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January 18, 2013 (Revised February 27, 2013)
Project No. 04.B3033006.09

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

Attention: Mr. Charles Hamilton, General Manager

Subject: Carpinteria Groundwater Basin, Annual Report for 2011

Dear Mr. Hamilton:

Presented in this annual report is a summary and description of groundwater conditions in the Carpinteria groundwater basin for calendar year 2011. This represents the 10th 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 2011, 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 2011. Plate 2 - Water Level Hydrograph Map, October 2011 depicts water level contours during October 2011. Plates 3 and 4 depict the location of wells that are used to monitor water quality in the basin. These two maps 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 (TDS), 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 2011 calendar water year was recorded at 14.56 inches at the Carpinteria Fire Station, and was about 27 percent below the long-term average. Precipitation data at the Carpinteria Fire Station have been collected for 62 years between 1949 to the present, during which average annual precipitation was 19.89 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 now lasted from 1999 to 2011 (12 years).

Groundwater Levels

Water level measurements were made by District staff on a bimonthly basis for 31 wells in the basin during 2011. 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 14 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 2011 period and on Plate 2 for the October 2011 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 April 2011, the time period presented on Plate 1, a pumping depression was present in the central portion of the basin generally in the vicinity of the District office. The pumping trough was as deep as about 10 feet below sea level during the April 2011 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 fell during the second half of calendar year 2011 in response to below average rainfall.

During October 2011, the time period presented on Plate 2, the pumping trough in the central part of the District continued to be evident, and to a greater degree than during April 2011 due to groundwater pumping. During October, the headquarters well, which is usually pumping continually, caused water levels in that portion of the basin being on the order of 50 feet below sea level. The pumping level in the District headquarters well was 76 feet below sea level. As is usual, several wells included in the water-level measurement program were being pumped and the water levels in surrounding wells were influenced by pumping wells at the time of the water level measurements.

Water level data from the 20-year period between 1992 and 2011 indicate that water levels are commonly higher in the winter and spring due to recharge from precipitation and seasonal reduction in groundwater pumpage, and relatively lower in summer and fall due to pumping of groundwater from wells within the District. In general, the hydrographs presented on Plates 1 and 2 illustrate that during the period of 2006 through 2011, water levels in Storage Unit No. 1 have locally declined by as much as 20 to 30 feet. Average annual groundwater pumping in the basin over this 5 year period was about 3,700 acre-feet per year (afy). However, during 2011, due to below average precipitation and annual groundwater pumpage in the range of 3,800 acre-feet (refer to Figure 2), water levels in the central part of Storage Unit No. 1 have declined by 5 to 10 feet (refer to Plates 1 and 2).

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 2011, unit water values were assigned to land uses based on 2011 land use data. Based on this calculation, a private pumpage estimate of 2,428 acre-feet was calculated. Summaries of District groundwater pumpage and imported water amounts for 2011 are included in Appendix A - Supporting Data "Public Water System Statistics".

Groundwater pumpage from the basin by the District in calendar year 2011 was 1,365 acre-feet. Water purchased and imported into the District in calendar year 2011 was 2,673 acre-feet. The volume of groundwater pumpage by the District was approximately 131 percent of the 20-year District average of about 1,038 acre-feet. Groundwater pumpage in the District between calendar years 1992 and 2011 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 1992 and 2011 has averaged about 3,545 afy, and ranged from as high as 4,085 afy in 1992, 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 2011.

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)
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	1,074	2,842	3,939	27
2009	14.39	2,596	1,488	2,835	4,084	36
2010	26.30	2,294	742	3,157	3,036	24
2011	14.56	2,428	1,365	2,673	3,793	36
Mean	21.49	2,507	1,038	3,243	3,545	28
Maximum	41.35	3,116	2,664	3,907	4,085	39
Minimum	8.91	2,174	84	2,673	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

The estimates of the safe yield for the groundwater basin have been reassessed several times during the past 30 years. Most recently in 2012 Pueblo Water Resources, Inc. completed a modeling study of the District's groundwater basin and arrived at a revised "practical rate of withdrawal," or "operational yield" of the basin of 3,600 to 4,200 afy. Prior to the most recent estimate, a value of 4,500 to 5,000 afy was considered the "safe yield" of the basin, (GTC, 1976 and 1986). In 2003, the District retained the firm of Integrated Water Resources, Inc. to perform an independent review of this value. The results of that study reasserted that a basin "safe yield" in the range of 4,500 to 5,000 afy was appropriate. Since that time, the District has discontinued reference to "safe yield" but has instead referred to an "operational yield," which is understood as a range of long term average annual pumpage at which no undesirable effects will occur.

The total groundwater pumpage has not exceeded the prior "safe yield" range of 4,5000 to 5,000 afy, nor the upper limit of the current "operational yield" of 4,200 during the last 20 years. Further, the average pumpage of 3,545 is below the lower bound of the current "operational yield" of 3,600 afy.

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 Plates 3 and 4, 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, had moderated in 2008 and 2009, but has risen in 2010 and 2011 to as high as 337 mg/l. By contrast, nitrate concentration within Well -19E1 was much lower, with a maximum concentration of 13 mg/l during 2011. During 2011, nitrate concentrations in Well -20R4 have remained similar to the prior year at about 126 mg/l. Nitrate concentrations within Well -28F7 (Lyons Well) have been rising modestly for the past several years, but have moderated since 2009 to a value of approximately 30 mg/l in 2011 (expressed as nitrate).

During 2011, 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 in Well -19E1 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 2011 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 2011 water levels in the central part of Storage Unit No. 1 continued to remain at elevations below sea level. Groundwater pumpage from the basin in 2011 was estimated to be approximately 3,793 acre-feet. At this rate of pumpage and the below-normal rainfall that occurred during calendar year 2011, water levels declined compared to the previous year. 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.

We recommend that the data collection program (water levels and water quality) be maintained in its current form in the 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, CHg
Senior Project Hydrogeologist

Attachments: Figure 1 - Cumulative Departure from Average Precipitation
Figure 2 - Water Use and Precipitation Data
Plate 1 - Water Level Hydrograph Map, April 2011 Period
Plate 2 - Water Level Hydrograph Map, October 2011 Period
Plate 3 - Chemical Hydrograph Map - Western Extent
Plate 4 - Chemical Hydrograph Map - Eastern Extent
Appendix A - Supporting Data

Copies Submitted: (20) Addressee

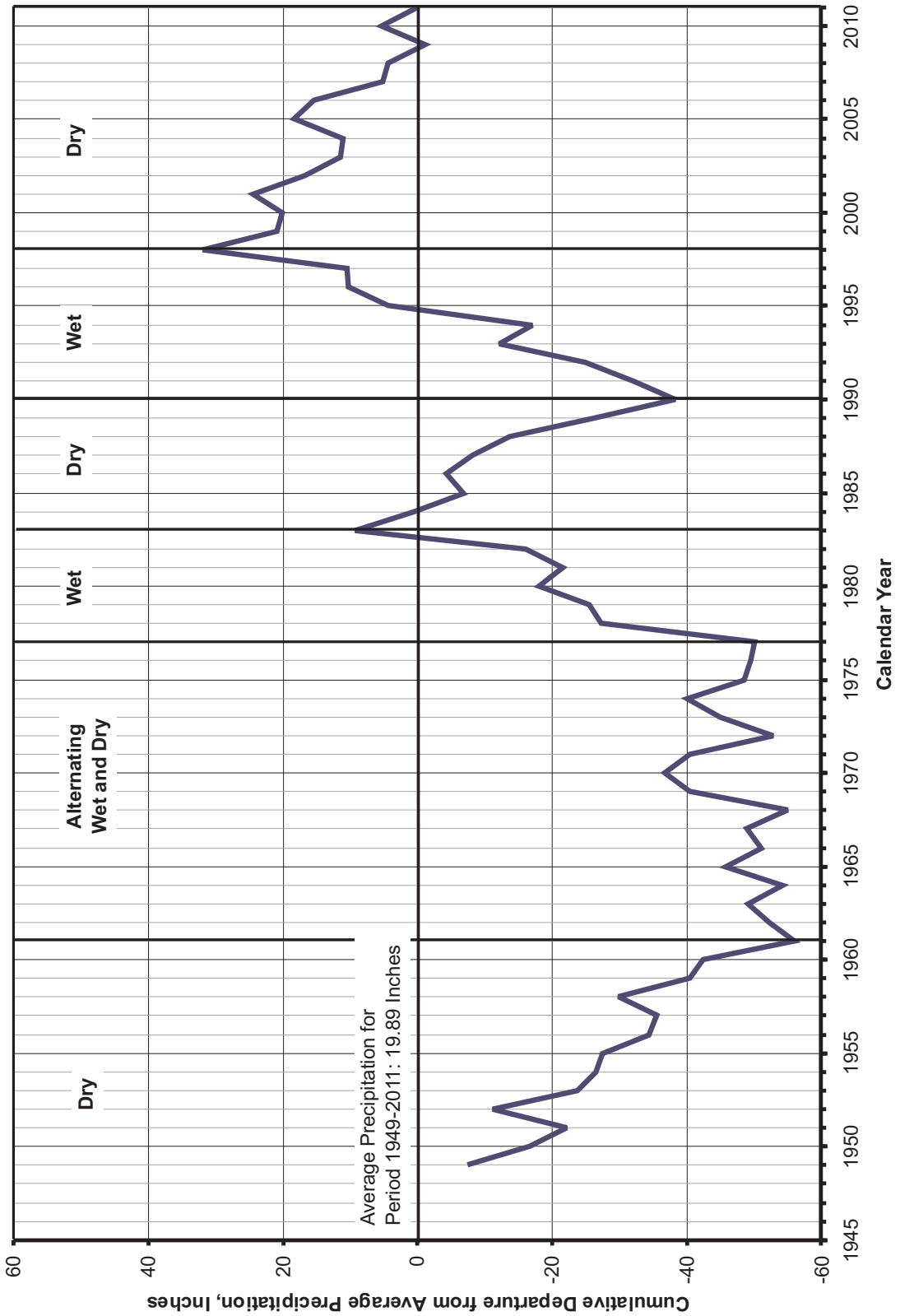
REFERENCES

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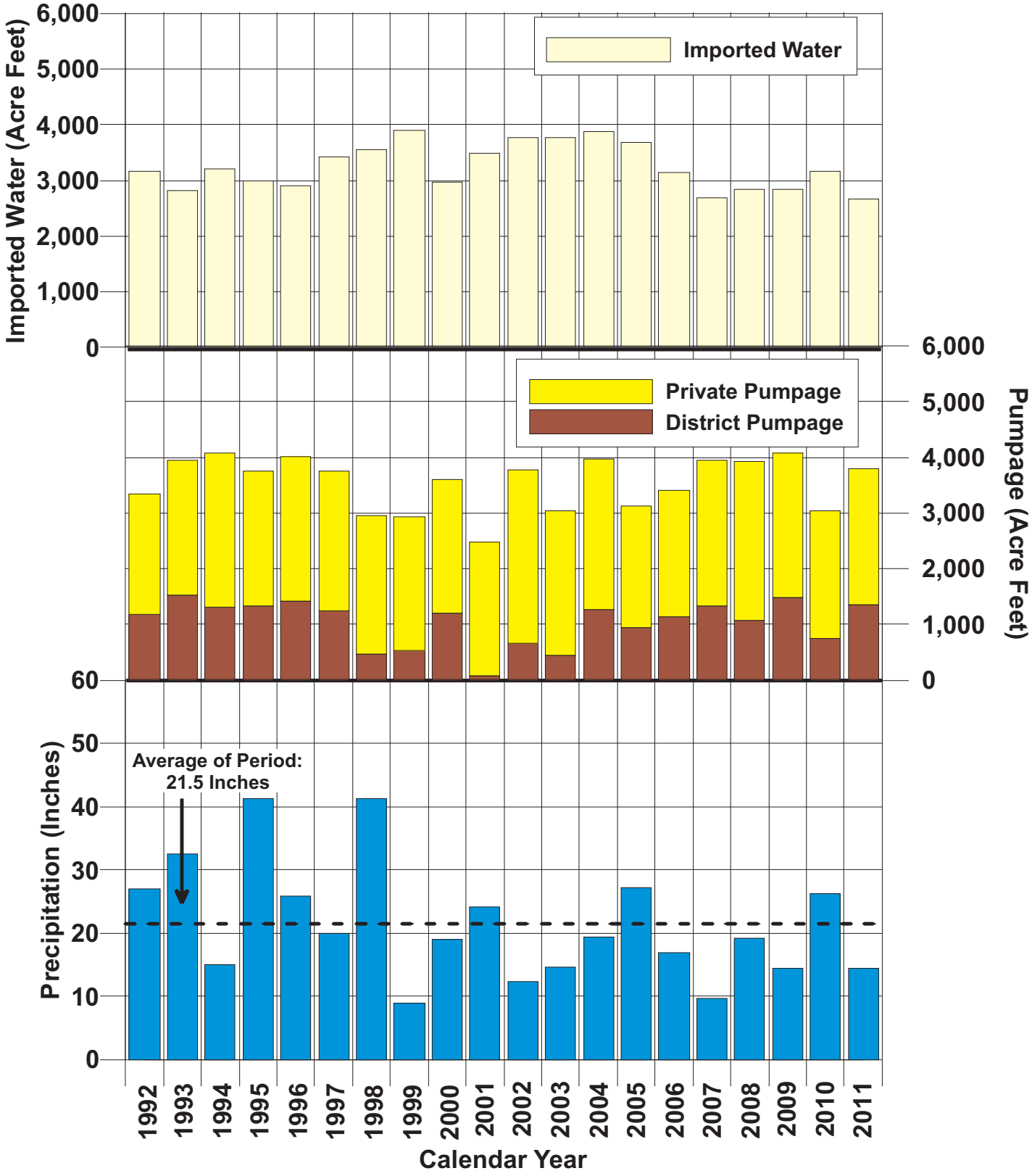
CUMULATIVE DEPARTURE FROM AVERAGE PRECIPITATION
Carpinteria Fire Station
Carpinteria Valley Water District

FIGURE 1



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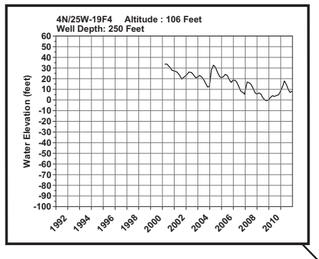
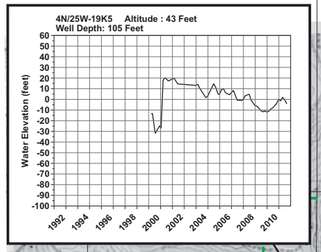
WATER USE AND PRECIPITATION DATA
Carpinteria Valley Water District

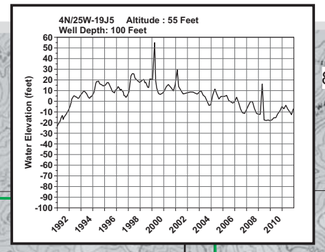
FIGURE 2

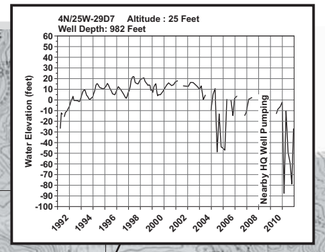
PLATES

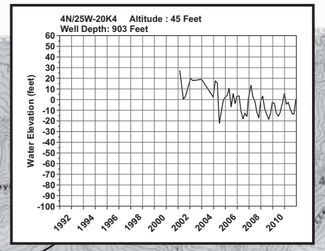
RANGE 26 WEST ← → RANGE 25 WEST

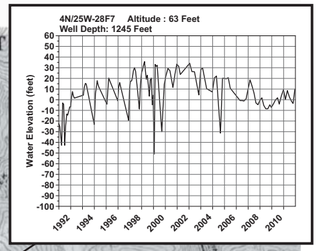


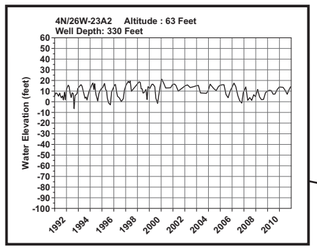


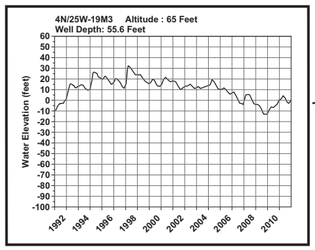


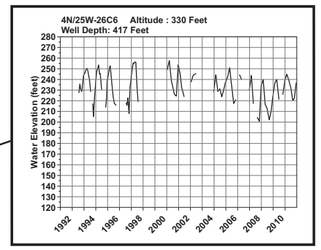


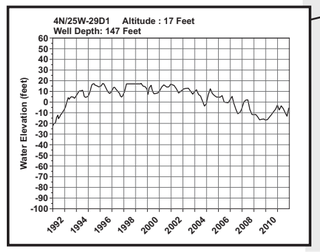


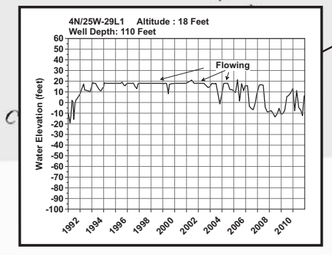


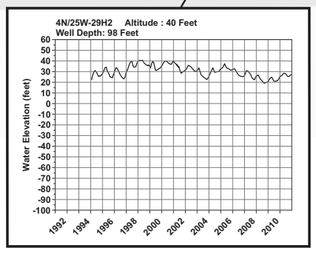


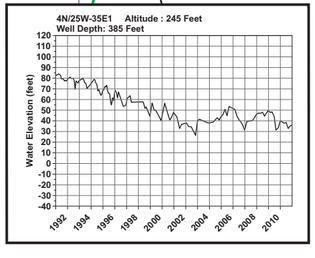


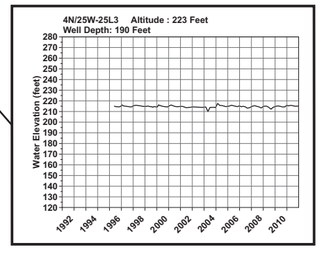


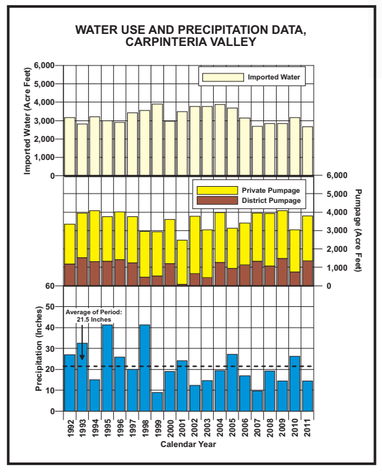












LEGEND

- 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
- Contour of equal water level elevation in feet, April 2011 dashed where approximate, queried where inferred
- Principal direction of groundwater flow
- Water well hydrograph, altitude of water surface in feet

NORTH

0 3000 6000

FEET

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

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WATER LEVEL HYDROGRAPH MAP APRIL 2011 PERIOD

Client: **CARPINTERIA VALLEY WATER DISTRICT**

Project No. 04.B3033006.09 May 2012 PLATE 1

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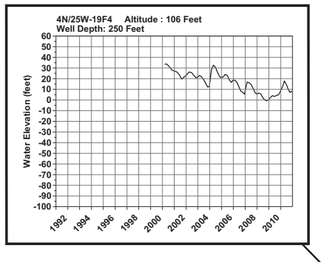

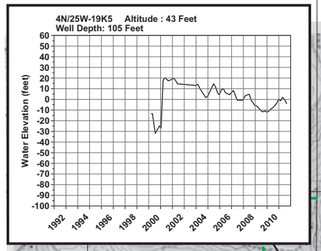

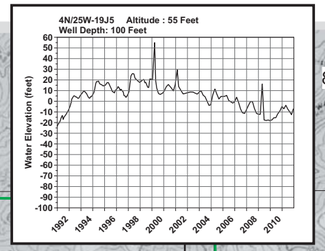

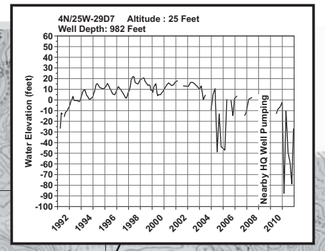

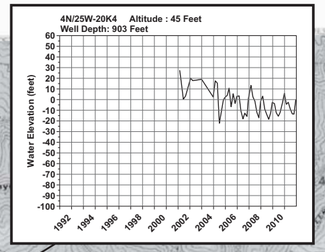

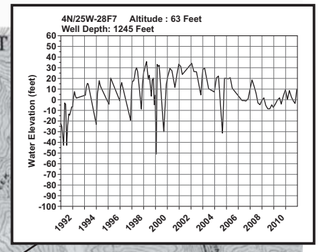

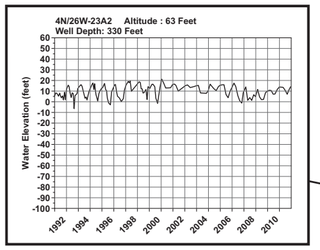

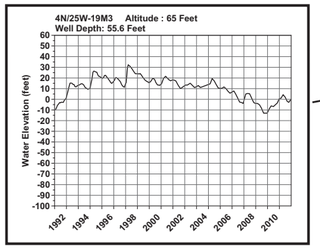

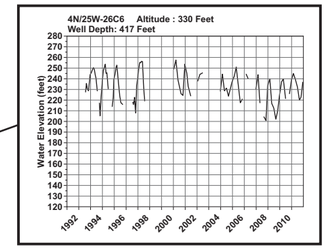

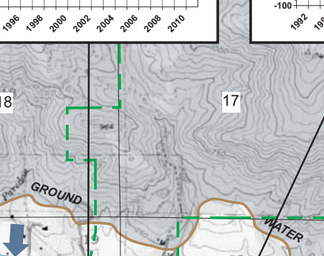

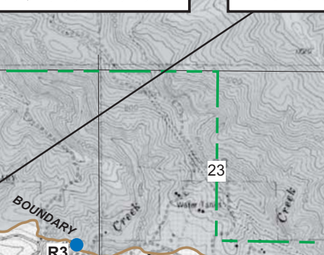

LEGEND

- 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, October 2010, dashed where approximate, queried where inferred
- Principal direction of groundwater flow
- Water well hydrograph, altitude of water surface in feet

NORTH

0 3000 6000

FEET

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

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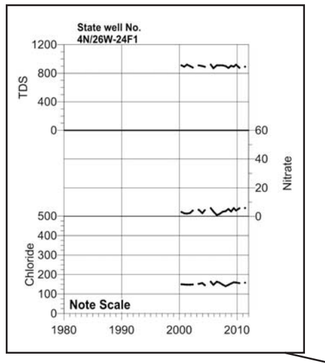
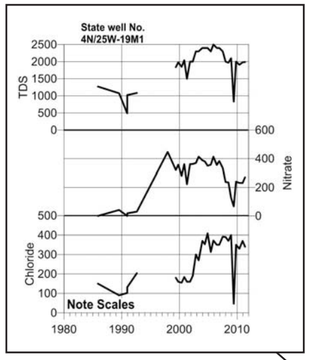
Tel.: (805) 650-7000, FAX: (805) 650-7010

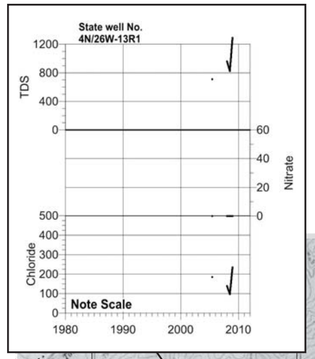
WATER LEVEL HYDROGRAPH MAP OCTOBER 2011 PERIOD

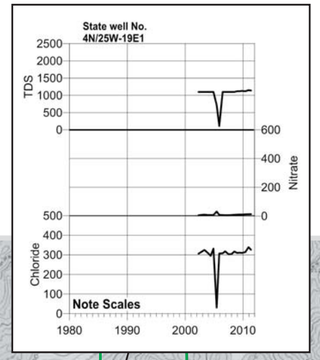
Client: **CARPINTERIA VALLEY WATER DISTRICT**

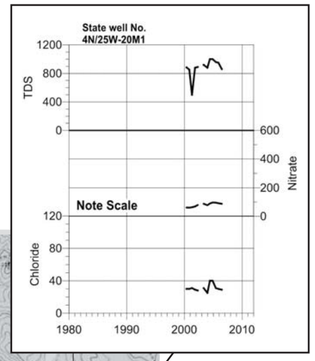
Project No. 04.B3033006.09 May 2012 PLATE 2

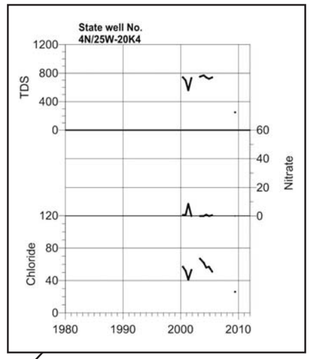


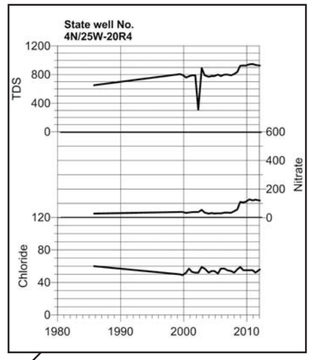


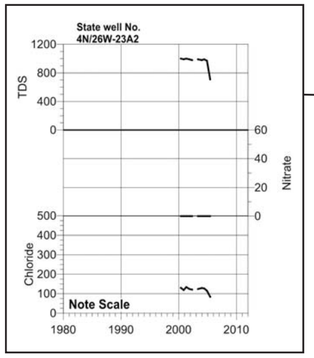


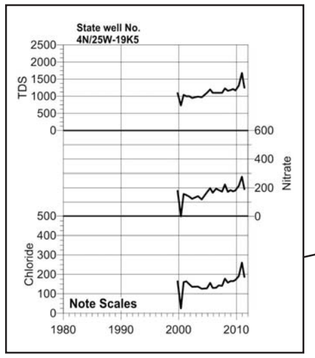


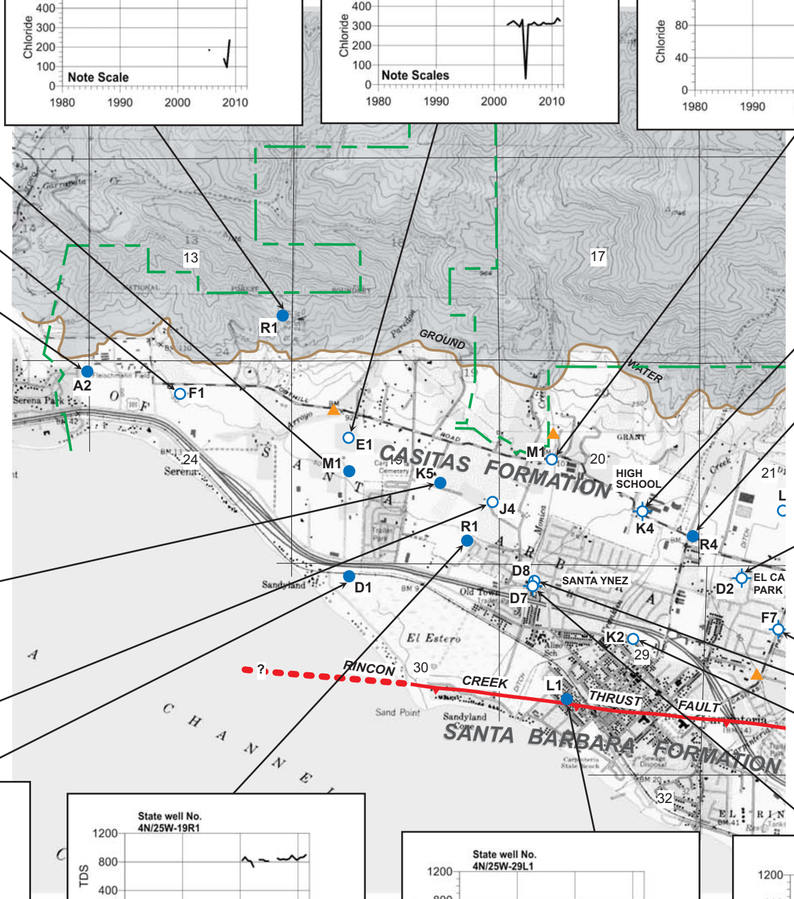


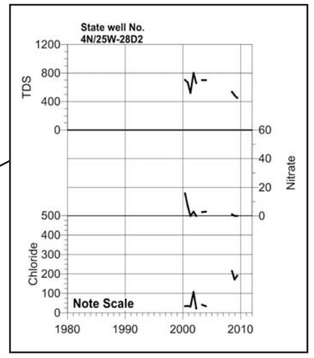


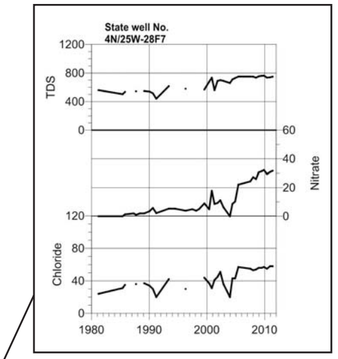


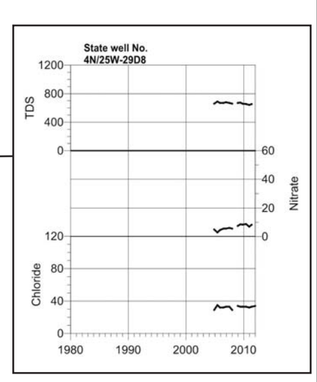


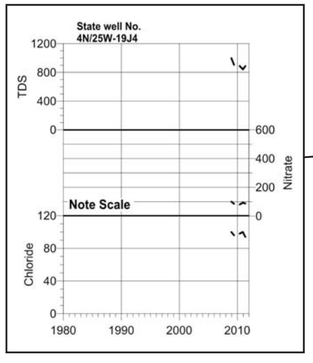


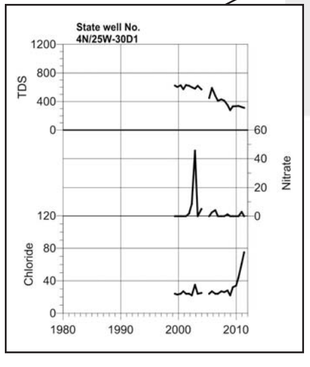


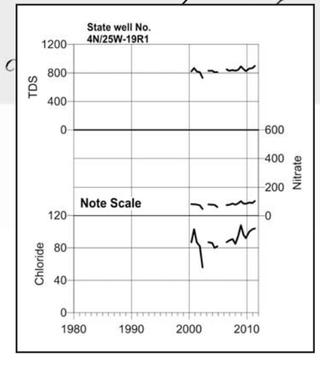


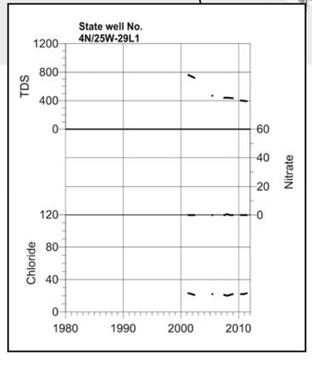


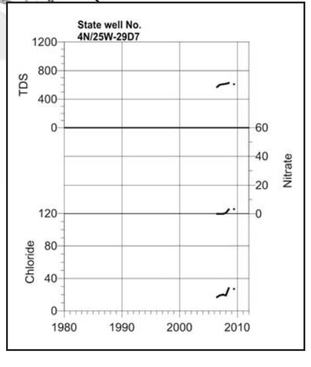


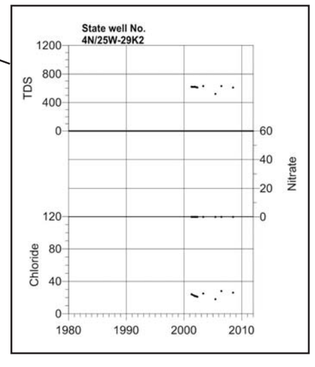












LEGEND

- Approximate location of well with long term hydrograph record
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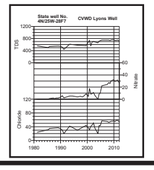
- Surface water quality monitoring station

Groundwater basin boundary

Approximate location of Rincon Creek Thrust Fault

Water district boundary



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

NORTH

0 3000 6000

FEET

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 (WESTERN EXTENT)

Client: **CARPINTERIA VALLEY WATER DISTRICT**

Project No. 04.B3033006 | February 2013 | PLATE 3

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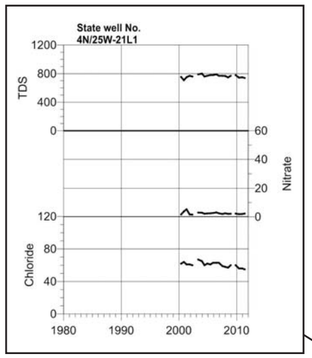

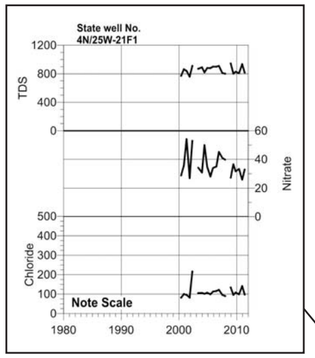

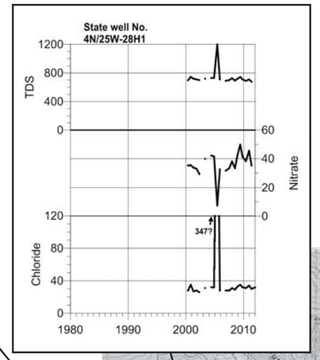

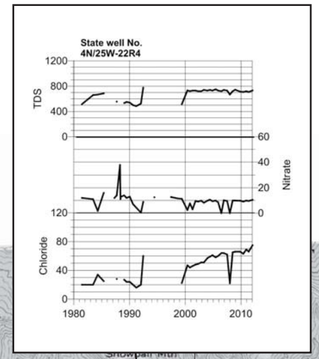

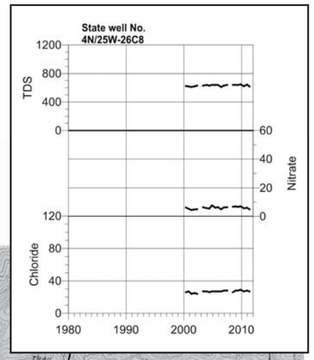

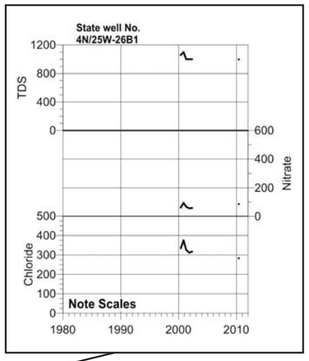

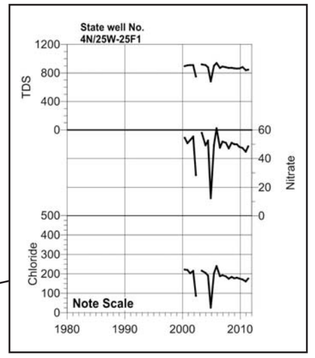

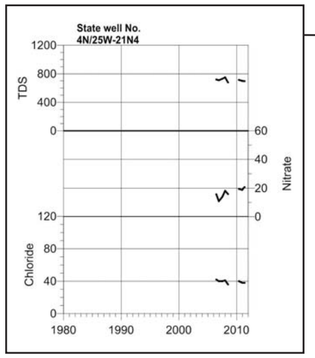

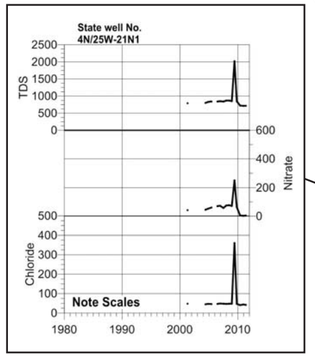

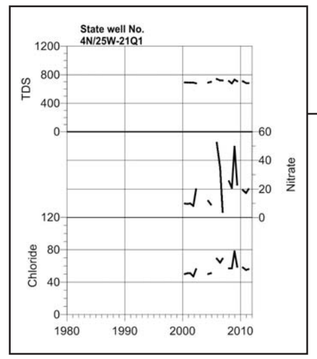

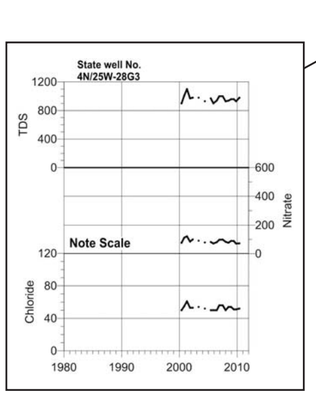

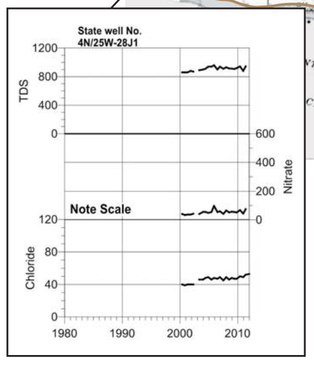

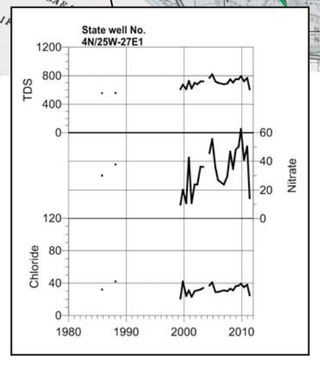

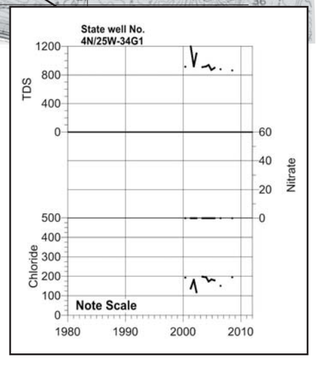

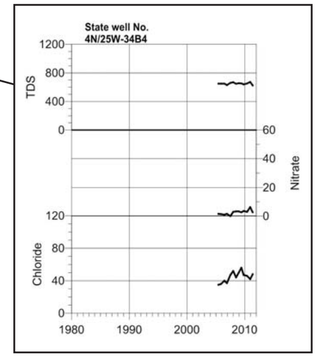

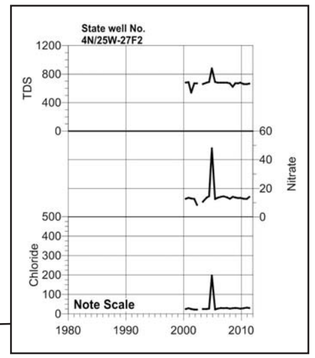

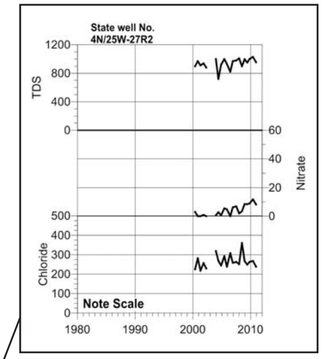

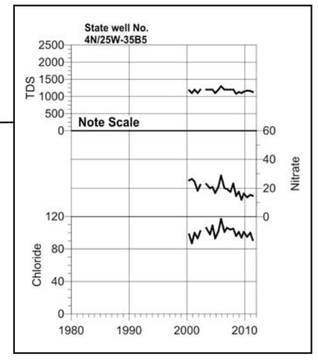

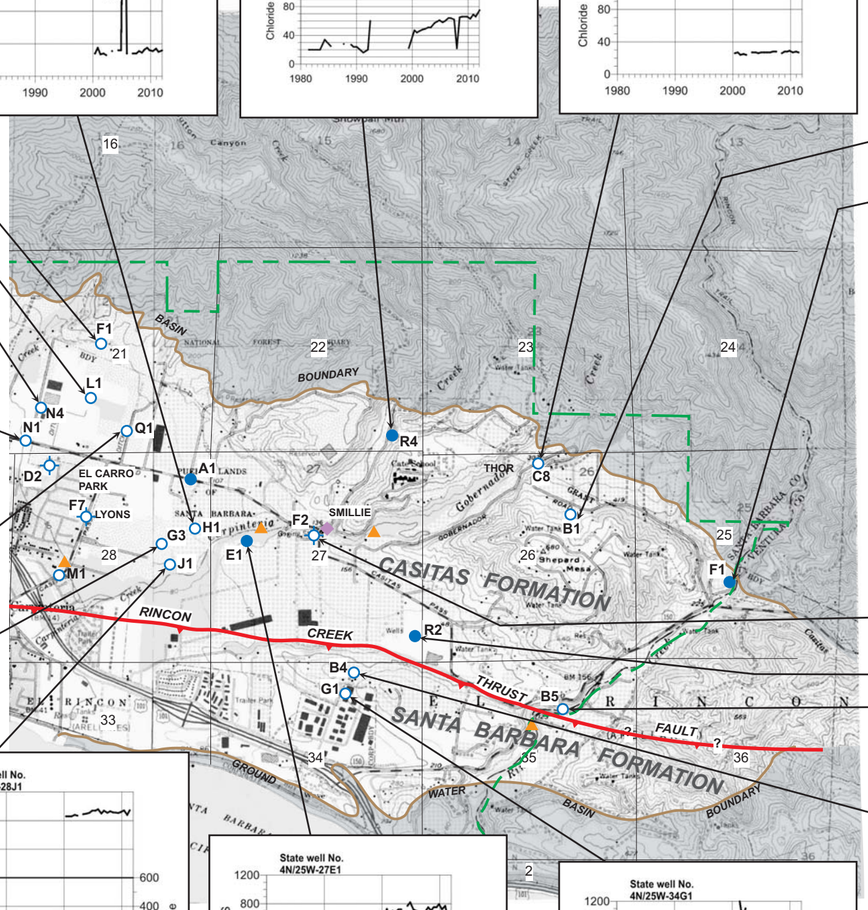

LEGEND

- **H1** — Approximate location of well with long term hydrograph record
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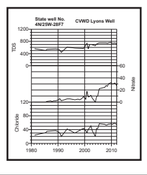
Groundwater basin boundary

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).

NORTH

0 3000 6000

FEET

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CHEMICAL HYDROGRAPH MAP (EASTERN EXTENT)

Client: **CARPINTERIA VALLEY WATER DISTRICT**

Project No. 04.B3033006 | February 2013 | PLATE 4

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APPENDIX A
SUPPORTING DATA

State of California

DEPARTMENT OF WATER RESOURCES

California Natural Resources Agency

PUBLIC WATER SYSTEM STATISTICS

Calendar Year **2011**

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: **15,141 (estimated)**
Names of communities served: City of Carpinteria & unicorpo

2. Active Service Connections

Customer Class	Potable Water		Recycled Water	
	Metered	Unmetered	Metered	Unmetered
Single Family Residential	3046	0	0	0
Multi-family Residential	332	0	0	0
Commercial/Institutional	276	0	0	0
Industrial	57	0	0	0
Landscape Irrigation	40	0	0	0
Other	119	0	0	0
Agricultural Irrigation	428	0	0	0
TOTAL	4298	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*	119.79	155.91	150.65	24.41	110.56	158.96	169.34	150.03	152.60	109.96	42.23	20.63	1365.07
	Surface	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
	Purchased 1/	99.00	54.31	56.68	290.29	351.00	227.16	319.00	324.12	270.00	230.00	202.00	249.00	2672.56
	Total Potable	218.79	210.22	207.33	314.7	461.56	386.12	488.34	474.15	422.6	339.96	244.23	269.63	4037.63
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		54.05	60.14	48.96	67.79	84.61	97.53	88.12	91.36	94.62	73.20	56.15	68.90	885.427
B.Multi-family Residential		34.73	34.97	31.41	39.01	41.55	49.99	42.24	45.76	46.96	40.62	31.93	40.72	479.8921
C.Commercial/Institutional		22.60	31.43	24.32	40.06	54.12	52.88	56.78	53.46	56.99	40.45	25.04	30.57	488.6983
D.Industrial		5.41	4.76	3.76	5.19	6.86	8.15	6.81	7.44	8.26	6.71	5.51	6.34	75.18595
E.Landscape Irrigation		1.02	2.23	1.21	2.97	6.04	6.37	5.98	6.51	7.06	4.30	2.56	2.41	48.66391
F.Other		0.02	0.01	0.00	0.01	0.03	0.05	0.08	0.11	0.15	0.03	0.10	0.19	0.792011
Total Urban Retail *(A thru F*		117.826	133.5354	109.6602	155.0253	193.2094	214.9702	200.0092	204.6465	214.045	165.3168	121.2856	149.1299	1978.659
Agricultural Irrigation		58.60	84.44	65.24	126.81	187.46	201.87	207.85	196.07	213.73	139.17	92.03	114.85	1688.115
Wholesale*(to other agencies)*		0	0	0	0	0	0	0	0	0	0	0	0	0

Summary of Water Quality Data, Spring & Fall 2011

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		E.C.		SAR	TDS	Alkalinity	Hardness	Ammonia Nitrogen
																		Field	Lab	Field	Lab					
4N/25W-19E1	Ocean Breeze	5/11/2011	127	35	1	196	<10	320	125	326	13	1.4	2.1	<0.01	<0.05	<0.01	<0.02	NA	7.3	10.5	1760	4	1140	260	461	--
		1/24/2012	124	34	1	201	<10	320	124	324	14.9	1.4	2.1	<0.01	<0.05	0.02	<0.02	NA	7.1	14.11	1760	4.1	1140	260	449	--
4N/25W-19J4	Carlton	5/16/2011	153	39	1	51	<10	300	161	94	87.3	0.3	0.1	<0.01	2.8	0.04	0.11	NA	7	7.43	1190	1	887	250	542	--
		1/31/2012	140	38	<1	49	<10	280	147	106	95	0.2	0.2	<0.01	0.19	<0.01	0.05	NA	6.4	3	1180	0.9	855	230	506	--
4N/25W-19K5	Westland Floral	5/18/2011	190	58	1	82	<10	360	179	187	191	0.3	0.2	<0.01	0.07	<0.01	<0.02	NA	6.5	11.95	1760	1.3	1250	300	713	--
		1/24/2012	281	84	2	115	<10	410	310	290	270	0.2	0.4	<0.01	<0.05	<0.01	<0.02	NA	6.9	18.7	2380	1.5	1760	340	1050	--
4N/25W-19M1	Abbott	5/12/2011	283	74	1	186	<10	430	400	340	271	0.8	1.2	<0.01	0.17	<0.01	<0.02	NA	6.7	15.25	2630	2.5	1990	350	1010	--
		2/8/2012	331	84	2	199	<10	410	450	350	337	0.7	1.2	<0.01	<0.05	<0.01	<0.02	NA	7	19.01	2790	2.5	2160	340	1170	--
4N/25W-19R1	Westland Floral	6/6/2011	150	39	1	52	<10	300	148	104	104	0.4	<0.1	<0.01	<0.05	0.04	<0.02	NA	7.2	7.7	1200	1	898	240	535	--
		1/24/2012	153	39	1	51	<10	310	150	103	84.3	0.4	0.1	<0.01	<0.05	0.06	<0.02	NA	7.1	14.1	1220	1	892	250	542	--
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	5/11/2011	124	38	2	84	<10	380	129	52	126	0.3	0.2	<0.01	0.08	0.11	<0.02	NA	7.3	7.88	1190	1.7	935	310	466	--
		1/11/2012	116	36	2	84	<10	380	132	56	120	0.3	0.2	0.02	<0.05	0.13	<0.02	NA	6.9	9.81	1180	1.7	926	310	438	--
4N/25W-21F1	Rancho Antigua	5/11/2011	92	40	2	82	<10	440	30	98	32.8	0.6	0.2	<0.01	0.05	<0.01	0.11	NA	7.3	7.25	1090	1.8	817	360	394	--
		1/12/2012	83	37	1	75	<10	410	30	103	40.3	0.5	0.2	<0.01	<0.05	<0.01	0.06	NA	7.4	9.1	1060	1.7	780	340	359	--
4N/25W-21L1	Bradley	5/12/2011	91	30	2	74	<10	370	115	55	2.3	0.3	0.2	<0.01	<0.05	0.02	<0.02	NA	7.1	6.46	966	1.7	740	310	350	--
		1/11/2012	92	31	2	75	<10	370	123	58	2.3	0.2	0.2	<0.01	<0.05	0.01	<0.02	NA	7.5	8.75	984	1.7	754	300	357	--
4N/25W-21N?	Ocean Breeze	5/11/2011	93	29	2	67	<10	350	128	42	4.5	0.3	0.1	<0.01	<0.05	0.03	0.1	NA	7.3	6.33	910	1.6	716	280	351	--
		1/11/2012	86	29	2	70	<10	350	120	47	3.9	0.2	0.2	<0.01	<0.05	0.03	0.07	NA	7.5	7.93	920	1.7	708	290	334	--
4N/25W-21N4	Brand Flowers	5/11/2011	93	29	1	60	<10	340	115	38	20.8	0.4	0.2	<0.01	0.06	0.51	<0.02	NA	7.3	5.7	893	1.4	697	280	351	--
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4N/25W-21Q1	Overgaag/Westerlay Roses	5/12/2011	82	27	1	72	<10	340	85	56	20	0.4	0.1	<0.01	0.06	0.31	<0.02	NA	7.2	5.85	899	1.8	683	280	316	--
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4N/25W-22R4	Vedder	5/12/2011	106	29	2	54	<10	300	141	66	9.6	0.3	0.1	<0.01	0.06	<0.01	<0.02	NA	7.1	5.97	958	1.2	708	240	384	--
		1/11/2012	108	29	2	54	<10	300	153	75	10.5	0.2	0.1	<0.01	<0.05	<0.01	<0.02	NA	7.5	7.83	974	1.2	732	240	389	--
4N/25W-25F1	Nichols	5/12/2011	123	42	2	69	<10	280	105	176	48.5	0.4	<0.1	<0.01	0.09	<0.01	<0.02	NA	7.1	8.2	1250	1.4	846	230	480	--
		1/11/2012	123	42	2	70	<10	280	108	192	55.3	0.4	<0.1	<0.01	<0.05	<0.01	<0.02	NA	7.4	10.33	1270	1.4	873	230	480	--
4N/25W-26B1	Dautch	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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4N/25W-26C8	Thor	5/16/2011	98	28	1	37	<10	270	152	27	5	0.3	<0.1	<0.01	0.06	<0.01	<0.02	NA	8	5.14	787	0.8	618	220	360	--
		1/11/2012	97	28	1	37	<10	280	157	29	6.7	0.2	<0.1	<0.01	<0.05	<0.01	<0.02	NA	7.6	6.8	826	0.9	636	230	357	--
4N/25W-27E1	Phelps	5/18/2011	98	26	1	34	<10	290	120	25	14.4	0.3	<0.1	<0.01	<0.05	<0.01	<0.02	NA	6.9	4.67	789	0.8	609	240	351	--
		1/12/2012	98	27	<1	35	<10	300	130	30	26.1	0.3	<0.1	<0.01	<0.05	<0.01	<0.02	NA	7.4	6.4	830	0.8	646	240	356	--
4N/25W-27F2	CVWD (Smillie well)	6/6/2011	110	28	1	38	<10	300	145	30	14.1	0.2	<0.1	<0.01	<0.05	<0.01	<0.02	NA	7.1	5.35	857	0.8	666	250	390	--
		2/8/2012	114	30	2	37	<10	300	147	30	14.8	0.1	<0.1	0.01	<0.05	<0.01	0.02	NA	7	6.55	857	0.8	675	250	408	--
4N/25W-27R2	Shepard Farms	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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4N/25W-28A1	Moore	5/11/2011	89	27	1	56	<10	330	106	44	18.4	0.4	0.1	0.09	<0.05	0.03	0.16	NA	7.2	5.51	863	1.3	672	270	333	--
		1/11/2012	91	27	1	58	<10	330	109	48	18.4	0.3	<0.1	0.03	<0.05	0.02	<0.02	NA	7.5	6.93	886	1.4	683	270	338	--
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)	6/6/2011	118	30	1	54	<10	320	136	58	31.6	0.3	<0.1	<0.01	0.08	0.23	<0.02	NA	7.1	6.13	975	1.1	749	260	418	--
		3/5/2012	109	29	<1	51	<10	310	136	54	26.3	0.4	<0.1	<0.01	0.25	0.38	<0.02	NA	7	7.2	1000	1.1	716	260	391	--
4N/25W-28G3	Dal Pozzo	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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4N/25W-28H1	Huff	5/18/2011	103	28	1	45	<10	310	125	30	35.3	0.4	<0.1	<0.01	0.07	<0.01	<0.02	NA	7	5.41	870	1	678	250	372	--
		1/12/2012	97	28	1	43	<10	310	128	32	37	0.4	0.1	<0.01	<0.05	<0.01	0.08	NA	7.4	7.1	876	1	676	260	357	--
4N/25W-28J1	Catlin	5/20/2011	159	40	1	51	<10	390	176	52	75	0.3	<0.1	<0.01	0.07	<0.01	<0.02	NA	6.8	7.11	1200	0.9	944	320	561	--
		2/28/2012	153	41	2	50	<10	330	177	53	74.4	0.2	0.1	<0.01	<0.05	<0.01	<0.02	NA	7	8.35	1270	0.9	881	270	550	--
4N/25W-29D7	Santa Ynez Well (CVWD)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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4N/25W-29D8	H.Q. Well (CVWD Raw)	6/6/2011	91	24	1	63	<10	320	113	33	8.3	0.4	0.1	<0.01	<0.05	0.11	<0.02	NA	7.2		818	1.5	654	260	326	--
		2/8/2012	91	25	2	63	<10	320	112	34	8.6	0.3	0.2	0.01	<0.05	0.06	0.02	NA	7.6	7.81	828	1.5	656	260	330	--
4N/25W-29D8	H.Q. Well (CVWD Finish)	6/6/2011	89	23	1	64	<10	320	112	35	8.5	0.3	0.1	0.04	<0.05	<0.01	<0.02	NA	7.2		833	1.6	653	260	317	--
		2/8/2012	91	25	2	65	<10	320	114	37	8.8	0.2	0.1	<0.01	<0.05	<0.01	<0.02	NA	7.5	7.38	840	1.6	663	260	330	--
4N/25W-29K2	Pekins	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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4N/25W-29L1	Saragosa	5/20/2011	33	17	3	53	<10	240	23	23	<0.4	0.3	<0.1	0.02	1.2	0.09	1.2	NA	7.4	3.45	508	1.9	392	200	152	--
		1/31/2012	33	17	3	52	<10	230	36	23	<0.4	0.3	<0.1	<0.01	0.46	0.06	1.6	NA	6.9	4.13	520	1.8	394	190	152	--
4N/25W-30D1	Sandyland/Slough Well	6/6/2011	21	12	2	61	<10	140	<2	75	<0.4	0.6	0.1	<0.01	4.6	0.21	0.06	NA	7.8	3.29	490	2.6	312	120	102	--
		1/31/2012	20	12	2	60	<10	160	<2	78	<0.4	0.4	0.1	<0.01	2.9	0.27	0.02	NA	7.3	4.63	527	2.6	332	130	99.3	--
4N/25W-34G1	Aluminum Filter	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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4N/25W-34B4	Twin Pines	5/12/2011	89	26	2	51	<10	300	106	48	2.7	0.3	0.1	<0.01	<0.05	<0.01	<0.02	NA	7.3	5.7	830	1.2	625	250	329	--
		1/12/2012	88	26	1	49	<10	300	115	52	5.5	0.4	0.1	<0.01	0.14	0.02	<0.02	NA	7.4	7.07	842	1.2	637	250	327	--
4N/25W-35B5	Van der Kar	5/12/2011	157	54	2	93	<10	400	320	91	14.7	0.4	0.3	<0.01	<0.05	<0.01	<0.02	NA	7.4	8.67	1450	1.6	1130	330	614	--
		1/12/2012	149	52	2	91	<10	400	320	102	16	0.4	0.3	<0.01	<0.05	<0.01	<0.02	NA	7.4	11.3	1440	1.6	1130	330	586	--
4N/26W-13R1	Baker	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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4N/26W-23A2	Zangger	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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4N/26W-24F1	Hickey Brothers	5/16/2011	84	37	1	134	<10	440	30	158	5.9	1.1	0.3	<0.01	0.31	0.12	<0.02	NA	7.5	8.3	1220	3.1	891	360	362	--
		1/31/2012	80	36	1	133	<10	440	37	155	<0.4	1.0	0.2	<0.01	0.44	0.19	<0.02	NA	6.9	10.9	1220	3.1	883	360	348	--
Toro Creek		5/16/2011	149	50	2	122	<10	390	250	160	15.2	0.4	0.2	<0.01	0.05	<0.01	<0.02	NA	7.8	8.31	1480	2.2	1140	320	577	0.8
		11/9/2011	143	49	2	125	<10	390	260	161	10.7	0.4	0.2	0.01	0.06	<0.01	0.07	NA	7.8	9.38	1510	2.3	1140	320	558	ND
Arroyo Paredon Creek		5/16/2011	112	44	2	184	<10	360	146	263	5.2	1.4	1.1	<0.01	0.09	<0.01	<0.02	NA	8.1	8.5	1610	3.7	1120	300	460	0.4
		11/9/2011	112	35	5	307	<10	440	121	420	1.4	2.8	3.5	<0.01	<0.05	<0.01	<0.02	NA	8.2	14.7	2140	6.5	1440	360	423	ND
Santa Monica Creek		5/16/2011	86	26	<1	37	<10	260	137	25	<0.4	0.5	0.1	<0.01	<0.05	0.01	<0.02	NA	8.2	4.29	724	0.9	572	210	322	0.3
		11/9/2011	93	28	1	50	<10	310	144	31	<0.4	0.6	0.3	<0.01	<0.05	<0.01	<0.02	NA	8.3	6	831	1.2	658	250	347	ND
Carpinteria Creek		5/16/2011	80	27	1	31	<10	230	130	16	<0.4	0.3	<0.1	<0.01	<0.05	<0.01	<0.02	NA	8.4	4	667	0.8	515	190	311	ND
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Gobernador Creek		5/16/2011	83	26	1	29	<10	260	130	15	0.7	0.3	<0.1	<0.01	0.05	<0.01	<0.02	NA	8.3	3.98	682	0.7	545	210	314	0.2
		11/9/2011	87	30	1	37	<10	270	154	23	1.8	0.4	<0.1	<0.01	<0.05	<0.01	<0.02	NA	7.7	5.77	768	0.9	604	220	341	ND
Rincon Creek		5/16/2011	81	31	1	44	<10	310	93	35	3.1	0.4	0.2	<0.01	<0.05	<0.01	<0.02	NA	8.3	4.55	758	1.1	598	260	330	ND
		11/9/2011	93	41	2	87	<10	360	135	85	8	0.6	0.4	<0.01	<0.05	<0.01	<0.02	NA	8.2	8	1070	1.9	812	300	401	ND

Concentrations in milligrams per liter, except Electrical Conductance (micromhos/cm) and pH.
Non detected concentrations shown as < PQL (Practical Quantitation Limit)
NA = Not Available