FUGRO CONSULTANTS, INC.

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August 3, 2011
Project No. 04.B3033006.08

Carpinteria Valley Water District
Post Office Box 578
Carpinteria, California 93014

Attention: Mr. Charles Hamilton, General Manager

Subject: Carpinteria Groundwater Basin, Annual Report for 2010

Dear Mr. Hamilton:

Presented in this annual report is a summary and description of groundwater conditions in the Carpinteria groundwater basin for calendar year 2010. This represents the ninth annual report that has been prepared to assist the Carpinteria Valley Water District (District) in its ongoing efforts (pursuant to its AB3030 Groundwater Management Plan) to manage the groundwater resources of the basin and provide information on water level and water quality conditions to all users of groundwater in the basin. The intent of the annual report is to provide a brief narrative and graphics that document the "health" of the basin's groundwater resources, trends in groundwater levels and water quality, information on land use, and annual groundwater pumpage. Information on the development of the program, selection of wells to be sampled, and surface water sampling points, etc., is available in prior reports prepared for the District.

Four large maps form an integral part of this report. Plate 1 - Water Level Hydrograph Map, April 2010, depicts wells in the basin used for purposes of water level measurements and to assess changes in groundwater in storage. This map shows the physical limits of the groundwater basin, locations of the key wells, historical variations in water levels, and water level contours during the period of April 2010. Plate 2 - Water Level Hydrograph Map, October 2010 depicts water level contours during October 2010. Plate 3 - Contours of Equal Difference in Water Levels, October 2009 to October 2010 depicts the change in water levels between these two periods. Plate 4 - Chemical Hydrograph Map, depicts the location of wells that are used to monitor water quality in the basin. This map depicts trends of several important water quality constituents for ground and surface water that are routinely obtained as part of the semiannual water quality data collection program. The data provide information on the concentration and spatial distribution of total dissolved solids, nitrate ions, and chloride ions. These maps are updated annually and are included in each annual report.

PRECIPITATION

Groundwater recharge occurs by direct infiltration of precipitation, streambed percolation, irrigation return flow, and to a limited extent, by underflow from the "hill and mountain" area. Precipitation in the Carpinteria area for the 2010 calendar water year was recorded at 26.30 inches at the Carpinteria Fire Station. Precipitation data at the Carpinteria Fire Station have been collected for 62 years between 1949 to the present, during which average annual precipitation was 19.97 inches. A graph showing the cumulative departure from average precipitation is presented as Figure 1. The departure from average precipitation is the difference between precipitation in a specific year and the average precipitation for the period. Figure 1 depicts the sum of these departures over time (cumulative). Based on the cumulative departure from average precipitation at this station, there have been a series of cyclic wet and dry periods. Within the period of record, dry cycles have occurred between 1949 and 1960 (11 years or more) and between 1984 and 1990 (6 years). The current relatively dry cycle has lasted from 1999 to 2009 (10 years). Precipitation data during calendar year 2010 and the first part of 2011, may indicate the end of the dry period. A longer period of record for precipitation will be needed to confirm the possible end of this relatively dry period over the last 10 years.

Groundwater Levels

Water level measurements are made by District staff on a bimonthly basis for about 34 wells in the basin. The locations of these wells are shown on Plates 1 and 2. The water level data were obtained from District staff and hydrographs prepared for 17 key wells, which are shown on Plates 1 and 2. The data were then used to prepare water level elevation contours, which are shown on Plate 1 for the April 2010 period and on Plate 2 for the October 2010 period. The contours are representative of water levels within wells perforated in several depth zones. Therefore, the contours represent a composite of many different depth zones, not water level conditions in a single, common aquifer.

During 2010, water levels in the basin were generally higher than during the previous year. During April 2010, the time period presented on Plate 1, a pumping depression still remained in the central portion of the basin generally in the vicinity of and north of the District office. The pumping trough was as deep as about 15 feet below sea level during the April 2010 measurement period and several feet below sea level at the coast, a condition that could allow sea water intrusion. As in previous years, which have exhibited similar water level declines at the coast, there is no documented evidence of sea water intrusion in the basin. Water levels throughout the District appear to have risen during the final months of calendar year 2010 in response to above average rainfall.

During October 2010, the pumping trough in the central part of the District was evident, although to a lesser degree than during April 2010 likely due to early rainfall of over 2 inches, which occurred during October 2010. During October, the headquarters well, which is usually pumping continually, was being repaired, which allowed water levels in that portion of the basin to recover somewhat. Plate 3 depicts the change in water levels between October 2009 and October 2010 and illustrates the relative water level rise (blue) in most portions of the District. As is usual, several wells included in the water-level measurement program were being pumped or the water levels in these wells were inferred to be influenced by nearby pumping wells at the time of the water level measurements. The affects of this pumping is considered minor in the overall interpretation of the general water level conditions n the basin.

Water level data from the 20-year period between 1991 and 2010 indicate that water levels are commonly higher in the winter and spring due to recharge from precipitation and lower total groundwater pumpage, and relatively lower in summer and autumn due to pumping of groundwater from wells within the District. In general, the hydrographs presented on Plates 1 through 3 show that during the period of 2005 through 2009, water levels in Storage Unit No. 1 have locally declined by as much as 15 to 25 feet. Average annual groundwater pumping in the basin over this 5 year period was about 3,700 acre-feet per year (afy). During 2010, however, due to above normal precipitation and relatively low annual groundwater pumpage in the range of 2,900 acre-feet (refer to Figure 2), water levels in the central part of Storage Unit No. 1 have risen by 5 to 10 feet in most parts of the District (refer to Plate 3). Past periods of water level decline have recovered within a 2 to 3 year cycle with above average rainfall, such as occurred beginning in 1992.

There has been no significant change in water levels in Storage Unit No. 2, likely due in part to the very limited number of wells that are monitored in this part of the basin and the very limited amounts of groundwater pumped from this storage unit.

Groundwater Use

Groundwater pumpage in the basin occurs both from District production wells (see Plates 1 and 2) and from about 100 private wells. Pumpage from District wells is metered. The District supplies imported water and/or local groundwater to numerous agricultural parcels of known acreage and crop type (lemon, avocado, greenhouse, flower fields). From these metered deliveries, unit water use values (so called determining factors) for various crop types can be used to estimate private groundwater pumpage. For calendar year 2010, unit water values were assigned to land uses based on 2010 land use data. Based on this calculation, a private pumpage estimate of 2,198 acre-feet was calculated. Summaries of District groundwater pumpage and imported water amounts for 2010 are included in Appendix A - Supporting Data.

Groundwater pumpage from the basin by the District in calendar year 2010 was 742 acre-feet. Water purchased and imported into the District in calendar year 2010 was 3,157 acre-feet. The volume of groundwater pumpage was approximately 67 percent of the 20-year District average of about 1,103 acre-feet. Groundwater pumpage in the District between calendar years 1991 and 2010 is presented in Figure 2 - Water Use and Precipitation Data, Carpinteria Valley, and in Table 1 - Water Use and Precipitation Data. Imported water volumes (Casitas MWD, State project water, and Lake Cachuma water) and seasonal precipitation totals are also provided in Appendix A. As indicated, groundwater pumpage from the basin between 1991 and 2010 has averaged about 3,606 afy, and ranged from as high as 5,015 afy in 1991, to as low as 2,484 afy during 2001. Of the groundwater pumped, District pumpage has typically been about one-quarter to one-third of the total, which was the case during 2010.

Table 1. Water Use and Precipitation Data

Calendar Year	Rainfall (inches)	Estimated Private Pumpage (acre-feet)	Metered CVWD Pumpage (acre-feet)	Imported Water (acre-feet)	Total Pumpage (acre-feet)	District Use (percent)
1991	26.13	2,351	2,664	1,434	**5,015**	53
1992	27.05	2,174	1,178	3,155	3,352	35
1993	32.62	2,434	1,524	2,808	3,958	39
1994	15.02	2,780	1,305	3,206	4,085	32
1995	41.35	2,418	1,340	2,995	3,758	36
1996	25.86	2,597	1,410	2,896	4,007	35
1997	19.98	2,504	1,242	3,429	3,746	33
1998	41.35	2,481	469	3,549	2,950	16
1999	8.91	2,400 [1]	535	3,907	2,935	18
2000	18.99	2,400 [1]	1,210	2,959	3,610	34
2001	24.23	2,400 [1]	84	3,497	2,484	3
2002	12.28	3,116	662	3,774	3,778	18
2003	14.62	2,596 [2]	446	3,769	3,042	15
2004	19.42	2,698 [2]	1,265	3,884	3,963	32
2005	27.20	2,183 [2]	940	3,693	3,123	30
2006	16.86	2,270 [2]	1,142	3,147	3,412	33
2007	9.67	2,606	1,340	2,684	3,946	34
2008	19.22	2,865[3]	1,074	2,842	3,939	27
2009	14.39	2,596	1,488	2,835	4,084	36
2010	26.30	2,198	742	3,157	2,940	25
Mean	22.07	2,503	1,103	3,181	3,606	29
Maximum	41.35	3,116	2,664	3,907	5,015	53
Minimum	8.91	2,174	84	1,434	2,484	3

Notes: 1) 1999 to 2001 private pumpage estimated based on long-term average.
2) 2003 to 2006 private pumpage based on land use data of 2004 and 2006
Bolded value of Total Pumpage (1991 only) exceed 5,000 acre-feet "safe yield"

The estimated 4,500 to 5,000 afy safe yield of the basin, (GTC, 1976 and 1986), has been exceeded only once in the last 20 years (in 1991), which was at the end of the dry period which ended that year. During the remaining years, total groundwater pumped has been less than the 4,500 to 5,000 afy safe yield of the basin and, on average, has been about 3,606 afy. Pumpage less than the basin safe yield since about 1992 has resulted in a recovery of water levels in the basin and an accumulation of groundwater in storage. In 2003, the District retained the firm of Integrated Water Resources, Inc. (IWR) to perform an independent review of the safe yield of the basin. The results of that study reasserted that a basin safe range of from 4,500 to 5,000 afy was appropriate.

GROUNDWATER QUALITY

Groundwater quality in the Carpinteria basin is monitored by collecting samples from as many as 30 wells and 6 surface water stations on a biannual basis (spring/fall). The data collection program was initiated by the District in early 1999. Laboratory analyses performed included a full range of inorganic chemical constituents typically referred to as "Irrigation Suitability Analysis."

Groundwater quality in the basin continues to be suitable for most uses. As shown on Plate 4, total dissolved solids (TDS) concentrations for most wells range from 600 to 1,000 milligrams per liter (mg/l). Nitrate concentrations (expressed as nitrate) within Well -19MI, which have been elevated in past years with concentrations of over 400 mg/l, have moderated in the past several years to approximately 200 mg/l. By contrast, nitrate concentration within Well -19E1 was much lower, with a maximum concentration of 13 mg/l during 2010. During 2010, nitrate concentrations in Well -20R4 have continued to increase to a maximum of 128 mg/l. Nitrate concentrations within Well -28F7 (Lyons Well) have been rising modestly for the past several years, but have moderated during 2010 to approximately 30 mg/l (expressed as nitrate)

During 2010, chloride concentrations within Well -19MI and adjacent Well -19E1 were over 300 mg/l. With the exception of a single low (and likely erroneous) value, chloride concentrations in well -19MI have remained relatively steady for the past several years. Well -19M1 is 204 feet deep and likely has very shallow perforations although the actual depth interval is unknown. Well -19E1 is located approximately 900 feet north and is a relatively shallow well. Comparison of water quality data from the two wells shows that, although chloride concentrations are higher than many monitored wells, neither nitrate nor TDS are as elevated as those in Well -19M1.

Groundwater in the basin is generally characterized as calcium bicarbonate in chemical nature and locally demerited by the presence of elevated nitrate and chloride ion concentrations in shallow aquifers in Sections 19 and 20 of the basin. Other than the locally high nitrate ion concentrations in Section 19 and 20, the groundwater quality appears stable with no long-term trends toward impairment.

SUMMARY AND CONCLUSIONS

Based on the data for 2010 and the preceding years, aquifers in the Carpinteria basin continue to be adequately recharged during average to above average precipitation years, and provide a generally high quality of groundwater for the prevailing usages. During the spring and fall of 2010 water levels in the central part of Storage Unit No. 1 had fallen to elevations below sea level, although the levels appeared to be rising at the end of the calendar year in response to significant rainfall. Groundwater pumpage from the basin in 2010 was estimated to be approximately 2,940 acre-feet. At this rate of pumpage and the significant rainfall during calendar year 2010, water levels have risen compared to the previous year (Plate 3). No adverse water quality conditions or trends are apparent in the basin other than the occurrence of elevated nitrate and chloride ion concentrations in two shallow wells in the western portion of the basin.

Prior annual reports recommended that the Santa Barbara County Environmental Health Services (SBCEHS) be contacted to facilitate information exchange and notification on permit applications for the construction, modification, or destruction of water wells in the Carpinteria basin (exclusive of the Carpinteria city limits). Mr. Norm Fujimoto administers water well permit applications with the SBCEHS and has agreed to include the District as a recipient of future permit applications. Mr. Fujimoto also provided to us and the District a list (by APN, street address, and well permit application number) of approximately 90 water wells for which permit applications have been filed in the District and adjacent Montecito Water District in the Toro Canyon area covering the period from about 2000 to 2011. The District will need to review these permit applications relative to the construction of new water wells, well log data, water level and water quality information, and anticipated groundwater extractions. Such information should be merged with the database of such hydrogeologic information maintained by the District. We would be pleased to assist in this process.

We are informed by Mr. Robert McDonald, District Engineer that an update of hydrogeologic conditions and the construction of a groundwater flow model of the Carpinteria basin is being performed under a State of California Department of Water Resources (DWR) Local Groundwater Assistance Program Grant (Proposition 84) is nearing completion and should be available for public review in mid-2011. The water balance associated with the model may provide an update of the basin safe yield and will include evaluation of five scenarios of groundwater management strategies. These scenarios will tentatively include:

1. What additional groundwater recharge potential would occur if Santa Monica and Franklin Creeks were unlined?
2. What would happen if groundwater were extracted under a simulated 8 year drought scenario? operational scenarios be optimized using District wells?
3. How could the overall distribution system water quality be improved if a well(s) were constructed at Carpinteria Reservoir or at Lateral 2?
4. How would the basin respond to incrementally increasing the amount of groundwater pumped by the District over a simulation period extending to the year 2030.

The District is a participant in the California Statewide Groundwater Elevation Monitoring (CASGEM) program. In December 2010, the District notified the DWR of the intention to assume responsibility for monitoring and reporting groundwater elevations for the Carpinteria groundwater basin. DWR staff review and verification of the information to the CASGEM online notification system is currently in progress. The monitoring entity's notification for the District is complete. The next step in the CASGEM process will be for the District to submit their groundwater level monitoring plan and well data to the CASGEM internet portal; the portal is scheduled to be available to accept that data in mid May 2011. When DWR's review of the notification of intent to monitor groundwater levels and the groundwater level monitoring plan is completed, the District will be contacted and notified of the status as a monitoring entity. Information contained in this annual Groundwater Management Plan report should facilitate that data submittal to the DWR. We would be pleased to assist in that process.

We recommend that the data collection program (water levels and water quality) be maintained in its current form in subsequent years with the following modifications:

The nitrate concentration in the District's Lyons Well has been rising modestly and should be monitored at several intervals throughout a typical pumping cycle to determine if the concentrations are related to the duration of the pumping cycle. We would be pleased to assist in that process.

With the observed depression in water levels in the central part of Storage Unit No. 1 the District may want to consider expanding the water quality monitoring program to include additional wells and more frequent monitoring (perhaps quarterly) in that area for general mineral constituents, particularly chloride ion concentrations. The expanded monitoring should focus on qualified wells (suitable depth and perforated interval) located in Sections 19, 20, 28, and 29. In conjunction with this increased monitoring, several additional monitoring wells located in key areas where hydrogeologic data are lacking should be considered. These additional monitoring wells should be designed to separately monitor groundwater levels and groundwater quality in several different aquifers and be provided with dedicated transducers to collect groundwater water level and groundwater quality data on a daily basis. Such data could be downloaded quarterly and graphs developed to depict trends in groundwater level and quality (i.e., salinity or conductivity measurements as an early indicator of possible seawater intrusion into the basin)

CLOSURE

This report has been prepared for the exclusive use of the Carpinteria Valley Water District and their agents for specific application to the conditions of groundwater supply and quality in the Carpinteria groundwater basin in Carpinteria, California. The findings and conclusions presented herein were prepared in accordance with generally accepted hydrogeologic engineering practices. No other warranty, express or implied, is made.

Sincerely,

FUGRO CONSULTANTS, INC.

Timothy A. Nicely, P.G., C.Hg.
Project Hydrogeologist

David A. Gardner, CHg 122
Principal Hydrogeologist

Attachments: Figure 1 - Cumulative Departure from Average Precipitation
Figure 2 - Water Use and Precipitation Data
Plate 1 - Water Level Hydrograph Map, April 2010 Period
Plate 2 - Water Level Hydrograph Map, October 2010 Period
Plate 3 - Contours of Equal Difference in Water Levels, October 2009 to 2010
Plate 4 - Chemical Hydrograph Map
Appendix A - Supporting Data

Copies Submitted: (20) Addressee

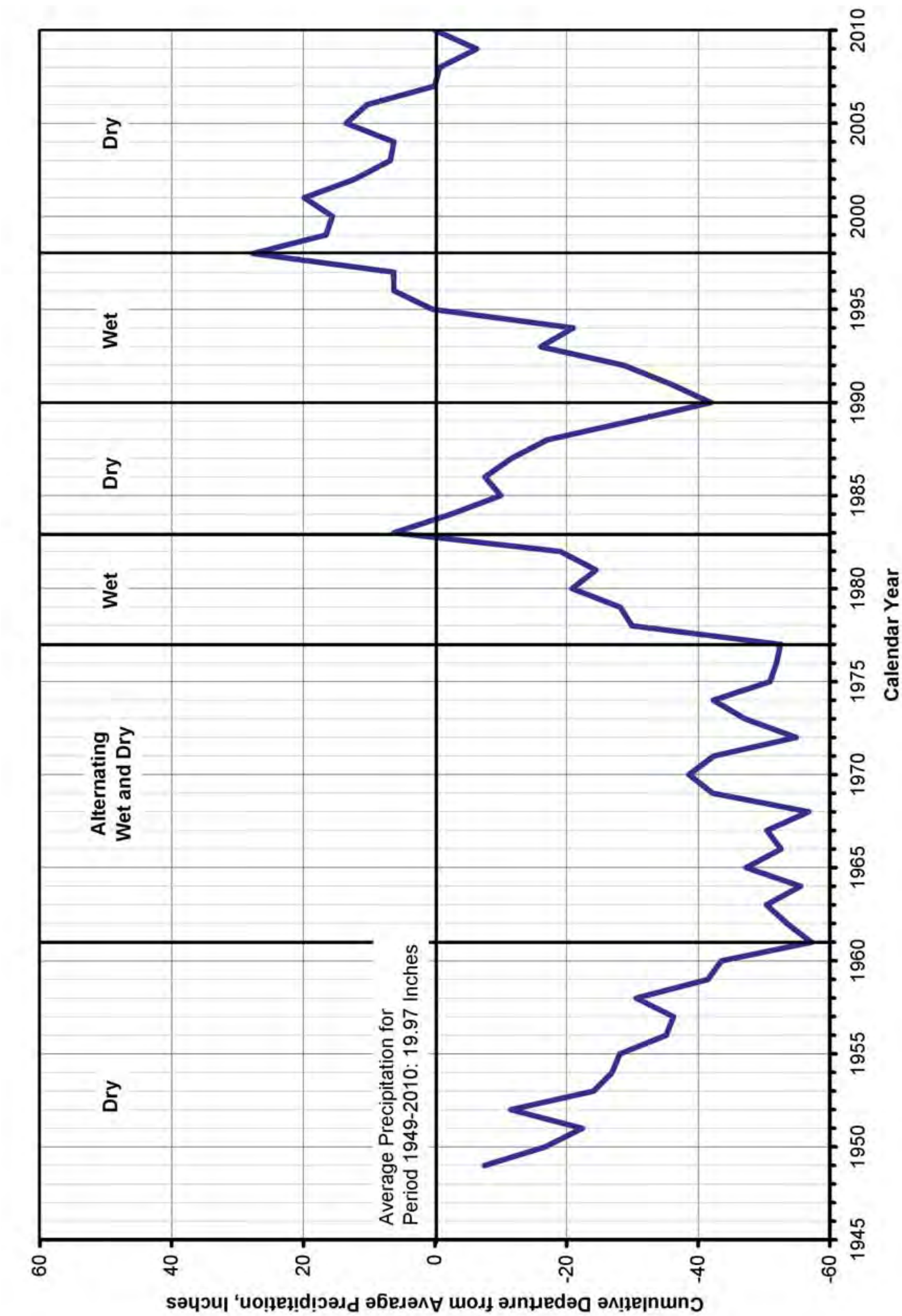
REFERENCES

Geotechnical Consultants, Inc. (1976), *Hydrogeologic Investigation of the Carpinteria Ground Water Basin,* consultant's unpublished report prepared for the Carpinteria County Water District, June 11.

_____ (1986), *Hydrogeologic Update, Carpinteria Groundwater Basin*, consultant's unpublished report prepared for the Carpinteria County Water District, July.

Integrated Water Resources, Inc. (IWR, 2003) *Perennial Yield Review of the Carpinteria Valley Groundwater Basin*, consultant's unpublished report prepared for the Carpinteria County Water District, February 25.

FIGURES



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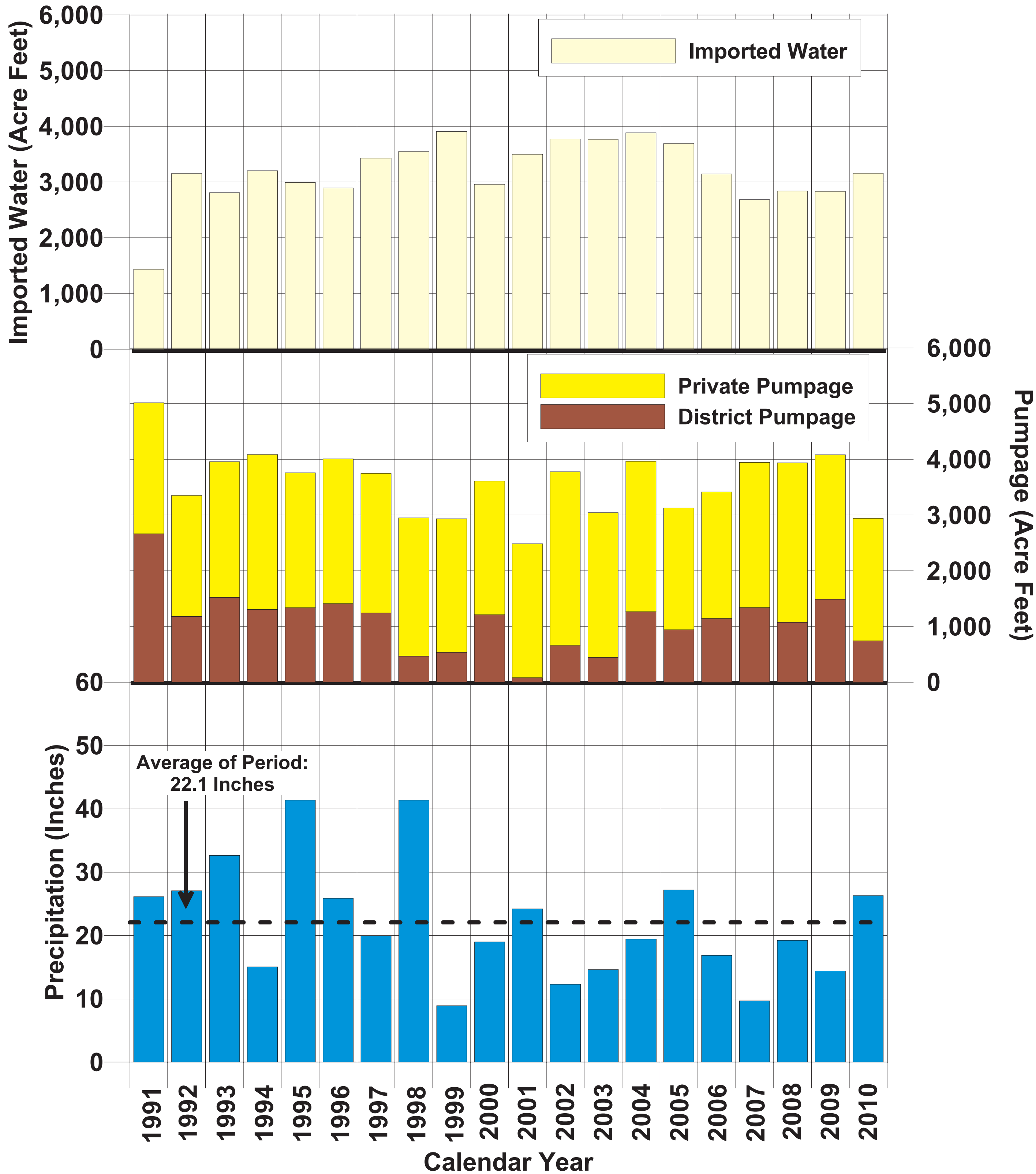
CUMULATIVE DEPARTURE FROM AVERAGE PRECIPITATION
Carpinteria Fire Station
Carpinteria Valley Water District

FIGURE 1



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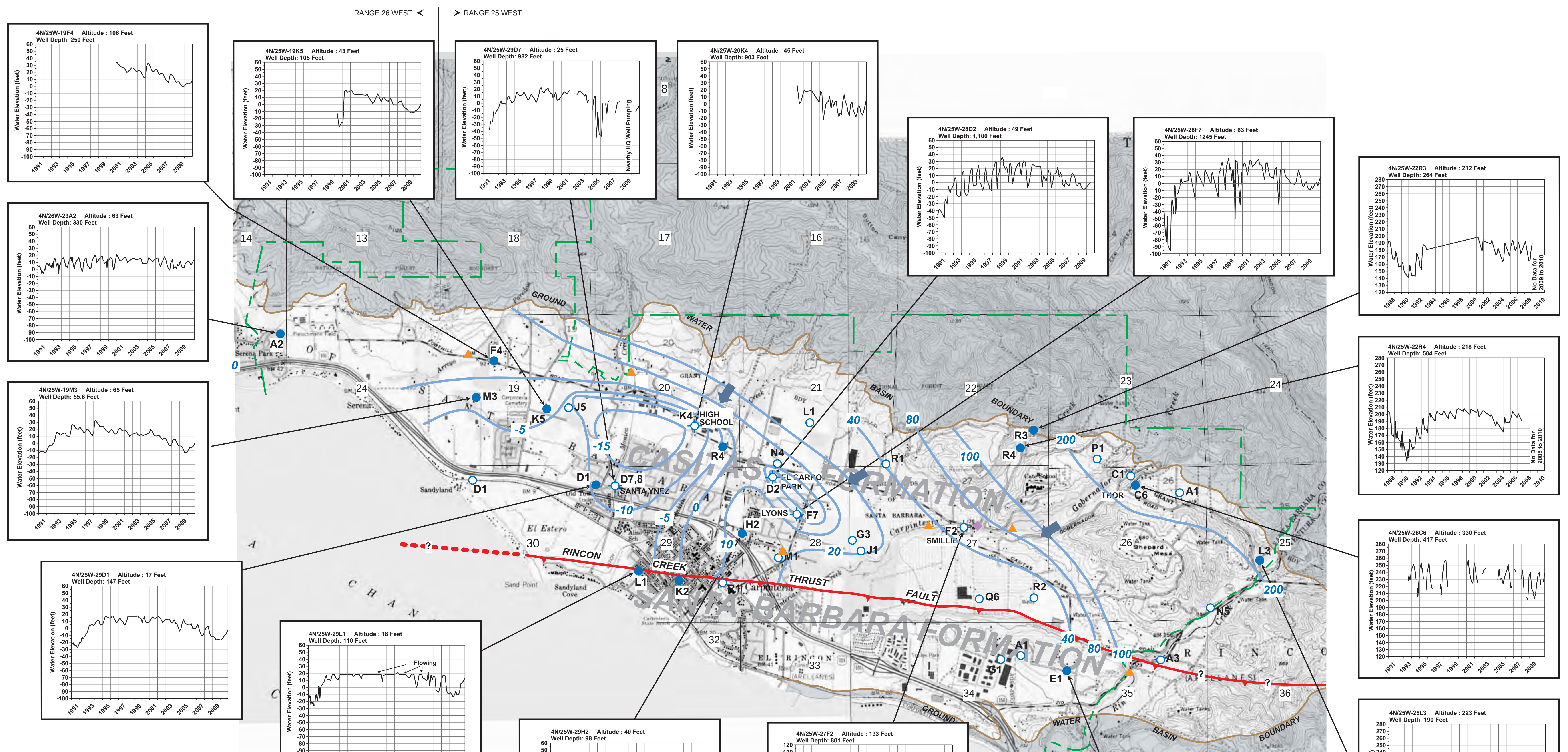
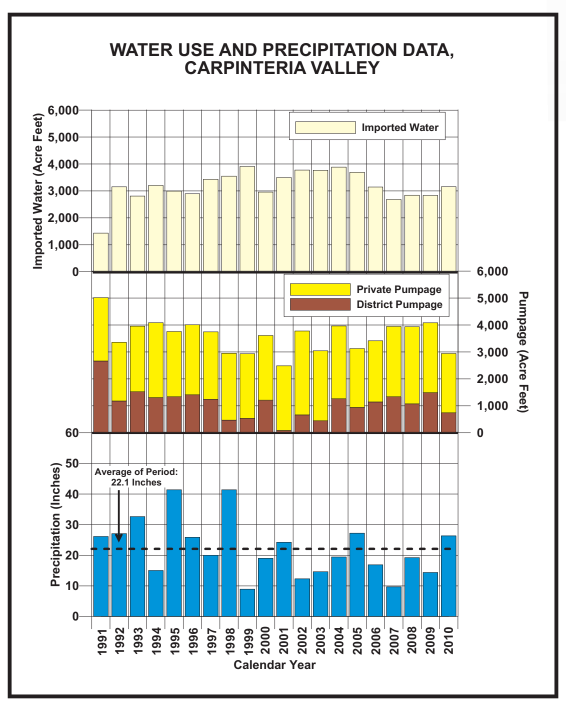
WATER USE AND PRECIPITATION DATA
Carpinteria Valley Water District

FIGURE 2

PLATES

RANGE 26 WEST ← → RANGE 25 WEST

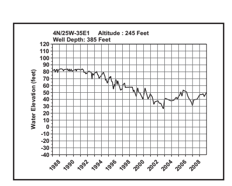




BASE MAP SOURCES: USGS 7.5' California quadrangle maps, Carpinteria (photorevised 1988) and White Ledge Peak (photorevised 1967).

LEGEND

- H1 — Approximate location of well with long term hydrograph record
- F4 — Approximate location of well included in monthly water level data collection program
- D7 SANTA YNEZ — CVWD production well
- Casitas Pass Road Precipitation Station No. 383, Santa Barbara County
- Surface water quality monitoring station
- Groundwater basin boundary
- Approximate location of Rincon Creek Thrust Fault
- Water District boundary
- 20 — Contour of equal water level elevation in feet, April 2010 dashed where approximate, queried where inferred
- Principal direction of groundwater flow



- Water well hydrograph, altitude of water surface in feet

NORTH

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FEET

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WATER LEVEL HYDROGRAPH MAP APRIL 2010 PERIOD

Client: **CARPINTERIA VALLEY WATER DISTRICT**

Project No. 04.B3033006.08 April 2011 PLATE 1

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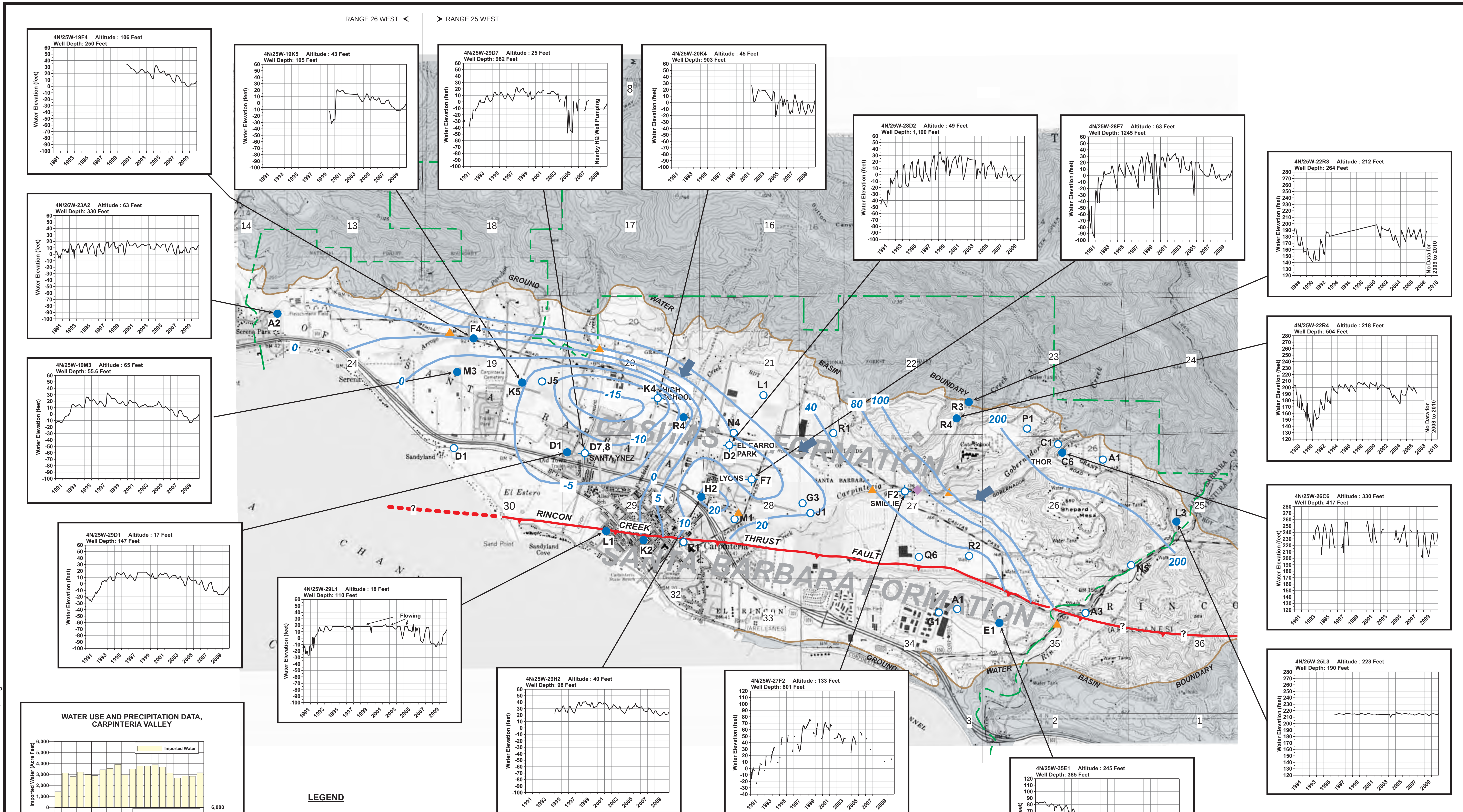

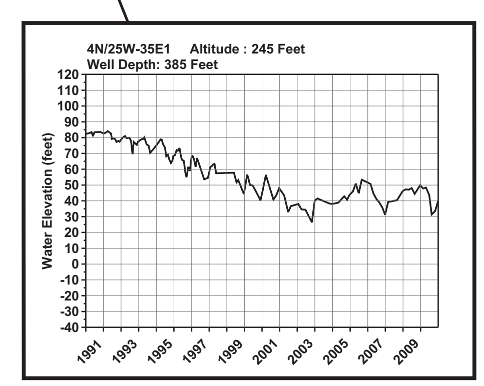

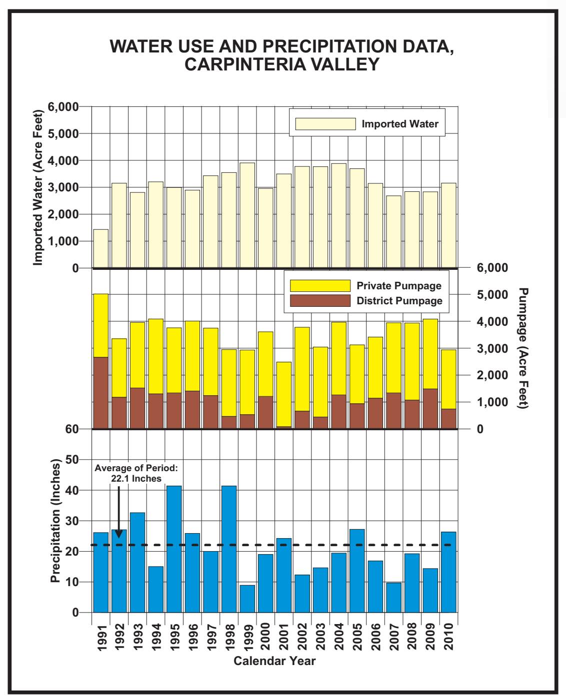

BASE MAP SOURCES: USGS 7.5' California quadrangle maps, Carpinteria (photorevised 1988) and White Ledge Peak (photorevised 1967).

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- Water well hydrograph, altitude of water surface in feet

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WATER LEVEL HYDROGRAPH MAP OCTOBER 2010 PERIOD

Client: **CARPINTERIA VALLEY WATER DISTRICT**

Project No. 04.B3033006.08 April 2011 PLATE 2

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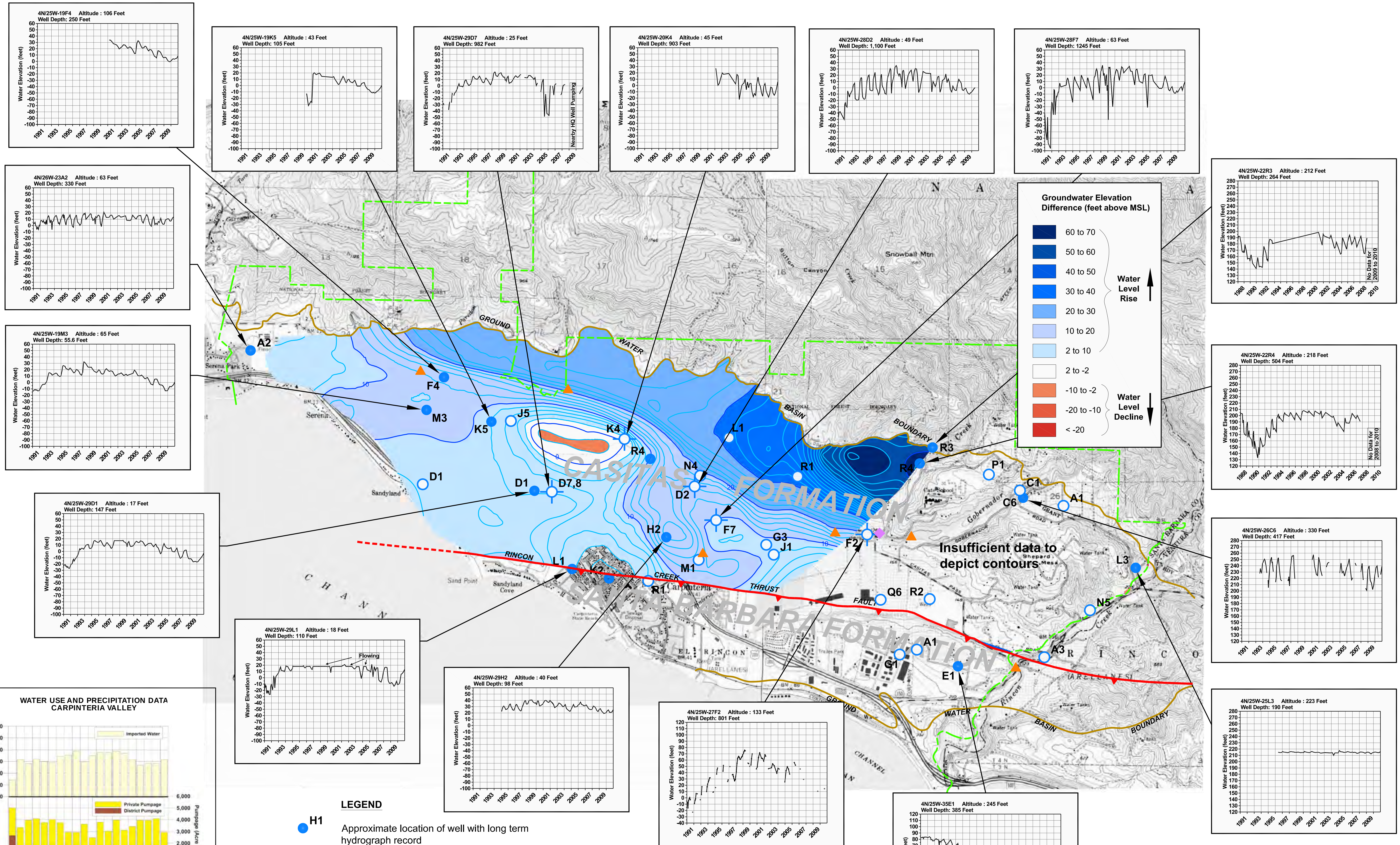

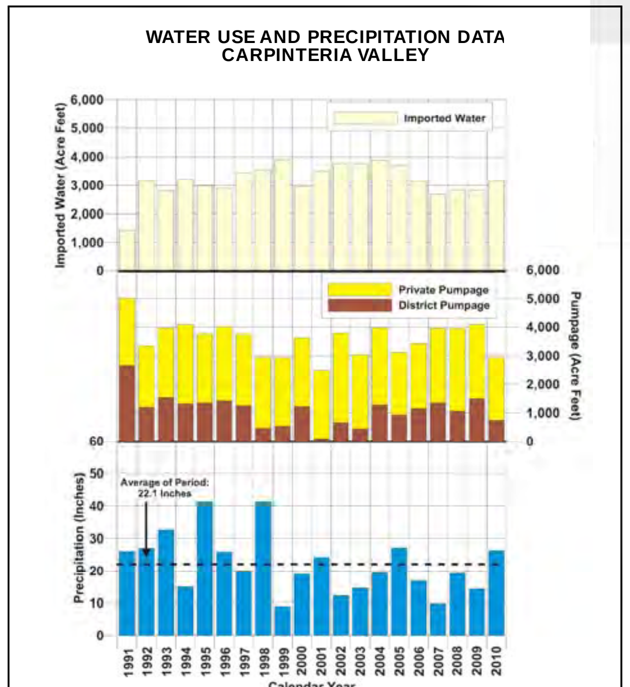

BASE MAP SOURCE: USGS 7.5' California quadrangle maps, Carpinteria (photorevised 1988) and White Ledge Peak (photorevised 1967).

LEGEND

- H1 — Approximate location of well with long term hydrograph record
- F4 — Approximate location of well included in monthly water level data collection program
- D7 — CVWD production well
- Casitas Pass Road Precipitation Station No. 383, Santa Barbara County
- Surface water quality monitoring station
- Groundwater basin boundary
- Water District boundary
- Groundwater Elevation (2 foot interval)
- Groundwater Elevation (10 foot interval)
- Approximate location of Rincon Creek Thrust Fault
- Water well hydrograph, altitude of water surface in feet

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CONTOURS OF EQUAL DIFFERENCE IN WATER LEVELS OCTOBER 2009 TO OCTOBER 2010

Client: **CARPINTERIA VALLEY WATER DISTRICT**

04.B3033006.08 April 2011 Plate 3

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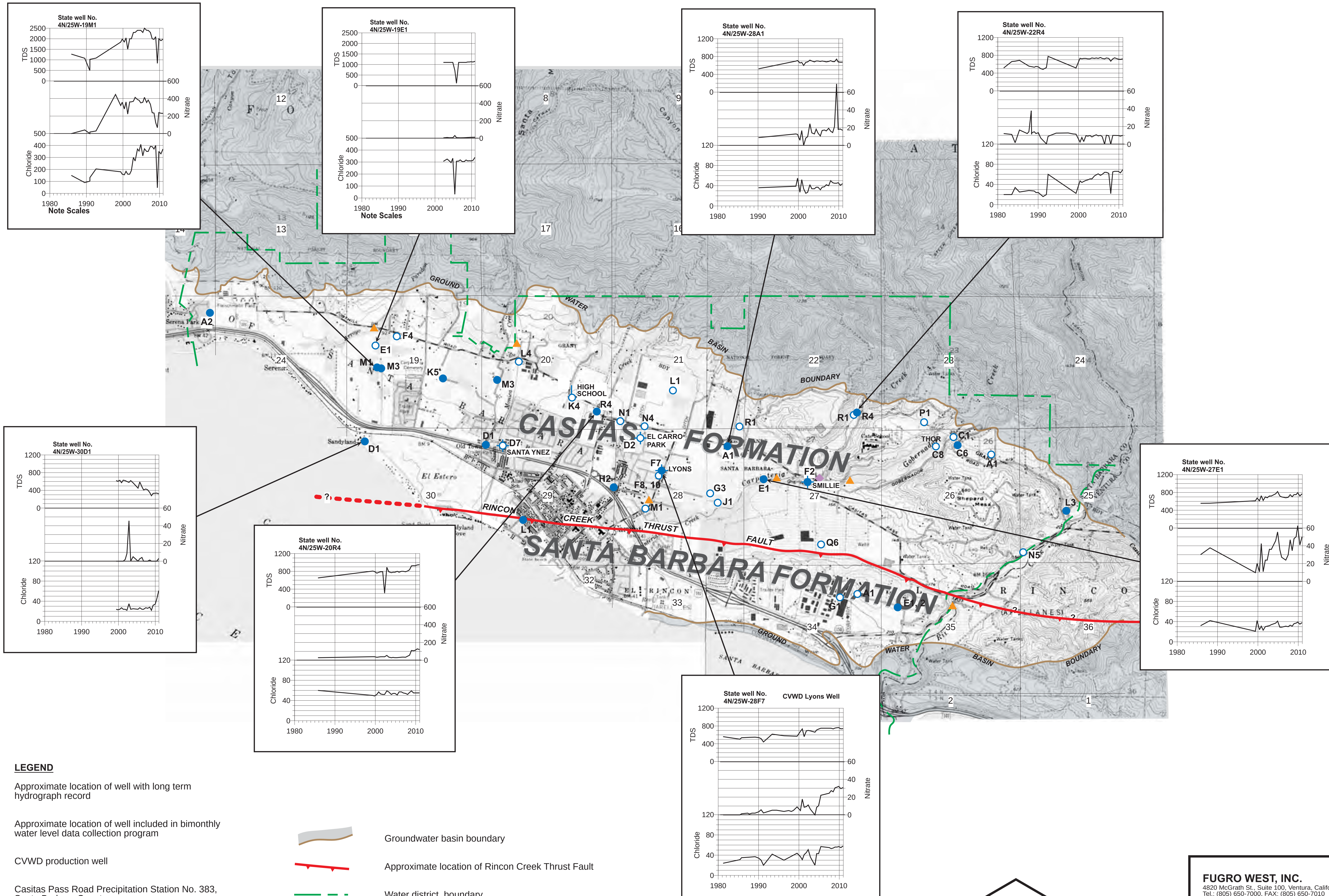


LEGEND

H1 — Approximate location of well with long term hydrograph record

F4 — Approximate location of well included in bimonthly water level data collection program

D7 — CVWD production well

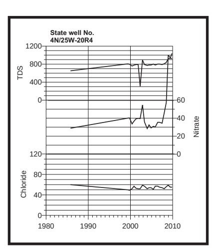
SANTA YNEZ — Casitas Pass Road Precipitation Station No. 383, Santa Barbara County

Surface water quality monitoring station

Groundwater basin boundary

Approximate location of Rincon Creek Thrust Fault

Water district boundary



Chemical Hydrograph, all constituents in milligrams per liter (mg/l)

BASE MAP SOURCES: USGS 7.5' California quadrangle maps, Carpinteria (photorevised 1988) and White Ledge Peak (photorevised 1967).

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CHEMICAL HYDROGRAPH MAP

Client: **CARPINTERIA VALLEY WATER DISTRICT**

Project No. 04.B3033006.08 April 2010 PLATE 4

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APPENDIX A
SUPPORTING DATA

PUBLIC WATER SYSTEM STATISTICS

Calendar Year **2010**

Carpinteria Valley Water District
Robert McDonald, District Engineer
1301 Santa Ynez Avenue
Carpinteria, CA 93013
PWS#4210001 SRO

1. General Information

Please follow the provided instructions.

Contact : Robert McDonald
Title: District Engineer
Phone: 805-684-2816 ext. 107
Fax: 805-684-3170
E-mail: bob@cvwd.net
Website: www.cvwd.net
County: **Santa Barbara**
Population served: **15,694 (estimate)**
Names of communities served: City of Carpinteria and unincorporated areas of Santa Barbara County

2. Active Service Connections

Customer Class	Potable Water		Recycled Water	
	Metered	Unmetered	Metered	Unmetered
Single Family Residential	3,078	0	0	0
Multi-family Residential	314	0	0	0
Commercial/Institutional	246	0	0	0
Industrial	57	0	0	0
Landscape Irrigation	68	0	0	0
Other	125	0	0	0
Agricultural Irrigation	398	0	0	0
TOTAL	4286	0	0	0

3. Total Water Into the System - Units of production: **AF**

(Select: **AF**=acre-feet; **MG**=million gallons; **CCF**=hundred cubic feet)

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Potable	*Wells*	153.71	134.87	119.89	101.58	139.28	15.99	15.83	12.18	4.69	14.75	14.84	14.21	741.82
	Surface	0	0	0	0	0	0	0	0	0	0	0	0	0
	Purchased 1/	69.20	28.00	127.00	199.36	308.00	404.00	410.00	483.82	462.21	250.68	226.00	189.00	3157.27
	Total Potable	222.91	162.87	246.89	300.94	447.28	419.99	425.83	496	466.9	265.43	240.84	203.21	3899.09
Untreated Water		0	0	0	0	0	0	0	0	0	0	0	0	0
Recycled 2/		0	0	0	0	0	0	0	0	0	0	0	0	0

1/ Potable wholesale supplier(s): Cachuma Project & SWP

2/ Recycled wholesale supplier(s):
Level of treatment:

4. Metered Water Deliveries - Units of delivery: **AF**

(Select: **AF**=acre-feet; **MG**=million gallons; **CCF**=hundred cubic feet)

	If recycled is included, X box ↓	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
A.SingleFamilyResidential		63.29	52.49	66.85	73.97	92.32	97.05	103.93	109.81	82.54	80.30	65.30	56.40	944.2344
B.Multi-family Residential		27.55	22.92	28.51	31.56	40.28	42.31	45.68	48.20	36.09	34.27	27.84	24.60	409.8147
C.Commercial/Institutional		25.30	21.11	26.98	31.43	46.21	41.44	54.34	64.36	38.87	36.14	27.93	21.26	435.3655
D.Industrial		4.35	3.27	4.65	6.21	7.59	6.01	8.13	8.46	7.36	6.87	5.72	4.36	72.98439
E.Landscape Irrigation		2	2	6	8	11	11	13	13	10	7	5	2	90
F.Other		0	0	0	0	0	0	0	0	0	0	0	0	0
Total Urban Retail *(A thru F)*		122.4839	101.786	132.9913	151.1662	197.399	197.803	225.0803	243.8361	174.8623	164.5845	131.786	108.6203	1952.399
Agricultural Irrigation		60.75	46.75	90.31	113.19	200.02	160.47	206.84	251.02	175.95	137.41	84.47	53.58	1580.76
Wholesale *(to other agencies)*														

Population Served estimation derived from Avg household of 2.41 people per hshld x 6512 (# hshlds in Carpinteria)

Summary of Water Quality Data, Spring & Fall 2010
Carpinteria Valley Water District
Groundwater Basin Data Collection Program

Well No.	Owner/Name	Sample Date	Calcium	Magnesium	Potassium	Sodium	Carbonate	Bicarbonate	Sulfate	Chloride	Nitrate	Fluoride	Boron	Copper	Iron	Manganese	Zinc	PH Field	PH Lab	E.C. Field	E.C. Lab	SAR	TDS	Alkalinity	Hardness	Ammonia Nitrogen
4N/25W-19E1	Ocean Breeze	5/18/2010	122	35	1	187	<10	320	123	314	11.8	1.3	2	<0.01	<0.05	0.01	<0.02	NA	6.7	10.3	1720	3.8	1120	260	448	--
		11/16/2010	124	34	1	208	<10	310	122	339	12.5	1.3	2.1	<0.01	<0.05	0.02	<0.02	NA	6.9	10.16	1740	4.3	1150	260	449	--
4N/25W-19J4	Carlton	5/12/2010	146	40	1	52	<10	310	162	98	80.4	0.4	<0.1	<0.01	<0.05	<0.01	<0.02	NA	6.7	7.3	1210	1	890	250	529	--
		11/17/2010	139	38	1	50	<10	280	142	100	92	0.3	0.1	<0.01	0.07	<0.01	0.02	NA	6.9	6.9	1160	1	842	230	503	--
4N/25W-19K5	Westland Floral	5/13/2010	195	61	1	82	<10	370	193	191	214	0.4	0.2	<0.01	<0.05	<0.01	<0.02	NA	6.7	11.45	1820	1.3	1310	300	738	--
		12/14/2010	266	86	2	115	<10	390	280	260	278	<0.1	0.3	<0.01	0.79	<0.01	<0.02	NA	6.6	11.7	2180	1.6	1680	320	1020	--
4N/25W-19M1	Abbott	5/20/2010	284	74	1	185	<10	430	370	330	232	0.8	1.2	<0.01	0.09	<0.01	<0.02	NA	6.7	14.3	2560	2.5	1910	350	1010	--
		12/8/2010	282	74	1	191	<10	450	380	370	231	0.7	1.3	<0.01	0.18	<0.01	<0.02	NA	6.7	14.95	2660	2.6	1980	370	1010	--
4N/25W-19R1	Westland Floral	5/13/2010	140	38	1	49	<10	300	140	100	93	0.4	<0.1	<0.01	<0.05	0.02	<0.02	NA	7.1	7.18	1180	0.9	861	240	506	--
		12/14/2010	144	37	1	50	<10	300	142	103	90	<0.1	<0.1	<0.01	<0.05	0.08	<0.02	NA	7.1	6.29	1190	1	867	240	512	--
4N/25W-20K4	CVWD (High School, Raw)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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4N/25W-20K4	CVWD (High School,Treated)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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4N/25W-20M1	Ocean Breeze/Foothill	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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4N/25W-20R4	Persoon	5/13/2010	116	38	2	81	<10	390	133	55	128	0.3	0.2	0.01	<0.05	0.08	<0.02	NA	7.2	7.6	1220	1.7	943	320	446	--
		11/17/2010	125	38	2	88	<10	390	129	55	121	0.3	0.2	<0.01	<0.05	0.07	<0.02	NA	7.2	7.6	1210	1.8	948	320	468	--
4N/25W-21F1	Rancho Antigua	5/12/2010	86	39	1	80	<10	440	29	99	33.2	0.5	0.2	<0.01	<0.05	<0.01	0.11	NA	7.2	7.7	1080	1.8	808	360	375	--
		11/16/2010	102	44	2	106	<10	490	22	141	26	0.7	0.2	<0.01	0.05	<0.01	0.29	NA	7	7.77	1240	2.2	934	400	436	--
4N/25W-21L1	Bradley	5/12/2010	89	31	2	75	<10	380	109	56	1.9	0.3	0.2	<0.01	<0.05	0.01	<0.02	NA	7.1	6.8	959	1.7	744	310	350	--
		11/16/2010	91	31	2	80	<10	380	107	56	2	0.2	0.2	<0.01	<0.05	0.01	<0.02	NA	7.2	6.15	954	1.8	749	310	355	--
4N/25W-21N?	Ocean Breeze	5/18/2010	94	30	2	69	<10	350	132	41	5	0.3	0.2	<0.01	<0.05	0.04	0.23	NA	6.9	6.32	917	1.6	723	290	358	--
		11/16/2010	90	29	2	71	<10	350	126	44	2.9	0.3	0.2	<0.01	<0.05	0.02	0.09	NA	7.3	5.99	913	1.7	715	290	344	--
4N/25W-21N4	Brand Flowers	5/12/2010	84	32	1	63	<10	370	104	40	19.5	0.4	0.1	1.01	0.06	0.99	0.02	NA	6.9	6.15	907	1.5	714	300	341	--
		11/17/2010	92	31	1	65	<10	350	104	38	18.8	0.3	0.1	<0.01	0.05	0.25	0.02	NA	7	5.25	906	1.5	700	290	357	--
4N/25W-21Q1	Overgaag/Westerlay Roses	5/11/2010	86	30	1	77	<10	350	86	58	19.4	0.4	0.1	<0.01	<0.05	0.35	<0.020	NA	7.1	5.75	897	1.8	708	290	338	--
		11/17/2010	82	27	1	76	<10	340	85	55	17.3	0.4	0.1	<0.01	0.05	0.16	<0.02	NA	7.1	5.73	891	1.9	684	280	316	--
4N/25W-22R4	Vedder	5/13/2010	100	30	1	53	<10	310	142	63	9.1	0.3	0.1	<0.01	<0.05	<0.01	<0.02	NA	7	6.21	961	1.2	708	250	373	--
		11/16/2010	108	30	2	56	<10	300	145	69	9.9	0.2	0.1	<0.01	0.13	<0.01	<0.02	NA	7.2	5.84	953	1.2	720	240	393	--
4N/25W-25F1	Nichols	5/11/2010	133	48	2	79	<10	290	111	171	47.3	0.4	<0.1	<0.01	0.24	<0.01	0.03	NA	7.2	6.84	1240	1.5	882	240	529	--
		11/16/2010	121	42	2	74	<10	280	114	161	44.7	0.5	<0.1	<0.01	0.21	0.01	<0.02	NA	7.5	7.25	1220	1.5	839	230	475	--
4N/25W-26B1	Dautch	5/18/2010	183	43	2	63	<10	240	96	283	86.4	0.2	<0.1	0.03	0.27	<0.01	<0.02	NA	6.8	9.63	1580	1.1	997	200	634	--
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4N/25W-26C8	Thor	5/18/2010	95	29	1	38	<10	280	146	27	5.7	0.3	<0.1	<0.01	<0.05	<0.01	<0.02	NA	7.1	5	805	0.9	622	230	356	--
		12/16/2010	103	30	1	44	<10	280	153	28	6.1	0.3	<0.1	<0.01	0.1	<0.01	<0.02	NA	7.4	4.51	807	1	645	230	380	--
4N/25W-27E1	Phelps	5/12/2010	114	32	1	40	<10	320	138	35	40.9	0.3	<0.1	<0.01	<0.05	<0.01	<0.02	NA	6.9	5.42	912	0.9	721	260	416	--
		12/15/2010	126	33	1	40	<10	340	142	38	50.3	<0.1	<0.1	<0.01	0.13	<0.01	<0.02	NA	6.9	5.65	986	0.8	770	280	450	--
4N/25W-27F2	CVWD (Smillie well)	5/18/2010	103	28	1	37	<10	310	139	29	12.8	0.2	<0.1	0.02	<0.05	<0.01	<0.02	NA	6.9	5.25	847	0.8	660	250	372	--
		12/8/2010	104	28	1	38	<10	300	143	32	12.7	0.1	<0.1	<0.01	<0.05	<0.01	<0.02	NA	7	5.05	849	0.9	659	250	375	--
4N/25W-27R2	Shepard Farms	5/20/2010	149	46	2	112	<10	340	100	268	11.8	0.5	0.2	<0.01	0.38	0.27	<0.02	NA	7.1	9.25	1550	2.1	1030	280	561	--
		11/16/2010	134	40	2	110	<10	330	91	238	8.2	0.6	0.1	<0.01	0.07	0.25	<0.02	NA	7.2	8.81	1440	2.1	954	270	499	--
4N/25W-28A1	Moore	5/12/2010	88	28	1	57	<10	330	108	41	18.5	0.4	<0.1	<0.01	<0.05	0.02	<0.02	NA	7.2	5.63	860	1.4	672	270	335	--
		11/17/2010	92	28	1	60	<10	330	101	44	17.1	0.3	<0.1	0.04	<0.05	0.02	<0.02	NA	7.3	5.59	874	1.4	673	270	345	--
4N/25W-28D2	CVWD (El Carro,Raw)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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4N/25W-28D2	CVWD (El Carro,Treated)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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4N/25W-28F7	CVWD (Lyons)	6/8/2010	111	29	1	52	<10	320	138	55	29.5	0.2	<0.1	<0.01	0.23	0.32	<0.02	NA	7	6.03	970	1.1	736	260	396	--
		1/3/2011	111	29	1	52	<10	320	138	58	30.8	0.4	<0.1	<0.01	0.17	0.29	<0.02	NA	7.1	6.25	972	1.1	740	260	396	--
4N/25W-28G3	Dal Pozzo	5/11/2010	165	46	1	60	<10	390	192	52	72.8	0.3	0.1	<0.01	<0.05	0.05	<0.02	NA	7.2	7.15	1200	1.1	979	320	601	--
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4N/25W-28H1	Huff	5/12/2010	100	29	1	46	<10	320	123	31	38.2	0.4	<0.1	0.01	<0.05	<0.01	<0.02	NA	7	5.61	880	1	689	260	369	--
		12/15/2010	109	30	1	46	<10	320	122	34	45.5	<0.1	<0.1	<0.01	0.1	<0.01	<0.02	NA	7	5.59	919	1	708	270	395	--
4N/25W-28J1	Catlin	5/18/2010	151	42	1	52	<10	410	169	50	68	0.3	<0.1	<0.01	<0.05	<0.01	<0.02	NA	7	7.21	1180	1	943	330	550	--
		12/13/2010	141	39	1	47	<10	390	169	49	43.9	0.2	<0.1	<0.01	0.05	<0.01	<0.02	NA	6.9	6.37	1110	0.9	880	64	64	--
4N/25W-29D7	Santa Ynez Well (CVWD)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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4N/25W-29D8	H.Q. Well (CVWD Raw)	5/20/2010	88	24	1	61	<10	330	109	33	8.8	0.3	0.1	<0.01	<0.05	0.1	<0.02	NA	7.2	5.6	832	1.5	655	270	318	--
		1/20/2011	90	24	1	60	<10	320	108	32	7	0.3	0.1	<0.01	0.08	0.08	<0.02	NA	7	5.51	823	1.5	642	260	323	--
4N/25W-29D8	H.Q. Well (CVWD Finish)	5/20/2010	91	25	1	64	<10	330	108	35	8.7	0.3	0.1	0.02	<0.05	<0.01	<0.02	NA	7.4	5.65	480	1.5	663	270	330	--
		1/20/2011	89	24	1	61	<10	320	109	35	7	0.3	<0.1	<0.01	<0.05	<0.01	<0.02	NA	7	5.54	834	1.5	646	270	321	--
4N/25W-29K2	Pekins	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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4N/25W-29L1	Saragosa	5/13/2010	31	17	3	50	<10	250	29	22	<0.4	0.2	<0.1	<0.01	0.18	0.03	1.5	NA	7.5	3.45	519	1.8	402	210	147	--
		12/13/2010	32	17	3	54	<10	250	18	22	<0.4	0.3	<0.1	0.01	0.1	0.05	1.1	NA	7.7	3.32	497	1.9	396	200	150	--
4N/25W-30D1	Sandyland/Slough Well	5/20/2010	22	12	2	57	<10	200	<2	44	<0.4	0.7	0.1	<0.01	1.6	0.12	0.07	NA	8	3.33	460	2.4	338	160	104	--
		12/8/2010	19	13	2	57	<10	160	7	61	3	0.4	0.1	<0.01	1.1	0.12	<0.02	NA	7.9	3.45	480	2.5	322	130	101	--
4N/25W-34G1	Aluminum Filter	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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4N/25W-34B4	Twin Pines	5/11/2010	98	30	2	57	<10	310	106	46	3	0.4	0.1	<0.01	0.07	0.01	<0.02	NA	7.3	7.1	825	1.3	652	250	368	--
		12/13/2010	98	27	2	55	<10	320	122	42	6.3	0.3	0.1	<0.01	1.5	0.41	<0.02	NA	7.2	5.45	853	1.3	673	260	356	--
4N/25W-35B5	Van der Kar	5/11/2010	168	61	2	101	<10	410	320	95	13.7	0.4	0.3	0.01	<0.05	<0.01	<0.02	NA	7.4	8.6	1450	1.7	1170	340	670	--
		11/17/2010	159	55	2	98	<10	400	330	100	15.4	0.3	0.3	<0.01	0.05	<0.01	<0.02	NA	7.4	8.35	1450	1.7	1160	330	623	--
4N/26W-13R1	Baker	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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4N/26W-23A2	Zangger	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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4N/26W-24F1	Hickey Brothers	5/13/2010	77	36	1	120	<10	450	30	156	5.7	1	0.2	0.01	0.15	0.1	<0.02	NA	6.8	8.5	1230	2.8	877	370	340	--
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Toro Creek		5/11/2010	133	52	1	124	<10	370	260	186	14.8	0.4	0.2	<0.01	<0.05	<0.01	<0.02	NA	7.9	9.67	1560	2.3	1140	300	546	--
		12/27/2010	109	38	2	91	<10	290	180	107	9	0.5	0.1	<0.01	0.11	<0.01	<0.02	NA	7.9	5.73	1120	1.9	826	240	428	0.2
Arroyo Paredon Creek		5/13/2010	102	38	2	227	<10	390	117	366	<0.4	2.3	2.2	<0.01	<0.05	<0.01	<0.02	NA	8	11.13	1930	4.9	1240	320	411	--
		12/6/2010	93	29	2	266	<10	420	88	380	0.5	2.7	3.3	<0.01	0.08	<0.01	<0.02	NA	8.2	9.85	1960	6.2	1280	340	351	<0.2
Santa Monica Creek		5/18/2010	82	26	<1	38	<10	270	131	21	<0.4	0.4	0.1	<0.01	<0.05	0.01	<0.02	NA	8	4.45	717	0.9	568	220	312	--
		12/6/2010	83	26	1	38	<10	270	147	18	<0.4	0.2	0.1	<0.01	0.11	0.02	<0.02	NA	8.1	3.83	736	0.9	583	220	314	<0.2
Carpinteria Creek		5/18/2010	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		12/27/2010	70	21	1	27	<10	230	93	16	1.7	0.3	<0.1	<0.01	0.14	<0.01	<0.02	NA	7.9	3.35	589	0.7	460	190	261	0.8
Gobernador Creek		5/18/2010	85	29	1	35	<10	270	135	16	0.7	0.3	<0.1	<0.01	<0.05	<0.01	<0.02	NA	8.1	4.25	720	0.8	572	220	331	--
		11/17/2010	96	34	1	47	<10	300	164	31	4.2	0.4	<0.1	<0.01	<0.05	<0.01	<0.02	NA	8	4.15	850	1	678	250	379	<0.2
Rincon Creek		5/11/2010	89	36	1	61	<10	330	112	48	2	0.5	0.3	<0.01	<0.05	<0.01	<0.02	NA	8.1	5.11	856	1.4	680	270	370	--
		12/6/2010	81	33	3	75	<10	350	109	71	3.4	0.4	0.4	<0.01	<0.05	<0.01	<0.02	NA	7.9	4.51	960	1.8	726	290	338	<0.2

Concentrations in milligrams per liter, except Conductance (micromhos/cm) and pH.
ND - Not detected. Detection limits: iron <0.05 mg/l; manganese <0.03 mg/l; nitrate <0.4 mg/l.
-- Not sampled