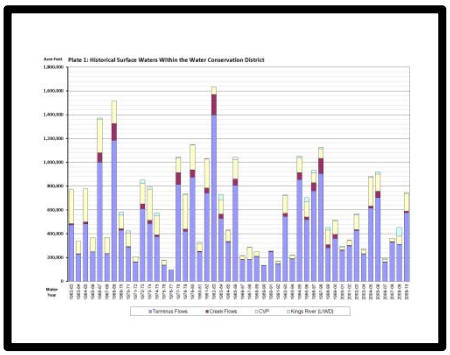
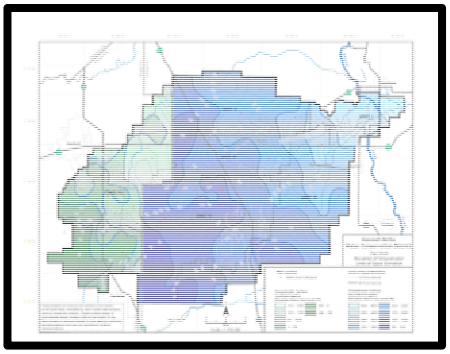
APPENDIX E

KAWEAH DELTA Water Conservation DISTRICT

GROUNDWATER MANAGEMENT PLAN

2010 ANNUAL REPORT





GROUNDWATER MANAGEMENT PLAN

2010 Annual Report

August 16, 2012

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1.0 EXECUTIVE SUMMARY

The Kaweah Delta Water Conservation District (KDWCD) is pleased to present this comprehensive annual progress report on the *Groundwater Management Plan* (Plan). The Plan was first adopted in 1995. The following section summarizes the goal of the Plan, the status of each of the elements of the Plan and the activities accomplished in 2010.

1.1 Plan Goal

As stated in the Plan, "The goal of the Plan is to offer efficient and effective groundwater management in an effort to provide a sustainable, high quality supply of groundwater for agricultural, environmental, and urban use for the future." The following five elements and their corresponding activities shape the Plan:

1) Monitoring Program
2) Resource Protection
3) Sustainability
4) Stakeholder Involvement
5) Planning and Management

The following is a summary of the Plan elements and the activities of significance that occurred in 2010. Additionally, Figure 1 lists all the Plan activities and notes the progress of each.

1.1.1 Monitoring Program

KDWCD performed spring and fall groundwater level monitoring and incorporated the data into the historical information that has been maintained for over 50 years. In the Fall of 2010, the average groundwater level was raised by 11.9 feet due, in part, to an above average year of water delivery in which runoff into Lake Kaweah was 135% of average. Along with the high inflow to the area, KDWCD and other water users brought in over 149,000 AC-FT from the Central Valley Project (CVP). Historical data shows that the Plan area continues to be in a state of overdraft. Subsidence monitoring, and water quality monitoring for both surface and groundwater, are newly defined activities in the Plan of which KDWCD is evaluating data sources and defining an appropriate monitoring program to incorporate these activities.

1.1.2 Resource Protection

KDWCD coordinated with county and city agencies in the Plan area in the development of well ordinances to help protect groundwater quality. Tulare County initiated plans to develop a well education program to encourage proper well construction, maintenance, and destruction. Additionally, Tulare County has developed a Well Maintenance and Abandonment Project as a potential project for an Integrated Regional Water Management Plan implementation grant submittal.

Figure 1 - ACTIVITIES CHECKLIST - 2010

	Action	Development	Inactive	Modified
Monitoring Program				
Groundwater Levels	☐			
Groundwater Quality		☐		
Surface Water Flows	☐			
Surface Water Quality		☐		
Intra-District Transfers	☐			
Inter-District Transfers			☐	
Inelastic Land Surface Subsidence		☐		
Monitoring Protocols	☐			
Resource Protection				
Well Abandonment		☐		
Wellhead Protection		☐		
Saline Water Intrusion			☐	
Migration of Contaminated Groundwater			☐	
Well Construction Policies		☐		
Sustainability				
Distribution of District Owned Water	☐			
Channel Recharge	☐			
Basin Recharge	☐			
In-Lieu Recharge	☐			
Construction and Operation of Facilities	☐			
Water Conservation	☐			
No Exportation of Groundwater	☐			
Reduction in Groundwater Outflow		☐		
Additional Water Supply and Storage	☐			
Pumping Restrictions			☐	
Conjunctive Use	☐			
Stakeholder Involvement				
Memorandum of Understanding		☐		
Advisory Committee		☐		
Relationships with Other Agencies	☐			
Planning and Management				
Land Use Planning	☐			
Groundwater Model	☐			
Groundwater Reports	☐			
Plan Re-evaluation			☐	
Dispute Resolution			☐	
Program Funding and Fees	☐			

1.1.3 Sustainability

Due to the above average water year, there was more opportunity to enhance the groundwater table through recharge efforts. KDWCD was able to spread water to the facilities upgraded and improved on during 2009.

1.1.4 Stakeholder Involvement

Sixteen Plan participants (table 3) now support the Plan through planning and oversight of the Plan area. Additionally, many efforts are proceeding with various water interest groups in the area to seek funding and/or promote projects with regional benefits. KDWCD has continued to play the lead role in local and regional efforts to form Integrated Regional Water Management Plans. As discussed in 2.4.3 *(Integrated Regional Water Management Planning)*, 5 projects were selected by KIRWMP group to be presented for grant funds. These projects were selected based on a objectives which include groundwater management, water supply, flood control, and ecosystem restoration. At the end of the 2010 year, the group proceeded by preparing the grant application.

1.1.5 Planning and Management

The County of Tulare's General Plan update, KDWCD and City of Visalia's groundwater modeling project, The Kaweah River Basin IRWM and this Annual Report are all activities that demonstrate coordinated planning and management of groundwater resources in the Kaweah Basin. Managing the Kaweah Basin groundwater is a challenge due to the historic overdraft conditions and success will only be possible through a detailed understanding of the conditions, accurate monitoring groundwater protection policies and extensive recharge efforts. This level of management will require the continued collaboration of multiple dedicated stakeholders with sufficient time and finances to coordinate the planning and management of groundwater in the Kaweah Basin.

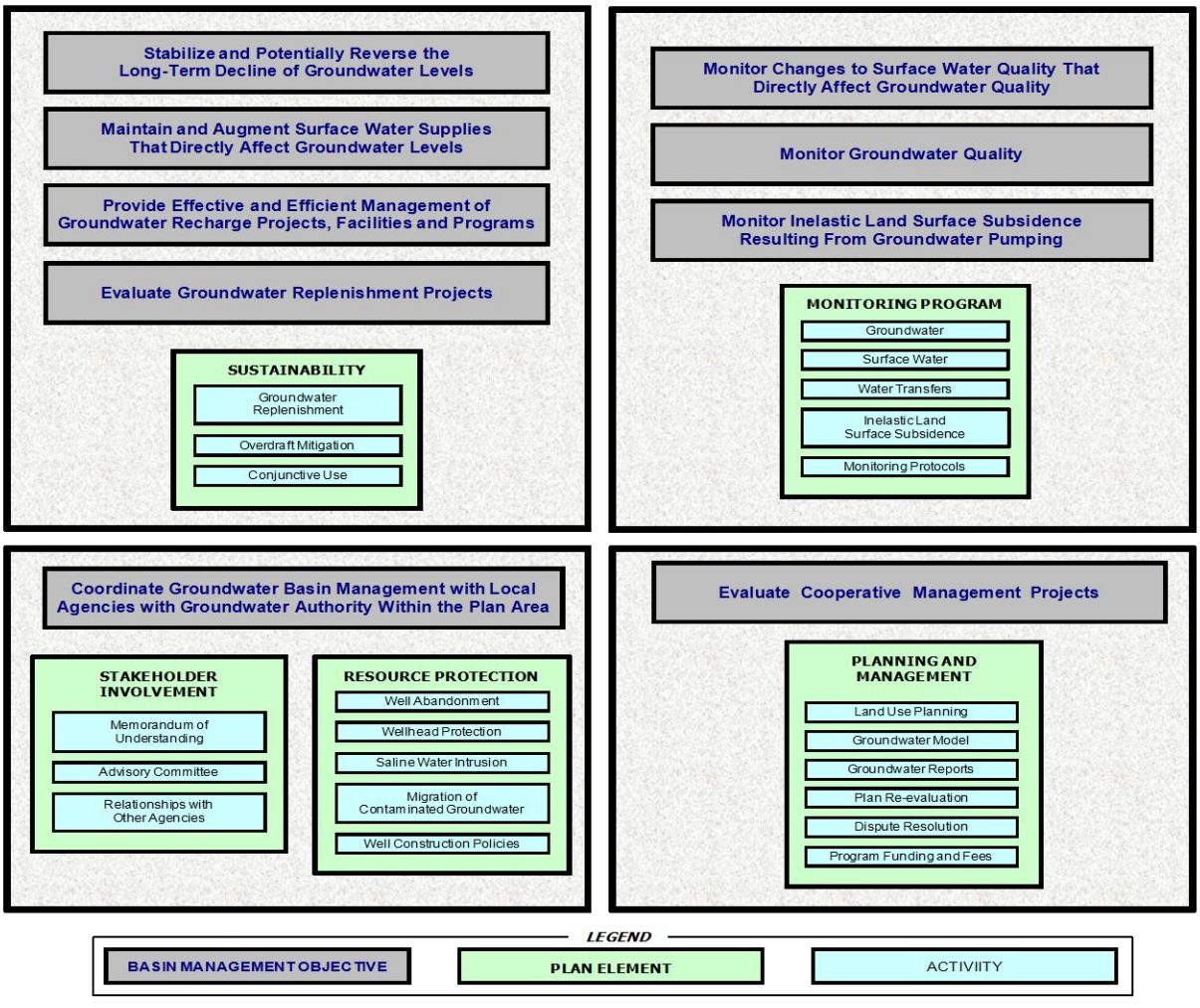
2.0 PLAN ELEMENTS

The November 7, 2006 update of Kaweah Delta Water Conservation District's (KDWCD) *Groundwater Management Plan* (Plan) defined five Plan elements (Elements) that established links between Basin Management Objectives and defined activities (Activities). These five Elements are;

1) Monitoring Program
2) Resource Protection
3) Sustainability
4) Stakeholder Involvement
5) Planning and Management

The relationship of the Plan components can be seen on Figure 2. It is through these Elements that this Report will summarize the year's Activities, review the status of that Element, evaluate an Activities effect on the Plan's stated management objectives and discuss any necessary changes in Plan direction. The following discussion reviews each Activity of significance undertaken in the 2010 calendar year. It is important to note that not every Activity of the Plan is discussed in this report, only those Activities in which there is reportable progress.

Figure 2: Groundwater Management Plan Implementation Diagram



2.1 Monitoring Program

At the core of the KDWCD's Plan is the Monitoring Element. The collection and recording of data, both current and historical, is the means in which KDWCD evaluates conditions and defines the Activities that determine the effectiveness of the Plan.

2.1.1 Groundwater

KDWCD has been monitoring and recording groundwater data since 1952. Refer to Figure 3 for a graphic depiction of the historic groundwater levels recorded within KDWCD. *Annual Groundwater Reports*, which detail Spring and Fall groundwater measurements, have been compiled since 1978. Additionally, California Water Service Company, the local purveyor of water for the City of Visalia, has monitored and recorded city groundwater level data since 1940. Refer to Figure 4 for a graphic depiction of the historic groundwater levels below the City of Visalia.

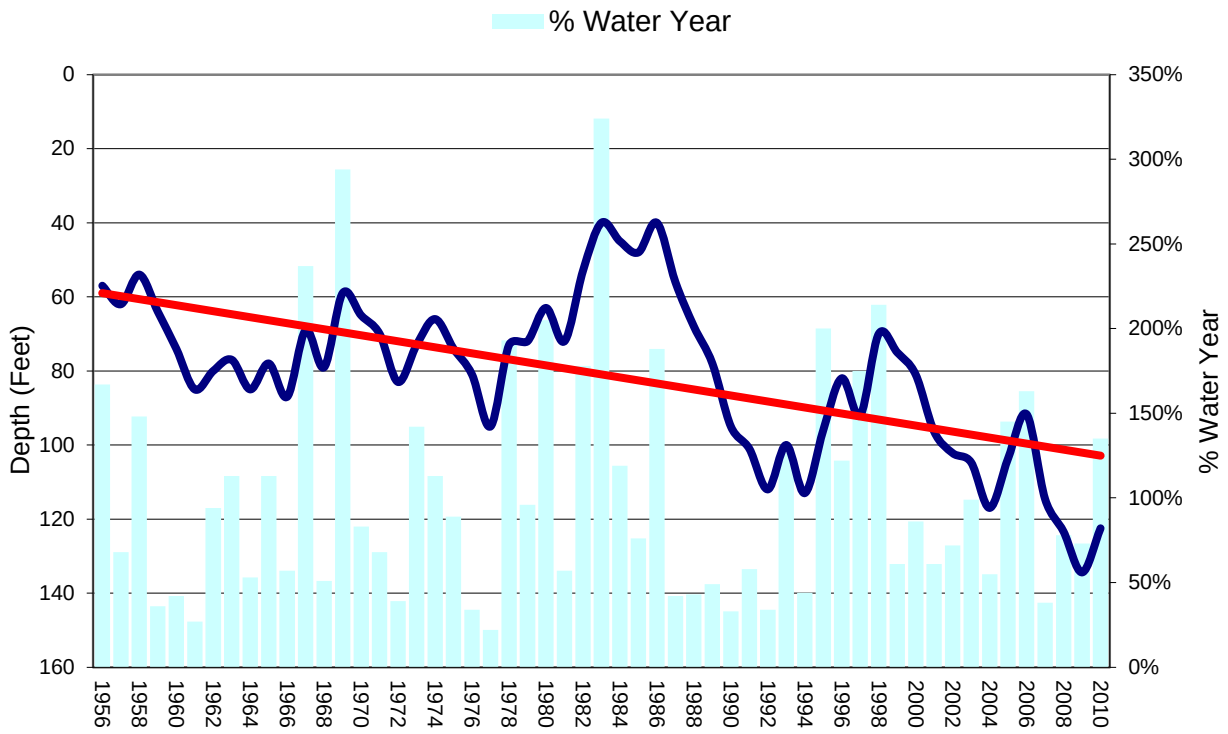
2.1.1.1 *Groundwater Levels*

Annual groundwater measurements were collected for the calendar year 2010 and the results have been published in KDWCD's *2010 Annual Groundwater Report* included as Appendix A of this report. Compared to the previous year, the average groundwater level declined 0.5 feet in the Spring of 2010 and increased 11.9 feet in the Fall of 2010 to an average depth to groundwater of 122.5 feet. The collected data for calendar years 2009 & 2010 have been developed into contour maps for both depth to groundwater and groundwater elevation, and are included in the *2010 Annual Groundwater Report*.

Historically, monitoring data reflects that the average groundwater level within KDWCD has declined. Characteristically, groundwater responds in some degree to the water year with the depth generally falling in dryer years and rising in wetter years. These responses are generally reflective of the use of surface water versus groundwater for agricultural irrigation and the additional recharge efforts that take place in a wet year. Overall, the groundwater level in KDWCD is declining based upon a trend analysis of available data since 1956. The overall result is that KDWCD, as a whole, is in a long-term overdraft condition.

KDWCD annually measures over 150 wells during the Spring and Fall of each year. The number of wells measured can fluctuate due to the availability of measurable wells. Additional measurements are supplied by Tulare Irrigation District and Kings County Water District for the same periods, bringing the total number of wells monitored within KDWCD to over 300. The groundwater-monitoring program has been a primary Activity in KDWCD's effort to track groundwater levels. Monitoring plays a key role in determining the effectiveness of KDWCD's groundwater recharge programs, which include importation of water, development of recharge facilities, and operational agreements with various local entities to manage water and facilities.

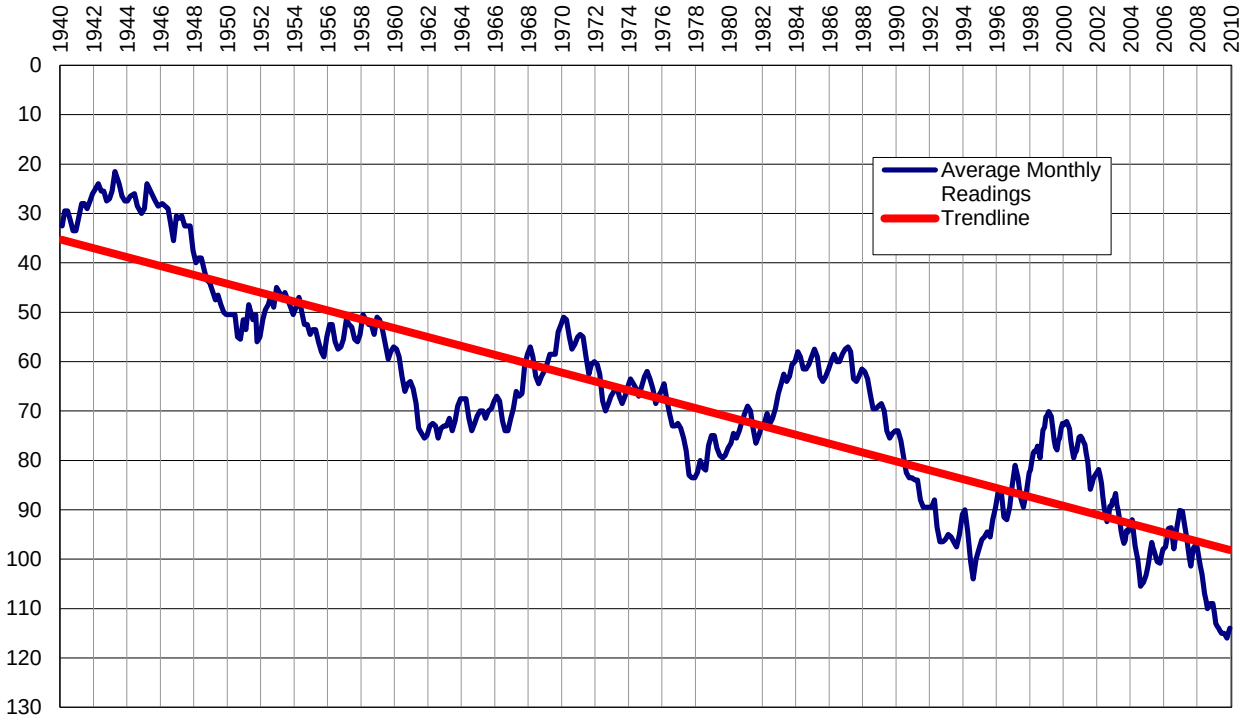
Figure 3 - Historical Average Depth to Groundwater (Fall Measurement) Kaweah Delta Water Conservation District



The majority of wells that KDWCD measures each spring and fall are agricultural production wells. When measuring water levels, it is common to come across an operating well pump, which prevents measurement and data collection.

Additionally, each year a number of wells within the network are removed or destroyed due to improvements or development. This affects both the annual and historical well database used to evaluate groundwater conditions. KDWCD continues to work toward securing wells for future monitoring by coordinating with the counties of Tulare and Kings to educate developers/landowners of their use, proper construction, operation, maintenance and destruction.

Figure 4 - Historical AverageDepth to Groundwater: Visalia (Monthly Measurement)



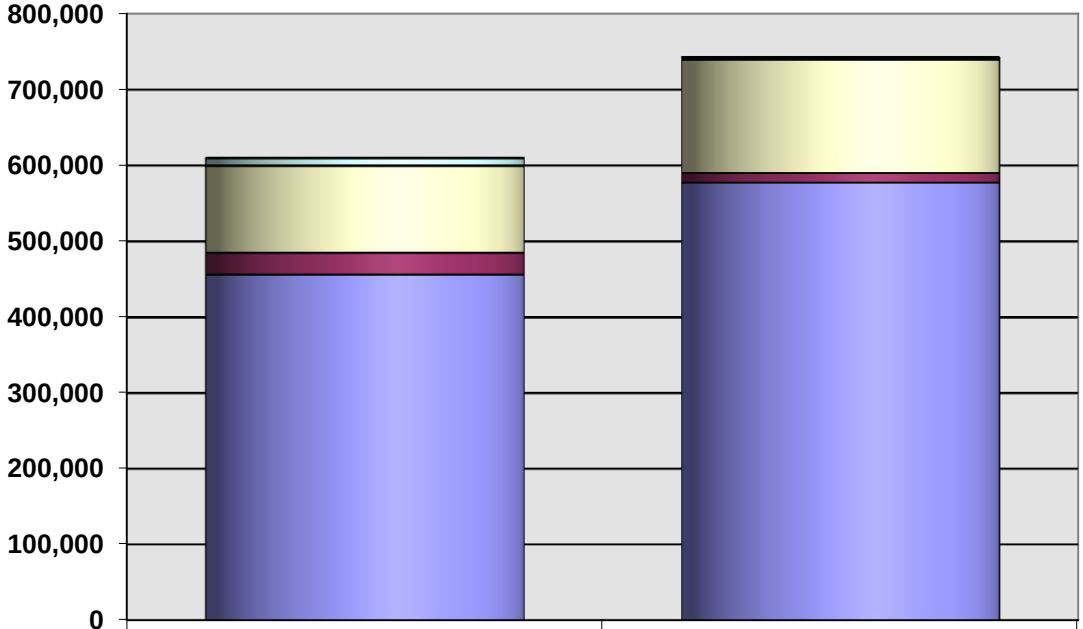
2.1.1.2 *Groundwater Quality*

KDWCD has been developing a monitoring plan for groundwater quality as a new Activity called for in the 2006 update of the Plan. This has involved evaluating potential sources for acquiring relevant ground water quality data in the Kaweah Basin. Many aspects of monitoring are under review including pertinent constituents to track historical information, volume, and frequency available data. KDWCD will continue to evaluate and define useable information sources toward the implementation of groundwater quality data collection and tracking.

2.1.2 Surface Water

Surface water that flows into and through the Plan area comes from several different sources, primarily snowmelt and rain runoff from the Kaweah River watershed. A majority of the flows from the watershed are regulated in Lake Kaweah, which is operated by the U.S. Army Corps of Engineers. Unregulated flows that enter the Kaweah River system include the following water courses: Cottonwood Creek, Dry Creek, Lewis Creek, Mehrten Creek and Yokohl Creek. Imported surface water enters the KDWCD from the Central Valley Project's Friant-Kern Canal, the Kings River or spills from Alta Irrigation District.

Figure 5 - Surface Water Flow Comparison within the Water Conservation District



	AVERAGE	2009-10
Kings River (LIWD)	10,065	3,223
CVP	114,908	149,147
Creek Flows	28,564	12,533
Terminus Flows	456,227	577,432

2.1.2.1 *Surface Water Flows*

Each year the Kaweah and St. Johns Rivers Association monitors daily surface water flows and compiles that data into an Annual Report of the *Discharge of the Kaweah River and Canal Diversions*. This data in combination with groundwater level data can be used to evaluate effective use of surface water to the benefit of the groundwater basin.

The 2009-10 Water Year was above average in terms of runoff into Lake Kaweah with total inflow into the lake at 577,432 acre-feet, which was 135% of average runoff. The 2010 April through July inflow into Lake Kaweah was 413,562 acre-feet, which was 146% of average based on a 106-year average. Figure 5 summarizes the flows from the various sources into the Plan area for 2010 and compares the year to an average year. Plate 1 details the historical surface water flows within KDWCD.

2.1.2.2 *Surface Water Quality*

Surface water quality monitoring, like groundwater quality monitoring, is a new Activity adopted as part of the 2006 update of the Plan. Accordingly, KDWCD is in the process of developing a monitoring plan. The Kaweah River Sub-watershed (Sub-watershed) is part of the Southern San Joaquin Valley Water Quality Coalition and one of its

primary functions is the regular monitoring of surface water quality under the Irrigated Lands Regulatory Program (The Coalition and Sub-watershed's local representation is approved by the Central Valley Regional Water Quality Control Board). This program monitors water column and sediment samples for issues of water quality degradation in waters of the State that might result from agricultural practices. The Sub-watershed monitoring has been identified as one source of existing data that is a likely source to collect surface water quality data. KDWCD will continue to evaluate and define additional existing sources of data within the Plan area.

2.1.3 Water Transfers

Surface water transfers can be beneficial or harmful to groundwater levels in the Plan area depending on how they are structured. The Watermaster of the Kaweah and St. Johns Rivers, under direction of the Kaweah and St. Johns Rivers Association (Association), administers surface water transfers within the Association service area. KDWCD also monitors transfers of surface water within its boundaries.

2.1.3.1 *Intra-District Water Transfers*

The year 2010 was an above average year for the Kaweah Basin and water transfers within KDWCD continued to be an activity utilized for maximizing surface water usage. River units transferred water among themselves to improve water supply toward meeting demands. The Association's *Transfer Policy* defines the parameters and procedures for transfers with the Watermaster implementing those procedures in an effort to avoid negative impacts to the Basin.

2.1.4 Inelastic Land Surface Subsidence

KDWCD has been investigating available inelastic land surface subsidence data in response to a new Activity implemented by the 2006 Plan update. Initial search in 2007 showed there is no recent local data on subsidence. KDWCD continues to explore options toward estimating the extent of the work necessary and costs to perform such a study for KDWCD. Additionally, partners are being sought out as a way of sharing costs with other agency(s) and combining areas of the investigation.

2.1.5 Monitoring Protocols

Monitoring protocols set the framework for data collection and establish the accuracy and reliability of data that is fundamental to the Plan. Protocols are in place and guide the collection of data for groundwater levels, surface water flows and water transfers. During the planning stages of the Groundwater Quality, Surface Water Quality and Inelastic Land Surface Subsidence Activities, thought and discussion has centered on the establishment of associated protocols. Defining protocols for these Activities are requisite for the success of implementing the Plan.

2.2 Resource Protection

It is not enough that the Plan defines the importance of groundwater as a critical resource in the Kaweah Basin, the Plan must also recognize the need to protect that resource from further degradation. The Resource Protection element of the plan identifies those Activities necessary to maintain the quantity and quality of the groundwater supply.

2.2.1 Well Abandonment and Construction Policies

Tulare and Kings Counties, in addition to some of the cities in the Plan area, have well ordinances that are established to provide for the permitting and oversight of construction, deepening, reconstruction and abandonment of wells in their jurisdiction. The goals of the ordinances are to insure high quality groundwater and regulate the entry of substances into underground waters through the promulgation of well development policies and permits applying to well projects.

A increasing trend in the number of contaminated groundwater wells, especially in the small public water systems of disadvantaged communities, has resulted in Tulare County working to identify funding assistance for a Well Maintenance & Abandonment Project as discussed in 2.4.3 (*Integrated Regional Water Management Planning*). This project would promote a voluntary compliance program for owners and operators of private wells in areas of the County that are at risk due to localized contaminate issues. The program would include outreach and educational components, as well as a grant program to qualified individual applicants to cover the costs of proper abandonment, repair, alterations or maintenance of high-risks wells. This Well Maintenance and Abandonment Project has been submitted under the Kaweah Basin Integrated Regional Water Management Plan process as a potential project for the Plan area.

2.3 Sustainability

Stabilizing groundwater levels has been a primary objective of the Plan in response to the historical overdraft of the groundwater resource of the area. This section contains the Activities utilized to achieve this goal through Groundwater Replenishment, Overdraft Mitigation and Conjunctive Use.

2.3.1 Groundwater Replenishment

Groundwater Replenishment is an Activity of the Plan that often has considerable activity each year. KDWCD operates and maintains recharge basins throughout the Plan area and most of the channels within the Plan area are located within soil zones with high permeability characteristics. These facilities enable KDWCD to capture and percolate floodwaters that might otherwise flow out of the Plan area or cause flood damage. KDWCD has established and will continue to develop programs that promote surface water use, resulting in in-lieu groundwater recharge through reductions in groundwater pumping. A visual overview of this extensive recharge system is provided on Plate 2 and Plate 3. These represent basin inventory and a map of KDWCD.

2.3.1.1 *Distribution of District Owned Water*

In 2007, KDWCD transferred 860 acre-feet of Kaweah River water to the adjacent Ivanhoe Irrigation District (IID) to help IID alleviate dry year surface water shortages they experience. In exchange, IID agreed to return CVP water in a later year at a return rate of 1.5 to 1.0. The transfer was able to reduce some of the groundwater pumping and the Kaweah Basin will end up with a net-gain due to water importation. Since 2008, conditions have not been present to allow IID to return any of the water under this exchange.

2.3.1.2 *In-Lieu Recharge*

The demand on the groundwater reservoir is proportionately reduced whenever surface water supplies can be used to satisfy irrigation demand.

- Mooney Grove Pond: KDWCD executed an agreement in 2008 with the County of Tulare, Tulare Irrigation District (TID) and the City of Tulare to provide surface water to a three acre recreation/irrigation pond in the County's public park of Mooney Grove. Previously, the County solely supplied the pond by pumping groundwater. The agreement involved installing a pump and facilities from the adjacent TID North Branch Canal to supply the pond at times when surface water is available. The agreement also coordinated the purchase of surface water between the County and the City and established the parameters for diversions to the pond. The parties anticipate the relief of groundwater pumping will benefit the local groundwater supplies. Recently, TID has successfully finished coordinating with the County and the United States Bureau of Reclamation to annex portions of the park that are not in TID's service area, enabling TID to deliver water to the park.

- Tulare Irrigation District Water Importation Program: 2010 was the tenth year of a minimum ten-year agreement between TID and KDWCD in which KDWCD pays TID an incentive for each acre-foot of CVP water imported by TID. The Parties Agreed to extend this agreement an additional five years. The program provides TID opportunities to import additional water into the Kaweah Basin. The agreement was reached in order to lessen the financial impact to TID resulting from seepage losses in TID's Main Intake Canal that occurs as water is conveyed to the TID service area. The agreement also helps to

maintain the historical recharge benefit to the Kaweah Basin that occurs as a result of the conveyance seepage. CVP water imported by TID pursuant to the terms of the agreement is summarized in Table 1.

Table 1: TID CVP Importation

Calendar Year	Acre-Feet
2001	23,296
2002	40,026
2003	70,591
2004	34,650
2005	139,437
2006	100,849
2007	2,386
2008	29,098
2009	76,456
2010	99,911
Average	**61,670**

The groundwater basin is benefited by this agreement in two ways. The first is the expected increase in groundwater recharge quantities that will occur in the eastern portion of the KDWCD as the water is conveyed to TID. Secondly, a decrease in groundwater pumping results with in-lieu recharge in the central to westerly region of the KDWCD occurs because of the importation of an additional supply of surface water to TID's service area for irrigation purposes.

2.3.1.3 *Construction and Operation of Facilities*

One of the impacts of a dry year is diminished recharge activity, but at the same time it provides improved opportunity for construction and coordination activities to occur without delays imposed by interference of wet conditions or water in the channels. In 2010, there was ample amount of time to proceed with improvements and added activities for layoff water. The following is an account of the various improvements that occurred in 2010 that will directly benefit the Kaweah Basin's recharge ability in above normal to wet years:

- Anderson Basin Improvement (No.24): A valuable balancing basin at the tail end of the Farmers Ditch Company system, the 142-acre basin has limited capacity due to its depth in relation to the supply channel. Taking advantage of development projects in the area, the center cell of the basin continued to be excavated in trade for the dirt, improving on the ability to gravity feed water into the basin and increasing its capacity.

- Oakes Basin Improvement (No.43): 2008 was the final year of a five-year exclusive agreement between Dunn's Sand and KDWCD to excavate the 40-acre site for groundwater recharge, storm water layoff for the City of Visalia and habitat development/preservation purposes. The site is currently used for recharge activities and KDWCD initiated some finishing operations at the basin in 2009 to shape the basin to its final contour. Currently, additional inlet capacity is being designed in coordination with the City of Visalia

to allow for storm water layoff in the basin at a volume that will help relieve Mill Creek flows through the City during peak rainfall events. Additionally, a pump-out structure and equipment will be provided that will allow the city to return the diverted water back to the creek after the storm event has subsided.

- Mooney Grove East Basin Site: The County of Tulare, Tulare Irrigation District (TID) and KDWCD have an agreement in place to develop an area for both recreation and recharge at an undeveloped location on the east end of Mooney Grove Park. In this arrangement, the two districts would excavate the 5-acre site and construct the necessary structures to divert water from the adjacent TID canal for recharge and flood control spreading operations. The County has designed the recreation aspects of the basin area. In 2010, excavation was completed and the basin is operational. TID has plans to install an upgraded inlet structure to provide ease of use.

- Peoples Basin Site (No.99): KDWCD continued with the preliminary engineering of the 40-acre Peoples Basin property to evaluate development parameters necessary to establish this site as a recharge and storm water layoff basin adjacent to the Lower Kaweah River, upstream from the City of Visalia.

- Lakeside Basin (No.10): KDWCD continues to work with several contractors to excavate additional dirt from the 187-acre Lakeside Basin as a source of fill dirt for development projects in the area. The work will serve to improve the capacity of the Lakeside Basin for managing flood flows and recharge.

- Kit Carson Basin Site: Kings County Water District, Lakeside Irrigation Water District and KDWCD continue to coordinate the purchase of a 160-acre recharge basin site in which it is anticipated that each entity will contribute an equal share of the acquisition costs. The basin will be useful for both recharge and flood control operations.

- Packwood Creek Project: A standing committee on water related projects, the Visalia Water Management Committee along with KDWCD started the initial stages of the Packwood Creek Project. The project would lay out the design and construction of one or more check structures placed in Packwood Creek intended to enhance in-channel recharge. A hydrologic study was performed to provide feedback for the projects effect on recharge and current state of the channel.

2.3.2 Overdraft Mitigation

Since the 1950's, KDWCD has observed declining groundwater levels and the Kaweah Basin has been identified by the California Department of Water Resources as "…being in a critical condition of overdraft." These conditions were confirmed in the KDWCD's Water Resources Investigation performed by Fugro-West in 2003. Overdraft mitigation has been a focal point of the Plan with Activities focused on actions that have direct, positive impact on the groundwater table.

2.3.2.1 *Water Conservation*:

KDWCD promotes the beneficial use of water by the promotion, sponsorship and participation in educational programs that focus on improving the understanding of water needs and concerns both locally and statewide.

- Education and Ag Together: KDWCD continues to participate and sponsor local schoolteachers in the Education and Ag Together Foundation (EAT Foundation) class, Ag II "It's all about Water," for the summer of 2010. This involved two sessions of a two-day class where some of the topics were water law, power generation, dams and rivers. The class focuses on past and present California water issues and California water supply and demand. KDWCD is proud to be an annual sponsor of this class, believing it is important that Californians understand where water comes from and how water gets to the faucet.

- Central Valley Tour: KDWCD again participated and helped sponsor the Water Education Foundation's Central Valley Tour in the Spring of 2010. The Central Valley Tour is a 3-day tour that travels the length of the San Joaquin Valley, giving participants interested in California water a clear understanding of the State Water Project and Central Valley Project. Stops include the Kern County Water Bank, the San Joaquin River, Mendota Pool, Friant Dam, San Luis National Wildlife Refuge, San Luis Reservoir, as well as the Kaweah Basin. Issues of growth, water supply, groundwater banking, wetlands, salmon restoration and agricultural water supply and drainage were discussed on this tour, which began and ended in Northern California.

- Sequoia For Youth: KDWCD participates in a program lead by Interpretive Rangers of Sequoia National Park that lead the middle school children through a 3 day program learning about ecosystems, watersheds, conservation, local plants and animals, and much more. Starting at the valley floor and moving up to the Sierra Mountains, the local students learn the value of the snowpack, the way the watershed distributes runoff, groundwater use and its impacts, and the many competing uses for water in the valley.

2.3.2.2 *Additional Water Supply & Storage*

Although KDWCD receives a surface supply of water from the Kaweah River system, the quantity received can vary dramatically from year to year. Effort is made to annually import water from the Central Valley Project, the Kings River or other sources to supplement the Kaweah River supply.

- Resources Exchange Agreement: KDWCD actively pursues importation of water to stabilize the amount of water delivered to the Basin and reduce the groundwater overdraft. Historically, KDWCD has regularly imported CVP water through Temporary Contracts or other Non-Long Term Contracts with the U.S.

Bureau of Reclamation (Bureau) in an effort to protect and enhance available groundwater resources within the Kaweah River Basin.

In April of 2004, KDWCD entered into a Resource Exchange Agreement (Agreement) with Ivanhoe Irrigation District (IID) that creates an exchange of water assets, which will provide advantages to both parties and the Kaweah Basin as a whole. The Agreement assigns a portion of KDWCD's storage space in Lake Kaweah and a portion of KDWCD's Longs Canal water supply (an upper Kaweah River water supply) to IID. In return there is an assignment of 1,200-acre-feet of CVP Class 1 contract water supply and 7,400 acre-feet of CVP Class 2 contract water supply from IID's Long-Term Contract to KDWCD.

The Agreement improves IID's ability to keep surface water competitively priced with local groundwater and retain long-term reliability of its surface water. For KDWCD, the Agreement improves our ability to continue to receive CVP water. The Agreement requires a number of steps to accomplish the exchange of water assets between the parties, the most significant being a partial assignment of IID's Class 1 and Class 2 CVP Contract water supply to KDWCD. This will involve National Environmental Policy Act compliance and consultation with the U.S. Fish and Wildlife Service for Endangered Species Act compliance. Both KDWCD and IID have assessed the environmental impacts through separate California Environmental Quality Act processes. This agreement was executed on February 26th, 2010. The year 2010 presented us with an above normal water year in which KDWCD was able to import approx. 36,000 acre-feet of water into area through their newly acquired CVP contract. (see table 2.3.3)

- Cloud Seeding: KDWCD has contracted with cloud seeding services going back as early as 1975 to perform cloud seeding operations over the Kaweah River Watershed. This ongoing effort is designated as *The Kaweah River Weather Resources Management Program*. In 2010, Atmospherics International, Inc. contracted for both seeding flights and ground generators in a program over the Kaweah River Target Area. KDWCD's contract with Atmospherics International, Inc. for seeding begins November 1 and can extend through May. The seeding activities are limited to this period to provide the greatest benefit to the watershed's snowpack while considering costs.

  KDWCD acknowledges that quantifying the benefits of cloud seeding for expected precipitation improvements is difficult. The weather modification program is just one of KDWCD's continuing efforts to provide additional water that would assist in reducing the long-term groundwater basin overdraft condition. KDWCD's view is that every economical and feasible opportunity to promote additional water supplies into the region must be considered.

- City of Visalia Water Importation Agreement: Developed from groundwater overdraft discussions within the Visalia Water Management Committee, the City of Visalia (City) and California Water Service Company (Cal Water) arranged for the City to acquire a total of 10,000-acre feet of water over a 8-year period from Cal Water's City of Bakersfield water supply. The water supply is stored in a Kern County water bank and requires a series of exchanges to accomplish delivery of the water. The water will be used to recharge groundwater in areas beneficial to the City to help offset municipal groundwater withdrawals. In 2008 all of the necessary agreements were fully executed and the City with KDWCD now stand ready to implement recharge activities when conditions are present. In 2010, the first series of exchanges delivered over 1200 AF to the area which was utilized in groundwater recharge basins.

2.3.3 Conjunctive Use

Since 2007, 2008 and 2009 were below average water years, the Kaweah Basin landowners benefited greatly from the recharge activities that took place in the previous wet water years of 2005 and 2006. 2010 was an above average year at 135%, and we anticipate to see our recharge activities produce a positive impact on the groundwater table though such an impact will not reflect in the groundwater table until 2011. Table 2 summarizes the recharge activities in those years and their apparent effect on the groundwater levels. Further information on the recharge activities in these years is available in the previous Annual Groundwater Management Plan Reports.

Table 2: 2005-2010 Groundwater Response Summary

Year	Lake Kaweah Inflow - % Avg.	KDWCD Water Importation - AF	Recharge Basins Utilized - Ea.	Recharge Basin Percolation - AF*	Recharge in Channels - AF*	Fall Season Groundwater Avg. Depth Change - Ft.
2005	145	108,500	34	36,000	267,200	+13.4
2006	163	56,600	30	149,000	237,000	+12.9
2007	39	0	2	2,719	66,000	-24.6
2008	78	0	17	33,013	124,258	-11.3
2009	73	7,236	16	45,483	46,628	-8.1
2010	135	36,600	30	159,852	148,000	+11.9

*estimated

This simple summary illustrates the dramatic effect the climatic conditions of the water year, emphasizing the effects precipitation can have on the Kaweah Basin groundwater system. Figure 3 further illustrates the historical response of the groundwater table to the nature of the water year.

In 2010, KDWCD had the opportunity to implement additional recharge actions to the benefit of the basin. These recharge programs and agreements utilized the above average water year to maximize recharge efforts. KDWCD also imported additional CVP water through programs noted below.

RECHARGE/IMPORTATION

Under KDWCD's new USBR contract and due to the above average water year, KDWCD received 100% of its contract Class 1 and Class 2 water which totaled 8600 AF. Imported transfers of CVP water from Tulare Irrigation District and Exeter Irrigation district to KDWCD supplied more than 28000 AF. KDWCD diverted said water to multiple basins and channels for enhanced recharge efforts. KDWCD also participated in additional programs to import water as listed below.

- May 2010 – Multiple programs with the City of Visalia and CVP using KDWCD river conveyance utilized storm water basins located throughout the city for over 858 AF delivered.
- February/May 2010 – Hills Valley Irrigation District/City of Bakersfield CVP water importation program brought in 1300 AF and spread throughout various basin's for the benefit of the City of Visalia.

2.4 Stakeholder Involvement

The status of local groundwater supplies has an impact on the entire Kaweah Basin. Therefore, the Plan is comprised of Activities involving numerous coordinating entities and other interested parties who take an active role in the Plan to strengthen the effectiveness of the Plan.

2.4.1 Memorandum of Understanding

In accordance with the Plan objectives, KDWCD has incorporated participation of many entities in the Plan through *Memorandums of Understanding* (MOU). The Plan participants are listed in Table 3 below and their service area is shown on Plate 4.

Table 3: Current Plan Participants

Entity	MOU Date
Consolidated Peoples Ditch Company	1995
St. Johns Water District	1995
Tulare Irrigation District	1996
Lakeside Ditch Company	1998
Lakeside Irrigation Water District	1998
Kings County Water District	2002
City of Visalia	2002
City of Farmersville	2003
California Water Service Company	2004
City of Tulare	2004
Ivanhoe Irrigation District	2004
Stone Corral Irrigation District	2005
City of Woodlake	2005
City of Lindsay	2006
Exeter Irrigation District	2006
County of Tulare	2007

It is important to note that participants Ivanhoe Irrigation District, Stone Corral Irrigation District, the City of Woodlake, the City of Lindsay and Exeter Irrigation District are outside of the Plan boundary, but as part of the Kaweah River Basin their activities have potential impact on groundwater within the Plan area.

KDWCD continues to work with additional entities to encourage their participation in the Plan. The Plan also takes into consideration those entities that have lands within the Plan area that want to manage groundwater under their own separate plan. This is explained in more detail in previous Annual Reports.

2.4.2 Advisory Committee

One of the defined Plan Activities is an annual meeting with participants and interested parties to review and discuss groundwater conditions, water supplies, groundwater recharge, recharge basin development and other activities related to the Plan. The Advisory Committee met following the 2010 water year to discuss and review report history and current data (see Appendix B).

2.4.3 Relationships with Other Agencies

The Plan encourages coordination with agencies and other interests that share the groundwater resource in an effort to coordinate information and data, provide relevant programs and allocate funds.

- District HCP/NCCP Project: Following the initiation of the *1993 Kaweah River Delta Corridor Enhancement Study*, KDWCD elected to pursue the development of a Habitat *Conservation Plan* (HCP). A HCP comprehensively addresses the long-term habitat and species impacts, instead of what would normally be handled on a project-by-project basis, allowing for comprehensive management of the water needs of the area.

  The development of a HCP offers many benefits toward the construction and operation of groundwater recharge and storm water layoff basins, construction and maintenance of water conveyance systems and development of habitat restoration sites. Management of lands under the HCP will help maximize the value of both water and habitat, deliver greater cumulative benefits to habitat and species recovery within the Basin and contribute toward overall Lower San Joaquin Valley habitat and species recovery efforts.

  KDWCD has received approval for the Plan of Study. The Plan of Study is divided into three phases: a) Project Development, b) HCP Development, and c) Environmental Analysis and Review. The Project Development Phase includes those efforts needed to fully develop the scope and nature of the HCP, as well as integration of State of California, Endangered Species Act requirements. The HCP Development Phase will take elements from the Plan of Study and the Project Development Phase to form the content of the HCP document and the basis for a Section 10(a) Incidental Take Permit and associated State action. The final phase will develop appropriate environmental documentation in satisfaction of NEPA and CEQA guidelines for the covered actions within the proposed HCP.

  KDWCD anticipates the HCP will help to streamline the process for developing projects within the Kaweah River Basin and accomplish Plan goals.

- Integrated Regional Water Management Planning: Responding to calls from the State to integrate water resources management across jurisdictional boundaries, KDWCD has served as the lead agency in developing an Integrated Regional Water Management Plan (IRWMP) for the Kaweah Basin. Originating in early 2007, a local stakeholder group has been met monthly, stepping through the formation of a Kaweah Basin IRWMP.

  KDWCD has performed a functionally equivalent Water Management Plan for the area for over 20 years and completed made to formalize this Water Management Plan. The first step has been developing a

Memorandum of Understanding to establish the IRWMP between five local entities and the second to set a structure of participation and scoring mechanism to rate projects presented to the IRWMP for funding. The overriding focus of the group has been to establish long-term water management goals and guidelines for the area that will promulgate multi-stakeholder, cost-benefit projects that address multiple water issues and related needs of the area.

In 2010, the local stakeholder group met monthly and developed a comprehensive list of projects that would benefit Kaweah River Basin water supplies. The group coordinated and combined projects that complimented each other, and internally scored those projects to determine those projects to prioritize. The Five projects listed below were identified as having the most value for the region.

1. Tulare Irrigation District and the City of Tulare have joined together for the Plum Basin Recharge Project, which will be focused primarily on flood protection and groundwater recharge.
2. Water Reuse Pipeline Project was directed to City of Visalia and Tulare Irrigation District. This project included ways to improve the use of existing water resources.
3. The County of Tulare, in cooperation with Self-Help Enterprises and the Community Water Center, is launching the Groundwater Quality Protection and Investigation Project aimed to investigate groundwater contamination and ways to address problem areas.
4. Kaweah Delta Water Conservation District will introduce the Paregien Basin Project addresses groundwater recharge and temporary diversions.
5. Kaweah Delta Water Conservation District will improve on an existing basin with the Oakes Basin Habitat Enhancement Project focused on habitat restoration.

At the conclusion of 2010, these projects were being combined into an application for a Department of Water Resources Irrigated Regional Water Management Plan Implementation Grant submittal due January 2011.

- The Tulare County Water Commission: In 2007, the Tulare County Board of Supervisors re-formed the Tulare County Water Commission to advise the Board of Supervisors on issues of water supply and quality, watershed management, wastewater disposal, flood control, and growth management. The Tulare County Water Commission is designed to examine a wide variety of water issues that impact Tulare County. The Water Commission serves as an advisory body to the Tulare County Board of Supervisors. Listed below are some of the issues reviewed by the Water Commission in 2010:

Rural Community Drinking Water System Issues
Tulare County AB 303 Grant Award
Current Water Legislation Activities
Nitrate Concerns and Management Plans
Delta Vision Plan
Exportation of Groundwater
Integrated Regional Water Management Planning
Sustainable Groundwater in Agriculture
The Water Element of the General Plan
Permitting for Groundwater Recharge Basin Construction
California Water Bond

2.5 Planning and Management

A successful program is often the result of planning and management, which guide and focus the direction of a program. Below is a discussion of key Plan activities that have an important role in effectively managing groundwater in the Basin.

2.5.1 Land Use Planning

Cities and Counties within the Plan area oversee land use and zoning. KDWCD monitors, guides and advises entities with regard to ordinances and policies that protect and enhance groundwater quality and supply.

- County General Plan Update: The County of Tulare is in the process of updating its General Plan and KDWCD has been instrumental in its development relating to water issues. The General Plan is critical to the County and should have a part in addressing impacts to water supply, water quality and groundwater overdraft. The County released a Draft Environmental Impact Report in 2008. In 2010, the Tulare County Water Commission reviewed and discussed aspects of the water element of the General Plan, giving Tulare County suggestions of ways to improve the plan.

- Yokohl Ranch Development Proposal: The County of Tulare is currently reviewing a proposal for a new city in the rangeland foothills of the Kaweah River watershed. The proposed Yokohl Ranch Development has an eventual build out of 10,000 homes plus supporting amenities. KDWCD has been in discussions with the developer and the County to assure potential impacts to flood control, surface water supply, groundwater supply and water quality are sufficiently addressed. The project will require an amendment to the county's current *Foothill Growth Management Plan* and to current zoning.

2.5.2 Groundwater Model

The Plan recognizes groundwater modeling as an important planning and management tool to effectively understand the groundwater characteristics of the Plan area.

- District Groundwater Model: A Numerical Groundwater Flow Model for KDWCD was completed and calibrated in 2005. The model is available to perform various water supply scenarios toward future programs to better manage groundwater resources within the Kaweah Basin.

- City of Visalia Groundwater Model: KDWCD, the City of Visalia and California Water Service are participating in the construction of a Visalia Numerical Groundwater Flow Model. The Model will improve the ability to study the groundwater conditions within the City region, better understand the potential benefits of contemplated recharge efforts and help the City understand the potential impacts of future development. The total Model project cost is estimated at $210,000 with KDWCD contributing $70,000 and the City contributing $140,000. The final phase of model development and reporting was accomplished in 2010

2.5.3 Groundwater Report – Annual Groundwater Management Plan Report

This 2010 Annual Report summarizes the current groundwater conditions and provides an over-view of Plan Activities. KDWCD has committed to producing reports annually and has on file reports from 1995 when the Plan was first developed.

2.5.4 Plan Re-Evaluation

KDWCD has not yet performed a periodic plan re-evaluation, choosing instead to focus on the specific elements of monitoring, water quality and crop demand. This will improve the local understanding of the conditions of water resources.

2.5.5 Program Funding and Fees

Funding for Plan Activities comes primarily from three sources: 1) KDWCD's budget, 2) cooperative agreements with other coordinating agencies or 3) grants available for groundwater management.

Although the general management activities of the Plan are currently funded through KDWCD's budget, numerous projects are underway that are based on partnerships between KDWCD and other entities. KDWCD has historically received multiple funding grants for groundwater management efforts and will continue in such efforts in the future. The KDWCD also anticipates competing for other grant funds through the Kaweah Basin IRWMP process. Specifically, KDWCD is in the process of applying for an Implementation Grant through the Department of Water Resources.

3.0 CONCLUSION

In evaluating the Groundwater Management Plan Activities that took place in 2010, the following conclusions can be drawn.

3.1 Plan Goal

The updated Plan has been a catalyst to improve the efficiency and effectiveness of groundwater management in the area and it is clear the Activities conducted under the Plan impact the ability to sustain a high quality groundwater supply for agricultural, environmental and urban uses into the future. Continuation of these Activities by the Plan participants will be necessary to stabilize or reverse the overdraft conditions of the Kaweah Basin. The following discussion summarizes this year's activities for the five Plan Elements, which are the basis of the Plan.

3.1.1 Monitoring Program

The core of the Plan is the groundwater monitoring that has been performed for over 50 years providing KDWCD and Stakeholders with groundwater conditions related to meeting water demands in the Plan area. The challenge will be to incorporate the new monitoring activities for water quality and subsidence. These new Activities will require additional research into available sources of accurate and reliable data for the Kaweah Basin.

3.1.2 Resource Protection

Groundwater protection has been implemented through the established well ordinances of the counties and cities within the Plan area. The development of additional programs, like those proposed by Tulare County to broaden understanding of the water quality threats to groundwater, will continue to improve the ability to minimize adverse groundwater quality issues in the Plan area.

3.1.3 Sustainability

Sustainability is a Plan Element with the most activity. Numerous projects have been completed and are underway that advanced or could potentially advance KDWCD's ability to manage groundwater supplies. This has been accomplished through the numerous surface water management programs, recharge basin capacity improvements, water management cooperative agreements and water educational programs performed in 2010.

3.1.4 Stakeholder Involvement

Growing in participation since the Plan's inception in 1995, there are now sixteen participants that play an active role in the planning and evaluation of groundwater management. Implementing the activities of the Plan, KDWCD coordinated with multiple agencies to maximize benefits and minimize expenditures for Plan activities. Coordinating efforts are underway that will expand the participation and scope of planning efforts to effectively manage water and maximize resources.

3.1.5 Planning and Management

An array of local planning processes, guidelines and supporting funds are available to coordinate the activities of the Plan. This Annual Report acts as a valuable tool to record the activities, progress and the general effectiveness of the Plan. It is envisioned that the Annual Report will bring to light needed changes and serve as the impetus to modify the Plan. The result will allow the Plan to meet its goals of providing a sustainable, high quality supply of groundwater for agricultural, environmental and urban uses into the future.

3.2 Plan Component Changes

The Plan is designed to be flexible, allowing updates to be made as needed, based principally on the evaluation of information that is gathered through the monitoring programs. Since the last update, the Plan has been evaluated as effective and there have not been any component changes identified for revision. Elements of the Plan will be annually evaluated to seek clarification or development that would improve the effectiveness of the Plan in meeting its defined Goals.

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Kaweah Delta Water Conservation District, County of Tulare, City of Visalia, City of Lindsay, Exeter I.D.

TULARE COUNTY GENERAL PLAN, 2025 - (DRAFT)
County of Tulare, Resource Management Agency

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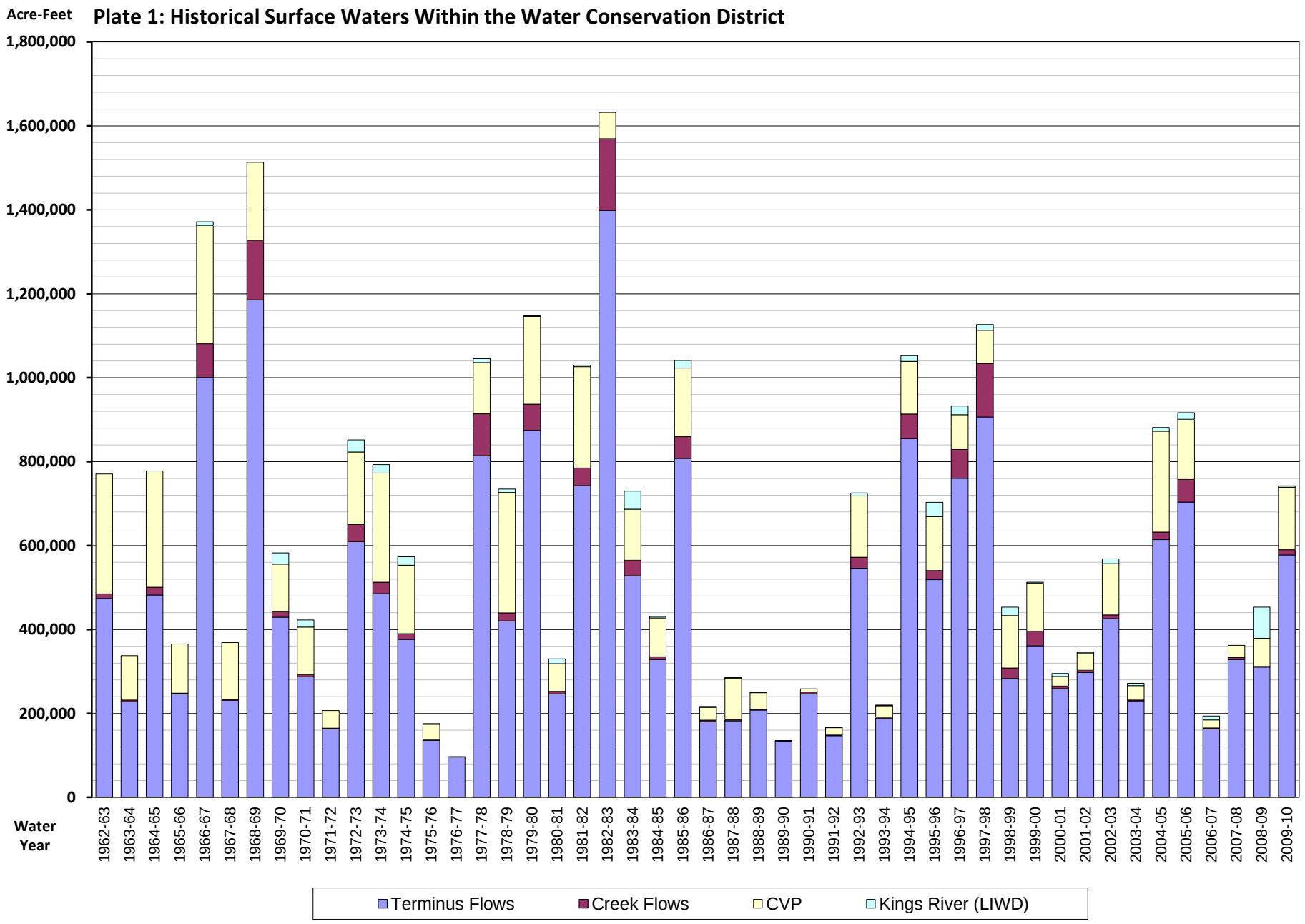
Kaweah Delta Water Conservation District

The preceding documents are on file at, or can be located through, the Kaweah Delta Water Conservation District office.
Please, call (559) 747-5601, or write to 2975 N. Farmersville Blvd, Farmersville, CA 93223.

PLATES


Acre-Feet
Plate 1: Historical Surface Waters Within the Water Conservation District
1,800,000
1,600,000
1,400,000
1,200,000
1,000,000
800,000
600,000
400,000
200,000
0
Water Year
1962-63
1963-64
1964-65
1965-66
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1967-68
1968-69
1969-70
1970-71
1971-72
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1998-99
1999-00
2000-01
2001-02
2002-03
2003-04
2004-05
2005-06
2006-07
2007-08
2008-09
2009-10
Terminus Flows
Creek Flows
CVP
Kings River (LIWD)

PLATE 2: Kaweah Delta Water Conservation District

Available Recharge Basin Inventory

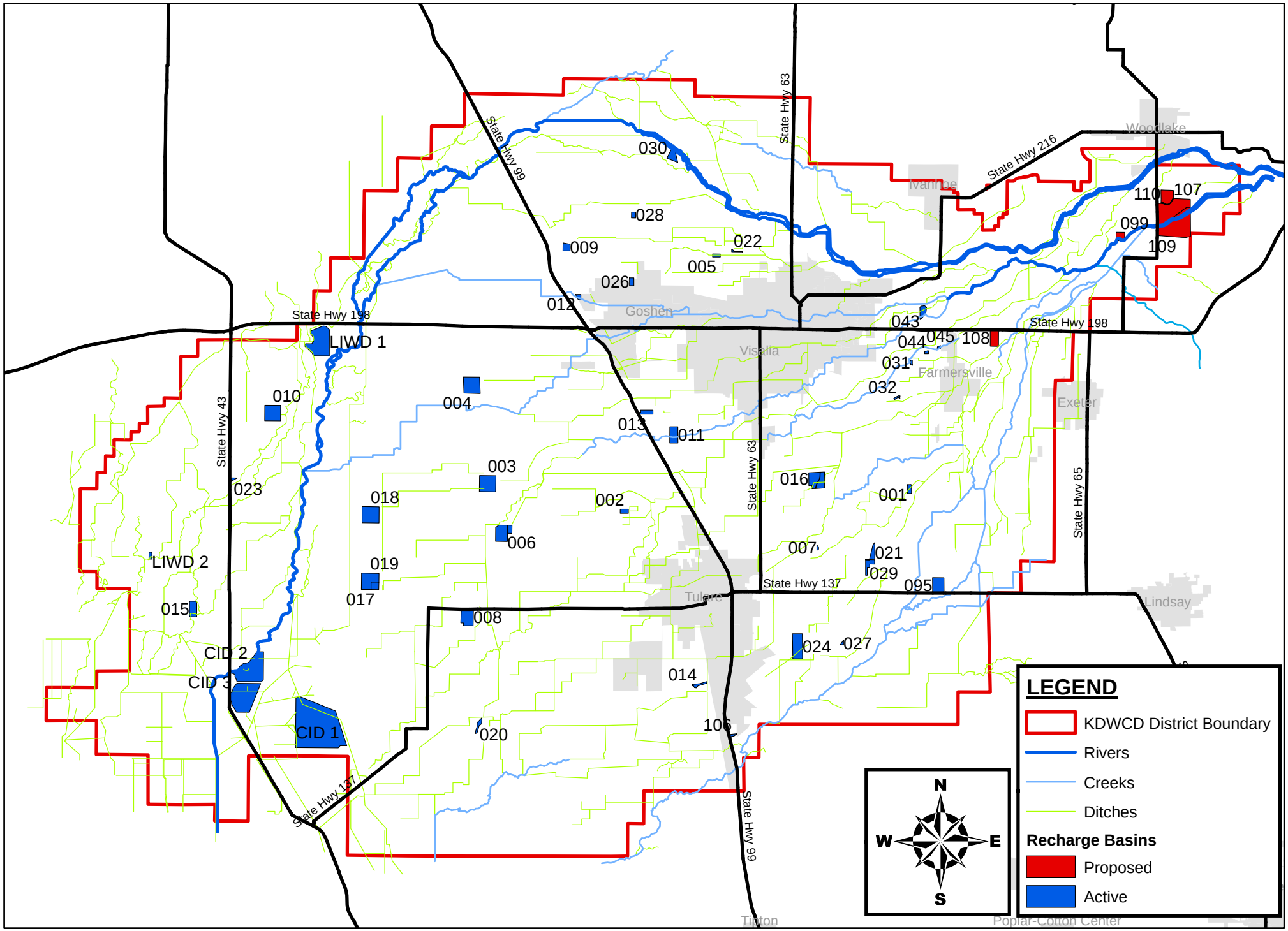
Basin Name	No.	River System	Supply Channel	Owner	Acreage	Capacity (A.F.)	Inflow Capacity (CFS)	Perc A.F. per Day*
Doris	25	(either)	Cameron Creek	KDWCD & TID	15	60	30	7
Hutcheson East	45	(either)	Cameron Creek	Kaweah Delta WCD	4.4	n/a	n/a	n/a
Hutcheson West	44	(either)	Tulare ID Canal	Kaweah Delta WCD	5.5	25	16	2
Enterprise	2	(either)	Tulare ID Canal	Kaweah Delta WCD	20	100	20	8
Colpien	3	(either)	Tulare ID Canal	Kaweah Delta WCD	160	640	180	60
Abercrombie	14	(either)	Tulare ID Canal	Kaweah Delta WCD	20	80	20	5
Creamline	16	(either)	Tulare ID Canal	Kaweah Delta & Tulare ID	153	535	n/a	85
Franks	17	(either)	Tulare ID Canal	Kaweah Delta WCD	40	160	n/a	6
Guinn	18	(either)	Tulare ID Canal	Kaweah Delta WCD	168	672	70	25
Franks	19	(either)	Tulare ID Canal	Kaweah Delta WCD	130	520	60	16
Wilbur	20	(either)	Tulare ID Canal	KDWCD & TID	20	100	50	5
Oakes	43	Kaweah	Lower Kaweah River	Kaweah Delta WCD	40.9	200	40	7
Bill Clark	32	Kaweah	Consolidated PDC	Private Landowner	2	4	2	1
Elk Bayou	106	Kaweah	Elk Bayou Creek	County of Tulare	6	22	n/a	3
Nelson Pit	13	Kaweah	Evans Ditch	Kaweah Delta WCD	34	340	10	14
Art Shannon	1	Kaweah	Farmers Ditch	Kaweah Delta WCD	33.8	270	20	30
Gary Shannon	7	Kaweah	Farmers Ditch	Kaweah Delta WCD	5	20	5	5
Gordon Shannon	21	Kaweah	Farmers Ditch	Kaweah Delta WCD	15	90	45	6
Anderson	24	Kaweah	Farmers Ditch	Kaweah Delta WCD	147	588	50	20
Ellis	27	Kaweah	Farmers Ditch	Private Landowner	3	30	15	4
Nunes	29	Kaweah	Farmers Ditch	Kaweah Delta WCD	40	240	50	30
Sunset	95	Kaweah	Inside Creek	Kaweah Delta WCD	103	320	n/a	60
Creekside	n/a	Kaweah	Mill Creek	City of Visalia	8	59.7	33	1
Goshen Pit	12	Kaweah	North Mill Creek	City of Visalia	12	185	10	5
Machado	6	Kaweah	Packwood Creek	Kaweah Delta WCD	166	665	120	80
Corcoran Hwy.	8	Kaweah	Packwood Creek	Kaweah Delta WCD	120	480	150	40
Tagus	11	Kaweah	Packwood Creek	Kaweah Delta WCD	80	800	250	150
Packwood	4	Kaweah	South Mill Creek	City of Visalia	160	800	125	35
Corcoran Basins 1,2,3	n/a	St. Johns	Cross Creek	Corcoran DC	2400	9000	700	200
Doe-Goshen	28	St. Johns	Goshen Ditch	Private Landowner	20	80	25	10
Harrell	30	St. Johns	Harrell No. 1	Private Landowner	50	200	35	40
Lakeside	10	St. Johns	Lakeside Ditch	Kaweah Delta WCD	187	800	75	150
Howe	15	St. Johns	Lakeside Ditch	Kaweah Delta WCD	52.5	208	50	15
Green	23	St. Johns	Lakeside Ditch	Kaweah Delta WCD	4	12	6	1
Lakeside Basin No. 1	n/a	St. Johns	Lakeside Ditch	Lakeside DC	320	1000	289	60
Lakeside Basin No. 2	n/a	St. Johns	Lakeside Ditch	Lakeside DC	64	180	20	30
Willow School	5	St. Johns	Modoc Ditch	Modoc Ditch Co.	50	200	25	25
Goshen (Doe)	9	St. Johns	Modoc Ditch	Private Landowner	40	160	15	10
Shannon-Modoc	22	St. Johns	Modoc Ditch	Private Landowner	10	50	20	4
Doe-Ritchie	26	St. Johns	Modoc Ditch	Private Landowner	20	80	10	10
					4929			

Developing Recharge Basin Inventory

Basin Name	No.	River System	Supply Channel	Owner	Acreage	Capacity (A.F.)	Inflow Capacity (CFS)	Perc A.F. per Day*
Paregien	108	Kaweah	Deep Creek	Kaweah Delta WCD	78.5	n/a	n/a	n/a
Hannah Ranch South	n/a	Kaweah	Lower Kaweah	Private Landowner	n/a	n/a	n/a	n/a
Peoples	99	Kaweah	Lower Kaweah River	Kaweah Delta WCD	40	n/a	n/a	n/a
Hannah Ranch North	109	Kaweah	Lower Kaweah River	Kaweah Delta WCD	398	n/a	n/a	n/a
Curtis	107	St. Johns	St. Johns River	Kaweah Delta WCD	95.6	n/a	n/a	n/a
S/K-Vander Stelt	111	St. Johns	St. Johns River	City of Visalia	94.7	n/a	n/a	n/a
Garner (Kit Carson)	n/a	St. Johns	Settlers Ditch	LIWD/KCWD/KDWCD	55	n/a	n/a	n/a

* Estimate only

PLATE 3 - Groundwater Recharge Facilities



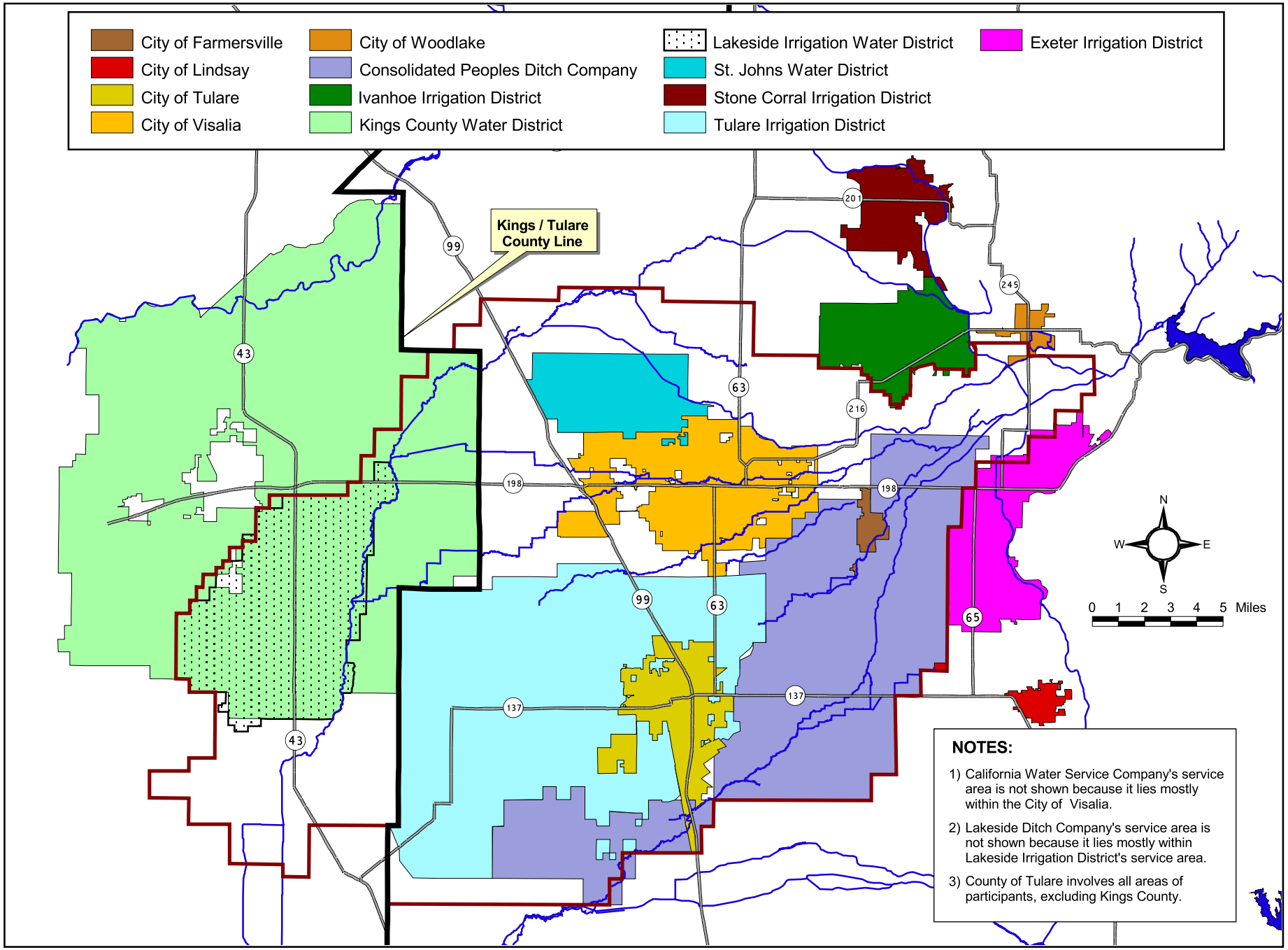


PLATE 4: Groundwater Management Plan Area

APPENDIX -A-

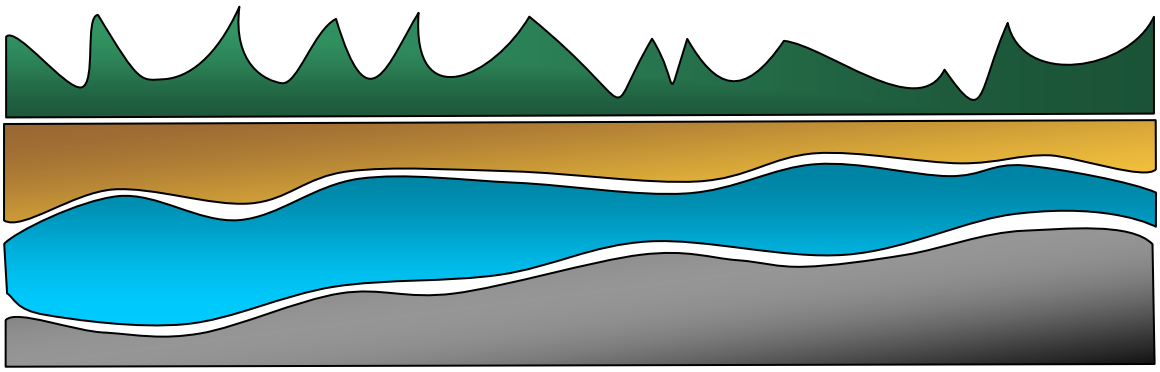
2008 Annual Groundwater Report

KAWEAH DELTA

Water Conservation

DISTRICT

2010 ANNUAL GROUNDWATER REPORT



2010 ANNUAL GROUNDWATER REPORT

This report has been prepared by Kaweah Delta Water Conservation District and presents groundwater measurements that were taken throughout the District. This information is intended to provide the District Board of Directors and participants with groundwater data that will allow for the evaluation of past and current groundwater conditions within the District.

The groundwater measurements were taken in the months of February and October for spring and fall, respectively, at wells located within the Kaweah Delta Water Conservation District boundaries. The data was collected by Kaweah Delta Water Conservation District, Kings County Water District and Tulare Irrigation District.

Many groundwater measurements were taken, but only the groundwater depths from well sites in each respective season of 2009 and 2010 were compared within the District. The spring 2010 average comparable depth to groundwater was approximately 116.0 ft., which reflected a groundwater level decline of 0.5 ft. from the prior year. The fall 2010 average comparable depth to groundwater was approximately 122.5 ft., which reflected a groundwater level rise of 11.9 ft. from the prior year.

TABLE OF CONTENTS

KAWEAH DELTA WATER CONSERVATION DISTRICT

WATER YEAR 2009 - 2010
PRELIMINARY REPORT

WATER SUPPLY (AC-FT)

TERMINUS INFLOW	577,432
CREEK FLOW	12,533
CVP	149,147
KINGS RIVER	3,223
TOTAL	**742,335**

Terminus inflow of **577,432 AF was 135%** of the long term average, beginning at the 1904 Water Year.

The April - July flow of **413,562 AF was 146%** of the long term April - July average, beginning at the 1904 Water Year.

Creek Flow is the water year totals of Dry Creek, Yokohl Creek, and Cottonwood Creek.

KAWEAH DELTA WATER CONSERVATION DISTRICT

AVERAGE GROUND WATER CHANGES (AGENCY)

SPRING 2009 - 2010 COMPARISON

AGENCY CODE	NUMBER OF WELLS MEASURED SPRING 2010	NUMBER OF WELLS COMPARED TO SPRING 2009	AVERAGE CHANGE IN GROUNDWATER DEPTH
5129	17	17	-1.3
5603	87	80	2.1
5604	93	77	-2.1
5627	17	17	-4.4
COMBINED	**214**	**191**	**-0.5**

FALL 2009 - 2010 COMPARISON

AGENCY CODE	NUMBER OF WELLS MEASURED FALL 2010	NUMBER OF WELLS COMPARED TO FALL 2009	AVERAGE CHANGE IN GROUNDWATER DEPTH
5129	17	16	2.6
5603	110	87	15.1
5604	97	76	10.6
5627	19	19	10.5
COMBINED	**243**	**198**	**11.9**

AGENCY CODE	AGENCY DESCRIPTION
5129	Kings County Water District
5603	Kaweah Delta Water Conservation District
5604	Tulare Irrigation District
5627	Lakeside Irrigation Water District

KAWEAH DELTA WATER CONSERVATION DISTRICT

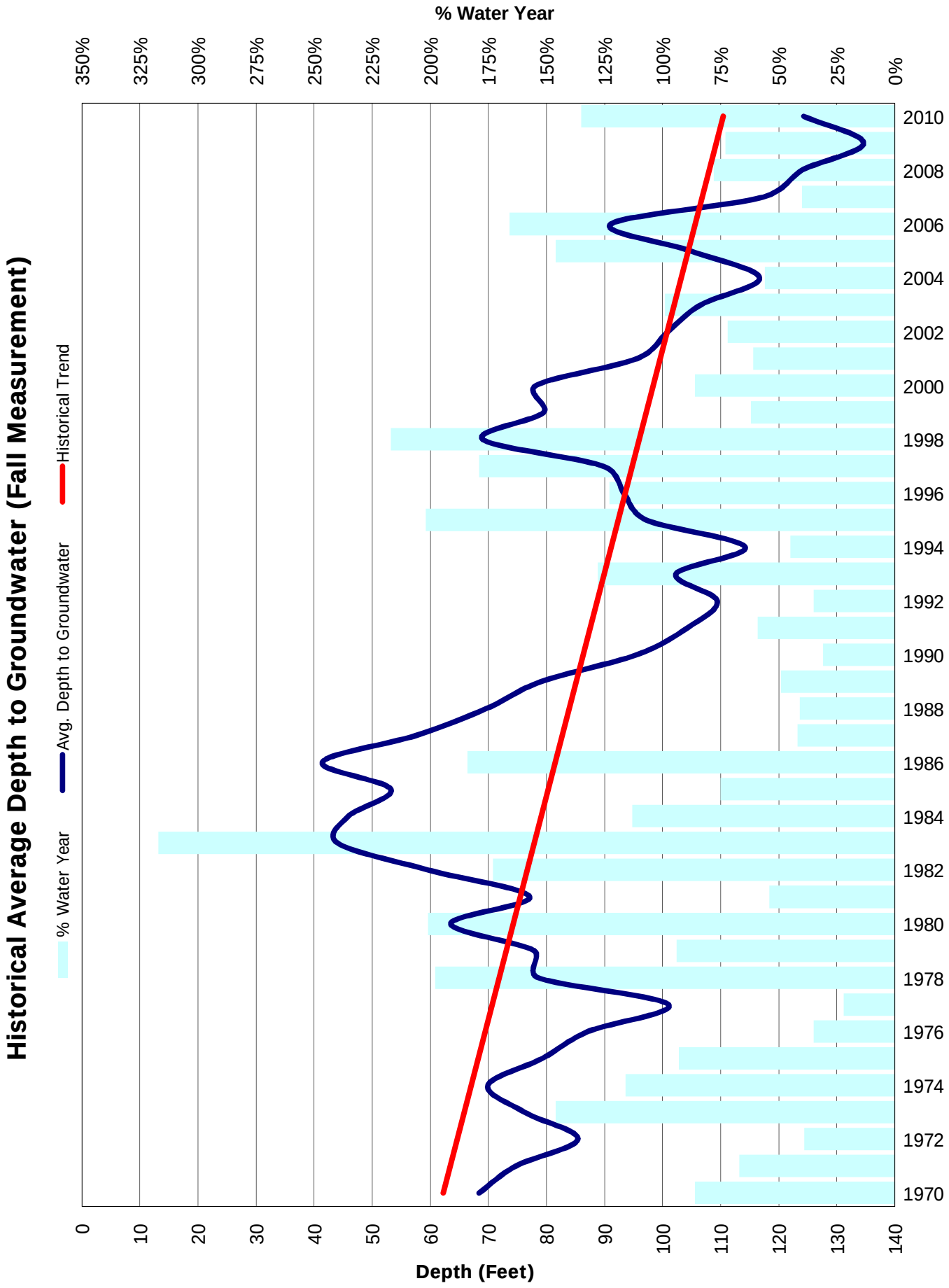
AVERAGE GROUND WATER CHANGES (HYDROLOGIC ZONES)

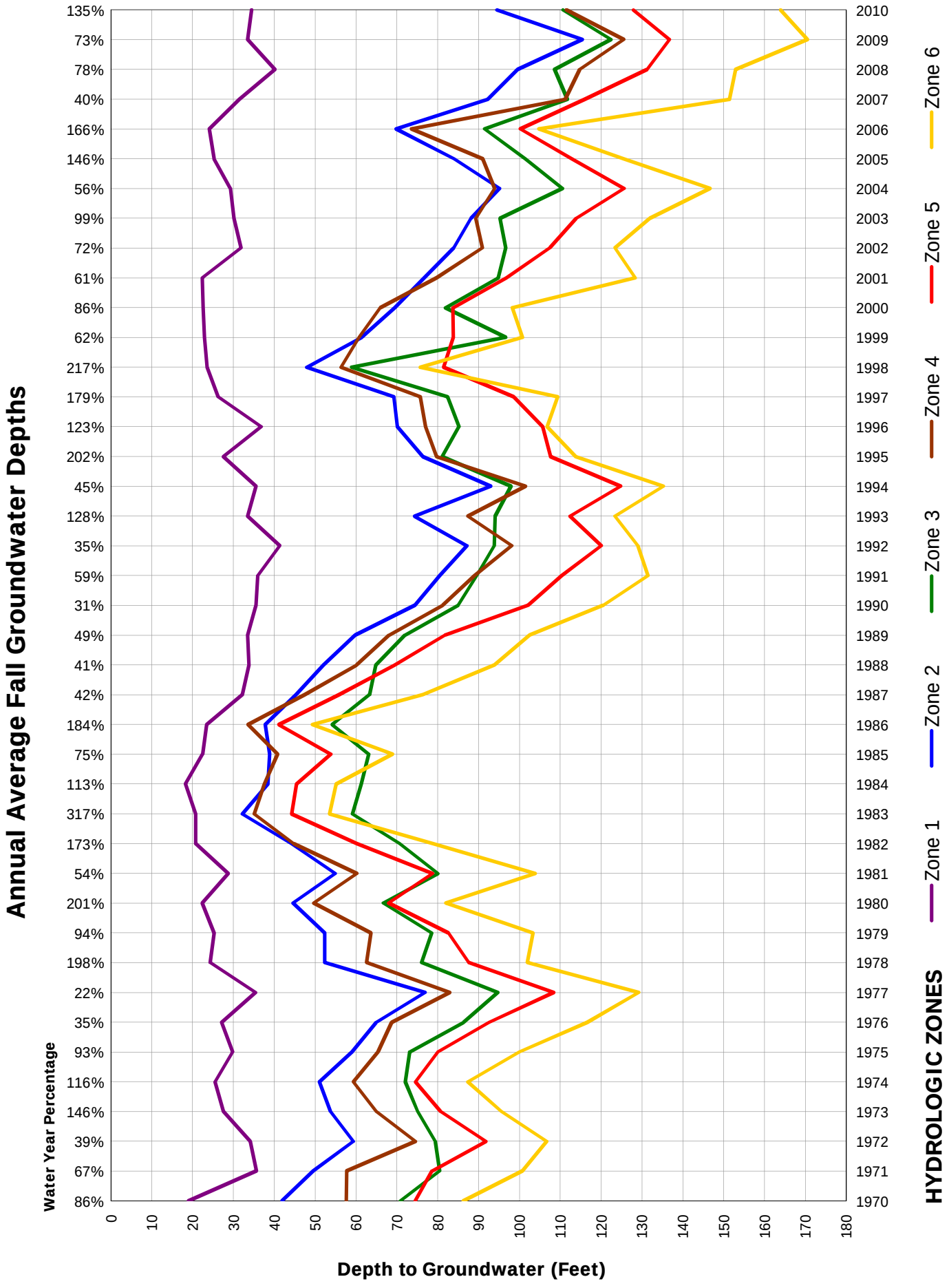
SPRING 2009- SPRING 2010

HYDROLOGIC ZONE	NUMBER OF WELLS COMPARED	SPRING 2009 AVERAGE DEPTH TO WATER	SPRING 2010 AVERAGE DEPTH TO WATER	AVERAGE CHANGE IN DEPTH
1	12	34.3	31.2	3.2
2	23	99.5	99.0	0.5
3	18	103.1	101.8	1.3
4	25	106.5	102.5	3.9
5	76	126.8	128.3	-1.5
6	37	141.0	145.0	-4.0
TOTAL	**191**	**115.6**	**116.0**	**-0.5**

FALL 2009 - FALL 2010

HYDROLOGIC ZONE	NUMBER OF WELLS COMPARED	FALL 2009 AVERAGE DEPTH TO WATER	FALL 2010 AVERAGE DEPTH TO WATER	AVERAGE CHANGE IN DEPTH
1	8	34.3	32.8	1.5
2	20	112.5	94.6	17.8
3	17	120.4	109.9	10.5
4	29	124.1	110.3	13.8
5	79	137.2	125.3	11.9
6	45	169.1	158.6	10.6
TOTAL	**198**	**134.4**	**122.5**	**11.9**


Historical Average Depth to Groundwater (Fall Measurement)
% Water Year
350%
325%
300%
275%
250%
225%
200%
175%
150%
125%
100%
75%
50%
25%
0%
% Water Year
Avg. Depth to Groundwater
Historical Trend
2010
2008
2006
2004
2002
2000
1998
1996
1994
1992
1990
1988
1986
1984
1982
1980
1978
1976
1974
1972
1970
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
Depth (Feet)


Annual Average Fall Groundwater Depths
Water Year Percentage
135%
73%
78%
40%
166%
146%
56%
99%
72%
61%
86%
62%
217%
179%
123%
202%
45%
128%
35%
59%
31%
49%
41%
42%
184%
75%
113%
317%
173%
54%
201%
94%
198%
22%
35%
93%
116%
146%
39%
67%
86%
2010
2009
2008
2007
2006
2005
2004
2003
2002
2001
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1972
1971
1970
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
180
Depth to Groundwater (Feet)
HYDROLOGIC ZONES
Zone 1
Zone 2
Zone 3
Zone 4
Zone 5
Zone 6

KAWEAH DELTA WATER CONSERVATION DISTRICT

AVERAGE DEPTH TO GROUNDWATER (FALL)

(DATA FROM NEW HYDROLOGIC ZONES)

Year	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	District	% WY
1970	19.0	41.9	70.9	57.6	74.5	86.3	68.4	86%
1971	35.6	49.5	80.5	57.7	78.6	100.8	74.7	67%
1972	34.1	59.4	79.4	74.5	91.8	106.7	85.4	39%
1973	27.5	53.7	75.1	65.0	80.7	95.6	76.2	146%
1974	25.5	51.0	72.1	59.3	74.6	87.4	69.9	116%
1975	29.8	59.0	73.1	65.4	80.0	100.0	79.3	93%
1976	27.1	65.0	86.3	68.7	92.6	116.6	87.2	35%
1977	35.4	76.9	94.7	83.0	108.4	129.2	101.0	22%
1978	24.3	52.3	76.1	62.6	87.6	101.9	78.5	198%
1979	25.3	52.3	78.5	63.7	82.6	103.3	77.9	94%
1980	22.4	44.6	66.7	49.7	68.0	82.0	63.5	201%
1981	28.7	54.9	80.1	60.2	78.8	103.9	77.1	54%
1982	20.8	44.1	70.7	44.7	60.2	78.8	59.6	173%
1983	20.8	32.2	59.1	35.1	44.3	53.5	44.0	317%
1984	18.3	38.4	61.3	37.6	45.4	55.1	45.9	113%
1985	22.5	38.9	63.1	40.8	53.8	69.0	53.2	75%
1986	23.4	37.8	54.2	33.6	41.1	49.3	41.4	184%
1987	32.2	45.3	63.3	47.5	55.9	76.4	57.6	42%
1988	33.8	52.0	64.8	60.1	69.4	93.8	69.7	41%
1989	33.5	59.8	72.0	68.1	81.8	102.5	79.1	49%
1990	35.5	74.4	85.0	81.2	102.1	120.6	95.6	31%
1991	36.0	80.5	89.5	89.0	110.3	131.5	104.3	59%
1992	41.3	87.2	93.8	98.2	120.1	129.0	109.4	35%
1993	33.5	74.3	94.1	87.4	112.4	123.4	102.3	128%
1994	35.5	93.0	98.0	101.5	124.8	135.2	114.2	45%
1995	27.6	76.4	81.1	79.7	107.6	113.8	97.2	202%
1996	36.8	70.1	85.2	77.0	105.7	106.8	93.3	123%
1997	26.3	69.3	82.4	75.7	98.6	109.4	89.8	179%
1998	23.6	47.9	58.9	56.3	81.5	75.7	69.0	217%
1999	22.9	61.4	96.7	60.7	83.8	100.7	79.5	62%
2000	22.6	69.5	81.9	65.9	83.7	98.3	78.2	86%
2001	22.4	76.7	94.8	79.7	96.8	128.3	95.6	61%
2002	31.9	83.9	96.7	90.9	107.4	123.4	100.9	72%
2003	30.1	88.1	95.2	89.3	113.9	131.9	106.6	99%
2004	29.3	95.1	110.6	94.0	125.7	146.7	116.7	56%
2005	25.3	84.0	101.5	91.1	112.9	125.5	104.8	146%
2006	24.1	69.8	91.5	73.6	100.2	104.7	91.1	166%
2007	31.4	92.2	111.7	111.2	115.9	151.4	117.3	40%
2008	40.2	99.6	108.6	114.8	131.3	152.9	124.0	78%
2009	33.5	115.4	122.4	125.6	136.8	170.5	134.6	73%
2010	34.4	94.5	110.7	111.5	127.9	163.9	124.3	135%

KAWEAH DELTA WATER CONSERVATION DISTRICT

WELLS REMOVED FROM LAST YEAR'S ANNUAL REPORT

AGENCY CODE	WELL NUMBER	HYDROLOGIC ZONE	AGENCY CODE	WELL NUMBER	HYDROLOGIC ZONE
5603	20S25E14F001M	4			
5603	20S25E14F002M	4			

WELLS ADDED FROM LAST YEAR'S ANNUAL REPORT

AGENCY CODE	WELL NUMBER	HYDROLOGIC ZONE	AGENCY CODE	WELL NUMBER	HYDROLOGIC ZONE
5603	18S24E15R003M	2	5603	19S22E16A003M	6
5603	18S24E22E001M	2	5603	18S26E01Q003M	1
5603	18S24E35K001M	3			

KAWEAH DELTA WATER CONSERVATION DISTRICT
GROUNDWATER DATA

WELL IDENTIFICATION			DEPTH TO WATER (FEET)					
			SPRING			FALL		
AGENCY CODE	WELL NUMBER	HYDROLOGIC ZONE	SPRING 2009	SPRING 2010	SPRING CHANGE	FALL 2009	FALL 2010	FALL CHANGE
5603	17S23E27L001M	2	95.5	102.5	-7.0	150.5	108.5	42.0
5603	17S23E34J001M	2	94.0	92.0	2.0	98.0	91.0	7.0
5603	17S24E20L001M	2	39.5	42.5	-3.0	62.5	34.5	28.0
5603	17S24E27F001M	2			N/A	69.2	63.2	6.0
5603	17S24E34B001M	2	74.5	88.5	-14.0	72.5	65.5	7.0
5603	17S24E36H003M	2	96.5	107.5	-11.0	90.5	98.5	-8.0
5603	17S25E29E001M	2	189.0		N/A	191.0		N/A
5603	17S26E36R001M	1	36.5	23.0	13.5	41.5		N/A
5603	18S22E32J001M	6	148.2	149.2	-1.0	156.2		N/A
5603	18S22E34R001M	6	100.7	101.7	-1.0	102.7	99.7	3.0
5603	18S23E02Q001M	2	124.5	109.5	15.0		113.5	N/A
5603	18S23E14A001M	2	146.0	149.0	-3.0	198.0	136.0	62.0
5129	18S23E15A001M	2	111.9	109.6	2.3	124.8	124.9	-0.1
5129	18S23E21J001M	6	123.0	122.8	0.2	160.2	158.0	2.2
5603	18S23E24K001M	2	114.7	119.7	-5.0	138.7	129.7	9.0
5603	18S23E26F001M	3	134.4		N/A	157.4	141.4	16.0
5129	18S23E26L001M	3	129.6	122.5	7.1	132.1	138.1	-6.0
5129	18S23E27P001M	3	124.2	120.1	4.1	127.1	143.0	-15.9
5129	18S23E28B001M	6	108.1	108.4	-0.3	114.8	115.5	-0.7
5129	18S23E28R001M	6	118.7	125.4	-6.7	125.5	125.1	0.4
5603	18S23E30D001M	6		121.0	N/A	286.0	204.0	82.0
5129	18S23E32B001M	6	147.1	141.1	6.0	179.1	158.3	20.8
5129	18S23E33C001M	6	116.3	116.1	0.2	122.7	123.0	-0.3
5603	18S23E33J001M	6	151.5		N/A	135.5	125.5	10.0
5129	18S23E34A001M	3	127.7	122.8	4.9	138.4	146.0	-7.6
5603	18S23E34A002M	3	138.0		N/A	167.0	151.0	16.0
5603	18S24E02H001M	2	98.5	106.5	-8.0	104.5	95.5	9.0
5603	18S24E04J001M	2	95.5	90.5	5.0	124.5		N/A
5603	18S24E06H001M	2	86.0	84.0	2.0		81.0	N/A
5603	18S24E07H001M	2	110.5	99.5	11.0	154.5	115.5	39.0
5603	18S24E10J001M	2	98.5	94.5	4.0	130.5	88.5	42.0
5603	18S24E13H002M	2	120.0	109.0	11.0	130.0	78.0	52.0
5603	18S24E13N001M	2	109.0	96.0	13.0	109.0	90.0	19.0
5603	18S24E15R003M	2		118.0	N/A		102.0	N/A
5603	18S24E17L001M	2	102.0		N/A	117.0	88.0	29.0
5603	18S24E22E001M	2			N/A		100.0	N/A
5603	18S24E25D001M	3	115.0	112.0	3.0	121.0	112.0	9.0
5603	18S24E31C001M	3	129.5	118.5	11.0	139.5		N/A
5603	18S24E35K001M	3			N/A			N/A

KAWEAH DELTA WATER CONSERVATION DISTRICT
GROUNDWATER DATA

WELL IDENTIFICATION			DEPTH TO WATER (FEET)					
			SPRING			FALL		
AGENCY CODE	WELL NUMBER	HYDROLOGIC ZONE	SPRING 2009	SPRING 2010	SPRING CHANGE	FALL 2009	FALL 2010	FALL CHANGE
5603	18S25E04H001M	2	103.0	115.0	-12.0	107.0	119.0	-12.0
5603	18S25E05E002M	2	109.0	107.0	2.0	117.0	99.0	18.0
5603	18S25E05Q001M	2	109.0	112.0	-3.0	106.0	97.0	9.0
5603	18S25E12N001M	2	66.0	70.0	-4.0		71.0	N/A
5603	18S25E15A002M	2		89.0	N/A	89.0	92.0	-3.0
5603	18S25E15C001M	2	87.0	78.0	9.0	80.0	78.0	2.0
5603	18S25E16B001M	2	96.0	85.0	11.0	89.0		N/A
5603	18S25E18A001M	2	95.0		N/A			N/A
5603	18S25E19H001M	2	103.0	108.0	-5.0		96.0	N/A
5603	18S25E23J001M	3	68.0	60.5	7.5	85.0	48.0	37.0
5603	18S25E28R001M	3	70.0	76.0	-6.0	72.0	72.0	0.0
5603	18S25E30Q001M	3	111.0	107.0	4.0	111.0	111.0	0.0
5603	18S25E33R001M	3	93.5	94.5	-1.0			N/A
5603	18S26E01Q003M	1		17.5	N/A		18.0	N/A
5603	18S26E02D002M	1	59.0	60.0	-1.0	52.0	60.0	-8.0
5603	18S26E09H001M	1	35.5	30.5	5.0	36.5	30.5	6.0
5603	18S26E10J001M	1	30.0	26.0	4.0			N/A
5603	18S26E16K001M	1	20.0	20.0	0.0	15.0	23.0	-8.0
5603	18S26E17L001M	1	29.0	24.0	5.0	27.0	31.0	-4.0
5603	18S26E19B002M	3	49.5	45.5	4.0	62.5	47.5	15.0
5603	18S26E24J002M	1	57.0	51.0	6.0	67.0	62.0	5.0
5603	18S26E24J003M	1	58.5	54.0	4.5		63.5	N/A
5603	18S26E27B001M	1	24.0	25.5	-1.5	28.0	21.0	7.0
5603	18S26E30N001M	3	51.5	49.5	2.0	57.5	53.5	4.0
5603	18S26E32A001M	4	40.0	33.0	7.0	49.0	25.0	24.0
5603	18S27E05J001M	1	19.5	17.5	2.0	19.5	15.5	4.0
5603	18S27E07B001M	1	22.0	21.0	1.0	29.0	19.0	10.0
5603	18S27E07R002M	1	21.0	21.5	-0.5	19.0		N/A
5603	19S21E13A001M	6	177.6		N/A			N/A
5603	19S21E13C003M	6	158.0		N/A			N/A
5627	19S21E25J001M	6	107.5	121.5	-14.0	116.5	103.8	12.7
5627	19S21E26B001M	6	167.1	168.4	-1.3	211.0	190.1	20.9
5603	19S21E34D001M	6			N/A			N/A
5627	19S21E36M001M	6	41.7	42.5	-0.8	45.8	44.4	1.4
5603	19S22E01N002M	6	99.5		N/A	132.5		N/A
5603	19S22E02K001M	6	102.8	111.8	-9.0	78.8	106.8	-28.0
5627	19S22E04B001M	6	115.9	122.3	-6.4	126.5	127.8	-1.3
5129	19S22E04M001M	6	114.0	122.5	-8.5	124.8	124.7	0.1
5603	19S22E08D002M	6	148.0	166.0	-18.0	229.0	206.0	23.0

KAWEAH DELTA WATER CONSERVATION DISTRICT
GROUNDWATER DATA

WELL IDENTIFICATION			DEPTH TO WATER (FEET)					
			SPRING			FALL		
AGENCY CODE	WELL NUMBER	HYDROLOGIC ZONE	SPRING 2009	SPRING 2010	SPRING CHANGE	FALL 2009	FALL 2010	FALL CHANGE
5603	19S22E09J001M	6			N/A	111.0	109.0	2.0
5603	19S22E10R002M	6	103.5		N/A		146.5	N/A
5627	19S22E15M001M	6	112.5	122.6	-10.1	124.0	126.4	-2.4
5603	19S22E16A003M	6			N/A		106.5	N/A
5603	19S22E17E001M	6			N/A	115.6	128.6	-13.0
5603	19S22E17L001M	6			N/A			N/A
5627	19S22E19M001M	6	118.5		N/A	140.0	142.4	-2.4
5603	19S22E21C001M	6	129.0		N/A	188.0	128.0	60.0
5603	19S22E22A001M	6			N/A			N/A
5603	19S22E23A001M	6	103.5		N/A	110.5	117.5	-7.0
5603	19S22E24B001M	6	128.8		N/A	135.8	109.8	26.0
5603	19S22E28D001M	6	144.0	107.0	37.0	148.0	118.0	30.0
5603	19S22E30D001M	6			N/A	118.5		N/A
5603	19S22E31B002M	6	121.0	110.0	11.0	164.0		N/A
5627	19S22E32D001M	6	174.9	155.3	19.6	226.0	229.3	-3.3
5603	19S22E34L001M	6	134.5		N/A	134.5		N/A
5129	19S22E36E001M	6	119.9	137.6	-17.7	134.9	131.3	3.6
5603	19S23E02F001M	3	122.5	133.5	-11.0	201.5	119.5	82.0
5603	19S23E06H001M	6			N/A	159.0	136.0	23.0
5603	19S23E07A002M	6			N/A			N/A
5129	19S23E08J001M	6	148.9	148.0	0.9	162.5	153.8	8.7
5129	19S23E10C001M	3	100.4	101.3	-0.9	117.0	116.9	0.1
5129	19S23E10D001M	3	104.3	108.5	-4.2		114.0	N/A
5603	19S23E10Q001M	3	127.4		N/A	139.4		N/A
5129	19S23E11C001M	3	112.5	114.6	-2.1	126.9	114.5	12.4
5603	19S23E11C001M	3			N/A		120.5	N/A
5603	19S23E12L001M	3	109.4	111.4	-2.0	124.4	113.4	11.0
5604	19S23E13A003M	5	125.0	132.0	-7.0	147.0	122.0	25.0
5604	19S23E19H001M	5	110.0	120.0	-10.0	123.0	111.0	12.0
5604	19S23E20C001M	5	120.0	121.0	-1.0	122.0	118.0	4.0
5603	19S23E21C001M	5			N/A	137.4	135.4	2.0
5604	19S23E21P001M	5		114.0	N/A	118.0	111.0	7.0
5603	19S23E22H001M	5	116.6	116.6	0.0	122.6	95.6	27.0
5604	19S23E23D001M	5	114.0	108.0	6.0	114.0	101.0	13.0
5604	19S23E24L001M	5	122.0	114.0	8.0	122.0	106.0	16.0
5604	19S23E25C001M	5		118.0	N/A	123.0	111.0	12.0
5604	19S23E25L002M	5	122.0	135.0	-13.0	139.0	125.0	14.0
5604	19S23E26B001M	5	103.0	99.0	4.0	105.0	84.0	21.0
5604	19S23E27A001M	5	110.0		N/A	109.0	87.0	22.0

KAWEAH DELTA WATER CONSERVATION DISTRICT
GROUNDWATER DATA

WELL IDENTIFICATION			DEPTH TO WATER (FEET)					
			SPRING			FALL		
AGENCY CODE	WELL NUMBER	HYDROLOGIC ZONE	SPRING 2009	SPRING 2010	SPRING CHANGE	FALL 2009	FALL 2010	FALL CHANGE
5604	19S23E27P001M	5	113.0	128.0	-15.0	126.0	90.0	36.0
5604	19S23E30H002M	5	116.0	126.0	-10.0	134.0	106.0	28.0
5604	19S23E31R001M	5	117.0	120.0	-3.0	124.0	122.0	2.0
5604	19S23E32H001M	5	124.0	148.0	-24.0	143.0	134.0	9.0
5604	19S23E34L001M	5	111.0		N/A			N/A
5604	19S23E35H001M	5	111.0	112.0	-1.0	126.0	95.0	31.0
5603	19S24E08D002M	5	113.0	107.0	6.0	107.0	108.0	-1.0
5604	19S24E10G001M	3	128.0	126.0	2.0	136.0	129.0	7.0
5604	19S24E13C002M	5	122.0	124.0	-2.0	133.0	125.0	8.0
5604	19S24E14A001M	5	126.0	133.0	-7.0		145.0	N/A
5604	19S24E17A001M	5	137.0	151.0	-14.0	164.0	144.0	20.0
5604	19S24E17N001M	5	137.0	141.0	-4.0	169.0	138.0	31.0
5603	19S24E18J001M	5	135.6	135.6	0.0	162.6	183.6	-21.0
5604	19S24E18R001M	5		153.0	N/A		147.0	N/A
5604	19S24E19L001M	5	138.0	128.0	10.0	151.0	129.0	22.0
5604	19S24E20J001M	5	146.0	140.0	6.0	156.0	146.0	10.0
5603	19S24E22C001M	5			N/A			N/A
5604	19S24E22C002M	5		143.0	N/A		124.0	N/A
5604	19S24E22P001M	5	138.0	136.0	2.0	146.0	137.0	9.0
5604	19S24E23D001M	5	142.0	134.0	8.0	143.0	139.0	4.0
5604	19S24E24A003M	5	118.0	122.0	-4.0	136.0	127.0	9.0
5604	19S24E25D001M	5		133.0	N/A	103.0	133.0	-30.0
5604	19S24E27H001M	5	134.0	142.0	-8.0	137.0	134.0	3.0
5604	19S24E27Q001M	5	142.0	136.0	6.0	151.0	146.0	5.0
5604	19S24E28H001M	5		164.0	N/A	168.0	140.0	28.0
5604	19S24E29D001M	5	144.0	123.0	21.0	155.0	121.0	34.0
5604	19S24E29R001M	5		144.0	N/A	154.0	143.0	11.0
5604	19S24E30J001M	5		135.0	N/A			N/A
5604	19S24E31E001M	5	157.0	145.0	12.0	170.0	159.0	11.0
5603	19S24E31K001M	5	151.7		N/A	153.7	153.7	0.0
5604	19S24E33A002M	5	140.0	136.0	4.0	149.0	144.0	5.0
5604	19S24E33H001M	5	149.0	141.0	8.0	154.0	149.0	5.0
5604	19S24E36R001M	5	151.0	159.0	-8.0		157.0	N/A
5603	19S25E01P001M	4	63.5		N/A	54.5	59.5	-5.0
5603	19S25E02A001M	4	63.0		N/A	69.0		N/A
5603	19S25E06A001M	3	109.0	109.0	0.0	110.0	112.0	-2.0
5603	19S25E09H001M	4	90.0		N/A	98.0	106.0	-8.0
5603	19S25E10R001M	4	88.5	46.5	42.0	110.5	97.5	13.0
5603	19S25E13A002M	4	67.0		N/A	122.0		N/A

KAWEAH DELTA WATER CONSERVATION DISTRICT
GROUNDWATER DATA

WELL IDENTIFICATION			DEPTH TO WATER (FEET)					
			SPRING			FALL		
AGENCY CODE	WELL NUMBER	HYDROLOGIC ZONE	SPRING 2009	SPRING 2010	SPRING CHANGE	FALL 2009	FALL 2010	FALL CHANGE
5603	19S25E16A002M	4		92.0	N/A	101.0	92.0	9.0
5604	19S25E19B001M	5	110.0	112.0	-2.0	112.0	111.0	1.0
5604	19S25E20P001M	5	105.0	88.0	17.0	108.0	72.0	36.0
5603	19S25E24M001M	4			N/A			N/A
5603	19S25E27A001M	4	100.0	93.0	7.0	138.0	90.0	48.0
5603	19S25E28H001M	4	94.0	110.0	-16.0	115.0	102.0	13.0
5604	19S25E29B001M	5	104.0	68.0	36.0	96.0		N/A
5604	19S25E30C001M	5	117.0	118.0	-1.0	126.0	120.0	6.0
5603	19S25E32J001M	4	118.0		N/A			N/A
5603	19S25E34A002M	4	112.0		N/A	107.0	116.0	-9.0
5603	19S25E35B002M	4	73.5	98.5	-25.0		90.5	N/A
5603	19S26E03A001M	4	80.0	80.0	0.0	75.0	83.0	-8.0
5603	19S26E05C001M	4	43.0	47.0	-4.0	45.0	33.0	12.0
5603	19S26E05N001M	4	62.8	59.8	3.0		55.8	N/A
5603	19S26E16J002M	4		86.5	N/A		93.5	N/A
5603	19S26E17L001M	4	83.5		N/A	87.5	88.5	-1.0
5603	19S26E20A001M	4	70.5	76.5	-6.0	103.5	95.5	8.0
5603	19S26E21J001M	4			N/A			N/A
5603	19S26E28D001M	4	74.0	94.0	-20.0	99.0	101.0	-2.0
5603	19S26E30D001M	4	90.0	85.0	5.0	98.0	81.0	17.0
5603	19S26E33C001M	4	64.0		N/A	89.0	99.0	-10.0
5603	19S26E33M001M	4	66.0	80.0	-14.0	82.0		N/A
5627	20S21E11D001M	6			N/A	302.4	270.9	31.5
5627	20S21E11N001M	6			N/A	296.0	267.0	29.0
5603	20S21E24F001M	6	243.0	292.0	-49.0	225.0	301.0	-76.0
5603	20S21E36P001M	6	291.0		N/A		292.0	N/A
5604	20S22E01H001M	6	126.0	150.0	-24.0	154.0	138.0	16.0
5627	20S22E01Q001M	6	97.4	139.4	-42.0	152.5	138.0	14.5
5627	20S22E02C001M	6	153.6	148.8	4.8	143.8	142.5	1.3
5603	20S22E03C002M	6	134.0	135.0	-1.0	120.0	138.0	-18.0
5627	20S22E03P001M	6	127.5	135.4	-7.9	145.0	136.4	8.6
5603	20S22E04C001M	6	119.0		N/A	210.0		N/A
5627	20S22E04D001M	6	102.7	114.5	-11.8	119.8	115.7	4.1
5627	20S22E05L001M	6	187.8	174.2	13.6	286.8	256.2	30.6
5627	20S22E06C001M	6	176.0	170.0	6.0	164.2		N/A
5627	20S22E06H001M	6	185.5	182.2	3.3	260.2	258.2	2.0
5603	20S22E07A003M	6	216.0		N/A	297.0	233.0	64.0
5627	20S22E07A004M	6	201.2	214.4	-13.2	263.9	257.5	6.4
5603	20S22E08A002M	6	173.0	197.0	-24.0	248.0		N/A

KAWEAH DELTA WATER CONSERVATION DISTRICT
GROUNDWATER DATA

WELL IDENTIFICATION			DEPTH TO WATER (FEET)					
			SPRING			FALL		
AGENCY CODE	WELL NUMBER	HYDROLOGIC ZONE	SPRING 2009	SPRING 2010	SPRING CHANGE	FALL 2009	FALL 2010	FALL CHANGE
5627	20S22E08J001M	6	99.3	133.9	-34.6	162.9	154.7	8.2
5627	20S22E09H001M	6	197.8	180.0	17.8	212.1	190.4	21.7
5603	20S22E13C002M	6	189.5		N/A		219.5	N/A
5603	20S22E14C001M	6	266.5		N/A		228.5	N/A
5627	20S22E20A002M	6	107.6	104.5	3.1	113.8	98.5	15.3
5603	20S22E23M001M	6			N/A		263.5	N/A
5603	20S22E24R001M	6			N/A			N/A
5604	20S22E25R001M	6	138.0	153.0	-15.0	160.0	153.0	7.0
5603	20S22E27A001M	6			N/A			N/A
5603	20S22E33F001M	6			N/A			N/A
5603	20S22E35L001M	6			N/A			N/A
5603	20S22E36A001M	5			N/A	180.0	145.0	35.0
5604	20S23E02H001M	5	112.0	127.0	-15.0		127.0	N/A
5604	20S23E03L001M	5	121.0	133.0	-12.0	129.0	115.0	14.0
5604	20S23E04F001M	5	125.0	130.0	-5.0	135.0	127.0	8.0
5129	20S23E05J001M	5	127.2	133.2	-6.0	139.9	131.1	8.8
5604	20S23E07H003M	5	153.0	159.0	-6.0		137.0	N/A
5129	20S23E08G001M	5	133.0	134.9	-1.9	150.5	135.7	14.8
5604	20S23E08H001M	5	136.0	142.0	-6.0		136.0	N/A
5604	20S23E09J002M	5	126.0	120.0	6.0	131.0	111.0	20.0
5603	20S23E11C001M	5			N/A	136.6		N/A
5604	20S23E11L001M	5	130.0	137.0	-7.0	141.0	133.0	8.0
5604	20S23E12A001M	5	120.0	129.0	-9.0	133.0	122.0	11.0
5604	20S23E13E002M	5	132.0	134.0	-2.0	131.0	133.0	-2.0
5604	20S23E15A001M	5	128.0	133.0	-5.0	139.0	123.0	16.0
5604	20S23E16J001M	5		130.0	N/A	140.0	122.0	18.0
5604	20S23E17C001M	5	149.0	155.0	-6.0		144.0	N/A
5604	20S23E18R001M	5	153.0	172.0	-19.0	170.0	160.0	10.0
5604	20S23E19J001M	5		178.0	N/A	172.0	161.0	11.0
5604	20S23E21B001M	5		152.0	N/A	148.0	139.0	9.0
5604	20S23E24L001M	5	135.0	134.0	1.0		141.0	N/A
5604	20S23E25J002M	4	155.0	155.0	0.0	156.0	162.0	-6.0
5604	20S23E26C001M	5	160.0	156.0	4.0		135.0	N/A
5604	20S23E26R001M	5	120.0	134.0	-14.0	129.0	123.0	6.0
5604	20S23E27D001M	5	131.0	142.0	-11.0	139.0	134.0	5.0
5604	20S23E27R001M	5	121.0	129.0	-8.0	146.0		N/A
5604	20S23E29J002M	5	145.0	146.0	-1.0	147.0	142.0	5.0
5604	20S23E30R001M	5	158.0		N/A		167.0	N/A
5604	20S24E04E001M	5	145.0	134.0	11.0		138.0	N/A

KAWEAH DELTA WATER CONSERVATION DISTRICT
GROUNDWATER DATA

WELL IDENTIFICATION			DEPTH TO WATER (FEET)					
			SPRING			FALL		
AGENCY CODE	WELL NUMBER	HYDROLOGIC ZONE	SPRING 2009	SPRING 2010	SPRING CHANGE	FALL 2009	FALL 2010	FALL CHANGE
5604	20S24E06A001M	5	142.0	135.0	7.0	140.0	144.0	-4.0
5604	20S24E07G001M	5		124.0	N/A	128.0	129.0	-1.0
5604	20S24E09M001M	5	122.0	120.0	2.0	124.0	120.0	4.0
5604	20S24E14R001M	5	123.0	123.0	0.0	132.0	129.0	3.0
5604	20S24E15P001M	5	98.0	92.0	6.0	105.0	96.0	9.0
5604	20S24E16H001M	5	143.0	142.0	1.0	148.0	154.0	-6.0
5604	20S24E17A002M	5	115.0	112.0	3.0	118.0	113.0	5.0
5604	20S24E17P001M	5	93.0	107.0	-14.0	109.0	96.0	13.0
5604	20S24E18F001M	5	138.0	138.0	0.0	143.0	141.0	2.0
5604	20S24E20M002M	5	99.0	103.0	-4.0	108.0	103.0	5.0
5603	20S24E24H001M	4	163.5	149.5	14.0	274.5	190.5	84.0
5604	20S24E27C001M	5	74.0		N/A		96.0	N/A
5604	20S24E28L001M	5	90.0	86.0	4.0	84.0	91.0	-7.0
5604	20S24E29B001M	5	83.0	84.0	-1.0	86.0	84.0	2.0
5604	20S24E30J002M	4	113.0		N/A	110.0	110.0	0.0
5604	20S24E31R001M	4	98.0	107.0	-9.0	104.0	104.0	0.0
5604	20S24E33C001M	5	80.0	85.0	-5.0	100.0	78.0	22.0
5603	20S24E34C001M	4	74.5		N/A	81.5		N/A
5603	20S25E01A001M	4	74.0		N/A	98.0	73.0	25.0
5603	20S25E02A001M	4			N/A		107.5	N/A
5603	20S25E03R001M	4	104.0		N/A	132.0		N/A
5604	20S25E06C001M	5	140.0	132.0	8.0	150.0	112.0	38.0
5603	20S25E06R002M	5	127.0		N/A			N/A
5603	20S25E12A001M	4	118.5	113.0	5.5	122.5		N/A
5603	20S25E14F004M	4	115.0		N/A		125.0	N/A
5603	20S25E16J002M	4	117.0		N/A	138.0	141.0	-3.0
5603	20S25E17A002M	4			N/A	140.0		N/A
5604	20S25E18M001M	5	147.0	160.0	-13.0		154.0	N/A
5603	20S25E19R001M	4	154.5	126.5	28.0	183.5		N/A
5603	20S25E21J002M	4	106.0	119.0	-13.0		153.0	N/A
5603	20S25E23H001M	4			N/A	109.5		N/A
5603	20S25E24R001M	4	160.5	119.5	41.0	158.5	135.5	23.0
5603	20S25E28H002M	4	111.0		N/A	124.0	154.0	-30.0
5603	20S26E07R002M	4		114.0	N/A	119.0		N/A
5603	21S22E07J001M	6	287.0	241.0	46.0	280.0	243.0	37.0
5603	21S23E02A001M	4	195.5	171.5	24.0	202.5		N/A
5604	21S23E02C001M	4	123.0	129.0	-6.0		122.0	N/A
5603	21S23E03D001M	5			N/A	163.8	156.8	7.0
5604	21S23E03N001M	5	129.0	139.0	-10.0	144.0	121.0	23.0

KAWEAH DELTA WATER CONSERVATION DISTRICT
GROUNDWATER DATA

WELL IDENTIFICATION			DEPTH TO WATER (FEET)					
			SPRING			FALL		
AGENCY CODE	WELL NUMBER	HYDROLOGIC ZONE	SPRING 2009	SPRING 2010	SPRING CHANGE	FALL 2009	FALL 2010	FALL CHANGE
5604	21S23E04A001M	5		182.0	N/A	156.0	146.0	10.0
5604	21S23E05A002M	5	136.0	138.0	-2.0	141.0	139.0	2.0
5604	21S23E05E002M	5	136.0	148.0	-12.0	146.0	144.0	2.0
5604	21S23E05R001M	5		135.0	N/A	145.0	138.0	7.0
5604	21S23E07H001M	5	132.0	127.0	5.0		125.0	N/A
5603	21S23E07J001M	5	209.0		N/A	225.0	125.0	100.0
5604	21S23E08F002M	5	144.0	142.0	2.0		144.0	N/A
5604	21S23E08R001M	5	127.0		N/A	146.0	125.0	21.0
5604	21S23E10J002M	5	128.0	123.0	5.0		139.0	N/A
5603	21S23E11D001M	4	243.5		N/A	273.5	210.5	63.0
5603	21S23E12C002M	4	141.0		N/A		143.0	N/A
5603	21S23E13A002M	4	174.0		N/A	206.0		N/A
5604	21S23E14C001M	4			N/A		149.0	N/A
5604	21S23E21C002M	5			N/A			N/A
5604	21S23E21C003M	5		146.0	N/A		134.0	N/A
5604	21S23E22H001M	5			N/A		143.0	N/A
5603	21S23E22J001M	6			N/A		134.0	N/A
5603	21S24E01L001M	4	150.5	129.5	21.0			N/A
5603	21S24E03L001M	4	108.4	88.4	20.0	114.4	93.4	21.0
5604	21S24E04F001M	4		161.0	N/A	168.0	154.0	14.0
5603	21S24E05H002M	4	115.2	126.2	-11.0	147.2	123.2	24.0
5603	21S24E07B001M	4	126.0		N/A	143.0		N/A
5603	21S24E08A001M	4	130.4	125.4	5.0	143.4	97.4	46.0
5603	21S24E09C002M	4	169.0		N/A	218.0	180.0	38.0
5603	21S24E18A001M	4			N/A			N/A

KAWEAH DELTA WATER CONSERVATION DISTRICT
GROUNDWATER MEASUREMENTS

WELL IDENTIFICATION			SPRING 2010			FALL 2010		
AGENCY CODE	WELL NUMBER	M.P. above G.S.	at M.P.	at W.S.	DEPTH	at M.P.	at W.S.	DEPTH
5603	17S23E27L001M	0.5	107	4	102.5	109	0	108.5
5603	17S23E34J001M	0	93	1	92	91	0	91
5603	17S24E20L001M	1.5	45	1	42.5	36	0	34.5
5603	17S24E27F001M	1.8				65	0	63.2
5603	17S24E34B001M	0.5	90	1	88.5	66	0	65.5
5603	17S24E36H003M	1.5	117	8	107.5	100	0	98.5
5603	17S25E29E001M	0						
5603	17S26E36R001M	0.5	24.5	1	23			
5603	18S22E32J001M	0.8	152	2	149.2			
5603	18S22E34R001M	0.3	103	1	101.7	100	0	99.7
5603	18S23E02Q001M	2.5	117	5	109.5	116	0	113.5
5603	18S23E14A001M	1	160	10	149	137	0	136
5603	18S23E24K001M	0.3	122	2	119.7	130	0	129.7
5603	18S23E26F001M	0.6				142	0	141.4
5603	18S23E30D001M	0	122	1	121	204	0	204
5603	18S23E33J001M	0.5				126	0	125.5
5603	18S23E34A002M	1				152	0	151
5603	18S24E02H001M	0.5	110	3	106.5	96	0	95.5
5603	18S24E04J001M	0.5	95	4	90.5			
5603	18S24E06H001M	1	86	1	84	82	0	81
5603	18S24E07H001M	0.5	103	3	99.5	116	0	115.5
5603	18S24E10J001M	2.5	130	33	94.5	91	0	88.5
5603	18S24E13H002M	1	113	3	109	79	0	78
5603	18S24E13N001M	0	97	1	96	90	0	90
5603	18S24E15R003M	2	131	11	118	104	0	102
5603	18S24E17L001M	2				90	0	88
5603	18S24E22E001M	1				240	139	100
5603	18S24E25D001M	0	113	1	112	112	0	112
5603	18S24E31C001M	1.5	125	5	118.5			
5603	18S24E35K001M	0						
5603	18S25E04H001M	1	120	4	115	133	13	119
5603	18S25E05E002M	1	110	2	107	100	0	99
5603	18S25E05Q001M	2	120	6	112	99	0	97
5603	18S25E12N001M	0	71	1	70	71	0	71
5603	18S25E15A002M	1	120	30	89	103	10	92
5603	18S25E15C001M	1	80	1	78	79	0	78
5603	18S25E16B001M	1	87	1	85			
5603	18S25E18A001M	0						
5603	18S25E19H001M	1	120	11	108	190	93	96
5603	18S25E23J001M	0	65	4.5	60.5	48	0	48

KAWEAH DELTA WATER CONSERVATION DISTRICT
GROUNDWATER MEASUREMENTS

WELL IDENTIFICATION			SPRING 2010			FALL 2010		
AGENCY CODE	WELL NUMBER	M.P. above G.S.	at M.P.	at W.S.	DEPTH	at M.P.	at W.S.	DEPTH
5603	18S25E28R001M	0	76		76	72	0	72
5603	18S25E30Q001M	0	108	1	107	111	0	111
5603	18S25E33R001M	0.5	120	25	94.5			
5603	18S26E01Q003M	2	20.5	1	17.5	20	0	18
5603	18S26E02D002M	0	61	1	60	60	0	60
5603	18S26E09H001M	0.5	32	1	30.5	31	0	30.5
5603	18S26E10J001M	2	29	1	26			
5603	18S26E16K001M	2	23	1	20	25	0	23
5603	18S26E17L001M	1	26	1	24	32	0	31
5603	18S26E19B002M	0.5	47	1	45.5	48	0	47.5
5603	18S26E24J002M	1	53	1	51	63	0	62
5603	18S26E24J003M	0.5	55.5	1	54	64	0	63.5
5603	18S26E27B001M	0	26.5	1	25.5	21	0	21
5603	18S26E30N001M	0.5	51	1	49.5	54	0	53.5
5603	18S26E32A001M	0	34	1	33	25	0	25
5603	18S27E05J001M	1.5	20	1	17.5	17	0	15.5
5603	18S27E07B001M	0	22	1	21	19	0	19
5603	18S27E07R002M	6	28.5	1	21.5			
5603	19S21E13A001M	0.4						
5603	19S21E13C003M	1						
5603	19S21E34D001M	0.5						
5603	19S22E01N002M	2.5						
5603	19S22E02K001M	0.2	139	27	111.8	107	0	106.8
5603	19S22E08D002M	0	167	1	166	206	0	206
5603	19S22E09J001M	3				112	0	109
5603	19S22E10R002M	0.5				149	2	146.5
5603	19S22E16A003M	0.5				180	73	106.5
5603	19S22E17E001M	0.4				160	31	128.6
5603	19S22E17L001M	0.6						
5603	19S22E21C001M	0				128	0	128
5603	19S22E22A001M	2						
5603	19S22E23A001M	0.5				118	0	117.5
5603	19S22E24B001M	0.2				110	0	109.8
5603	19S22E28D001M	2	110	1	107	120	0	118
5603	19S22E30D001M	1.5						
5603	19S22E31B002M	1	112	1	110			
5603	19S22E34L001M	1.5						
5603	19S23E02F001M	0.5	137	3	133.5	120	0	119.5
5603	19S23E06H001M	1				137	0	136
5603	19S23E07A002M	0.5						

KAWEAH DELTA WATER CONSERVATION DISTRICT
GROUNDWATER MEASUREMENTS

WELL IDENTIFICATION			SPRING 2010			FALL 2010		
AGENCY CODE	WELL NUMBER	M.P. above G.S.	at M.P.	at W.S.	DEPTH	at M.P.	at W.S.	DEPTH
5603	19S23E10Q001M	0.6						
5603	19S23E11C001M	0.5				121	0	120.5
5603	19S23E12L001M	0.6	113	1	111.4	114	0	113.4
5603	19S23E21C001M	0.6				137	1	135.4
5603	19S23E22H001M	0.4	140	23	116.6	96	0	95.6
5603	19S24E08D002M	0	108	1	107	108	0	108
5603	19S24E18J001M	0.4	160	24	135.6	184	0	183.6
5603	19S24E22C001M	0.4						
5603	19S24E31K001M	0.3				157	3	153.7
5603	19S25E01P001M	0.5				60	0	59.5
5603	19S25E02A001M	1						
5603	19S25E06A001M	0	110	1	109	112	0	112
5603	19S25E09H001M	1				110	3	106
5603	19S25E10R001M	0.5	48	1	46.5	100	2	97.5
5603	19S25E13A002M	2						
5603	19S25E16A002M	1	94	1	92	93	0	92
5603	19S25E24M001M	0.5						
5603	19S25E27A001M	2	96	1	93	92	0	90
5603	19S25E28H001M	0	140	30	110	102	0	102
5603	19S25E32J001M	0						
5603	19S25E34A002M	1				120	3	116
5603	19S25E35B002M	1.5	130	30	98.5	92	0	90.5
5603	19S26E03A001M	0	81	1	80	83	0	83
5603	19S26E05C001M	0	48	1	47	33	0	33
5603	19S26E05N001M	1.2	62	1	59.8	57	0	55.8
5603	19S26E16J002M	0.5	88	1	86.5	94	0	93.5
5603	19S26E17L001M	0.5				89	0	88.5
5603	19S26E20A001M	0.5	90	13	76.5	96	0	95.5
5603	19S26E21J001M	1						
5603	19S26E28D001M	1	100	5	94	102	0	101
5603	19S26E30D001M	2	125	38	85	83	0	81
5603	19S26E33C001M	1				100	0	99
5603	19S26E33M001M	1	89	8	80			
5603	20S21E24F001M	0	295	3	292	301	0	301
5603	20S21E36P001M	0				292	0	292
5603	20S22E03C002M	0	136	1	135	138	0	138
5603	20S22E04C001M	0						
5603	20S22E07A003M	1				234	0	233
5603	20S22E08A002M	1	202	4	197			
5603	20S22E13C002M	0.5				220	0	219.5

KAWEAH DELTA WATER CONSERVATION DISTRICT
GROUNDWATER MEASUREMENTS

WELL IDENTIFICATION			SPRING 2010			FALL 2010		
AGENCY CODE	WELL NUMBER	M.P. above G.S.	at M.P.	at W.S.	DEPTH	at M.P.	at W.S.	DEPTH
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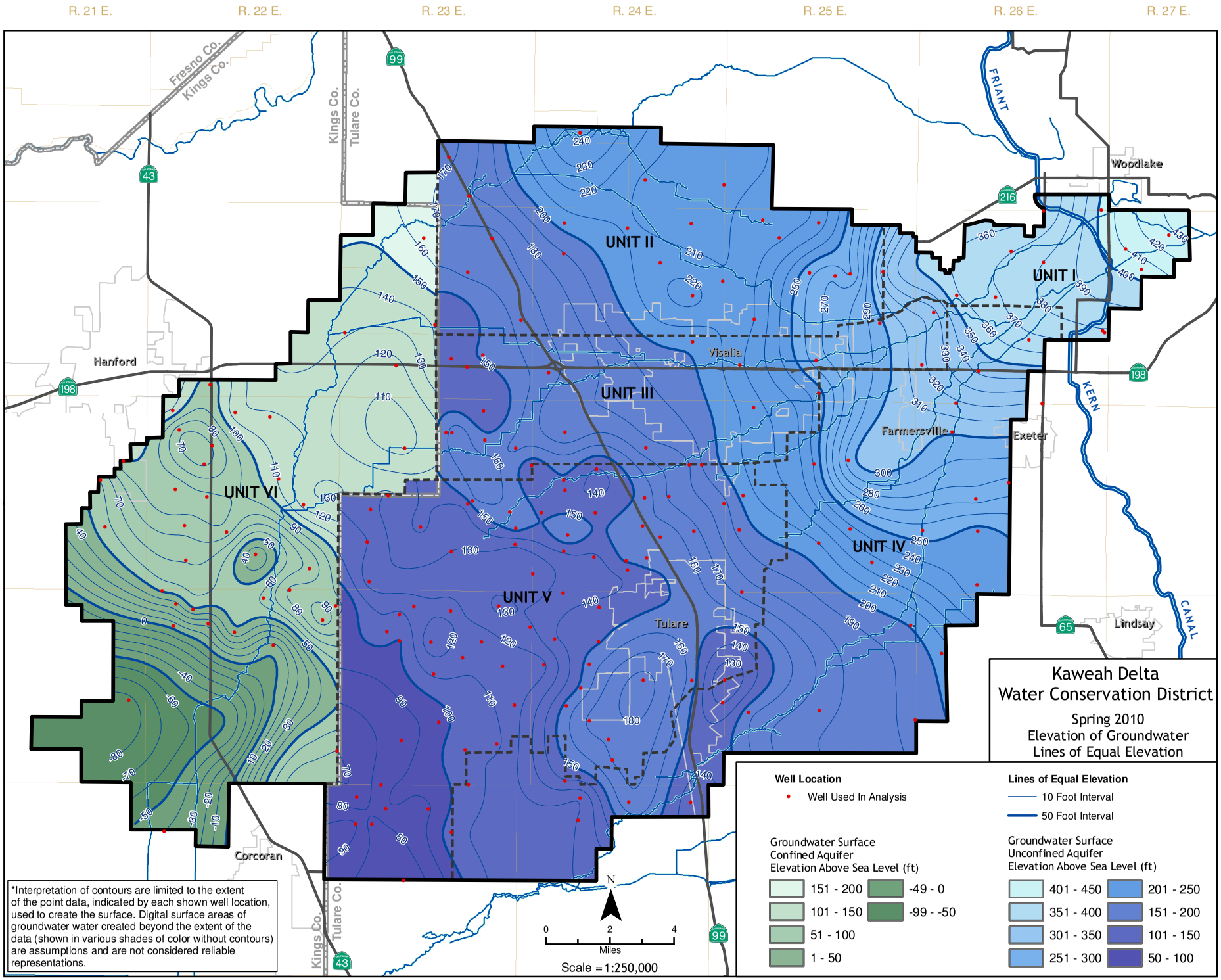
5603	20S22E23M001M	0.5				264	0	263.5
5603	20S22E24R001M	0.5						
5603	20S22E27A001M	0.5						
5603	20S22E33F001M	1						
5603	20S22E35L001M	0.5						
5603	20S22E36A001M	1				146	0	145
5603	20S23E11C001M	0.4						
5603	20S24E24H001M	0.5	160	10	149.5	198	7	190.5
5603	20S24E34C001M	0.5						
5603	20S25E01A001M	1				74	0	73
5603	20S25E02A001M	0.5				108	0	107.5
5603	20S25E03R001M	1						
5603	20S25E06R002M	0						
5603	20S25E12A001M	0.5	120	6.5	113			
5603	20S25E14F004M	1				127	1	125
5603	20S25E16J002M	1				142	0	141
5603	20S25E17A002M	2						
5603	20S25E19R001M	1.5	129	1	126.5			
5603	20S25E21J002M	0	150	31	119	177	24	153
5603	20S25E23H001M	0.5						
5603	20S25E24R001M	0.5	121	1	119.5	136	0	135.5
5603	20S25E28H002M	2				164	8	154
5603	20S26E07R002M	1	170	55	114			
5603	21S22E07J001M	0	242	1	241	243	0	243
5603	21S23E02A001M	0.5	240	68	171.5			
5603	21S23E03D001M	0.2				160	3	156.8
5603	21S23E07J001M	0				125	0	125
5603	21S23E11D001M	0.5				211	0	210.5
5603	21S23E12C002M	1				145	1	143
5603	21S23E13A002M	1						
5603	21S23E22J001M	1				135	0	134
5603	21S24E01L001M	0.5	180	50	129.5			
5603	21S24E03L001M	0.6	190	101	88.4	94	0	93.4
5603	21S24E05H002M	0.8	190	63	126.2	124	0	123.2
5603	21S24E07B001M	2						
5603	21S24E08A001M	0.6	130	4	125.4	98	0	97.4
5603	21S24E09C002M	0				300	120	180
5603	21S24E18A001M	0						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Tulare Co.
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Hanford
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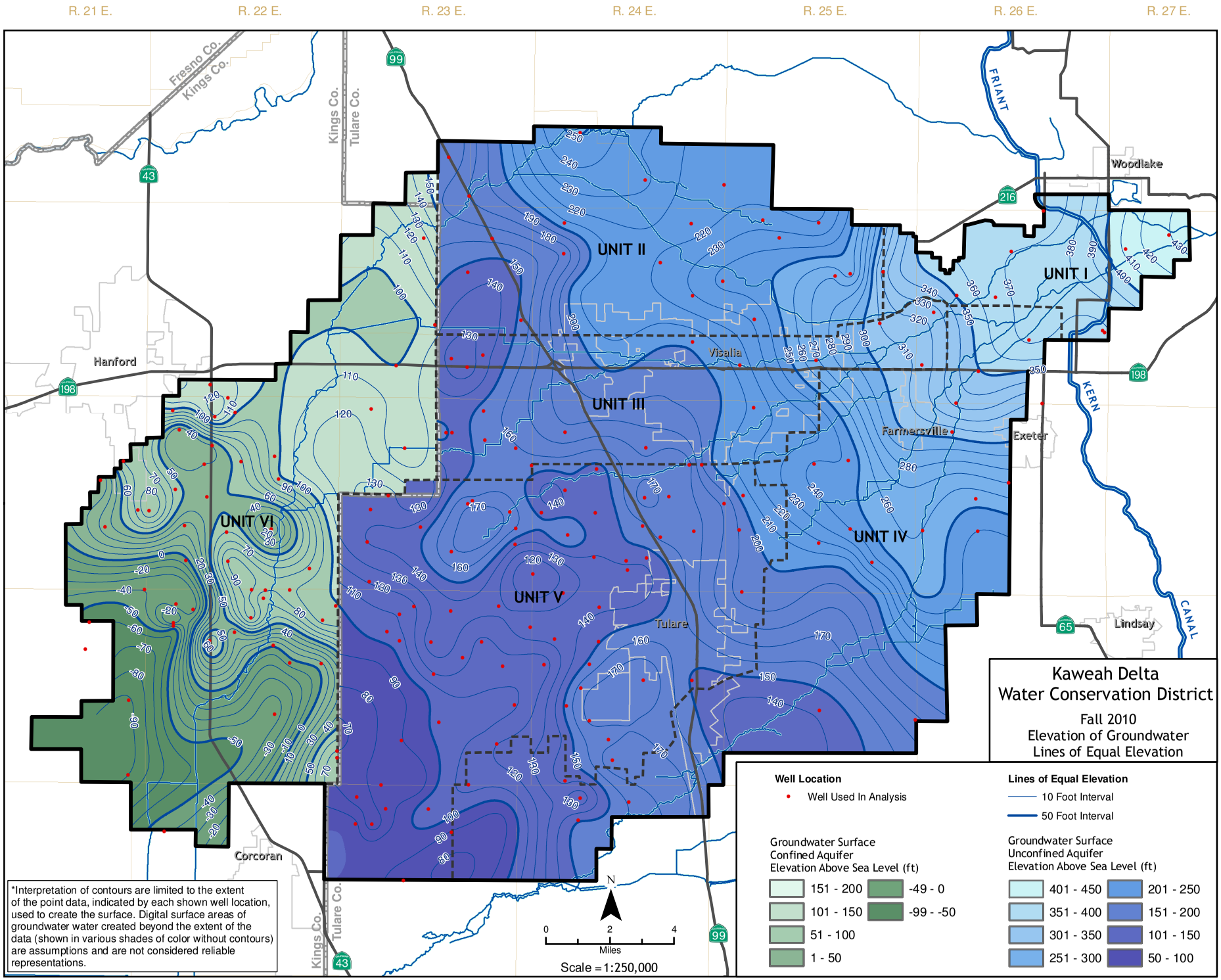
*Interpretation of contours are limited to the extent of the point data, indicated by each shown well location, used to create the surface. Digital surface areas of groundwater water created beyond the extent of the data (shown in various shades of color without contours) are assumptions and are not considered reliable representations.
N
0 2 4
Miles
Scale = 1:250,000
Kaweah Delta
Water Conservation District
Spring 2010
Elevation of Groundwater
Lines of Equal Elevation
Well Location
Well Used In Analysis
Lines of Equal Elevation
10 Foot Interval
50 Foot Interval
Groundwater Surface
Confined Aquifer
Elevation Above Sea Level (ft)
151 - 200
101 - 150
51 - 100
1 - 50
-49 - 0
-99 - -50
Groundwater Surface
Unconfined Aquifer
Elevation Above Sea Level (ft)
401 - 450
351 - 400
301 - 350
251 - 300
201 - 250
151 - 200
101 - 150
50 - 100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Miles
Scale = 1:250,000
Kaweah Delta
Water Conservation District
Fall 2010
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Lines of Equal Elevation
Well Location
Well Used In Analysis
Lines of Equal Elevation
10 Foot Interval
50 Foot Interval
Groundwater Surface
Confined Aquifer
Elevation Above Sea Level (ft)
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Groundwater Surface
Unconfined Aquifer
Elevation Above Sea Level (ft)
401 - 450
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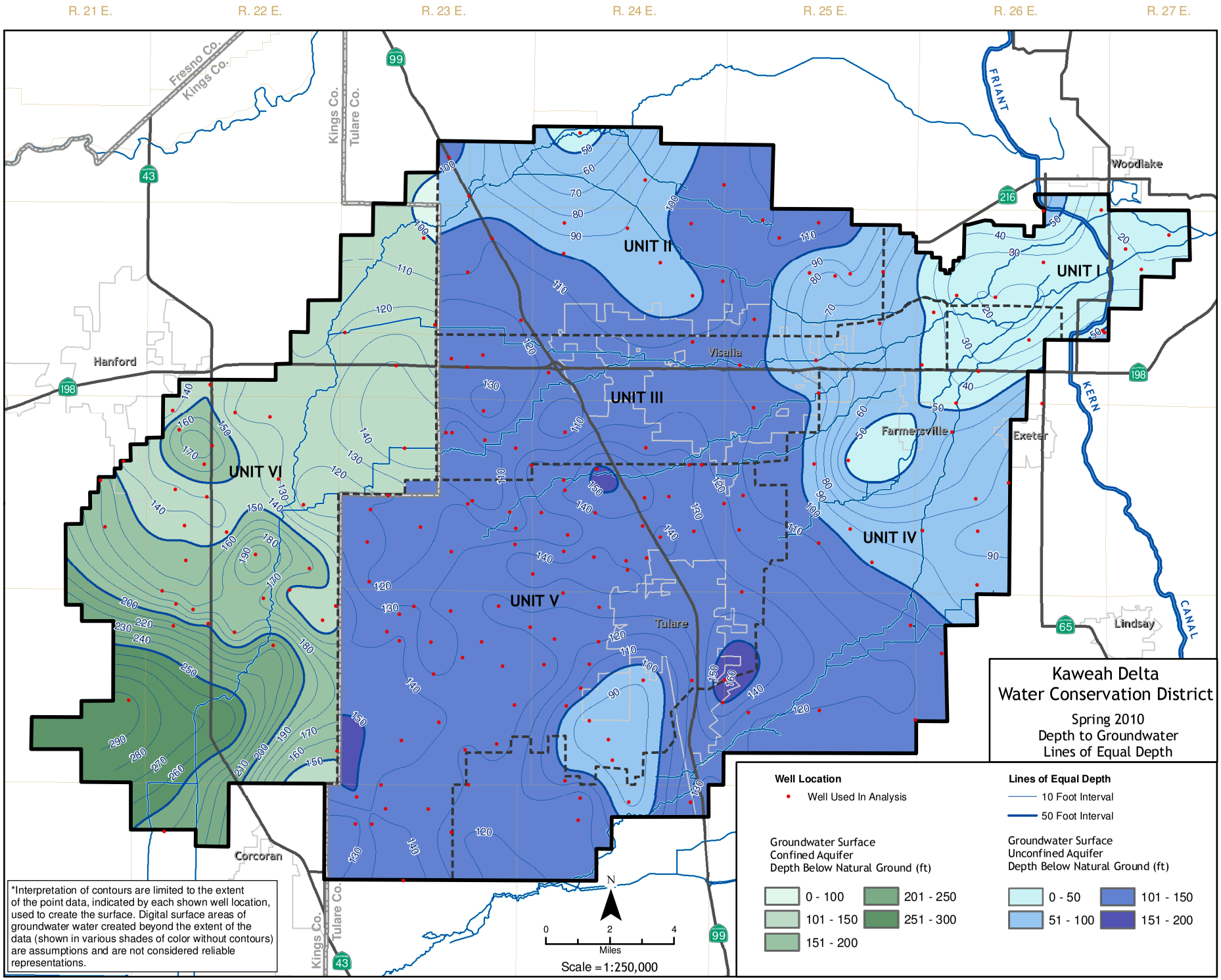
251 - 300
201 - 250
151 - 200
101 - 150
50 - 100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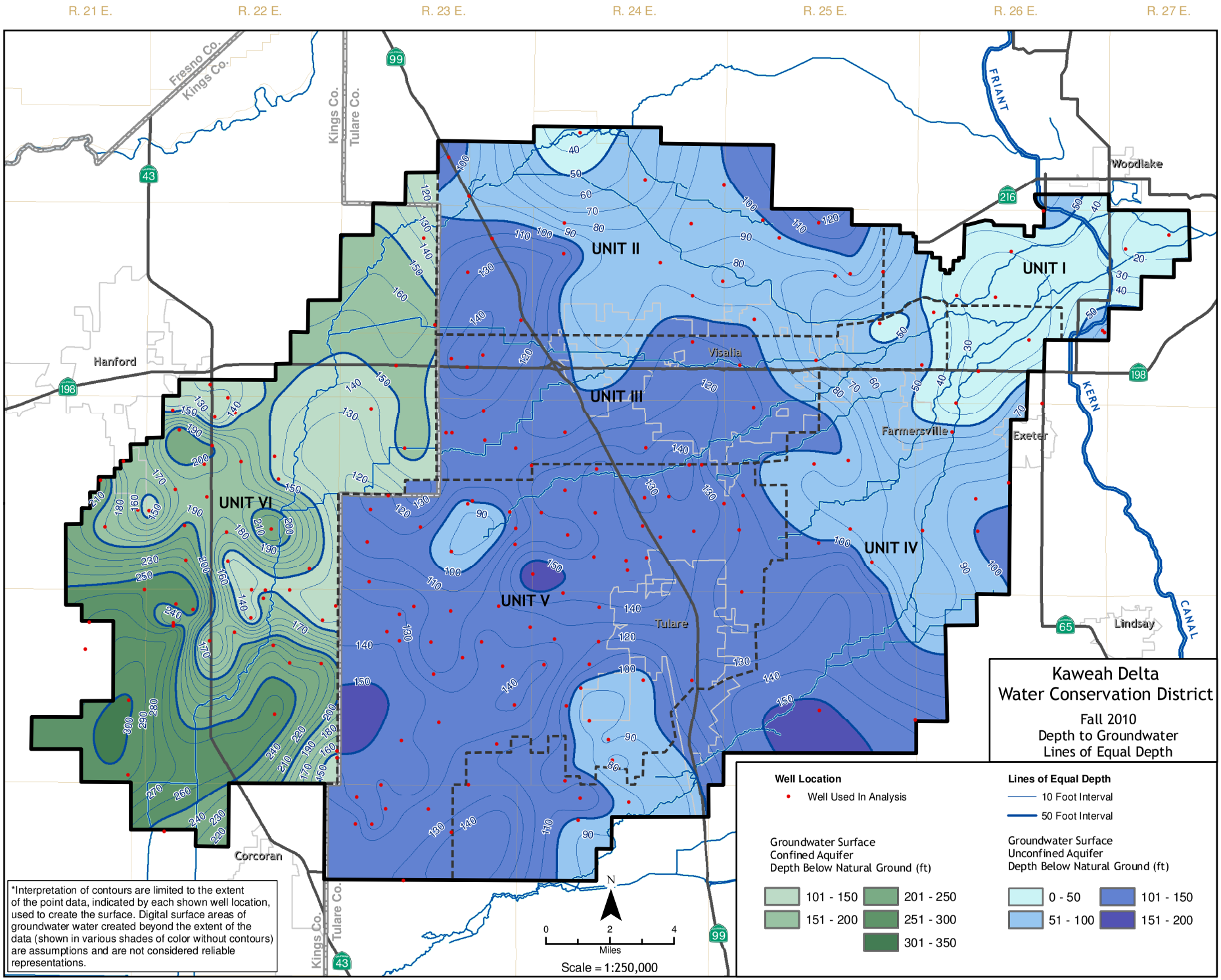
N
0 2 4
Miles
Scale = 1:250,000
Kaweah Delta
Water Conservation District
Spring 2010
Depth to Groundwater
Lines of Equal Depth
Well Location
Well Used In Analysis
Lines of Equal Depth
10 Foot Interval
50 Foot Interval
Groundwater Surface
Confined Aquifer
Depth Below Natural Ground (ft)
0 - 100
101 - 150
151 - 200
201 - 250
251 - 300
Groundwater Surface
Unconfined Aquifer
Depth Below Natural Ground (ft)
0 - 50
51 - 100
101 - 150
151 - 200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N
0 2 4
Miles
Scale = 1:250,000
Kaweah Delta
Water Conservation District
Fall 2010
Depth to Groundwater
Lines of Equal Depth
Well Location
Well Used In Analysis
Lines of Equal Depth
10 Foot Interval
50 Foot Interval
Groundwater Surface
Confined Aquifer
Depth Below Natural Ground (ft)
101 - 150
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Groundwater Surface
Unconfined Aquifer
Depth Below Natural Ground (ft)
0 - 50
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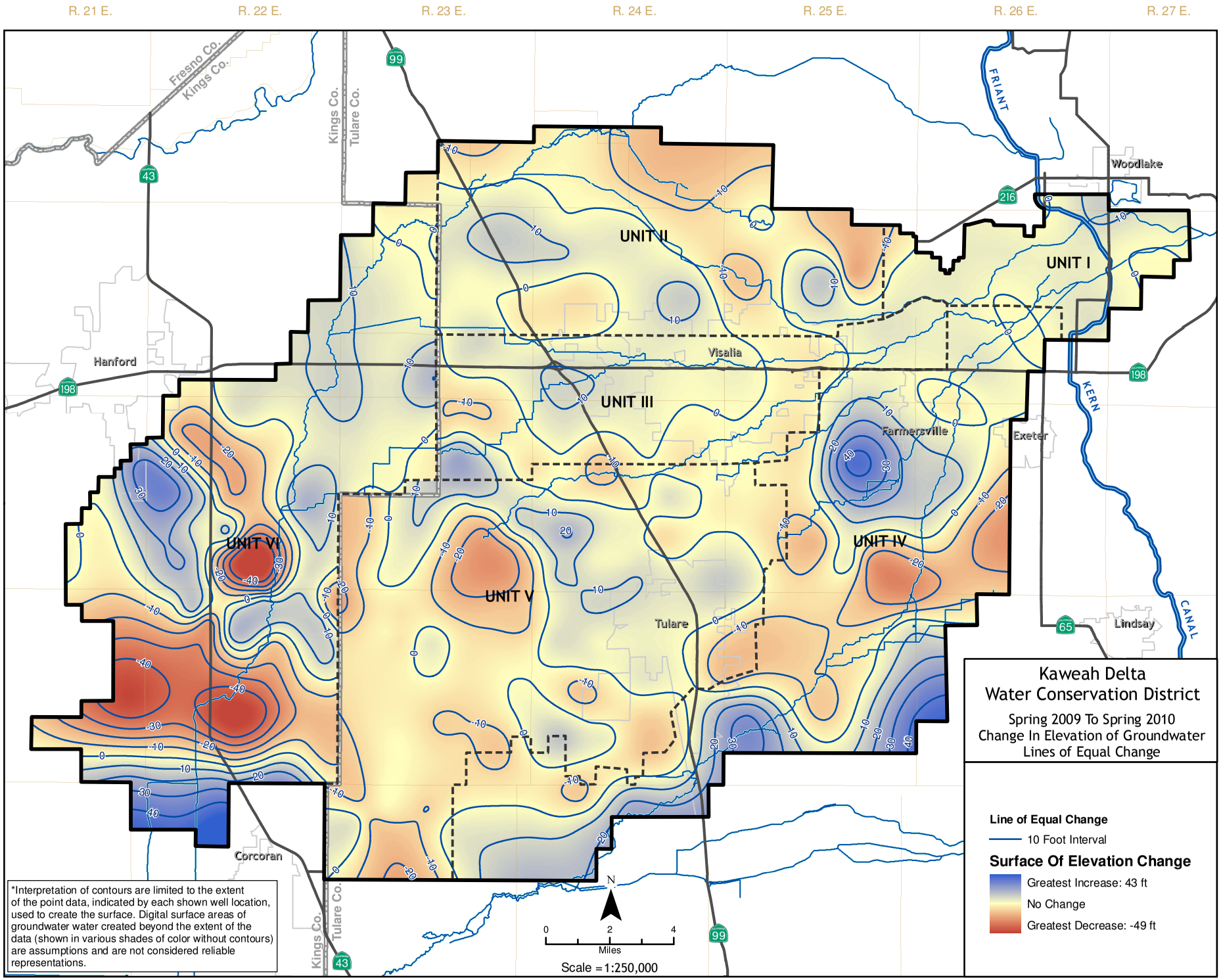
151 - 200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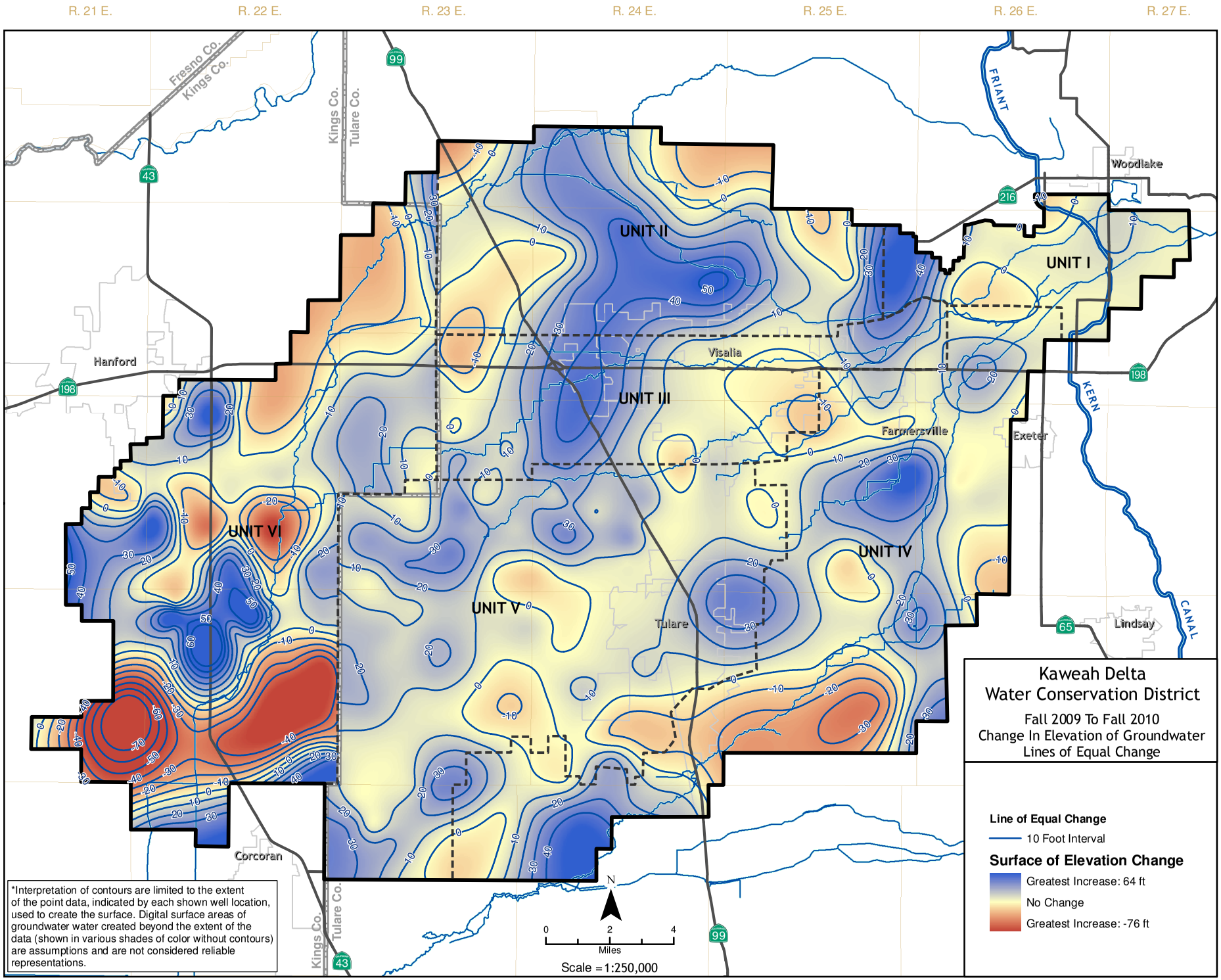
*Interpretation of contours are limited to the extent of the point data, indicated by each shown well location, used to create the surface. Digital surface areas of groundwater water created beyond the extent of the data (shown in various shades of color without contours) are assumptions and are not considered reliable representations.
N
0
2
4
Miles
Scale = 1:250,000
Kaweah Delta
Water Conservation District
Spring 2009 To Spring 2010
Change In Elevation of Groundwater
Lines of Equal Change
Line of Equal Change
10 Foot Interval
Surface Of Elevation Change
Greatest Increase: 43 ft
No Change
Greatest Decrease: -49 ft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Fresno Co.
Kings Co.
Kings Co.
Tulare Co.
FRIANT
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CANAL
Woodlake
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Visalia
Farmersville
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Lindsay
Corcoran
UNIT I
UNIT II
UNIT III
UNIT IV
UNIT V
UNIT VI
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43
198
216
65
*Interpretation of contours are limited to the extent of the point data, indicated by each shown well location, used to create the surface. Digital surface areas of groundwater water created beyond the extent of the data (shown in various shades of color without contours) are assumptions and are not considered reliable representations.
N
0
2
4
Miles
Scale = 1:250,000
Kaweah Delta
Water Conservation District
Fall 2009 To Fall 2010
Change In Elevation of Groundwater
Lines of Equal Change
Line of Equal Change
10 Foot Interval
Surface of Elevation Change
Greatest Increase: 64 ft
No Change
Greatest Increase: -76 ft

APPENDIX -B-

2010 Annual Groundwater Management Plan Meeting Minutes

KAWEAH DELTA WATER CONSERVATION DISTRICT
2011 ANNUAL GROUNDWATER MANAGEMENT PLAN MEETING

March 14, 2011 -- Convened at 8:30 a.m.
2975 North Farmersville, California 93223

---------- MINUTES ----------

PRESENT:

Mark Larsen	Kaweah Delta Water Conservation District
Larry Dotson	Kaweah Delta Water Conservation District
Victor Hernandez	Kaweah Delta Water Conservation District
Andrew Benelli	City of Visalia
Kim Loeb	City of Visalia
Phil Mirwald	California Water Service Company
Aaron Fukada	Tulare Irrigation District
Dale Sally	Ivanhoe Irrigation District
Jim May	Tulare County, Resource Management Agency
Denise Akins	Tulare County, County Administrative Office
Debbie Vaughn	Tulare County, County Administrative Office
Dick Schafer	Lakeside Irrigation Water District
Dennis Keller	Keller & Wegley Consulting Engineers

1.0 SIGN-IN AND INTRODUCTIONS:

General Manager, Mark Larsen opened the meeting and requested all those attending to sign the sign-in sheet. The group was then encouraged to participate in open discussion during the meeting. It was also acknowledged that the last annual meeting held was on August 7, 2007 and that this meeting was intended to report on years 2008, 2009 and 2010 combined. The group was informed that the Groundwater Management Plan, 2008 Annual Report was completed and distributed to plan participants. The District is currently working on the 2009 and 2010 Annual Reports and they will be distributed upon completion.

2.0 GROUNDWATER CONDITIONS:

a. Historical Conditions (2010 Current)

Engineering Technician, Victor Hernandez reviewed the District's Historical Average Depth to Groundwater (Fall Measurement). The group was presented with a graph depicting the depth to groundwater and percent water year, starting from 1956 through 2010. The conditions for the last three years were discussed, highlighting the sharp increases and decreases in depth to groundwater that occurred in 2008 and 2009 versus 2010. The corresponding pattern between depth to groundwater and percent of surface water delivery was emphasized as indicated by the increase in depth to groundwater during below average water years and the inverse for above average water years. The overall historical trend observed is an increasing depth to groundwater of approximately 0.80 feet per year.

b. Annual Average Fall Depth to Water (2010 Current)

The group was also presented a graph representing Annual Average Fall Groundwater Depths categorized into six different Hydrologic Unit (Regions) for the period of 1970 through 2010. The information showed the differing regional groundwater conditions that vary from that of the District's general average depth to groundwater. Aaron Fukuda noted that the TID Spring 2011 groundwater measurements indicated a continued groundwater recovery from the prior drier surface water delivery years. Further discussion on groundwater depths included the State Water Project's influence, pre and post project, on the District's groundwater supplies. Another major effect noted was the continued development of agriculture toward permanent plantings and dairy support crops with higher related water demands that stress groundwater supplies.

KAWEAH DELTA WATER CONSERVATION DISTRICT
2011 ANNUAL GROUNDWATER MANAGEMENT PLAN MEETING

March 14, 2011 -- Convened at 8:30 a.m.
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---------- MINUTES ----------

3.0 PLAN ACTIVITIES:

Kaweah Delta Water Conservation

a. City of Visalia Groundwater Model

Senior Engineer, Larry Dotson informed the group that three years ago the District and the City of Visalia started a Numerical Groundwater Flow Model Study for the City of Visalia area. The data collected included historical groundwater supply and demands that were used in developing a representative model that could be used to evaluate water conservation or recharge programs that might be implemented in the future. Four different modeling scenarios have presently been performed and the City is currently developing the fifth scenario that would combine multiple conservation, recharge and recycling programs. The study has revealed the complex nature of three dimensional groundwater flows through the study area. The primary finding was that conservation and/or recharge efforts do not product a one for one benefit. This was due to hydrologic conditions that influence a significant portion of these conserved or recharged groundwater supplies to flow outward to the regions outside of the models study area. The study is expected to be completed this year.

b. Monitoring Well Network (Loss/Gain of Wells)

Victor Hernandez discussed the District's present groundwater measurement network that is made up of a variety of different types of wells, including agricultural, domestic, municipal and dedicated monitoring wells. The decline in available measurement wells during the past 10 years was explained due to such factors as urban development and groundwater level declines. The District is presently implementing a program of replacement and addition to the network toward providing a long-term sustainable means for assessing groundwater supply conditions.

c. Basin Projects (Mooney Grove, Oakes Basin, Paregien, Police Station Basin)

Larry Dotson informed the group on status of some of the District's ongoing groundwater recharge basin projects as noted below:

- ✓ Mooney Grove – A recharge basin was constructed on the eastside of the County of Tulare's Mooney Grove Park during 2010 by the District in cooperation with the County. The facility takes delivery of surface water from a TID canal through a temporary siphon. A permanent basin inlet will be constructed by TID at some future time. The basin has been utilized several times since its completion for groundwater recharge and has performed well. Prior to the basin's construction, TID installed a pumping facility in their North Branch Canal for delivery of surface water to the existing ponds that had been supplied solely from the park's groundwater well.
- ✓ Oakes Basin – The District has recently completed the excavation of the Oakes Basin that is planned as a multiple purpose facility for groundwater recharge, natural habitat development and City of Visalia stormwater layoff. The next phase of development will be the design/construction of larger inlet works and an outlet pumping station. The basin has been used for recharge operations since initial excavation and will continue so during future development.

- ✓ Paregien Project – A multi-use project is currently being designed by the District for groundwater recharge, stormwater layoff and habitat enhancement. The project site is located to the southwest of the Kaweah Oakes Preserve with Deep Creek running through the property. The components of the project will include the construction of a check structure within Deep Creek with adjacent winged embankments to retain creek flows for stormwater layoff and groundwater recharge. Portions of the property are to be dedicated for improvements in natural habitat that would be a benefit to the region and credited to the District.
- ✓ Police Station Basin – The City of Visalia recently completed a regional stormwater basin south of Packwood Creek to the west of Mooney Boulevard, next to a new City Police Sub-Station. The basin's designed drainage area currently contains minimal development, leaving a significant volume in the basin available for other purposes. During the end of last year an inlet facility from Packwood Creek into the City's Stormwater system was designed and constructed. This diversion works allows surface water conveyance into the basin for groundwater recharge. The new improvements were utilized at the being of this year during a City of Visalia recharge program.

d. Resources Exchange Agreement

Mark Larsen reported that the District in March 2010 obtained a partial assignment of Central Valley Project water from Ivanhoe Irrigation District through a Resources Exchange Agreement. The assignment provided the District permanent contractor status with the USBR and makes available different classes and quantities of surface water deliveries through the Friant-Kern Canal into the District. The District is planning to management this new source of imported water to the benefit of the groundwater basin.

e. Integrated Regional Water Management Plan

Mr. Larsen whet on to discuss that for the past several years the District has been taking the lead role in establishing an Integrated Regional Water Management Plan that would serve as an authorized plan that represents our basin in the State's developing IRWMP program. The plan includes a multitude of concerns regarding water management including water quality. It was note that the future of the State's IRWMP program is uncertain at this time due to a possible change in the State's goals. The anticipated primary issue will be the continuation of local control of groundwater versus State control of groundwater. Presently the Kaweah IRWMP has a functioning plan and has taken the opportunity to recently submit a grant application to the State program for funding of several different water projects for differing agencies participating in the plan.

f. December 2010 Activities

Victor Hernandez reported on various recharge activities undertaken by the District during December 2010 as a result of Lake Kaweah's encroached storage conditions that resulted from previous storm events. Working with Delta Lands Reclamation District No. 770, the District developed several locations where DLRD #770 could install pumping plants for the upstream spreading of flood flows. The program produced two primary benefits, first excess or damaging flows to the Tulare Lakebed were diminished and second this excess water was retained within our District to the benefit of groundwater supplies. Four different locations were utilized during the program, all with differing levels of improvements that were performed by our District.

g. Grants

Mark Larsen discussed the three recent grants that the District was pursuing. Last year the District applied for a USBR WaterSMART grant for System Optimization Review. The District scored well in their application, but due to the extended period of time necessary to obtain approval from USBR for our CVP Contract's Water Management Plan the application was deemed ineligible for not having an approved plan prior to the grant submittal deadline. The second grant was for a USBR WaterSMART implementation grant for the Paregien Project. The District has submitted the application and is awaiting the review by USBR. The third grant was submitted under the aforementioned Kaweah IRWMP's grant submittal to the Department of Water Resources was also for the Paregien Project.

h. Yokohl Ranch

Mr. Larsen then informed the group of a planned community development by the Boswell Corporation, located in Yokohl Valley. Yokohl Ranch will be located in the foothill region to the east and outside of the District. The projected build-out is estimated at 10,000 houses or at a 30,000 population. The development will require an substantial water source which is not available from local groundwater supplies. The developer is presently pursuing possible water sources to fulfill expected demands. Such sources could include Kaweah River and/or USBR Contract water supplies. The initial impact of the planned community to the Kaweah groundwater basin is foreseen as potentially negative, if not properly mitigated, due to reductions of native or imported surface water deliveries. The District will continue to monitor the planning process for the community and is expecting the release of a Draft EIR for public review sometime in the future.

i. Water Conservation Education

Mr. Larsen finished with the review of the District's water conservation education activities. The District has and will continue to participate in the following programs:

- ✓ Education & Agriculture Together Foundation – The District is involved in the E.A.T. AG-2 class and presents programs to teachers enrolled in the class that focuses on local water issues, including regional surface and groundwater supplies.
- ✓ Sequoia for Youth – The Sequoia for Youth is a program on agricultural and water education geared toward elementary school students. The District is involved in giving presentations regarding local surface systems and groundwater supplies. The youth learn many aspects of a watershed.
- ✓ Central Valley Tour - Annually, the Water Education Foundation has a Central Valley Tour in which the District hosts a segment. The group is provided a tour of the local water management facilities along with a dinner/presentation by the District.
- ✓ Service Club Presentations – The District has a long history of local involvement in presenting current water issues to local service organizations. This opportunity for public presentation is considered a valuable format for reaching the various interests within the District.
- ✓ District Newsletter – The District as part of its CVP contract obligation will this year start the process of publishing a semi-annual newsletter. The primarily focus will be on surface water delivery, groundwater conditions and associated District activities.

Kings County Water District

a. Garner Basin

Larry Dotson discussed the development of the Garner Basin. The project is located immediately south of Highway 198 and east of 7th Avenue. KCWD was able to coordinate with the construction of the Highway 198 expansion project, such that the contractor for the project will fully excavate and install all improvements in exchange for the excavated material to be used as part of the road fill material. The excavation is approximately 70 percent complete and the remaining work is expected to be finished with the resumption of the highway project. KDWCD, Lakeside Irrigation Water District and KCWD anticipate a partnership on the development and operation of the basin.

b. Other Activities

No other activities were discussed.

City of Visalia

a. Waste Water Treatment Plant

Andrew Benelli informed the group that the City is currently in the design phase of a tertiary treatment improvement project for the conservation plant. The designs are presently 90 percent complete and the project EIR is expected for public review after this summer. The City anticipates that the tertiary treated wastewater could be used as a supplemental agricultural supply and is currently in discussions with TID for a water exchange program that would be utilized in City groundwater recharge programs.

b. Basin #4

The City was also able to capitalize on the Highway 198 Improvement Project. The City's terminal basin located east of the conservation plant and immediately west of the Kings County line is being deepen by the Highway project contractor and the material utilized as road fill.

c. City of Visalia Importation Agreement

There was no discussion regarding the City importation agreement.

d. City of Visalia – Packwood Creek Project

Kim Loeb and Larry Dotson informed the group of a linear recharge project along Packwood Creek being studied by the City and KDWCD. The concept is for the installation of several check structures along the waterway to elevate water surface elevations during low flow delivery to improve the channel's wetted perimeter and improve recharge performance. The design of the structure has commenced and construction of one of the structures is tentatively being schedule for this fall.

e. Grants

Mr. Loeb continued to discuss the City's recent grant application in cooperation with the Urban Tree Foundation. The DWR Flood Corridor Program Grant emphasizes the reduction of flood damage thought the development of non-structural projects that enhance habitat. The application was for the acquisition and development of four different properties for these purposes. The four locations were designated as the 1) Peoples Basin Exchange, 2) Oakes Basin Expansion, 3) Goshen Basin Expansion and 4) the Jenning Ditch Basin.

Cal-Water

a. Cal-Water Urban Water Management Plan & City of Visalia Master Plan (20x2020)

Phil Mirwald discussed the progress on Cal-Waters efforts toward updating their Urban Water Management Plan and the development of a Conservation Plan for the Visalia District. Presently the Conservation Master Plan has been released to local agencies for review and comments. The UWMP is expected to be completed before the end of this year.

b. Other Activities

No other activities were discussed.

Other Agencies

Dick Schafer, representing Lakeside Irrigation WD, reported on the expansion of their regulation/recharge basin located immediately south of Highway 198. Similar to KCWD and the City of Visalia, the work is being performed by the Highway contractor in exchange for excavated material. The improvement will increase the basins flood control capacity.

Aaron Fukuda, representing Tulare ID reported on the following activities:

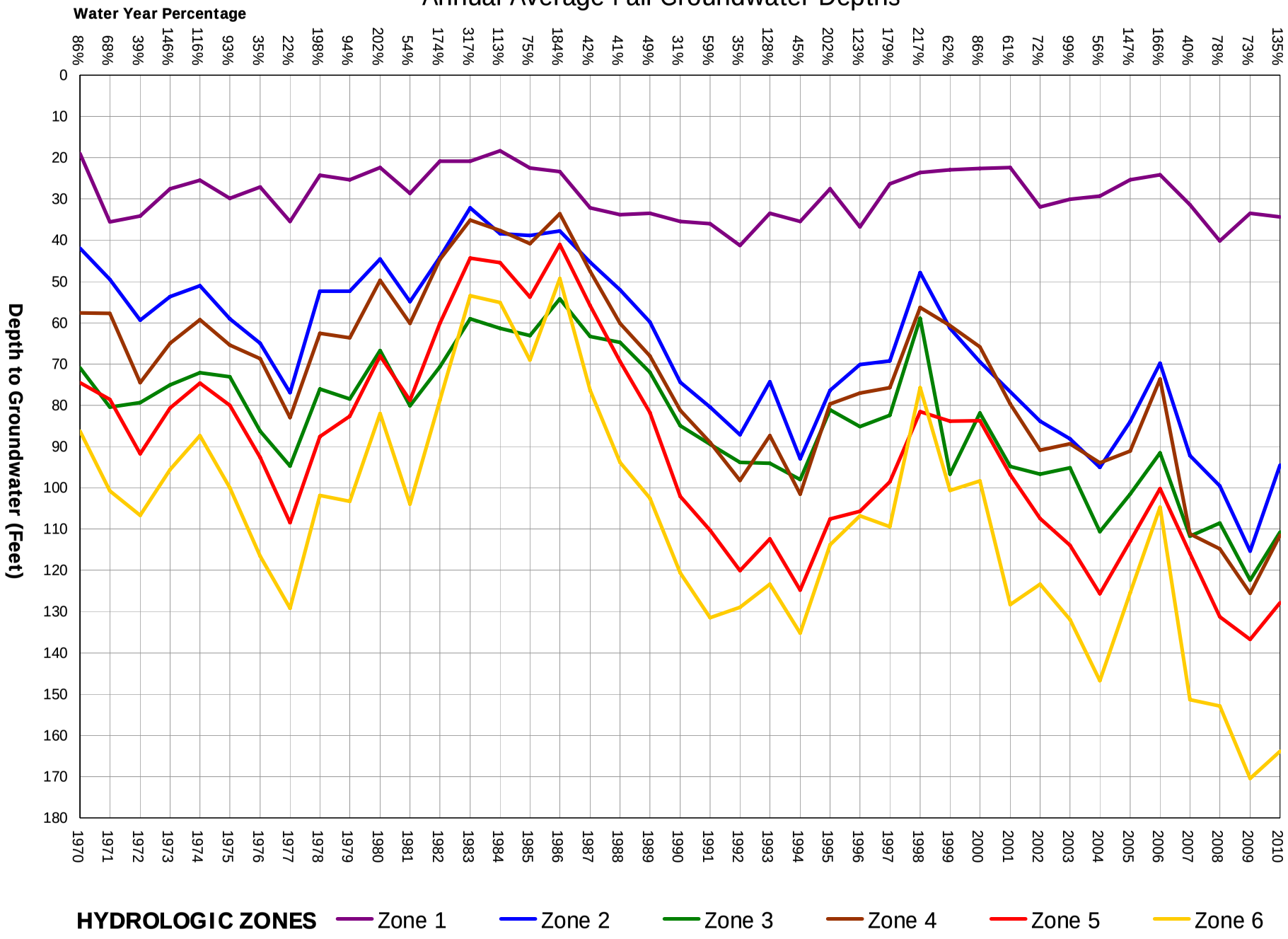
- ✓ Construction of the Plum Basin is progressing using TID forces and is being funded though a USBR grant. The basin is located south of Avenue 256 along both sides of the Main Canal. The facility will be used for both water delivery regulation and groundwater recharge. The City of Tulare also is participating in the project and will be able to use excavated material toward their anticipated Highway 99 overcrossing project.
- ✓ Preliminary construction of the basin on the District's new office site is completed. Further construction is also expected to be performed under a USBR cost sharing grant. The completed project will also be used for delivery system regulation and groundwater recharge.
- ✓ The District completed the update of their Groundwater Management Plan last year. The updated plan was revised in several areas and is now SB1938 compliant.
- ✓ The District has recent started a program entailing the lease of lands for groundwater recharge. Certain lands within the District that are not desirable for agriculture due to sandy soil are leased, then minor embankment are constructed by the District around the perimeter of the property. The existing ditch turnout is used to shallow flood the land during recharge opportunities.

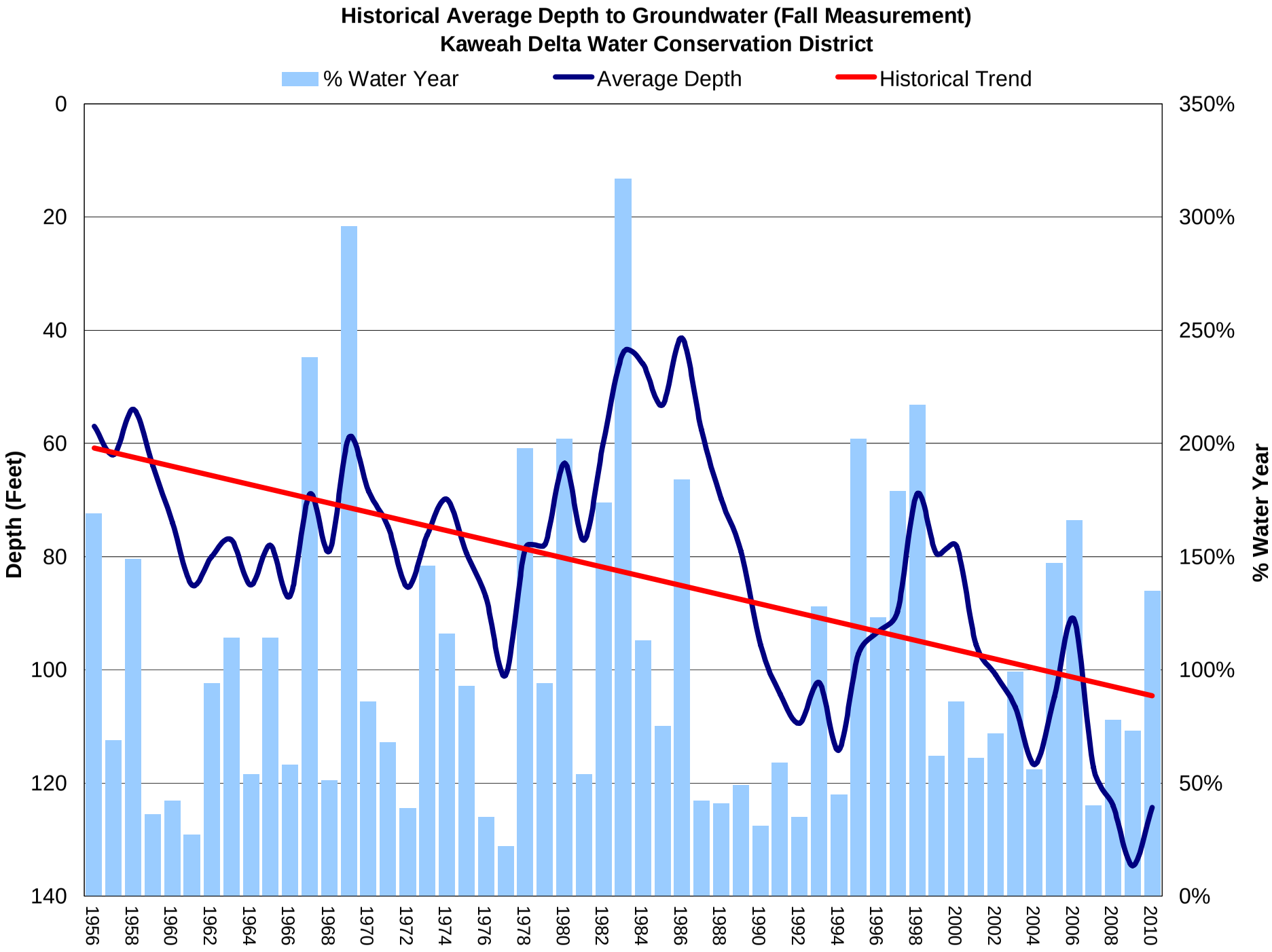
4.0 ADJOURNMENT:

The meeting was adjourned at 10:30 a.m.

KAWEAH DELTA WATER CONSERVATION DISTRICT

Annual Average Fall Groundwater Depths




Historical Average Depth to Groundwater (Fall Measurement)
Kaweah Delta Water Conservation District
% Water Year
Average Depth
Historical Trend
Depth (Feet)
% Water Year
0
20
40
60
80
100
120
140
350%
300%
250%
200%
150%
100%
50%
0%
1956
1958
1960
1962
1964
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