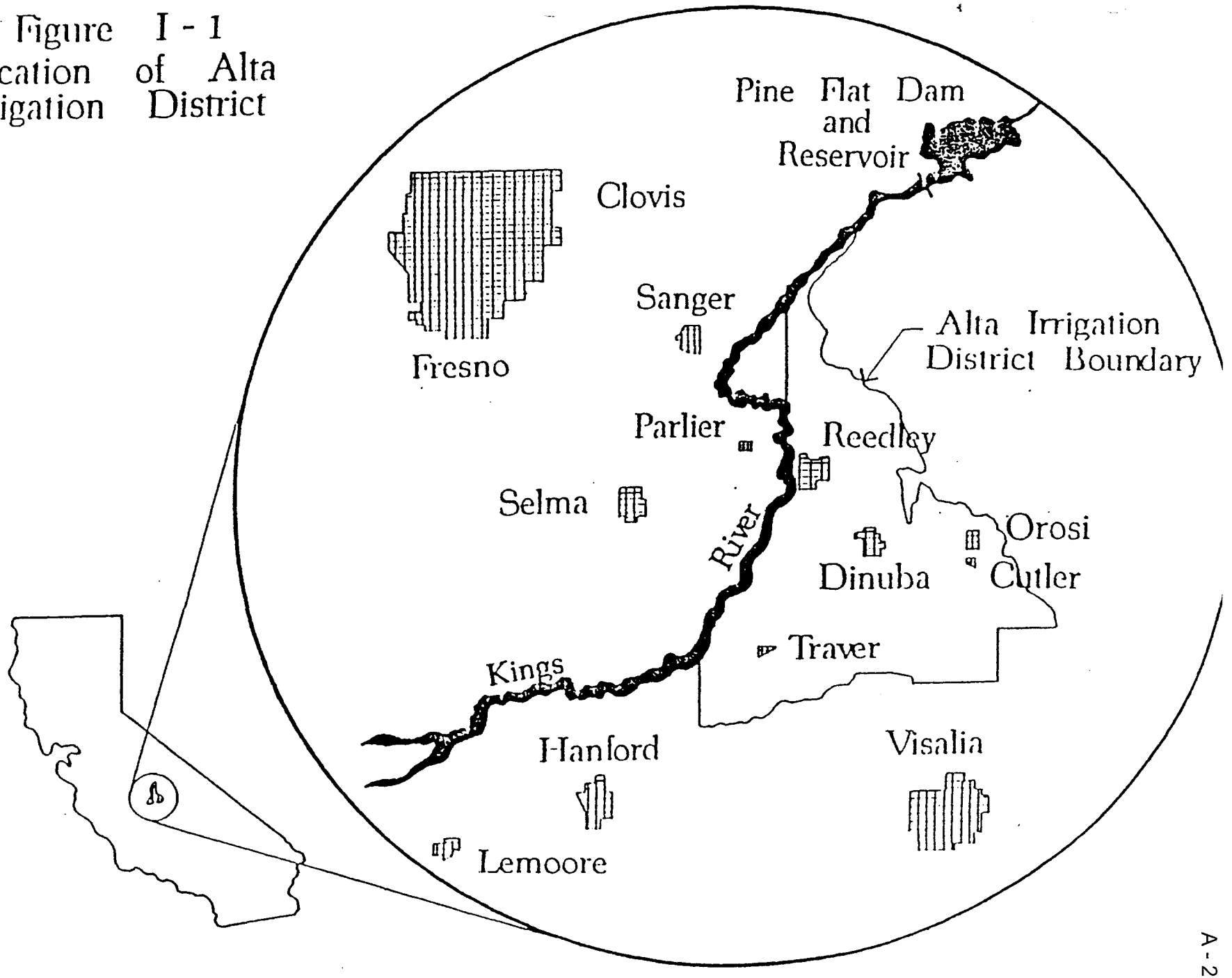
Note: * Indicates that canal seepage is less than 0.05% of Alta's total district diversion.

SCHEDULE OF DIVERSIONS & WATER RUN, 1973 - 1992

	DIVERSIONS FROM HEADGATE		WATER RUN	
1973	86,773	Acre Feet	04/16-08/31	138 Days
1974	220,041	Acre Feet	05/15-08/31	139 Days
1975	184,034	Acre Feet	04/21-08/22	124 Days
1976	43,381	Acre Feet	06/14-07/17	34 Days
1977	38,721	Acre Feet	07/01-07/28	28 Days
1978	246,204	Acre Feet	05/11-10/31 & 5 days in Sept.	169 Days
1979	181,999	Acre Feet	05/01-08/31	123 Days
1980	253,269	Acre Feet	04/01-09/13	166 Days
1981	145,581	Acre Feet	05/04-08/14	103 Days
1982	247,599	Acre Feet	04/20-10/31	195 Days
1983	205,445	Acre Feet	04/28-09/29 & 10/02-10/14	167 Days
1984	214,165	Acre Feet	03/31-09/07	161 Days
1985	170,826	Acre Feet	04/28-08/26	121 Days
1986	227,709	Acre Feet	04/07-09/30	177 Days
1987	121,270	Acre Feet	05/04-08/04	93 Days
1988	59,118	Acre Feet	06/13-08/01	50 Days
1989	89,983	Acre Feet	05/28-08/04	69 Days
1990	58,468	Acre Feet	06/21-08/07	48 Days
1991	107,706	Acre Feet	05/21-08/10	82 Days
1992	66,623	Acre Feet	05/28-07/26	59 Days
AVERAGE	**148,446**	**Acre Feet**	**AVERAGE**	**112 Days**
MOST	**253,269**	**Acre Feet**	**LONGEST**	**195 Days**
LEAST	**38,721**	**Acre Feet**	**SHORTEST**	**28 Days**

Reference: Alta Irrigation District
1992 Annual Report

Figure I - 1
Location of Alta
Irrigation District



NORTH

Table I-1
Alta I.D. Canal Specifications

Canal Name	Length (mi)	Average Top Width (ft)	Average Cross Sectional Area (sq ft)	Canal Volume (AF)
Alta Main	8.9	72.4	245	265.3
A.B. Clark	4.4	12.4	19	8.8
A.N. Smith	1.8	5.7	5	0.7
A.W. Clark	2.9	8.3	9	2.6
Andrews	2.5	4.0	3	1.0
Ballard	2.8	9.3	11	1.5
Banks	17.7	13.2	21	44.8
Bowhay	3.1	12.6	20	7.5
Bump & Edmison	1.8	7.3	7	0.6
Button	15.0	17.7	28	50.9
Buttonwillow	11.0	19.9	48	60.4
Caesar	5.3	15.7	27	17.1
California Vineyard	6.9	19.2	46	37.6
Carey-Hunter	7.7	12.9	19	16.0
Carpenter	1.2	10.9	15	1.0
Clapp	1.5	6.1	6	0.3
Clements	4.0	13.5	20	9.7
Clough	3.9	10.7	14	6.8
Cross Creek W.W.	1.9	11.6	17	3.9
Curtis Cutoff	1.5	15.0	24	2.3
Lower Curtis Cutoff	0.9	10.2	13	1.0
Upper Curtis Cutoff	1.0	11.0	14	0.5
Dinuba Town	8.8	13.9	24	24.5
East Branch	15.5	42.8	123	231.5
East Gould	1.5	4.5	2	0.2
East Reedley	5.5	17.5	46	18.1
East Section 20	1.2	8.3	10	1.4
Elter	2.5	6.5	5	1.5
Floyd	1.5	4.8	4	0.6
Frane	1.4	N/A	N/A	0.1
Gordon	1.0	5.7	6	0.5
Grove	1.7	7.5	10	1.2
Haden & Boone	2.7	6.0	6	1.3
Hogan	2.1	5.4	5	0.4
Horsman	5.0	9.2	9	5.7
J.T. Williams	2.4	N/A	N/A	0.8
Jack	1.2	8.0	10	1.4
Kennedy School House	5.0	13.4	23	2.9
Kennedy Waste Way	7.3	13.4	22	15.2
King	4.4	13.8	19	10.1
Kirk	1.7	4.6	4	0.7
Knestric	5.6	6.2	4	2.6
Loper	3.2	6.3	4	1.7
Lovell	2.0	5.7	5	1.1
McBriar	2.0	N/A	N/A	0.8
McClanahan	5.9	15.1	27	18.3
Mc Gee	1.9	4.6	4	1.3
Monson	7.0	13.9	27	23.0
Montague	1.3	4.4	4	0.5
Mt. Campbell	3.7	12.8	20	6.4
Nichols-Cann	1.9	N/A	N/A	0.5
Nuss	1.2	N/A	N/A	0.1
Orosi School House	3.2	7.5	7	2.8
Parenti	1.3	N/A	N/A	0.3
Parks	1.5	7.7	9	0.9
Peck	0.6	N/A	N/A	0.1
Red Williams	1.5	16.1	18	3.3
Reedley Main	3.0	21.5	45	16.7
Reo	1.5	4.5	2	0.4
Rice-Brubaker	2.2	5.4	5	0.8
Sandridge	2.9	15.4	30	5.8
Segrue	0.3	N/A	N/A	0.1
Smith Mountain	9.3	12.8	17	17.9
Sontag	6.7	9.5	12	9.3
Tout	6.0	10.2	13	8.2
Traver Creek	10.1	28.0	78	95.6
Traver Canal	12.3	39.4	58	86.6
Uphill	0.6	N/A	N/A	0.1
Van Noy	2.2	8.9	12	3.3
Wahtoke	5.1	12.8	15	7.1
Weise	1.0	9.1	11	1.3
West Gould	4.9	7.6	10	4.8
West Reedley	5.6	10.6	13	7.6
West Section 20	1.8	7.5	7	1.5
Wilson	10.7	16.4	31	40.1
Wilson Hunter	1.5	10.4	18	3.3
Wilson School House	3.4	11.1	16	6.2
Windsor	1.3	N/A	N/A	0.2
TOTAL	316.7			1,239.1

Notes: Width and area values as N/A denote canals that are completely piped.
Width and area values are for open channel segments only.

Reference: Kings River Conservation District (KRCD)

WELL LOCATIONS
ALTA IRRIGATION DISTRICT

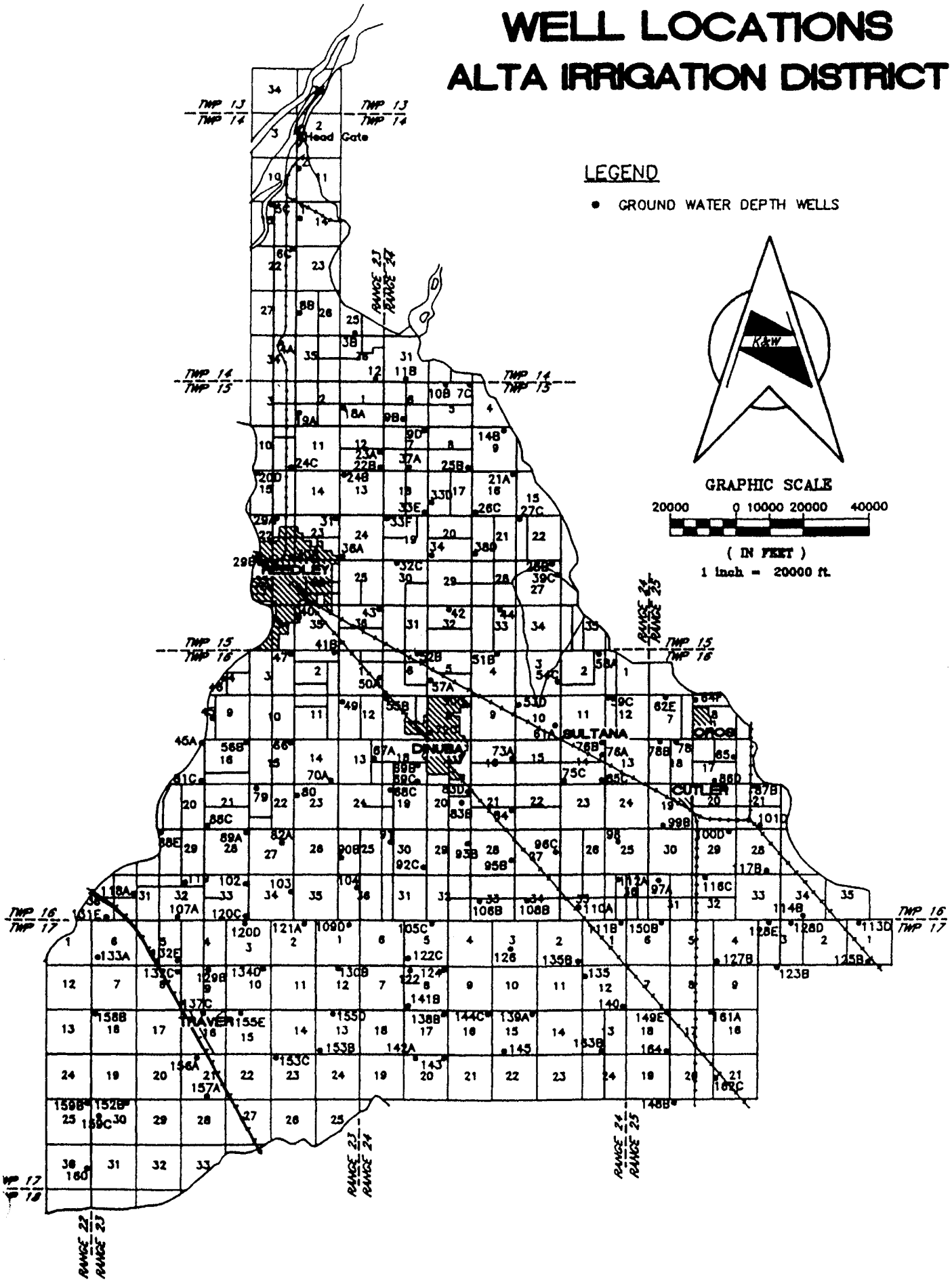


EXHIBIT "F"
GROUNDWATER MANAGEMENT PLAN
RULES AND REGULATIONS
TO IMPLEMENT THE
GROUNDWATER MANAGEMENT PLAN
OF
ALTA IRRIGATION DISTRICT

1. Rules and Regulations Governing Distribution of Water and Maintenance of Distribution System to Alta Irrigation District: The Rules and Regulation adopted by the District on March 9, 1990 and attached hereto as Exhibit "G" are hereby incorporated in these Rules and Regulations.

2. Water Monitoring:

(a) Semi-annual Groundwater Level Measurement: At least twice per year, District shall provide staff at its expense to monitor and measure the depth to standing groundwater at well sites within District. In its sole discretion, District shall select the number and location of well sites. District shall prepare maps as required by the Plan.

(b) Water Quality sampling and testing: District along with other local agencies as defined in water Code Section 10752g, ("Local Agencies") shall implement a water sampling and monitoring program for water quality purposes in accordance with a Memorandum of Understanding entered into by District and those Local Agencies.

3. Direct Recharge: When feasible, District will consider delivery of water to recharge basins owned and maintained by Local Exhibit "F" Agencies within the District. All such deliveries of recharge water shall be at the discretion of District Board of Directors. ("Board of Directors"). The Local Agency owning the recharge basin shall be liable for any damages connected with or arising out of transportation use, storage or recharge of such water. District shall be responsible for any damage to Agency resulting from the intentional or negligent acts of District or its employees or agents.

4. Indirect Recharge:

(a) Canal Recharge: District shall endeavor to monitor and evaluate recharge from canals when appropriate, as determined by District. Canals with good

recharge capabilities will be evaluated for potential use as groundwater recharge facilities to receive recharge water during the off-irrigation season.

(b) Surface Water/Groundwater Pumping: The District shall continue to divert and deliver surface water supplies of the District to reduce groundwater pumping.

5. Water Conservation - Water Regulation: District's policies and procedures promote the beneficial use of water. Specific examples include instantaneous (orifice type of metering) flow measurements at all turnouts; with propeller meters at all turnouts associated with current or future pipeline projects. The District shall continue to promote policies that enhance water conservation policies (see enclosed Alta Irrigation District Rules and Regulations, adopted March 9, 1990). The District Board of Directors has the authority to adopt water conservation and water regulation policies for the District. If Agency adopts and enforces a water conservation plan within its boundaries, such Plan shall be effective to the extent it is not inconsistent with the District's Plan.

6. No Exportation of Groundwater: After the adoption hereof, there shall be no exportation of groundwater that results in any additional net loss to District's total available water supplies. Minor amounts of urban drainage shall not be considered groundwater exportation subject to this paragraph. The District Board of Directors has the authority to renew any mitigating measures proposed to prevent such net loss.

7. Well Drilling and Abandonment: District will work with the agencies of jurisdiction in amending the water well ordinance applicable within the District to require a minimum of fifty (50) foot annular seal on all gravel packed wells.

8. Groundwater Banking: District shall endeavor to promote advantageous groundwater banking projects. The Board of Directors has the authority to control the destination of the District's Kings River water under appropriate licenses.

9. Intra-district water Transfer: District annually adopts a specific policy to address the issue of internal water transfers within the District. The District desires to reduce pumping from the groundwater by better utilization of surface water supplies. The Board of Directors has the authority to control the destination of the District's Kings River water under appropriate licenses.

10. Inter-district water Transfer: District shall endeavor to promote advantageous water transfers (water transfers that increase the water supply available

within the District) between the District and other entities. The Board of Directors has the authority to initiate such transfers.

11. Reduction in Groundwater outflow: The District's current water entitlement allocations result in additional pumping in the south and southwesterly areas of the District which may reduce groundwater outflow under certain circumstances. The groundwater outflow from the District is principally to the south and west. Existing surface water along with supplemental water,' when available, will be used to improve the groundwater barrier along the perimeter of the District to reduce the amount of outflow. The Board of Directors has the authority to adjust water entitlement allocations.

12. Pumping Restrictions: Only under special circumstances would pumping restrictions be imposed. The Board of Directors shall not impose such restrictions until after consulting with Local Agencies and holding a mandatory public hearing at least sixty (60) days prior to the effective date of such restrictions.

13. Additional Water Supply and storage: The Board of Directors could impose such action only by Resolution.

14. Redistribution of Surface Water: The Board of Directors could impose such action by Resolution adopted after a mandatory public hearing held at least sixty (60) days prior to imposing such action.

ATTACHMENT B

Notice of Intent to Adopt a SB 1938 Groundwater Management Plan (July 10, 2008)

RESOLUTION OF INTENT

A RESOLUTION FOR THE ALTA IRRIGATION DISTRICT TO APPROVE AND AUTHORIZE THE NOTICE OF AN INTENT TO UPDATE ALTA IRRIGATION DISTRICT'S GROUNDWATER MANAGEMENT PLAN UNDER Section 10750 et seq. TO BE IN COMPLIANCE WITH SB 1938(Stats 2002, Ch 603)

WHEREAS, ALTA IRRIGATION DISTRICT, a public agency duly organized and existing under and by virtue of the laws of the State of California (the "Entity"), has determined that it is in the best interest and to the advantage of the Entity to update its current groundwater management plan. The current groundwater management plan is a AB 3030 type of plan and it is intent of Entity to update its current plan to meet the requirements of a SB 1938 type of plan; and

WHEREAS, the Entity is located in Fresno, Tulare and Kings Counties; and

WHEREAS, participation will include local agencies and interested parties located within the Entity; and

WHEREAS, The Entity will act as the lead agency in the governance of the groundwater management plan, as updated.

NOW, THEREFORE, BE IT RESOLVED BY THE GOVERNING BODY OF THE ENTITY AS FOLLOWS:

Section 1. Findings. The Entity's Governing Body hereby specifically finds and determines that the actions authorized hereby relate to the public affairs of the Entity and the inter-relationship with other water interests within the Upper Kings Sub Basin.

Section 2. Memorandum of Understandings. Existing Memorandum of Understandings, to be updated and entered into by and between the Entity and the local agencies with overlapping spheres of interest within the Entity.

Section 3. Effective Date. This Resolution of Intent shall be advertised under the prescribed guidelines of Government Code 6066 prior to action being considered.

PASSED AND ADOPTED this 10th day of July, 2008 by the following vote:

AYES: Waldner, Marshall, Astiasuain and Halford

NOES: None

ABSENT: Belknap, Krahn and Warkentin

Attested by: Chris M. Kapheim

Chris M. Kapheim, General Manager/Secretary

ATTACHMENT C

Bulletin 118, Department of Water Resources

Tulare Lake Hydrologic Region

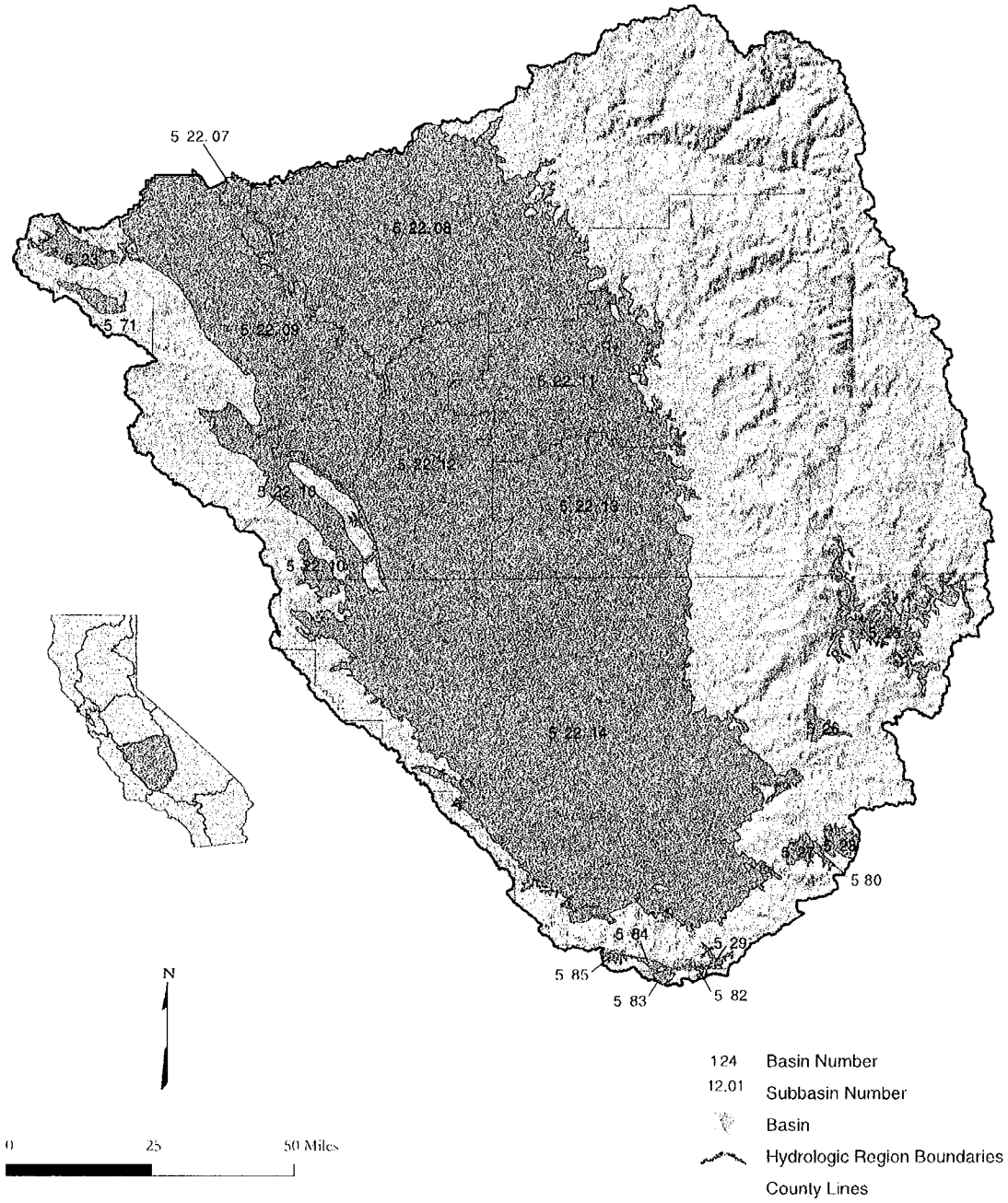


Figure 37 Tulare Lake Hydrologic Region

Basins and Subbasins of Tulare Lake Hydrologic Region

Basin/subbasin	Basin name
5-22	San Joaquin Valley
5-22.08	Kings
5-22.09	Westside
5-22.10	Pleasant Valley
5-22.11	Kaweah
5-22.12	Tulare Lake
5-22.13	Tule
5-22.14	Kern County
5-23	Panoche Valley
5-25	Kern River Valley
5-26	Walker Basin Creek Valley
5-27	Cummings Valley
5-28	Tehachapi Valley West
5-29	Castaic Lake Valley
5-71	Vallecitos Creek Valley
5-80	Brite Valley
5-82	Cuddy Canyon Valley
5-83	Cuddy Ranch Area
5-84	Cuddy Valley
5-85	Mil Potrero Area

Description of the Region

The Tulare Lake HR covers approximately 10.9 million acres (17,000 square miles) and includes all of Kings and Tulare counties and most of Fresno and Kern counties (Figure 37). The region corresponds to approximately the southern one-third of RWQCB 5. Significant geographic features include the southern half of the San Joaquin Valley, the Temblor Range to the west, the Tehachapi Mountains to the south, and the southern Sierra Nevada to the east. The region is home to more than 1.7 million people as of 1995 (DWR, 1998). Major population centers include Fresno, Bakersfield, and Visalia. The cities of Fresno and Visalia are entirely dependent on groundwater for their supply, with Fresno being the second largest city in the United States reliant solely on groundwater.

Groundwater Development

The region has 12 distinct groundwater basins and 7 subbasins of the San Joaquin Valley Groundwater Basin, which crosses north into the San Joaquin River HR. These basins underlie approximately 5.33 million acres (8,330 square miles) or 49 percent of the entire HR area.

Groundwater has historically been important to both urban and agricultural uses, accounting for 41 percent of the region's total annual supply and 35 percent of all groundwater use in the State. Groundwater use in the region represents about 10 percent of the State's overall supply for agricultural and urban uses (DWR 1998).

The aquifers are generally quite thick in the San Joaquin Valley subbasins with groundwater wells commonly exceeding 1,000 feet in depth. The maximum thickness of freshwater-bearing deposits (4,400 feet) occurs at the southern end of the San Joaquin Valley. Typical well yields in the San Joaquin Valley range from 300 gpm to 2,000 gpm with yields of 4,000 gpm possible. The smaller basins in the mountains surrounding the San Joaquin Valley have thinner aquifers and generally lower well yields averaging less than 500 gpm.

The cities of Fresno, Bakersfield, and Visalia have groundwater recharge programs to ensure that groundwater will continue to be a viable water supply in the future. Extensive groundwater recharge programs are also in place in the south valley where water districts have recharged several million acre-feet for future use and transfer through water banking programs.

The extensive use of groundwater in the San Joaquin Valley has historically caused subsidence of the land surface primarily along the west side and south end of the valley.

Groundwater Quality

In general, groundwater quality throughout the region is suitable for most urban and agricultural uses with only local impairments. The primary constituents of concern are high TDS, nitrate, arsenic, and organic compounds.

The areas of high TDS content are primarily along the west side of the San Joaquin Valley and in the trough of the valley. High TDS content of west-side water is due to recharge of stream flow originating from marine sediments in the Coast Range. High TDS content in the trough of the valley is the result of concentration of salts because of evaporation and poor drainage. In the central and west-side portions of the valley, where the Corcoran Clay confining layer exists, water quality is generally better beneath the clay than above it. Nitrates may occur naturally or as a result of disposal of human and animal waste products and fertilizer. Areas of high nitrate concentrations are known to exist near the town of Shafter and other isolated areas in the San Joaquin Valley. High levels of arsenic occur locally and appear to be associated with lakebed areas. Elevated arsenic levels have been reported in the Tulare Lake, Kern Lake and Buena Vista Lake bed areas. Organic contaminants can be broken into two categories, agricultural and industrial. Agricultural pesticides and herbicides have been detected throughout the valley, but primarily along the east side where soil permeability is higher and depth to groundwater is shallower. The most notable agricultural contaminant is DBCP, a now-banned soil fumigant and known carcinogen once used extensively on grapes. Industrial organic contaminants include TCE, DCE, and other solvents. They are found in groundwater near airports, industrial areas, and landfills.

Water Quality in Public Supply Wells

From 1994 through 2000, 1,476 public supply water wells were sampled in 14 of the 19 groundwater basins and subbasins in the Tulare Lake HR. Evaluation of analyzed samples shows that 1,049 of the wells, or 71 percent, met the state primary MCLs for drinking water. Four-hundred-twenty-seven wells, or 29 percent, exceeded one or more MCL. Figure 38 shows the percentages of each contaminant group that exceeded MCLs in the 427 wells.

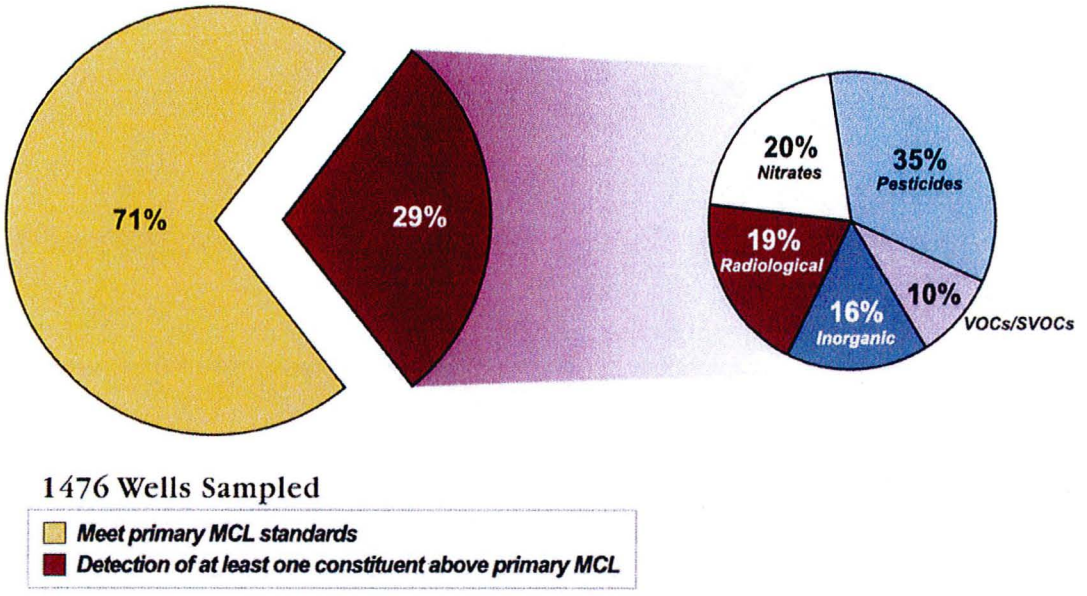


Figure 38 MCL exceedances by contaminant group in public supply wells in the Tulare Lake Hydrologic Region

Table 31 lists the three most frequently occurring contaminants in each of the six contaminant groups and shows the number of wells in the HR that exceeded the MCL for those contaminants.

Table 31 Most frequently occurring contaminants by contaminant group in the Tulare Lake Hydrologic Region

Contaminant group	Contaminant - # of wells	Contaminant - # of wells	Contaminant - # of wells
Inorganics - Primary	Fluoride – 32	Arsenic – 16	Aluminum – 13
Inorganics - Secondary	Iron – 155	Manganese – 82	TDS – 9
Radiological	Gross Alpha – 74	Uranium – 24	Radium 228 – 8
Nitrates	Nitrate(as NO_3) – 83	Nitrate + Nitrite – 14	Nitrite(as N) – 3
Pesticides	DBCP – 130	EDB – 24	Di(2-Ethylhexyl)phthalate – 7
VOCs/SVOCs	TCE – 17	PCE – 16	Benzene – 6 MTBE – 6

DBCP = Dibromochloropropane
EDB = Ethylenedibromide
TCE = Trichloroethylene
PCE = Tetrachloroethylene
VOC = Volatile organic compound
SVOC = Semivolatile organic compound

Changes from Bulletin 118-80

There are no newly defined basins since Bulletin 118-80. However, the subbasins of the San Joaquin Valley, which were delineated as part of the 118-80 update, are given their first numeric designation in this report (Table 32).

Table 32 Modifications since Bulletin 118-80 of groundwater basins and subbasins in Tulare Lake Hydrologic Region

Subbasin name	New number	Old number
Kings	5-22.08	5-22
Westside	5-22.09	5-22
Pleasant Valley	5-22.10	5-22
Kaweah	5-22.11	5-22
Tulare Lake	5-22.12	5-22
Tule	5-22.13	5-22
Kern County	5-22.14	5-22
Squaw Valley	deleted	5-24
Cedar Grove Area	deleted	5-72
Three Rivers Area	deleted	5-73
Springville Area	deleted	5-74
Templeton Mountain Area	deleted	5-75
Manache Meadow Area	deleted	5-76
Sacator Canyon Valley	deleted	5-77
Rockhouse Meadows Valley	deleted	5-78
Inns Valley	deleted	5-79
Bear Valley	deleted	5-81

Several basins have been deleted from the Bulletin 118-80 report. In Squaw Valley (5-24) all 118 wells are completed in hard rock. Cedar Grove Area (5-72) is a narrow river valley in Kings Canyon National Park with no wells. Three Rivers Area (5-73) has a thin alluvial terrace deposit but 128 of 130 wells are completed in hard rock. Springville Area (5-74) is this strip of alluvium adjacent to Tule River and all wells are completed in hard rock. Templeton Mountain Area (5-75), Manache Meadow Area (5-76), and Sacator Canyon Valley (5-77) are all at the crest of mountains with no wells. Rockhouse Meadows Valley (5-78) is in wilderness with no wells. Inns Valley (5-79) and Bear Valley (5-81) both have all wells completed in hard rock.

Table 33 Tulare Lake Hydrologic Region groundwater data

Basin/Subbasin	Basin Name	Area (acres)	Groundwater Budget Type	Well Yields (gpm)		Types of Monitoring			TDS (mg/L)	
				Maximum	Average	Levels	Quality	Title 22	Average	Range
5-22	SAN JOAQUIN VALLEY									
5-22.08	KINGS	976,000	C	3,000	500-1,500	909	-	722	200-700	40-2000
5-22.09	WESTSIDE	640,000	C	2,000	1,100	960	-	50	520	220-35,000
5-22.10	PLEASANT VALLEY	146,000	B	3,300	-	151	-	2	1,500	1000-3000
5-22.11	KAWEAH	446,000	B	2,500	1,000-2,000	568	-	270	189	35-580
5-22.12	TULARE LAKE	524,000	B	3,000	300-1,000	241	-	86	200-600	200-40,000
5-22.13	TULE	467,000	B	3,000	-	459	-	150	256	200-30,000
5-22.14	KERN COUNTY	1,950,000	A	4,000	1,200-1,500	2,258	249	476	400-450	150-5000
5-23	PANOCHE VALLEY	33,100	C	-	-	48	-	-	1,300	394-3530
5-25	KERN RIVER VALLEY	74,000	C	3,650	350	-	-	92	378	253-480
5-26	WALKER BASIN CREEK VALLEY	7,670	C	650	-	-	-	1	-	-
5-27	CUMMINGS VALLEY	10,000	A	150	56	51	-	15	344	-
5-28	TEHACHAPI VALLEY WEST	14,800	A	1,500	454	64	-	19	315	280-365
5-29	CASTAC LAKE VALLEY	3,600	C	400	375	-	-	3	583	570-605
5-71	VALLECITOS CREEK VALLEY	15,100	C	-	-	-	-	0	-	-
5-80	BRITE VALLEY	3,170	A	500	50	-	-	-	-	-
5-82	CUDDY CANYON VALLEY	3,300	C	500	400	-	-	3	693	695
5-83	CUDDY RANCH AREA	4,200	C	300	180	-	-	4	550	480-645
5-84	CUDDY VALLEY	3,500	A	160	135	3	-	3	407	325-645
5-85	MIL POTRERO AREA	2,300	C	3,200	240	7	-	7	460	372-657

gpm - gallons per minute
mg/L - milligram per liter
TDS -total dissolved solids

ATTACHMENT D

SB 1938 Advisory Meeting Notice and Minutes

SB 1938 Advisory Meeting
Alta ID Board Room
Thursday, April 9, 2009, 8:00 a.m.

AGENDA

1. Introductions
2. Review of Handouts
    a. Tulare Lake Hydrologic Region
    b. Requirements of 1938 Plan
    c. Alta's AB 3030 Plan
    d. Specific Goals and Objectives
3. Other Items for Discussion

SB 1938 AVDISORY MEETING
ALTA IRRIGATION DISTRICT BOARD ROOM
Thursday, April 9, 2009, 8:00 a.m.

CALL TO ORDER: The first advisory meeting for the SB 1938 groundwater plan was called to order at 8:00am by Chris Kapheim w/AID. Members present were David Cone w/KRCD, Laurel Firestone w/Community Water Center, Jerry Halford w/AID, David Orth w/KRCD, Russ Robertson w/City of Reedley, Dean Uota w/City of Dinuba, Norman Waldner w/AID, Jim Wegley w/Keller Wegley Engineering, Steve Worthley w/Tulare County and Mike Ayala w/AID.

INTRODUCTIONS: The advisory committee members all did a short self-introduction stating their organization and position.

REVIEW OF HANDOUTS:

Tulare Lake Hydrologic Region: Reviewed existing bulletin

Requirements of 1938 Plan: Committee discussed water quality & groundwater level information, monitoring and reporting plan. The committee discussed integrating regional goals and objectives from the Upper Kings IRWMP to correspond with the District's SB 1398 plan. Furthermore, it was discussed that it would be beneficial to also review data from surrounding areas outside of the Kings sub basin.

Additionally, abandoned wells was discussed as a concern that needs to be addressed county wide. Discussion focused on finding cost efficient means to initiate an incentive based program with landowners to give a reasonable time frame to abandon wells; funding and coordination of such efforts will require further input.

Water Quality Testing was reviewed, with nitrates being a principal concern. KRCD will evaluate current irrigation efficiency analysis to include nitrate testing of pumps.

The Committee reviewed Alta's water quality monitoring efforts for nitrates and DBCP and discussed the County's efforts in nitrate monitoring.

Alta's AB 3030 Plan: Alta's current groundwater plan was reviewed

Specific Goals and Objectives: Reviewed potential goals and objectives:

1. Evaluate a coordinated effort to increase groundwater pumping for irrigation purposes in the impacted area. This could result in a reduction in surface water to lands overlying the lands lying easterly of the communities. Excess pumping would remove the contaminated water for surface irrigation of crops and create a cone of depression away from the domestic wells;

2. Hold workshops with the farm advisor to encourage more effective utilization of fertilizers;

3. Actively encourage implementation of Tulare County's program for locating and properly abandoning of groundwater wells;
4. Work and coordinate efforts with interested parties, i.e., extension service, academic experts, etc., to identify potential sources of contamination;

5. Develop a program with the farm operators and testing laboratories to evaluate nitrate applications on individual parcels;

6. Use various media sources to disseminate information on fertilizer application, problems and availability of programs to assist farm operators;

7. Search out funding sources to work with and develop programs for farm operators; and

8. Evaluate a coordinated effort to alter surface water supplies/groundwater pumping available to the lands to more effectively manage groundwater movement to minimize the degradation to water quality.

ADDITIONAL ITEMS FOR DISCCUSSION: Information will be forwarded to the committee to be reviewed prior to further discussion.

ADJOURNMENT: There being no further items to discuss the meeting was adjourned until the next Advisory Meeting.

Sincerely,

Chris M. Kapheim
SB 1938 Advisory Committee

CMK: ma

ATTACHMENT E

Table 111-1, KRCD Surface Water Study (1991)

Table III-1
Alta I.D. Canal Seepage for Wet (1984) and Dry (1990) Years

Canal Name	Length (mi)	Seepage (cfs)	1984 Seepage (AF)	1984 Seepage % of Diversion	1990 Seepage (AF)	1990 Seepage % of Diversion
Alta Main	8.9	11.2	3,592	1.7%	1,071	1.8%
A.B. Clark	4.4	2.5	810	0.4%	242	0.4%
A.N. Smith	1.8	0.2	62	0.0% *	18	0.0% *
A.W. Clark	2.9	0.6	186	0.1%	56	0.1%
Andrews	2.5	0.4	130	0.1%	39	0.1%
Ballard	2.8	0.2	79	0.0% *	23	0.0% *
Banks	17.7	4.4	1,409	0.7%	151	0.3%
Bowhay	3.1	1.1	336	0.2%	100	0.2%
Bump & Edmiston	1.8	0.2	64	0.0% *	19	0.0% *
Button	15.0	4.2	1,345	0.6%	281	0.5%
Buttonwillow	11.0	8.9	2,830	1.3%	844	1.4%
Caesar	5.3	4.4	1,397	0.7%	417	0.7%
California Vineyard	6.9	6.1	1,938	0.9%	578	1.0%
Cary-Hunter	7.7	2.8	885	0.4%	263	0.5%
Carpenter	1.2	0.0	10	0.0% *	3	0.0% *
Clapp	1.5	0.0	5	0.0% *	2	0.0% *
Clements	4.0	2.1	667	0.3%	199	0.3%
Clough	3.9	1.6	502	0.2%	15	0.0% *
Cross Creek W.W.	1.9	0.4	129	0.1%	4	0.0% *
Curtis Cutoff	1.5	0.5	155	0.1%	46	0.1%
Lower Curtis Cutoff	0.9	0.2	73	0.0% *	22	0.0% *
Upper Curtis Cutoff	1.0	0.1	19	0.0% *	6	0.0% *
Dinuba Town	8.8	4.7	1,507	0.7%	449	0.8%
East Branch	15.5	18.0	5,753	2.7%	1,715	2.9%
East Gould	1.5	0.1	31	0.0% *	9	0.0% *
East Reedley	5.5	1.8	563	0.3%	168	0.3%
East Section 20	1.2	0.1	20	0.0% *	6	0.0% *
Elter	2.5	0.1	38	0.0% *	11	0.0% *
Floyd	1.5	0.1	42	0.0% *	13	0.0% *
Frane	1.4	0.0	3	0.0% *	1	0.0% *
Gordon	1.0	0.1	41	0.0% *	12	0.0% *
Grove	1.7	0.0	16	0.0% *	5	0.0% *
Haden & Boone	2.7	0.4	141	0.1%	42	0.1%
Hogan	2.1	0.1	37	0.0% *	11	0.0% *
Horseman	5.0	1.7	550	0.3%	164	0.3%
J.T. Williams	2.4	0.0	9	0.0% *	3	0.0% *
Jack	1.2	0.3	103	0.0% *	31	0.1%
Kennedy School Hous	5.0	0.3	82	0.0% *	24	0.0% *
Kennedy Waste Way	7.3	3.7	1,166	0.5%	347	0.6%
King	4.4	3.1	979	0.5%	206	0.4%
Kirk	1.7	0.3	84	0.0% *	25	0.0% *
Knestric	5.6	0.8	254	0.1%	76	0.1%
Loper	3.2	0.5	162	0.1%	48	0.1%
Lovell	2.0	0.4	136	0.1%	41	0.1%
McBriar	2.0	0.0	8	0.0% *	2	0.0% *
McClanahan	5.9	4.8	1,527	0.7%	446	0.8%
Mc Gee	1.9	0.2	54	0.0% *	16	0.0% *
Monson	7.0	3.5	1,128	0.5%	336	0.6%
Montague	1.3	0.2	52	0.0% *	16	0.0% *
Mt. Campbell	3.7	1.5	466	0.2%	139	0.2%
Nichols-Cann	1.9	0.0	6	0.0% *	2	0.0% *
Nuss	1.2	0.0	2	0.0% *	1	0.0% *
Orosi School House	3.2	0.9	279	0.1%	83	0.1%
Parenti	1.3	0.0	4	0.0% *	1	0.0% *
Parks	1.5	0.2	78	0.0% *	23	0.0% *
Peck	0.6	0.0	2	0.0% *	0	0.0% *
Red Williams	1.5	0.2	67	0.0% *	10	0.0% *
Reedley Main	3.0	2.9	917	0.4%	273	0.5%
Reo	1.5	0.2	63	0.0% *	19	0.0% *
Rice-Brubaker	2.2	0.3	99	0.0% *	30	0.1%
Sandridge	2.9	0.4	140	0.1%	42	0.1%
Segrue	0.3	0.0	1	0.0% *	0	0.0% *
Smith Mountain	9.3	3.1	977	0.5%	291	0.5%
Sontag	6.7	0.2	59	0.0% *	14	0.0% *
Tout	6.0	1.4	439	0.2%	131	0.2%
Traver Creek	10.1	12.1	3,878	1.8%	1,156	2.0%
Traver Canal	12.3	21.6	6,910	3.2%	1,788	3.1%
Uphill	0.6	0.0	2	0.0% *	0	0.0% *
Van Noy	2.2	0.3	96	0.0% *	18	0.0% *
Wahtoke	5.1	0.7	224	0.1%	67	0.1%
Weisse	1.0	0.3	80	0.0% *	2	0.0% *
West Gould	4.9	0.9	281	0.1%	84	0.1%
West Reedley	5.6	1.4	442	0.2%	132	0.2%
West Section 20	1.8	0.1	26	0.0% *	8	0.0% *
Wilson	10.7	7.0	2,220	1.0%	662	1.1%
Wilson Hunter	1.5	0.5	151	0.1%	45	0.1%
Wilson School House	3.4	0.9	287	0.1%	85	0.1%
Windsor	1.3	0.0	3	0.0%	1	0.0%
Total	316.7	154	49,306	23.1%	13,727	23.6%

Note: * indicates that canal seepage is less than 0.05% of Alta's total district diversion.

ATTACHMENT F

Table 9, Future District Operating Budget –

Engineers Report Proposition 218 Procedures (2005)

TABLE 9
FUTURE DISTRICT OPERATIONAL BUDGETS

Volumetric Water Surcharge	**$3.65**	**$3.76**	**$3.90**	**$4.10**
Fiscal Year	**06/07**	**07/08**	**08/09**	**09/10**
Water Run Revenues				
Water Surcharge	$ 365,000	$ 376,000	$ 390,000	$ 410,000
Water Surcharge Penalty	500	500	500	500
Pine Flat Power Income 50%	84,476	84,476	84,476	84,476
Total Water Run Revenues	$ 449,976	$ 460,976	$ 474,976	$ 494,976
Water Run Costs				
Maintenance Ditchtender Trucks	$ 8,000	$ 8,400	$ 8,800	$ 9,200
Fuel - Ditchtender trucks	30,000	33,000	36,000	39,000
Cell Phone - Ditchtenders	6,000	6,000	6,000	6,000
Answering Service	400	400	400	400
Algicide	24,000	24,000	24,000	24,000
Operational Payroll	263,423	270,535	277,840	285,342
Payroll Tax/Benefits	84,885	87,177	89,531	91,948
Drop Boards	6,100	6,400	6,800	7,200
Total Water Run Costs	$ 422,808	$ 435,913	$ 449,371	$ 463,090
Add reserves for maintenance of pipelines	$ 25,000	$ 25,000	$ 25,000	$ 25,000
Net Operational Cash Flow	$ 2,168	$ 63	$ 605	$ 6,886

ATTACHMENT G

Water Banking Annual Report (2009)

ALTA IRRIGATION DISTRICT

WATER BANKING

2009 ANNUAL REPORT

Adopted 03/11/2010

TABLE OF CONTENTS

Water Banking Implementation Strategy

Project Yield: Project Yield is determined by measuring the water efficiency benefits of the project which result in a measured volume of conserved water. The basic premise of the program is that it is efficient from a water management perspective to make water deliveries at the lower end of the system from a localized source in the vicinity of the targeted water deliveries rather than delivering water more than 38 miles from the Kings River from AID's storage account in Pine Flat Reservoir. System readjustments and changing variables of demand diminish the efficiency of system deliveries from the Kings River by a factor of two (2).

It would take at least twice the volume of releases from the Kings River to meet surface water demands down steam from localized project sources in the lower reaches of the District. Localized projects can more efficiently meet surface water demands by pumping groundwater that was previously recharged. As a result, the water management efficiency for that delivery has been shown to require a 50% of the water release required to meet localized surface water demands. Making water deliveries from a localized source allows for greater system flexibility and water use efficiency with an end result of more reliable deliveries.

Water Resource Benefits: The Project Yield for Harder and Traver Banking Projects is to be used to address long-term water resource issues within the District. Long-term, where the planning horizon is more than five years, water will be developed for water transfers to meet Cutler-Orosi surface water demands. Short-term, where the planning horizon is less than five years, water will be developed for water transfers to address and improve water use efficiency issues for groundwater or surface water, i.e., Wahtoke Lake Pumping Project.

Available Recharge: Water available for recharge is the total water recharged in the project basins minus fifteen percent minus the extracted water. It is the intent to coordinate pumping during the mid-week periods of Tuesday through Friday to compliment enhanced irrigation demand during the mid-week period. During the non-operational irrigation period, water will be transferred from the East Branch to the Traver Canal via the Willow Creek Project to supply flows to Harder and Traver Banking Projects. The origin of Willow Creek flows is eastside watershed and the measured volume of water utilized shall be accounted for accordingly. In addition, there will also be inflow from the Kings River Watershed that will be accounted for in the water banking program.

Banking Advisory Committee

ATTENDANCE :

Chris Kapheim, Alta ID (GM)
Tom Marshall, Alta ID (Board Member)
Jim Wegley, Alta ID (Consulting Engineer)
Mike Swanson, landowner
Robert Jackson, landowner
Brad Jones, landowner
Jason George, landowner

DISCUSSION:

Chris Kapheim gave a general overview of the Harder Pond and proposed Traver Banking projects and their relative importance to the region. It was emphasized that monitoring data would be shared with Advisory Committee members to encourage information sharing and questions on the banking process. It is anticipated that there will be at least one annual meeting to review the performance of banking projects. Projects will allow water to be recharged in designed projects that will enable the District to address (i) uncontrolled flood flows, (ii) enhance groundwater recharge, (iii) improve water deliveries to downstream landowners from a groundwater source, and (iv) improve the District's water balance (new water) by being able to capture previously uncontrolled sources of water with application to a beneficial use. Furthermore, it was stated that of recharged water, at least 15% would be designated for recharge. Of the water to be extracted for landowner deliveries, such extracted water would be used incrementally to provide better service to landowner demands where it can be shown that there would be no negative influence on neighboring wells. Monitoring would be designed to show operational use of the banking process and resulting groundwater impacts, i.e., landowner groundwater and banking groundwater.

Discussion focused on the need for groundwater extraction. It was mentioned that there will be two wells located at each of the project sites. Water will not be extracted until sufficient groundwater recharge has taken place. It was further explained, that at some District projects (London Pond, Avenue 384) diversion pumps deliver stored water from basins to meet demand from downstream landowners. The London Pond site, based on its soil characteristics, recharges very slowly thus enabling the District to use the stored water for reregulation purposes. Both the Harder Pond and Traver pond have greater recharge potential thus storing the water in the soil aquifer and pumping on demand when necessary has been incorporated into their design features. It was also emphasized that efforts would be implemented to enhance sources of water to banking locations. On wet water years summer flows and winter flows would be utilized.

Banking Advisory Committee

ATTENDANCE:

Chris Kapheim, Alta ID (GM)
Tom Marshall, Alta ID (Board Member)
Jim Wegley, Alta ID (Consulting Engineer)
Dean Thonesen, landowner
Brad Jones, landowner
Mike Swanson, landowner

NOT IN ATTENDANCE:

Brent Smittcamp, landowner

DISCUSSION:

1. Review of the AID Banking Program.

The banking program consists of developing recharge and extraction sites that provide the following benefits: groundwater recharge, flood control, enhanced surface water efficiency and address water quality issues. Water delivered from the Kings River to the lower reaches of the AID has limitations in terms of timing with ordered demands, changes in environmental conditions (weather) and distance from inception to destination (approximately 38 miles). As a result, it has been determined that it is more efficient to store surplus waters in engineered basins and extract necessary volumes to meet demand as opposed to delivering water over extended distances that in some cases take two to three days from the Kings River to landowner delivery. As a result, extracted water from the banking project (Pumping) has a conserved value or Project Yield of twice the amount pumped. The Project Yield is the water available to address groundwater water quality issues in the easterly portion of AID, i.e., Cutler-Orosi areas. Furthermore, the program will take advantage of wintertime storm water flows. Such storm water flows will be recharged into Harder, Dinuba & Traver Pond recharge basins.

2. Review of the Harder Pond Banking Annual Report

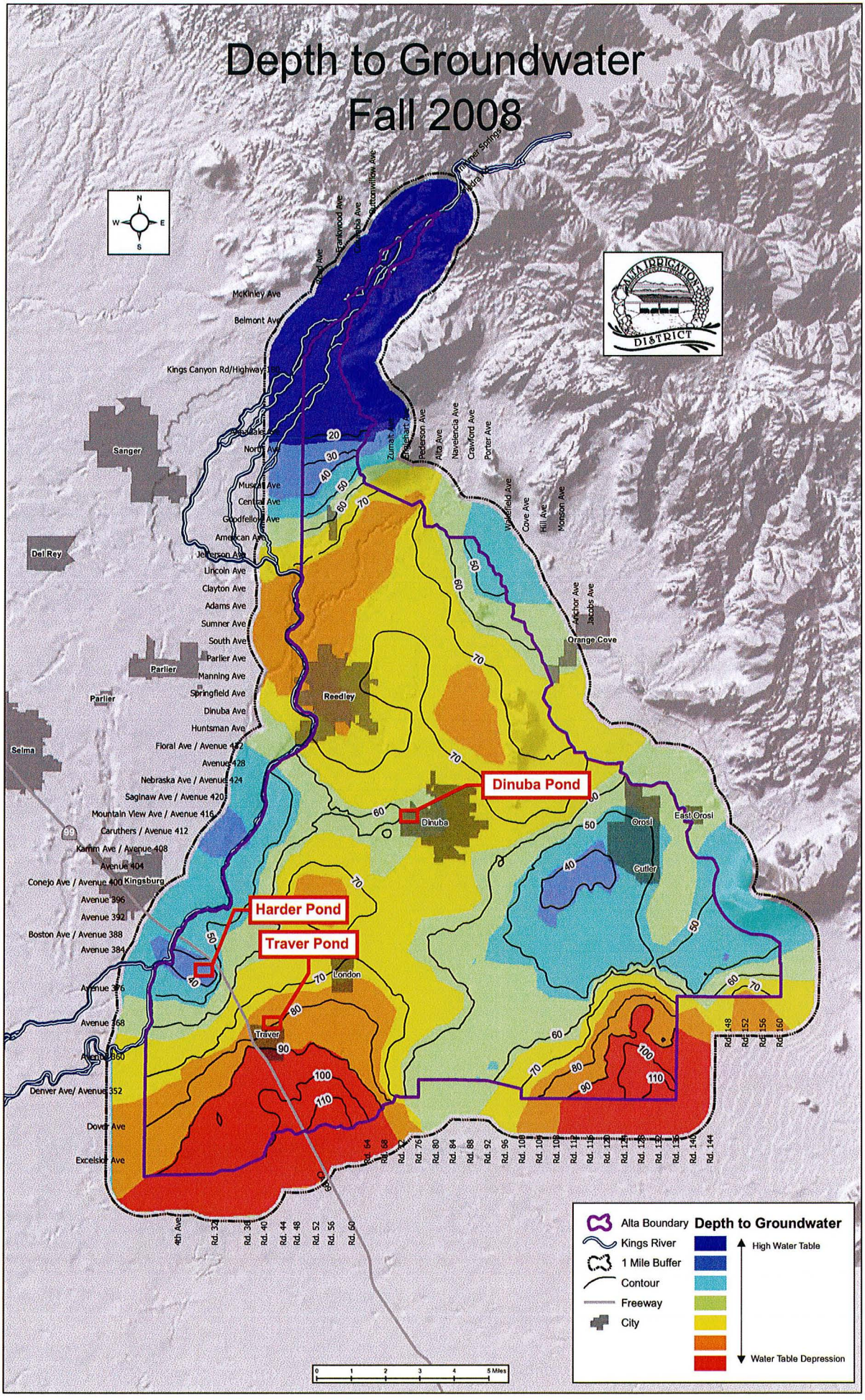
Discussion was held on the review of past practices and results for years 2008 and 2009 for AID's water banking program. AID showed data that illustrated the amount of water recharged in 2008, 563 acre-feet, and an additional 399 acre-feet in 2009. In 2009 188 acre-feet was extracted from the Harder Pond Banking Project. The result for 2009 was that forty-seven percent (47%) of the water recharged in the basins was extracted leaving a remainder of fifty-three percent (53%) for recharge. It was further discussed that in the future AID would extract up to eighty-five (85%) of the recharged water in the basins.

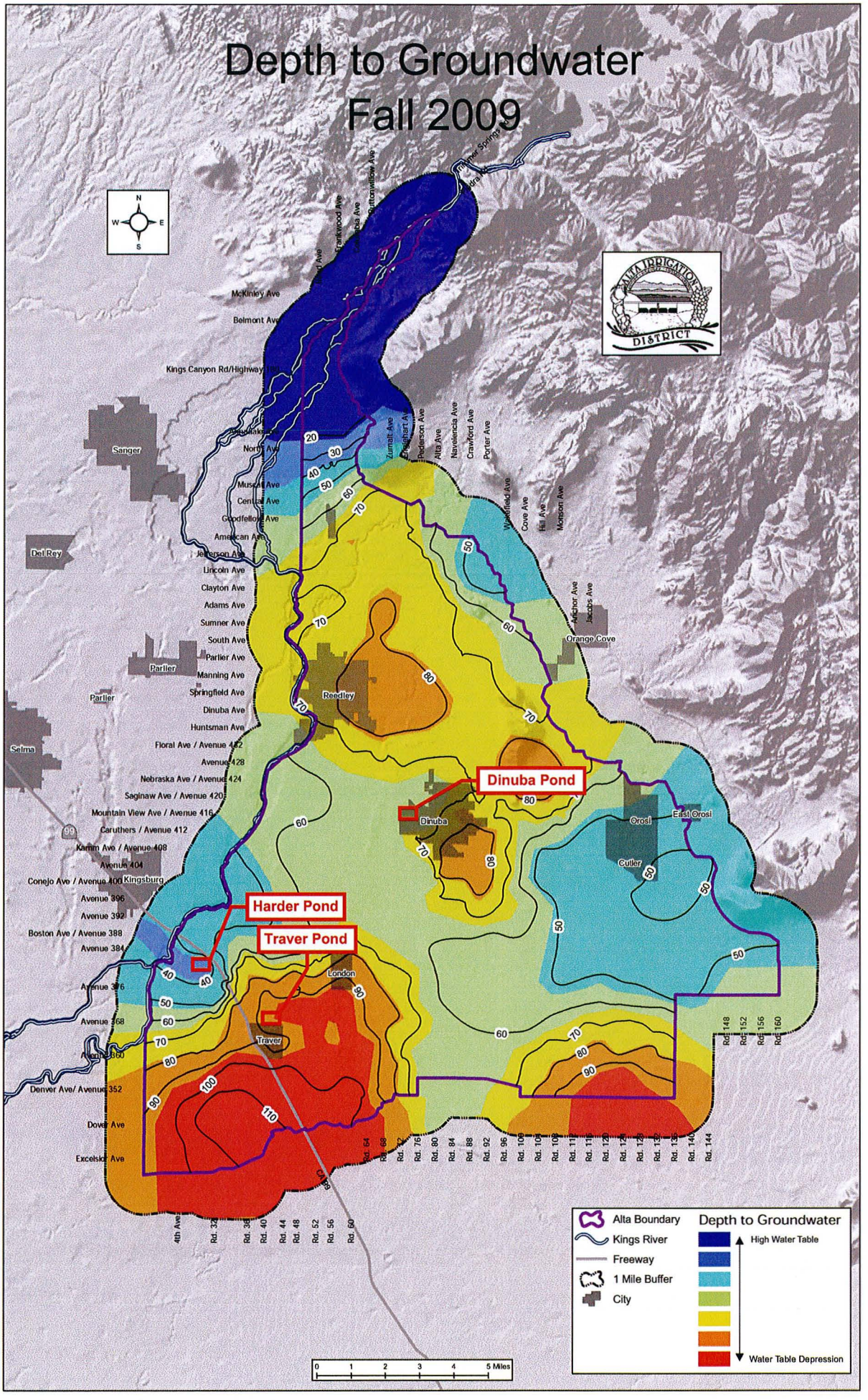
AID did review the monitoring of project wells and adjacent landowners wells. The results thus far illustrate no negative impacts of water extractions from the project site.

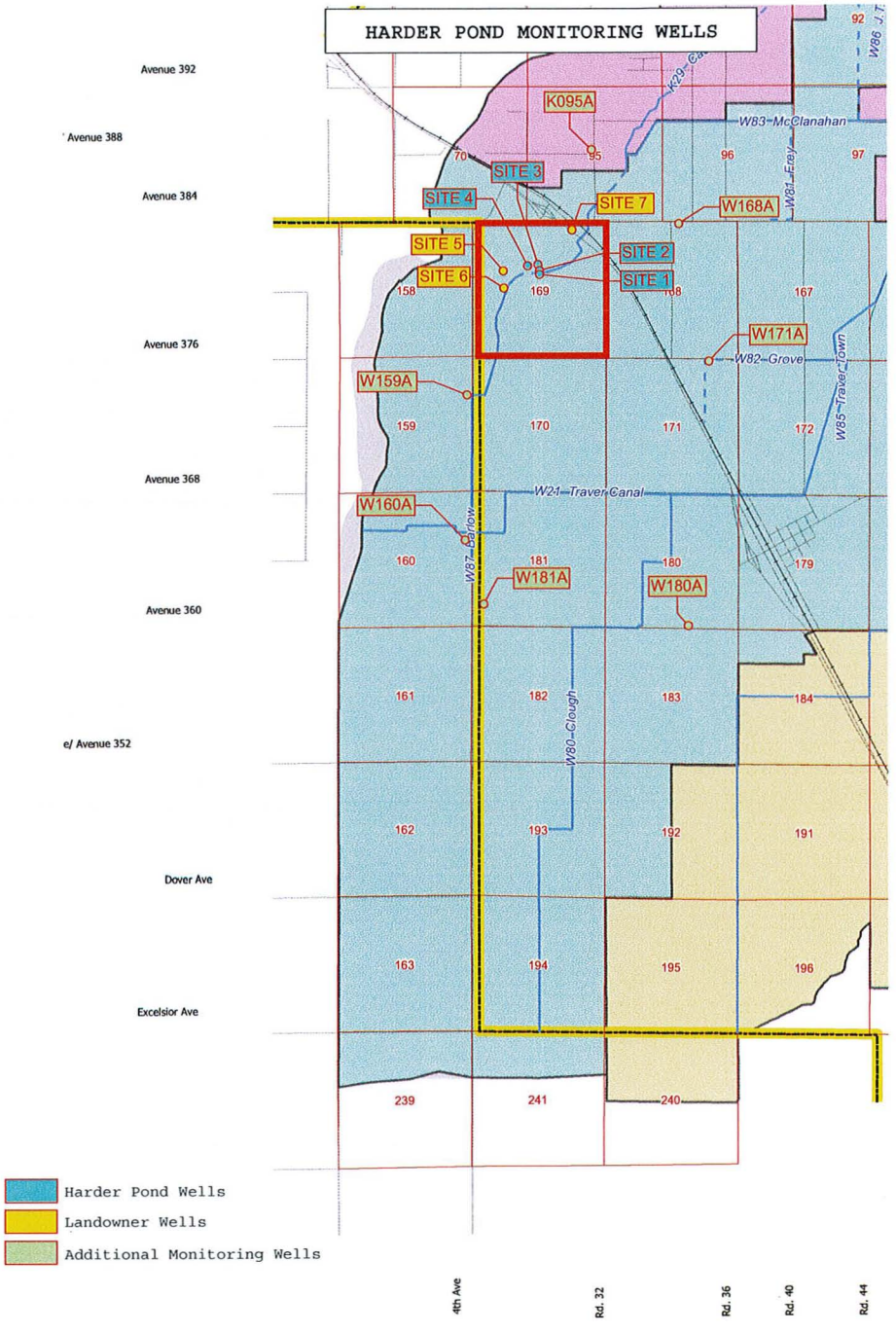
A review of regional benefits was discussed in terms of utilization of conserved water from the project and use on an interim basis. In 2009, 113.30 acre-feet was sold to a landowner that was experiencing groundwater limitations.

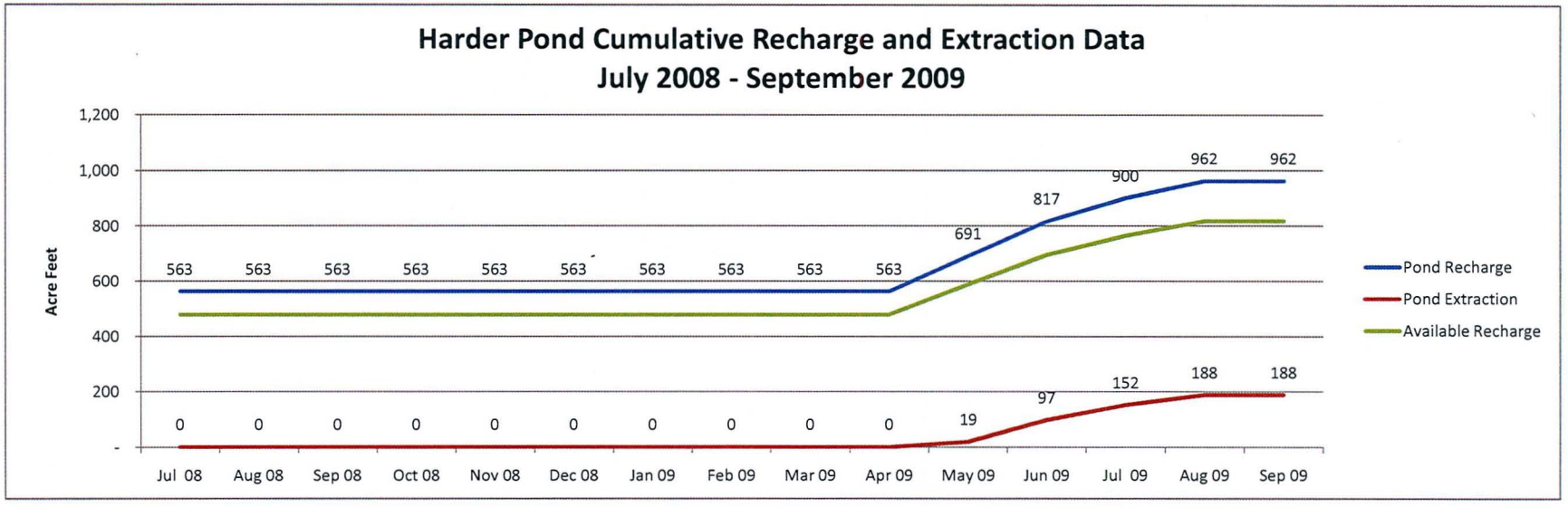
3. Review of the Traver Banking Project:

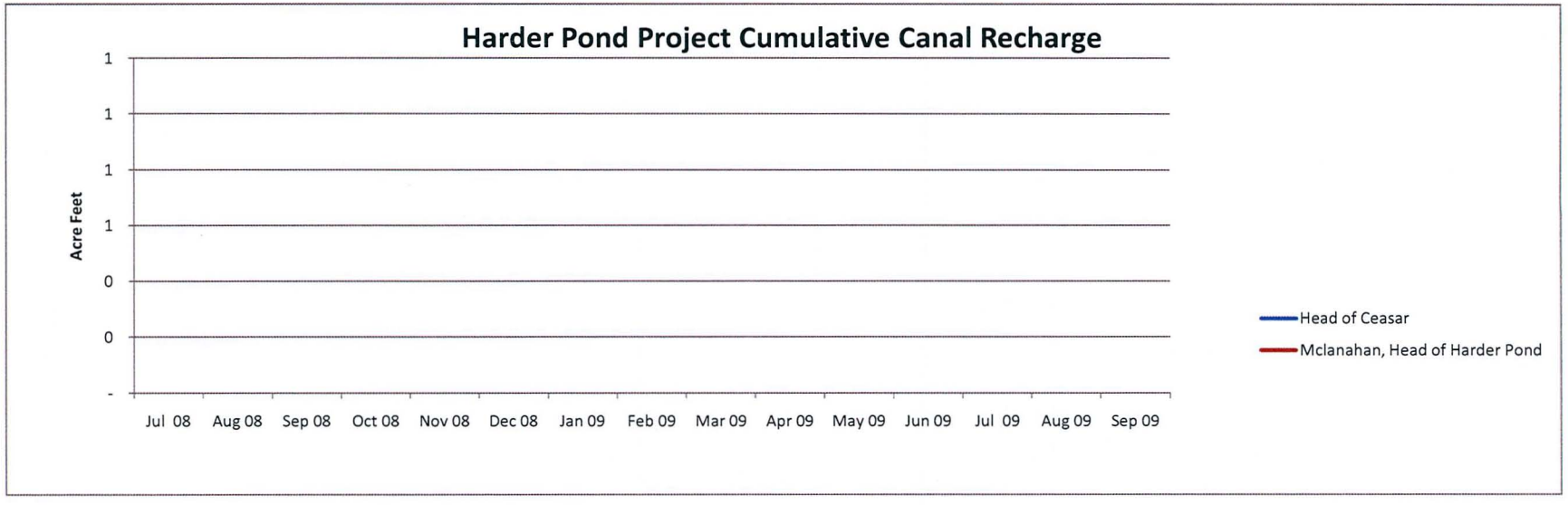
AID will be closing escrow in February of 2010 on the Anderson Property (28 acres) in the vicinity of Road 44 and 376. Discussion of how the project will operate and improve water resource flexibility.

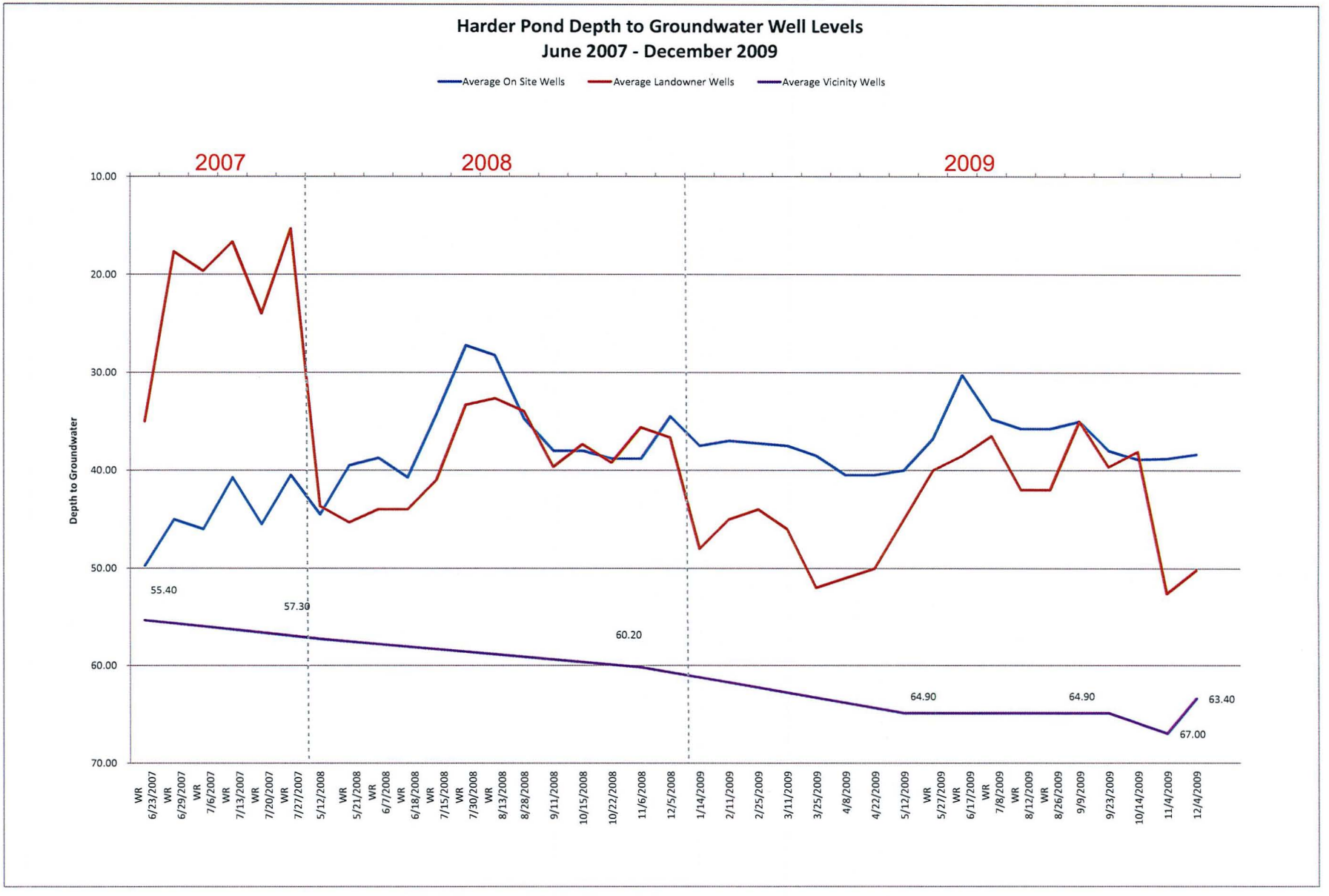

Depth to Groundwater
Fall 2008
N
W
E
S
ALTA IRRIGATION DISTRICT
Dinuba Pond
Harder Pond
Traver Pond
Sanger
Del Rey
Parlier
Reedley
Selma
Dinuba
Orosi
East Orosi
Cutler
Orange Cove
Kingsburg
London
Traver
McKinley Ave
Belmont Ave
Kings Canyon Rd/Highway 180
North Ave
Muscat Ave
Central Ave
Goodfellow Ave
American Ave
Jefferson Ave
Lincoln Ave
Clayton Ave
Adams Ave
Sumner Ave
South Ave
Parlier Ave
Manning Ave
Springfield Ave
Dinuba Ave
Huntsman Ave
Floral Ave / Avenue 412
Avenue 408
Nebraska Ave / Avenue 424
Saginaw Ave / Avenue 420
Mountain View Ave / Avenue 416
Caruthers / Avenue 412
Kamm Ave / Avenue 408
Avenue 404
Conejo Ave / Avenue 400
Avenue 396
Avenue 392
Boston Ave / Avenue 388
Avenue 384
Avenue 376
Avenue 368
Avenue 360
Denver Ave/ Avenue 352
Dover Ave
Excelsior Ave
4th Ave
Rd. 32
Rd. 36
Rd. 40
Rd. 44
Rd. 48
Rd. 52
Rd. 56
Rd. 60
Rd. 64
Rd. 68
Rd. 72
Rd. 76
Rd. 80
Rd. 84
Rd. 88
Rd. 92
Rd. 96
Rd. 100
Rd. 104
Rd. 108
Rd. 112
Rd. 116
Rd. 120
Rd. 124
Rd. 128
Rd. 132
Rd. 136
Rd. 140
Rd. 144
Rd. 148
Rd. 152
Rd. 156
Rd. 160
Alta Boundary
Kings River
1 Mile Buffer
Contour
Freeway
City
Depth to Groundwater
High Water Table
Water Table Depression
0 1 2 3 4 5 Miles


Depth to Groundwater
Fall 2009
N
W
E
S
Alta Irrigation District
Sanger
Del Rey
Parlier
Selma
Reedley
Dinuba
Orange Cove
Kingsburg
London
Traver
Orosi
East Orosi
Cutler
Dinuba Pond
Harder Pond
Traver Pond
McKinley Ave
Belmont Ave
Kings Canyon Rd/Highway 180
North Ave
Manning Ave
Springfield Ave
Dinuba Ave
Huntsman Ave
Floral Ave / Avenue 432
Avenue 428
Nebraska Ave / Avenue 424
Saginaw Ave / Avenue 420
Mountain View Ave / Avenue 416
Caruthers / Avenue 412
Kamm Ave / Avenue 408
Avenue 404
Conejo Ave / Avenue 400
Avenue 396
Avenue 392
Boston Ave / Avenue 388
Avenue 384
Avenue 376
Avenue 368
Avenue 360
Denver Ave/ Avenue 352
Dover Ave
Excelsior Ave
Alta Boundary
Kings River
Freeway
1 Mile Buffer
City
Depth to Groundwater
High Water Table
Water Table Depression
0 1 2 3 4 5 Miles


HARDER POND MONITORING WELLS
Avenue 392
Avenue 388
Avenue 384
Avenue 376
Avenue 368
Avenue 360
e/ Avenue 352
Dover Ave
Excelsior Ave
K095A
SITE 3
SITE 4
SITE 7
W168A
SITE 5
SITE 2
SITE 6
SITE 1
W171A
W159A
W160A
W181A
W180A
W83-McClanahan
W81-Frey
W82-Grove
W85-Traver Town
W21-Traver Canal
W87-Barlow
W80-Clough
70
95
96
97
158
169
168
167
159
170
171
172
160
181
180
179
161
182
183
184
162
193
192
191
163
194
195
196
239
241
240
Harder Pond Wells
Landowner Wells
Additional Monitoring Wells
4th Ave
Rd. 32
Rd. 36
Rd. 40
Rd. 44


Harder Pond Cumulative Recharge and Extraction Data
July 2008 - September 2009
Acre Feet
1,200
1,000
800
600
400
200
-
563 563 563 563 563 563 563 563 563 563 691 817 900 962 962
0 0 0 0 0 0 0 0 0 0 19 97 152 188 188
Jul 08 Aug 08 Sep 08 Oct 08 Nov 08 Dec 08 Jan 09 Feb 09 Mar 09 Apr 09 May 09 Jun 09 Jul 09 Aug 09 Sep 09
Pond Recharge
Pond Extraction
Available Recharge


Harder Pond Project Cumulative Canal Recharge
Acre Feet
1
1
1
1
0
0
-
Jul 08 Aug 08 Sep 08 Oct 08 Nov 08 Dec 08 Jan 09 Feb 09 Mar 09 Apr 09 May 09 Jun 09 Jul 09 Aug 09 Sep 09
Head of Ceasar
Mclanahan, Head of Harder Pond


Harder Pond Depth to Groundwater Well Levels
June 2007 - December 2009
Average On Site Wells
Average Landowner Wells
Average Vicinity Wells
2007
2008
2009
Depth to Groundwater
10.00
20.00
30.00
40.00
50.00
60.00
70.00
55.40
57.30
60.20
64.90
64.90
63.40
67.00
WR 6/23/2007
WR 6/29/2007
WR 7/6/2007
WR 7/13/2007
WR 7/20/2007
WR 7/27/2007
5/12/2008
WR 5/21/2008
WR 6/7/2008
WR 6/18/2008
WR 7/15/2008
WR 7/30/2008
WR 8/13/2008
8/28/2008
9/11/2008
10/15/2008
10/22/2008
11/6/2008
12/5/2008
1/14/2009
2/11/2009
2/25/2009
3/11/2009
3/25/2009
4/8/2009
4/22/2009
5/12/2009
WR 5/27/2009
WR 6/17/2009
WR 7/8/2009
WR 8/12/2009
WR 8/26/2009
9/9/2009
9/23/2009
10/14/2009
11/4/2009
12/4/2009

Harder Pond Summary and Conclusion

In May of 2008, during the 2009 operational season (water run) water recharge was initiated at the Harder Pond Project ("Project"). Measured flows at the Harder Pond were used to meet downstream agricultural demand with excess flows being recharged in on-site basins. From May through August of 2008 water was recharged with no extraction of recharged water resulting in 562.9 acre-feet of recharged water credited to the Project. The following winter months resulted in less than average rainfall and snowpack thus precluding the recharge of storm water in the Project.

2009 Water run deliveries were initiated on May 14, 2009 and continued until August 28, 2009. Measured recharged water for the period was 399.3 acre-feet. During the same period 188.31 acre-feet of water was extracted from the Project. For the 2009 water run, the ratio of recharged water to extracted water is forty-seven percent. The pre-determined cumulative maximum recharge to extraction ration for the project is eighty-five percent. As a result, the Project recharge to extraction ratio was well under the allowable maximum.

In review of the Harder Pond Depth to Groundwater Levels (June 2007 – December 2009), adjacent area groundwater levels have dropped from 20 feet in June 2007 to 50 feet in November of 2009. The drop in depicted surrounding groundwater levels is primarily due to less than average water years resulting in lower precipitation and snowpack levels thus reducing surface water deliveries and increasing agricultural groundwater pumping. There was no correlation of groundwater pumping from the Project enhancing the decline of adjacent area groundwater levels. Harder Pond depth to groundwater levels for 2008 and 2009 ranged in the 30 to 40 feet range which is higher than surrounding groundwater levels (see attached Harder Pond Depth to Groundwater Levels on page 6).

Harder Pond Regional Benefits

The Available Recharge water from the Hard Pond Project ("Project") will have short-term and long-term regional benefits. Ultimately, the Available Recharge from the Project will be used to address water quality and supply issues in the easterly portion of the District, i.e., Cutler and Orosi areas. On a short-term basis the Available Recharge can be used to address other local water resource issues.

In 2009, local groundwater resources in the vicinity of Smith Mountain, within the District, experienced significant groundwater limitations. A landowner desired to acquire additional surface water supplies to mitigate groundwater pumping near Smith Mountain. As a result, 500 acre-feet of water was sold from the Project to mitigate the Smith Mountain groundwater impacts. In 2009 operational season, 113.30 acre feet were delivered to landowners with the balance available the following year's operational season.

Financial Data on Harder Pond
For Year Ending 09/30/09

PGE pump costs (2 meters)

10/2008	$	-
11/2008	$	-
12/2008	$	-
1/2009	$	-
2/2009	$	322.14
3/2009	$	115.87
4/2009	$	651.85
5/2009	$	110.43
6/2009		
7/2009	$	1,413.05
8/2009	$	1,195.97
9/2009	$	1,010.47
	$	4,819.78

PGE Power	$	4,819.78
Engineering	$	317.09
Well Monitoring	$	4,069.00
Cash Expenses	$	9,205.87
Depreciation	$	41,263
Total Expenses	$	50,468.54

Engineering (Management)

9/2009	$	317.09
	$	317.09

Well Monitoring

	Quantity	Miles (RT)	Hours		Rate		Total
Vehicle	26	30	0	$	0.55	$	429.00
Employee	26		4	$	35.00	$	3,640.00
						$	4,069.00

based on bi-weekly well monitoring, supervisor rates

5 years on SCADA
15 years on pumps
40 years for everything else

Depreciation			5 Year	15 Year	40 Year	Not Depreciable
Land	$	134,817.81				$ 134,817.81
Extraction Wells and Pumps	$	189,229.08		$ 100,000.00	$ 89,229.08	
Flow Measurement and SCADA	$	73,250.80	$ 73,250.80			
Monitoring Wells	$	33,699.03			$ 33,699.03	
IRTC Flap Gates	$	16,397.00			$ 16,397.00	
Other	$	658,508.79			$ 658,508.79	
	$	1,105,902.51	$ 73,250.80	$ 100,000.00	$ 797,833.90	$ 134,817.81

Annual Depreciation

1-5 years	$	41,262.67
6-15 years	$	26,612.51
16-40 years	$	19,945.85

GLOSSARY OF TERMS

A. Project Yield (PY)

= Conserved Water = Water Available for Transfers
= 2x Pumped Water (PW)
PY=2xPW
50% efficiency from Non Project source, i.e. Kings River

B. Available Water Resource Benefits (AWRB) Long/Short Term

Long Term > 5 years - Water Transfers available for Cutler/Orosi
Short Term > 5 years - Water Transfers available to address/improving water use efficiency
WRB = Project Yield less Water Transferred Delivered
WRB = 2x Pumped Water less Water Transferred Delivered
WRB = 2xPW – WTD

C. Water Transferred (WT)

Total amount of water transferred

D. Water Transferred Delivered (WTD)

Total amount of water transferred measured to date

E. Water Transferred Outstanding Balance (WTOB)

= WT – WTD

F. Available Recharge (AR)

Tracked by water shed = Water Availability
= Meter Readings into the pond, less 15% protected recharge, less pumped water
AR = MR-(.15xMR) – PW
AR = .85MR – PW

G. Project Recharge to Extraction Ratio must be less than 85%

H. Canal Recharge (CR)

Accrued during non operational season
CR = Meter reading at the Head of the Caesar – Meter Reading into the Pond

I. Kings River Water Shed – All water attributed to the Kings River Water Shed

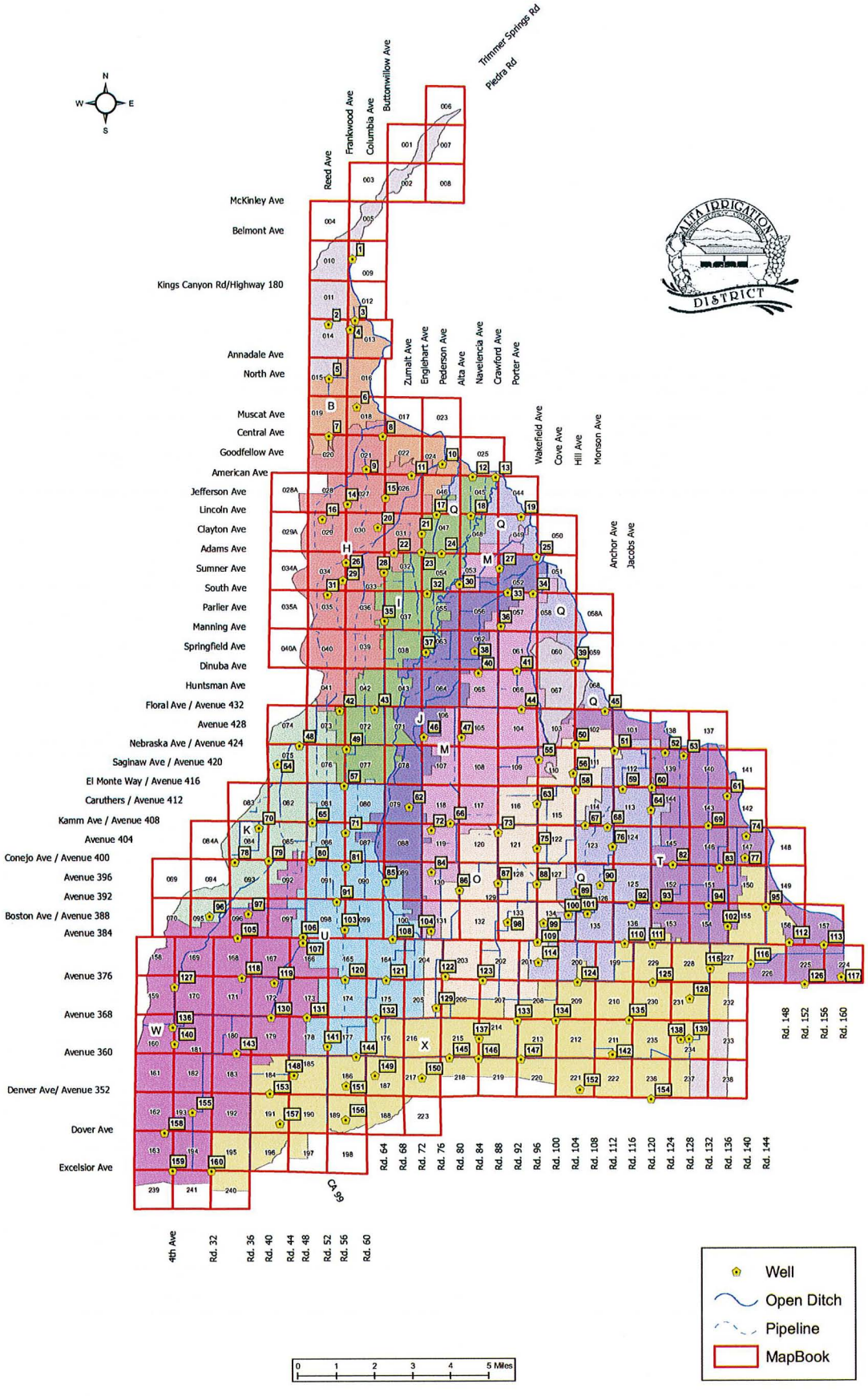
J. Non-Kings River Watershed

Wet Year, watershed attributed to Willow Creek flows

ATTACHMENT H

Map of Monitoring Well Locations

Depth to Groundwater Monitoring Wells



ATTACHMENT I

Section 5 Goals and Objectives, Upper Kings Basin IRWMP

CHAPTER 5 GOALS AND OBJECTIVES

An explanation of the regional planning process and overall integration strategy used to develop the Upper Kings Basin IRWMP is provided in this section along with the description of the goals and objectives. This IRWMP provides a planning framework and management structure from which local water management policies, projects, and programs can be formulated, evaluated, integrated, and implemented. The Water Forum first worked to develop a consensus on the regional problems, issues, and potential conflicts. Goals and objectives were then established to address these issues and to set the stage for the development of the projects, programs, and actions. A planning framework and integration strategy was defined to help the Water Forum work with stakeholders to prioritize projects and alternatives to be included in the IRWMP.

5.1 PROCESS OF DETERMINATION OF REGIONAL PLANNING ISSUES, GOALS, AND OBJECTIVES

The Water Forum worked through the fall of 2003 and winter of 2004 to identify priority problems and issues, and generate a consensus on the purpose and need for the IRWMP. A number of existing information sources, as listed below, were reviewed during this process:

- The original MOU adopted in May 2001 by the DWR, KRCD, AID, CID, and FID;
- The Water Forum Concept Paper (2004);
- Basin Assessment Report (WRIME, 2003b); and
- IRWMP Guidelines (DWR, 2004).

On the basis of the above review, the Water Forum members developed the IRWMP goals, regional planning objectives, and specific water management objectives for the region. These goals and objectives were adopted at the February 2004 Water Forum meeting. These were forwarded to each of the stakeholder groups for consideration before adopting the Resolution of Support for the IRWMP.

5.2 REGIONAL PROBLEMS, ISSUES, AND CONFLICTS

Water Forum participants have identified and developed consensus on priority problems, issues, and sources of potential conflicts in the Kings Basin.

5.2.1 GROUNDWATER OVERDRAFT

Overdraft of the groundwater resource is the primary problem to be addressed in the Upper Kings Basin IRWMP. Overdraft provides a unifying theme for the IRWMP and is the major "driver" for the planning process. The Basin Advisory Panel (BAP) composed of original MOU partners documented that the Kings groundwater basin was in overdraft condition (WRIME, 2003) and recommended that the Water Forum support development of the Kings IGSM to provide a tool to analyze the regional water budget and quantify the nature and extent of overdraft. The Kings IGSM was developed and applied under direction of the Water Forum's Technical Analysis and Data Work Group. The Kings IGSM provides the scientific and technical basis for quantifying the current and potential future overdraft (WRIME 2007b). The area water budget and model results are further explained in Chapter 4 and in Appendix B.

The model and related technical work helped the Water Forum by providing data and analysis results to conclude that the primary water management goal should be to "halt and ultimately reverse the current overdraft of the groundwater aquifer". It is expected that attainment of this goal would "lead to overall maintenance or improvement in the quantity, quality and cost of development of groundwater resources in the region." The continued overdraft over a long period has resulted in the loss of groundwater supply in some areas in the eastern part of the Kings Basin and is not sustainable.

Overdraft increases the competition for the available supply and creates conflicts between agricultural, environmental, and urban water users, and between geographic areas within the region. Declining groundwater levels and groundwater migration across jurisdictional boundaries are also a potential source of increased conflict. In addition, site-specific issues associated with groundwater quality, groundwater recharge, and the need for water and wastewater management facilities to address overdraft have been identified as high priority issues.

5.2.2 WATER SUPPLY RELIABILITY

Water demand has exceeded the available surface and groundwater supplies as they are currently developed and managed with the existing capital facilities and institutional arrangements. A reliable surface water supply is not assured in normal and dry years. Groundwater makes up the balance of urban and agricultural water demands when surface water is not available. In addition, some areas in the basin are entirely reliant on groundwater. Therefore, the long-term sustainability and reliability of the surface and groundwater supply must be addressed in the IRWMP.

An improvement in the capture and storage of storm water and flood water both annually (winter storage for summer use) and during multi-year climatic variations (wet year storage to meet dry year demands) will increase the water supply reliability in the region. The ability to utilize the available groundwater storage is contingent upon construction of capital facilities and on agreements for how to operate and manage the available groundwater storage space. The community, through the Water Forum and IRWMP process, seeks to avoid litigation over water resources and to develop a consensus solution for creating sustainable water supplies with minimum environmental impact.

5.2.3 Degradation of Water Quality

Degradation of water quality in parts of the IRWMP Region has the potential to reduce the available supply or increase treatment costs. Also, the migration of poor quality water is a factor in the operation of the groundwater basin. Therefore, existing water quality needs to be maintained or improved to ensure that there is water of acceptable quality to meet current and future agricultural, urban, and environmental requirements. A wide range of local, state, and federal programs, both regulatory and voluntary, need to be better coordinated to avoid additional burdensome regulations and to provide benefits to the region.

5.2.4 Urban Development

Significant urban development is occurring throughout the planning area, placing increased demands on already stressed resources and increasing the potential for conflicts between existing and new water users. Recent legislation requires urban areas to document and prove that long-term water supplies are available. Potential conflicts exist due to inconsistent planning horizons, lack of compatibility between land use and water supply plans, decreased water quality, and increased treatment costs and requirements for both drinking water and wastewater treatment. Urban areas reduce the amount of applied irrigation water and have a potential effect on the amount of groundwater recharge. Urban water use serves to "harden" the water demand and require a reliable supply of high quality water as compared to agricultural uses. Current urban use is not measured in some areas.

5.2.5 Protection of Water Rights

A complex system of water rights exists and is managed by the KRWA on behalf of its 28 members. This water rights system and the associated agreements were put in place to resolve long standing historical conflicts. These agreements demonstrate that local interests can solve and manage conflicts at a local level. The existing agreements, rights, and entitlements

will provide the basis for further basin planning and management because the protection of existing rights is a premise for the IRWMP planning effort and is required to avoid conflicts.

Overlying groundwater rights must also be protected to avoid conflicts. Agreements, similar to those that are used in surface water management, need to be developed for the operation of the groundwater basin and any potential groundwater management facilities for recharge and storage.

5.2.6 Sustaining the Agricultural Economy

The Kings Basin is a rich agricultural region, and agriculture is a pillar of the local economic and cultural landscape. Agricultural interests developed and paid for many of the local water supply facilities and hold some of the most senior water rights in the Kings Basin. Agricultural and urban users have differences in the ability to pay for new water supplies. Existing agricultural land uses need to be protected to avoid conflicts associated with water and land use conversions.

5.2.7 Protection of Life and Property from Flooding

Major storm events have the potential for impacts to existing land use. Regional and local flood control facilities may need improvement to better manage flood runoff and protect existing or proposed land uses. Urbanization increases impervious areas and therefore, will increase runoff, which will have impacts on existing drainage, water delivery infrastructure, and downstream agricultural land uses. Cities and water districts need to work together to avoid these impacts and plan for long-term regional flood control solutions.

5.2.8 Protection of the Environment

Community and social programs designed to protect or enhance environmental conditions must be identified and factored into project designs. Environmental protection goals and objectives may be in conflict with other economic development goals and objectives. Integrated solutions to land use and water supply issues also need to factor in potential ecosystem management benefits and costs. Ignoring ecosystem needs could result in projects that do not meet regulatory requirements, are subject to legal challenge, and therefore are subject to schedule delays, cost overruns, or abandonment.

5.2.9 ENVIRONMENTAL JUSTICE

Environmental justice issues can be a source of conflict for IRWMP projects. Therefore, a scientific and open approach needs to be followed in selecting potential project sites. The project sites will be selected based upon soil conditions, water availability, water delivery facilities, agency coordination, and landowner cooperation. Potential projects in areas, towns, or cities will not be rated and prioritized based upon characters of size, ethnicity, economics, or religious beliefs.

5.3 REGIONAL GOALS AND PLANNING OBJECTIVES

The regional goals and planning objectives were established to guide the development of the IRWMP and the planning process. These objectives also defined how the Kings Basin stakeholders integrated other community values into the process to define water management strategies.

5.3.1 REGIONAL GOALS

The regional goals are the broadest statement of intent or purpose for the IRWMP and are intended to address the primary problems and resource conflicts in the region. The Water Forum consulted and elaborated on the original goals and objectives developed by the Basin Advisory Panel (WRIME, 2003b). The goals of the IRWMP are:

- Halt, and ultimately reverse, the current overdraft and provide for sustainable management of surface and groundwater;
- Increase the water supply reliability, enhance operational flexibility, and reduce system constraints;
- Improve and protect water quality;
- Provide additional flood protection; and
- Protect and enhance aquatic ecosystems and wildlife habitat.

5.3.2 REGIONAL WATER RESOURCES OBJECTIVES

Regional water resources objectives were adopted by the Water Forum to address specifically the water resources issues. They are designed to address the priority water supply problems by integrating land, water, and environmental management strategies that will provide multiple benefits and the greatest return on investment. It should be noted that resolution of the groundwater overdraft is still a primary purpose and unifying theme for the IRWMP. The IRWMP water management objectives are:

- Define local and regional opportunities for groundwater recharge, water reuse/reclamation, and drinking water treatment;
- Develop large scale regional conjunctive use projects and artificial recharge facilities to:
  - Enhance operational flexibility of existing water facilities, consistent with existing agreements, entitlements, and water rights;
  - Improve the ability to store available sources of surface water in the groundwater basin;
  - Capture storm water and flood water currently lost in the region;
  - Provide multipurpose groundwater recharge facilities that provide flood control, recreation, and ecosystem benefits; and
  - Integrate the fishery management plan;
- Promote 'in-lieu' groundwater recharge to reduce reliance on groundwater through reclamation and reuse of treated wastewater, surface water treatment and delivery for municipal drinking water, and delivery of untreated water for agricultural use;
- Negotiate and develop institutional arrangements and cost sharing for water banking, water exchange, water reclamation, and water treatment;
- Design programs to improve water conservation and water use efficiency by all water users;
- Identify interconnections or improvement of conveyance systems to provide multiple benefits; and
- Enhance wildlife habitat through surface water reclamation, recharge, and treatment facilities.

5.3.3 Regional Planning Objectives for the Upper Kings Basin IRWMP and Planning Process

The regional planning objectives were adopted by the Water Forum to guide the Upper Kings Basin IRWMP development process. The regional planning objectives reflect community values and acknowledge a range of stakeholder perspectives towards land use, water supply, and environmental resources. Proposed regional planning objectives included:

- Use the Water Forum to help:
  - Create a framework for ongoing regional collaboration and conflict resolution;
  - Coordinate the regional planning process to produce an IRWMP;
  - Define local and regional water management strategies;
  - Evaluate and compare alternatives;

  - Prioritize cost effective local and regional solutions; and
  - Increase public understanding of water management issues.
- Collect and compile water quality baseline data for the region and define opportunities to integrate existing local, state, and federal programs.
- Investigate and resolve legal and institutional issues that may affect project development.
- Identify and pursue sources of funding needed to support project development.
- Compile an inventory of existing water resources plans and policies for the region (including state agencies); include an inventory of local government and water district strategies and initiatives for dealing with water resources problems.
- Develop an integrated hydrologic model to determine regional water budgets, understand how the groundwater basin operates, evaluate and compare alternatives, and support decision making.
- Involve local water districts and land use agencies in generating and confirming the current and future water needs.
- Seek to ensure compatibility and consistency with land use and water supply plans.
- Create and define opportunities to share data and information.
- Develop and implement a community affairs strategy to provide outreach and educate the public and decision makers on water management problems and solutions.
- Evaluate local and regional economic impacts and benefits of proposed projects.
- Identify potential environmental and ecosystem benefits associated with developing the IRWMP.
- Avoid environmental impacts during planning and project design where possible.
- Coordinate needed environmental review of the final alternative projects and programs.

During development of the IRWMP, the Water Forum has realized many of the preliminary planning objectives that were initially established in 2005. The implementation plan contained herein updates the approach to oversight and coordination and establishes long-term strategies for ongoing Water Forum operations. The Water Forum will continue to coordinate stakeholder involvement during implementation of the Upper Kings Basin IRWMP and will use adaptive management to continuously respond to changing circumstances.

ATTACHMENT J

Member Agencies Upper Kings Basin IRWMP Authority

KRCD
Kings River Conservation District
Reliable resources for the Valley

- **Water**
  - Groundwater Management
  - Water Quality
  - Storage Studies
  - Water Management
  - Upper Kings Basin Water Authority
- **Power**
- **Environment**
- **News**
- **Advocacy**
- **About KRCD**

Directors | Advisory Committee | Service Area | Agendas & Minutes | Governing Documents | News

Directors

The Upper Kings Basin Integrated Regional Water Management Authority is governed by a board of directors, which is composed of one representative from each of the 15 member agencies. The directors and alternates are appointed by each member's governing board.

Member Agency	Director
Alta Irrigation District	Norman Waldner, Director Alternate: Chris Kapheim, General Manager
City of Clovis	Harry Armstrong, Mayor Alternate: Mike Leonardo, Public Utilities Director Alternate: Lisa Koehn, Assistant Public Utilities Director
City of Dinuba	Mark Wallace, Mayor Alternate: Dan Meinert, Deputy City Manager Alternate: Dean K. Uota, City Engineer
City of Fresno	Andreas Borgeas, Council Member Alternate: Rene Ramirez, Department of Public Utilities Director
City of Kerman	Trinidad M. Rodriquez, Mayor Alternate: Ken Moore, Public Works Director
City of Kingsburg	Bruce Blayney, Mayor Alternate: David Karstetter, Mayor Pro Tem
City of Parlier	Armando Lopez, Mayor Alternate: Lou Martinez, City Manager
City of Reedley	Steven Rapada, Council Member Alternate: Anita Betancourt, Council Member
City of Sanger	José R. Villarreal, Mayor Alternate: John White, Interim City Manager
City of Selma	Dennis Lujan, Mayor Alternate: D-B Heusser, City Manager Alternate: Roseann Galvan, Administrative Analyst
Consolidated Irrigation District	Robert Nielsen, Jr., Board President Alternate: Phillip Desatoff, General Manager
Fresno Irrigation District	Jeffrey Boswell, Board President Alternate: Gary Serrato, General Manager
Kings County Water District	Barry McCutcheon, President Alternate: Donald Mills, General Manager
Kings River Conservation District	Mark McKean, Board President Alternate: David Orth, General Manager
Raisin City Water District	Jerry K. Boren, President

Alternate:

Board Officers

Chair
Harry Armstrong, Mayor
City of Clovis

Vice Chair
Gary Serrato, General Manager
Fresno Irrigation District

Secretary/Treasurer
David Orth, General Manager
Kings River Conservation District

Last updated 02-26-10

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ATTACHMENT K

Memorandum of Understanding with Overlapping Local Agencies

MEMORANDUM OF UNDERSTANDING
BETWEEN
ALTA IRRIGATION DISTRICT
AND
LOCAL AGENCY

ARTICLE I - AGREEMENT

The articles and provisions contained herein constitute a bilateral and binding agreement by and between ALTA IRRIGATION DISTRICT, a California Irrigation District ("District") and LOCAL AGENCY, A Public Agency ("Agency").

ARTICLE II - RECOGNTION

The District has developed an amended Groundwater Management Plan ("Plan") with input from several local agencies which are water purveyors with overlapping spheres of influence within the District. It is the intent of the District to implement the plan with the support and coordination of such local agencies by means of a separate Memorandum of Understanding ("MOU") between each agency and the District.

ARTICLE III - PURPOSE

It is the purpose of this MOU, entered willingly, between District and Agency, to document the interests and responsibilities of both parties in the adoption and implementation of a coordinated Plan. It is also hoped that such MOU will promote and provide a means to establish an orderly process to share information, develop a course of action and resolve any misunderstandings or differences that may arise.

ARTICLE IV - COORDINATION

There shall be bi-annual coordinating meeting ("Meeting") between the District and the Agency. District shall give notice to the Agency thirty (30) days prior to date of the Meeting. If there are concerns or questions regarding the Plan, Agency shall transmit its concerns in writing to District seven (7) days prior to the Meeting.

ARTICLE V - OBLIGATIONS

The Plan shall be binding on the parties hereto unless superseded by the MOU or amendment thereto. It is agreed between both parties that information pertaining to depth to groundwater and groundwater quality shall be shared and coordinated between the parties.

ARTICLE VI - AREA OF PLAN

The plan shall be effective in all areas within the Agency boundaries. The Plan shall also be effective in any area annexed to the Agency Subsequent to the adoption of the Plan.

ARTICLE VII - TERM

The initial term of the MOD shall commence on the date hereof and continue for five (5) years, and shall continue year to year thereafter, unless terminated by written notice given at least one (l) year prior to such termination.

ALTA IRRIGATION DISTRICT

_____

Norman Waldner, President

_____ _____

Chris Kapheim, Secretary Date

LOCAL AGENCY

_____

Members Name, President

_____ _____

Members Name, Secretary Date