TABLE 7-PUMP TEST DATA FOR CCID WELLS

Well No.	Date Tested	Pumping Rate (gpm)	Static Level (feet)*	Pumping Level (feet)	Drawdown (feet)	Approximate Specific Capacity (gpm/ft)
8-A	10/15/16	1,856	61.9	73.4	11.5	161.4
48-A	10/15/16	1,862	31.5	116.8	85.3	21.8
56	8/12/15	1,147	143.3	180	36.7	31.3
62	6/15/15	1,909	50.0	80.0	30.0	63.6

Records from CCID. Well No. 56 taps strata only below the Corcoran Clay. The other three wells tap strata only above the Corcoran Clay.

As part of the 1998 evaluation, 24-hour aquifer tests were conducted on three other wells by the CCID in April 1998. CCID Well No. 48-A is located west of Lovers Lane or Badger Flat Road and adjacent to the Main Canal and Los Banos Creek, northwest of the City. The well is perforated from 50 to 80 feet and 100 to 180 feet in depth. The static water level prior to pumping was 11.0 feet. The average pumping rate was 1,960 gpm. The drawdown at the end of pumping was 77.0 feet, and the specific capacity was 25.5 feet. Corrected recovery measurements indicated a transmissivity of 56,000 gpd per foot.

Private Well No. 549 (T10S/R11E-18R), located east of the City and north of State Highway 152, is perforated from 166 to 256 feet in depth. The static level prior to pumping was 11.8 feet below the measuring point. The average pumping rate was 1,450 gpm. The drawdown at the end of pumping was 74.9 feet, and the specific capacity was 19.3 gpm per foot. Corrected recovery measurements indicate a transmissivity of 70,000 gpd per foot.

Private well No. 76 (T10S/R10E-35L) is located near the south boundary of the study area and is perforated from 86 to 306 feet in depth. The static level prior to pumping was 8.6 feet below the measuring point. The average pumping rate was 1,570 gpm.

The drawdown at the end of pumping was 74.2 feet and the specific capacity was 22 gpm per foot. Uncorrected recovery measurements indicated a transmissivity of 35,000 gpd per foot.

In cooperation with CCID staff, a 24-hour constant discharge test was conducted on Hostetler Well No. 950 during May 20-21, 2009. According to the completion report, this well is screened in the following depth intervals:

140 to 164 feet	264 to 310 feet
181 to 226 feet	416 to 446 feet.

The Corcoran Clay was reportedly encountered between 312 and 425 feet in depth at this well. The static level in the pumped well was 61.7 feet prior to pumping. The average pumping rate was 1,315 gpm. The pumping level at the end of pumping was 140.6 feet and the specific capacity was 17 gpm per foot. Another comparably perforated well was used as an observation well for the test. The completion report for Hostetler Well No. 964 indicates that it is screened in the following depth intervals:

101 to 129 feet	194 to 209 feet
140 to 154 feet	224 to 236 feet
161 to 176 feet	431 to 453 feet.

The well is located 1,700 feet from Well No. 950. The best value of transmissivity from the drawdown measurements for this test was for Well No. 964. The static level in Well No. 964 prior to pumping of Well No. 950 was 46.2 feet. By the end of the pumping period, depth to water in this well was 49.2 feet, and the drawdown was 3.0 feet. A transmissivity of 143,000 gpd per foot was indicated by these measurements.

The best value for transmissivity from the recovery measurements for this test was also for Well No. 964. After about six hours of recovery, depth to water was 48.3 feet, or about two feet below the static level prior to pumping. A transmissivity of 177,000 gpd per foot was indicated by recovery measurements for this well.

A recovery test was conducted on Hostetler Well No. 121 on May 28, 2009. A completion report is not available for Well No. 121, but the reported depth is 217 feet. The well had been pumping at an average rate of about 1,300 gpm for a prolonged period before pumping was stopped for this test. The pumping level was 86.9 feet prior to the cessation of pumping, and the specific capacity was 25 gpm per foot. The water level fully recovered to a static level of 36.0 feet within 20 minutes after pumping stopped. Recovery measurements indicate a transmissivity of 37,000 gpd per foot, in good agreement with the specific capacity value. Well No. 364 was used as an observation well for the test. The water level in Well No. 364 rose from 47.1 feet before pumping of Well No. 121 stopped to 43.3 feet after about six and three-fourths hours of recovery. A transmissivity of 56,000 gpd per foot was indicated by the recovery measurements for this well.

In summary, for the two Hostetler Well tests, the transmissivity of strata above the Corcoran Clay (above 300 feet in depth) tapped by these wells was 114,000 gpd per foot. The transmissivity of deposits above a depth of 220 feet was indicated to be about 56,000 gpd per foot.

Aquifer tests were done in late August 2017 on two small pits in the area bounded by Los Banos Creek on the northwest, the DMC on the southwest, and South Creek Road on the east. Each pit was dug through a local clay layer, into about 10 to 20 feet of saturated coarse-grained deposits of the upper aquifer. Each pit was dewatered, then the water level allowed to recover. For the East Pit, the average pumping rate was about 595 gpm. For the West Pit, the average pumping rate was 885 gpm.

The static level prior to pumping the East Pit was 41.5 feet deep and the specific capacity was 45.8 gpm per foot. Uncorrected recovery measurements for the Eat Pit indicated a transmissivity of 105,000 gpd per foot. For the West Pit, the static level prior to pumping was 34.8 feet deep, and the specific capacity was 36.5 per foot. Uncorrected recovery measurements for the West Pit indicated a transmissivity of 106,000 gpd per foot.

Table 8 summarizes the aquifer test results for wells and pits in the study area. Transmissivities ranged from 35,000 to

TABLE 8-SUMMARY OF AQUIFER TEST RESULTS

Well	Date of Test	Pumping Rate (gpm)	Drawdown (feet)	Specific Capacity (gpm/ft)	Transmissivity (gpd per foot)	Perf. Int. (feet)
CCID No. 8-A	11/96	2,415	25.5	94.7	168,000	75-220
CCID No. 48	04/98	1,960	77.0	25.5	56,000	50-180
Well No. 549	04/98	1,450	74.9	19.3	70,000	166-256
Well No. 76	04/98	1,570	74.2	22	35,000	86-306
Well No. 950	05/09	1,315	78.9	17	177,000	140-310 416-446
Well No. 121	05/09	1,300	50.9	25	37,000	T.D. 217
East Pit near Creek and DMC	08/17	595	12.4	48.0	105,000	N.A.
West Pit near Creek and DMC	08/17	885	24.2	36.5	106,000	N.A.

177,000 gpd per foot, and were generally higher for deeper wells and for wells tapping stream channel deposits. Transmissivity values in the range of 70,000 to 168,000 gpd per foot appear to be representative of the entire upper aquifer in the area.

LAND SUBSIDENCE

Subsidence was measured extensively in the area south of the Los Banos study area by the U.S. Geological Survey for many decades. The total land subsidence between 1926 and 1972 (taken from U.S. Geological Survey Professional Paper 437-F) ranged from one to 12 feet in the part of the area that was south of Los Banos in Fresno County.

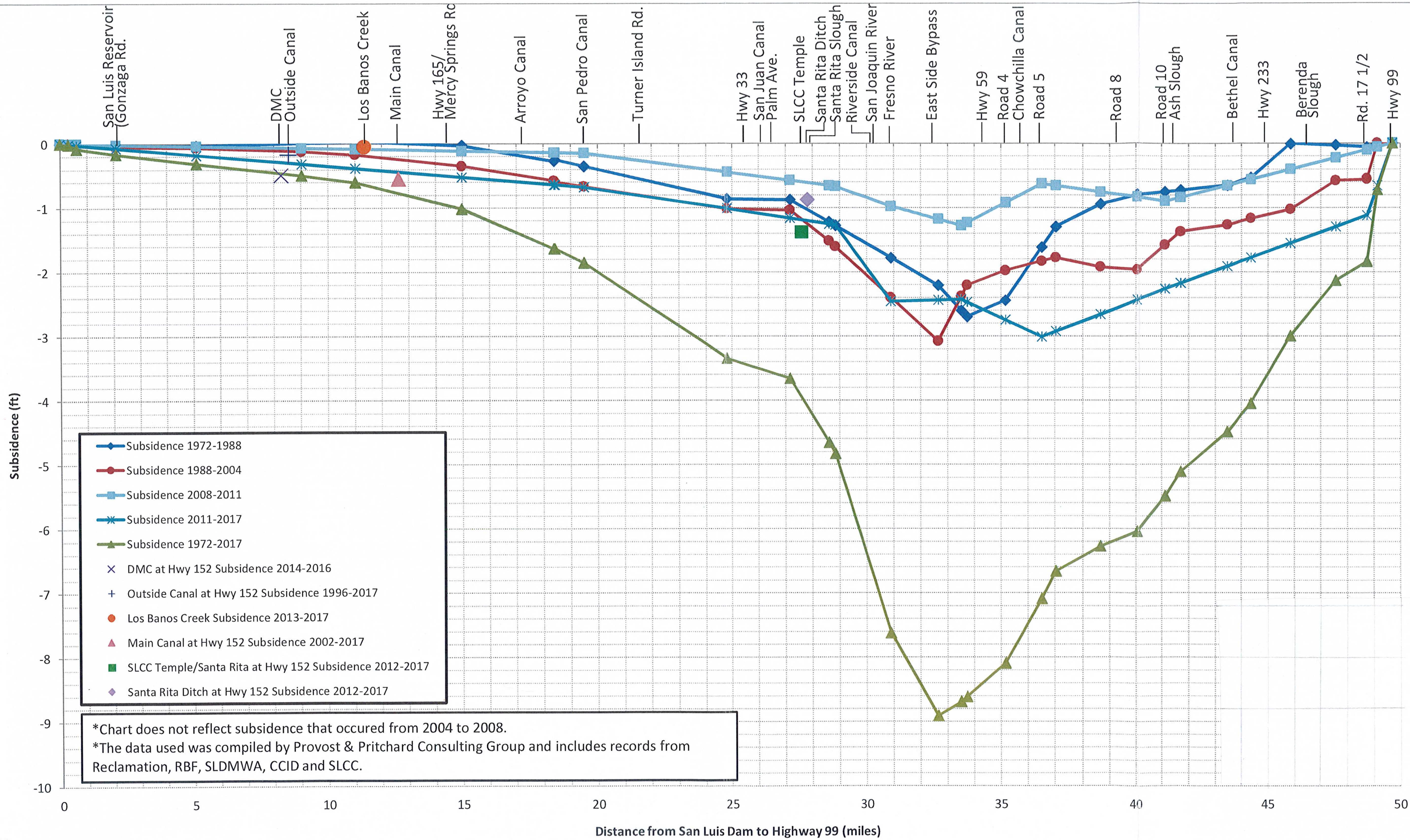
From 1972 until the early 2000's, much less information was available on land subsidence than for the previous decades. This was because once water from the California Aqueduct became available, it was thought that the subsequent decrease in pumpage would essentially eliminate overdraft and land subsidence. However, by the drought of the early 1990's, it had become apparent that subsidence was continuing. Some information has been available for the settling of some canals and other features. The Delta-Mendota and Outside Canals required extensive repairs due to subsidence in 1974. Surveys have indicated a subsidence ranging from 1.76 to 2.75 feet along the Outside Canal between 1991 and 2017. Subsidence along the Main Canal in the study area ranged from 0.31 to 0.70 foot from 2002 to 2017. Subsidence along the DMC in the study area ranged from about 0.8 to 1.5 feet during 1984 to 2016.

Highway 152 Transect

Periodic surveys of land surface elevations were done along Highway 152 between I-5 and Highway 99. Figure 20 shows land surface subsidence along this section between 1972 and 2017. The maximum subsidence (about nine feet) occurred near the East-side Bypass. In the area west of Highway 33, most of the sub-sidence apparently occurred after 1988. Subsidence along High-way 152 in the Los Banos study area ranged from about 0.5 to 1.0 foot during 1998 to 2017, and generally increased to the east.

GROUNDWATER QUALITY

Groundwater quality in the Los Banos area was discussed in some detail by KDSA (2010). The primary chemical constituents of concern in terms of drinking water quality in the groundwater at and near Los Banos were hexavalent chromium, TDS, sulfate, uranium (alpha activity), and selenium. Although nitrate con-centrations in strata tapped by City wells have been below the maximum contaminant level (MCL) of 45 mg/l, concentrations in water from four of these wells were elevated (exceeding 38 mg/l) in 2017.



Source:
Elevation change computed from report geodetic surveys along Highway 152 from Caltrans, edtied by Bureau of Reclamation.

FIGURE 20- HISTORICAL LAND SUBSIDENCE ALONG HIGHWAY 152 TRANSECT

Once a MCL was developed for hexavalent chromium, this made hexavalent chromium potentially the most important chemical constituent in terms of the chemical quality of water from City wells. However, enforcement of this MCL is temporarily on hold due to litigation. Appendix D contains the results of recent chemical analyses of water from City wells.

Inorganic Chemical Constituents

Table 9 shows the results of chemical analyses for water samples collected from City wells in July 2017. Total dissolved solids (TDS) concentrations ranged from 380 to 1,100 mg/l. The lowest TDS concentrations (400 mg/l or less) were in water from Wells No. 6, 11, and 12. These wells are in the west part of the City. In contrast, the highest TDS concentrations (exceeding 850 mg/l) were in water from Wells No. 5, 7, 10, and 14. The first three of these wells are all located in the east part of the City, and Well No. 14 is the only active City well tapping strata below the Corcoran Clay.

Nitrate concentrations in water from the City wells ranged from 10 to 35 mg/l, below the MCL of 45 mg/l, in July 2017. The highest nitrate concentrations (31 mg/l or greater) were in water from Wells No. 5, 7, and 10. These three wells are in the east part of the City, have casings perforated above a depth of 130 feet, and have annular seals of about 60 feet deep or less.

TABLE 9-CHEMICAL QUALITY OF WATER FROM CITY OF LOS BANOS WELLS

Constituent (mg/l)	No. 1	No. 2	No. 3	No. 5	No. 6
Calcium	54	50	66	120	47
Magnesium	27	26	34	67	23
Sodium	68	66	83	160	47
Potassium	3	3	3	3	2
Bicarbonate	232	220	256	403	146
Sulfate	73	64	91	240	50
Chloride	97	86	120	230	100
Nitrate	18	18	28	35	15
Fluoride	0.2	0.2	0.2	0.2	0.2
pH	7.9	8.0	7.9	8.0	8.1
Electrical Conductivity (micromhos/cm @ 25°C)	820	770	970	1,800	680
Total Dissolved Solids (@ 180°C)	480	440	580	1,100	380
Iron	<0.1	<0.1	<0.1	<0.1	<0.1
Manganese	<0.02	<0.02	<0.02	<0.02	<0.02
Arsenic (ppb)	6.1	5.3	4.7	5.9	5.7
Hexavalent Chromium (ppb)	27	30	28	40	26
Selenium (ppb)	0.62	0.87	0.77	0.87	0.69
Alpha Activity (pc/l)	<3.0	<3.0	<3.0	9.1	<3.0
Date	7/12/17	7/12/17	7/12/17	7/12/17	7/12/17

Continued:

TABLE 9-CHEMICAL QUALITY OF WATER FROM CITY OF LOS BANOS WELLS
(Continued:)

Constituent (mg/l)	No. 7	No. 9	No. 10	No. 11
Calcium	110	48	95	49
Magnesium	63	27	53	23
Sodium	160	63	120	45
Potassium	3	3	3	2
Bicarbonate	415	207	329	195
Sulfate	240	78	190	47
Chloride	220	84	170	84
Nitrate	33	10	31	18
Fluoride	0.2	0.2	0.2	0.2
pH	8.0	8.0	8.0	8.1
Electrical Conductivity (micromhos/cm @ 25°C)	1,700	760	1,400	690
Total Dissolved Solids (@ 180°C)	1,100	440	860	400
Iron	<0.1	<0.1	<0.1	<0.1
Manganese	<0.02	<0.02	<0.02	<0.02
Arsenic (ppb)	5.3	7.2	5.0	3.8
Hexavalent Chromium (ppb)	38	32	31	21
Selenium (ppb)	<0.4	3.2	0.70	1.95
Alpha Activity (pc/l)	12.6	3.5	10.6	3.0
Date	7/12/17	7/12/17	7/12/17	7/12/17

Continued:

TABLE 9-CHEMICAL QUALITY OF WATER FROM CITY OF LOS BANOS WELLS
(Continued:)

Constituent (mg/l)	No. 12	No. 13	No. 14	No. 15
Calcium	50	92	96	53
Magnesium	22	49	54	30
Sodium	47	98	190	47
Potassium	2	3	3	2
Bicarbonate	183	342	366	183
Sulfate	51	140	310	72
Chloride	75	170	190	96
Nitrate	16	26	24	21
Fluoride	0.2	0.2	0.2	0.1
pH	8.1	8.0	8.0	8.1
Electrical Conductivity (micromhos/cm @ 25°C)	660	1,300	1,700	770
Total Dissolved Solids (@ 180°C)	380	780	1,100	480
Iron	<0.1	<0.1	<0.1	<0.1
Manganese	<0.02	<0.02	<0.02	<0.02
Arsenic (ppb)	4.3	4.9	6.0	7.8
Hexavalent Chromium (ppb)	22	34	38	20
Selenium (ppb)	0.49	-	0.55	2.46
Alpha Activity (pc/l)	<3.0	4.0	8.6	<3.0
Date	7/12/17	7/12/17	7/12/17	7/12/17

Records from City of Los Banos. Laboratory analyses by BSK Associates of Fresno. Hexavalent chromium concentrations are recent average values from Provost & Pritchard Consulting Group.

The lowest nitrate concentrations (16 mg/l or less) were in water from Wells No. 6, 9, and 12. The first two of these wells are in the north part of the City, and Wells No. 6 and 9 have perforations only below a depth of 180 feet.

Chloride concentrations in water from City wells ranged from 75 to 230 mg/l, below the recommended MCL of 250 mg/l. The highest chloride concentrations (170 mg/l or greater) were in water from Wells No. 5, 7, 10, 13, and 14. These were the same wells with the highest TDS concentrations. The lowest chloride concentrations (less than 90 mg/l) were in water from Wells No. 2, 9, 11, and 12. These wells also produced water with relatively low TDS concentrations. Sulfate concentrations in water from City wells ranged from 47 to 310 mg/l. The highest sulfate concentration (190 mg/l or more) were in water from Wells No. 5, 7, 10, and 14. These wells also had high chloride concentrations. Water from Well No. 14 had a sulfate concentration exceeding the recommended MCL of 250 mg/l. The lowest sulfate concentrations (less than 70 mg/l) were in water from Wells No. 2, 11, and 12. These wells also had relatively low chloride concentrations.

Iron and manganese concentrations in water from all of the wells were less than 0.1 mg/l and 0.02 mg/l, below the respective recommended MCLs of 0.3 mg/l and 0.05 mg/l. Well No. 15 had an arsenic concentration of 12 ppb, exceeding the MCL, and this well has been on standby. Water from two other active City wells (No. 5 and 9) had arsenic concentrations between 9.3 and 9.5 ppb, just below the MCL. Arsenic concentrations in water from the remaining active City wells in 2017 ranged from about 6 to 8 ppb. Hexavalent chromium concentrations in water from City wells ranged from 21 to 40 mg/l, exceeding the new MCL of 10 ppb. The lowest hexavalent chromium concentrations were generally in the more westerly City wells, whereas higher concentrations were to the east and northwest (Wells No. 5, 7, and 14). The City is exploring various options to address the hexavalent chromium issue.

Additional information on some inorganic constituents is available for water from CCID wells. Irrigation analyses are generally done on water samples collected from these wells annually. Table 10 provides the results of water samples collected from the four CCID wells in the study area in July 2017. TDS concentrations ranged from 560 to 1,200 mg/l. The highest TDS concentrations were in water from Wells No. 48-A and 56. The latter of these wells taps strata below the Corcoran Clay. Nitrate concentrations in water from these wells ranged from less than 1 to 30 mg/l, less than the MCL of 45 mg/l for drinking water. Nitrate concentrations in water from the three upper aquifer wells ranged from 20 to 30 mg/l. The nitrate concentration

TABLE 10-CHEMICAL QUALITY OF WATER FROM CCID WELLS

Constituent (mg/l)	No. 8-A	No. 48-A	No. 56	No. 62
Calcium	93	83	67	79
Magnesium	47	45	28	33
Sodium	69	99	139	93
Potassium	3	3	3	3
Bicarbonate	290	280	150	260
Sulfate	95	130	260	120
Chloride	120	150	130	120
Nitrate	25	30	<1	20
pH	7.7	7.8	8.1	7.7
Electrical Conductivity (micromhos/cm @ 25°C)	1,100	1,200	1,200	1,100
Total Dissolved Solids (@ 180°C)	670	770	740	670
Boron	0.47	0.81	1.7	0.5
Date	7/25/17	7/25/17	7/25/17	7/25/17

Analyses by BSK Analytical Laboratory.

in water from Well No. 56 was undetectable. This well taps the lower aquifer. Boron concentrations ranged from 0.5 to 1.7 mg/l, and the highest concentration was in water from Well No. 56. The boron concentration in water from Well No. 56 was unsuitable for irrigation of most crops, except pistachios. Boron concentrations in water from the other three wells were near or exceeded the recommended MCL of 0.5 mg/l for boron-sensitive crops. Water from the CCID wells is pumped into canals and blended before use for crop irrigation.

Radiological Constituents

Alpha activities in water from most City wells have been less than 7 picocuries per liter, below the MCL of 15 picocuries per liter. Associated uranium activities have been well below the MCL of 20 picocuries per liter. Alpha activities in July 2017 ranged from less than 3 to 12.6 picocuries per liter. The highest activities were in water from Wells No. 5, 7, and 10. All of these wells are in the east part of the City and have shallow perforations (tops range from 104 to 125 feet) in depth. In contrast, the lowest alpha activities in July 2017 (3 picocuries per liter or less) were in water from Wells No. 1, 2, 3, 6, 11, 12, and 15. This group of wells is in the west or central part of the City. The highest alpha and uranium activities thus appear to be in the shallower groundwater beneath the east part of the City.

Trace Organic Chemical Constituents

Results of historical analyses for trace organics in water from City wells were provided by the City. Concentrations of these constituents have usually been non-detectable, except for tetrachloroethylene (PCE) in water from City Well No. 13. Detectable concentrations of PCE have been consistently found in water from this well since 2001. The concentrations have ranged from 0.8 to 1.6 ppb, less than the MCL of 5.0 ppb. Well No. 13 is located west of Mercy Springs Road and north of Pacheco Boulevard. Trihalomethanes (disinfection by-products) have been found in water from most City wells at concentrations well below the respective MCLs. These low concentrations are likely due to well disinfection practices. Overall, representative concentrations of trace organic constituents in water from City wells have been well below the respective MCLs.

INTERCONNECTED SURFACE AND GROUNDWATER SYSTEMS

There are no known locations in the Los Banos study area where the surface water and shallow groundwater are interconnected. That is, the shallowest water levels have been below the bottom of the adjacent stream channel or other water body.

Along Los Banos Creek, this is documented by historical water-level measurements for shallow monitor wells.

KNOWN GROUNDWATER CONTAMINATION SITES

Figure 21 shows what are considered to possibly be significant groundwater contamination sites in the study area, all of which are all in the City vicinity. Most of the information was taken from the California Regional Water Quality Control Board's GEOTRACKER website. Most of these sites involve petroleum, and no known impacts to City wells have resulted. In the Los Banos urban area, solvent related trace organics have been found in shallow groundwater at the former City landfill (dump), located near Mercy Springs and Del Rio Roads. Low concentrations of solvent related trace organics have also been found in shallow groundwater near City Well No. 13, from an unidentified source.

GROUNDWATER BUDGET FOR CITY OF LOS BANOS

The City includes the urban area and the WWTF and associated effluent use area. The sources of recharge to the groundwater in the City of Los Banos include urban storm runoff, canal seepage, and lateral groundwater inflow. The sources of groundwater discharge in the City include consumptive use. The water-level elevation maps for Spring 2009 and 2017 indicated no significant groundwater outflow. The difference between the recharge and

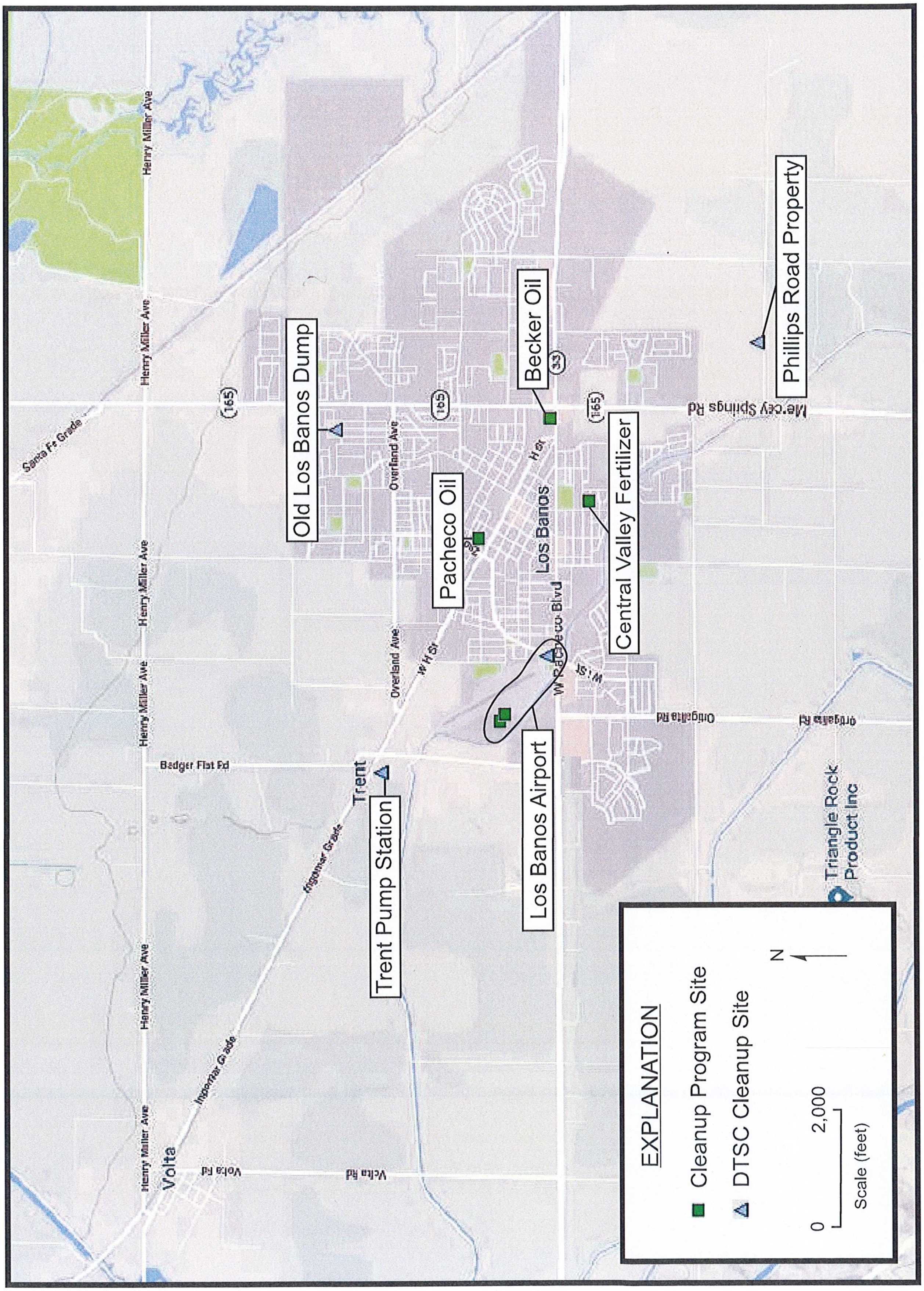


FIGURE 21- KNOWN GROUNDWATER CONTAMINATION SITES

discharge is the change in groundwater storage. The period selected for the water budget is 2003-12, which comprises a near normal hydrologic base period, based on CCID water deliveries.

Recharge

Much of the Los Banos urban storm runoff is presently discharged to canals or channels. An estimated 200 acre-feet per year is percolated to the groundwater in the City. The lateral groundwater inflow was estimated based on the Spring 2009 and 2017 water-level elevation maps. There was a width of groundwater inflow into the City of about five and a half miles, and the average water-level slope was about seven-feet per mile.

Darcy's Law is $Q = TIL$, where

Q : groundwater flow (gpd)

T : transmissivity (gpd/ft)

I : water-level slope (ft/mile)

L : width of flow (miles)

Using a transmissivity of 65,000 gpd per foot, and the previously indicated water-level slope and width of inflow, there was an estimated lateral groundwater inflow into the City of 2,800 acre-feet per year. Most of this inflow came from seepage from the Main and Outside Canals, deep percolation beneath lands in the CCID irrigated with canal water, and from seepage from Los Banos Creek streamflow.

The reach of the Main Canal in the City is about three miles long. The average canal seepage estimated by the CCID is 0.68 cfs per mile during an average canal run of 330 days. This equals a canal seepage of about 1,300 acre-feet per year. Although this value is entered into the City water budget, the water came from the CCID. The total recharge to groundwater in the City was thus about 4,300 acre feet per year.

Discharge

Groundwater discharge in the City is due to consumptive use and groundwater outflow. The consumptive use in the City is due to evapotranspiration from outside water use, evaporation from the effluent ponds, and evapotranspiration of effluent by crops irrigated with effluent. The amount of effluent is estimated to be about half of the groundwater pumpage, or about 3,900 acre-feet per year for 2003-12. The outside water use was also about 3,900 acre-feet per year. Assuming an irrigation efficiency of 70 percent, this equals about 2,730 acre-feet per year of consumptive use from outside water use. An average of about 345 acres of pasture have been irrigated with effluent. Using a consumptive use of applied water of 3.3 acre-feet per acre per year from DWR Bulletin 113-3, this equals about 1,140 acre-feet per year. The nearest pan evaporation records were used to estimate evaporation from the effluent ponds. These records indicate a pan evaporation of 65 inches per year. Using an average wetted effluent pond area of 200 acres and a pan factor of 0.8, and deducting the average annual rainfall of 10 inches, yields a net annual evaporation of effluent from the ponds of 580 acre-feet per year.

The total consumptive use for the City was thus 2,730 plus 1,140 plus 580, or about 4,450 acre-feet per year.

Lateral groundwater outflow from the City, based on the water-level elevation and direction of groundwater flow in Spring 2009 and Spring 2017, was indicted to be insignificant. Table 11 shows the water budget components for the City of Los Banos part of the study area.

Change in Storage

The difference between the recharge and discharge is about -150 acre-feet per year. Water-level records for the City wells were reviewed to determine the average water-level change between Spring 2003 and Spring 2013. The average water-level decline was about 0.55 foot per year. Using a specific yield of 15 percent and an area of 5,900 acres, this yields a change in storage of about 490 acre-feet per year. The average of the two values for change in storage, or about 300 acre-feet per year

TABLE 11-GROUNDWATER BUDGET FOR
CITY OF LOS BANOS (2003-12)

	Acre-feet per Year
RECHARGE	
Canal Seepage	1,300
Groundwater Inflow	2,800
Urban Storm Runoff	200
Subtotal:	4,300
DISCHARGE	
Outside Water Consumption	2,730
Crop Consumptive Use of Effluent	1,140
Pond Evaporation of Effluent	580
Subtotal:	4,450
DIFFERENCE	-150
CALCULATED CHANGE IN GROUNDWATER STORAGE	-490
GROUNDWATER OVERDRAFT	300

Note: If the CCID contribution to recharge is excluded, the total recharge would be 700 acre-feet per year and the City water deficit would be 3,750 acre-feet per year.

(rounded), is indicated to be the groundwater overdraft beneath the City for 2003-13.

Summary

Assuming that about 500 acre-feet per year of the groundwater inflow to the City was from Los Banos Creek streamflow, the total groundwater replenishment within the City was about 700 acre-feet per year, compared to a total consumptive use of about 4,450 acre-feet per year. This leaves a net deficit of about 3,750 acre-feet per year for 2003-12.

GROUNDWATER BUDGET FOR CCID AND SLWD PART OF STUDY AREA

Recharge

Sources of recharge to the groundwater in the CCID part of the study area for 2003-12 included deep percolation from lands irrigated with CCID water, canal seepage, streamflow seepage, and groundwater inflow. Sources of recharge to the groundwater in the SLWD part of the study area included deep percolation from lands irrigated with Aqueduct or DMC water and streamflow seepage.

The average delivered canal water for 18,700 acres in the CCID and SLWD was 51,000 acre-feet per year from 2003-12. The evapotranspiration of applied water averaged 37,500 acre-feet per year for 2003-12. The difference between the delivered water and evapotranspiration was 13,500 acre-feet per year, which was the deep percolation for this period.

There are 7.9 miles of the Main Canal and 7.1 miles of the Outside Canal in the CCID part of the study area, or a total of 15.0 miles. Using an average canal seepage of 0.68 cfs per mile from the CCID, the seepage was 10.2 cfs or 20.19 acre-feet per day canal run. This equals a canal seepage of 6,650 acre-feet over a 330-day canal run. Seepage from other canals in the area is considered insignificant.

The estimated average seepage from Los Banos Creek in the CCID, and SLWD is estimated to be about 1,500 acre-feet per year.

Almost all of the groundwater inflow into the CCID and SLWD part of the study area as of 2017 was derived from Los Banos Creek seepage and seepage from the Outside Canal, which have already been accounted for. However, an average of about 500 acre-feet of other groundwater inflow was estimated.

The total recharge to the groundwater in the CCID and SLWD part of the study area thus averaged about 21,650 acre-feet per year for 2003-12.

Discharge

The discharge from the groundwater in the CCID and SLWD part of the study area is from pumpage of CCID and private wells and groundwater outflow. Pumpage from CCID wells was 2,600 acre-feet per year and from private wells was 11,300 acre-feet per year, or a total of 13,900 acre-feet per year in the area. Groundwater outflow from the CCID to the northeast occurred along a 7.1 mile long segment. Using the Spring 2017 water-level elevation map, the average water-level slope was about eight feet per mile. The average transmissivity along and near the Outside canal is about 140,000 gpd per foot. Using Darcy's Law, the lateral groundwater outflow was about 8,900 acre-feet per year. There is additional groundwater outflow from the study area upper aquifer downward through the Corcoran Clay. Based on a previous evaluation for the SJRECWA (KDSA 1989), the downward flow in the GSA would be about 1,600 acre-feet per year. The total groundwater discharge would be about 24,400 acre-feet per year. The difference between the recharge and discharge was thus -2,750 acre-feet per year. Table 12 shows water-level budget values for the CCID and SLWD part of the study area.

Change in Storage

Water-level changes between Spring 2003 and Spring 2013 were determined for 23 wells in the study area. Average water-level declines in the CCID part of the area were 0.5 foot per year.

TABLE 12-GROUNDWATER BUDGET FOR CCID
AND SLWD PART OF STUDY AREA (2003-12)

	Acre-feet per Year
RECHARGE	
Groundwater Inflow	500
Deep Percolation from Irrigation	13,500
Canal Seepage	6,650
Los Banos Creek Seepage	1,500
Subtotal:	22,150
DISCHARGE	
Pumpage	13,900
Groundwater Outflow (lateral)	8,900
Groundwater outflow (downward)	1,600
Subtotal:	24,400
DIFFERENCE	-2,250
CALCULATED CHANGE IN GROUNDWATER STORAGE	-2,450
GROUNDWATER OVERDRAFT	-2,350

Average water-level declines in the SLWD part of the area were 2.1 feet per year. Using an average specific yield of 0.2 the storage change in the upper aquifer beneath the CCID was 12,090 acres x 0.5 foot per year x 0.12 or -700 acre-feet per year (rounded). The storage change beneath the SLWD was 5,783 acres x 2.1 feet per year x 0.12 or -1,500 acre-feet per year. The combined storage change for both districts was -2,200 acre-feet per year. There was some additional storage change due to compaction of the Corcoran Clay and deeper clay layers. This is estimated to be several hundred acre-feet per year. This value for total groundwater overdraft was thus about 2,600 acre-feet per year.

GROUNDWATER BUDGET FOR THE GWD PART OF STUDY AREA

There are 800 acres of irrigated land in the GWD part of the study area. Provost & Pritchard has indicated that the average water delivery by the GWD to this property has been 1,080 acre-feet per year. They also determined the consumptive use of applied water, which averaged 1,980 acre-feet per year. The remainder of the consumptive use (900 acre-feet per year) was provided by groundwater pumping, and is considered the net deficit for this area.

GROUNDWATER BUDGET FOR MERCED COUNTY WHITE AREAS IN THE STUDY AREA

Provost & Pritchard has indicated that there are 2,170 acres of land in the white areas. They estimated that the consumptive use of applied water was about 6,700 acre-feet per year. No surface water was delivered to this area, and the applied water came from groundwater pumpage. The net deficit was thus 6,700 acre-feet per year.

GROUNDWATER BUDGET FOR THE LOS BANOS STUDY AREA

Table 13 provides a groundwater budget for the Los Banos Study Area for 2003-12. This budget combines information from the water budget values for the City of Los Banos, CCID and SLWD, GWD, and the Merced County white areas in the area. The largest items of groundwater recharge are deep percolation from irrigation and canal seepage, which comprises an average of 21,450 acre-feet per year, or 92 percent of the recharge. The total average recharge was 23,650 feet per year. The largest source of groundwater discharge was pumpage from irrigation (21,500 acre-feet per year). This comprised 77 percent of the groundwater discharge. The difference between the groundwater recharge and discharge was an average of -4,250 acre-feet per year. The calculated average decrease in groundwater storage was 490 acre-feet per year in the City, 2450 acre-feet per year in the CCID and SLWD, and 260 acre-feet per year in the white

TABLE 13-GROUNDWATER BUDGET FOR
LOS BANOS STUDY AREA (2003-12)

	Acre-feet per Year
RECHARGE	
Groundwater Inflow	500
Deep Percolation from Irrigation	13,500
Canal Seepage	7,950
Los Banos Creek Seepage	1,500
Urban Storm Runoff	200
Subtotal:	23,650
DISCHARGE	
Pumpage for Irrigation	21,500
Groundwater Outflow (mostly in alluvial form)	2,000
Urban Outside Consumption	2,700
Effluent Evaporation and Evapotranspiration	1,700
Subtotal:	27,900
DIFFERENCE	-4,250
CALCULATED CHANGE IN GROUNDWATER STORAGE	-3,200

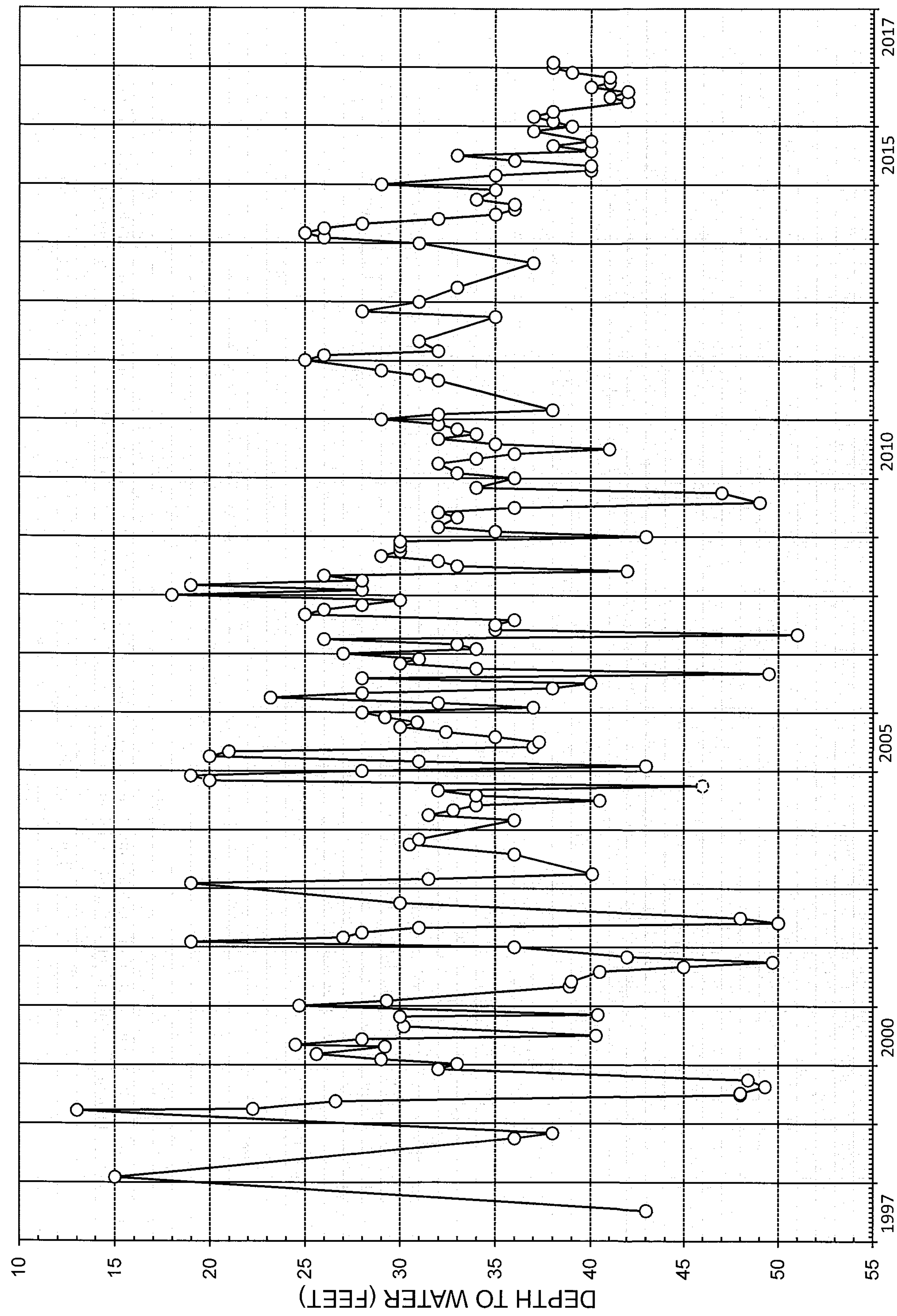
areas, or a total of 3,200 acre-feet per year. This is considered a reasonable agreement, considering the accuracy of the various items in the water budget.

TABLE 13-GROUNDWATER BUDGET FOR
LOS BANOS STUDY AREA (2003-12)

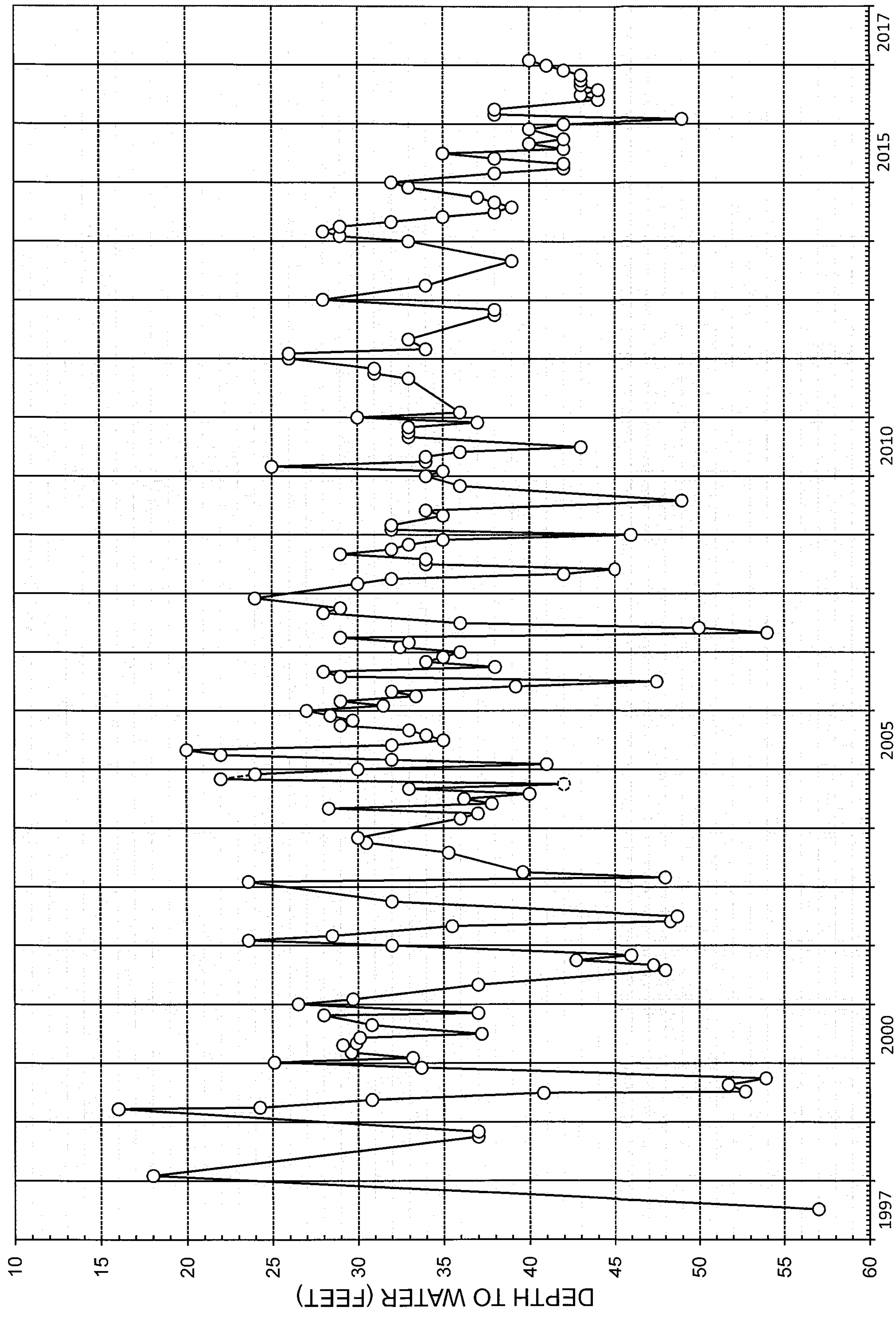
	Acre-feet per Year
RECHARGE	
Groundwater Inflow	500
Deep Percolation from Irrigation	13,500
Canal Seepage	7,950
Los Banos Creek Seepage	1,500
Urban Storm Runoff	200
Subtotal:	23,650
DISCHARGE	
Pumpage for Irrigation	21,500
Groundwater Outflow (mostly in alluvial form)	2,000
Urban Outside Consumption	2,700
Effluent Evaporation and Evapotranspiration	1,700
Subtotal:	27,900
DIFFERENCE	-4,250
CALCULATED CHANGE IN GROUNDWATER STORAGE	-3,200

APPENDIX A

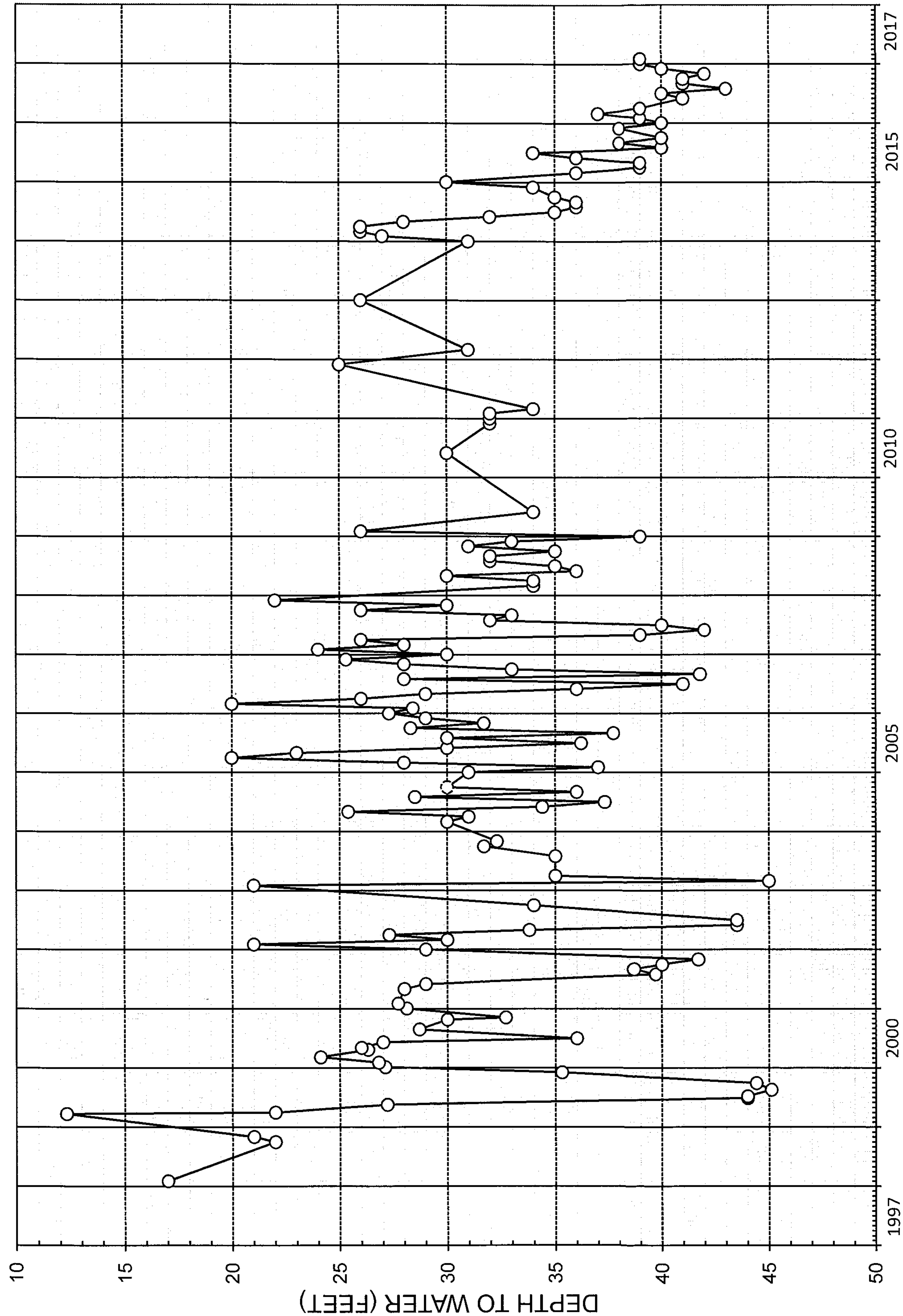
WATER-LEVEL HYDROGRAPHS FOR WELLS



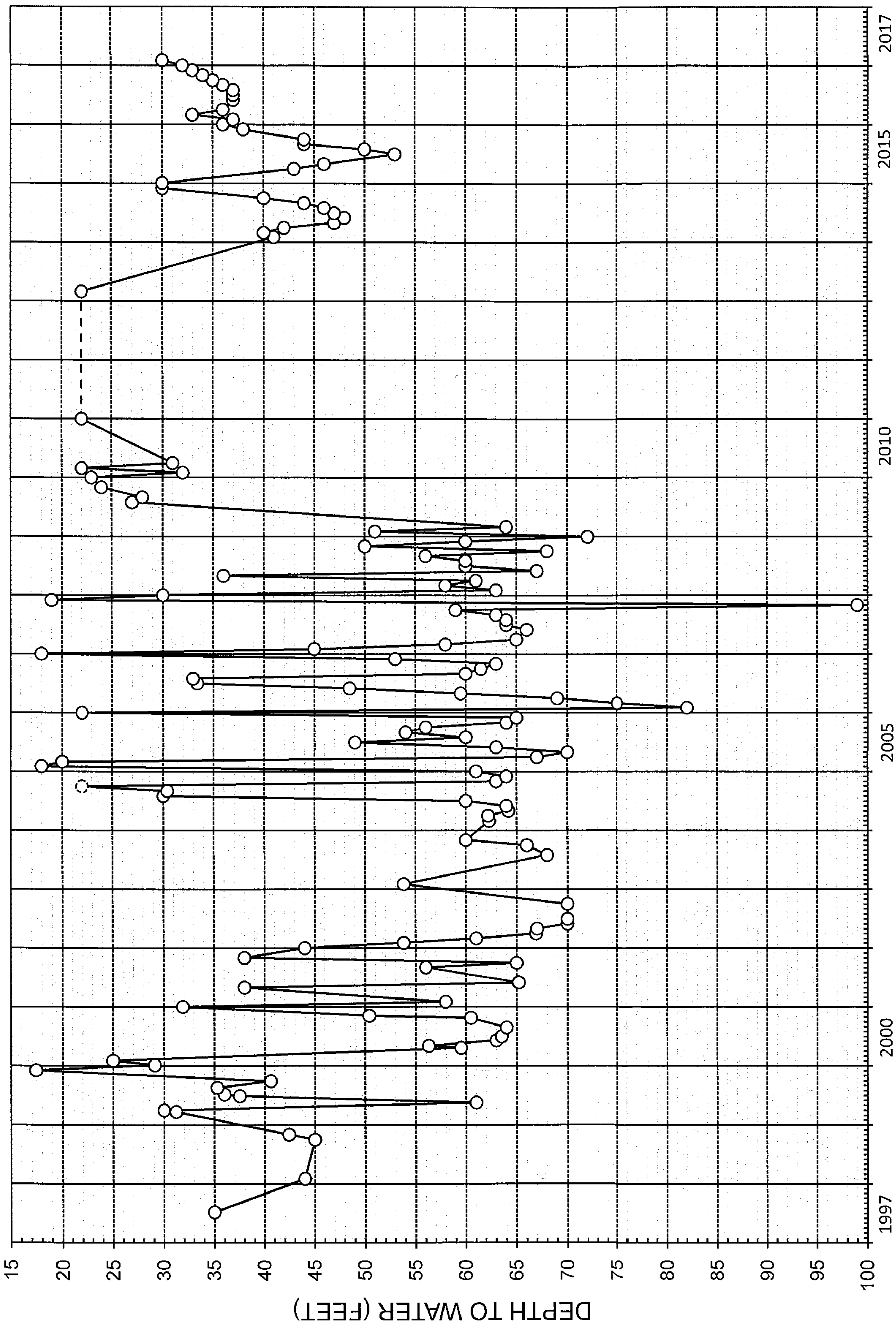
WATER-LEVEL HYDROGRAPH FOR CITY OF LOS BANOS WELL NO. 1



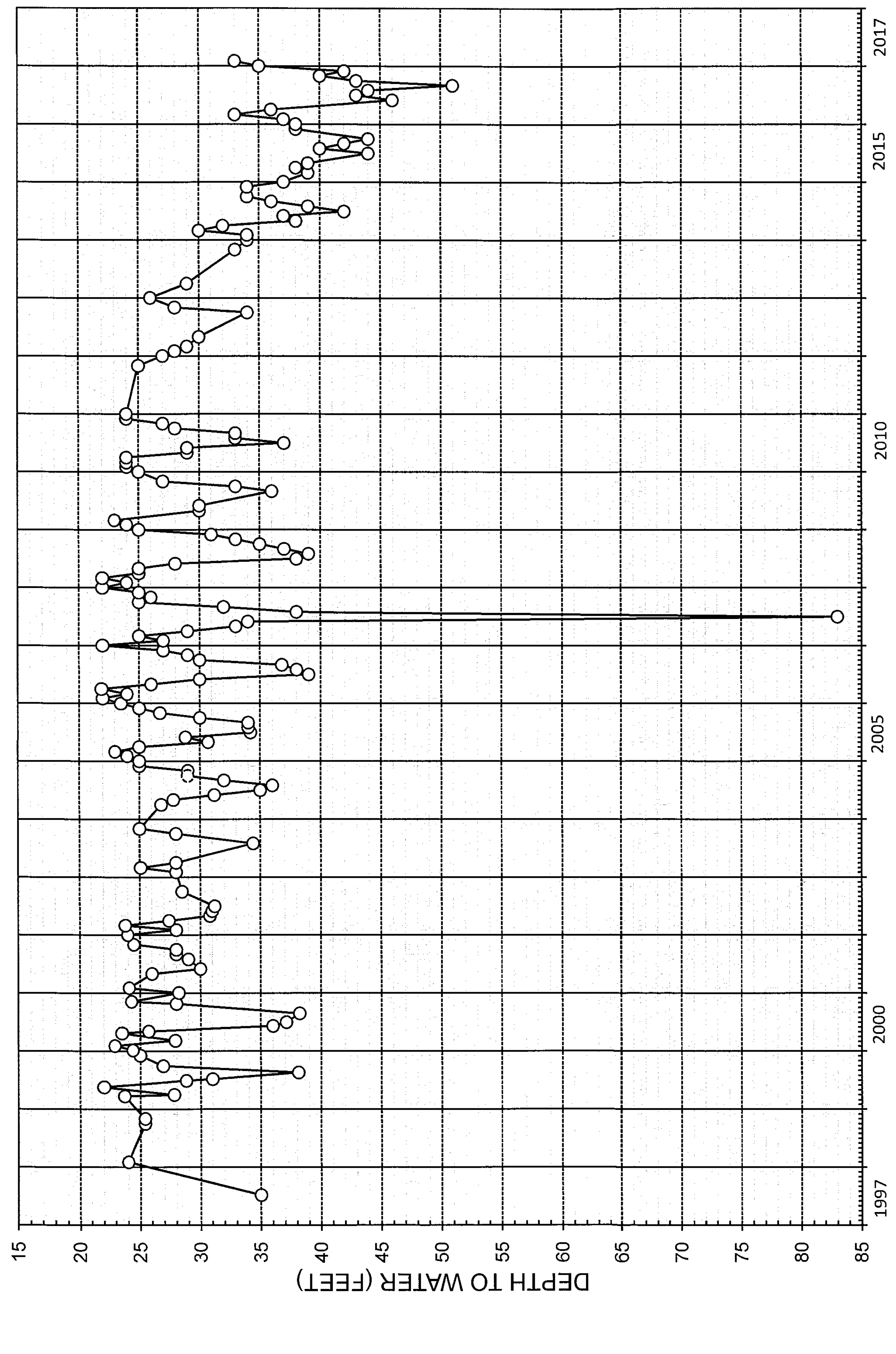
WATER-LEVEL HYDROGRAPH FOR CITY OF LOS BANOS WELL NO. 2



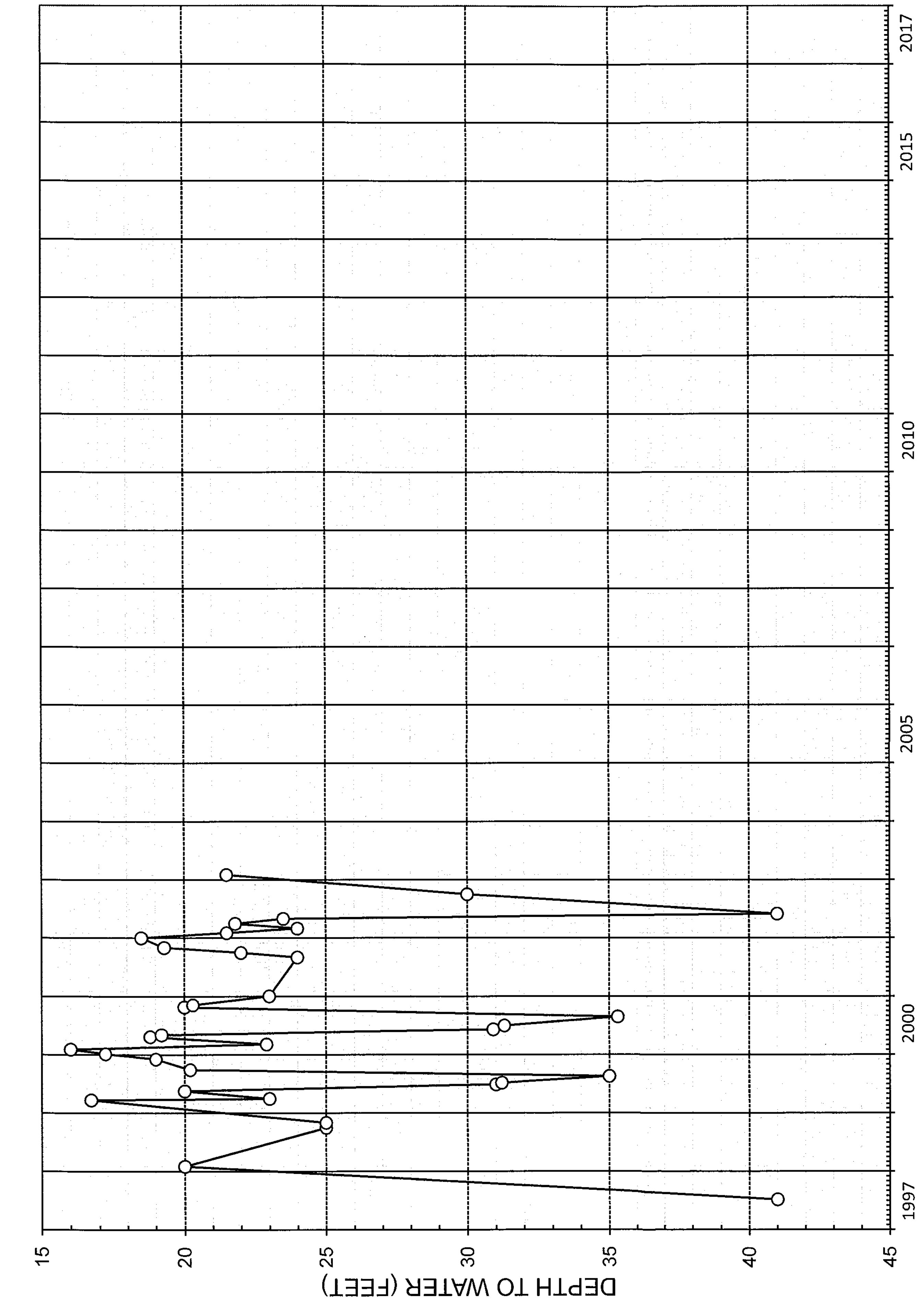
WATER-LEVEL HYDROGRAPH FOR CITY OF LOS BANOS WELL NO. 3



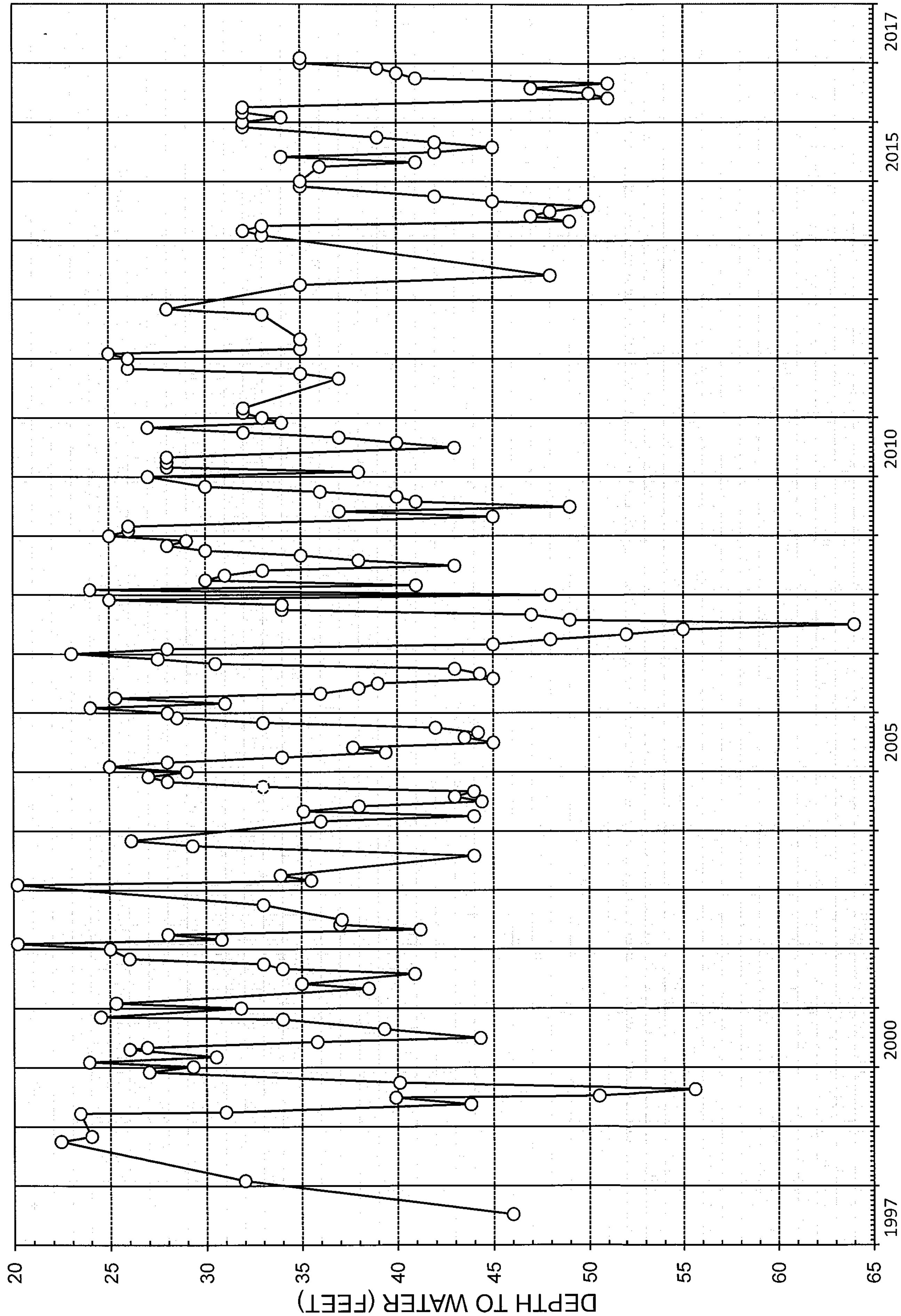
WATER-LEVEL HYDROGRAPH FOR CITY OF LOS BANOS WELL NO. 6



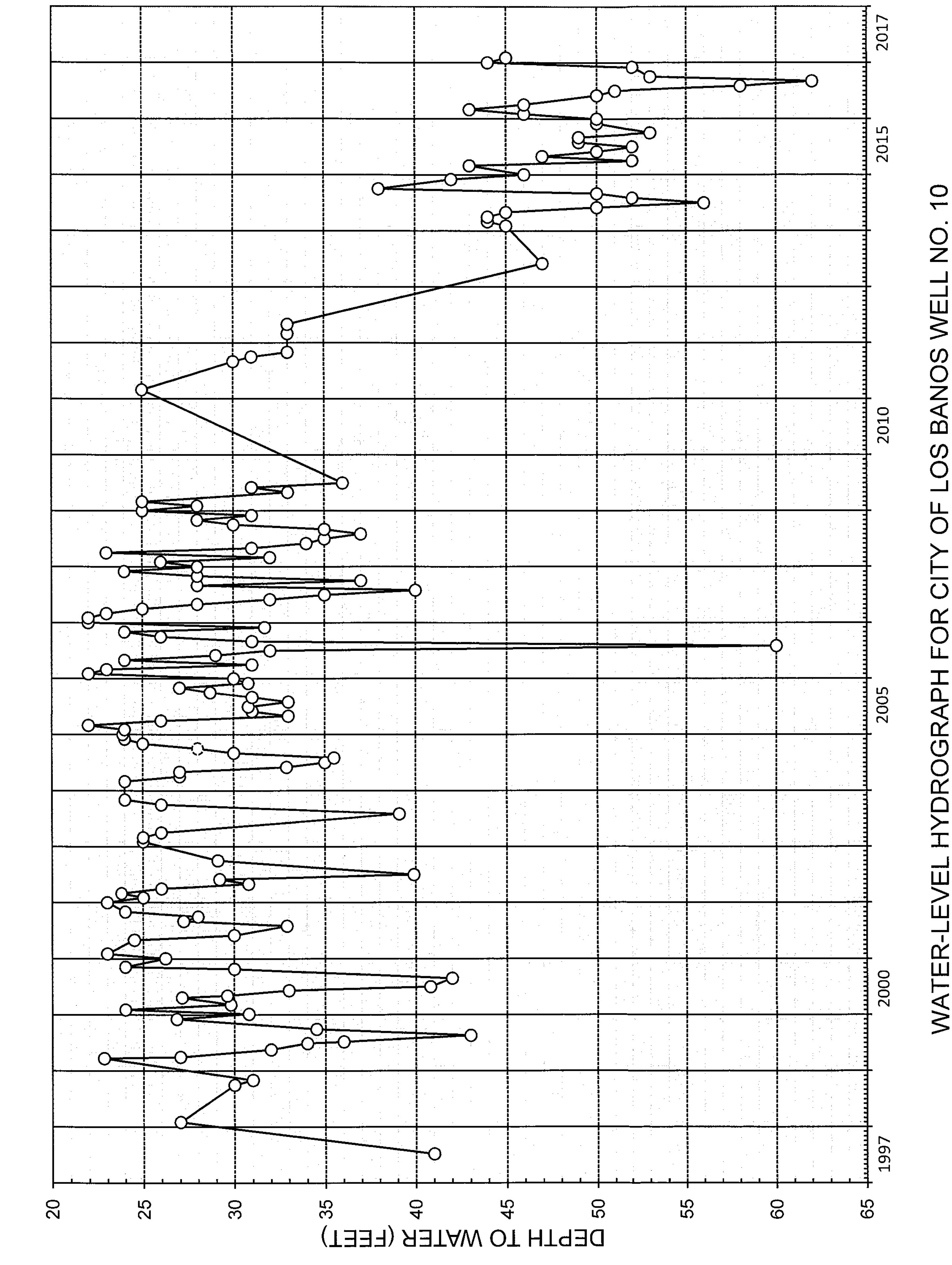
WATER-LEVEL HYDROGRAPH FOR CITY OF LOS BANOS WELL NO. 7

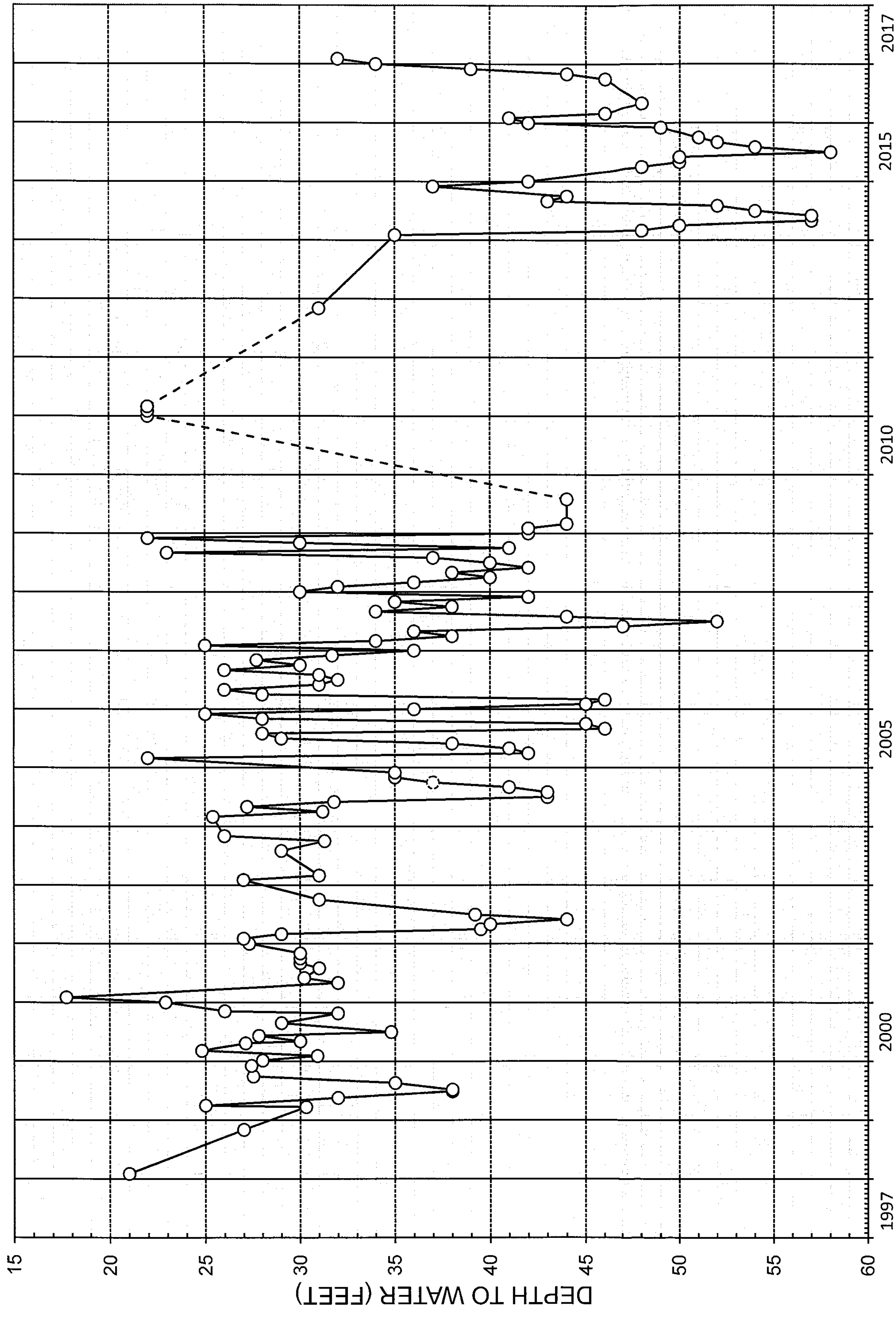


WATER-LEVEL HYDROGRAPH FOR CITY OF LOS BANOS WELL NO. 8

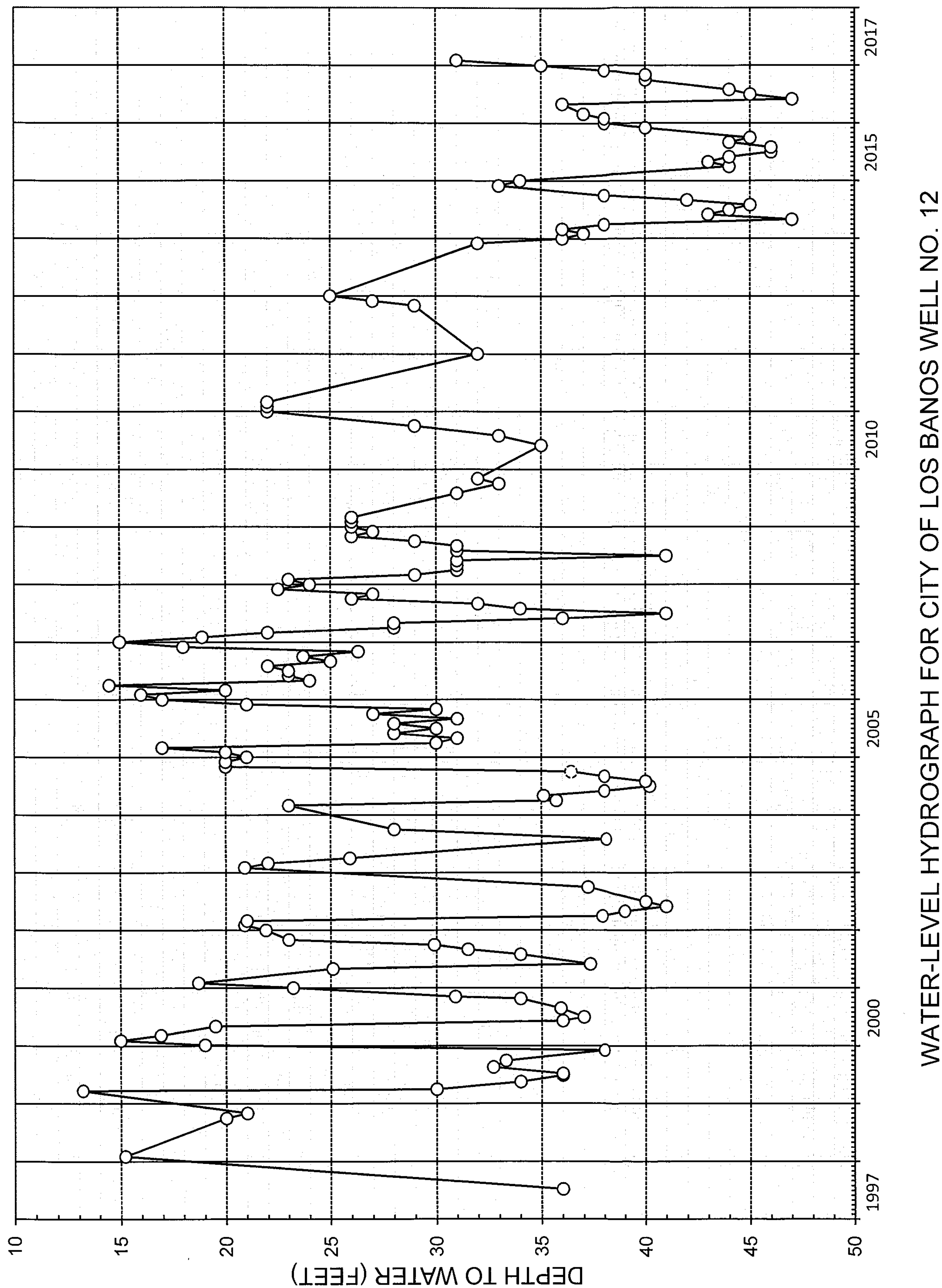


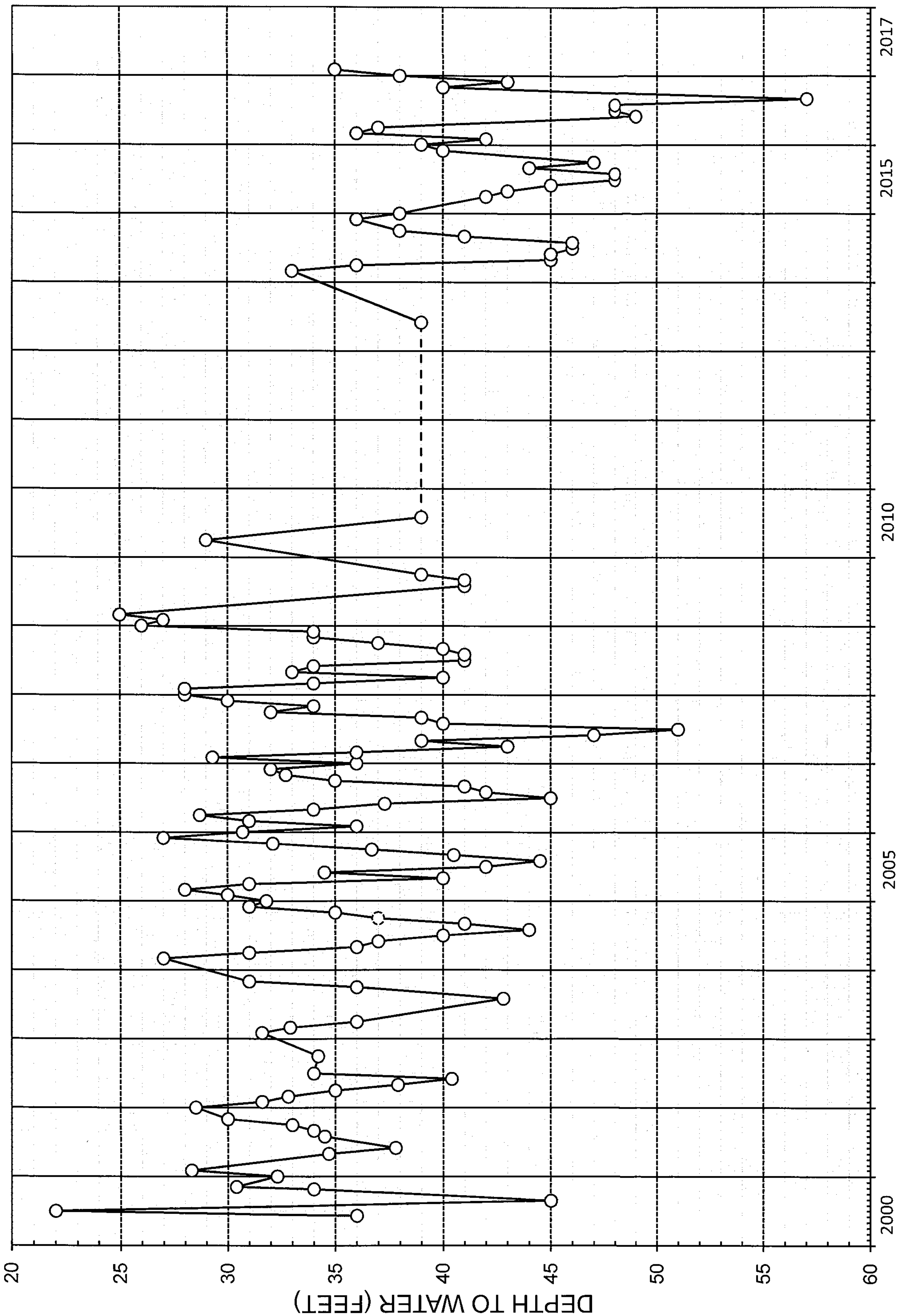
WATER-LEVEL HYDROGRAPH FOR CITY OF LOS BANOS WELL NO. 9


WATER-LEVEL HYDROGRAPH FOR CITY OF LOS BANOS WELL NO. 10
DEPTH TO WATER (FEET)
20
25
30
35
40
45
50
55
60
65
1997
2000
2005
2010
2015
2017

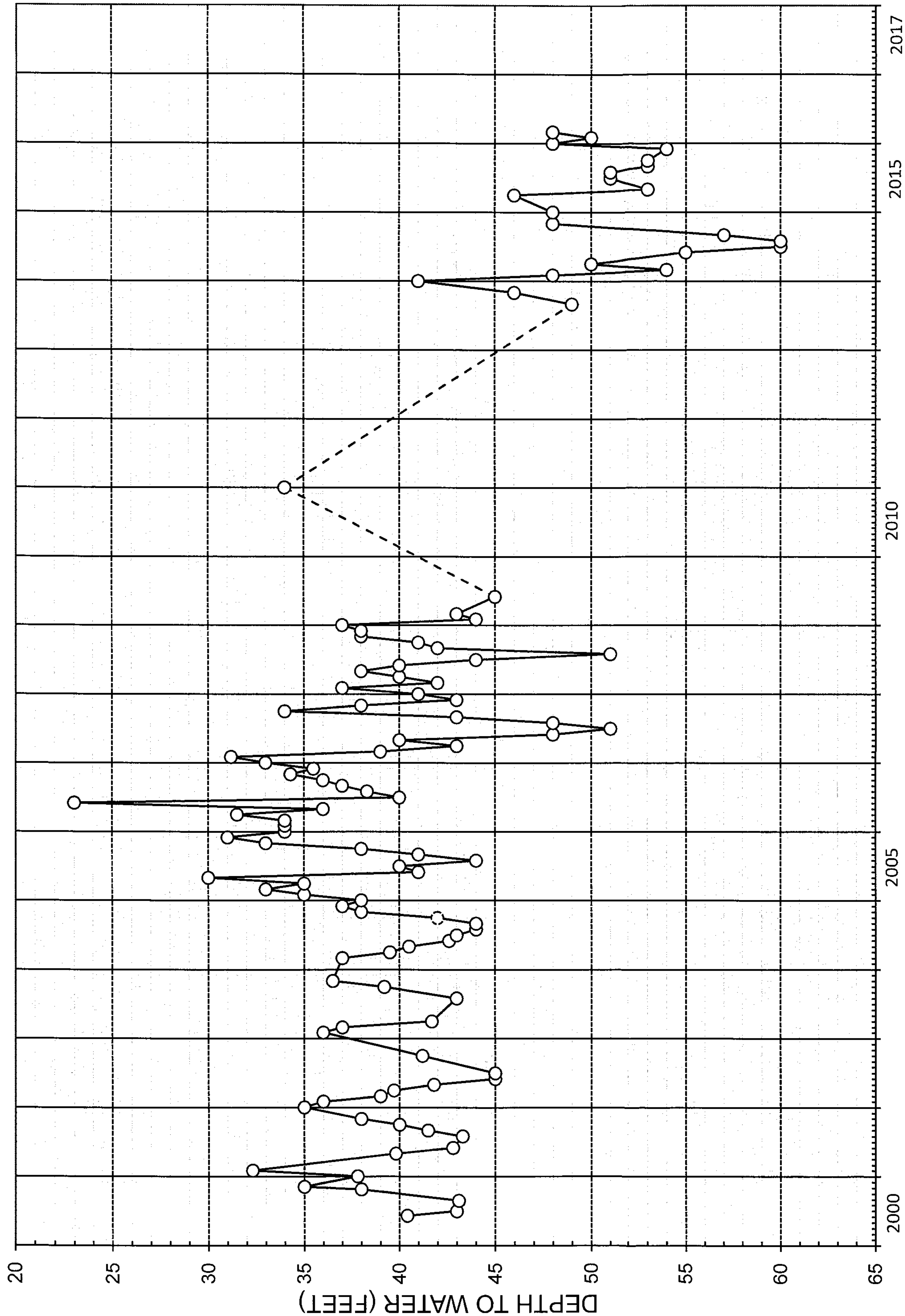


WATER-LEVEL HYDROGRAPH FOR CITY OF LOS BANOS WELL NO. 11

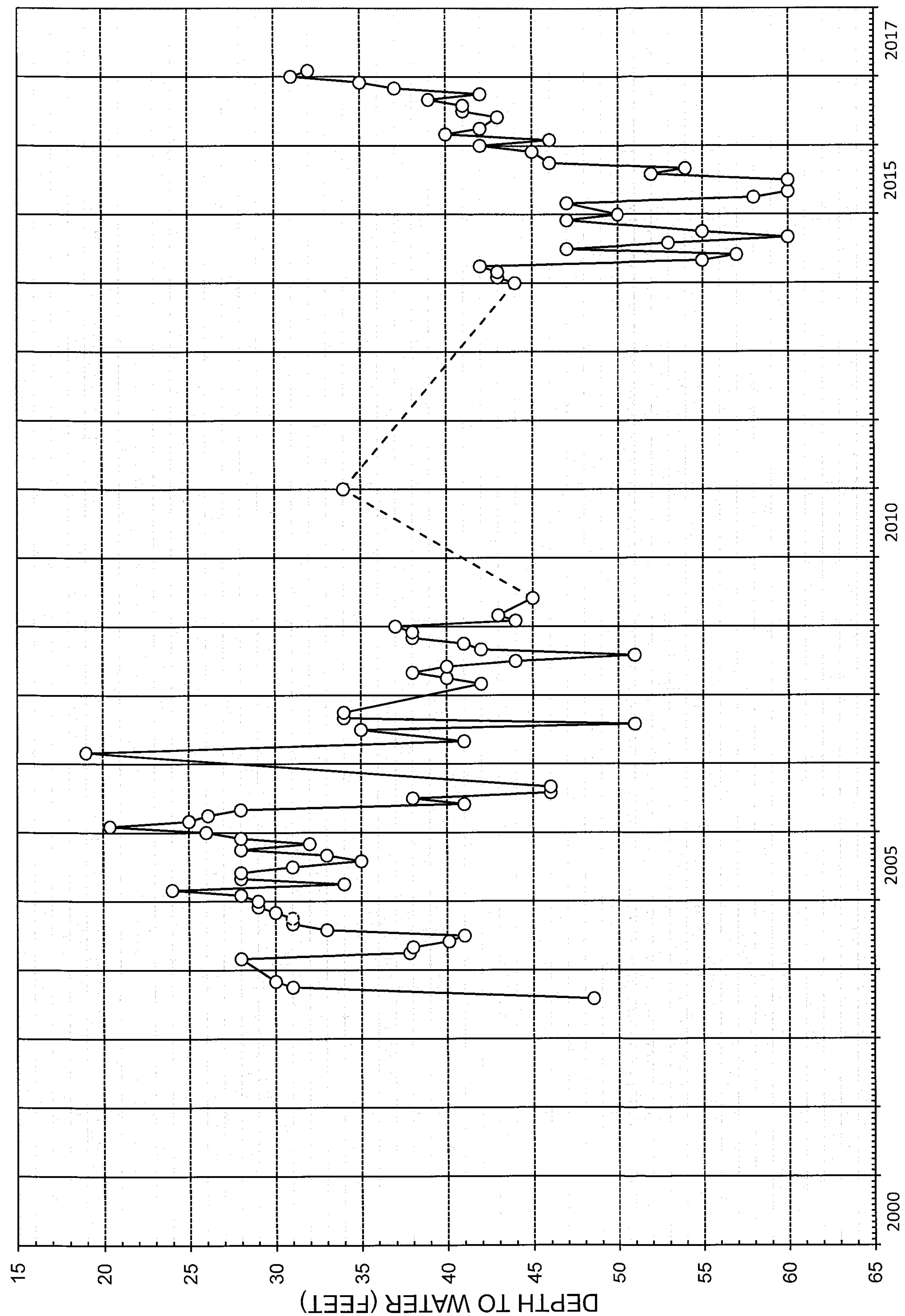

WATER-LEVEL HYDROGRAPH FOR CITY OF LOS BANOS WELL NO. 12
DEPTH TO WATER (FEET)
10
15
20
25
30
35
40
45
50
1997
2000
2005
2010
2015
2017



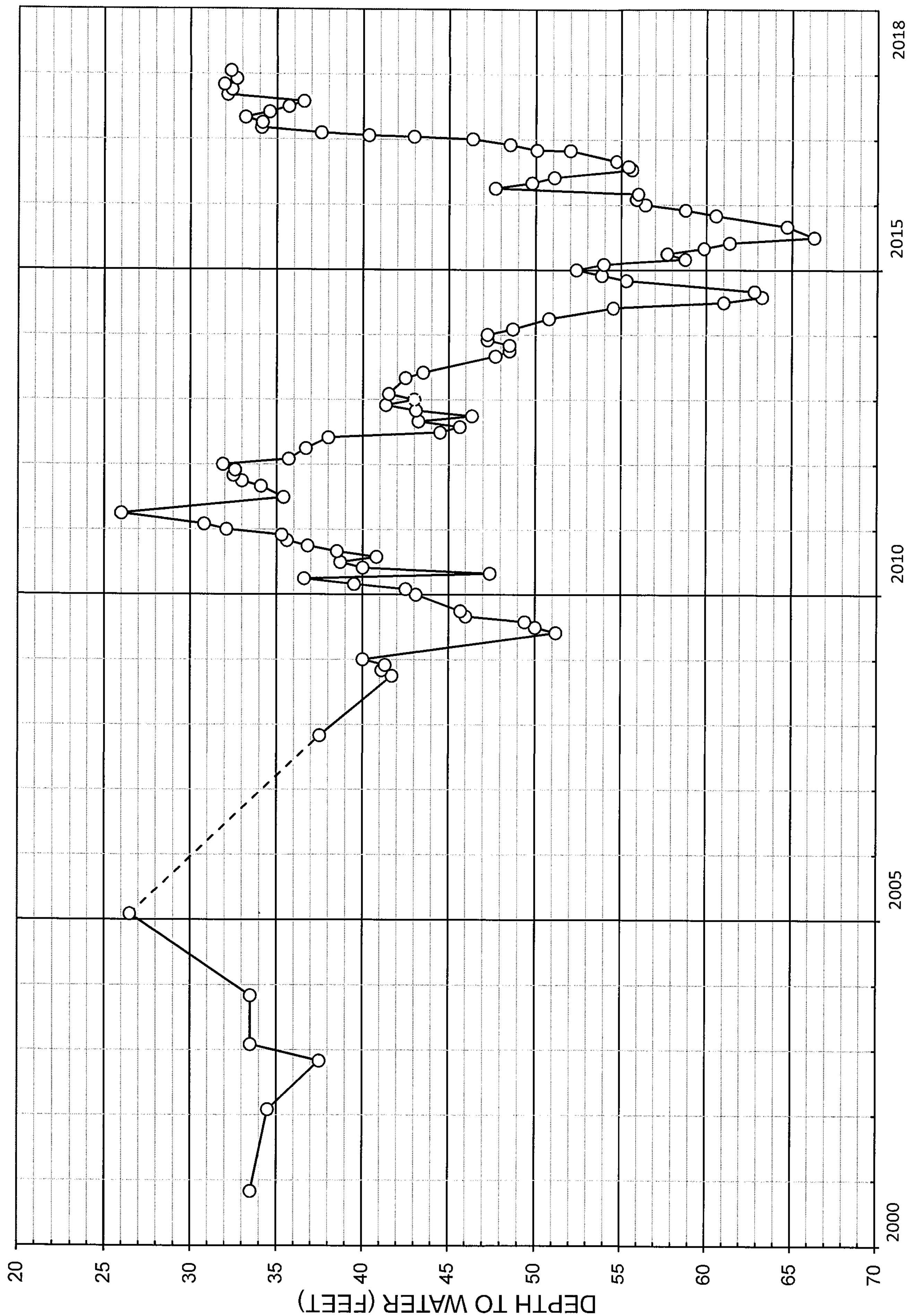
WATER-LEVEL HYDROGRAPH FOR CITY OF LOS BANOS WELL NO. 13



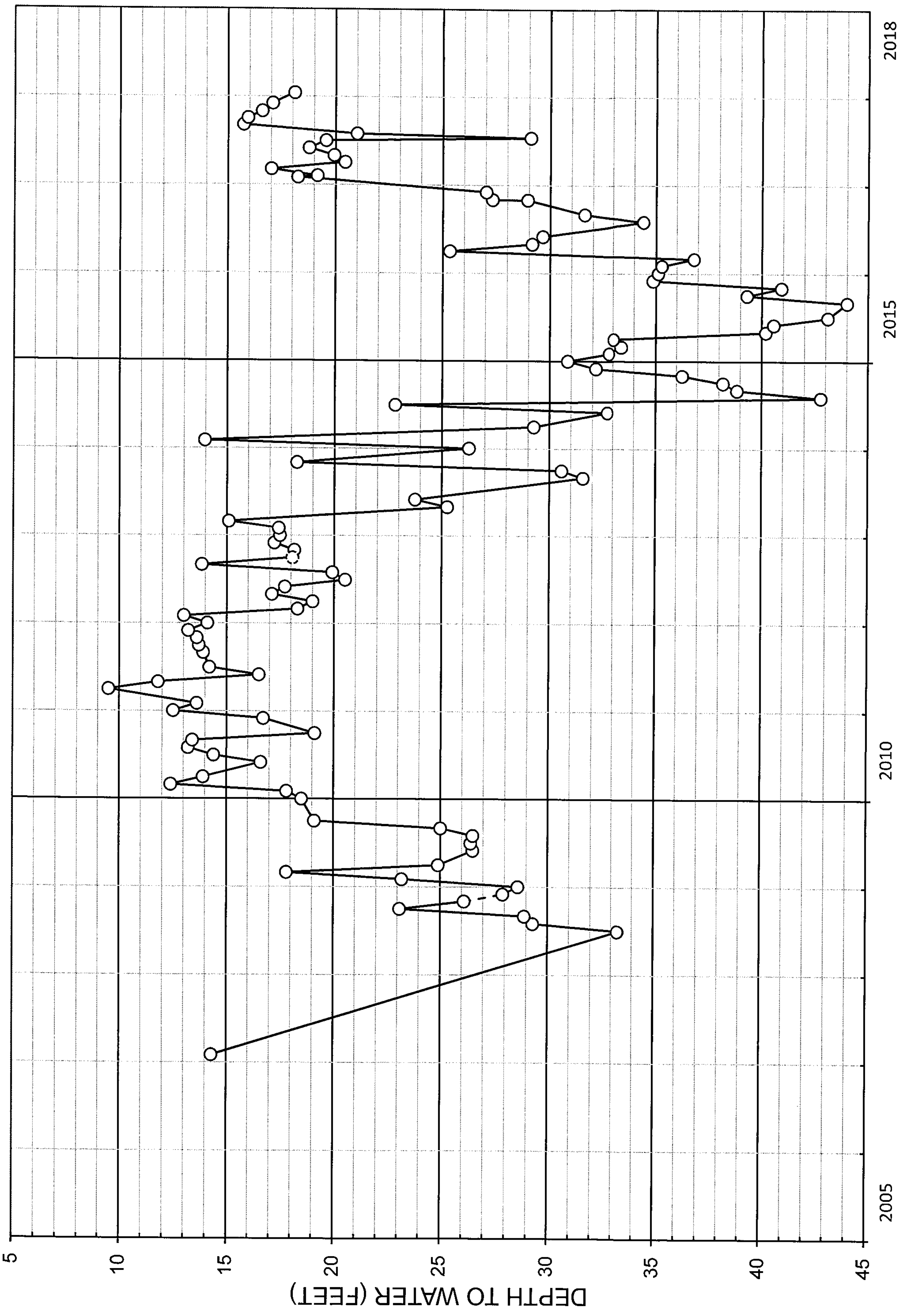
WATER-LEVEL HYDROGRAPH FOR CITY OF LOS BANOS WELL NO. 14



WATER-LEVEL HYDROGRAPH FOR CITY OF LOS BANOS WELL NO. 15



WATER-LEVEL HYDROGRAPH FOR CCID WELL NO. 8



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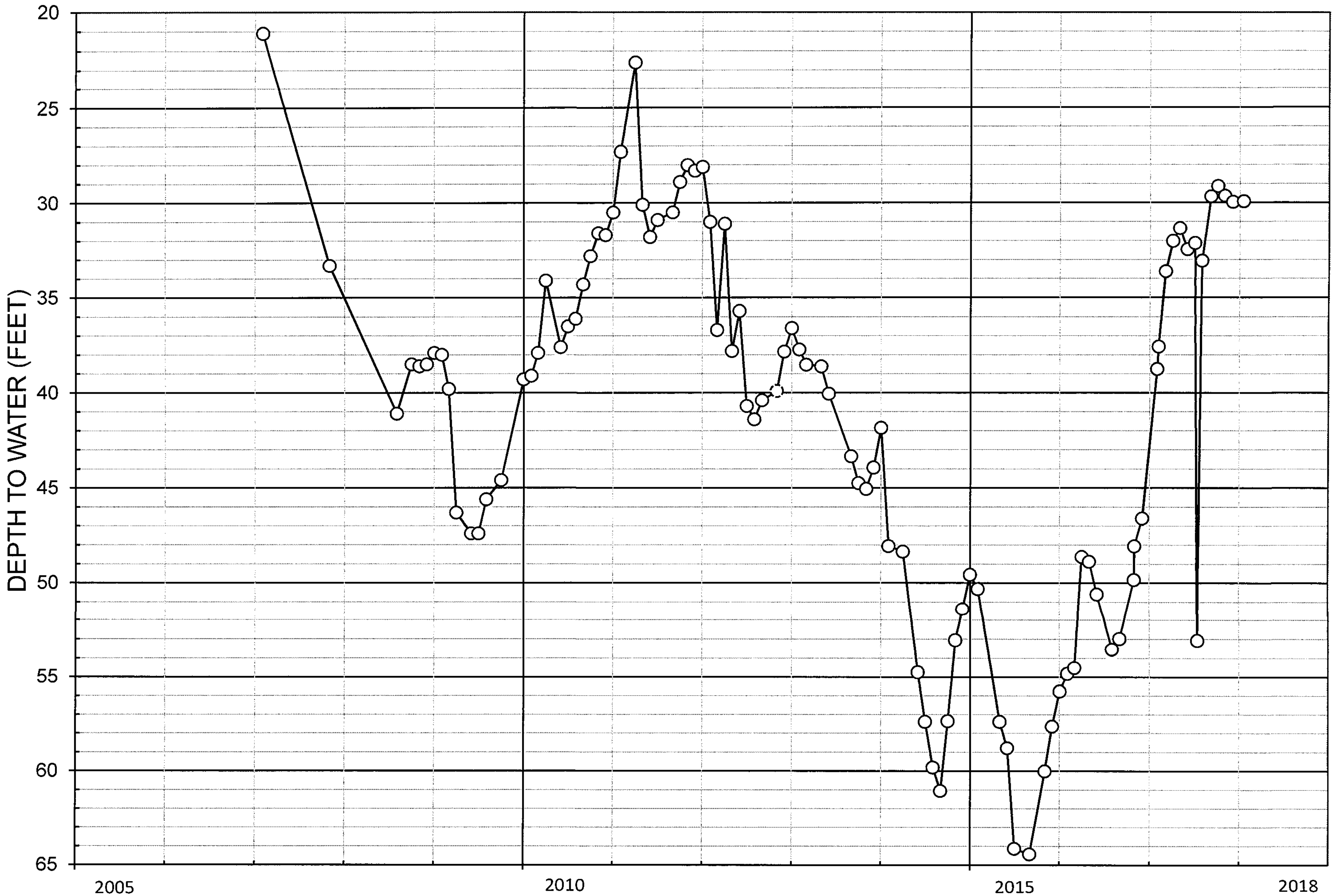
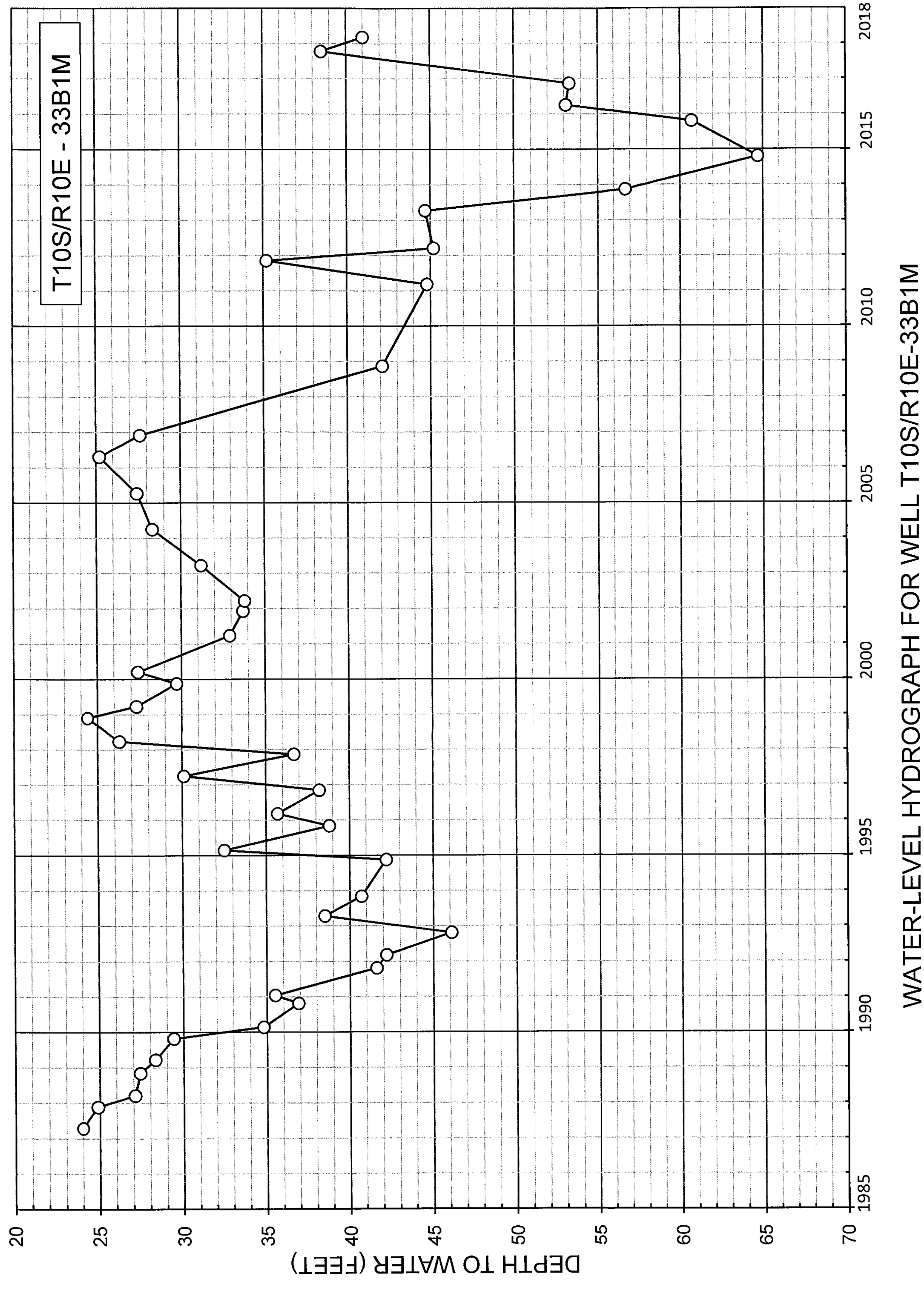
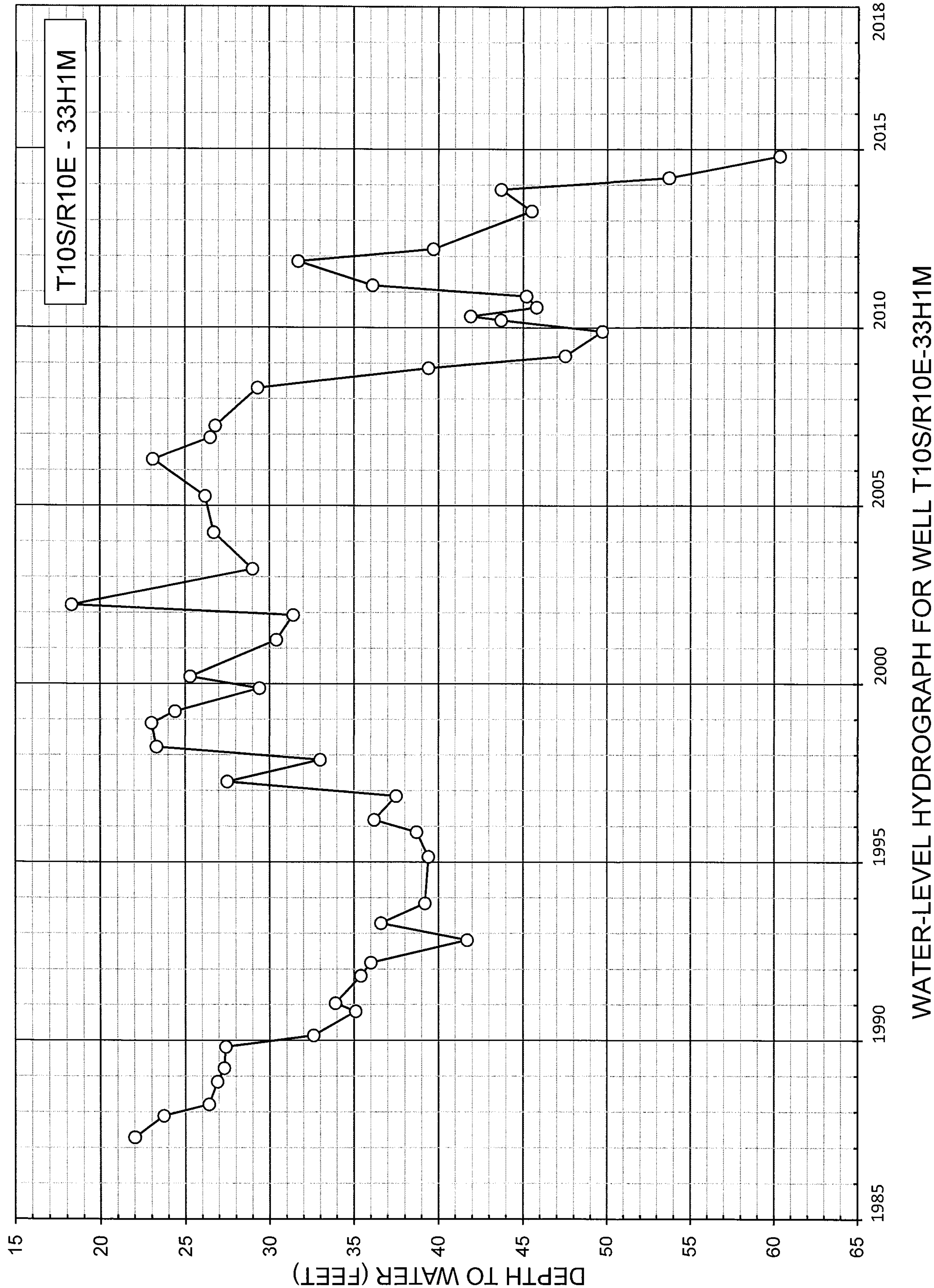
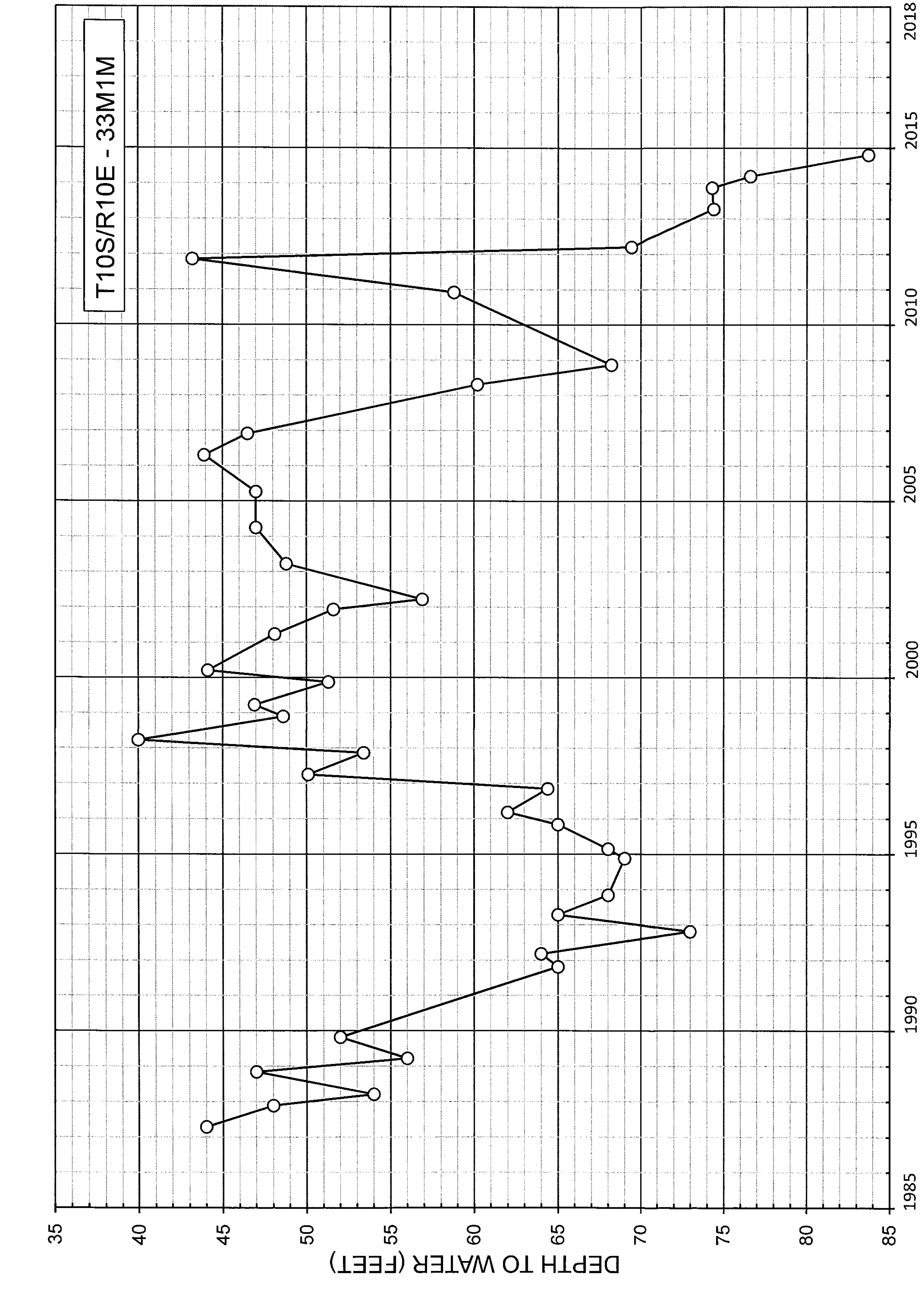


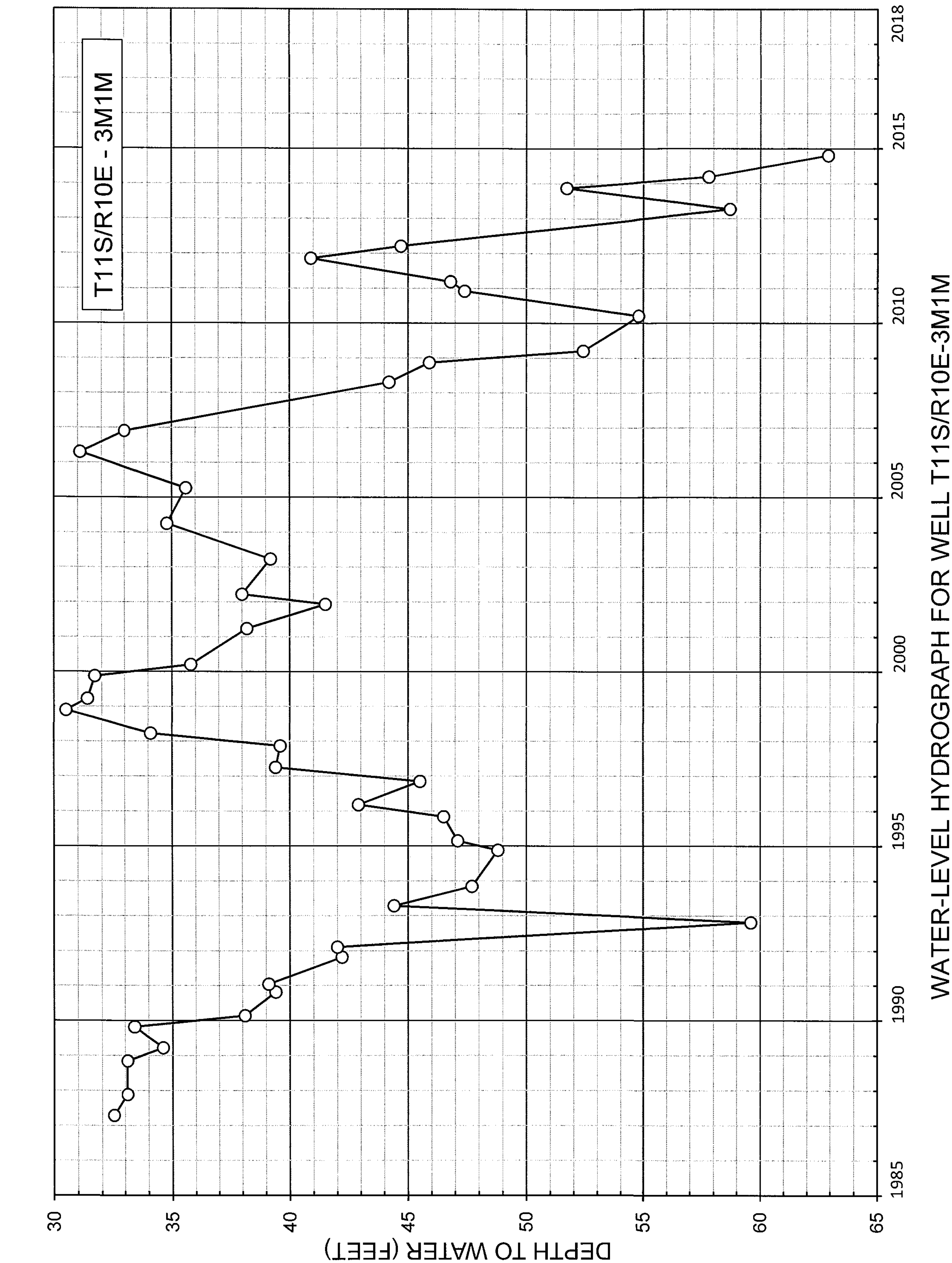
WATER-LEVEL HYDROGRAPH FOR CCID WELL NO. 62

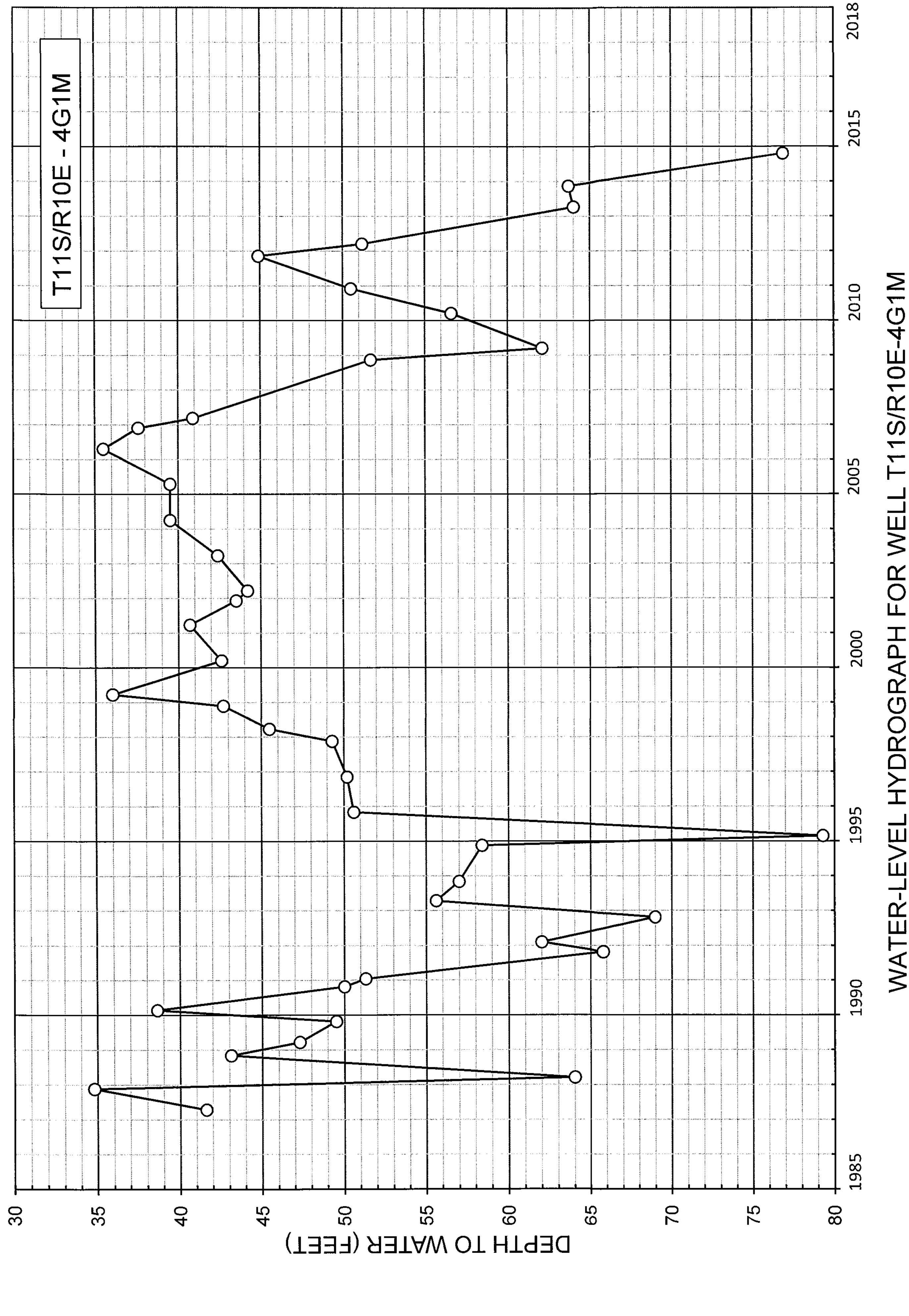

T10S/R10E - 33B1M
DEPTH TO WATER (FEET)
20
25
30
35
40
45
50
55
60
65
70
1985
1990
1995
2000
2005
2010
2015
2018
WATER-LEVEL HYDROGRAPH FOR WELL T10S/R10E-33B1M

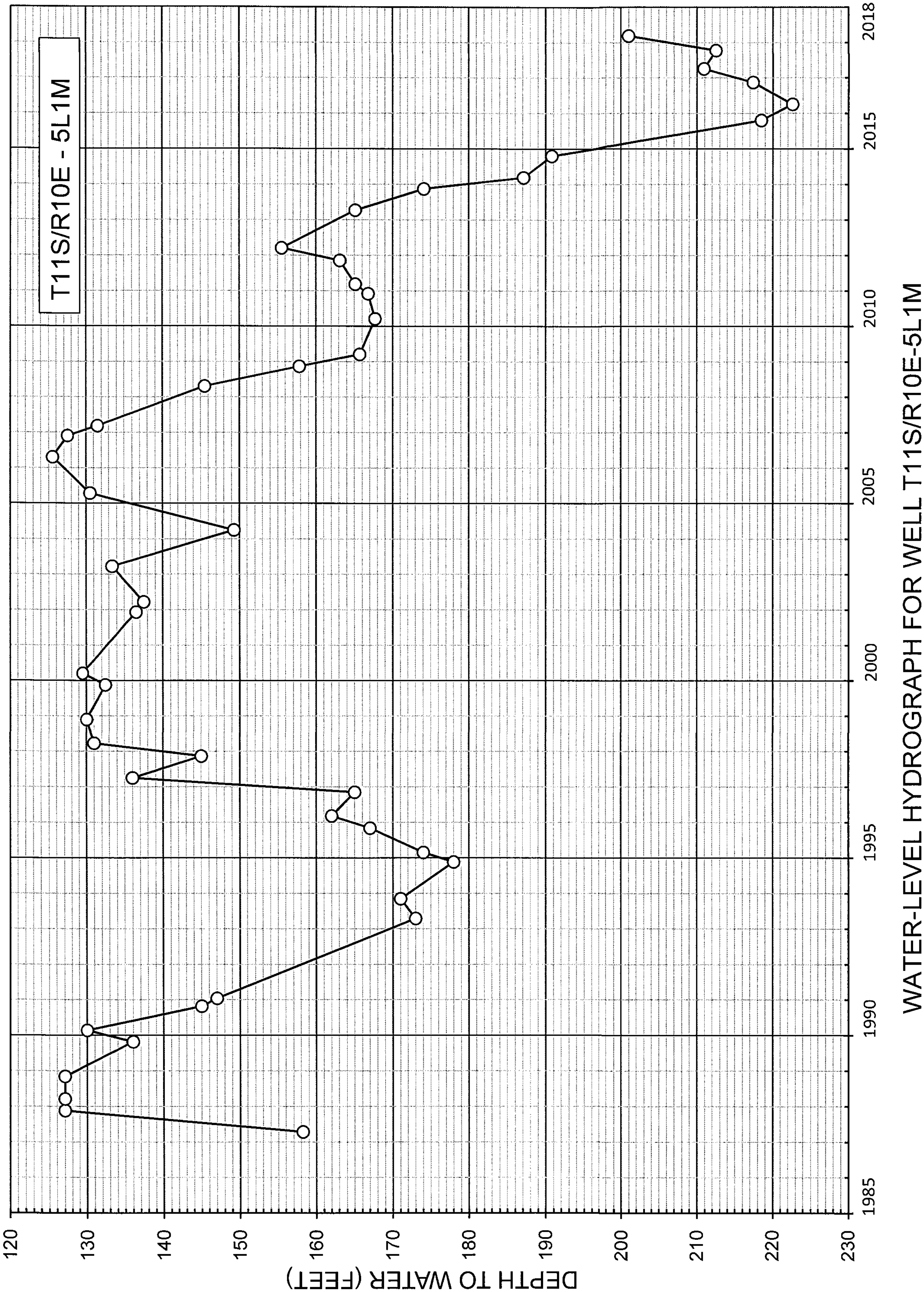

T10S/R10E - 33H1M
WATER-LEVEL HYDROGRAPH FOR WELL T10S/R10E-33H1M
DEPTH TO WATER (FEET)
15
20
25
30
35
40
45
50
55
60
65
1985
1990
1995
2000
2005
2010
2015
2018

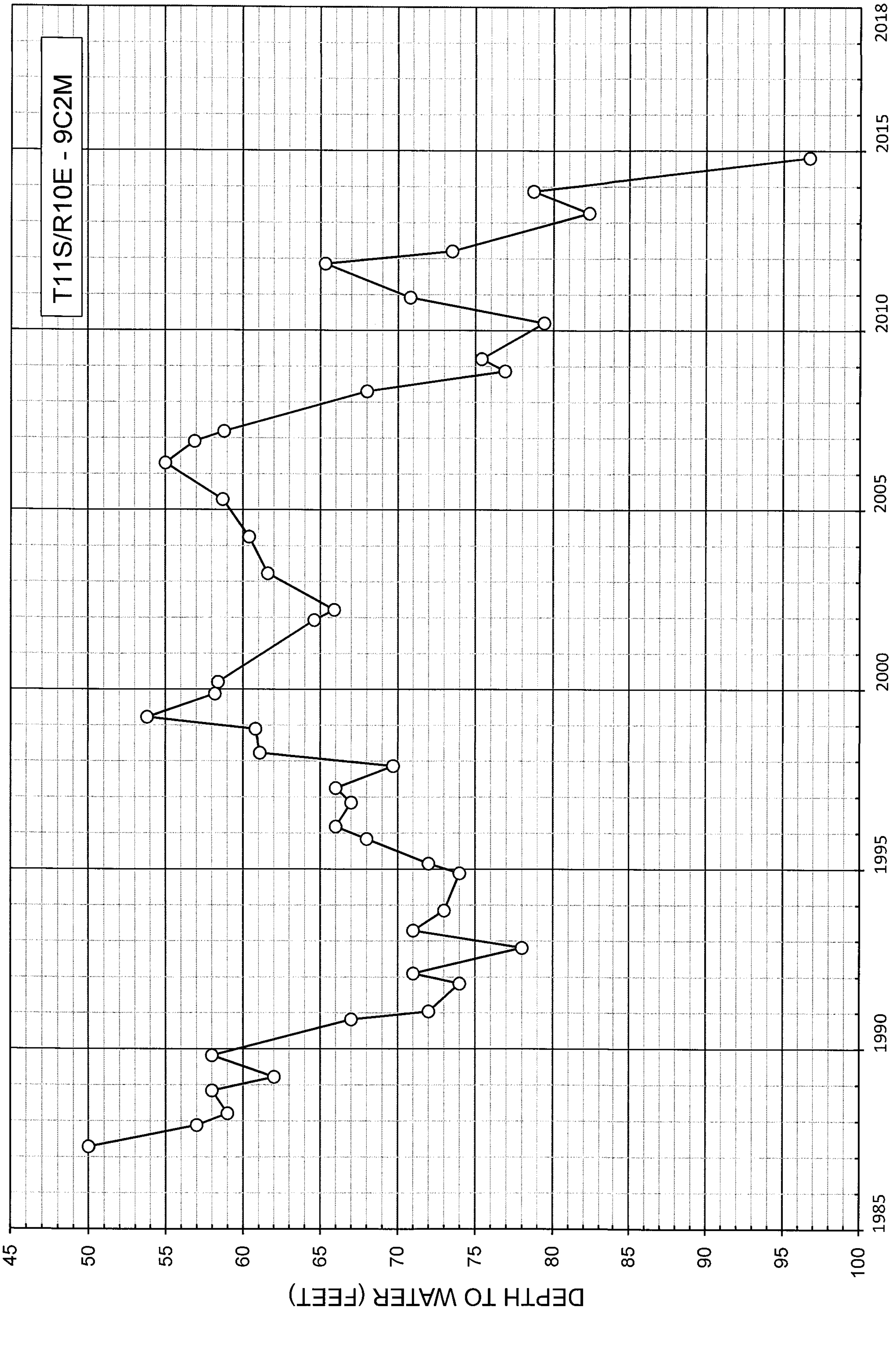


WATER-LEVEL HYDROGRAPH FOR WELL T10S/R10E-33M1M

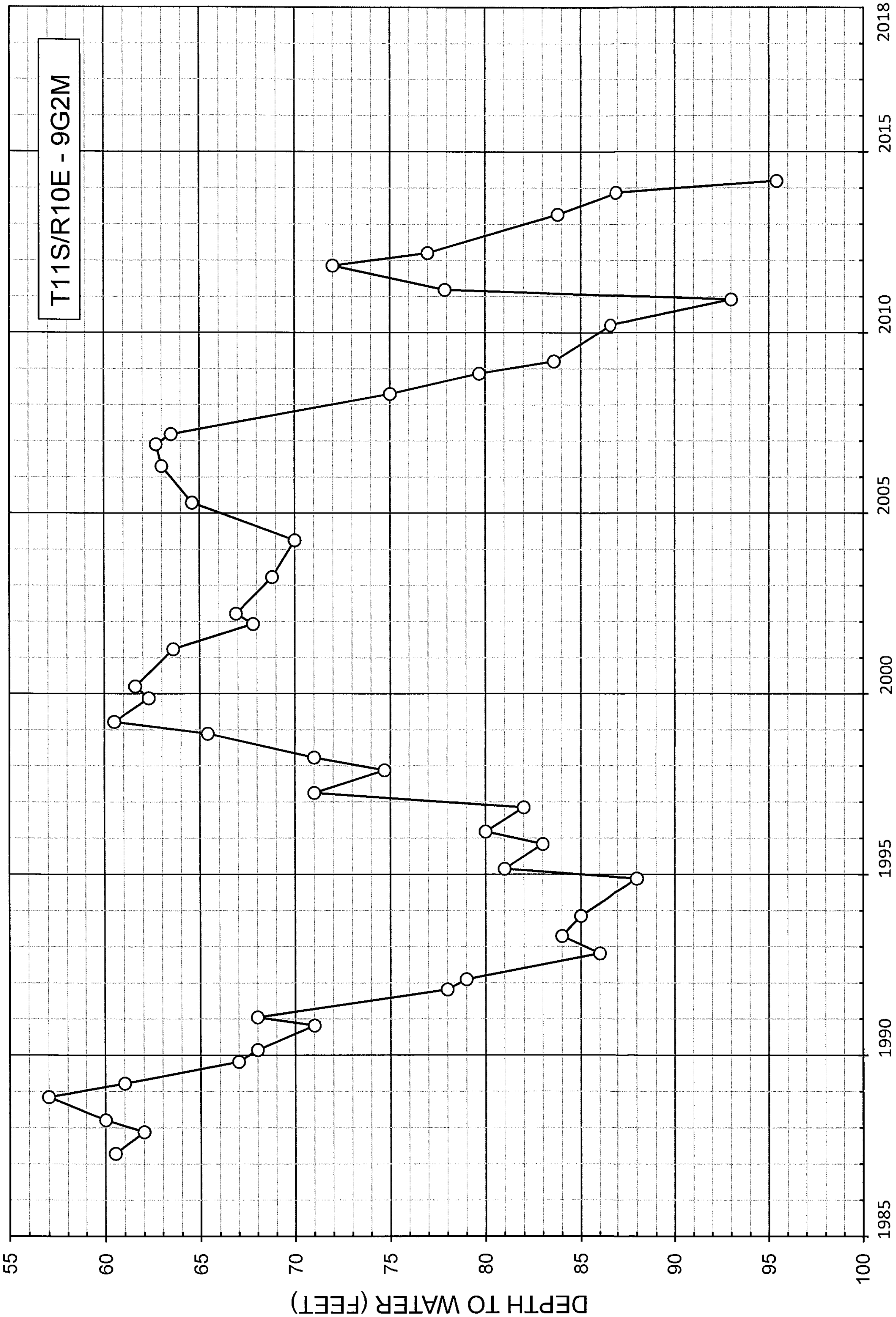

T11S/R10E - 3M1M
WATER-LEVEL HYDROGRAPH FOR WELL T11S/R10E-3M1M
DEPTH TO WATER (FEET)
30
35
40
45
50
55
60
65
1985
1990
1995
2000
2005
2010
2015
2018


T11S/R10E - 4G1M
WATER-LEVEL HYDROGRAPH FOR WELL T11S/R10E-4G1M
DEPTH TO WATER (FEET)
30
35
40
45
50
55
60
65
70
75
80
1985
1990
1995
2000
2005
2010
2015
2018

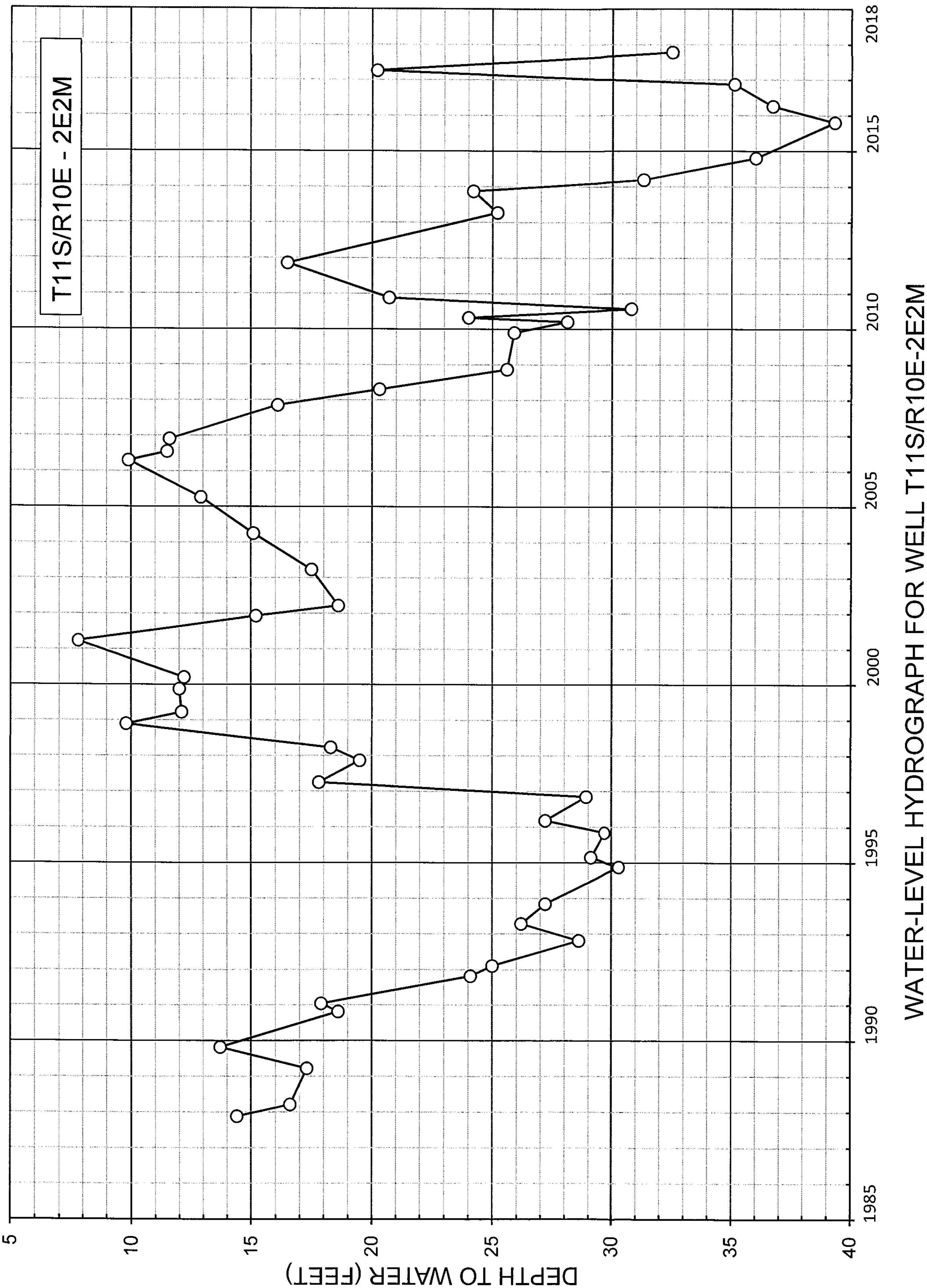

T11S/R10E - 5L1M
WATER-LEVEL HYDROGRAPH FOR WELL T11S/R10E-5L1M
DEPTH TO WATER (FEET)
120
130
140
150
160
170
180
190
200
210
220
230
1985
1990
1995
2000
2005
2010
2015
2018

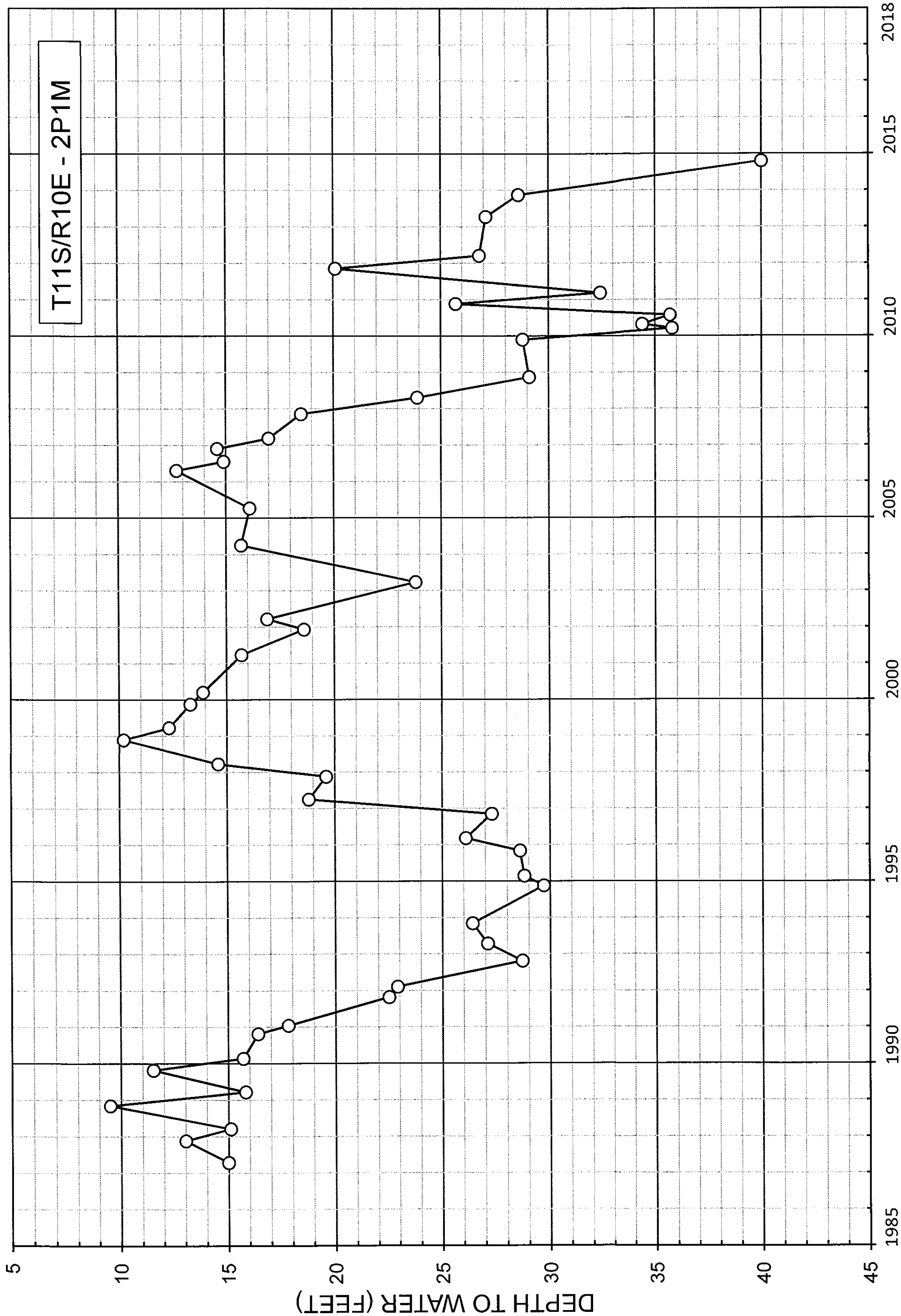


WATER-LEVEL HYDROGRAPH FOR WELL T11S/R10E-9C2M

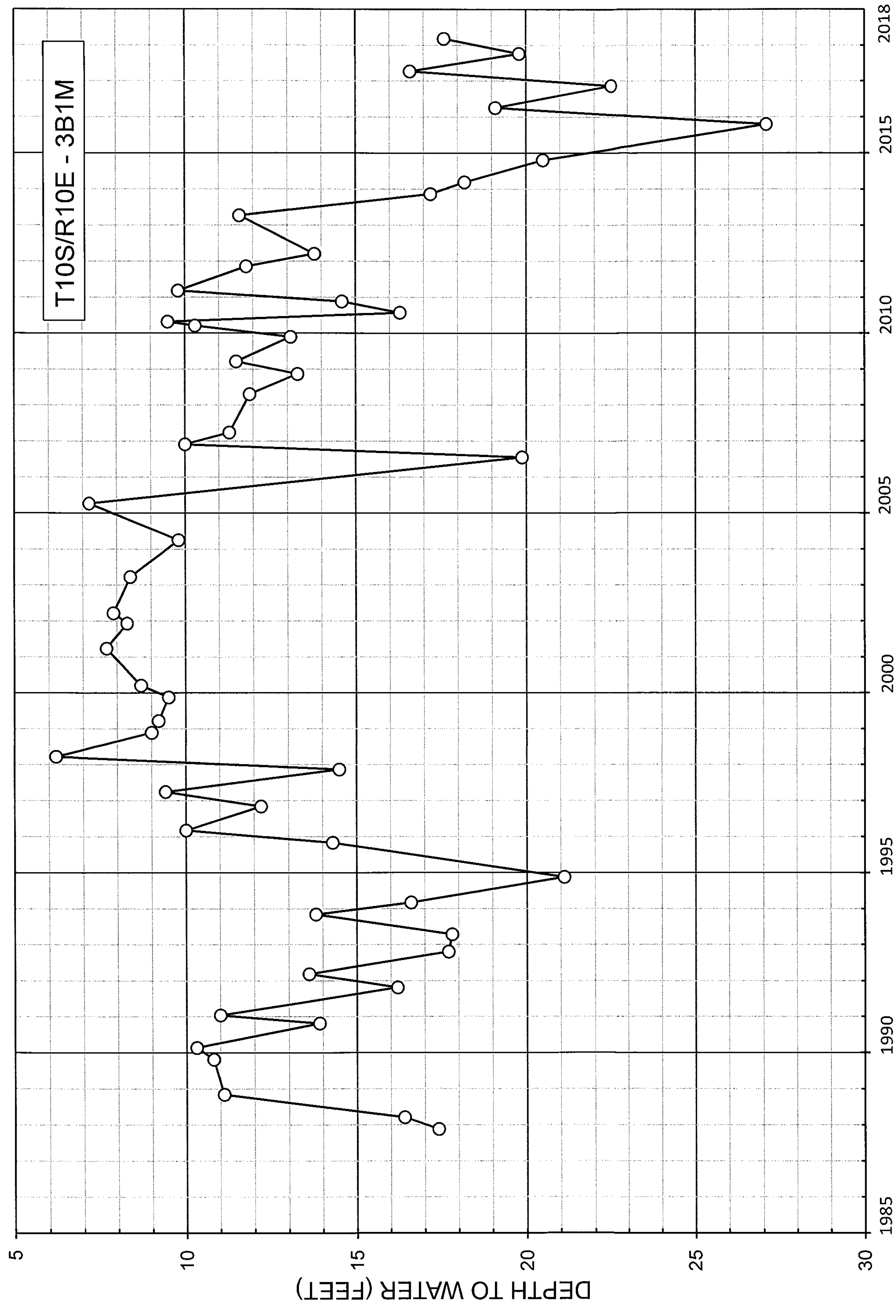


WATER-LEVEL HYDROGRAPH FOR WELL T11S/R10E-9G2M

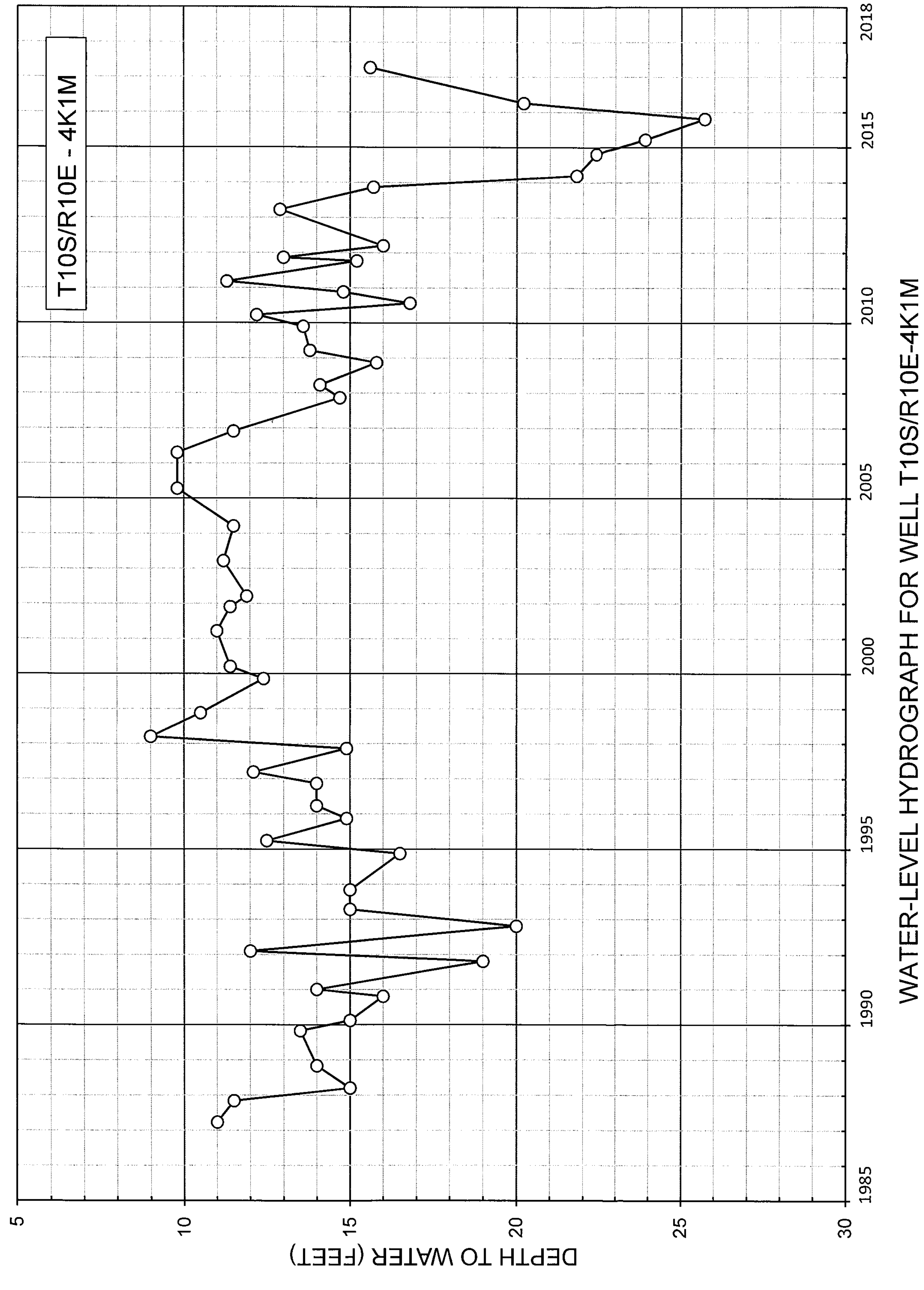

T11S/R10E - 2E2M
WATER-LEVEL HYDROGRAPH FOR WELL T11S/R10E-2E2M
DEPTH TO WATER (FEET)
5
10
15
20
25
30
35
40
1985
1990
1995
2000
2005
2010
2015
2018

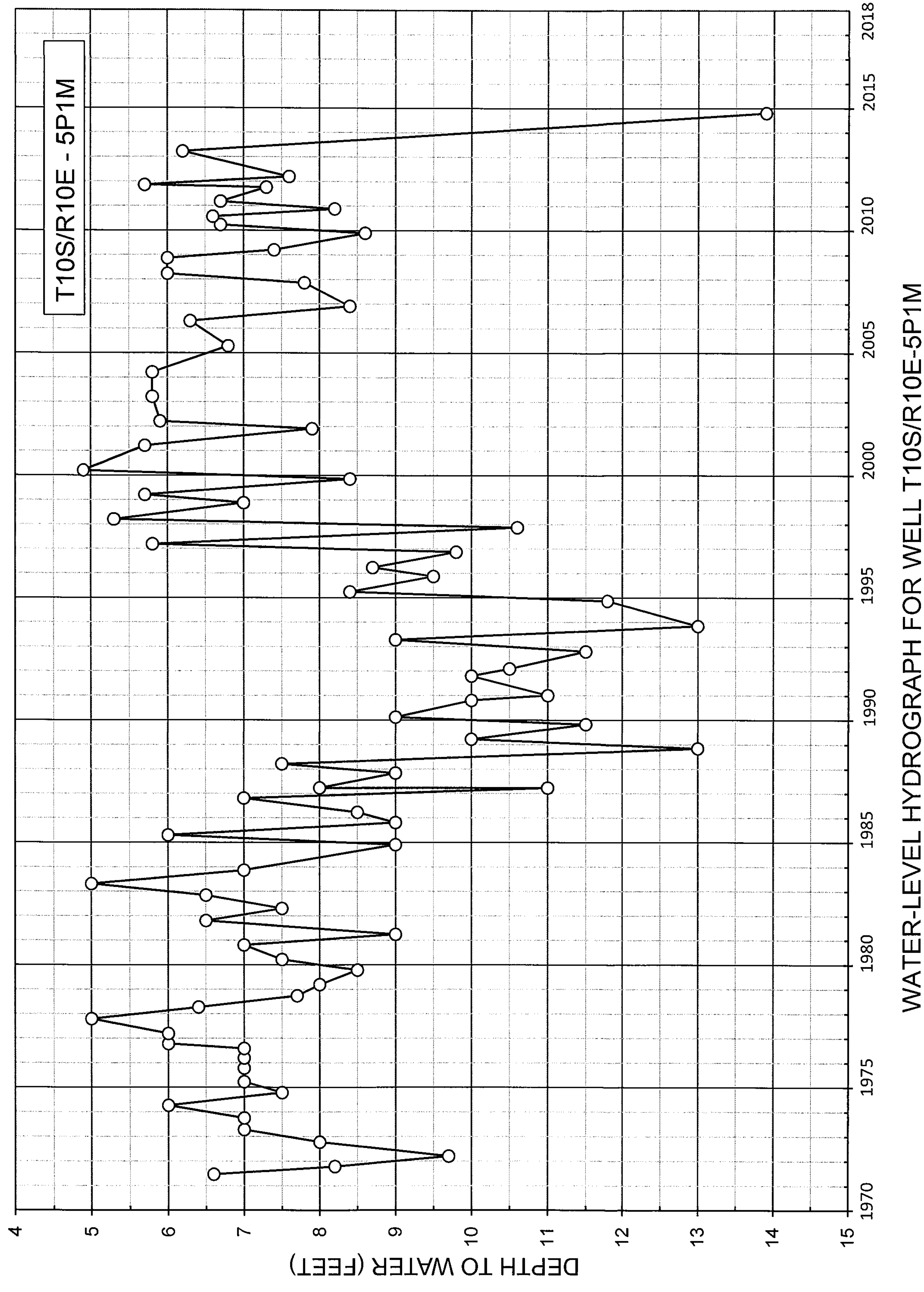


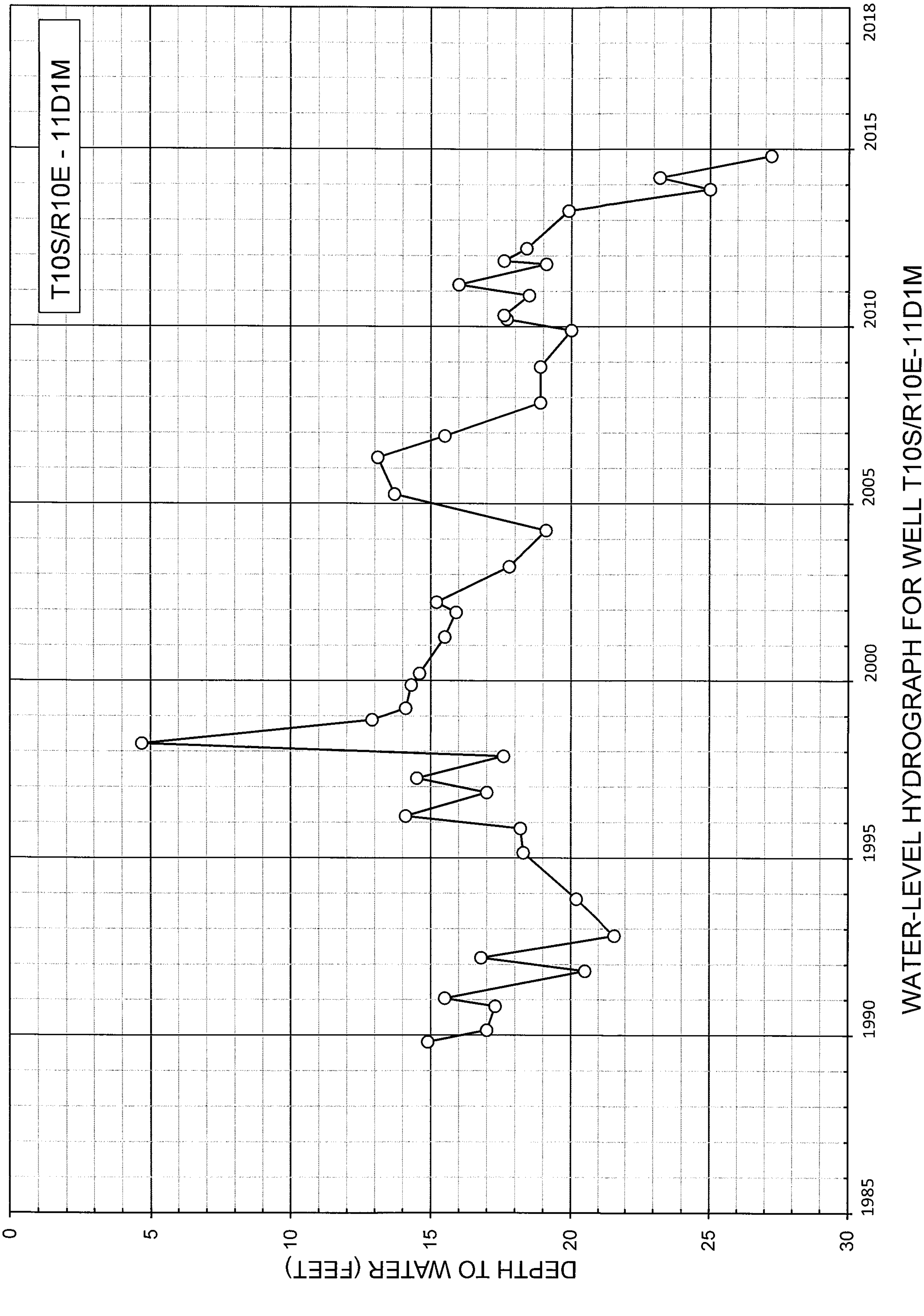
WATER-LEVEL HYDROGRAPH FOR WELL T11S/R10E-2P1M

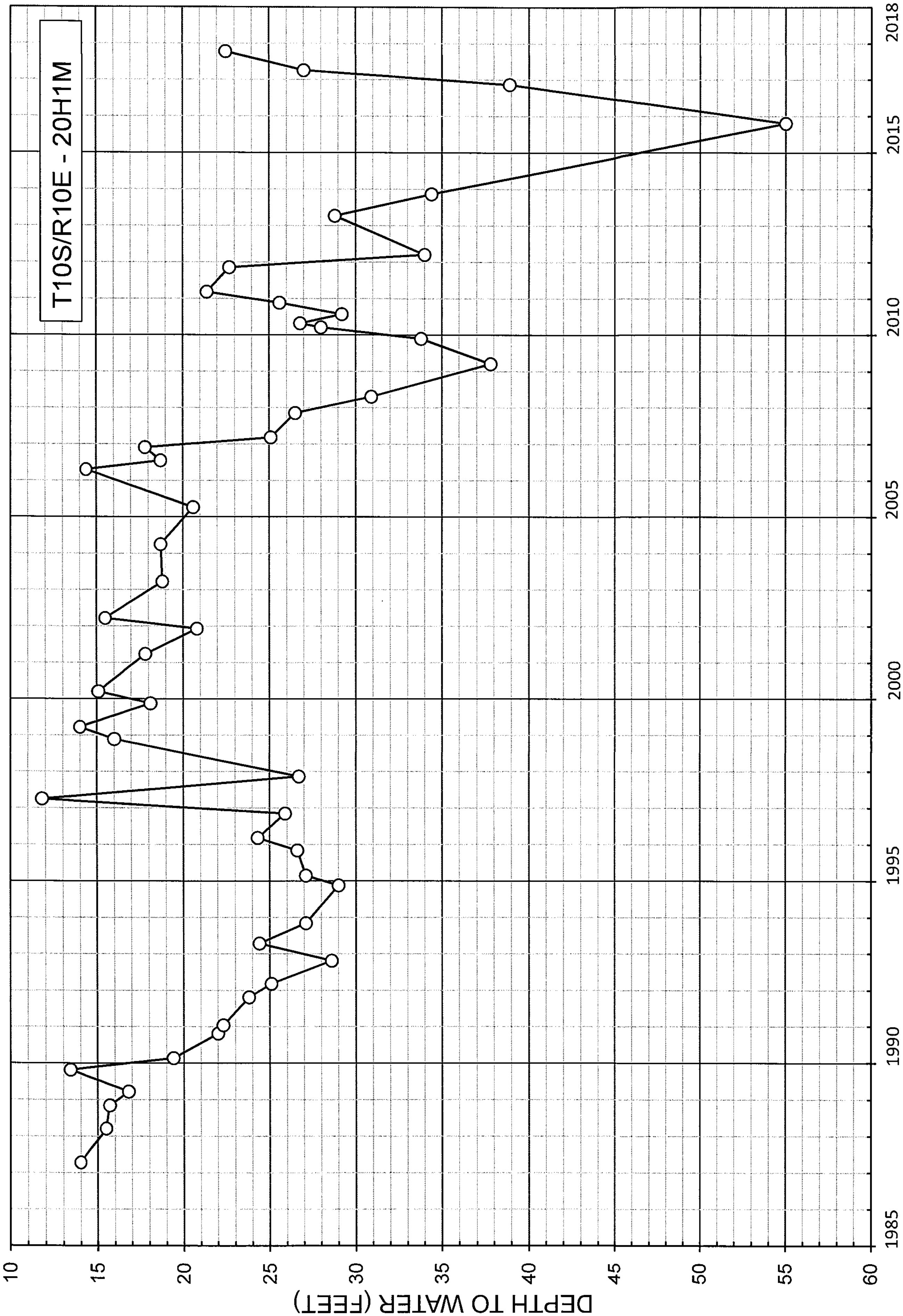


WATER-LEVEL HYDROGRAPH FOR WELL T10S/R10E-3B1M

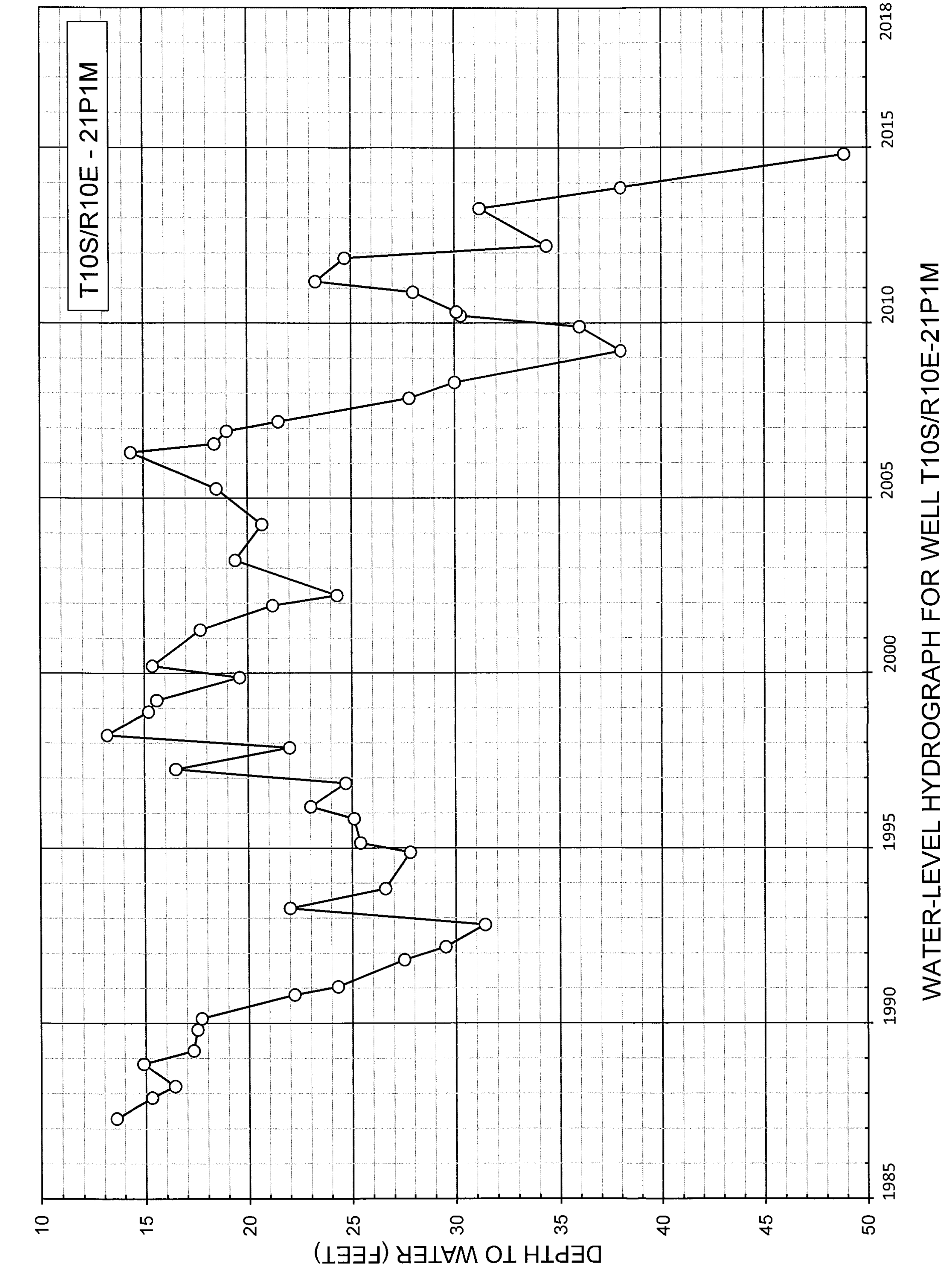

T10S/R10E - 4K1M
DEPTH TO WATER (FEET)
5
10
15
20
25
30
1985
1990
1995
2000
2005
2010
2015
2018
WATER-LEVEL HYDROGRAPH FOR WELL T10S/R10E-4K1M


T10S/R10E - 5P1M
WATER-LEVEL HYDROGRAPH FOR WELL T10S/R10E-5P1M
DEPTH TO WATER (FEET)
4
5
6
7
8
9
10
11
12
13
14
15
1970
1975
1980
1985
1990
1995
2000
2005
2010
2015
2018

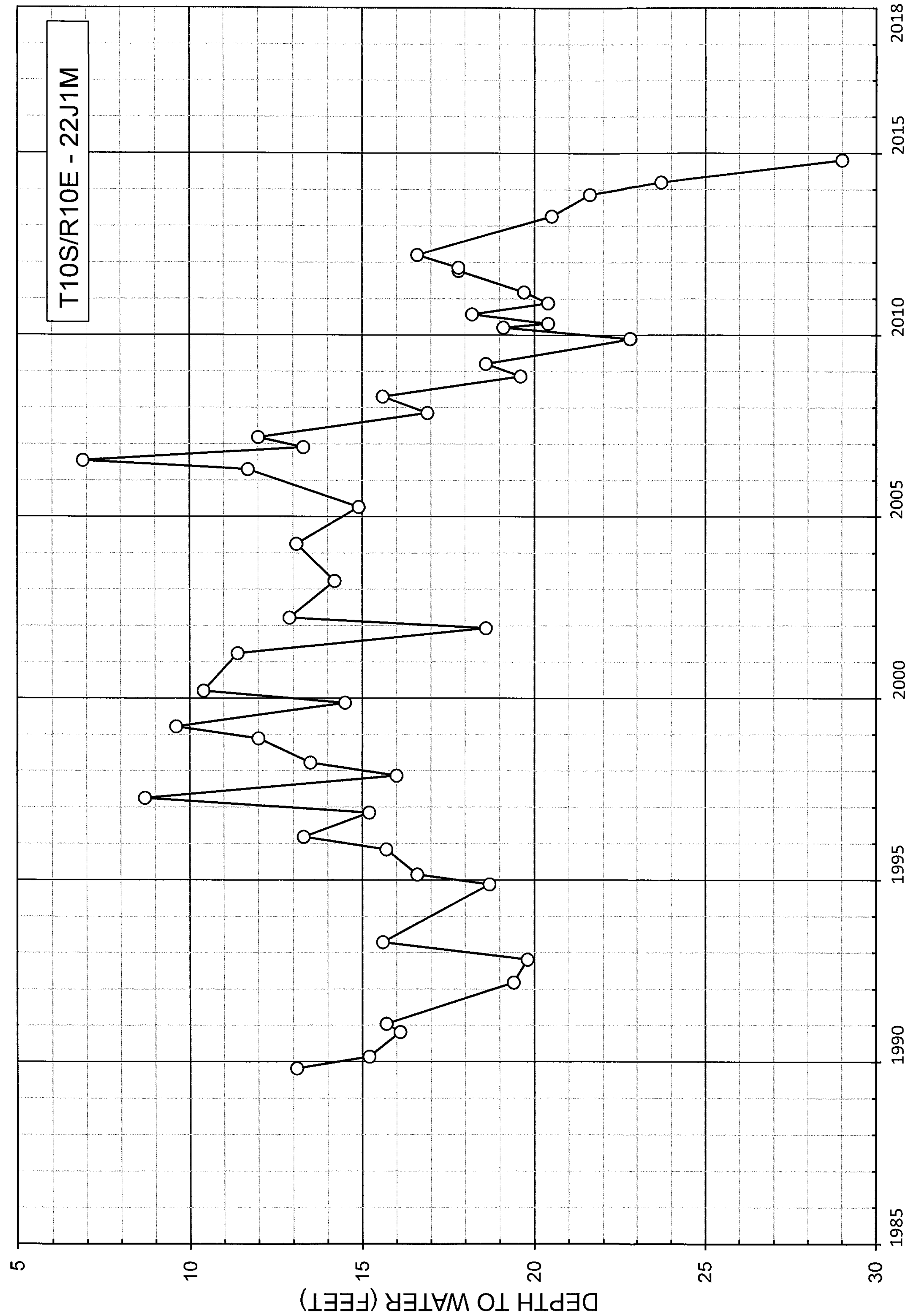

T10S/R10E - 11D1M
WATER-LEVEL HYDROGRAPH FOR WELL T10S/R10E-11D1M
DEPTH TO WATER (FEET)
0
5
10
15
20
25
30
1985
1990
1995
2000
2005
2010
2015
2018



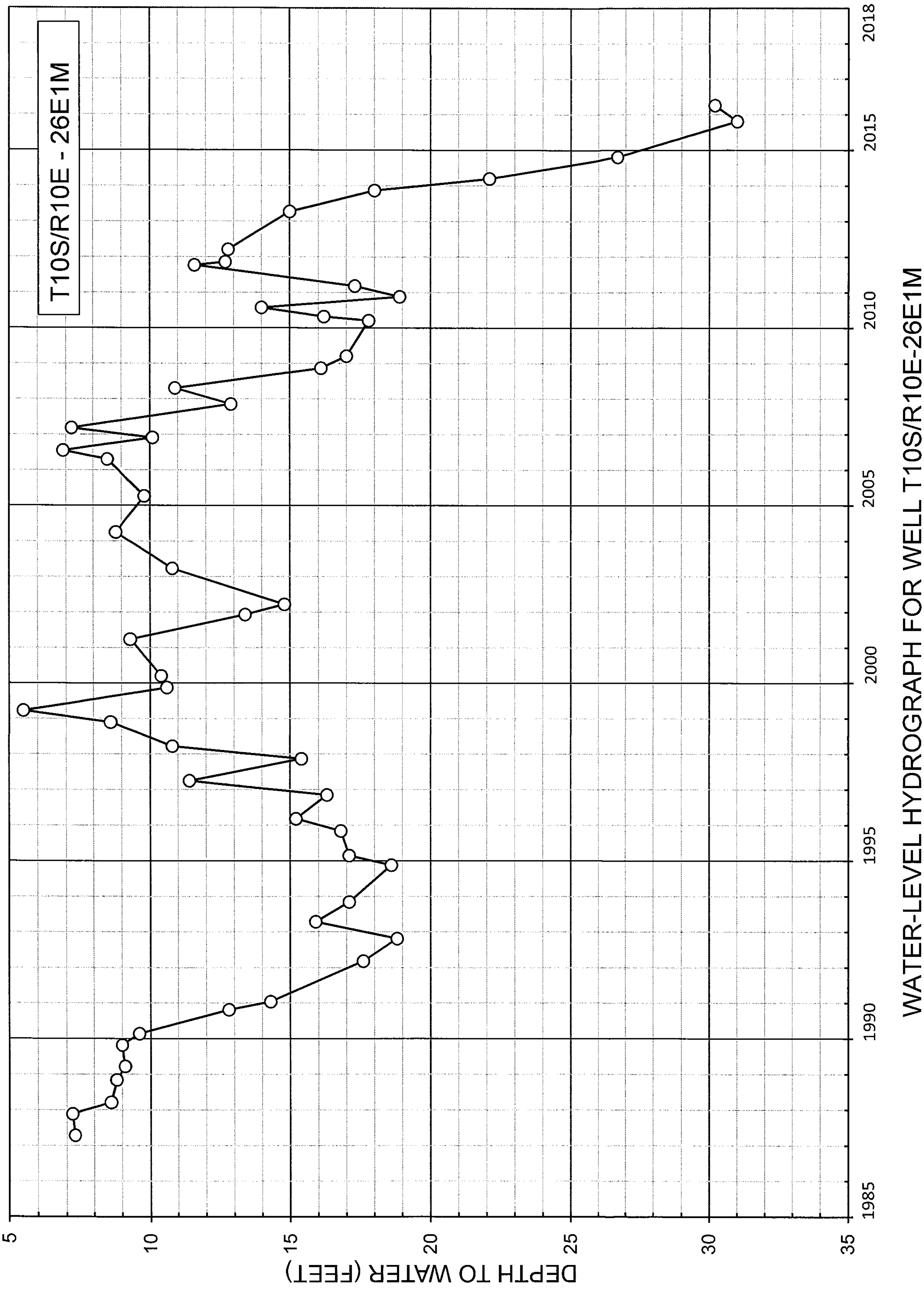
WATER-LEVEL HYDROGRAPH FOR WELL T10S/R10E-20H1M

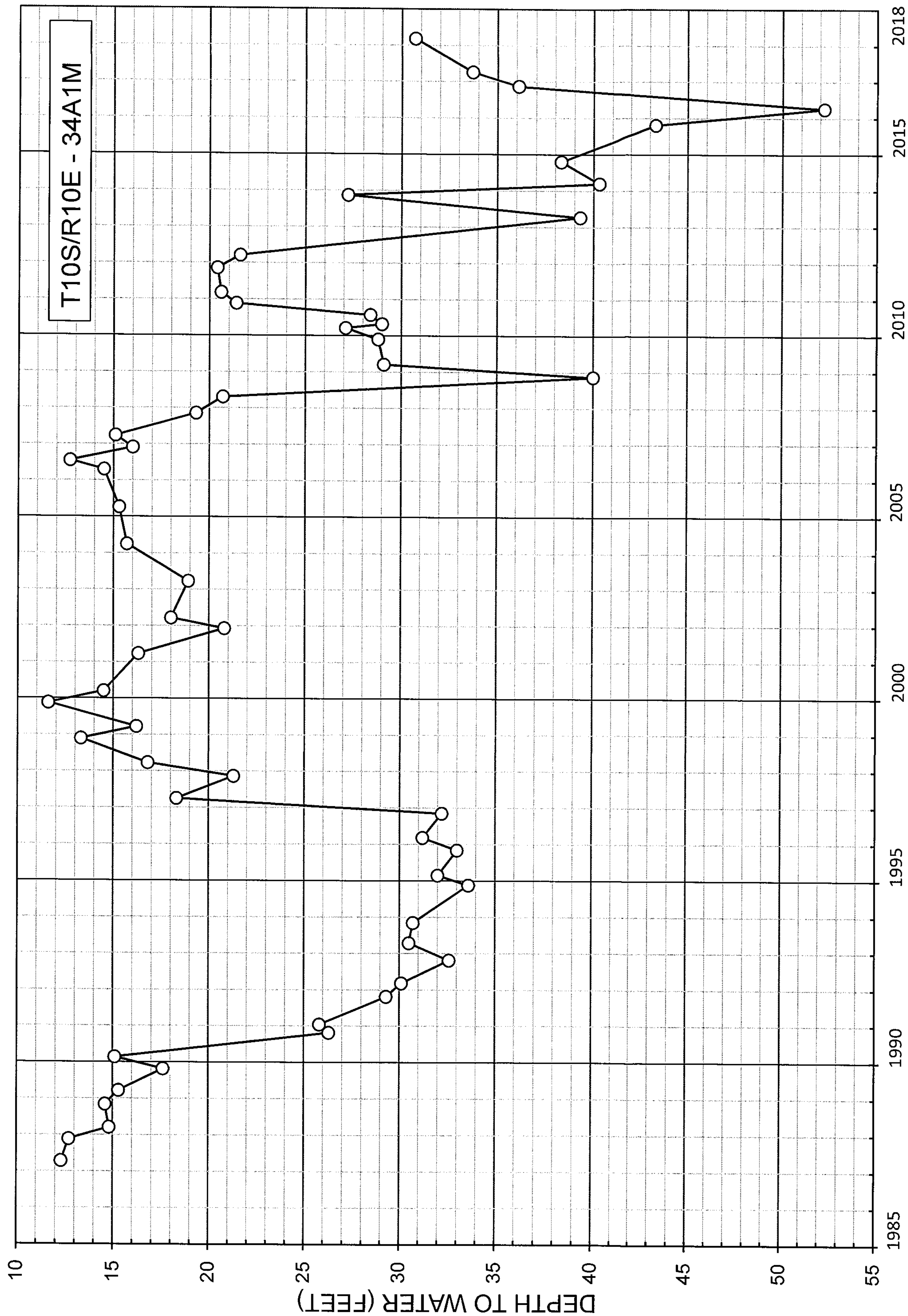


T10S/R10E - 21P1M
DEPTH TO WATER (FEET)
10
15
20
25
30
35
40
45
50
1985
1990
1995
2000
2005
2010
2015
2018
WATER-LEVEL HYDROGRAPH FOR WELL T10S/R10E-21P1M

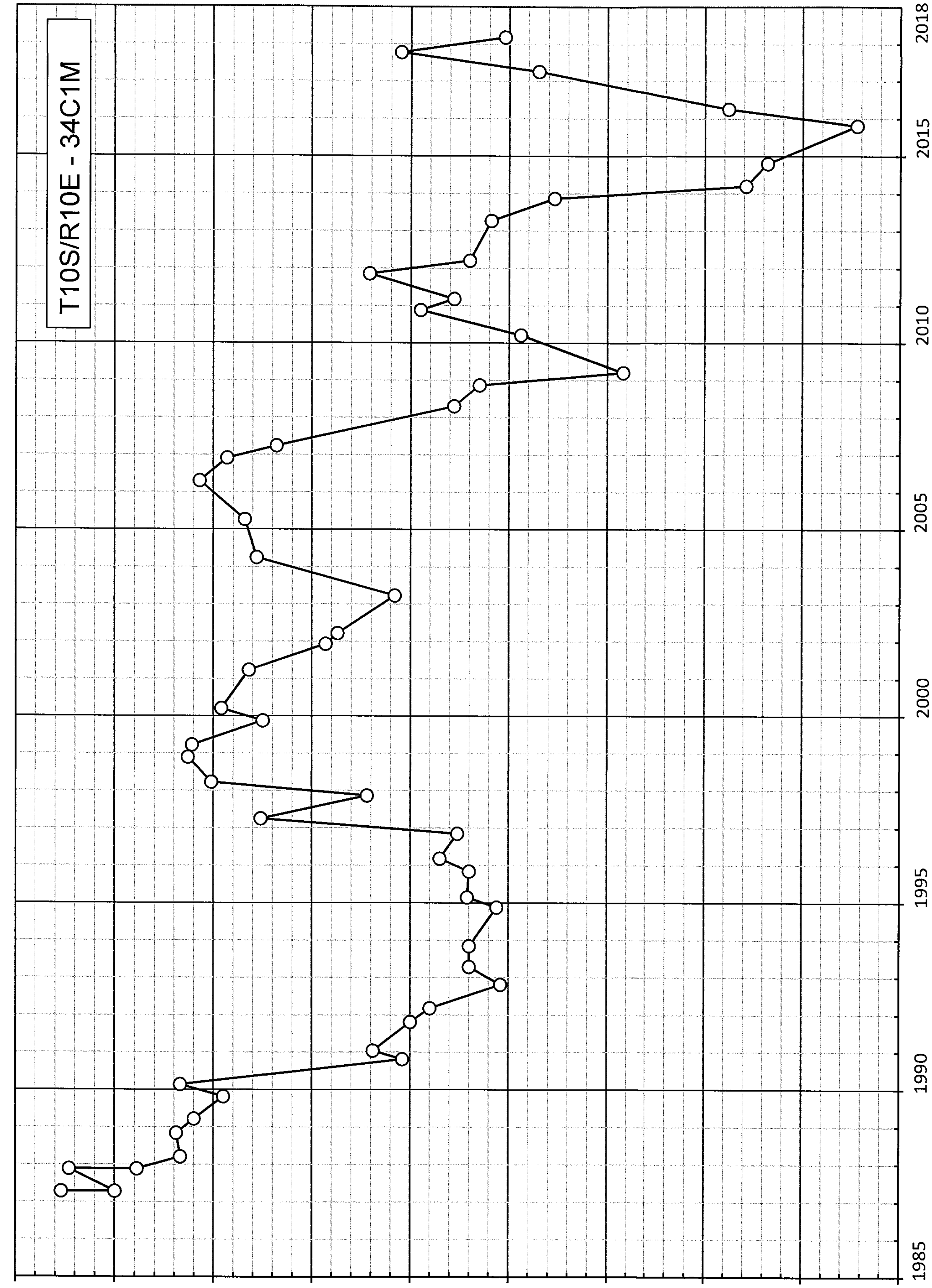


WATER-LEVEL HYDROGRAPH FOR WELL T10S/R10E-22J1M

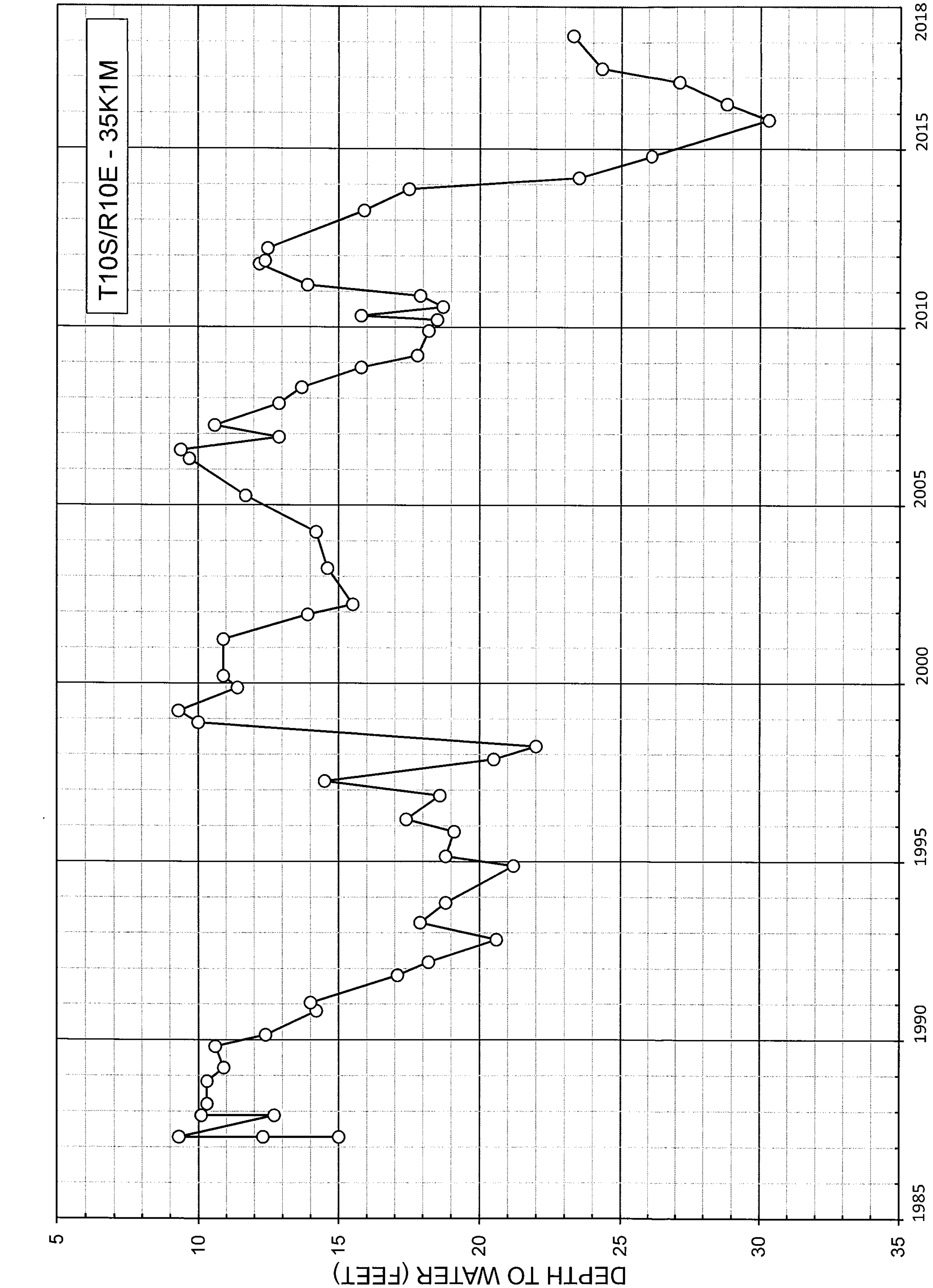

T10S/R10E - 26E1M
WATER-LEVEL HYDROGRAPH FOR WELL T10S/R10E-26E1M
DEPTH TO WATER (FEET)
5
10
15
20
25
30
35
1985
1990
1995
2000
2005
2010
2015
2018



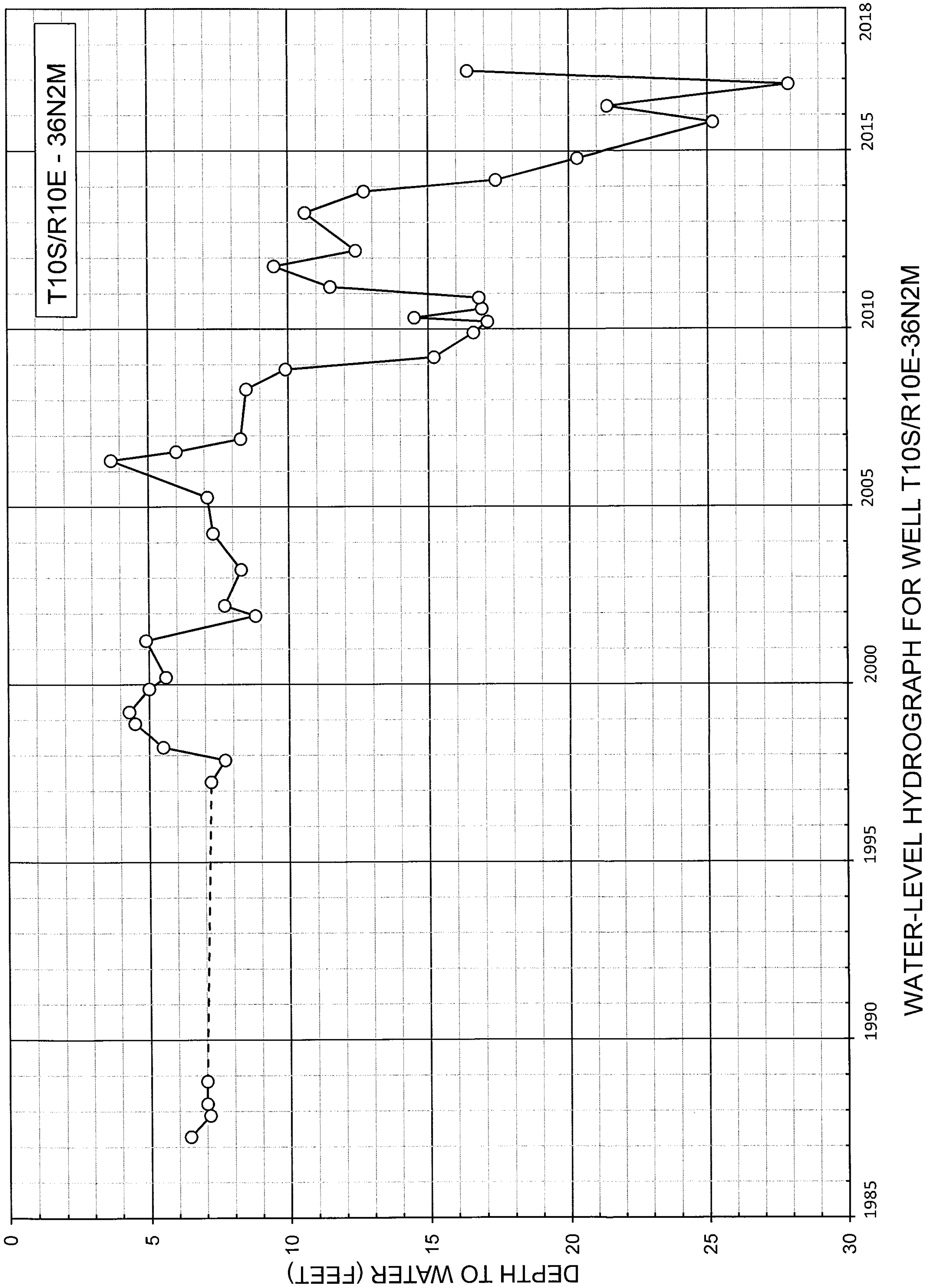
WATER-LEVEL HYDROGRAPH FOR WELL T10S/R10E-34A1M

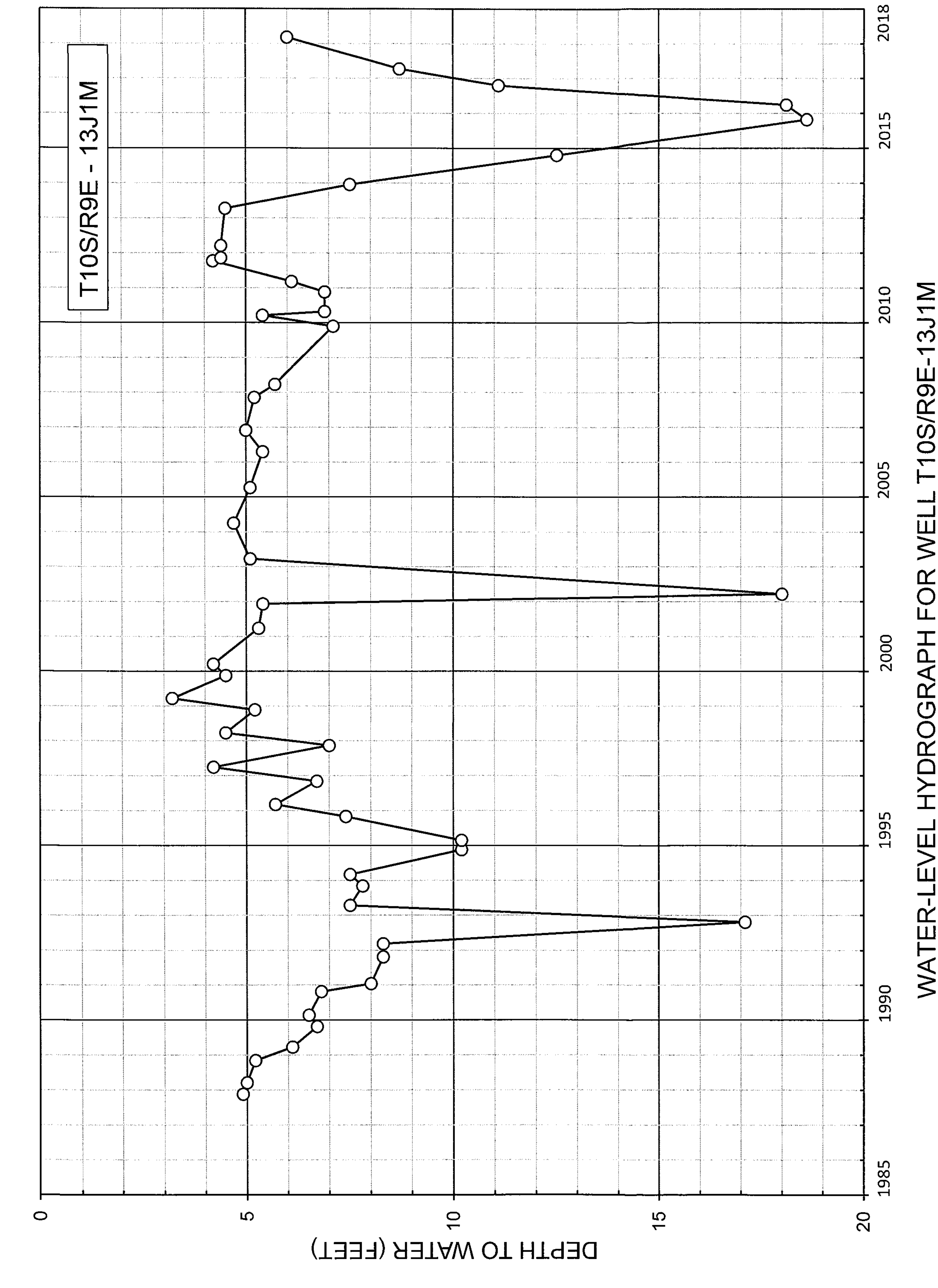


WATER-LEVEL HYDROGRAPH FOR WELL T10S/R10E-34C1M



WATER-LEVEL HYDROGRAPH FOR WELL T10S/R10E-35K1M


T10S/R10E - 36N2M
DEPTH TO WATER (FEET)
0
5
10
15
20
25
30
1985
1990
1995
2000
2005
2010
2015
2018
WATER-LEVEL HYDROGRAPH FOR WELL T10S/R10E-36N2M


T10S/R9E - 13J1M
DEPTH TO WATER (FEET)
0
5
10
15
20
1985
1990
1995
2000
2005
2010
2015
2018
WATER-LEVEL HYDROGRAPH FOR WELL T10S/R9E-13J1M

APPENDIX B

LOS BANOS CREEK STREAMFLOW RECORDS

Los Banos Creek Outflow

Year	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1965													-
1966													-
1967					26		6			3			35
1968			10	6	2	7	2	2	2				31
1969	6,708	11,851	5,952				3			8	12		24,534
1970	4,865	595		12			4					3,273	8,749
1971	1,460				2		12	4	4		3		1,485
1972			3	2		3	3		2		1		14
1973	1,793	8,840	3,810		5	6	3	2	3	4	3	54	14,523
1974	3,979		1,373	3,995	1			4	6	6	6	5	9,375
1975		1,186	4,651	359				7		10	7		6,220
1976	3								1				4
1977									2				2
1978	4,550	15,075	4,455	432						1			24,513
1979		4,614	684	553					1				5,852
1980	4,677	8,277	1,948		3			1				3	14,909
1981	7		153	645				4		1			810
1982	6,367	4,447	1,263	7,252	1,004	1					569	7,942	28,845
1983	9,263	13,178	18,556	3,021	2,529				298		1,872	5,574	54,291
1984	2,297	2,144	454										4,895
1985			766	294					12	3			1,075
1986		5,695	10,608		21	50		48	234				16,656
1987		960		1	3			2	1	1			968
1988	1			1			1		1	4			8
1989				1			1			1			3
1990	1			1				1		2			5
1991	1												1
1992				1						1			2
1993	6,760	6,601	2,292	1,014		1				1			16,669
1994		1,514											1,514
1995	5,794	462	12,888	2,182			1			1			21,328
1996	1,705	11,674	3,208	875	148			7		1	1,015	9,649	28,282
1997	17,825	4,547	976						1				23,349
1998	10,643	37,048	8,422	2,892	1,885	1,190				248	128	282	62,738
1999	1,190	4,630	214	1			1				1		6,037
2000		5,821	1,028										6,849
2001		2	934				1				2		939
2002		192								1		3,588	3,781
2003	2,106		132		1	1							2,240
2004		1,455	735										2,190
2005	5,025	5,140	3,318		809								14,292
2006	3,554		2,310	1,553									7,417
2007									1				1
2008		958							5				963
2009													-

2010		728	2,396									784	3,908
2011	2,864	3,782	5,906	700									13,252
2012													-
2013													-
2014													-
2015													-
2016			5,430	390									5,820
Totals:	103,438	161,416	104,875	26,183	6,439	1,259	38	82	574	297	3,619	31,154	439,374

TIME	DATE	LOS BANOS FLOW-RES IN cfs PER-AVER	LOS BANOS FLOW-RES OUT cfs PER-AVER	LOS BANOS TOP CON STOR ac-ft INST-VAL	LOS BANOS STOR-RES EOP ac-ft INST-VAL
2400	01OCT2016	0.0	0.0	20562.	19375.
2400	02OCT2016	0.0	0.0	20562.	19361.
2400	03OCT2016	0.0	0.0	20562.	19356.
2400	04OCT2016	0.0	0.0	20562.	19347.
2400	05OCT2016	0.0	0.0	20562.	19338.
2400	06OCT2016	0.0	0.0	20562.	19334.
2400	07OCT2016	0.0	0.0	20562.	19329.
2400	08OCT2016	0.0	0.0	20562.	19325.
2400	09OCT2016	0.0	0.0	20562.	19306.
2400	10OCT2016	0.0	0.0	20562.	19306.
2400	11OCT2016	0.0	0.0	20562.	19306.
2400	12OCT2016	0.0	0.0	20562.	19297.
2400	13OCT2016	0.0	0.0	20562.	19297.
2400	14OCT2016	0.0	0.0	20562.	19288.
2400	15OCT2016	0.0	0.0	20562.	19288.
2400	16OCT2016	0.0	0.0	20562.	19288.
2400	17OCT2016	0.0	0.0	20562.	19284.
2400	18OCT2016	0.0	0.0	20562.	19279.
2400	19OCT2016	0.0	0.0	20562.	19275.
2400	20OCT2016	0.0	0.0	20562.	19270.
2400	21OCT2016	0.0	0.0	20562.	19261.
2400	22OCT2016	0.0	0.0	20562.	19257.
2400	23OCT2016	0.0	0.0	20562.	19257.
2400	24OCT2016	0.0	0.0	20562.	19243.
2400	25OCT2016	0.0	0.0	20562.	19243.
2400	26OCT2016	0.0	0.0	20562.	19243.
2400	27OCT2016	0.0	0.0	20562.	19243.
2400	28OCT2016	0.0	0.0	20562.	19302.
2400	29OCT2016	0.0	0.0	20562.	19297.
2400	30OCT2016	0.0	0.0	20562.	19297.
2400	31OCT2016	0.0	0.0	20562.	19297.
2400	01NOV2016	0.0	0.0	20562.	19297.
2400	02NOV2016	0.0	0.0	20562.	19284.
2400	03NOV2016	5.0	0.0	20562.	19293.
2400	04NOV2016	0.0	0.0	20562.	19284.
2400	05NOV2016	0.0	0.0	20562.	19284.
2400	06NOV2016	0.0	0.0	20562.	19284.
2400	07NOV2016	0.0	0.0	20562.	19279.
2400	08NOV2016	0.0	0.0	20562.	19279.
2400	09NOV2016	0.0	0.0	20562.	19275.
2400	10NOV2016	0.0	0.0	20562.	19275.
2400	11NOV2016	0.0	0.0	20562.	19270.
2400	12NOV2016	0.0	0.0	20562.	19270.
2400	13NOV2016	3.0	0.0	20562.	19275.
2400	14NOV2016	3.0	0.0	20562.	19266.
2400	15NOV2016	3.0	0.0	20562.	19257.

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LOS BANOS	LOS BANOS	LOS BANOS	LOS BANOS
FLOW-RES IN cfs	FLOW-RES OUT cfs	TOP CON STOR ac-ft	STOR-RES EOP ac-ft

TIME	DATE	PER-AVER	PER-AVER	INST-VAL	INST-VAL
2400	16NOV2016	0.0	0.0	20562.	19257.
2400	17NOV2016	0.0	0.0	20562.	19257.
2400	18NOV2016	0.0	0.0	20562.	19247.
2400	19NOV2016	0.0	0.0	20562.	19234.
2400	20NOV2016	0.0	0.0	20562.	19252.
2400	21NOV2016	0.0	0.0	20562.	19247.
2400	22NOV2016	0.0	0.0	20562.	19247.
2400	23NOV2016	0.0	0.0	20562.	19247.
2400	24NOV2016	0.0	0.0	20562.	19243.
2400	25NOV2016	0.0	0.0	20562.	19234.
2400	26NOV2016	2.0	0.0	20562.	19238.
2400	27NOV2016	2.0	0.0	20562.	19243.
2400	28NOV2016	0.0	0.0	20562.	19234.
2400	29NOV2016	0.0	0.0	20562.	19234.
2400	30NOV2016	0.0	0.0	20562.	19229.
2400	01DEC2016	0.0	0.0	20562.	19229.
2400	02DEC2016	0.0	0.0	20562.	19220.
2400	03DEC2016	0.0	0.0	20562.	19220.
2400	04DEC2016	0.0	0.0	20562.	19220.
2400	05DEC2016	0.0	0.0	20562.	19211.
2400	06DEC2016	0.0	0.0	20562.	19211.
2400	07DEC2016	0.0	0.0	20562.	19211.
2400	08DEC2016	0.0	0.0	20562.	19211.
2400	09DEC2016	0.0	0.0	20562.	19216.
2400	10DEC2016	0.0	0.0	20562.	19211.
2400	11DEC2016	3.0	0.0	20562.	19216.
2400	12DEC2016	0.0	0.0	20562.	19216.
2400	13DEC2016	0.0	0.0	20562.	19216.
2400	14DEC2016	0.0	0.0	20562.	19211.
2400	15DEC2016	4.0	0.0	20562.	19220.
2400	16DEC2016	0.0	0.0	20562.	19216.
2400	17DEC2016	0.0	0.0	20562.	19216.
2400	18DEC2016	0.0	0.0	20562.	19198.
2400	19DEC2016	0.0	0.0	20562.	19198.
2400	20DEC2016	2.0	0.0	20562.	19202.
2400	21DEC2016	0.0	0.0	20562.	19193.
2400	22DEC2016	3.0	0.0	20562.	19198.
2400	23DEC2016	11.0	0.0	20562.	19220.
2400	24DEC2016	0.0	0.0	20562.	19216.
2400	25DEC2016	0.0	0.0	20562.	19207.
2400	26DEC2016	0.0	0.0	20562.	19207.
2400	27DEC2016	0.0	0.0	20562.	19207.
2400	28DEC2016	0.0	0.0	20562.	19207.
2400	29DEC2016	0.0	0.0	20562.	19198.
2400	30DEC2016	0.0	0.0	20562.	19198.
2400	31DEC2016	0.0	0.0	20562.	19198.

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TIME	DATE	LOS BANOS FLOW-RES IN cfs PER-AVER	LOS BANOS FLOW-RES OUT cfs PER-AVER	LOS BANOS TOP CON STOR ac-ft INST-VAL	LOS BANOS STOR-RES EOP ac-ft INST-VAL
2400	01JAN2017	0.0	0.0	20562.	19184.
2400	02JAN2017	5.0	0.0	20562.	19193.
2400	03JAN2017	0.0	0.0	20562.	19193.
2400	04JAN2017	287.0	0.0	20562.	19763.
2400	05JAN2017	134.0	0.0	20562.	20030.
2400	06JAN2017	54.0	35.0	20562.	20067.
2400	07JAN2017	101.0	50.0	20562.	20169.
2400	08JAN2017	564.0	73.0	20562.	21143.
2400	09JAN2017	651.0	175.0	20562.	22088.
2400	10JAN2017	242.0	200.0	20562.	22171.
2400	11JAN2017	1369.0	688.0	20562.	23522.
2400	12JAN2017	273.0	427.0	20562.	23216.
2400	13JAN2017	140.0	343.0	20562.	22812.
2400	14JAN2017	98.0	258.0	20562.	22495.
2400	15JAN2017	69.0	200.0	20562.	22235.
2400	16JAN2017	63.0	200.0	20562.	21962.
2400	17JAN2017	0.0	200.0	20562.	21565.

2400	18JAN2017	0.0	0.0	20562.	21478.
2400	19JAN2017	394.0	0.0	20562.	21864.
2400	20JAN2017	0.0	217.0	20562.	21435.
2400	21JAN2017	659.0	416.0	20562.	22966.
2400	22JAN2017	886.0	450.0	20562.	23831.
2400	23JAN2017	1565.0	900.0	20562.	25151.
2400	24JAN2017	776.0	907.0	20562.	24890.
2400	25JAN2017	613.0	1800.0	20562.	24306.
2400	26JAN2017	97.0	454.0	20562.	23598.
2400	27JAN2017	62.0	450.0	20562.	22827.
2400	28JAN2017	48.0	450.0	20562.	22030.
2400	29JAN2017	39.0	450.0	20562.	21215.
2400	30JAN2017	28.0	450.0	20562.	20379.
2400	31JAN2017	24.0	150.0	20562.	20128.
2400	01FEB2017	42.0	0.0	20562.	20211.
2400	02FEB2017	0.0	0.0	20562.	20211.
2400	03FEB2017	66.0	0.0	20562.	20458.
2400	04FEB2017	62.0	0.0	20562.	20580.
2400	05FEB2017	47.0	52.0	20562.	20571.
2400	06FEB2017	51.0	129.0	20562.	20416.
2400	07FEB2017	707.0	200.0	20562.	21421.
2400	08FEB2017	399.0	200.0	20562.	21816.
2400	09FEB2017	202.0	200.0	20562.	21821.
2400	10FEB2017	732.0	200.0	20562.	22876.
2400	11FEB2017	310.0	300.0	20562.	22896.
2400	12FEB2017	146.0	399.0	20562.	22392.
2400	13FEB2017	100.0	400.0	20562.	21797.
2400	14FEB2017	68.0	400.0	20562.	21138.
2400	15FEB2017	57.0	400.0	20562.	20458.

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TIME	DATE	LOS BANOS FLOW-RES IN cfs PER-AVER	LOS BANOS FLOW-RES OUT cfs PER-AVER	LOS BANOS TOP CON STOR ac-ft INST-VAL	LOS BANOS STOR-RES EOP ac-ft INST-VAL
2400	16FEB2017	58.0	300.0	20562.	19979.
2400	17FEB2017	66.0	200.0	20562.	19813.
2400	18FEB2017	106.0	150.0	20562.	19726.
2400	19FEB2017	65.0	99.0	20562.	19657.
2400	20FEB2017	1124.0	116.0	20562.	21656.
2400	21FEB2017	1124.0	300.0	20562.	23291.
2400	22FEB2017	369.0	425.0	20562.	23181.
2400	23FEB2017	187.0	450.0	20562.	22658.
2400	24FEB2017	119.0	450.0	20562.	22001.
2400	25FEB2017	0.0	450.0	20562.	21282.
2400	26FEB2017	72.6	450.2	20562.	20533.
2400	27FEB2017	65.0	325.0	20562.	20016.
2400	28FEB2017	68.0	142.0	20562.	19740.
2400	01MAR2017	100.0	400.0	20562.	21797.
2400	02MAR2017	0.0	0.0	20562.	19882.
2400	03MAR2017	0.0	0.0	20562.	20007.
2400	04MAR2017	47.0	0.0	20562.	20188.
2400	05MAR2017	66.0	0.0	20562.	20318.
2400	06MAR2017	64.0	0.0	20562.	20444.
2400	07MAR2017	43.0	0.0	20562.	20529.
2400	08MAR2017	38.0	0.0	20562.	20604.
2400	09MAR2017	33.0	0.0	20562.	20670.
2400	10MAR2017	33.0	0.0	20562.	20736.
2400	11MAR2017	28.0	0.0	20562.	20792.
2400	12MAR2017	27.0	0.0	20562.	20844.
2400	13MAR2017	26.0	0.0	20562.	20896.
2400	14MAR2017	19.0	0.0	20562.	20934.
2400	15MAR2017	22.0	0.0	20562.	20977.
2400	16MAR2017	14.0	0.0	20723.	21005.
2400	17MAR2017	17.0	0.0	20884.	21039.
2400	18MAR2017	14.0	0.0	21045.	21067.
2400	19MAR2017	19.0	0.0	21206.	21105.
2400	20MAR2017	19.0	0.0	21367.	21143.
2400	21MAR2017	19.0	0.0	21528.	21181.
2400	22MAR2017	31.0	0.0	21688.	21243.
2400	23MAR2017	20.0	0.0	21849.	21282.

2400	24MAR2017	17.0	0.0	22010.	21315.
2400	25MAR2017	19.0	0.0	22171.	21353.
2400	26MAR2017	0.0	0.0	22332.	21353.
2400	27MAR2017	19.0	0.0	22493.	21430.
2400	28MAR2017	8.0	0.0	22654.	21445.
2400	29MAR2017	17.0	0.0	22815.	21478.
2400	30MAR2017	8.0	0.0	22976.	21493.
2400	31MAR2017	7.0	0.0	23137.	21507.
2400	01APR2017	7.0	0.0	23298.	21521.
2400	02APR2017	0.0	0.0	23459.	21445.

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TIME	DATE	LOS BANOS FLOW-RES IN cfs PER-AVER	LOS BANOS FLOW-RES OUT cfs PER-AVER	LOS BANOS TOP CON STOR ac-ft INST-VAL	LOS BANOS STOR-RES EOP ac-ft INST-VAL
2400	03APR2017	97.0	0.0	23619.	21637.
2400	04APR2017	8.0	0.0	23780.	21652.
2400	05APR2017	4.5	0.0	23941.	21661.
2400	06APR2017	12.0	0.0	24102.	21685.
2400	07APR2017	0.0	0.0	24263.	21709.
2400	08APR2017	17.0	0.0	24424.	21743.
2400	09APR2017	8.0	0.0	24585.	21758.
2400	10APR2017	7.0	0.0	24746.	21772.
2400	11APR2017	13.0	0.0	24907.	21797.
2400	12APR2017	0.0	0.0	25068.	21801.
2400	13APR2017	13.0	0.0	25229.	21826.
2400	14APR2017	2.0	0.0	25390.	21830.
2400	15APR2017	8.0	0.0	25551.	21845.
2400	16APR2017	10.0	0.0	25711.	21864.
2400	17APR2017	5.0	0.0	25872.	21874.
2400	18APR2017	12.0	0.0	26033.	21898.
2400	19APR2017	0.0	0.0	26194.	21898.
2400	20APR2017	0.0	0.0	26355.	21935.
2400	21APR2017	0.0	0.0	26516.	21937.
2400	22APR2017	0.0	0.0	26677.	21937.
2400	23APR2017	10.0	0.0	26838.	21957.
2400	24APR2017	0.0	0.0	26999.	21952.
2400	25APR2017	3.0	0.0	27160.	21957.
2400	26APR2017	0.0	0.0	27321.	21957.
2400	27APR2017	3.0	0.0	27482.	21962.
2400	28APR2017	0.0	0.0	27642.	21962.
2400	29APR2017	0.0	0.0	27803.	21962.
2400	30APR2017	12.0	0.0	27964.	21986.
2400	01MAY2017	0.0	0.0	28125.	21962.
2400	02MAY2017	0.0	0.0	28286.	21962.
2400	03MAY2017	4.5	0.0	28447.	21971.
2400	04MAY2017	0.0	0.0	28608.	21952.
2400	05MAY2017	0.0	0.0	28769.	21957.
2400	06MAY2017	0.0	0.0	28930.	21947.
2400	07MAY2017	0.0	0.0	29091.	21937.
2400	08MAY2017	0.0	0.0	29252.	21937.
2400	09MAY2017	0.0	0.0	29413.	21932.
2400	10MAY2017	0.0	0.0	29573.	21923.
2400	11MAY2017	0.0	0.0	29734.	21918.
2400	12MAY2017	0.0	0.0	29895.	21918.
2400	13MAY2017	0.0	0.0	30056.	21903.
2400	14MAY2017	0.0	0.0	30217.	21894.
2400	15MAY2017	0.0	0.0	30378.	21884.
2400	16MAY2017	0.0	0.0	30539.	21836.
2400	17MAY2017	0.0	0.0	30700.	21869.
2400	18MAY2017	0.0	0.0	30861.	21867.

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TIME	DATE	LOS BANOS FLOW-RES IN cfs PER-AVER	LOS BANOS FLOW-RES OUT cfs PER-AVER	LOS BANOS TOP CON STOR ac-ft INST-VAL	LOS BANOS STOR-RES EOP ac-ft INST-VAL

2400	19MAY2018	0.0	0.0	31183.	19919.
2400	20MAY2018	0.0	0.0	31344.	19915.
2400	21MAY2018	0.0	0.0	31505.	19901.
2400	22MAY2018	0.0	0.0	31665.	19896.
2400	23MAY2018	0.0	0.0	31826.	19887.
2400	24MAY2018	0.0	0.0	31987.	19873.
2400	25MAY2018	0.0	0.0	32148.	19869.
2400	26MAY2018	0.0	0.0	32309.	19864.
2400	27MAY2018	0.0	0.0	32470.	19901.
2400	28MAY2018	0.0	0.0	32631.	19855.
2400	29MAY2018	0.0	0.0	32792.	19850.
2400	30MAY2018	0.0	0.0	32953.	19823.
2400	31MAY2018	0.0	0.0	33114.	19813.
2400	01JUN2018	0.0	0.0	33275.	19804.
2400	02JUN2018	0.0	0.0	33436.	19800.
2400	03JUN2018	0.0	0.0	33596.	19800.
2400	04JUN2018	0.0	0.0	33757.	19786.
2400	05JUN2018	0.0	0.0	33918.	19763.
2400	06JUN2018	0.0	0.0	34079.	19740.
2400	07JUN2018	0.0	0.0	34240.	19726.
2400	08JUN2018	0.0	0.0	34401.	19722.
2400	09JUN2018	0.0	0.0	34562.	19703.
2400	10JUN2018	26.0	0.0	34562.	19754.
2400	11JUN2018	0.0	0.0	34562.	19754.
2400	12JUN2018	0.0	0.0	34562.	19676.
2400	13JUN2018	0.0	0.0	34562.	19667.
2400	14JUN2018	0.0	0.0	34562.	19653.
2400	15JUN2018	0.0	0.0	34562.	19644.
2400	16JUN2018	0.0	0.0	34562.	19644.
2400	17JUN2018	0.0	0.0	34562.	19616.
2400	18JUN2018	0.0	0.0	34562.	19607.
2400	19JUN2018	0.0	0.0	34562.	19593.
2400	20JUN2018	25.0	0.0	34562.	19644.
2400	21JUN2018	0.0	0.0	34562.	19575.
2400	22JUN2018	0.0	0.0	34562.	19566.
2400	23JUN2018	34.0	0.0	34562.	19634.
2400	24JUN2018	0.0	0.0	34562.	19534.
2400	25JUN2018	0.0	0.0	34562.	19529.
2400	26JUN2018	0.0	0.0	34562.	19516.
2400	27JUN2018	0.0	0.0	34562.	19497.
2400	28JUN2018	0.0	0.0	34562.	19479.
2400	29JUN2018	0.0	0.0	34562.	19470.
2400	30JUN2018	0.0	0.0	34562.	19466.
2400	01JUL2018	0.0	0.0	34562.	19447.
2400	02JUL2018	0.0	0.0	34562.	19438.
2400	03JUL2018	0.0	0.0	34562.	19461.

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TIME	DATE	LOS BANOS FLOW-RES IN cfs PER-AVER	LOS BANOS FLOW-RES OUT cfs PER-AVER	LOS BANOS TOP CON STOR ac-ft INST-VAL	LOS BANOS STOR-RES EOP ac-ft INST-VAL
2400	04JUL2018	0.0	0.0	34562.	19415.
2400	05JUL2018	0.0	0.0	34562.	19402.
2400	06JUL2018	0.0	0.0	34562.	19393.
2400	07JUL2018	37.0	0.0	34562.	19466.
2400	08JUL2018	0.0	0.0	34562.	19361.
2400	09JUL2018	46.0	0.0	34562.	19452.
2400	10JUL2018	0.0	0.0	34562.	19347.
2400	11JUL2018	0.0	0.0	34562.	19320.
2400	12JUL2018	0.0	0.0	34562.	19306.
2400	13JUL2018	0.0	0.0	34562.	19306.
2400	14JUL2018	0.0	0.0	34562.	19306.
2400	15JUL2018	0.0	0.0	34562.	19275.
2400	16JUL2018	0.0	0.0	34562.	19261.
2400	17JUL2018	0.0	0.0	34562.	19252.
2400	18JUL2018	0.0	0.0	34562.	19243.
2400	19JUL2018	0.0	0.0	34562.	19225.
2400	20JUL2018	0.0	0.0	34562.	19207.
2400	21JUL2018	0.0	0.0	34562.	19198.
2400	22JUL2018	0.0	0.0	34562.	19180.

2400 23JUL2017	0.0	0.0	34562.	21153.
2400 24JUL2017	0.0	0.0	34562.	21143.
2400 25JUL2017	0.0	0.0	34562.	21129.
2400 26JUL2017	0.0	0.0	34562.	21119.
2400 27JUL2017	0.0	0.0	34562.	21110.
2400 28JUL2017	0.0	0.0	34562.	21091.
2400 29JUL2017	0.0	0.0	34562.	21077.
2400 30JUL2017	0.0	0.0	34562.	21077.
2400 31JUL2017	0.0	0.0	34562.	21072.
2400 01AUG2017	0.0	0.0	34562.	21048.
2400 02AUG2017	0.0	0.0	34562.	21039.
2400 03AUG2017	0.0	0.0	34562.	21024.
2400 04AUG2017	0.0	0.0	34562.	21015.
2400 05AUG2017	0.0	0.0	34562.	21005.
2400 06AUG2017	0.0	0.0	34562.	20986.
2400 07AUG2017	0.0	0.0	34562.	20982.
2400 08AUG2017	0.0	0.0	34562.	20967.
2400 09AUG2017	0.0	0.0	34562.	20948.
2400 10AUG2017	0.0	0.0	34562.	20939.
2400 11AUG2017	0.0	0.0	34221.	20929.
2400 12AUG2017	0.0	0.0	33879.	20920.
2400 13AUG2017	0.0	0.0	33538.	20906.
2400 14AUG2017	0.0	0.0	33196.	20891.
2400 15AUG2017	0.0	0.0	32855.	20877.
2400 16AUG2017	0.0	0.0	32513.	20863.
2400 17AUG2017	0.0	0.0	32172.	20863.
2400 18AUG2017	0.0	0.0	31830.	20844.

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TIME DATE	LOS BANOS FLOW-RES IN cfs PER-AVER	LOS BANOS FLOW-RES OUT cfs PER-AVER	LOS BANOS TOP CON STOR ac-ft INST-VAL	LOS BANOS STOR-RES EOP ac-ft INST-VAL
2400 19AUG2017	0.0	0.0	31489.	20835.
2400 20AUG2017	0.0	0.0	31147.	20825.
2400 21AUG2017	0.0	0.0	30806.	20816.
2400 22AUG2017	0.0	0.0	30464.	20806.
2400 23AUG2017	0.0	0.0	30123.	20797.
2400 24AUG2017	0.0	0.0	29782.	20787.
2400 25AUG2017	0.0	0.0	29440.	20778.
2400 26AUG2017	0.0	0.0	29099.	20764.
2400 27AUG2017	0.0	0.0	28757.	20759.
2400 28AUG2017	0.0	0.0	28416.	20745.
2400 29AUG2017	0.0	0.0	28074.	20745.
2400 30AUG2017	0.0	0.0	27733.	20721.
2400 31AUG2017	0.0	0.0	27391.	20721.
2400 01SEP2017	0.0	0.0	27050.	20698.
2400 02SEP2017	0.0	0.0	26708.	20698.
2400 03SEP2017	0.0	0.0	26367.	20684.
2400 04SEP2017	0.0	0.0	26025.	20674.
2400 05SEP2017	0.0	0.0	25684.	20660.
2400 06SEP2017	0.0	0.0	25342.	20651.
2400 07SEP2017	0.0	0.0	25001.	20641.
2400 08SEP2017	0.0	0.0	24660.	20632.
2400 09SEP2017	0.0	0.0	24318.	20627.
2400 10SEP2017	0.0	0.0	23977.	20613.
2400 11SEP2017	0.0	0.0	23635.	20613.
2400 12SEP2017	0.0	0.0	23294.	20604.
2400 13SEP2017	0.0	0.0	22952.	20585.
2400 14SEP2017	0.0	0.0	22611.	20557.
2400 15SEP2017	0.0	0.0	22269.	20557.
2400 16SEP2017	2.5	0.0	21928.	20562.
2400 17SEP2017	0.0	0.0	21586.	20552.
2400 18SEP2017	0.0	0.0	21245.	20524.
2400 19SEP2017	0.0	0.0	20903.	20515.
2400 20SEP2017	0.0	0.0	20562.	20496.
2400 21SEP2017	0.0	0.0	20562.	20490.
2400 22SEP2017	0.0	0.0	20562.	20482.
2400 23SEP2017	0.0	0.0	20562.	20468.
2400 24SEP2017	0.0	0.0	20562.	20454.
2400 25SEP2017	0.0	0.0	20562.	20454.

2400 26SEP2017	0.0	0.0	20562.	20449.
2400 27SEP2017	0.0	0.0	20562.	20435.
2400 28SEP2017	2.5	0.0	20562.	20440.
2400 29SEP2017	0.0	0.0	20562.	20435.
2400 30SEP2017	0.0	0.0	20562.	20416.

***** Advisory: Inflows are a computed value. The inflows are computed from changes in storages which can produce erratic hourly results. Inflows can be averaged over several hours to produce a more realistic value.**

Sacramento District
Water Control Data System

US Army Corps of Engineers

WCDS HOME GLOSSARY CONTACT DISTRICT HOME

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TIME	DATE	LOS BANOS FLOW-RES IN cfs PER-AVER	LOS BANOS FLOW-RES OUT cfs PER-AVER	LOS BANOS TOP CON STOR ac-ft INST-VAL	LOS BANOS STOR-RES EOP ac-ft INST-VAL
2400	01OCT2017	0.0	0.0	20562.	20407.
2400	02OCT2017	0.0	0.0	20562.	20398.
2400	03OCT2017	0.0	0.0	20562.	20388.
2400	04OCT2017	0.0	0.0	20562.	20384.
2400	05OCT2017	0.0	0.0	20562.	20374.
2400	06OCT2017	0.0	0.0	20562.	20370.
2400	07OCT2017	0.0	0.0	20562.	20356.
2400	08OCT2017	0.0	0.0	20562.	20351.
2400	09OCT2017	0.0	0.0	20562.	20346.
2400	10OCT2017	0.0	0.0	20562.	20337.
2400	11OCT2017	0.0	0.0	20562.	20328.
2400	12OCT2017	0.0	0.0	20562.	20328.
2400	13OCT2017	0.0	0.0	20562.	20314.
2400	14OCT2017	0.0	0.0	20562.	20309.
2400	15OCT2017	0.0	0.0	20562.	20304.
2400	16OCT2017	0.0	0.0	20562.	20295.
2400	17OCT2017	2.0	44.0	20562.	20211.
2400	18OCT2017	0.0	75.0	20562.	20063.
2400	19OCT2017	0.0	75.0	20562.	19910.
2400	20OCT2017	0.0	46.0	20562.	19809.
2400	21OCT2017	0.0	0.0	20562.	19809.
2400	22OCT2017	0.0	0.0	20562.	19809.
2400	23OCT2017	0.0	0.0	20562.	19800.
2400	24OCT2017	0.0	0.0	20562.	19800.
2400	25OCT2017	0.0	0.0	20562.	19800.
2400	26OCT2017	0.0	0.0	20562.	19800.
2400	27OCT2017	0.0	0.0	20562.	19790.
2400	28OCT2017	0.0	0.0	20562.	19790.
2400	29OCT2017	0.0	0.0	20562.	19790.
2400	30OCT2017	0.0	0.0	20562.	19786.
2400	31OCT2017	0.0	0.0	20562.	19786.
2400	01NOV2017	0.0	0.0	20562.	19777.
2400	02NOV2017	0.0	0.0	20562.	19777.
2400	03NOV2017	0.0	0.0	20562.	19772.
2400	04NOV2017	0.0	0.0	20562.	19772.
2400	05NOV2017	0.0	0.0	20562.	19772.
2400	06NOV2017	0.0	0.0	20562.	19767.
2400	07NOV2017	0.0	0.0	20562.	19763.
2400	08NOV2017	0.0	0.0	20562.	19758.
2400	09NOV2017	0.0	0.0	20562.	19758.
2400	10NOV2017	0.0	0.0	20562.	19758.
2400	11NOV2017	3.0	0.0	20562.	19763.
2400	12NOV2017	0.0	0.0	20562.	19763.
2400	13NOV2017	0.0	0.0	20562.	19754.
2400	14NOV2017	0.0	0.0	20562.	19744.
2400	15NOV2017	0.0	0.0	20562.	19744.

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LOS BANOS	LOS BANOS	LOS BANOS	LOS BANOS
FLOW-RES IN cfs	FLOW-RES OUT cfs	TOP CON STOR ac-ft	STOR-RES EOP ac-ft

TIME	DATE	PER-AVER	PER-AVER	INST-VAL	INST-VAL
2400	16NOV2017	7.0	0.0	20562.	19758.
2400	17NOV2017	0.0	0.0	20562.	19758.
2400	18NOV2017	0.0	0.0	20562.	19758.
2400	19NOV2017	0.0	0.0	20562.	19758.
2400	20NOV2017	0.0	0.0	20562.	19754.
2400	21NOV2017	2.5	0.0	20562.	19749.
2400	22NOV2017	0.0	0.0	20562.	19749.
2400	23NOV2017	0.0	0.0	20562.	19744.
2400	24NOV2017	2.5	0.0	20562.	19749.
2400	25NOV2017	2.5	0.0	20562.	19744.
2400	26NOV2017	0.0	2.5	20562.	19749.
2400	27NOV2017	0.0	0.0	20562.	19749.
2400	28NOV2017	0.0	0.0	20562.	19744.
2400	29NOV2017	0.0	0.0	20562.	19744.
2400	30NOV2017	0.0	0.0	20562.	19744.
2400	01DEC2017	0.0	0.0	20562.	19735.
2400	02DEC2017	0.0	0.0	20562.	19731.
2400	03DEC2017	0.0	0.0	20562.	19731.
2400	04DEC2017	0.0	0.0	20562.	19726.
2400	05DEC2017	0.0	0.0	20562.	19722.
2400	06DEC2017	0.0	0.0	20562.	19722.
2400	07DEC2017	0.0	0.0	20562.	19717.
2400	08DEC2017	0.0	0.0	20562.	19717.
2400	09DEC2017	0.0	0.0	20562.	19717.
2400	10DEC2017	0.0	0.0	20562.	19708.
2400	11DEC2017	0.0	0.0	20562.	19703.
2400	12DEC2017	0.0	0.0	20562.	19699.
2400	13DEC2017	0.0	0.0	20562.	19699.
2400	14DEC2017	0.0	0.0	20562.	19699.
2400	15DEC2017	2.0	0.0	20562.	19703.
2400	16DEC2017	0.0	0.0	20562.	19699.
2400	17DEC2017	0.0	0.0	20562.	19685.
2400	18DEC2017	0.0	0.0	20562.	19685.
2400	19DEC2017	0.0	0.0	20562.	19685.
2400	20DEC2017	0.0	0.0	20562.	19680.
2400	21DEC2017	0.0	0.0	20562.	19680.
2400	22DEC2017	0.0	0.0	20562.	19671.
2400	23DEC2017	0.0	0.0	20562.	19676.
2400	24DEC2017	0.0	0.0	20562.	19671.
2400	25DEC2017	0.0	0.0	20562.	19671.
2400	26DEC2017	0.0	0.0	20562.	19671.
2400	27DEC2017	0.0	0.0	20562.	19671.
2400	28DEC2017	0.0	0.0	20562.	19662.
2400	29DEC2017	3.0	0.0	20562.	19667.
2400	30DEC2017	0.0	0.0	20562.	19662.
2400	31DEC2017	0.0	0.0	20562.	19662.

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TIME	DATE	LOS BANOS FLOW-RES IN cfs PER-AVER	LOS BANOS FLOW-RES OUT cfs PER-AVER	LOS BANOS TOP CON STOR ac-ft INST-VAL	LOS BANOS STOR-RES EOP ac-ft INST-VAL
2400	01JAN2018	0.0	0.0	20562.	19662.
2400	02JAN2018	0.0	0.0	20562.	19662.
2400	03JAN2018	2.5	0.0	20562.	19667.
2400	04JAN2018	0.0	0.0	20562.	19667.
2400	05JAN2018	0.0	0.0	20562.	19667.
2400	06JAN2018	0.0	0.0	20562.	19676.
2400	07JAN2018	0.0	0.0	20562.	19671.
2400	08JAN2018	19.0	0.0	20562.	19708.
2400	09JAN2018	21.0	0.0	20562.	19749.
2400	10JAN2018	0.0	0.0	20562.	19747.
2400	11JAN2018	0.0	0.0	20562.	19744.
2400	12JAN2018	0.0	0.0	20562.	19749.
2400	13JAN2018	0.0	0.0	20562.	19744.
2400	14JAN2018	3.0	0.0	20562.	19749.
2400	15JAN2018	0.0	0.0	20562.	19744.
2400	16JAN2018	3.0	0.0	20562.	19749.
2400	17JAN2018	0.0	0.0	20562.	19754.

2400	18JAN2018	3.0	0.0	20562.	19754.
2400	19JAN2018	0.0	0.0	20562.	19754.
2400	20JAN2018	0.0	0.0	20562.	19754.
2400	21JAN2018	0.0	0.0	20562.	19740.
2400	22JAN2018	0.0	0.0	20562.	19735.
2400	23JAN2018	0.0	0.0	20562.	19740.
2400	24JAN2018	0.0	0.0	20562.	19740.
2400	25JAN2018	0.0	0.0	20562.	19740.
2400	26JAN2018	0.0	0.0	20562.	19735.
2400	27JAN2018	0.0	0.0	20562.	19731.
2400	28JAN2018	0.0	0.0	20562.	19731.
2400	29JAN2018	0.0	0.0	20562.	19731.
2400	30JAN2018	2.0	0.0	20562.	19735.
2400	31JAN2018	0.0	0.0	20562.	19731.
2400	01FEB2018	0.0	0.0	20562.	19726.
2400	02FEB2018	0.0	0.0	20562.	19726.
2400	03FEB2018	0.0	0.0	20562.	19731.
2400	04FEB2018	2.0	0.0	20562.	19726.
2400	05FEB2018	0.0	0.0	20562.	19722.
2400	06FEB2018	0.0	0.0	20562.	19722.
2400	07FEB2018	0.0	0.0	20562.	19717.
2400	08FEB2018	0.0	0.0	20562.	19717.
2400	09FEB2018	0.0	0.0	20562.	19712.
2400	10FEB2018	0.0	0.0	20562.	19712.
2400	11FEB2018	0.0	0.0	20562.	19708.
2400	12FEB2018	0.0	0.0	20562.	19708.
2400	13FEB2018	0.0	0.0	20562.	19708.
2400	14FEB2018	0.0	0.0	20562.	19585.
2400	15FEB2018	0.0	0.0	20562.	19694.

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TIME	DATE	LOS BANOS FLOW-RES IN cfs PER-AVER	LOS BANOS FLOW-RES OUT cfs PER-AVER	LOS BANOS TOP CON STOR ac-ft INST-VAL	LOS BANOS STOR-RES EOP ac-ft INST-VAL
2400	16FEB2018	0.0	0.0	20562.	19685.
2400	17FEB2018	0.0	0.0	20562.	19680.
2400	18FEB2018	0.0	0.0	20562.	19680.
2400	19FEB2018	0.0	0.0	20562.	19671.
2400	20FEB2018	0.0	0.0	20562.	19657.
2400	21FEB2018	0.0	0.0	20562.	19657.
2400	22FEB2018	0.0	0.0	20562.	19648.
2400	23FEB2018	0.0	0.0	20562.	19648.
2400	24FEB2018	0.0	0.0	20562.	19644.
2400	25FEB2018	0.0	0.0	20562.	19639.
2400	26FEB2018	2.5	0.0	20562.	19644.
2400	27FEB2018	2.0	0.0	20562.	19648.
2400	28FEB2018	0.0	0.0	20562.	19648.
2400	01MAR2018	11.0	0.0	20562.	19657.
2400	02MAR2018	5.0	0.0	20562.	19667.
2400	03MAR2018	0.0	3.5	20562.	19662.
2400	04MAR2018	0.0	0.0	20562.	19657.
2400	05MAR2018	0.0	0.0	20562.	19657.
2400	06MAR2018	0.0	0.0	20562.	19653.
2400	07MAR2018	0.0	0.0	20562.	19653.
2400	08MAR2018	0.0	0.0	20562.	19653.
2400	09MAR2018	0.0	0.0	20562.	19653.
2400	10MAR2018	2.0	0.0	20562.	19657.
2400	11MAR2018	0.0	0.0	20562.	19635.
2400	12MAR2018	0.0	0.0	20562.	19653.
2400	13MAR2018	0.0	0.0	20562.	19653.
2400	14MAR2018	0.0	0.0	20562.	19653.
2400	15MAR2018	0.0	0.0	20723.	19648.
2400	16MAR2018	0.0	0.0	20884.	19644.
2400	17MAR2018	2.0	0.0	21045.	19648.
2400	18MAR2018	0.0	0.0	21206.	19648.
2400	19MAR2018	0.0	0.0	21367.	19648.
2400	20MAR2018	5.0	0.0	21528.	19657.
2400	21MAR2018	7.0	0.0	21688.	19671.
2400	22MAR2018	79.0	0.0	21849.	19827.
2400	23MAR2018	86.0	0.0	22010.	19998.

2400	24MAR2018	26.0	0.0	22171.	20049.
2400	25MAR2018	14.0	0.0	22332.	20077.
2400	26MAR2018	11.0	0.0	22493.	20100.
2400	27MAR2018	7.0	0.0	22654.	20114.
2400	28MAR2018	7.0	0.0	22815.	20128.
2400	29MAR2018	7.0	0.0	22976.	20141.
2400	30MAR2018	0.0	0.0	23137.	20141.
2400	31MAR2018	0.0	0.0	23298.	20115.
2400	01APR2018	0.0	0.0	23459.	20115.
2400	02APR2018	0.0	0.0	23619.	20151.

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TIME	DATE	LOS BANOS FLOW-RES IN cfs PER-AVER	LOS BANOS FLOW-RES OUT cfs PER-AVER	LOS BANOS TOP CON STOR ac-ft INST-VAL	LOS BANOS STOR-RES EOP ac-ft INST-VAL
2400	03APR2018	0.0	0.0	23780.	20151.
2400	04APR2018	0.0	0.0	23941.	20141.
2400	05APR2018	3.0	0.0	24102.	20146.
2400	06APR2018	3.0	0.0	24263.	20151.
2400	07APR2018	5.0	0.0	24424.	20160.
2400	08APR2018	3.0	0.0	24585.	20165.
2400	09APR2018	5.0	0.0	24746.	20174.
2400	10APR2018	0.0	0.0	24907.	20174.
2400	11APR2018	0.0	0.0	25068.	20169.
2400	12APR2018	5.0	0.0	25229.	20179.
2400	13APR2018	0.0	0.0	25390.	20155.
2400	14APR2018	0.0	0.0	25551.	20155.
2400	15APR2018	0.0	0.0	25711.	20146.
2400	16APR2018	0.0	0.0	25872.	20146.
2400	17APR2018	0.0	0.0	26033.	20146.
2400	18APR2018	0.0	0.0	26194.	20141.
2400	19APR2018	0.0	0.0	26355.	20132.
2400	20APR2018	0.0	0.0	26516.	20132.
2400	21APR2018	0.0	0.0	26677.	20132.
2400	22APR2018	0.0	0.0	26838.	20128.
2400	23APR2018	0.0	0.0	26999.	20128.
2400	24APR2018	0.0	0.0	27160.	20118.
2400	25APR2018	0.0	0.0	27321.	20114.
2400	26APR2018	0.0	0.0	27482.	20100.
2400	27APR2018	0.0	0.0	27642.	20100.
2400	28APR2018	0.0	0.0	27803.	20090.
2400	29APR2018	0.0	0.0	27964.	20077.
2400	30APR2018	0.0	0.0	28125.	20077.
2400	01MAY2018	0.0	0.0	28286.	20067.
2400	02MAY2018	0.0	0.0	28447.	20053.
2400	03MAY2018	0.0	0.0	28608.	20072.
2400	04MAY2018	0.0	0.0	28769.	20049.
2400	05MAY2018	0.0	0.0	28930.	20044.
2400	06MAY2018	0.0	0.0	29091.	20040.
2400	07MAY2018	0.0	0.0	29252.	20035.
2400	08MAY2018	0.0	0.0	29413.	20040.
2400	09MAY2018	0.0	0.0	29573.	20021.
2400	10MAY2018	0.0	0.0	29734.	20026.
2400	11MAY2018	0.0	0.0	29895.	20012.
2400	12MAY2018	0.0	0.0	30056.	19984.
2400	13MAY2018	7.0	0.0	30217.	19998.
2400	14MAY2018	0.0	0.0	30378.	19970.
2400	15MAY2018	0.0	0.0	30539.	19956.
2400	16MAY2018	0.0	0.0	30700.	19947.
2400	17MAY2018	0.0	0.0	30861.	19942.
2400	18MAY2018	0.0	0.0	31022.	19933.

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TIME	DATE	LOS BANOS FLOW-RES IN cfs PER-AVER	LOS BANOS FLOW-RES OUT cfs PER-AVER	LOS BANOS TOP CON STOR ac-ft INST-VAL	LOS BANOS STOR-RES EOP ac-ft INST-VAL

2400	19MAY2018	0.0	0.0	31183.	19919.
2400	20MAY2018	0.0	0.0	31344.	19915.
2400	21MAY2018	0.0	0.0	31505.	19901.
2400	22MAY2018	0.0	0.0	31665.	19896.
2400	23MAY2018	0.0	0.0	31826.	19887.
2400	24MAY2018	0.0	0.0	31987.	19873.
2400	25MAY2018	0.0	0.0	32148.	19869.
2400	26MAY2018	0.0	0.0	32309.	19864.
2400	27MAY2018	0.0	0.0	32470.	19901.
2400	28MAY2018	0.0	0.0	32631.	19855.
2400	29MAY2018	0.0	0.0	32792.	19850.
2400	30MAY2018	0.0	0.0	32953.	19823.
2400	31MAY2018	0.0	0.0	33114.	19813.
2400	01JUN2018	0.0	0.0	33275.	19804.
2400	02JUN2018	0.0	0.0	33436.	19800.
2400	03JUN2018	0.0	0.0	33596.	19800.
2400	04JUN2018	0.0	0.0	33757.	19786.
2400	05JUN2018	0.0	0.0	33918.	19763.
2400	06JUN2018	0.0	0.0	34079.	19740.
2400	07JUN2018	0.0	0.0	34240.	19726.
2400	08JUN2018	0.0	0.0	34401.	19722.
2400	09JUN2018	0.0	0.0	34562.	19703.
2400	10JUN2018	26.0	0.0	34562.	19754.
2400	11JUN2018	0.0	0.0	34562.	19754.
2400	12JUN2018	0.0	0.0	34562.	19676.
2400	13JUN2018	0.0	0.0	34562.	19667.
2400	14JUN2018	0.0	0.0	34562.	19653.
2400	15JUN2018	0.0	0.0	34562.	19644.
2400	16JUN2018	0.0	0.0	34562.	19644.
2400	17JUN2018	0.0	0.0	34562.	19616.
2400	18JUN2018	0.0	0.0	34562.	19607.
2400	19JUN2018	0.0	0.0	34562.	19593.
2400	20JUN2018	25.0	0.0	34562.	19644.
2400	21JUN2018	0.0	0.0	34562.	19575.
2400	22JUN2018	0.0	0.0	34562.	19566.
2400	23JUN2018	34.0	0.0	34562.	19634.
2400	24JUN2018	0.0	0.0	34562.	19534.
2400	25JUN2018	0.0	0.0	34562.	19529.
2400	26JUN2018	0.0	0.0	34562.	19516.
2400	27JUN2018	0.0	0.0	34562.	19497.
2400	28JUN2018	0.0	0.0	34562.	19479.
2400	29JUN2018	0.0	0.0	34562.	19470.
2400	30JUN2018	0.0	0.0	34562.	19466.
2400	01JUL2018	0.0	0.0	34562.	19447.
2400	02JUL2018	0.0	0.0	34562.	19438.
2400	03JUL2018	0.0	0.0	34562.	19461.

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TIME	DATE	LOS BANOS FLOW-RES IN cfs PER-AVER	LOS BANOS FLOW-RES OUT cfs PER-AVER	LOS BANOS TOP CON STOR ac-ft INST-VAL	LOS BANOS STOR-RES EOP ac-ft INST-VAL
2400	04JUL2018	0.0	0.0	34562.	19415.
2400	05JUL2018	0.0	0.0	34562.	19402.
2400	06JUL2018	0.0	0.0	34562.	19393.
2400	07JUL2018	37.0	0.0	34562.	19466.
2400	08JUL2018	0.0	0.0	34562.	19361.
2400	09JUL2018	46.0	0.0	34562.	19452.
2400	10JUL2018	0.0	0.0	34562.	19347.
2400	11JUL2018	0.0	0.0	34562.	19320.
2400	12JUL2018	0.0	0.0	34562.	19306.
2400	13JUL2018	0.0	0.0	34562.	19306.
2400	14JUL2018	0.0	0.0	34562.	19306.
2400	15JUL2018	0.0	0.0	34562.	19275.
2400	16JUL2018	0.0	0.0	34562.	19261.
2400	17JUL2018	0.0	0.0	34562.	19252.
2400	18JUL2018	0.0	0.0	34562.	19243.
2400	19JUL2018	0.0	0.0	34562.	19225.
2400	20JUL2018	0.0	0.0	34562.	19207.
2400	21JUL2018	0.0	0.0	34562.	19198.
2400	22JUL2018	0.0	0.0	34562.	19180.

2400	23JUL2018	0.0	0.0	34562.	19175.
2400	24JUL2018	0.0	0.0	34562.	19162.
2400	25JUL2018	0.0	0.0	34562.	19144.
2400	26JUL2018	0.0	0.0	34562.	19130.
2400	27JUL2018	0.0	0.0	34562.	19116.
2400	28JUL2018	0.0	0.0	34562.	19112.
2400	29JUL2018	0.0	0.0	34562.	19089.
2400	30JUL2018	0.0	0.0	34562.	19080.
2400	31JUL2018	0.0	0.0	34562.	19067.
2400	01AUG2018	0.0	0.0	34562.	19053.
2400	02AUG2018	0.0	0.0	34562.	19040.
2400	03AUG2018	0.0	0.0	34562.	19026.
2400	04AUG2018	0.0	0.0	34562.	19008.
2400	05AUG2018	0.0	0.0	34562.	18995.
2400	06AUG2018	0.0	0.0	34562.	18986.
2400	07AUG2018	0.0	0.0	34562.	18981.
2400	08AUG2018	0.0	0.0	34562.	18963.
2400	09AUG2018	0.0	0.0	34562.	18954.
2400	10AUG2018	0.0	0.0	34221.	18941.
2400	11AUG2018	0.0	0.0	33879.	18936.
2400	12AUG2018	0.0	0.0	33538.	18914.
2400	13AUG2018	0.0	0.0	33196.	18901.
2400	14AUG2018	0.0	0.0	32855.	18887.
2400	15AUG2018	0.0	0.0	32513.	18878.
2400	16AUG2018	0.0	0.0	32172.	18878.
2400	17AUG2018	0.0	0.0	31830.	18860.
2400	18AUG2018	0.0	0.0	31489.	18847.

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TIME	DATE	LOS BANOS FLOW-RES IN cfs PER-AVER	LOS BANOS FLOW-RES OUT cfs PER-AVER	LOS BANOS TOP CON STOR ac-ft INST-VAL	LOS BANOS STOR-RES EOP ac-ft INST-VAL
2400	19AUG2018	0.0	0.0	31147.	18838.
2400	20AUG2018	0.0	0.0	30806.	18820.
2400	21AUG2018	0.0	0.0	30464.	18820.
2400	22AUG2018	0.0	0.0	30123.	18807.
2400	23AUG2018	0.0	0.0	29782.	18791.
2400	24AUG2018	0.0	0.0	29440.	18775.
2400	25AUG2018	0.0	0.0	29099.	18762.
2400	26AUG2018	0.0	0.0	28757.	18757.
2400	27AUG2018	0.0	0.0	28416.	18744.
2400	28AUG2018	0.0	0.0	28074.	18726.
2400	29AUG2018	0.0	0.0	27733.	18722.
2400	30AUG2018	0.0	0.0	27391.	18708.
2400	31AUG2018	0.0	0.0	27050.	18704.
2400	01SEP2018	0.0	0.0	26708.	18699.
2400	02SEP2018	0.0	0.0	26367.	18686.
2400	03SEP2018	0.0	0.0	26025.	18682.
2400	04SEP2018	0.0	0.0	25684.	18673.
2400	05SEP2018	0.0	0.0	25342.	18664.
2400	06SEP2018	0.0	0.0	25001.	18664.
2400	07SEP2018	0.0	0.0	24660.	18650.
2400	08SEP2018	0.0	0.0	24318.	18637.
2400	09SEP2018	0.0	0.0	23977.	18628.
2400	10SEP2018	0.0	0.0	23635.	18615.
2400	11SEP2018	0.0	0.0	23294.	18601.
2400	12SEP2018	0.0	0.0	22952.	18588.
2400	13SEP2018	0.0	0.0	22611.	18570.
2400	14SEP2018	0.0	0.0	22269.	18570.
2400	15SEP2018	0.0	0.0	21928.	18548.
2400	16SEP2018	0.0	0.0	21586.	18544.
2400	17SEP2018	0.0	0.0	21245.	18535.
2400	18SEP2018	0.0	0.0	20903.	18530.
2400	19SEP2018	0.0	0.0	20562.	18517.
2400	20SEP2018	0.0	0.0	20562.	18508.
2400	21SEP2018	0.0	0.0	20562.	18499.
2400	22SEP2018	0.0	0.0	20562.	18495.
2400	23SEP2018	0.0	0.0	20562.	18495.
2400	24SEP2018	0.0	0.0	20562.	18482.
2400	25SEP2018	2.0	0.0	20562.	18486.

2400 26SEP2018	0.0	0.0	20562.	18463.
2400 27SEP2018	0.0	0.0	20562.	18464.
2400 28SEP2018	0.0	0.0	20562.	18464.
2400 29SEP2018	0.0	0.0	20562.	18446.
2400 30SEP2018	0.0	0.0	20562.	18442.

***** Advisory: Inflows are a computed value. The inflows are computed from changes in storages which can produce erratic hourly results. Inflows can be averaged over several hours to produce a more realistic value.**

Sacramento District

Water Control Data System

US Army Corps of Engineers

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TIME	DATE	LOS BANOS FLOW-RES IN cfs PER-AVER	LOS BANOS FLOW-RES OUT cfs PER-AVER	LOS BANOS TOP CON STOR ac-ft INST-VAL	LOS BANOS STOR-RES EOP ac-ft INST-VAL
2400	01OCT2018	0.0	0.0	20562.	18429.
2400	02OCT2018	0.0	0.0	20562.	18424.
2400	03OCT2018	0.0	0.0	20562.	18415.
2400	04OCT2018	0.0	0.0	20562.	18411.
2400	05OCT2018	0.0	0.0	20562.	18402.
2400	06OCT2018	0.0	0.0	20562.	18398.
2400	07OCT2018	0.0	0.0	20562.	18384.
2400	08OCT2018	0.0	0.0	20562.	18380.
2400	09OCT2018	5.0	0.0	20562.	18389.
2400	10OCT2018	0.0	0.0	20562.	18367.
2400	11OCT2018	0.0	0.0	20562.	18358.
2400	12OCT2018	0.0	0.0	20562.	18354.
2400	13OCT2018	0.0	0.0	20562.	18345.
2400	14OCT2018	0.0	0.0	20562.	18336.
2400	15OCT2018	0.0	0.0	20562.	18331.
2400	16OCT2018	0.0	0.0	20562.	18327.
2400	17OCT2018	0.0	0.0	20562.	18318.
2400	18OCT2018	0.0	0.0	20562.	18314.
2400	19OCT2018	0.0	0.0	20562.	18305.
2400	20OCT2018	0.0	0.0	20562.	18301.
2400	21OCT2018	0.0	0.0	20562.	18301.
2400	22OCT2018	0.0	0.0	20562.	18287.
2400	23OCT2018	0.0	0.0	20562.	18287.
2400	24OCT2018	0.0	0.0	20562.	18287.
2400	25OCT2018	0.0	0.0	20562.	18279.
2400	26OCT2018	0.0	0.0	20562.	18274.
2400	27OCT2018	0.0	0.0	20562.	18274.
2400	28OCT2018	0.0	0.0	20562.	18265.
2400	29OCT2018	0.0	0.0	20562.	18261.
2400	30OCT2018	0.0	0.0	20562.	18252.
2400	31OCT2018	0.0	0.0	20562.	18248.
2400	01NOV2018	0.0	0.0	20562.	18239.
2400	02NOV2018	0.0	0.0	20562.	18239.
2400	03NOV2018	0.0	0.0	20562.	18230.
2400	04NOV2018	0.0	0.0	20562.	18230.
2400	05NOV2018	0.0	0.0	20562.	18221.
2400	06NOV2018	0.0	0.0	20562.	18221.
2400	07NOV2018	0.0	0.0	20562.	18217.
2400	08NOV2018	0.0	0.0	20562.	18204.
2400	09NOV2018	0.0	0.0	20562.	18204.
2400	10NOV2018	0.0	0.0	20562.	18204.
2400	11NOV2018	0.0	0.0	20562.	18204.
2400	12NOV2018	0.0	0.0	20562.	18204.
2400	13NOV2018	0.0	0.0	20562.	18204.
2400	14NOV2018	0.0	0.0	20562.	18204.
2400	15NOV2018	0.0	0.0	20562.	18204.

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LOS BANOS	LOS BANOS	LOS BANOS	LOS BANOS
FLOW-RES IN	FLOW-RES OUT	TOP CON STOR	STOR-RES EOP
cfs	cfs	ac-ft	ac-ft

TIME	DATE	PER-AVER	PER-AVER	INST-VAL	INST-VAL
2400	16NOV2018	0.0	0.0	20562.	18204.
2400	17NOV2018	0.0	0.0	20562.	18204.
2400	18NOV2018	0.0	0.0	20562.	18204.
2400	19NOV2018	0.0	0.0	20562.	18204.
2400	20NOV2018	0.0	0.0	20562.	18204.
2400	21NOV2018	0.0	0.0	20562.	18164.
2400	22NOV2018	0.0	0.0	20562.	18169.
2400	23NOV2018	0.0	0.0	20562.	18169.
2400	24NOV2018	7.0	0.0	20562.	18182.
2400	25NOV2018	0.0	0.0	20562.	18160.
2400	26NOV2018	0.0	0.0	20562.	18160.
2400	27NOV2018	0.0	0.0	20562.	18160.
2400	28NOV2018	13.0	0.0	20562.	18186.
2400	29NOV2018	11.0	0.0	20562.	18208.
2400	30NOV2018	0.0	0.0	20562.	18208.
2400	01DEC2018	0.0	0.0	20562.	18208.
2400	02DEC2018	0.0	0.0	20562.	18199.
2400	03DEC2018	0.0	0.0	20562.	18195.
2400	04DEC2018	2.0	0.0	20562.	18199.
2400	05DEC2018	0.0	0.0	20562.	18199.
2400	06DEC2018	0.0	0.0	20562.	18199.
2400	07DEC2018	0.0	0.0	20562.	18199.
2400	08DEC2018	0.0	0.0	20562.	18195.
2400	09DEC2018	0.0	0.0	20562.	18195.
2400	10DEC2018	9.0	0.0	20562.	18213.
2400	11DEC2018	0.0	0.0	20562.	18195.
2400	12DEC2018	0.0	0.0	20562.	18191.
2400	13DEC2018	0.0	0.0	20562.	18191.
2400	14DEC2018	0.0	0.0	20562.	18191.
2400	15DEC2018	0.0	0.0	20562.	18186.
2400	16DEC2018	36.0	0.0	20562.	18257.
2400	17DEC2018	0.0	0.0	20562.	18213.
2400	18DEC2018	64.0	0.0	20562.	18340.
2400	19DEC2018	0.0	0.0	20562.	18208.
2400	20DEC2018	0.0	0.0	20562.	18208.
2400	21DEC2018	0.0	0.0	20562.	18199.
2400	22DEC2018	0.0	0.0	20562.	18199.
2400	23DEC2018	3.0	0.0	20562.	18204.
2400	24DEC2018	39.0	0.0	20562.	18283.
2400	25DEC2018	0.0	0.0	20562.	18265.
2400	26DEC2018	0.0	0.0	20562.	18199.
2400	27DEC2018	0.0	0.0	20562.	18195.
2400	28DEC2018	0.0	0.0	20562.	18208.
2400	29DEC2018	0.0	0.0	20562.	18186.
2400	30DEC2018	0.0	0.0	20562.	18186.
2400	31DEC2018	0.0	0.0	20562.	18186.

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TIME	DATE	LOS BANOS FLOW-RES IN cfs PER-AVER	LOS BANOS FLOW-RES OUT cfs PER-AVER	LOS BANOS TOP CON STOR ac-ft INST-VAL	LOS BANOS STOR-RES EOP ac-ft INST-VAL
2400	01JAN2019	0.0	0.0	20562.	18178.
2400	02JAN2019	4.0	0.0	20562.	18186.
2400	03JAN2019	0.0	0.0	20562.	18169.
2400	04JAN2019	0.0	0.0	20562.	18169.
2400	05JAN2019	0.0	0.0	20562.	18169.
2400	06JAN2019	0.0	0.0	20562.	18169.
2400	07JAN2019	15.0	0.0	20562.	18199.
2400	08JAN2019	0.0	0.0	20562.	18182.
2400	09JAN2019	31.0	0.0	20562.	18243.
2400	10JAN2019	0.0	0.0	20562.	18182.
2400	11JAN2019	0.0	0.0	20562.	18182.
2400	12JAN2019	0.0	0.0	20562.	18182.
2400	13JAN2019	73.0	0.0	20562.	18327.
2400	14JAN2019	0.0	0.0	20562.	18178.
2400	15JAN2019	0.0	0.0	20562.	18178.
2400	16JAN2019	4.0	0.0	20562.	18186.
2400	17JAN2019	40.0	0.0	20562.	18265.

2400	18JAN2019	40.0	31.0	20562.	18327.
2400	19JAN2019	27.0	31.0	20562.	18380.
2400	20JAN2019	0.0	0.0	20562.	18380.
2400	21JAN2019	0.0	0.0	20562.	18424.
2400	22JAN2019	6.0	0.0	20562.	18437.
2400	23JAN2019	9.0	0.0	20562.	18455.
2400	24JAN2019	11.0	0.0	20562.	18477.
2400	25JAN2019	9.0	0.0	20562.	18495.
2400	26JAN2019	5.0	0.0	20562.	18504.
2400	27JAN2019	7.0	0.0	20562.	18517.
2400	28JAN2019	7.0	0.0	20562.	18517.
2400	29JAN2019	0.0	0.0	20562.	18535.
2400	30JAN2019	0.0	0.0	20562.	18548.
2400	31JAN2019	0.0	0.0	20562.	18548.
2400	01FEB2019	0.0	0.0	20562.	18566.
2400	02FEB2019	0.0	0.0	20562.	18659.
2400	03FEB2019	99.0	0.0	20562.	18856.
2400	04FEB2019	620.0	0.0	20562.	20086.
2400	05FEB2019	1282.0	0.0	20562.	21153.
2400	06FEB2019	164.0	200.0	20562.	21081.
2400	07FEB2019	97.0	200.0	20562.	20877.
2400	08FEB2019	46.0	200.0	20562.	20571.
2400	09FEB2019	141.0	200.0	20562.	20454.
2400	10FEB2019	452.0	200.0	20562.	20953.
2400	11FEB2019	188.0	200.0	20562.	20929.
2400	12FEB2019	0.0	0.0	20562.	20929.
2400	13FEB2019	27.0	200.0	20562.	20477.
2400	14FEB2019	584.0	200.0	20562.	21239.
2400	15FEB2019	513.0	200.0	20562.	21860.

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TIME	DATE	LOS BANOS FLOW-RES IN cfs PER-AVER	LOS BANOS FLOW-RES OUT cfs PER-AVER	LOS BANOS TOP CON STOR ac-ft INST-VAL	LOS BANOS STOR-RES EOP ac-ft INST-VAL
2400	16FEB2019	374.0	200.0	20562.	22205.
2400	17FEB2019	242.0	200.0	20562.	22289.
2400	18FEB2019	143.0	200.0	20562.	22176.
2400	19FEB2019	89.0	200.0	20562.	21957.
2400	20FEB2019	68.0	200.0	20562.	21695.
2400	21FEB2019	76.0	200.0	20562.	21449.
2400	22FEB2019	39.0	200.0	20562.	21129.
2400	23FEB2019	33.0	200.0	20562.	20797.
2400	24FEB2019	32.0	200.0	20562.	20463.
2400	25FEB2019	25.0	150.0	20562.	20216.
2400	26FEB2019	25.0	100.0	20562.	20067.
2400	27FEB2019	21.0	100.0	20562.	19910.
2400	28FEB2019	0.0	0.0	20562.	19910.
2400	01MAR2019	21.0	0.0	20562.	19882.
2400	02MAR2019	35.0	0.0	20562.	19952.
2400	03MAR2019	37.0	0.0	20562.	20026.
2400	04MAR2019	28.0	0.0	20562.	20081.
2400	05MAR2019	30.0	0.0	20562.	20141.
2400	06MAR2019	54.0	0.0	20562.	20248.
2400	07MAR2019	123.0	0.0	20562.	20491.
2400	08MAR2019	97.0	0.0	20562.	20684.
2400	09MAR2019	64.0	0.0	20562.	20811.
2400	10MAR2019	62.0	0.0	20562.	20934.
2400	11MAR2019	65.0	0.0	20562.	21062.
2400	12MAR2019	50.0	0.0	20562.	21162.
2400	13MAR2019	34.0	0.0	20562.	21229.
2400	14MAR2019	31.0	0.0	20562.	21291.
2400	15MAR2019	27.0	0.0	20723.	21344.
2400	16MAR2019	24.0	0.0	20884.	21392.
2400	17MAR2019	24.0	0.0	21045.	21440.
2400	18MAR2019	17.0	0.0	21206.	21473.
2400	19MAR2019	20.0	0.0	21367.	21512.
2400	20MAR2019	43.0	0.0	21528.	21555.
2400	21MAR2019	29.0	0.0	21688.	21584.
2400	22MAR2019	24.0	0.0	21849.	21608.
2400	23MAR2019	87.0	0.0	22010.	21695.

2400 24MAR2019	0.0	0.0	22171.	21690.
2400 25MAR2019	10.0	0.0	22332.	21709.
2400 26MAR2019	15.0	0.0	22493.	21738.
2400 27MAR2019	10.0	0.0	22654.	21758.
2400 28MAR2019	15.0	0.0	22815.	21787.
2400 29MAR2019	10.0	0.0	22976.	21806.
2400 30MAR2019	5.0	0.0	23137.	21816.
2400 31MAR2019	15.0	0.0	23298.	21845.
2400 01APR2019	8.0	0.0	23459.	21860.
2400 02APR2019	2.0	0.0	23619.	21864.

1

TIME DATE	LOS BANOS FLOW-RES IN cfs PER-AVER	LOS BANOS FLOW-RES OUT cfs PER-AVER	LOS BANOS TOP CON STOR ac-ft INST-VAL	LOS BANOS STOR-RES EOP ac-ft INST-VAL
2400 03APR2019	42.0	0.0	23780.	21947.
2400 04APR2019	0.0	0.0	23941.	21889.
2400 05APR2019	10.0	0.0	24102.	21908.
2400 06APR2019	3.0	0.0	24263.	21913.
2400 07APR2019	8.0	0.0	24424.	21928.
2400 08APR2019	2.0	0.0	24585.	21932.
2400 09APR2019	5.0	0.0	24746.	21942.
2400 10APR2019	0.0	0.0	24907.	21937.
2400 11APR2019	0.0	0.0	25068.	21932.
2400 12APR2019	5.0	0.0	25229.	21942.
2400 13APR2019	0.0	0.0	25390.	21942.
2400 14APR2019	0.0	0.0	25551.	21937.
2400 15APR2019	3.0	0.0	25711.	21942.
2400 16APR2019	0.0	0.0	25872.	21937.
2400 17APR2019	3.0	0.0	26033.	21942.
2400 18APR2019	0.0	0.0	26194.	21942.
2400 19APR2019	3.0	0.0	26355.	21947.
2400 20APR2019	0.0	0.0	26516.	21942.
2400 21APR2019	0.0	0.0	26677.	21937.
2400 22APR2019	0.0	0.0	26838.	21937.
2400 23APR2019	0.0	0.0	26999.	21932.
2400 24APR2019	0.0	0.0	27160.	21932.
2400 25APR2019	3.0	0.0	-	21937.

***** Advisory: Inflows are a computed value. The inflows are computed from changes in storages which can produce erratic hourly results. Inflows can be averaged over several hours to produce a more realistic value.**

APPENDIX C

PUMPAGE FROM WELLS

SJREC GSA

updated 04/29/2019

ANNUAL PUMPAGE IN ACRE FEET FOR DEEP WELLS LOCATED IN THE CITY OF LOS BANOS URBAN GROWTH BOUNDARY AREA AND IN THE AREA SOUTH TO THE STATE AQUEDUCT
with and without the LOS BANOS CREEK SUB-AREA

SUMMARY TABLE A

DEEP WELL STUDY AREA	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Deep wells in City of Los Banos Urban Growth Boundary Sum A+B+C	14,797	14,754	8,628	8,314	14,153	15,861	11,633	7,064	13,779	9,540	8,286	8,668
Deep Wells O/S City of Los Banos Urban Growth Boundary Sum D+E	5,767	6,982	6,118	5,019	5,439	4,172	7,470	5,494	4,978	844	1,735	3,407
Deep Wells - LB Creek Sub-Area Sum F	4,580	4,642	5,392	6,330	5,247	4,256	2,812	6,846	6,139	1,970	1,173	1,393
Sum G	4,012	2,790	1,403	176	1,252	3,644	3,503	2,528	2,177	174	18	205
Deep Wells DMC/Aqueduct - LB Creek Sub-Area Sum H+I+J	1,319	4,397	5,239	1,024	226	4,303	3,100	4,340	1,776	2,859	0	211
Deep Wells others-SLWD LB Creek Sub-Area Sum L	6,006	9,058	9,495	7,910	8,770	8,466	6,439	7,726	7,446	4,380	1,309	4,190
Sum A+B+C+D+E	20,564	21,736	14,745	13,333	19,591	20,033	19,102	12,558	18,757	10,384	10,021	12,076
Sum F+G+H+I+J+L	15,917	20,886	21,530	15,440	15,495	20,670	15,855	21,440	17,538	9,383	2,500	5,999
Total (AF)	36,482	42,622	36,275	28,773	35,086	40,702	34,957	33,998	36,295	19,767	12,521	18,074
Sum A+B+C+D+E (%)	56%	51%	41%	46%	56%	49%	55%	37%	52%	53%	80%	67%
Sum F+G+H+I+J+L (%)	44%	49%	59%	54%	44%	51%	45%	63%	48%	47%	20%	33%

SUMMARY TABLE B

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Total - CITY (A)	9113	8876	877	809	7718	8313	7955	0	6057	6622	7412	7659
Total - PRIVATE (IN URBAN) (B)	4,221	4,957	6,460	6,916	6,000	6,058	2,161	5,971	6,852	2,789	867	973
Total - PRIVATE (O/S URBAN) (E+F+H)	9,643	13,161	13,190	11,275	10,372	9,062	9,256	12,103	10,748	2,814	2,902	4,793
Total - CCID (IN URBAN) (C)	1,463	922	1,291	589	435	1,490	1,517	1,093	870	130	7	36
Total - CCID (IN URBAN) (D)	1,314	930	991	510	314	1,206	1,026	717	966	0	6	14
Total - CCID (O/S URBAN) (G)	4,012	2,790	1,403	176	1,252	3,644	3,503	2,528	2,177	174	18	205
Total - PRIVATE OTHERS (O/S URBAN) (I+J+L)	6,716	10,986	12,062	8,499	8,996	10,929	9,539	11,586	8,625	7,239	1,309	4,394
Total (AF)	36,482	42,622	36,275	28,773	35,086	40,702	34,957	33,998	36,295	19,767	12,521	18,074

NOTES:

A. City of Los Banos Wells

B. Private Deep Wells within the City of Los Banos Urban Growth Boundary

C. CCID Deep Wells within the City of Los Banos Urban Growth Boundary

D. CCID Deep Wells O/S the City of Los Banos Urban Growth Boundary

E. Private Deep Wells O/S the City of Los Banos Urban Growth Boundary

F. Private Deep Wells O/S the City of Los Banos Urban Growth Boundary
Los Banos Creek Sub-Area

G. CCID Deep Wells O/S the City of Los Banos Urban Growth Boundary
Los Banos Creek Sub-Area

H. Deep Wells - DMC Pumpers O/S the City of Los Banos Urban Growth Boundary
Los Banos Creek Sub-Area

I. Deep Wells - DMC Pumpers - SLWD O/S the City of Los Banos Urban Growth Boundary
Los Banos Creek Sub-Area

J. Deep Wells Aqueduct Pumpers - SLWD O/S the City of Los Banos Urban Growth Boundary
Los Banos Creek Sub-Area

L. Deep Wells - others-SLWD - O/S the City of Los Banos Urban Growth Boundary

APPENDIX D

RESULTS OF CHEMICAL ANALYSES OF WATER FROM CITY WELLS

ASSOCIATES

Certificate of Analysis

Sample ID: A7G1000-01
Sampled By: Ryan Harris
Sample Description: Well 1

Sample Date - Time: 07/12/17 - 08:53
Matrix: Drinking Water
Sample Type: Grab

Field Data: pH=7.07 Temp=25.9 °C

BSK Associates Laboratory Fresno

General Chemistry

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Aggressive Index		**12**				A709340	07/24/17	07/24/17	
Alkalinity as CaCO3	SM 2320B	**190**	3.0	mg/L	1	A708761	07/12/17	07/12/17	
Bicarbonate as CaCO3	SM 2320B	**190**	3.0	mg/L	1	A708761	07/12/17	07/12/17	
Carbonate as CaCO3	SM 2320B	ND	3.0	mg/L	1	A708761	07/12/17	07/12/17	
Hydroxide as CaCO3	SM 2320B	ND	3.0	mg/L	1	A708761	07/12/17	07/12/17	
Chloride	EPA 300.0	**97**	1.0	mg/L	1	A708812	07/13/17	07/13/17	
Color, Apparent	SM 2120B	ND	5.0	CU	1	A708680	07/12/17 18:51	07/12/17	
Conductivity @ 25C	SM 2510B	**820**	1.0	umhos/cm	1	A708761	07/12/17	07/12/17	
Fluoride	EPA 300.0	**0.12**	0.10	mg/L	1	A708812	07/13/17	07/13/17	
Hexavalent Chromium	EPA 218.7	**35**	0.25	ug/L	5	A708827	07/13/17	07/13/17	
Langelier Index	SM 2330B	**0.35**				A709340	07/24/17	07/24/17	
MBAS, Calculated as LAS, mol wt 340	SM 5540C	ND	0.050	mg/L	1	A708807	07/12/17 20:00	07/12/17	
Nitrate + Nitrite as N	EPA 300.0	**4.0**	0.23	mg/L	1	A708812	07/13/17 10:53	07/13/17	
Nitrate as N	EPA 300.0	**4.0**	0.23	mg/L	1	A708812	07/13/17 10:53	07/13/17	
Nitrite as N	EPA 300.0	ND	0.050	mg/L	1	A708812	07/13/17 10:53	07/13/17	
Threshold Odor	SM 2150B	ND	1.0	T.O.N.	1	A708607	07/12/17 18:25	07/12/17	
Perchlorate	EPA 314.0	ND	2.0	ug/L	1	A709365	07/25/17	07/25/17	
pH (1)	SM 4500-H+ B	**7.9**		pH Units	1	A708761	07/12/17	07/12/17	
pH Temperature in °C		**23.4**							
Sulfate as SO4	EPA 300.0	**73**	1.0	mg/L	1	A708812	07/13/17	07/13/17	
Total Dissolved Solids	SM 2540C	**480**	5.0	mg/L	1	A708826	07/13/17	07/17/17	
Turbidity	SM 2130B	ND	0.10	NTU	1	A708680	07/12/17 19:16	07/12/17	

Metals

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Aluminum	EPA 200.7	ND	0.050	mg/L	1	A708842	07/13/17	07/21/17	
Antimony	EPA 200.8	ND	2.0	ug/L	1	A708842	07/13/17	07/20/17	
Arsenic	EPA 200.8	**6.1**	2.0	ug/L	1	A708842	07/13/17	07/20/17	
Barium	EPA 200.7	**0.073**	0.050	mg/L	1	A708842	07/13/17	07/21/17	
Beryllium	EPA 200.8	ND	1.0	ug/L	1	A708842	07/13/17	07/20/17	
Cadmium	EPA 200.8	ND	1.0	ug/L	1	A708842	07/13/17	07/20/17	
Calcium	EPA 200.7	**54**	0.10	mg/L	1	A708842	07/13/17	07/21/17	MS1.4
Chromium	EPA 200.8	**35**	10	ug/L	1	A708842	07/13/17	07/20/17	
Copper	EPA 200.8	ND	5.0	ug/L	1	A708842	07/13/17	07/20/17	
Iron	EPA 200.7	ND	0.030	mg/L	1	A708842	07/13/17	07/21/17	
Lead	EPA 200.8	ND	1.0	ug/L	1	A708842	07/13/17	07/20/17	
Magnesium	EPA 200.7	**27**	0.10	mg/L	1	A708842	07/13/17	07/21/17	
Manganese	EPA 200.7	ND	0.010	mg/L	1	A708842	07/13/17	07/21/17	
Mercury	EPA 200.8	ND	0.20	ug/L	1	A708842	07/13/17	07/20/17	CV0.0
Nickel	EPA 200.8	ND	10	ug/L	1	A708842	07/13/17	07/20/17	
Potassium	EPA 200.7	**2.5**	2.0	mg/L	1	A708842	07/13/17	07/21/17	
Selenium	EPA 200.8	**4.1**	2.0	ug/L	1	A708842	07/13/17	07/20/17	

BSK ASSOCIATES

Certificate of Analysis

Sample ID: A7G1000-01
Sampled By: Ryan Harris
Sample Description: Well 1

Sample Date - Time: 07/12/17 - 08:53
Matrix: Drinking Water
Sample Type: Grab

Field Data: pH=7.07 Temp=25.9 °C

Metals

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Silver	EPA 200.8	ND	10	ug/L	1	A708842	07/13/17	07/20/17	
Sodium	EPA 200.7	**68**	1.0	mg/L	1	A708842	07/13/17	07/21/17	MS1.4
Thallium	EPA 200.8	ND	1.0	ug/L	1	A708842	07/13/17	07/20/17	
Hardness as CaCO3	SM 2340B	**240**	0.41	mg/L					
Zinc	EPA 200.7	ND	0.050	mg/L	1	A708842	07/13/17	07/21/17	

Radiological

Analyte	Method	Result	Units	Batch	Prepared	Analyzed	Qual
Gross Alpha	SM 7110C	**1.51**	pCi/L	A709096	07/19/17	07/20/17	
1.65 Sigma Uncertainty		**0.220**	±				
MDA95		**1.06**	pCi/L				

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
EDB and DBCP by GC-ECD									
Dibromochloropropane (DBCP)	EPA 504.1	ND	0.010	ug/L	1	A708902	07/14/17	07/14/17	
Ethylene Dibromide (EDB)	EPA 504.1	ND	0.020	ug/L	1	A708902	07/14/17	07/14/17	
Surrogate: 1-Br-2-Nitrobenzene	EPA 504.1	98 %	*Acceptable range: 70-130 %*						
EPA 505 - Simazine, Atrazine, and Alachlor Only									
Alachlor	EPA 505	ND	1.0	ug/L	1	A708902	07/14/17	07/14/17	
Atrazine	EPA 505	ND	0.50	ug/L	1	A708902	07/14/17	07/14/17	
Simazine	EPA 505	ND	1.0	ug/L	1	A708902	07/14/17	07/14/17	
Surrogate: 1-Br-2-Nitrobenzene	EPA 505	98 %	*Acceptable range: 70-130 %*						
Volatile Organics by GC-MS									
1,1,1,2-Tetrachloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,1,1-Trichloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,1,2,2-Tetrachloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,1,2-Trichloro-1,2,2-trifluoroethane	EPA 524.2	ND	10	ug/L	1	A708850	07/13/17	07/13/17	
1,1,2-Trichloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,1-Dichloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,1-Dichloroethene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,1-Dichloropropene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,2,3-Trichlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,2,4-Trichlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,2,4-Trimethylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,2-Dichlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,2-Dichloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,2-Dichloropropane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,3,5-Trimethylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,3-Dichlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	

BSK ASSOCIATES

Certificate of Analysis

Sample ID: A7G1000-01
Sampled By: Ryan Harris
Sample Description: Well 1

Sample Date - Time: 07/12/17 - 08:53
Matrix: Drinking Water
Sample Type: Grab

Field Data: pH=7.07 Temp=25.9 °C

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Volatile Organics by GC-MS									
1,3-Dichloropropane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,4-Dichlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
2,2-Dichloropropane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
2-Butanone	EPA 524.2	ND	5.0	ug/L	1	A708850	07/13/17	07/13/17	
2-Chlorotoluene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
2-Hexanone	EPA 524.2	ND	10	ug/L	1	A708850	07/13/17	07/13/17	
4-Chlorotoluene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
4-Methyl-2-pentanone	EPA 524.2	ND	5.0	ug/L	1	A708850	07/13/17	07/13/17	
Acetone	EPA 524.2	ND	10	ug/L	1	A708850	07/13/17	07/13/17	
Benzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Bromobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Bromochloromethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Bromodichloromethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Bromoform	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Bromomethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Carbon Tetrachloride	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Chlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Chloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Chloroform	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Chloromethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
cis-1,2-Dichloroethene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
cis-1,3-Dichloropropene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Dibromochloromethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Dibromomethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Dichlorodifluoromethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Dichloromethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Di-isopropyl ether (DIPE)	EPA 524.2	ND	3.0	ug/L	1	A708850	07/13/17	07/13/17	
Ethyl tert-Butyl Ether (ETBE)	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Ethylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Hexachlorobutadiene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Isopropylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
m,p-Xylenes	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Methyl-t-butyl ether	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Naphthalene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
n-Butylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
n-Propylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
o-Xylene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
p-Isopropyltoluene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
sec-Butylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Styrene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
tert-Amyl Methyl Ether (TAME)	EPA 524.2	ND	3.0	ug/L	1	A708850	07/13/17	07/13/17	
tert-Butyl alcohol (TBA)	EPA 524.2	ND	2.0	ug/L	1	A708850	07/13/17	07/13/17	
tert-Butylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	

BSK ASSOCIATES

Certificate of Analysis

Sample ID: A7G1000-01
Sampled By: Ryan Harris
Sample Description: Well 1

Sample Date - Time: 07/12/17 - 08:53
Matrix: Drinking Water
Sample Type: Grab

Field Data: pH=7.07 Temp=25.9 °C

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Volatile Organics by GC-MS									
Tetrachloroethene (PCE)	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Toluene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
trans-1,2-Dichloroethene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
trans-1,3-Dichloropropene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Trichloroethene (TCE)	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Trichlorofluoromethane	EPA 524.2	ND	5.0	ug/L	1	A708850	07/13/17	07/13/17	
Vinyl Chloride	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Surrogate: 1,2-Dichlorobenzene-d4	EPA 524.2	92 %	*Acceptable range: 70-130 %*						
Surrogate: Bromofluorobenzene	EPA 524.2	103 %	*Acceptable range: 70-130 %*						
Total 1,3-Dichloropropene		ND	0.50	ug/L					
Total Trihalomethanes		ND	0.50	ug/L					
Total Xylenes, EPA 524.2		ND	0.50	ug/L					

ASSOCIATES

Certificate of Analysis

Sample ID: A7G1000-02
Sampled By: Ryan Harris
Sample Description: Well 2

Sample Date - Time: 07/12/17 - 09:08
Matrix: Drinking Water
Sample Type: Grab

Field Data: pH=6.99 Temp=24.8 °C

BSK Associates Laboratory Fresno

General Chemistry

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Aggressive Index		**12**				A709340	07/24/17	07/24/17	
Alkalinity as CaCO3	SM 2320B	**180**	3.0	mg/L	1	A708761	07/12/17	07/12/17	
Bicarbonate as CaCO3	SM 2320B	**180**	3.0	mg/L	1	A708761	07/12/17	07/12/17	
Carbonate as CaCO3	SM 2320B	ND	3.0	mg/L	1	A708761	07/12/17	07/12/17	
Hydroxide as CaCO3	SM 2320B	ND	3.0	mg/L	1	A708761	07/12/17	07/12/17	
Chloride	EPA 300.0	**86**	1.0	mg/L	1	A708812	07/13/17	07/13/17	
Color, Apparent	SM 2120B	ND	5.0	CU	1	A708680	07/12/17 18:53	07/12/17	
Conductivity @ 25C	SM 2510B	**770**	1.0	umhos/cm	1	A708761	07/12/17	07/12/17	
Fluoride	EPA 300.0	**0.12**	0.10	mg/L	1	A708812	07/13/17	07/13/17	
Hexavalent Chromium	EPA 218.7	**34**	0.25	ug/L	5	A708827	07/13/17	07/13/17	
Langelier Index	SM 2330B	**0.40**				A709340	07/24/17	07/24/17	
MBAS, Calculated as LAS, mol wt 340	SM 5540C	ND	0.050	mg/L	1	A708807	07/12/17 20:00	07/12/17	
Nitrate + Nitrite as N	EPA 300.0	**4.2**	0.23	mg/L	1	A708812	07/13/17 11:05	07/13/17	
Nitrate as N	EPA 300.0	**4.2**	0.23	mg/L	1	A708812	07/13/17 11:05	07/13/17	
Nitrite as N	EPA 300.0	ND	0.050	mg/L	1	A708812	07/13/17 11:05	07/13/17	
Threshold Odor	SM 2150B	ND	1.0	T.O.N.	1	A708607	07/12/17 18:25	07/12/17	
Perchlorate	EPA 314.0	ND	2.0	ug/L	1	A709365	07/25/17	07/25/17	
pH (1)	SM 4500-H+ B	**8.0**		pH Units	1	A708761	07/12/17	07/12/17	
pH Temperature in °C		**23.4**							
Sulfate as SO4	EPA 300.0	**64**	1.0	mg/L	1	A708812	07/13/17	07/13/17	
Total Dissolved Solids	SM 2540C	**440**	5.0	mg/L	1	A708826	07/13/17	07/17/17	
Turbidity	SM 2130B	**0.42**	0.10	NTU	1	A708680	07/12/17 19:18	07/12/17	

Metals

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Aluminum	EPA 200.7	ND	0.050	mg/L	1	A708842	07/13/17	07/21/17	
Antimony	EPA 200.8	ND	2.0	ug/L	1	A708842	07/13/17	07/20/17	
Arsenic	EPA 200.8	**5.3**	2.0	ug/L	1	A708842	07/13/17	07/20/17	
Barium	EPA 200.7	**0.067**	0.050	mg/L	1	A708842	07/13/17	07/21/17	
Beryllium	EPA 200.8	ND	1.0	ug/L	1	A708842	07/13/17	07/20/17	CV0.0
Cadmium	EPA 200.8	ND	1.0	ug/L	1	A708842	07/13/17	07/20/17	
Calcium	EPA 200.7	**50**	0.10	mg/L	1	A708842	07/13/17	07/21/17	
Chromium	EPA 200.8	**34**	10	ug/L	1	A708842	07/13/17	07/20/17	
Copper	EPA 200.8	ND	5.0	ug/L	1	A708842	07/13/17	07/20/17	
Iron	EPA 200.7	ND	0.030	mg/L	1	A708842	07/13/17	07/21/17	
Lead	EPA 200.8	ND	1.0	ug/L	1	A708842	07/13/17	07/20/17	
Magnesium	EPA 200.7	**26**	0.10	mg/L	1	A708842	07/13/17	07/21/17	
Manganese	EPA 200.7	ND	0.010	mg/L	1	A708842	07/13/17	07/21/17	
Mercury	EPA 200.8	ND	0.20	ug/L	1	A708842	07/13/17	07/20/17	CV0.0
Nickel	EPA 200.8	ND	10	ug/L	1	A708842	07/13/17	07/20/17	
Potassium	EPA 200.7	**2.5**	2.0	mg/L	1	A708842	07/13/17	07/21/17	
Selenium	EPA 200.8	ND	2.0	ug/L	1	A708842	07/13/17	07/20/17	

ASSOCIATES

Certificate of Analysis

Sample ID: A7G1000-02
Sampled By: Ryan Harris
Sample Description: Well 2

Sample Date - Time: 07/12/17 - 09:08
Matrix: Drinking Water
Sample Type: Grab

Field Data: pH=6.99 Temp=24.8 °C

Metals

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Silver	EPA 200.8	ND	10	ug/L	1	A708842	07/13/17	07/20/17	
Sodium	EPA 200.7	**66**	1.0	mg/L	1	A708842	07/13/17	07/21/17	
Thallium	EPA 200.8	ND	1.0	ug/L	1	A708842	07/13/17	07/20/17	
Hardness as CaCO3	SM 2340B	**230**	0.41	mg/L					
Zinc	EPA 200.7	ND	0.050	mg/L	1	A708842	07/13/17	07/21/17	

Radiological

Analyte	Method	Result	Units	Batch	Prepared	Analyzed	Qual
Gross Alpha	SM 7110C	**2.01**	pCi/L	A709096	07/19/17	07/20/17	
1.65 Sigma Uncertainty		**0.246**	±				
MDA95		**1.06**	pCi/L				

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
EDB and DBCP by GC-ECD									
Dibromochloropropane (DBCP)	EPA 504.1	ND	0.010	ug/L	1	A708902	07/14/17	07/14/17	
Ethylene Dibromide (EDB)	EPA 504.1	ND	0.020	ug/L	1	A708902	07/14/17	07/14/17	
Surrogate: 1-Br-2-Nitrobenzene	EPA 504.1	104 %	*Acceptable range: 70-130 %*						
EPA 505 - Simazine, Atrazine, and Alachlor Only									
Alachlor	EPA 505	ND	1.0	ug/L	1	A708902	07/14/17	07/14/17	
Atrazine	EPA 505	ND	0.50	ug/L	1	A708902	07/14/17	07/14/17	
Simazine	EPA 505	ND	1.0	ug/L	1	A708902	07/14/17	07/14/17	
Surrogate: 1-Br-2-Nitrobenzene	EPA 505	104 %	*Acceptable range: 70-130 %*						
Volatile Organics by GC-MS									
1,1,1,2-Tetrachloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,1,1-Trichloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,1,2,2-Tetrachloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,1,2-Trichloro-1,2,2-trifluoroethane	EPA 524.2	ND	10	ug/L	1	A708850	07/13/17	07/13/17	
1,1,2-Trichloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,1-Dichloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,1-Dichloroethene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,1-Dichloropropene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,2,3-Trichlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,2,4-Trichlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,2,4-Trimethylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,2-Dichlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,2-Dichloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,2-Dichloropropane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,3,5-Trimethylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,3-Dichlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	

BSK ASSOCIATES

Certificate of Analysis

Sample ID: A7G1000-02
Sampled By: Ryan Harris
Sample Description: Well 2

Sample Date - Time: 07/12/17 - 09:08
Matrix: Drinking Water
Sample Type: Grab

Field Data: pH=6.99 Temp=24.8 °C

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Volatile Organics by GC-MS									
1,3-Dichloropropane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,4-Dichlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
2,2-Dichloropropane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
2-Butanone	EPA 524.2	ND	5.0	ug/L	1	A708850	07/13/17	07/13/17	
2-Chlorotoluene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
2-Hexanone	EPA 524.2	ND	10	ug/L	1	A708850	07/13/17	07/13/17	
4-Chlorotoluene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
4-Methyl-2-pentanone	EPA 524.2	ND	5.0	ug/L	1	A708850	07/13/17	07/13/17	
Acetone	EPA 524.2	ND	10	ug/L	1	A708850	07/13/17	07/13/17	
Benzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Bromobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Bromochloromethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Bromodichloromethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Bromoform	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Bromomethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Carbon Tetrachloride	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Chlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Chloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Chloroform	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Chloromethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
cis-1,2-Dichloroethene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
cis-1,3-Dichloropropene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Dibromochloromethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Dibromomethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Dichlorodifluoromethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Dichloromethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Di-isopropyl ether (DIPE)	EPA 524.2	ND	3.0	ug/L	1	A708850	07/13/17	07/13/17	
Ethyl tert-Butyl Ether (ETBE)	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Ethylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Hexachlorobutadiene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Isopropylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
m,p-Xylenes	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Methyl-t-butyl ether	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Naphthalene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
n-Butylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
n-Propylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
o-Xylene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
p-Isopropyltoluene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
sec-Butylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Styrene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
tert-Amyl Methyl Ether (TAME)	EPA 524.2	ND	3.0	ug/L	1	A708850	07/13/17	07/13/17	
tert-Butyl alcohol (TBA)	EPA 524.2	ND	2.0	ug/L	1	A708850	07/13/17	07/13/17	
tert-Butylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	

BSK ASSOCIATES

Certificate of Analysis

Sample ID: A7G1000-02
Sampled By: Ryan Harris
Sample Description: Well 2

Sample Date - Time: 07/12/17 - 09:08
Matrix: Drinking Water
Sample Type: Grab

Field Data: pH=6.99 Temp=24.8 °C

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Volatile Organics by GC-MS									
Tetrachloroethene (PCE)	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Toluene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
trans-1,2-Dichloroethene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
trans-1,3-Dichloropropene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Trichloroethene (TCE)	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Trichlorofluoromethane	EPA 524.2	ND	5.0	ug/L	1	A708850	07/13/17	07/13/17	
Vinyl Chloride	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Surrogate: 1,2-Dichlorobenzene-d4	EPA 524.2	104 %	*Acceptable range: 70-130 %*						
Surrogate: Bromofluorobenzene	EPA 524.2	100 %	*Acceptable range: 70-130 %*						
Total 1,3-Dichloropropene		ND	0.50	ug/L					
Total Trihalomethanes		ND	0.50	ug/L					
Total Xylenes, EPA 524.2		ND	0.50	ug/L					

BSK ASSOCIATES

Certificate of Analysis

Sample ID: A7G1000-03
Sampled By: Ryan Harris
Sample Description: Well 3

Sample Date - Time: 07/12/17 - 09:23
Matrix: Drinking Water
Sample Type: Grab

Field Data: pH=7.05 Temp=27.1 °C

BSK Associates Laboratory Fresno

General Chemistry

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Aggressive Index		**12**				A709340	07/24/17	07/24/17	
Alkalinity as CaCO3	SM 2320B	**210**	3.0	mg/L	1	A708761	07/12/17	07/12/17	
Bicarbonate as CaCO3	SM 2320B	**210**	3.0	mg/L	1	A708761	07/12/17	07/12/17	
Carbonate as CaCO3	SM 2320B	ND	3.0	mg/L	1	A708761	07/12/17	07/12/17	
Hydroxide as CaCO3	SM 2320B	ND	3.0	mg/L	1	A708761	07/12/17	07/12/17	
Chloride	EPA 300.0	**120**	1.0	mg/L	1	A708812	07/13/17	07/13/17	
Color, Apparent	SM 2120B	ND	5.0	CU	1	A708680	07/12/17 18:54	07/12/17	
Conductivity @ 25C	SM 2510B	**970**	1.0	umhos/cm	1	A708761	07/12/17	07/12/17	
Fluoride	EPA 300.0	**0.11**	0.10	mg/L	1	A708812	07/13/17	07/13/17	
Hexavalent Chromium	EPA 218.7	**33**	0.25	ug/L	5	A708827	07/13/17	07/13/17	
Langelier Index	SM 2330B	**0.47**				A709340	07/24/17	07/24/17	
MBAS, Calculated as LAS, mol wt 340	SM 5540C	ND	0.050	mg/L	1	A708807	07/12/17 20:00	07/12/17	
Nitrate + Nitrite as N	EPA 300.0	**6.3**	0.23	mg/L	1	A708812	07/13/17 11:40	07/13/17	
Nitrate as N	EPA 300.0	**6.3**	0.23	mg/L	1	A708812	07/13/17 11:40	07/13/17	
Nitrite as N	EPA 300.0	ND	0.050	mg/L	1	A708812	07/13/17 11:40	07/13/17	
Threshold Odor	SM 2150B	ND	1.0	T.O.N.	1	A708607	07/12/17 18:25	07/12/17	
Perchlorate	EPA 314.0	ND	2.0	ug/L	1	A709365	07/25/17	07/25/17	
pH (1)	SM 4500-H+ B	**7.9**		pH Units	1	A708761	07/12/17	07/12/17	
pH Temperature in °C		**23.3**							
Sulfate as SO4	EPA 300.0	**91**	1.0	mg/L	1	A708812	07/13/17	07/13/17	
Total Dissolved Solids	SM 2540C	**580**	5.0	mg/L	1	A708826	07/13/17	07/17/17	
Turbidity	SM 2130B	**0.11**	0.10	NTU	1	A708680	07/12/17 19:19	07/12/17	

Metals

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Aluminum	EPA 200.7	ND	0.050	mg/L	1	A708842	07/13/17	07/21/17	
Antimony	EPA 200.8	ND	2.0	ug/L	1	A708842	07/13/17	07/20/17	
Arsenic	EPA 200.8	**4.7**	2.0	ug/L	1	A708842	07/13/17	07/20/17	
Barium	EPA 200.7	**0.080**	0.050	mg/L	1	A708842	07/13/17	07/21/17	
Beryllium	EPA 200.8	ND	1.0	ug/L	1	A708842	07/13/17	07/20/17	CV0.0
Cadmium	EPA 200.8	ND	1.0	ug/L	1	A708842	07/13/17	07/20/17	
Calcium	EPA 200.7	**66**	0.10	mg/L	1	A708842	07/13/17	07/21/17	
Chromium	EPA 200.8	**32**	10	ug/L	1	A708842	07/13/17	07/20/17	
Copper	EPA 200.8	ND	5.0	ug/L	1	A708842	07/13/17	07/20/17	
Iron	EPA 200.7	ND	0.030	mg/L	1	A708842	07/13/17	07/21/17	
Lead	EPA 200.8	ND	1.0	ug/L	1	A708842	07/13/17	07/20/17	
Magnesium	EPA 200.7	**34**	0.10	mg/L	1	A708842	07/13/17	07/21/17	
Manganese	EPA 200.7	ND	0.010	mg/L	1	A708842	07/13/17	07/21/17	
Mercury	EPA 200.8	ND	0.20	ug/L	1	A708842	07/13/17	07/20/17	CV0.0
Nickel	EPA 200.8	ND	10	ug/L	1	A708842	07/13/17	07/20/17	
Potassium	EPA 200.7	**2.6**	2.0	mg/L	1	A708842	07/13/17	07/21/17	
Selenium	EPA 200.8	ND	2.0	ug/L	1	A708842	07/13/17	07/20/17	

BSK ASSOCIATES

Certificate of Analysis

Sample ID: A7G1000-03
Sampled By: Ryan Harris
Sample Description: Well 3

Sample Date - Time: 07/12/17 - 09:23
Matrix: Drinking Water
Sample Type: Grab

Field Data: pH=7.05 Temp=27.1 °C

Metals

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Silver	EPA 200.8	ND	10	ug/L	1	A708842	07/13/17	07/20/17	
Sodium	EPA 200.7	**83**	1.0	mg/L	1	A708842	07/13/17	07/21/17	
Thallium	EPA 200.8	ND	1.0	ug/L	1	A708842	07/13/17	07/20/17	
Hardness as CaCO3	SM 2340B	**300**	0.41	mg/L					
Zinc	EPA 200.7	ND	0.050	mg/L	1	A708842	07/13/17	07/21/17	

Radiological

Analyte	Method	Result	Units	Batch	Prepared	Analyzed	Qual
Gross Alpha	SM 7110C	**3.02**	pCi/L	A709096	07/19/17	07/20/17	
1.65 Sigma Uncertainty		**0.291**	±				
MDA95		**1.06**	pCi/L				

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
EDB and DBCP by GC-ECD									
Dibromochloropropane (DBCP)	EPA 504.1	ND	0.010	ug/L	1	A708902	07/14/17	07/14/17	
Ethylene Dibromide (EDB)	EPA 504.1	ND	0.020	ug/L	1	A708902	07/14/17	07/14/17	
Surrogate: 1-Br-2-Nitrobenzene	EPA 504.1	106 %	*Acceptable range: 70-130 %*						
EPA 505 - Simazine, Atrazine, and Alachlor Only									
Alachlor	EPA 505	ND	1.0	ug/L	1	A708902	07/14/17	07/14/17	
Atrazine	EPA 505	ND	0.50	ug/L	1	A708902	07/14/17	07/14/17	
Simazine	EPA 505	ND	1.0	ug/L	1	A708902	07/14/17	07/14/17	
Surrogate: 1-Br-2-Nitrobenzene	EPA 505	106 %	*Acceptable range: 70-130 %*						
Volatile Organics by GC-MS									
1,1,1,2-Tetrachloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,1,1-Trichloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,1,2,2-Tetrachloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,1,2-Trichloro-1,2,2-trifluoroethane	EPA 524.2	ND	10	ug/L	1	A708850	07/13/17	07/13/17	
1,1,2-Trichloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,1-Dichloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,1-Dichloroethene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,1-Dichloropropene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,2,3-Trichlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,2,4-Trichlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,2,4-Trimethylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,2-Dichlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,2-Dichloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,2-Dichloropropane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,3,5-Trimethylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,3-Dichlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	

ASSOCIATES

Certificate of Analysis

Sample ID: A7G1000-03
Sampled By: Ryan Harris
Sample Description: Well 3

Sample Date - Time: 07/12/17 - 09:23
Matrix: Drinking Water
Sample Type: Grab

Field Data: pH=7.05 Temp=27.1 °C

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Volatile Organics by GC-MS									
1,3-Dichloropropane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,4-Dichlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
2,2-Dichloropropane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
2-Butanone	EPA 524.2	ND	5.0	ug/L	1	A708850	07/13/17	07/13/17	
2-Chlorotoluene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
2-Hexanone	EPA 524.2	ND	10	ug/L	1	A708850	07/13/17	07/13/17	
4-Chlorotoluene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
4-Methyl-2-pentanone	EPA 524.2	ND	5.0	ug/L	1	A708850	07/13/17	07/13/17	
Acetone	EPA 524.2	ND	10	ug/L	1	A708850	07/13/17	07/13/17	
Benzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Bromobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Bromochloromethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Bromodichloromethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Bromoform	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Bromomethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Carbon Tetrachloride	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Chlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Chloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Chloroform	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Chloromethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
cis-1,2-Dichloroethene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
cis-1,3-Dichloropropene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Dibromochloromethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Dibromomethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Dichlorodifluoromethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Dichloromethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Di-isopropyl ether (DIPE)	EPA 524.2	ND	3.0	ug/L	1	A708850	07/13/17	07/13/17	
Ethyl tert-Butyl Ether (ETBE)	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Ethylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Hexachlorobutadiene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Isopropylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
m,p-Xylenes	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Methyl-t-butyl ether	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Naphthalene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
n-Butylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
n-Propylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
o-Xylene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
p-Isopropyltoluene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
sec-Butylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Styrene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
tert-Amyl Methyl Ether (TAME)	EPA 524.2	ND	3.0	ug/L	1	A708850	07/13/17	07/13/17	
tert-Butyl alcohol (TBA)	EPA 524.2	ND	2.0	ug/L	1	A708850	07/13/17	07/13/17	
tert-Butylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	

ASSOCIATES

Certificate of Analysis

Sample ID: A7G1000-03
Sampled By: Ryan Harris
Sample Description: Well 3

Sample Date - Time: 07/12/17 - 09:23
Matrix: Drinking Water
Sample Type: Grab

Field Data: pH=7.05 Temp=27.1 °C

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Volatile Organics by GC-MS									
Tetrachloroethene (PCE)	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Toluene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
trans-1,2-Dichloroethene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
trans-1,3-Dichloropropene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Trichloroethene (TCE)	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Trichlorofluoromethane	EPA 524.2	ND	5.0	ug/L	1	A708850	07/13/17	07/13/17	
Vinyl Chloride	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Surrogate: 1,2-Dichlorobenzene-d4	EPA 524.2	94 %	*Acceptable range: 70-130 %*						
Surrogate: Bromofluorobenzene	EPA 524.2	102 %	*Acceptable range: 70-130 %*						
Total 1,3-Dichloropropene		ND	0.50	ug/L					
Total Trihalomethanes		ND	0.50	ug/L					
Total Xylenes, EPA 524.2		ND	0.50	ug/L					

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Certificate of Analysis

Sample ID: A7G1000-04
Sampled By: Ryan Harris
Sample Description: Well 5

Sample Date - Time: 07/12/17 - 12:25
Matrix: Drinking Water
Sample Type: Grab

Field Data: pH=7.06 Temp=28.5 °C

BSK Associates Laboratory Fresno

General Chemistry

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Aggressive Index		**13**				A709340	07/24/17	07/24/17	
Alkalinity as CaCO3	SM 2320B	**330**	3.0	mg/L	1	A708761	07/12/17	07/12/17	
Bicarbonate as CaCO3	SM 2320B	**330**	3.0	mg/L	1	A708761	07/12/17	07/12/17	
Carbonate as CaCO3	SM 2320B	ND	3.0	mg/L	1	A708761	07/12/17	07/12/17	
Hydroxide as CaCO3	SM 2320B	ND	3.0	mg/L	1	A708761	07/12/17	07/12/17	
Chloride	EPA 300.0	**230**	1.0	mg/L	1	A708813	07/13/17	07/13/17	
Color, Apparent	SM 2120B	ND	5.0	CU	1	A708680	07/12/17 18:55	07/12/17	
Conductivity @ 25C	SM 2510B	**1800**	1.0	umhos/cm	1	A708761	07/12/17	07/12/17	
Fluoride	EPA 300.0	**0.10**	0.10	mg/L	1	A708813	07/13/17	07/13/17	
Hexavalent Chromium	EPA 218.7	**43**	0.25	ug/L	5	A708827	07/13/17	07/13/17	
Langelier Index	SM 2330B	**1.0**				A709340	07/24/17	07/24/17	
MBAS, Calculated as LAS, mol wt 340	SM 5540C	ND	0.050	mg/L	1	A708807	07/12/17 20:00	07/12/17	
Nitrate + Nitrite as N	EPA 300.0	**8.0**	0.23	mg/L	1	A708813	07/13/17 14:26	07/13/17	
Nitrate as N	EPA 300.0	**8.0**	0.23	mg/L	1	A708813	07/13/17 14:26	07/13/17	
Nitrite as N	EPA 300.0	ND	0.050	mg/L	1	A708813	07/13/17 14:26	07/13/17	
Threshold Odor	SM 2150B	ND	1.0	T.O.N.	1	A708607	07/12/17 18:25	07/12/17	
Perchlorate	EPA 314.0	ND	4.0	ug/L	2	A709365	07/25/17	07/25/17	DL1.0
pH (1)	SM 4500-H+ B	**8.0**		pH Units	1	A708761	07/12/17	07/12/17	
pH Temperature in °C		**23.3**							
Sulfate as SO4	EPA 300.0	**240**	1.0	mg/L	1	A708813	07/13/17	07/13/17	
Total Dissolved Solids	SM 2540C	**1100**	5.0	mg/L	1	A708826	07/13/17	07/17/17	
Turbidity	SM 2130B	**0.14**	0.10	NTU	1	A708680	07/12/17 19:20	07/12/17	

Metals

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Aluminum	EPA 200.7	ND	0.050	mg/L	1	A708842	07/13/17	07/21/17	
Antimony	EPA 200.8	ND	2.0	ug/L	1	A708842	07/13/17	07/20/17	
Arsenic	EPA 200.8	**5.9**	2.0	ug/L	1	A708842	07/13/17	07/20/17	
Barium	EPA 200.7	**0.10**	0.050	mg/L	1	A708842	07/13/17	07/21/17	
Beryllium	EPA 200.8	ND	1.0	ug/L	1	A708842	07/13/17	07/20/17	CV0.0
Cadmium	EPA 200.8	ND	1.0	ug/L	1	A708842	07/13/17	07/20/17	
Calcium	EPA 200.7	**120**	0.10	mg/L	1	A708842	07/13/17	07/21/17	
Chromium	EPA 200.8	**43**	10	ug/L	1	A708842	07/13/17	07/20/17	
Copper	EPA 200.8	**5.2**	5.0	ug/L	1	A708842	07/13/17	07/20/17	
Iron	EPA 200.7	ND	0.030	mg/L	1	A708842	07/13/17	07/21/17	
Lead	EPA 200.8	ND	1.0	ug/L	1	A708842	07/13/17	07/20/17	
Magnesium	EPA 200.7	**67**	0.10	mg/L	1	A708842	07/13/17	07/21/17	
Manganese	EPA 200.7	ND	0.010	mg/L	1	A708842	07/13/17	07/21/17	
Mercury	EPA 200.8	ND	0.20	ug/L	1	A708842	07/13/17	07/20/17	CV0.0
Nickel	EPA 200.8	ND	10	ug/L	1	A708842	07/13/17	07/20/17	
Potassium	EPA 200.7	**3.0**	2.0	mg/L	1	A708842	07/13/17	07/21/17	
Selenium	EPA 200.8	**3.3**	2.0	ug/L	1	A708842	07/13/17	07/20/17	

BSK ASSOCIATES

Certificate of Analysis

Sample ID: A7G1000-04
Sampled By: Ryan Harris
Sample Description: Well 5

Sample Date - Time: 07/12/17 - 12:25
Matrix: Drinking Water
Sample Type: Grab

Field Data: pH=7.06 Temp=28.5 °C

Metals

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Silver	EPA 200.8	ND	10	ug/L	1	A708842	07/13/17	07/20/17	
Sodium	EPA 200.7	**160**	1.0	mg/L	1	A708842	07/13/17	07/21/17	
Thallium	EPA 200.8	ND	1.0	ug/L	1	A708842	07/13/17	07/20/17	
Hardness as CaCO3	SM 2340B	**590**	0.41	mg/L					
Zinc	EPA 200.7	ND	0.050	mg/L	1	A708842	07/13/17	07/21/17	

Radiological

Analyte	Method	Result	Units	Batch	Prepared	Analyzed	Qual
Gross Alpha	SM 7110C	**9.06**	pCi/L	A709096	07/19/17	07/20/17	
1.65 Sigma Uncertainty		**0.479**	±				
MDA95		**1.06**	pCi/L				

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
EDB and DBCP by GC-ECD									
Dibromochloropropane (DBCP)	EPA 504.1	ND	0.010	ug/L	1	A708902	07/14/17	07/14/17	
Ethylene Dibromide (EDB)	EPA 504.1	ND	0.020	ug/L	1	A708902	07/14/17	07/14/17	
Surrogate: 1-Br-2-Nitrobenzene	EPA 504.1	107 %	*Acceptable range: 70-130 %*						
EPA 505 - Simazine, Atrazine, and Alachlor Only									
Alachlor	EPA 505	ND	1.0	ug/L	1	A708902	07/14/17	07/14/17	
Atrazine	EPA 505	ND	0.50	ug/L	1	A708902	07/14/17	07/14/17	
Simazine	EPA 505	ND	1.0	ug/L	1	A708902	07/14/17	07/14/17	
Surrogate: 1-Br-2-Nitrobenzene	EPA 505	107 %	*Acceptable range: 70-130 %*						
Volatile Organics by GC-MS									
1,1,1,2-Tetrachloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,1,1-Trichloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,1,2,2-Tetrachloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,1,2-Trichloro-1,2,2-trifluoroethane	EPA 524.2	ND	10	ug/L	1	A708850	07/13/17	07/13/17	
1,1,2-Trichloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,1-Dichloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,1-Dichloroethene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,1-Dichloropropene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,2,3-Trichlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,2,4-Trichlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,2,4-Trimethylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,2-Dichlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,2-Dichloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,2-Dichloropropane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,3,5-Trimethylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,3-Dichlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	

BSK ASSOCIATES

Certificate of Analysis

Sample ID: A7G1000-04
Sampled By: Ryan Harris
Sample Description: Well 5

Sample Date - Time: 07/12/17 - 12:25
Matrix: Drinking Water
Sample Type: Grab

Field Data: pH=7.06 Temp=28.5 °C

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Volatile Organics by GC-MS									
1,3-Dichloropropane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,4-Dichlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
2,2-Dichloropropane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
2-Butanone	EPA 524.2	ND	5.0	ug/L	1	A708850	07/13/17	07/13/17	
2-Chlorotoluene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
2-Hexanone	EPA 524.2	ND	10	ug/L	1	A708850	07/13/17	07/13/17	
4-Chlorotoluene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
4-Methyl-2-pentanone	EPA 524.2	ND	5.0	ug/L	1	A708850	07/13/17	07/13/17	
Acetone	EPA 524.2	ND	10	ug/L	1	A708850	07/13/17	07/13/17	
Benzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Bromobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Bromochloromethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Bromodichloromethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Bromoform	EPA 524.2	**0.53**	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Bromomethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Carbon Tetrachloride	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Chlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Chloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Chloroform	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Chloromethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
cis-1,2-Dichloroethene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
cis-1,3-Dichloropropene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Dibromochloromethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Dibromomethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Dichlorodifluoromethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Dichloromethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Di-isopropyl ether (DIPE)	EPA 524.2	ND	3.0	ug/L	1	A708850	07/13/17	07/13/17	
Ethyl tert-Butyl Ether (ETBE)	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Ethylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Hexachlorobutadiene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Isopropylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
m,p-Xylenes	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Methyl-t-butyl ether	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Naphthalene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
n-Butylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
n-Propylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
o-Xylene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
p-Isopropyltoluene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
sec-Butylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Styrene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
tert-Amyl Methyl Ether (TAME)	EPA 524.2	ND	3.0	ug/L	1	A708850	07/13/17	07/13/17	
tert-Butyl alcohol (TBA)	EPA 524.2	ND	2.0	ug/L	1	A708850	07/13/17	07/13/17	
tert-Butylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	

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Certificate of Analysis

Sample ID: A7G1000-04
Sampled By: Ryan Harris
Sample Description: Well 5

Sample Date - Time: 07/12/17 - 12:25
Matrix: Drinking Water
Sample Type: Grab

Field Data: pH=7.06 Temp=28.5 °C

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Volatile Organics by GC-MS									
Tetrachloroethene (PCE)	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Toluene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
trans-1,2-Dichloroethene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
trans-1,3-Dichloropropene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Trichloroethene (TCE)	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Trichlorofluoromethane	EPA 524.2	ND	5.0	ug/L	1	A708850	07/13/17	07/13/17	
Vinyl Chloride	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Surrogate: 1,2-Dichlorobenzene-d4	EPA 524.2	90 %	*Acceptable range: 70-130 %*						
Surrogate: Bromofluorobenzene	EPA 524.2	102 %	*Acceptable range: 70-130 %*						
Total 1,3-Dichloropropene		ND	0.50	ug/L					
Total Trihalomethanes		**0.53**	0.50	ug/L					
Total Xylenes, EPA 524.2		ND	0.50	ug/L					

ASSOCIATES

Certificate of Analysis

Sample ID: A7G1000-05
Sampled By: Ryan Harris
Sample Description: Well 6

Sample Date - Time: 07/12/17 - 11:06
Matrix: Drinking Water
Sample Type: Grab

Field Data: pH=6.99 Temp=27.0 °C

BSK Associates Laboratory Fresno

General Chemistry

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Aggressive Index		**12**				A709340	07/24/17	07/24/17	
Alkalinity as CaCO3	SM 2320B	**120**	3.0	mg/L	1	A708761	07/12/17	07/12/17	
Bicarbonate as CaCO3	SM 2320B	**120**	3.0	mg/L	1	A708761	07/12/17	07/12/17	
Carbonate as CaCO3	SM 2320B	ND	3.0	mg/L	1	A708761	07/12/17	07/12/17	
Hydroxide as CaCO3	SM 2320B	ND	3.0	mg/L	1	A708761	07/12/17	07/12/17	
Chloride	EPA 300.0	**100**	1.0	mg/L	1	A708813	07/13/17	07/13/17	
Color, Apparent	SM 2120B	ND	5.0	CU	1	A708680	07/12/17 18:56	07/12/17	
Conductivity @ 25C	SM 2510B	**680**	1.0	umhos/cm	1	A708761	07/12/17	07/12/17	
Fluoride	EPA 300.0	**0.12**	0.10	mg/L	1	A708813	07/13/17	07/13/17	
Hexavalent Chromium	EPA 218.7	**28**	0.25	ug/L	5	A708827	07/13/17	07/13/17	
Langelier Index	SM 2330B	**0.30**				A709340	07/24/17	07/24/17	
MBAS, Calculated as LAS, mol wt 340	SM 5540C	ND	0.050	mg/L	1	A708807	07/12/17 20:00	07/12/17	
Nitrate + Nitrite as N	EPA 300.0	**3.5**	0.23	mg/L	1	A708813	07/13/17 14:49	07/13/17	
Nitrate as N	EPA 300.0	**3.5**	0.23	mg/L	1	A708813	07/13/17 14:49	07/13/17	
Nitrite as N	EPA 300.0	ND	0.050	mg/L	1	A708813	07/13/17 14:49	07/13/17	
Threshold Odor	SM 2150B	ND	1.0	T.O.N.	1	A708607	07/12/17 18:25	07/12/17	
Perchlorate	EPA 314.0	ND	2.0	ug/L	1	A709365	07/25/17	07/25/17	
pH (1)	SM 4500-H+ B	**8.1**		pH Units	1	A708761	07/12/17	07/12/17	
pH Temperature in °C		**23.2**							
Sulfate as SO4	EPA 300.0	**50**	1.0	mg/L	1	A708813	07/13/17	07/13/17	
Total Dissolved Solids	SM 2540C	**380**	5.0	mg/L	1	A708826	07/13/17	07/17/17	
Turbidity	SM 2130B	ND	0.10	NTU	1	A708680	07/12/17 19:21	07/12/17	

Metals

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Aluminum	EPA 200.7	ND	0.050	mg/L	1	A708842	07/13/17	07/21/17	
Antimony	EPA 200.8	ND	2.0	ug/L	1	A708842	07/13/17	07/20/17	
Arsenic	EPA 200.8	**5.7**	2.0	ug/L	1	A708842	07/13/17	07/20/17	
Barium	EPA 200.7	**0.10**	0.050	mg/L	1	A708842	07/13/17	07/21/17	
Beryllium	EPA 200.8	ND	1.0	ug/L	1	A708842	07/13/17	07/20/17	CV0.0
Cadmium	EPA 200.8	ND	1.0	ug/L	1	A708842	07/13/17	07/20/17	
Calcium	EPA 200.7	**47**	0.10	mg/L	1	A708842	07/13/17	07/21/17	
Chromium	EPA 200.8	**27**	10	ug/L	1	A708842	07/13/17	07/20/17	
Copper	EPA 200.8	ND	5.0	ug/L	1	A708842	07/13/17	07/20/17	
Iron	EPA 200.7	ND	0.030	mg/L	1	A708842	07/13/17	07/21/17	
Lead	EPA 200.8	ND	1.0	ug/L	1	A708842	07/13/17	07/20/17	
Magnesium	EPA 200.7	**23**	0.10	mg/L	1	A708842	07/13/17	07/21/17	
Manganese	EPA 200.7	ND	0.010	mg/L	1	A708842	07/13/17	07/21/17	
Mercury	EPA 200.8	ND	0.20	ug/L	1	A708842	07/13/17	07/20/17	CV0.0
Nickel	EPA 200.8	ND	10	ug/L	1	A708842	07/13/17	07/20/17	
Potassium	EPA 200.7	**2.4**	2.0	mg/L	1	A708842	07/13/17	07/21/17	
Selenium	EPA 200.8	ND	2.0	ug/L	1	A708842	07/13/17	07/20/17	

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Certificate of Analysis

Sample ID: A7G1000-05
Sampled By: Ryan Harris
Sample Description: Well 6

Sample Date - Time: 07/12/17 - 11:06
Matrix: Drinking Water
Sample Type: Grab

Field Data: pH=6.99 Temp=27.0 °C

Metals

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Silver	EPA 200.8	ND	10	ug/L	1	A708842	07/13/17	07/20/17	
Sodium	EPA 200.7	**47**	1.0	mg/L	1	A708842	07/13/17	07/21/17	
Thallium	EPA 200.8	ND	1.0	ug/L	1	A708842	07/13/17	07/20/17	
Hardness as CaCO3	SM 2340B	**210**	0.41	mg/L					
Zinc	EPA 200.7	ND	0.050	mg/L	1	A708842	07/13/17	07/21/17	

Radiological

Analyte	Method	Result	Units	Batch	Prepared	Analyzed	Qual
Gross Alpha	SM 7110C	ND	pCi/L	A709096	07/19/17	07/20/17	
1.65 Sigma Uncertainty		**0.156**	±				
MDA95		**1.06**	pCi/L				

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
EDB and DBCP by GC-ECD									
Dibromochloropropane (DBCP)	EPA 504.1	ND	0.010	ug/L	1	A708902	07/14/17	07/14/17	
Ethylene Dibromide (EDB)	EPA 504.1	ND	0.020	ug/L	1	A708902	07/14/17	07/14/17	
Surrogate: 1-Br-2-Nitrobenzene	EPA 504.1	105 %	*Acceptable range: 70-130 %*						
EPA 505 - Simazine, Atrazine, and Alachlor Only									
Alachlor	EPA 505	ND	1.0	ug/L	1	A708902	07/14/17	07/14/17	
Atrazine	EPA 505	ND	0.50	ug/L	1	A708902	07/14/17	07/14/17	
Simazine	EPA 505	ND	1.0	ug/L	1	A708902	07/14/17	07/14/17	
Surrogate: 1-Br-2-Nitrobenzene	EPA 505	105 %	*Acceptable range: 70-130 %*						

ASSOCIATES

Certificate of Analysis

Sample ID: A7G1000-06
Sampled By: Ryan Harris
Sample Description: Well 7

Sample Date - Time: 07/12/17 - 12:45
Matrix: Drinking Water
Sample Type: Grab

Field Data: pH=7.11 Temp=27.3 °C

BSK Associates Laboratory Fresno

General Chemistry

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Aggressive Index		**13**				A709340	07/24/17	07/24/17	
Alkalinity as CaCO3	SM 2320B	**340**	3.0	mg/L	1	A708761	07/12/17	07/12/17	
Bicarbonate as CaCO3	SM 2320B	**340**	3.0	mg/L	1	A708761	07/12/17	07/12/17	
Carbonate as CaCO3	SM 2320B	ND	3.0	mg/L	1	A708761	07/12/17	07/12/17	
Hydroxide as CaCO3	SM 2320B	ND	3.0	mg/L	1	A708761	07/12/17	07/12/17	
Chloride	EPA 300.0	**220**	1.0	mg/L	1	A708813	07/13/17	07/13/17	
Color, Apparent	SM 2120B	ND	5.0	CU	1	A708680	07/12/17 18:57	07/12/17	
Conductivity @ 25C	SM 2510B	**1700**	1.0	umhos/cm	1	A708761	07/12/17	07/12/17	
Fluoride	EPA 300.0	ND	0.10	mg/L	1	A708813	07/13/17	07/13/17	
Hexavalent Chromium	EPA 218.7	**42**	0.25	ug/L	5	A708827	07/13/17	07/13/17	
Langelier Index	SM 2330B	**0.98**				A709340	07/24/17	07/24/17	
MBAS, Calculated as LAS, mol wt 340	SM 5540C	ND	0.050	mg/L	1	A708807	07/12/17 20:00	07/12/17	
Nitrate + Nitrite as N	EPA 300.0	**7.6**	0.23	mg/L	1	A708813	07/13/17 15:01	07/13/17	
Nitrate as N	EPA 300.0	**7.6**	0.23	mg/L	1	A708813	07/13/17 15:01	07/13/17	
Nitrite as N	EPA 300.0	ND	0.050	mg/L	1	A708813	07/13/17 15:01	07/13/17	
Threshold Odor	SM 2150B	ND	1.0	T.O.N.	1	A708607	07/12/17 18:25	07/12/17	
Perchlorate	EPA 314.0	ND	4.0	ug/L	2	A709365	07/25/17	07/25/17	DL1.0
pH (1)	SM 4500-H+ B	**8.0**		pH Units	1	A708761	07/12/17	07/12/17	
pH Temperature in °C		**23.2**							
Sulfate as SO4	EPA 300.0	**240**	1.0	mg/L	1	A708813	07/13/17	07/13/17	
Total Dissolved Solids	SM 2540C	**1100**	5.0	mg/L	1	A708826	07/13/17	07/17/17	
Turbidity	SM 2130B	ND	0.10	NTU	1	A708680	07/12/17 19:22	07/12/17	

Metals

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Aluminum	EPA 200.7	ND	0.050	mg/L	1	A708842	07/13/17	07/21/17	
Antimony	EPA 200.8	ND	2.0	ug/L	1	A708842	07/13/17	07/20/17	
Arsenic	EPA 200.8	**5.3**	2.0	ug/L	1	A708842	07/13/17	07/20/17	
Barium	EPA 200.7	**0.060**	0.050	mg/L	1	A708842	07/13/17	07/21/17	
Beryllium	EPA 200.8	ND	1.0	ug/L	1	A708842	07/13/17	07/20/17	CV0.0
Cadmium	EPA 200.8	ND	1.0	ug/L	1	A708842	07/13/17	07/20/17	
Calcium	EPA 200.7	**110**	0.10	mg/L	1	A708842	07/13/17	07/21/17	
Chromium	EPA 200.8	**42**	10	ug/L	1	A708842	07/13/17	07/20/17	
Copper	EPA 200.8	ND	5.0	ug/L	1	A708842	07/13/17	07/20/17	
Iron	EPA 200.7	ND	0.030	mg/L	1	A708842	07/13/17	07/21/17	
Lead	EPA 200.8	ND	1.0	ug/L	1	A708842	07/13/17	07/20/17	
Magnesium	EPA 200.7	**63**	0.10	mg/L	1	A708842	07/13/17	07/21/17	
Manganese	EPA 200.7	ND	0.010	mg/L	1	A708842	07/13/17	07/21/17	
Mercury	EPA 200.8	ND	0.20	ug/L	1	A708842	07/13/17	07/20/17	CV0.0
Nickel	EPA 200.8	ND	10	ug/L	1	A708842	07/13/17	07/20/17	
Potassium	EPA 200.7	**2.9**	2.0	mg/L	1	A708842	07/13/17	07/21/17	
Selenium	EPA 200.8	**4.1**	2.0	ug/L	1	A708842	07/13/17	07/20/17	

BSK ASSOCIATES

Certificate of Analysis

Sample ID: A7G1000-06
Sampled By: Ryan Harris
Sample Description: Well 7

Sample Date - Time: 07/12/17 - 12:45
Matrix: Drinking Water
Sample Type: Grab

Field Data: pH=7.11 Temp=27.3 °C

Metals

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Silver	EPA 200.8	ND	10	ug/L	1	A708842	07/13/17	07/20/17	
Sodium	EPA 200.7	**160**	1.0	mg/L	1	A708842	07/13/17	07/21/17	
Thallium	EPA 200.8	ND	1.0	ug/L	1	A708842	07/13/17	07/20/17	
Hardness as CaCO3	SM 2340B	**530**	0.41	mg/L					
Zinc	EPA 200.7	ND	0.050	mg/L	1	A708842	07/13/17	07/21/17	

Radiological

Analyte	Method	Result	Units	Batch	Prepared	Analyzed	Qual
Gross Alpha	SM 7110C	**12.6**	pCi/L	A709096	07/19/17	07/20/17	
1.65 Sigma Uncertainty		**0.561**	±				
MDA95		**1.06**	pCi/L				

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
EDB and DBCP by GC-ECD									
Dibromochloropropane (DBCP)	EPA 504.1	ND	0.010	ug/L	1	A708902	07/14/17	07/14/17	
Ethylene Dibromide (EDB)	EPA 504.1	ND	0.020	ug/L	1	A708902	07/14/17	07/14/17	
Surrogate: 1-Br-2-Nitrobenzene	EPA 504.1	105 %	*Acceptable range: 70-130 %*						
EPA 505 - Simazine, Atrazine, and Alachlor Only									
Alachlor	EPA 505	ND	1.0	ug/L	1	A708902	07/14/17	07/14/17	
Atrazine	EPA 505	ND	0.50	ug/L	1	A708902	07/14/17	07/14/17	
Simazine	EPA 505	ND	1.0	ug/L	1	A708902	07/14/17	07/14/17	
Surrogate: 1-Br-2-Nitrobenzene	EPA 505	105 %	*Acceptable range: 70-130 %*						

ASSOCIATES

Certificate of Analysis

Sample ID: A7G1000-07
Sampled By: Ryan Harris
Sample Description: Well 9

Sample Date - Time: 07/12/17 - 12:03
Matrix: Drinking Water
Sample Type: Grab

Field Data: pH=7.05 Temp=28.4 °C

BSK Associates Laboratory Fresno

General Chemistry

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Aggressive Index		**12**				A709340	07/24/17	07/24/17	
Alkalinity as CaCO3	SM 2320B	**170**	3.0	mg/L	1	A708761	07/12/17	07/12/17	
Bicarbonate as CaCO3	SM 2320B	**170**	3.0	mg/L	1	A708761	07/12/17	07/12/17	
Carbonate as CaCO3	SM 2320B	ND	3.0	mg/L	1	A708761	07/12/17	07/12/17	
Hydroxide as CaCO3	SM 2320B	ND	3.0	mg/L	1	A708761	07/12/17	07/12/17	
Chloride	EPA 300.0	**84**	1.0	mg/L	1	A708813	07/13/17	07/13/17	
Color, Apparent	SM 2120B	ND	5.0	CU	1	A708680	07/12/17 18:58	07/12/17	
Conductivity @ 25C	SM 2510B	**760**	1.0	umhos/cm	1	A708761	07/12/17	07/12/17	
Fluoride	EPA 300.0	**0.11**	0.10	mg/L	1	A708813	07/13/17	07/13/17	
Hexavalent Chromium	EPA 218.7	**36**	0.25	ug/L	5	A708829	07/13/17	07/13/17	
Langelier Index	SM 2330B	**0.36**				A709340	07/24/17	07/24/17	
MBAS, Calculated as LAS, mol wt 340	SM 5540C	ND	0.050	mg/L	1	A708807	07/12/17 20:00	07/12/17	
Nitrate + Nitrite as N	EPA 300.0	**2.3**	0.23	mg/L	1	A708813	07/13/17 15:25	07/13/17	
Nitrate as N	EPA 300.0	**2.3**	0.23	mg/L	1	A708813	07/13/17 15:25	07/13/17	
Nitrite as N	EPA 300.0	ND	0.050	mg/L	1	A708813	07/13/17 15:25	07/13/17	
Threshold Odor	SM 2150B	ND	1.0	T.O.N.	1	A708607	07/12/17 18:25	07/12/17	
Perchlorate	EPA 314.0	ND	2.0	ug/L	1	A709365	07/25/17	07/25/17	
pH (1)	SM 4500-H+ B	**8.0**		pH Units	1	A708761	07/12/17	07/12/17	
pH Temperature in °C		**23.3**							
Sulfate as SO4	EPA 300.0	**78**	1.0	mg/L	1	A708813	07/13/17	07/13/17	
Total Dissolved Solids	SM 2540C	**440**	5.0	mg/L	1	A708826	07/13/17	07/17/17	
Turbidity	SM 2130B	**0.18**	0.10	NTU	1	A708680	07/12/17 19:23	07/12/17	

Metals

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Aluminum	EPA 200.7	ND	0.050	mg/L	1	A708842	07/13/17	07/21/17	
Antimony	EPA 200.8	ND	2.0	ug/L	1	A708842	07/13/17	07/20/17	
Arsenic	EPA 200.8	**7.2**	2.0	ug/L	1	A708842	07/13/17	07/20/17	
Barium	EPA 200.7	**0.083**	0.050	mg/L	1	A708842	07/13/17	07/21/17	
Beryllium	EPA 200.8	ND	1.0	ug/L	1	A708842	07/13/17	07/20/17	CV0.0
Cadmium	EPA 200.8	ND	1.0	ug/L	1	A708842	07/13/17	07/20/17	
Calcium	EPA 200.7	**48**	0.10	mg/L	1	A708842	07/13/17	07/21/17	
Chromium	EPA 200.8	**35**	10	ug/L	1	A708842	07/13/17	07/20/17	
Copper	EPA 200.8	ND	5.0	ug/L	1	A708842	07/13/17	07/20/17	
Iron	EPA 200.7	ND	0.030	mg/L	1	A708842	07/13/17	07/21/17	
Lead	EPA 200.8	ND	1.0	ug/L	1	A708842	07/13/17	07/20/17	
Magnesium	EPA 200.7	**27**	0.10	mg/L	1	A708842	07/13/17	07/21/17	
Manganese	EPA 200.7	ND	0.010	mg/L	1	A708842	07/13/17	07/21/17	
Mercury	EPA 200.8	ND	0.20	ug/L	1	A708842	07/13/17	07/20/17	CV0.0
Nickel	EPA 200.8	ND	10	ug/L	1	A708842	07/13/17	07/20/17	
Potassium	EPA 200.7	**2.5**	2.0	mg/L	1	A708842	07/13/17	07/21/17	
Selenium	EPA 200.8	ND	2.0	ug/L	1	A708842	07/13/17	07/20/17	

ASSOCIATES

Certificate of Analysis

Sample ID: A7G1000-07
Sampled By: Ryan Harris
Sample Description: Well 9

Sample Date - Time: 07/12/17 - 12:03
Matrix: Drinking Water
Sample Type: Grab

Field Data: pH=7.05 Temp=28.4 °C

Metals

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Silver	EPA 200.8	ND	10	ug/L	1	A708842	07/13/17	07/20/17	
Sodium	EPA 200.7	**63**	1.0	mg/L	1	A708842	07/13/17	07/21/17	
Thallium	EPA 200.8	ND	1.0	ug/L	1	A708842	07/13/17	07/20/17	
Hardness as CaCO3	SM 2340B	**230**	0.41	mg/L					
Zinc	EPA 200.7	ND	0.050	mg/L	1	A708842	07/13/17	07/21/17	

Radiological

Analyte	Method	Result	Units	Batch	Prepared	Analyzed	Qual
Gross Alpha	SM 7110C	**3.52**	pCi/L	A709096	07/19/17	07/20/17	
1.65 Sigma Uncertainty		**0.311**	±				
MDA95		**1.06**	pCi/L				

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
EDB and DBCP by GC-ECD									
Dibromochloropropane (DBCP)	EPA 504.1	ND	0.010	ug/L	1	A708902	07/14/17	07/14/17	
Ethylene Dibromide (EDB)	EPA 504.1	ND	0.020	ug/L	1	A708902	07/14/17	07/14/17	
Surrogate: 1-Br-2-Nitrobenzene	EPA 504.1	106 %	*Acceptable range: 70-130 %*						
EPA 505 - Simazine, Atrazine, and Alachlor Only									
Alachlor	EPA 505	ND	1.0	ug/L	1	A708902	07/14/17	07/14/17	
Atrazine	EPA 505	ND	0.50	ug/L	1	A708902	07/14/17	07/14/17	
Simazine	EPA 505	ND	1.0	ug/L	1	A708902	07/14/17	07/14/17	
Surrogate: 1-Br-2-Nitrobenzene	EPA 505	106 %	*Acceptable range: 70-130 %*						
Volatile Organics by GC-MS									
1,1,1,2-Tetrachloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,1,1-Trichloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,1,2,2-Tetrachloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,1,2-Trichloro-1,2,2-trifluoroethane	EPA 524.2	ND	10	ug/L	1	A708850	07/13/17	07/13/17	
1,1,2-Trichloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,1-Dichloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,1-Dichloroethene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,1-Dichloropropene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,2,3-Trichlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,2,4-Trichlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,2,4-Trimethylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,2-Dichlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,2-Dichloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,2-Dichloropropane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,3,5-Trimethylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,3-Dichlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	

ASSOCIATES

Certificate of Analysis

Sample ID: A7G1000-07
Sampled By: Ryan Harris
Sample Description: Well 9

Sample Date - Time: 07/12/17 - 12:03
Matrix: Drinking Water
Sample Type: Grab

Field Data: pH=7.05 Temp=28.4 °C

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Volatile Organics by GC-MS									
1,3-Dichloropropane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,4-Dichlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
2,2-Dichloropropane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
2-Butanone	EPA 524.2	ND	5.0	ug/L	1	A708850	07/13/17	07/13/17	
2-Chlorotoluene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
2-Hexanone	EPA 524.2	ND	10	ug/L	1	A708850	07/13/17	07/13/17	
4-Chlorotoluene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
4-Methyl-2-pentanone	EPA 524.2	ND	5.0	ug/L	1	A708850	07/13/17	07/13/17	
Acetone	EPA 524.2	ND	10	ug/L	1	A708850	07/13/17	07/13/17	
Benzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Bromobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Bromochloromethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Bromodichloromethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Bromoform	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Bromomethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Carbon Tetrachloride	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Chlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Chloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Chloroform	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Chloromethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
cis-1,2-Dichloroethene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
cis-1,3-Dichloropropene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Dibromochloromethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Dibromomethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Dichlorodifluoromethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Dichloromethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Di-isopropyl ether (DIPE)	EPA 524.2	ND	3.0	ug/L	1	A708850	07/13/17	07/13/17	
Ethyl tert-Butyl Ether (ETBE)	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Ethylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Hexachlorobutadiene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Isopropylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
m,p-Xylenes	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Methyl-t-butyl ether	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Naphthalene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
n-Butylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
n-Propylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
o-Xylene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
p-Isopropyltoluene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
sec-Butylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Styrene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
tert-Amyl Methyl Ether (TAME)	EPA 524.2	ND	3.0	ug/L	1	A708850	07/13/17	07/13/17	
tert-Butyl alcohol (TBA)	EPA 524.2	ND	2.0	ug/L	1	A708850	07/13/17	07/13/17	
tert-Butylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	

ASSOCIATES

Certificate of Analysis

Sample ID: A7G1000-07
Sampled By: Ryan Harris
Sample Description: Well 9

Sample Date - Time: 07/12/17 - 12:03
Matrix: Drinking Water
Sample Type: Grab

Field Data: pH=7.05 Temp=28.4 °C

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Volatile Organics by GC-MS									
Tetrachloroethene (PCE)	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Toluene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
trans-1,2-Dichloroethene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
trans-1,3-Dichloropropene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Trichloroethene (TCE)	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Trichlorofluoromethane	EPA 524.2	ND	5.0	ug/L	1	A708850	07/13/17	07/13/17	
Vinyl Chloride	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Surrogate: 1,2-Dichlorobenzene-d4	EPA 524.2	87 %	*Acceptable range:*	*70-130 %*					
Surrogate: Bromofluorobenzene	EPA 524.2	99 %	*Acceptable range:*	*70-130 %*					
Total 1,3-Dichloropropene		ND	0.50	ug/L					
Total Trihalomethanes		ND	0.50	ug/L					
Total Xylenes, EPA 524.2		ND	0.50	ug/L					

ASSOCIATES

Certificate of Analysis

Sample ID: A7G1000-08
Sampled By: Ryan Harris
Sample Description: Well 10

Sample Date - Time: 07/12/17 - 13:05
Matrix: Drinking Water
Sample Type: Grab

Field Data: pH=7.12 Temp=23.2 °C

BSK Associates Laboratory Fresno

General Chemistry

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Aggressive Index		**13**				A709340	07/24/17	07/24/17	
Alkalinity as CaCO3	SM 2320B	**270**	3.0	mg/L	1	A708803	07/12/17	07/12/17	
Bicarbonate as CaCO3	SM 2320B	**270**	3.0	mg/L	1	A708803	07/12/17	07/12/17	
Carbonate as CaCO3	SM 2320B	ND	3.0	mg/L	1	A708803	07/12/17	07/12/17	
Hydroxide as CaCO3	SM 2320B	ND	3.0	mg/L	1	A708803	07/12/17	07/12/17	
Chloride	EPA 300.0	**170**	1.0	mg/L	1	A708888	07/13/17	07/13/17	
Color, Apparent	SM 2120B	ND	5.0	CU	1	A708680	07/12/17 18:59	07/12/17	
Conductivity @ 25C	SM 2510B	**1400**	1.0	umhos/cm	1	A708803	07/12/17	07/12/17	
Fluoride	EPA 300.0	**0.11**	0.10	mg/L	1	A708888	07/13/17	07/13/17	
Hexavalent Chromium	EPA 218.7	**35**	0.25	ug/L	5	A708829	07/13/17	07/13/17	
Langelier Index	SM 2330B	**0.83**				A709340	07/24/17	07/24/17	
MBAS, Calculated as LAS, mol wt 340	SM 5540C	ND	0.050	mg/L	1	A708807	07/12/17 20:00	07/12/17	
Nitrate + Nitrite as N	EPA 300.0	**7.0**	0.23	mg/L	1	A708888	07/13/17 19:18	07/13/17	
Nitrate as N	EPA 300.0	**7.0**	0.23	mg/L	1	A708888	07/13/17 19:18	07/13/17	
Nitrite as N	EPA 300.0	ND	0.050	mg/L	1	A708888	07/13/17 19:18	07/13/17	
Threshold Odor	SM 2150B	ND	1.0	T.O.N.	1	A708607	07/12/17 18:25	07/12/17	
Perchlorate	EPA 314.0	ND	4.0	ug/L	2	A709365	07/25/17	07/25/17	DL1.0
pH (1)	SM 4500-H+ B	**8.0**		pH Units	1	A708803	07/12/17	07/12/17	
pH Temperature in °C		**22.9**							
Sulfate as SO4	EPA 300.0	**190**	1.0	mg/L	1	A708888	07/13/17	07/13/17	
Total Dissolved Solids	SM 2540C	**860**	5.0	mg/L	1	A708826	07/13/17	07/17/17	
Turbidity	SM 2130B	**0.39**	0.10	NTU	1	A708680	07/12/17 19:24	07/12/17	

Metals

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Aluminum	EPA 200.7	ND	0.050	mg/L	1	A708842	07/13/17	07/21/17	
Antimony	EPA 200.8	ND	2.0	ug/L	1	A708842	07/13/17	07/20/17	
Arsenic	EPA 200.8	**5.0**	2.0	ug/L	1	A708842	07/13/17	07/20/17	
Barium	EPA 200.7	**0.065**	0.050	mg/L	1	A708842	07/13/17	07/21/17	
Beryllium	EPA 200.8	ND	1.0	ug/L	1	A708842	07/13/17	07/20/17	CV0.0
Cadmium	EPA 200.8	ND	1.0	ug/L	1	A708842	07/13/17	07/20/17	
Calcium .	EPA 200.7	**95**	0.10	mg/L	1	A708842	07/13/17	07/21/17	
Chromium	EPA 200.8	**34**	10	ug/L	1	A708842	07/13/17	07/20/17	
Copper	EPA 200.8	ND	5.0	ug/L	1	A708842	07/13/17	07/20/17	
Iron	EPA 200.7	ND	0.030	mg/L	1	A708842	07/13/17	07/21/17	
Lead	EPA 200.8	ND	1.0	ug/L	1	A708842	07/13/17	07/20/17	
Magnesium	EPA 200.7	**53**	0.10	mg/L	1	A708842	07/13/17	07/21/17	
Manganese	EPA 200.7	ND	0.010	mg/L	1	A708842	07/13/17	07/21/17	
Mercury	EPA 200.8	ND	0.20	ug/L	1	A708842	07/13/17	07/20/17	CV0.0
Nickel	EPA 200.8	ND	10	ug/L	1	A708842	07/13/17	07/20/17	
Potassium	EPA 200.7	**2.8**	2.0	mg/L	1	A708842	07/13/17	07/21/17	
Selenium	EPA 200.8	**2.3**	2.0	ug/L	1	A708842	07/13/17	07/20/17	

BSK ASSOCIATES

Certificate of Analysis

Sample ID: A7G1000-08
Sampled By: Ryan Harris
Sample Description: Well 10

Sample Date - Time: 07/12/17 - 13:05
Matrix: Drinking Water
Sample Type: Grab

Field Data: pH=7.12 Temp=23.2 °C

Metals

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Silver	EPA 200.8	ND	10	ug/L	1	A708842	07/13/17	07/20/17	
Sodium	EPA 200.7	**120**	1.0	mg/L	1	A708842	07/13/17	07/21/17	
Thallium	EPA 200.8	ND	1.0	ug/L	1	A708842	07/13/17	07/20/17	
Hardness as CaCO3	SM 2340B	**450**	0.41	mg/L					
Zinc	EPA 200.7	ND	0.050	mg/L	1	A708842	07/13/17	07/21/17	

Radiological

Analyte	Method	Result	Units	Batch	Prepared	Analyzed	Qual
Gross Alpha	SM 7110C	**10.6**	pCi/L	A709096	07/19/17	07/20/17	
1.65 Sigma Uncertainty		**0.516**	±				
MDA95		**1.06**	pCi/L				

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
EDB and DBCP by GC-ECD									
Dibromochloropropane (DBCP)	EPA 504.1	ND	0.010	ug/L	1	A708902	07/14/17	07/14/17	
Ethylene Dibromide (EDB)	EPA 504.1	ND	0.020	ug/L	1	A708902	07/14/17	07/14/17	
Surrogate: 1-Br-2-Nitrobenzene	EPA 504.1	104 %	*Acceptable range: 70-130 %*						
EPA 505 - Simazine, Atrazine, and Alachlor Only									
Alachlor	EPA 505	ND	1.0	ug/L	1	A708902	07/14/17	07/14/17	
Atrazine	EPA 505	ND	0.50	ug/L	1	A708902	07/14/17	07/14/17	
Simazine	EPA 505	ND	1.0	ug/L	1	A708902	07/14/17	07/14/17	
Surrogate: 1-Br-2-Nitrobenzene	EPA 505	104 %	*Acceptable range: 70-130 %*						
Volatile Organics by GC-MS									
1,1,1,2-Tetrachloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,1,1-Trichloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,1,2,2-Tetrachloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,1,2-Trichloro-1,2,2-trifluoroethane	EPA 524.2	ND	10	ug/L	1	A708850	07/13/17	07/13/17	
1,1,2-Trichloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,1-Dichloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,1-Dichloroethene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,1-Dichloropropene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,2,3-Trichlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,2,4-Trichlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,2,4-Trimethylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,2-Dichlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,2-Dichloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,2-Dichloropropane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,3,5-Trimethylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,3-Dichlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	

ASSOCIATES

Certificate of Analysis

Sample ID: A7G1000-08
Sampled By: Ryan Harris
Sample Description: Well 10

Sample Date - Time: 07/12/17 - 13:05
Matrix: Drinking Water
Sample Type: Grab

Field Data: pH=7.12 Temp=23.2 °C

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Volatile Organics by GC-MS									
1,3-Dichloropropane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,4-Dichlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
2,2-Dichloropropane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
2-Butanone	EPA 524.2	ND	5.0	ug/L	1	A708850	07/13/17	07/13/17	
2-Chlorotoluene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
2-Hexanone	EPA 524.2	ND	10	ug/L	1	A708850	07/13/17	07/13/17	
4-Chlorotoluene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
4-Methyl-2-pentanone	EPA 524.2	ND	5.0	ug/L	1	A708850	07/13/17	07/13/17	
Acetone	EPA 524.2	ND	10	ug/L	1	A708850	07/13/17	07/13/17	
Benzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Bromobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Bromochloromethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Bromodichloromethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Bromoform	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Bromomethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Carbon Tetrachloride	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Chlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Chloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Chloroform	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Chloromethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
cis-1,2-Dichloroethene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
cis-1,3-Dichloropropene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Dibromochloromethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Dibromomethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Dichlorodifluoromethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Dichloromethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Di-isopropyl ether (DIPE)	EPA 524.2	ND	3.0	ug/L	1	A708850	07/13/17	07/13/17	
Ethyl tert-Butyl Ether (ETBE)	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Ethylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Hexachlorobutadiene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Isopropylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
m,p-Xylenes	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Methyl-t-butyl ether	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Naphthalene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
n-Butylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
n-Propylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
o-Xylene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
p-Isopropyltoluene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
sec-Butylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Styrene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
tert-Amyl Methyl Ether (TAME)	EPA 524.2	ND	3.0	ug/L	1	A708850	07/13/17	07/13/17	
tert-Butyl alcohol (TBA)	EPA 524.2	ND	2.0	ug/L	1	A708850	07/13/17	07/13/17	
tert-Butylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	

ASSOCIATES

Certificate of Analysis

Sample ID: A7G1000-08
Sampled By: Ryan Harris
Sample Description: Well 10

Sample Date - Time: 07/12/17 - 13:05
Matrix: Drinking Water
Sample Type: Grab

Field Data: pH=7.12 Temp=23.2 °C

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Volatile Organics by GC-MS									
Tetrachloroethene (PCE)	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Toluene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
trans-1,2-Dichloroethene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
trans-1,3-Dichloropropene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Trichloroethene (TCE)	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Trichlorofluoromethane	EPA 524.2	ND	5.0	ug/L	1	A708850	07/13/17	07/13/17	
Vinyl Chloride	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Surrogate: 1,2-Dichlorobenzene-d4	EPA 524.2	88 %	*Acceptable range: 70-130 %*						
Surrogate: Bromofluorobenzene	EPA 524.2	99 %	*Acceptable range: 70-130 %*						
Total 1,3-Dichloropropene		ND	0.50	ug/L					
Total Trihalomethanes		ND	0.50	ug/L					
Total Xylenes, EPA 524.2		ND	0.50	ug/L					

ASSOCIATES

Certificate of Analysis

Sample ID: A7G1000-09
Sampled By: Ryan Harris
Sample Description: Well 11

Sample Date - Time: 07/12/17 - 10:27
Matrix: Drinking Water
Sample Type: Grab

Field Data: pH=7.15 Temp=26.7 °C

BSK Associates Laboratory Fresno

General Chemistry

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Aggressive Index		**12**				A709340	07/24/17	07/24/17	
Alkalinity as CaCO3	SM 2320B	**160**	3.0	mg/L	1	A708803	07/12/17	07/12/17	
Bicarbonate as CaCO3	SM 2320B	**160**	3.0	mg/L	1	A708803	07/12/17	07/12/17	
Carbonate as CaCO3	SM 2320B	ND	3.0	mg/L	1	A708803	07/12/17	07/12/17	
Hydroxide as CaCO3	SM 2320B	ND	3.0	mg/L	1	A708803	07/12/17	07/12/17	
Chloride	EPA 300.0	**84**	1.0	mg/L	1	A708888	07/13/17	07/13/17	
Color, Apparent	SM 2120B	ND	5.0	CU	1	A708680	07/12/17 19:00	07/12/17	
Conductivity @ 25C	SM 2510B	**690**	1.0	umhos/cm	1	A708803	07/12/17	07/12/17	
Fluoride	EPA 300.0	**0.13**	0.10	mg/L	1	A708888	07/13/17	07/13/17	
Hexavalent Chromium	EPA 218.7	**23**	0.25	ug/L	5	A708829	07/13/17	07/13/17	
Langelier Index	SM 2330B	**0.44**				A709340	07/24/17	07/24/17	
MBAS, Calculated as LAS, mol wt 340	SM 5540C	ND	0.050	mg/L	1	A708807	07/12/17 20:00	07/12/17	
Nitrate + Nitrite as N	EPA 300.0	**4.1**	0.23	mg/L	1	A708888	07/13/17 19:29	07/13/17	
Nitrate as N	EPA 300.0	**4.1**	0.23	mg/L	1	A708888	07/13/17 19:29	07/13/17	
Nitrite as N	EPA 300.0	ND	0.050	mg/L	1	A708888	07/13/17 19:29	07/13/17	
Threshold Odor	SM 2150B	ND	1.0	T.O.N.	1	A708607	07/12/17 18:25	07/12/17	
Perchlorate	EPA 314.0	**4.0**	2.0	ug/L	1	A709365	07/25/17	07/25/17	
pH (1)	SM 4500-H+ B	**8.1**		pH Units	1	A708803	07/12/17	07/12/17	
pH Temperature in °C		**22.8**							
Sulfate as SO4	EPA 300.0	**47**	1.0	mg/L	1	A708888	07/13/17	07/13/17	
Total Dissolved Solids	SM 2540C	**400**	5.0	mg/L	1	A708826	07/13/17	07/17/17	
Turbidity	SM 2130B	**0.31**	0.10	NTU	1	A708680	07/12/17 19:25	07/12/17	

Metals

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Aluminum	EPA 200.7	ND	0.050	mg/L	1	A708842	07/13/17	07/21/17	
Antimony	EPA 200.8	ND	2.0	ug/L	1	A708842	07/13/17	07/20/17	
Arsenic	EPA 200.8	**3.8**	2.0	ug/L	1	A708842	07/13/17	07/20/17	
Barium	EPA 200.7	**0.094**	0.050	mg/L	1	A708842	07/13/17	07/21/17	
Beryllium	EPA 200.8	ND	1.0	ug/L	1	A708842	07/13/17	07/20/17	CV0.0
Cadmium	EPA 200.8	ND	1.0	ug/L	1	A708842	07/13/17	07/20/17	
Calcium	EPA 200.7	**49**	0.10	mg/L	1	A708842	07/13/17	07/21/17	
Chromium	EPA 200.8	**23**	10	ug/L	1	A708842	07/13/17	07/20/17	
Copper	EPA 200.8	ND	5.0	ug/L	1	A708842	07/13/17	07/20/17	
Iron	EPA 200.7	ND	0.030	mg/L	1	A708842	07/13/17	07/21/17	
Lead	EPA 200.8	ND	1.0	ug/L	1	A708842	07/13/17	07/20/17	
Magnesium	EPA 200.7	**23**	0.10	mg/L	1	A708842	07/13/17	07/21/17	
Manganese	EPA 200.7	ND	0.010	mg/L	1	A708842	07/13/17	07/21/17	
Mercury	EPA 200.8	ND	0.20	ug/L	1	A708842	07/13/17	07/20/17	CV0.0
Nickel	EPA 200.8	ND	10	ug/L	1	A708842	07/13/17	07/20/17	
Potassium	EPA 200.7	**2.1**	2.0	mg/L	1	A708842	07/13/17	07/21/17	
Selenium	EPA 200.8	ND	2.0	ug/L	1	A708842	07/13/17	07/20/17	

BSK ASSOCIATES

Certificate of Analysis

Sample ID: A7G1000-09
Sampled By: Ryan Harris
Sample Description: Well 11

Sample Date - Time: 07/12/17 - 10:27
Matrix: Drinking Water
Sample Type: Grab

Field Data: pH=7.15 Temp=26.7 °C

Metals

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Silver	EPA 200.8	ND	10	ug/L	1	A708842	07/13/17	07/20/17	
Sodium	EPA 200.7	**45**	1.0	mg/L	1	A708842	07/13/17	07/21/17	
Thallium	EPA 200.8	ND	1.0	ug/L	1	A708842	07/13/17	07/20/17	
Hardness as CaCO3	SM 2340B	**220**	0.41	mg/L					
Zinc	EPA 200.7	ND	0.050	mg/L	1	A708842	07/13/17	07/21/17	

Radiological

Analyte	Method	Result	Units	Batch	Prepared	Analyzed	Qual
Gross Alpha	SM 7110C	**3.02**	pCi/L	A709096	07/19/17	07/20/17	
1.65 Sigma Uncertainty		**0.291**	±				
MDA95		**1.06**	pCi/L				

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
EDB and DBCP by GC-ECD									
Dibromochloropropane (DBCP)	EPA 504.1	ND	0.010	ug/L	1	A708902	07/14/17	07/14/17	
Ethylene Dibromide (EDB)	EPA 504.1	ND	0.020	ug/L	1	A708902	07/14/17	07/14/17	
Surrogate: 1-Br-2-Nitrobenzene	EPA 504.1	108 %	*Acceptable range: 70-130 %*						
EPA 505 - Simazine, Atrazine, and Alachlor Only									
Alachlor	EPA 505	ND	1.0	ug/L	1	A708902	07/14/17	07/14/17	
Atrazine	EPA 505	ND	0.50	ug/L	1	A708902	07/14/17	07/14/17	
Simazine	EPA 505	ND	1.0	ug/L	1	A708902	07/14/17	07/14/17	
Surrogate: 1-Br-2-Nitrobenzene	EPA 505	108 %	*Acceptable range: 70-130 %*						
Volatile Organics by GC-MS									
1,1,1,2-Tetrachloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,1,1-Trichloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,1,2,2-Tetrachloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,1,2-Trichloro-1,2,2-trifluoroethane	EPA 524.2	ND	10	ug/L	1	A708850	07/13/17	07/13/17	
1,1,2-Trichloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,1-Dichloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,1-Dichloroethene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,1-Dichloropropene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,2,3-Trichlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,2,4-Trichlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,2,4-Trimethylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,2-Dichlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,2-Dichloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,2-Dichloropropane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,3,5-Trimethylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,3-Dichlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	

ASSOCIATES

Certificate of Analysis

Sample ID: A7G1000-09
Sampled By: Ryan Harris
Sample Description: Well 11

Sample Date - Time: 07/12/17 - 10:27
Matrix: Drinking Water
Sample Type: Grab

Field Data: pH=7.15 Temp=26.7 °C

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Volatile Organics by GC-MS									
1,3-Dichloropropane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,4-Dichlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
2,2-Dichloropropane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
2-Butanone	EPA 524.2	ND	5.0	ug/L	1	A708850	07/13/17	07/13/17	
2-Chlorotoluene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
2-Hexanone	EPA 524.2	ND	10	ug/L	1	A708850	07/13/17	07/13/17	
4-Chlorotoluene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
4-Methyl-2-pentanone	EPA 524.2	ND	5.0	ug/L	1	A708850	07/13/17	07/13/17	
Acetone	EPA 524.2	ND	10	ug/L	1	A708850	07/13/17	07/13/17	
Benzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Bromobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Bromochloromethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Bromodichloromethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Bromoform	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Bromomethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Carbon Tetrachloride	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Chlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Chloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Chloroform	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Chloromethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
cis-1,2-Dichloroethene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
cis-1,3-Dichloropropene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Dibromochloromethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Dibromomethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Dichlorodifluoromethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Dichloromethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Di-isopropyl ether (DIPE)	EPA 524.2	ND	3.0	ug/L	1	A708850	07/13/17	07/13/17	
Ethyl tert-Butyl Ether (ETBE)	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Ethylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Hexachlorobutadiene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Isopropylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
m,p-Xylenes	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Methyl-t-butyl ether	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Naphthalene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
n-Butylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
n-Propylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
o-Xylene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
p-Isopropyltoluene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
sec-Butylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Styrene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
tert-Amyl Methyl Ether (TAME)	EPA 524.2	ND	3.0	ug/L	1	A708850	07/13/17	07/13/17	
tert-Butyl alcohol (TBA)	EPA 524.2	ND	2.0	ug/L	1	A708850	07/13/17	07/13/17	
tert-Butylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	

BSK ASSOCIATES

Certificate of Analysis

Sample ID: A7G1000-09
Sampled By: Ryan Harris
Sample Description: Well 11

Sample Date - Time: 07/12/17 - 10:27
Matrix: Drinking Water
Sample Type: Grab

Field Data: pH=7.15 Temp=26.7 °C

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Volatile Organics by GC-MS									
Tetrachloroethene (PCE)	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Toluene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
trans-1,2-Dichloroethene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
trans-1,3-Dichloropropene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Trichloroethene (TCE)	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Trichlorofluoromethane	EPA 524.2	ND	5.0	ug/L	1	A708850	07/13/17	07/13/17	
Vinyl Chloride	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Surrogate: 1,2-Dichlorobenzene-d4	EPA 524.2	92 %	*Acceptable range:*	*70-130 %*					
Surrogate: Bromofluorobenzene	EPA 524.2	104 %	*Acceptable range:*	*70-130 %*					
Total 1,3-Dichloropropene		ND	0.50	ug/L					
Total Trihalomethanes		ND	0.50	ug/L					
Total Xylenes, EPA 524.2		ND	0.50	ug/L					

ASSOCIATES

Certificate of Analysis

Sample ID: A7G1000-10
Sampled By: Ryan Harris
Sample Description: Well 12

Sample Date - Time: 07/12/17 - 09:53
Matrix: Drinking Water
Sample Type: Grab

Field Data: pH=7.00 Temp=28.1 °C

BSK Associates Laboratory Fresno

General Chemistry

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Aggressive Index		**12**				A709340	07/24/17	07/24/17	
Alkalinity as CaCO3	SM 2320B	**150**	3.0	mg/L	1	A708803	07/12/17	07/12/17	
Bicarbonate as CaCO3	SM 2320B	**150**	3.0	mg/L	1	A708803	07/12/17	07/12/17	
Carbonate as CaCO3	SM 2320B	ND	3.0	mg/L	1	A708803	07/12/17	07/12/17	
Hydroxide as CaCO3	SM 2320B	ND	3.0	mg/L	1	A708803	07/12/17	07/12/17	
Chloride	EPA 300.0	**75**	1.0	mg/L	1	A708888	07/13/17	07/13/17	
Color, Apparent	SM 2120B	ND	5.0	CU	1	A708680	07/12/17 19:01	07/12/17	
Conductivity @ 25C	SM 2510B	**660**	1.0	umhos/cm	1	A708803	07/12/17	07/12/17	
Fluoride	EPA 300.0	**0.13**	0.10	mg/L	1	A708888	07/13/17	07/13/17	
Hexavalent Chromium	EPA 218.7	**24**	0.25	ug/L	5	A708829	07/13/17	07/13/17	
Langelier Index	SM 2330B	**0.43**				A709340	07/24/17	07/24/17	
MBAS, Calculated as LAS, mol wt 340	SM 5540C	ND	0.050	mg/L	1	A708807	07/12/17 20:00	07/12/17	
Nitrate + Nitrite as N	EPA 300.0	**3.7**	0.23	mg/L	1	A708888	07/13/17 19:39	07/13/17	
Nitrate as N	EPA 300.0	**3.7**	0.23	mg/L	1	A708888	07/13/17 19:39	07/13/17	
Nitrite as N	EPA 300.0	ND	0.050	mg/L	1	A708888	07/13/17 19:39	07/13/17	
Threshold Odor	SM 2150B	ND	1.0	T.O.N.	1	A708607	07/12/17 18:25	07/12/17	
Perchlorate	EPA 314.0	ND	2.0	ug/L	1	A709365	07/25/17	07/25/17	
pH (1)	SM 4500-H+ B	**8.1**		pH Units	1	A708803	07/12/17	07/12/17	
pH Temperature in °C		**22.7**							
Sulfate as SO4	EPA 300.0	**51**	1.0	mg/L	1	A708888	07/13/17	07/13/17	
Total Dissolved Solids	SM 2540C	**380**	5.0	mg/L	1	A708826	07/13/17	07/17/17	
Turbidity	SM 2130B	**0.11**	0.10	NTU	1	A708680	07/12/17 19:26	07/12/17	

Metals

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Aluminum	EPA 200.7	ND	0.050	mg/L	1	A708842	07/13/17	07/21/17	
Antimony	EPA 200.8	ND	2.0	ug/L	1	A708842	07/13/17	07/20/17	
Arsenic	EPA 200.8	**4.3**	2.0	ug/L	1	A708842	07/13/17	07/20/17	
Barium	EPA 200.7	**0.10**	0.050	mg/L	1	A708842	07/13/17	07/21/17	
Beryllium	EPA 200.8	ND	1.0	ug/L	1	A708842	07/13/17	07/20/17	CV0.0
Cadmium	EPA 200.8	ND	1.0	ug/L	1	A708842	07/13/17	07/20/17	
Calcium	EPA 200.7	**50**	0.10	mg/L	1	A708842	07/13/17	07/21/17	
Chromium	EPA 200.8	**24**	10	ug/L	1	A708842	07/13/17	07/20/17	
Copper	EPA 200.8	ND	5.0	ug/L	1	A708842	07/13/17	07/20/17	
Iron	EPA 200.7	ND	0.030	mg/L	1	A708842	07/13/17	07/21/17	
Lead	EPA 200.8	ND	1.0	ug/L	1	A708842	07/13/17	07/20/17	
Magnesium	EPA 200.7	**22**	0.10	mg/L	1	A708842	07/13/17	07/21/17	
Manganese	EPA 200.7	ND	0.010	mg/L	1	A708842	07/13/17	07/21/17	
Mercury	EPA 200.8	ND	0.20	ug/L	1	A708842	07/13/17	07/20/17	
Nickel	EPA 200.8	ND	10	ug/L	1	A708842	07/13/17	07/20/17	
Potassium	EPA 200.7	**2.1**	2.0	mg/L	1	A708842	07/13/17	07/21/17	
Selenium	EPA 200.8	ND	2.0	ug/L	1	A708842	07/13/17	07/20/17	

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Certificate of Analysis

Sample ID: A7G1000-10
Sampled By: Ryan Harris
Sample Description: Well 12

Sample Date - Time: 07/12/17 - 09:53
Matrix: Drinking Water
Sample Type: Grab

Field Data: pH=7.00 Temp=28.1 °C

Metals

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Silver	EPA 200.8	ND	10	ug/L	1	A708842	07/13/17	07/20/17	
Sodium	EPA 200.7	**47**	1.0	mg/L	1	A708842	07/13/17	07/21/17	
Thallium	EPA 200.8	ND	1.0	ug/L	1	A708842	07/13/17	07/20/17	
Hardness as CaCO3	SM 2340B	**220**	0.41	mg/L					
Zinc	EPA 200.7	ND	0.050	mg/L	1	A708842	07/13/17	07/21/17	

Radiological

Analyte	Method	Result	Units	Batch	Prepared	Analyzed	Qual
Gross Alpha	SM 7110C	ND	pCi/L	A709096	07/19/17	07/20/17	
1.65 Sigma Uncertainty		**0.191**	±				
MDA95		**1.06**	pCi/L				

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
EDB and DBCP by GC-ECD									
Dibromochloropropane (DBCP)	EPA 504.1	ND	0.010	ug/L	1	A708902	07/14/17	07/14/17	
Ethylene Dibromide (EDB)	EPA 504.1	ND	0.020	ug/L	1	A708902	07/14/17	07/14/17	
Surrogate: 1-Br-2-Nitrobenzene	EPA 504.1	102 %	*Acceptable range: 70-130 %*						
EPA 505 - Simazine, Atrazine, and Alachlor Only									
Alachlor	EPA 505	ND	1.0	ug/L	1	A708902	07/14/17	07/14/17	
Atrazine	EPA 505	ND	0.50	ug/L	1	A708902	07/14/17	07/14/17	
Simazine	EPA 505	ND	1.0	ug/L	1	A708902	07/14/17	07/14/17	
Surrogate: 1-Br-2-Nitrobenzene	EPA 505	102 %	*Acceptable range: 70-130 %*						
Volatile Organics by GC-MS									
1,1,1,2-Tetrachloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,1,1-Trichloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,1,2,2-Tetrachloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,1,2-Trichloro-1,2,2-trifluoroethane	EPA 524.2	ND	10	ug/L	1	A708850	07/13/17	07/13/17	
1,1,2-Trichloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,1-Dichloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,1-Dichloroethene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,1-Dichloropropene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,2,3-Trichlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,2,4-Trichlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,2,4-Trimethylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,2-Dichlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,2-Dichloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,2-Dichloropropane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,3,5-Trimethylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,3-Dichlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	

ASSOCIATES

Certificate of Analysis

Sample ID: A7G1000-10
Sampled By: Ryan Harris
Sample Description: Well 12

Sample Date - Time: 07/12/17 - 09:53
Matrix: Drinking Water
Sample Type: Grab

Field Data: pH=7.00 Temp=28.1 °C

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Volatile Organics by GC-MS									
1,3-Dichloropropane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,4-Dichlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
2,2-Dichloropropane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
2-Butanone	EPA 524.2	ND	5.0	ug/L	1	A708850	07/13/17	07/13/17	
2-Chlorotoluene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
2-Hexanone	EPA 524.2	ND	10	ug/L	1	A708850	07/13/17	07/13/17	
4-Chlorotoluene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
4-Methyl-2-pentanone	EPA 524.2	ND	5.0	ug/L	1	A708850	07/13/17	07/13/17	
Acetone	EPA 524.2	ND	10	ug/L	1	A708850	07/13/17	07/13/17	
Benzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Bromobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Bromochloromethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Bromodichloromethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Bromoform	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Bromomethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Carbon Tetrachloride	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Chlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Chloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Chloroform	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Chloromethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
cis-1,2-Dichloroethene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
cis-1,3-Dichloropropene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Dibromochloromethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Dibromomethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Dichlorodifluoromethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Dichloromethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Di-isopropyl ether (DIPE)	EPA 524.2	ND	3.0	ug/L	1	A708850	07/13/17	07/13/17	
Ethyl tert-Butyl Ether (ETBE)	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Ethylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Hexachlorobutadiene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Isopropylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
m,p-Xylenes	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Methyl-t-butyl ether	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Naphthalene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
n-Butylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
n-Propylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
o-Xylene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
p-Isopropyltoluene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
sec-Butylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Styrene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
tert-Amyl Methyl Ether (TAME)	EPA 524.2	ND	3.0	ug/L	1	A708850	07/13/17	07/13/17	
tert-Butyl alcohol (TBA)	EPA 524.2	ND	2.0	ug/L	1	A708850	07/13/17	07/13/17	
tert-Butylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	

ASSOCIATES

Certificate of Analysis

Sample ID: A7G1000-10
Sampled By: Ryan Harris
Sample Description: Well 12

Sample Date - Time: 07/12/17 - 09:53
Matrix: Drinking Water
Sample Type: Grab

Field Data: pH=7.00 Temp=28.1 °C

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Volatile Organics by GC-MS									
Tetrachloroethene (PCE)	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Toluene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
trans-1,2-Dichloroethene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
trans-1,3-Dichloropropene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Trichloroethene (TCE)	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Trichlorofluoromethane	EPA 524.2	ND	5.0	ug/L	1	A708850	07/13/17	07/13/17	
Vinyl Chloride	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Surrogate: 1,2-Dichlorobenzene-d4	EPA 524.2	94 %	*Acceptable range: 70-130 %*						
Surrogate: Bromofluorobenzene	EPA 524.2	102 %	*Acceptable range: 70-130 %*						
Total 1,3-Dichloropropene		ND	0.50	ug/L					
Total Trihalomethanes		ND	0.50	ug/L					
Total Xylenes, EPA 524.2		ND	0.50	ug/L					

BSK ASSOCIATES

Certificate of Analysis

Sample ID: A7G1000-11
Sampled By: Ryan Harris
Sample Description: Well 13

Sample Date - Time: 07/12/17 - 08:11
Matrix: Drinking Water
Sample Type: Grab

Field Data: pH=7.11 Temp=22.2 °C

BSK Associates Laboratory Fresno

General Chemistry

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Aggressive Index		**13**				A709340	07/24/17	07/24/17	
Alkalinity as CaCO3	SM 2320B	**280**	3.0	mg/L	1	A708803	07/12/17	07/12/17	
Bicarbonate as CaCO3	SM 2320B	**280**	3.0	mg/L	1	A708803	07/12/17	07/12/17	
Carbonate as CaCO3	SM 2320B	ND	3.0	mg/L	1	A708803	07/12/17	07/12/17	
Hydroxide as CaCO3	SM 2320B	ND	3.0	mg/L	1	A708803	07/12/17	07/12/17	
Chloride	EPA 300.0	**170**	1.0	mg/L	1	A708888	07/13/17	07/13/17	
Color, Apparent	SM 2120B	ND	5.0	CU	1	A708680	07/12/17 19:02	07/12/17	
Conductivity @ 25C	SM 2510B	**1300**	1.0	umhos/cm	1	A708803	07/12/17	07/12/17	
Fluoride	EPA 300.0	ND	0.10	mg/L	1	A708888	07/13/17	07/13/17	
Hexavalent Chromium	EPA 218.7	**42**	0.25	ug/L	5	A708829	07/13/17	07/13/17	
Langelier Index	SM 2330B	**0.83**				A709340	07/24/17	07/24/17	
MBAS, Calculated as LAS, mol wt 340	SM 5540C	ND	0.050	mg/L	1	A708807	07/12/17 20:00	07/12/17	
Nitrate + Nitrite as N	EPA 300.0	**5.8**	0.23	mg/L	1	A708888	07/13/17 19:50	07/13/17	
Nitrate as N	EPA 300.0	**5.8**	0.23	mg/L	1	A708888	07/13/17 19:50	07/13/17	
Nitrite as N	EPA 300.0	ND	0.050	mg/L	1	A708888	07/13/17 19:50	07/13/17	
Threshold Odor	SM 2150B	ND	1.0	T.O.N.	1	A708607	07/12/17 18:25	07/12/17	
Perchlorate	EPA 314.0	ND	4.0	ug/L	2	A709365	07/25/17	07/25/17	DL1.0
pH (1)	SM 4500-H+ B	**8.0**		pH Units	1	A708803	07/12/17	07/12/17	
pH Temperature in °C		**22.6**							
Sulfate as SO4	EPA 300.0	**140**	1.0	mg/L	1	A708888	07/13/17	07/13/17	
Total Dissolved Solids	SM 2540C	**780**	5.0	mg/L	1	A708826	07/13/17	07/17/17	
Turbidity	SM 2130B	**0.14**	0.10	NTU	1	A708680	07/12/17 19:27	07/12/17	

Metals

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Aluminum	EPA 200.7	ND	0.050	mg/L	1	A708842	07/13/17	07/21/17	
Antimony	EPA 200.8	ND	2.0	ug/L	1	A708842	07/13/17	07/20/17	
Arsenic	EPA 200.8	**4.9**	2.0	ug/L	1	A708842	07/13/17	07/20/17	
Barium	EPA 200.7	**0.12**	0.050	mg/L	1	A708842	07/13/17	07/21/17	
Beryllium	EPA 200.8	ND	1.0	ug/L	1	A708842	07/13/17	07/20/17	CV0.0
Cadmium	EPA 200.8	ND	1.0	ug/L	1	A708842	07/13/17	07/20/17	
Calcium	EPA 200.7	**92**	0.10	mg/L	1	A708842	07/13/17	07/21/17	MS1.4
Chromium	EPA 200.8	**41**	10	ug/L	1	A708842	07/13/17	07/20/17	
Copper	EPA 200.8	ND	5.0	ug/L	1	A708842	07/13/17	07/20/17	
Iron	EPA 200.7	ND	0.030	mg/L	1	A708842	07/13/17	07/21/17	
Lead	EPA 200.8	ND	1.0	ug/L	1	A708842	07/13/17	07/20/17	
Magnesium	EPA 200.7	**49**	0.10	mg/L	1	A708842	07/13/17	07/21/17	MS1.4
Manganese	EPA 200.7	ND	0.010	mg/L	1	A708842	07/13/17	07/21/17	
Mercury	EPA 200.8	ND	0.20	ug/L	1	A708842	07/13/17	07/20/17	
Nickel	EPA 200.8	ND	10	ug/L	1	A708842	07/13/17	07/20/17	
Potassium	EPA 200.7	**2.6**	2.0	mg/L	1	A708842	07/13/17	07/21/17	
Selenium	EPA 200.8	ND	2.0	ug/L	1	A708842	07/13/17	07/20/17	

BSK ASSOCIATES

Certificate of Analysis

Sample ID: A7G1000-11
Sampled By: Ryan Harris
Sample Description: Well 13

Sample Date - Time: 07/12/17 - 08:11
Matrix: Drinking Water
Sample Type: Grab

Field Data: pH=7.11 Temp=22.2 °C

Metals

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Silver	EPA 200.8	ND	10	ug/L	1	A708842	07/13/17	07/20/17	
Sodium	EPA 200.7	**98**	1.0	mg/L	1	A708842	07/13/17	07/21/17	MS1.4
Thallium	EPA 200.8	ND	1.0	ug/L	1	A708842	07/13/17	07/20/17	
Hardness as CaCO3	SM 2340B	**430**	0.41	mg/L					
Zinc	EPA 200.7	ND	0.050	mg/L	1	A708842	07/13/17	07/21/17	

Radiological

Analyte	Method	Result	Units	Batch	Prepared	Analyzed	Qual
Gross Alpha	SM 7110C	**4.03**	pCi/L	A709096	07/19/17	07/20/17	
1.65 Sigma Uncertainty		**0.330**	±				
MDA95		**1.06**	pCi/L				

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
EDB and DBCP by GC-ECD									
Dibromochloropropane (DBCP)	EPA 504.1	ND	0.010	ug/L	1	A708902	07/14/17	07/14/17	
Ethylene Dibromide (EDB)	EPA 504.1	ND	0.020	ug/L	1	A708902	07/14/17	07/14/17	
Surrogate: 1-Br-2-Nitrobenzene	EPA 504.1	108 %	*Acceptable range: 70-130 %*						
EPA 505 - Simazine, Atrazine, and Alachlor Only									
Alachlor	EPA 505	ND	1.0	ug/L	1	A708902	07/14/17	07/14/17	
Atrazine	EPA 505	ND	0.50	ug/L	1	A708902	07/14/17	07/14/17	
Simazine	EPA 505	ND	1.0	ug/L	1	A708902	07/14/17	07/14/17	
Surrogate: 1-Br-2-Nitrobenzene	EPA 505	108 %	*Acceptable range: 70-130 %*						
Volatile Organics by GC-MS									
1,1,1,2-Tetrachloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,1,1-Trichloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,1,2,2-Tetrachloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,1,2-Trichloro-1,2,2-trifluoroethane	EPA 524.2	ND	10	ug/L	1	A708850	07/13/17	07/13/17	
1,1,2-Trichloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,1-Dichloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,1-Dichloroethene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,1-Dichloropropene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,2,3-Trichlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,2,4-Trichlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,2,4-Trimethylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,2-Dichlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,2-Dichloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,2-Dichloropropane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,3,5-Trimethylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,3-Dichlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	

ASSOCIATES

Certificate of Analysis

Sample ID: A7G1000-11
Sampled By: Ryan Harris
Sample Description: Well 13

Sample Date - Time: 07/12/17 - 08:11
Matrix: Drinking Water
Sample Type: Grab

Field Data: pH=7.11 Temp=22.2 °C

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Volatile Organics by GC-MS									
1,3-Dichloropropane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,4-Dichlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
2,2-Dichloropropane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
2-Butanone	EPA 524.2	ND	5.0	ug/L	1	A708850	07/13/17	07/13/17	
2-Chlorotoluene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
2-Hexanone	EPA 524.2	ND	10	ug/L	1	A708850	07/13/17	07/13/17	
4-Chlorotoluene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
4-Methyl-2-pentanone	EPA 524.2	ND	5.0	ug/L	1	A708850	07/13/17	07/13/17	
Acetone	EPA 524.2	ND	10	ug/L	1	A708850	07/13/17	07/13/17	
Benzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Bromobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Bromochloromethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Bromodichloromethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Bromoform	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Bromomethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Carbon Tetrachloride	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Chlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Chloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Chloroform	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Chloromethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
cis-1,2-Dichloroethene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
cis-1,3-Dichloropropene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Dibromochloromethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Dibromomethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Dichlorodifluoromethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Dichloromethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Di-isopropyl ether (DIPE)	EPA 524.2	ND	3.0	ug/L	1	A708850	07/13/17	07/13/17	
Ethyl tert-Butyl Ether (ETBE)	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Ethylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Hexachlorobutadiene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Isopropylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
m,p-Xylenes	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Methyl-t-butyl ether	EPA 524.2	**10**	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Naphthalene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
n-Butylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
n-Propylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
o-Xylene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
p-Isopropyltoluene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
sec-Butylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Styrene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
tert-Amyl Methyl Ether (TAME)	EPA 524.2	ND	3.0	ug/L	1	A708850	07/13/17	07/13/17	
tert-Butyl alcohol (TBA)	EPA 524.2	ND	2.0	ug/L	1	A708850	07/13/17	07/13/17	
tert-Butylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	

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Certificate of Analysis

Sample ID: A7G1000-11
Sampled By: Ryan Harris
Sample Description: Well 13

Sample Date - Time: 07/12/17 - 08:11
Matrix: Drinking Water
Sample Type: Grab

Field Data: pH=7.11 Temp=22.2 °C

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Volatile Organics by GC-MS									
Tetrachloroethene (PCE)	EPA 524.2	**1.0**	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Toluene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
trans-1,2-Dichloroethene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
trans-1,3-Dichloropropene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Trichloroethene (TCE)	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Trichlorofluoromethane	EPA 524.2	ND	5.0	ug/L	1	A708850	07/13/17	07/13/17	
Vinyl Chloride	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Surrogate: 1,2-Dichlorobenzene-d4	EPA 524.2	99 %	*Acceptable range:*	*70-130 %*					
Surrogate: Bromofluorobenzene	EPA 524.2	102 %	*Acceptable range:*	*70-130 %*					
Total 1,3-Dichloropropene		ND	0.50	ug/L					
Total Trihalomethanes		ND	0.50	ug/L					
Total Xylenes, EPA 524.2		ND	0.50	ug/L					

ASSOCIATES

Certificate of Analysis

Sample ID: A7G1000-12
Sampled By: Ryan Harris
Sample Description: Well 14

Sample Date - Time: 07/12/17 - 11:39
Matrix: Drinking Water
Sample Type: Grab

Field Data: pH=7.02 Temp=26.5 °C

BSK Associates Laboratory Fresno

General Chemistry

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Aggressive Index		**13**				A709340	07/24/17	07/24/17	
Alkalinity as CaCO3	SM 2320B	**300**	3.0	mg/L	1	A708803	07/12/17	07/12/17	
Bicarbonate as CaCO3	SM 2320B	**300**	3.0	mg/L	1	A708803	07/12/17	07/12/17	
Carbonate as CaCO3	SM 2320B	ND	3.0	mg/L	1	A708803	07/12/17	07/12/17	
Hydroxide as CaCO3	SM 2320B	ND	3.0	mg/L	1	A708803	07/12/17	07/12/17	
Chloride	EPA 300.0	**190**	1.0	mg/L	1	A708888	07/13/17	07/13/17	
Color, Apparent	SM 2120B	ND	5.0	CU	1	A708680	07/12/17 19:03	07/12/17	
Conductivity @ 25C	SM 2510B	**1700**	1.0	umhos/cm	1	A708803	07/12/17	07/12/17	
Fluoride	EPA 300.0	ND	0.10	mg/L	1	A708888	07/13/17	07/13/17	
Hexavalent Chromium	EPA 218.7	**38**	0.25	ug/L	5	A708829	07/13/17	07/13/17	
Langelier Index	SM 2330B	**0.86**				A709340	07/24/17	07/24/17	
MBAS, Calculated as LAS, mol wt 340	SM 5540C	ND	0.050	mg/L	1	A708807	07/12/17 20:00	07/12/17	
Nitrate + Nitrite as N	EPA 300.0	**5.5**	0.23	mg/L	1	A708888	07/13/17 20:01	07/13/17	
Nitrate as N	EPA 300.0	**5.5**	0.23	mg/L	1	A708888	07/13/17 20:01	07/13/17	
Nitrite as N	EPA 300.0	ND	0.050	mg/L	1	A708888	07/13/17 20:01	07/13/17	
Threshold Odor	SM 2150B	ND	1.0	T.O.N.	1	A708607	07/12/17 18:25	07/12/17	
Perchlorate	EPA 314.0	ND	4.0	ug/L	2	A709365	07/25/17	07/25/17	DL1.0
pH (1)	SM 4500-H+ B	**8.0**		pH Units	1	A708803	07/12/17	07/12/17	
pH Temperature in °C		**22.6**							
Sulfate as SO4	EPA 300.0	**310**	1.0	mg/L	1	A708888	07/13/17	07/13/17	
Total Dissolved Solids	SM 2540C	**1100**	5.0	mg/L	1	A708826	07/13/17	07/17/17	
Turbidity	SM 2130B	**0.10**	0.10	NTU	1	A708680	07/12/17 19:28	07/12/17	

Metals

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Aluminum	EPA 200.7	ND	0.050	mg/L	1	A708842	07/13/17	07/21/17	
Antimony	EPA 200.8	ND	2.0	ug/L	1	A708842	07/13/17	07/20/17	
Arsenic	EPA 200.8	**6.0**	2.0	ug/L	1	A708842	07/13/17	07/20/17	
Barium	EPA 200.7	ND	0.050	mg/L	1	A708842	07/13/17	07/21/17	
Beryllium	EPA 200.8	ND	1.0	ug/L	1	A708842	07/13/17	07/20/17	CV0.0
Cadmium	EPA 200.8	ND	1.0	ug/L	1	A708842	07/13/17	07/20/17	
Calcium	EPA 200.7	**96**	0.10	mg/L	1	A708842	07/13/17	07/21/17	
Chromium	EPA 200.8	**38**	10	ug/L	1	A708842	07/13/17	07/20/17	
Copper	EPA 200.8	ND	5.0	ug/L	1	A708842	07/13/17	07/20/17	
Iron	EPA 200.7	ND	0.030	mg/L	1	A708842	07/13/17	07/21/17	
Lead	EPA 200.8	ND	1.0	ug/L	1	A708842	07/13/17	07/20/17	
Magnesium	EPA 200.7	**54**	0.10	mg/L	1	A708842	07/13/17	07/21/17	
Manganese	EPA 200.7	ND	0.010	mg/L	1	A708842	07/13/17	07/21/17	
Mercury	EPA 200.8	ND	0.20	ug/L	1	A708842	07/13/17	07/20/17	
Nickel	EPA 200.8	ND	10	ug/L	1	A708842	07/13/17	07/20/17	
Potassium	EPA 200.7	**2.8**	2.0	mg/L	1	A708842	07/13/17	07/21/17	
Selenium	EPA 200.8	**3.8**	2.0	ug/L	1	A708842	07/13/17	07/20/17	

ASSOCIATES

Certificate of Analysis

Sample ID: A7G1000-12
Sampled By: Ryan Harris
Sample Description: Well 14

Sample Date - Time: 07/12/17 - 11:39
Matrix: Drinking Water
Sample Type: Grab

Field Data: pH=7.02 Temp=26.5 °C

Metals

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Silver	EPA 200.8	ND	10	ug/L	1	A708842	07/13/17	07/20/17	
Sodium	EPA 200.7	**190**	1.0	mg/L	1	A708842	07/13/17	07/21/17	
Thallium	EPA 200.8	ND	1.0	ug/L	1	A708842	07/13/17	07/20/17	
Hardness as CaCO3	SM 2340B	**460**	0.41	mg/L					
Zinc	EPA 200.7	ND	0.050	mg/L	1	A708842	07/13/17	07/21/17	

Radiological

Analyte	Method	Result	Units	Batch	Prepared	Analyzed	Qual
Gross Alpha	SM 7110C	**8.56**	pCi/L	A709096	07/19/17	07/20/17	
1.65 Sigma Uncertainty		**0.467**	±				
MDA95		**1.06**	pCi/L				

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
EDB and DBCP by GC-ECD									
Dibromochloropropane (DBCP)	EPA 504.1	ND	0.010	ug/L	1	A708902	07/14/17	07/14/17	
Ethylene Dibromide (EDB)	EPA 504.1	ND	0.020	ug/L	1	A708902	07/14/17	07/14/17	
Surrogate: 1-Br-2-Nitrobenzene	EPA 504.1	103 %	*Acceptable range: 70-130 %*						
EPA 505 - Simazine, Atrazine, and Alachlor Only									
Alachlor	EPA 505	ND	1.0	ug/L	1	A708902	07/14/17	07/14/17	
Atrazine	EPA 505	ND	0.50	ug/L	1	A708902	07/14/17	07/14/17	
Simazine	EPA 505	ND	1.0	ug/L	1	A708902	07/14/17	07/14/17	
Surrogate: 1-Br-2-Nitrobenzene	EPA 505	103 %	*Acceptable range: 70-130 %*						
Volatile Organics by GC-MS									
1,1,1,2-Tetrachloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,1,1-Trichloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,1,2,2-Tetrachloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,1,2-Trichloro-1,2,2-trifluoroethane	EPA 524.2	ND	10	ug/L	1	A708850	07/13/17	07/13/17	
1,1,2-Trichloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,1-Dichloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,1-Dichloroethene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,1-Dichloropropene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,2,3-Trichlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,2,4-Trichlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,2,4-Trimethylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,2-Dichlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,2-Dichloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,2-Dichloropropane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,3,5-Trimethylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,3-Dichlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	

ASSOCIATES

Certificate of Analysis

Sample ID: A7G1000-12
Sampled By: Ryan Harris
Sample Description: Well 14

Sample Date - Time: 07/12/17 - 11:39
Matrix: Drinking Water
Sample Type: Grab

Field Data: pH=7.02 Temp=26.5 °C

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Volatile Organics by GC-MS									
1,3-Dichloropropane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,4-Dichlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
2,2-Dichloropropane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
2-Butanone	EPA 524.2	ND	5.0	ug/L	1	A708850	07/13/17	07/13/17	
2-Chlorotoluene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
2-Hexanone	EPA 524.2	ND	10	ug/L	1	A708850	07/13/17	07/13/17	
4-Chlorotoluene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
4-Methyl-2-pentanone	EPA 524.2	ND	5.0	ug/L	1	A708850	07/13/17	07/13/17	
Acetone	EPA 524.2	ND	10	ug/L	1	A708850	07/13/17	07/13/17	
Benzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Bromobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Bromochloromethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Bromodichloromethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Bromoform	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Bromomethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Carbon Tetrachloride	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Chlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Chloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Chloroform	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Chloromethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
cis-1,2-Dichloroethene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
cis-1,3-Dichloropropene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Dibromochloromethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Dibromomethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Dichlorodifluoromethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Dichloromethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Di-isopropyl ether (DIPE)	EPA 524.2	ND	3.0	ug/L	1	A708850	07/13/17	07/13/17	
Ethyl tert-Butyl Ether (ETBE)	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Ethylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Hexachlorobutadiene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Isopropylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
m,p-Xylenes	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Methyl-t-butyl ether	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Naphthalene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
n-Butylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
n-Propylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
o-Xylene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
p-Isopropyltoluene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
sec-Butylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Styrene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
tert-Amyl Methyl Ether (TAME)	EPA 524.2	ND	3.0	ug/L	1	A708850	07/13/17	07/13/17	
tert-Butyl alcohol (TBA)	EPA 524.2	ND	2.0	ug/L	1	A708850	07/13/17	07/13/17	
tert-Butylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	

ASSOCIATES

Certificate of Analysis

Sample ID: A7G1000-12
Sampled By: Ryan Harris
Sample Description: Well 14

Sample Date - Time: 07/12/17 - 11:39
Matrix: Drinking Water
Sample Type: Grab

Field Data: pH=7.02 Temp=26.5 °C

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Volatile Organics by GC-MS									
Tetrachloroethene (PCE)	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Toluene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
trans-1,2-Dichloroethene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
trans-1,3-Dichloropropene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Trichloroethene (TCE)	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Trichlorofluoromethane	EPA 524.2	ND	5.0	ug/L	1	A708850	07/13/17	07/13/17	
Vinyl Chloride	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Surrogate: 1,2-Dichlorobenzene-d4	EPA 524.2	88 %	*Acceptable range: 70-130 %*						
Surrogate: Bromofluorobenzene	EPA 524.2	90 %	*Acceptable range: 70-130 %*						
Total 1,3-Dichloropropene		ND	0.50	ug/L					
Total Trihalomethanes		ND	0.50	ug/L					
Total Xylenes, EPA 524.2		ND	0.50	ug/L					

ASSOCIATES

Certificate of Analysis

Sample ID: A7G1000-13
Sampled By: Ryan Harris
Sample Description: Well 15

Sample Date - Time: 07/12/17 - 10:49
Matrix: Drinking Water
Sample Type: Grab

Field Data: pH=7.03 Temp=27.1 °C

BSK Associates Laboratory Fresno

General Chemistry

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Aggressive Index		**12**				A709340	07/24/17	07/24/17	
Alkalinity as CaCO3	SM 2320B	**150**	3.0	mg/L	1	A708803	07/12/17	07/12/17	
Bicarbonate as CaCO3	SM 2320B	**150**	3.0	mg/L	1	A708803	07/12/17	07/12/17	
Carbonate as CaCO3	SM 2320B	ND	3.0	mg/L	1	A708803	07/12/17	07/12/17	
Hydroxide as CaCO3	SM 2320B	ND	3.0	mg/L	1	A708803	07/12/17	07/12/17	
Chloride	EPA 300.0	**96**	1.0	mg/L	1	A708888	07/13/17	07/13/17	
Color, Apparent	SM 2120B	ND	5.0	CU	1	A708680	07/12/17 19:04	07/12/17	
Conductivity @ 25C	SM 2510B	**770**	1.0	umhos/cm	1	A708803	07/12/17	07/12/17	
Fluoride	EPA 300.0	**0.12**	0.10	mg/L	1	A708888	07/13/17	07/13/17	
Hexavalent Chromium	EPA 218.7	**19**	0.25	ug/L	5	A708829	07/13/17	07/13/17	
Langelier Index	SM 2330B	**0.44**				A709340	07/24/17	07/24/17	
MBAS, Calculated as LAS, mol wt 340	SM 5540C	ND	0.050	mg/L	1	A708807	07/12/17 20:00	07/12/17	
Nitrate + Nitrite as N	EPA 300.0	**4.7**	0.23	mg/L	1	A708888	07/13/17 20:23	07/13/17	
Nitrate as N	EPA 300.0	**4.7**	0.23	mg/L	1	A708888	07/13/17 20:23	07/13/17	
Nitrite as N	EPA 300.0	ND	0.050	mg/L	1	A708888	07/13/17 20:23	07/13/17	
Threshold Odor	SM 2150B	ND	1.0	T.O.N.	1	A708607	07/12/17 18:25	07/12/17	
Perchlorate	EPA 314.0	ND	2.0	ug/L	1	A709365	07/25/17	07/25/17	
pH (1)	SM 4500-H+ B	**8.1**		pH Units	1	A708803	07/12/17	07/12/17	
pH Temperature in °C		**22.5**							
Sulfate as SO4	EPA 300.0	**72**	1.0	mg/L	1	A708888	07/13/17	07/13/17	
Total Dissolved Solids	SM 2540C	**480**	5.0	mg/L	1	A708826	07/13/17	07/17/17	
Turbidity	SM 2130B	**0.10**	0.10	NTU	1	A708680	07/12/17 19:29	07/12/17	

Metals

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Aluminum	EPA 200.7	ND	0.050	mg/L	1	A708842	07/13/17	07/21/17	
Antimony	EPA 200.8	ND	2.0	ug/L	1	A708842	07/13/17	07/20/17	
Arsenic	EPA 200.8	**7.8**	2.0	ug/L	1	A708842	07/13/17	07/20/17	
Barium	EPA 200.7	**0.11**	0.050	mg/L	1	A708842	07/13/17	07/21/17	
Beryllium	EPA 200.8	ND	1.0	ug/L	1	A708842	07/13/17	07/20/17	CV0.0
Cadmium	EPA 200.8	ND	1.0	ug/L	1	A708842	07/13/17	07/20/17	
Calcium	EPA 200.7	**53**	0.10	mg/L	1	A708842	07/13/17	07/21/17	
Chromium	EPA 200.8	**18**	10	ug/L	1	A708842	07/13/17	07/20/17	
Copper	EPA 200.8	ND	5.0	ug/L	1	A708842	07/13/17	07/20/17	
Iron	EPA 200.7	ND	0.030	mg/L	1	A708842	07/13/17	07/21/17	
Lead	EPA 200.8	ND	1.0	ug/L	1	A708842	07/13/17	07/20/17	
Magnesium	EPA 200.7	**30**	0.10	mg/L	1	A708842	07/13/17	07/21/17	
Manganese	EPA 200.7	ND	0.010	mg/L	1	A708842	07/13/17	07/21/17	
Mercury	EPA 200.8	ND	0.20	ug/L	1	A708842	07/13/17	07/20/17	
Nickel	EPA 200.8	ND	10	ug/L	1	A708842	07/13/17	07/20/17	
Potassium	EPA 200.7	**2.2**	2.0	mg/L	1	A708842	07/13/17	07/21/17	
Selenium	EPA 200.8	ND	2.0	ug/L	1	A708842	07/13/17	07/20/17	

ASSOCIATES

Certificate of Analysis

Sample ID: A7G1000-13
Sampled By: Ryan Harris
Sample Description: Well 15

Sample Date - Time: 07/12/17 - 10:49
Matrix: Drinking Water
Sample Type: Grab

Field Data: pH=7.03 Temp=27.1 °C

Metals

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Silver	EPA 200.8	ND	10	ug/L	1	A708842	07/13/17	07/20/17	
Sodium	EPA 200.7	**47**	1.0	mg/L	1	A708842	07/13/17	07/21/17	
Thallium	EPA 200.8	ND	1.0	ug/L	1	A708842	07/13/17	07/20/17	
Hardness as CaCO3	SM 2340B	**260**	0.41	mg/L					
Zinc	EPA 200.7	ND	0.050	mg/L	1	A708842	07/13/17	07/21/17	

Radiological

Analyte	Method	Result	Units	Batch	Prepared	Analyzed	Qual
Gross Alpha	SM 7110C	ND	pCi/L	A709096	07/19/17	07/20/17	
1.65 Sigma Uncertainty		**0.110**	±				
MDA95		**1.06**	pCi/L				

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
EDB and DBCP by GC-ECD									
Dibromochloropropane (DBCP)	EPA 504.1	ND	0.010	ug/L	1	A708902	07/14/17	07/14/17	
Ethylene Dibromide (EDB)	EPA 504.1	ND	0.020	ug/L	1	A708902	07/14/17	07/14/17	
Surrogate: 1-Br-2-Nitrobenzene	EPA 504.1	109 %	*Acceptable range: 70-130 %*						
EPA 505 - Simazine, Atrazine, and Alachlor Only									
Alachlor	EPA 505	ND	1.0	ug/L	1	A708902	07/14/17	07/14/17	
Atrazine	EPA 505	ND	0.50	ug/L	1	A708902	07/14/17	07/14/17	
Simazine	EPA 505	ND	1.0	ug/L	1	A708902	07/14/17	07/14/17	
Surrogate: 1-Br-2-Nitrobenzene	EPA 505	109 %	*Acceptable range: 70-130 %*						
Volatile Organics by GC-MS									
1,1,1,2-Tetrachloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,1,1-Trichloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,1,2,2-Tetrachloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,1,2-Trichloro-1,2,2-trifluoroethane	EPA 524.2	ND	10	ug/L	1	A708850	07/13/17	07/13/17	
1,1,2-Trichloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,1-Dichloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,1-Dichloroethene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,1-Dichloropropene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,2,3-Trichlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,2,4-Trichlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,2,4-Trimethylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,2-Dichlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,2-Dichloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,2-Dichloropropane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,3,5-Trimethylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,3-Dichlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	

ASSOCIATES

Certificate of Analysis

Sample ID: A7G1000-13
Sampled By: Ryan Harris
Sample Description: Well 15

Sample Date - Time: 07/12/17 - 10:49
Matrix: Drinking Water
Sample Type: Grab

Field Data: pH=7.03 Temp=27.1 °C

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Volatile Organics by GC-MS									
1,3-Dichloropropane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
1,4-Dichlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
2,2-Dichloropropane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
2-Butanone	EPA 524.2	ND	5.0	ug/L	1	A708850	07/13/17	07/13/17	
2-Chlorotoluene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
2-Hexanone	EPA 524.2	ND	10	ug/L	1	A708850	07/13/17	07/13/17	
4-Chlorotoluene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
4-Methyl-2-pentanone	EPA 524.2	ND	5.0	ug/L	1	A708850	07/13/17	07/13/17	
Acetone	EPA 524.2	ND	10	ug/L	1	A708850	07/13/17	07/13/17	
Benzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Bromobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Bromochloromethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Bromodichloromethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Bromoform	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Bromomethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Carbon Tetrachloride	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Chlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Chloroethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Chloroform	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Chloromethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
cis-1,2-Dichloroethene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
cis-1,3-Dichloropropene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Dibromochloromethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Dibromomethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Dichlorodifluoromethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Dichloromethane	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Di-isopropyl ether (DIPE)	EPA 524.2	ND	3.0	ug/L	1	A708850	07/13/17	07/13/17	
Ethyl tert-Butyl Ether (ETBE)	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Ethylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Hexachlorobutadiene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Isopropylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
m,p-Xylenes	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Methyl-t-butyl ether	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Naphthalene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
n-Butylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
n-Propylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
o-Xylene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
p-Isopropyltoluene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
sec-Butylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Styrene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
tert-Amyl Methyl Ether (TAME)	EPA 524.2	ND	3.0	ug/L	1	A708850	07/13/17	07/13/17	
tert-Butyl alcohol (TBA)	EPA 524.2	ND	2.0	ug/L	1	A708850	07/13/17	07/13/17	
tert-Butylbenzene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	

ASSOCIATES

Certificate of Analysis

Sample ID: A7G1000-13
Sampled By: Ryan Harris
Sample Description: Well 15

Sample Date - Time: 07/12/17 - 10:49
Matrix: Drinking Water
Sample Type: Grab

Field Data: pH=7.03 Temp=27.1 °C

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Volatile Organics by GC-MS									
Tetrachloroethene (PCE)	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Toluene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
trans-1,2-Dichloroethene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
trans-1,3-Dichloropropene	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Trichloroethene (TCE)	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Trichlorofluoromethane	EPA 524.2	ND	5.0	ug/L	1	A708850	07/13/17	07/13/17	
Vinyl Chloride	EPA 524.2	ND	0.50	ug/L	1	A708850	07/13/17	07/13/17	
Surrogate: 1,2-Dichlorobenzene-d4	EPA 524.2	105 %	*Acceptable range: 70-130 %*						
Surrogate: Bromofluorobenzene	EPA 524.2	103 %	*Acceptable range: 70-130 %*						
Total 1,3-Dichloropropene		ND	0.50	ug/L					
Total Trihalomethanes		ND	0.50	ug/L					
Total Xylenes, EPA 524.2		ND	0.50	ug/L					

Appendix T. Groundwater Conditions in the Dos Palos Sub-Area of the SJREC GSP

GROUNDWATER CONDITIONS IN THE DOS PALOS SUB-AREA OF THE SJREC GSP

prepared for
San Joaquin River Exchange
Contractors GSA
Los Banos, California

and
City of Dos Palos GSA
Dos Palos, California

by
Kenneth D. Schmidt & Associates
Groundwater Quality Consultants
Fresno, California

May 2019

KENNETH D. SCHMIDT AND ASSOCIATES
GROUNDWATER QUALITY CONSULTANTS
600 WEST SHAW AVE., SUITE 250
FRESNO, CALIFORNIA 93704
TELEPHONE (559) 224-4412

May 31, 2019

Mr. Chris White, Executive Director
San Joaquin River Exchange
Contractors GSA
P. O. Box 2115
Los Banos, CA 93635

Re: Dos Palos Sub-Area of the
SJREC GSP

Dear Chris:

Submitted herewith is our report on groundwater conditions in the Dos Palos Sub-area of the SJREC GSP. We appreciate the cooperation of the CCID and City of Dos Palos in providing information for this report.

Sincerely Yours,

Kenneth D. Schmidt
Geologist No. 1578
Certified Hydrogeologist 176

REGISTERED GEOLOGIST
KENNETH D. SCHMIDT
NO. 1578
STATE OF CALIFORNIA

REGISTERED GEOLOGIST
KENNETH D. SCHMIDT
NO. 176
CERTIFIED
HYDROGEOLOGIST
STATE OF CALIFORNIA

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GROUNDWATER CONDITIONS IN THE DOS PALOS SUB-AREA OF THE SJREC GSP

INTRODUCTION

As part of the Groundwater Sustainability Plan (GSP) for the San Joaquin River Exchange Contractors (SJREC) GSA service area, GSPs for a number of cities, including Dos Palos, are being incorporated into the SJREC GSP. The City has been using water from the California Aqueduct for several decades, because of poor groundwater quality beneath the City. Kenneth D. Schmidt and Associates (KDSA, 2017) prepared a report on groundwater conditions in the vicinity of the City of Dos Palos, as part of an evaluation of potential sites for a backup well for the City. The area evaluated included the City and lands to the south and west along the pipeline extending between the Aqueduct and the City.

This report is intended to provide information on groundwater conditions within and near the Dos Palos Study Area (Figure 1). This area encompasses lands that are planned for future urban development. This study area is generally bounded by Carmellia Avenue to the north, W. Miller Avenue to the south, the Laguna Canal to the west, and N. Custer Avenue on the east. Lands surrounding most of the City are in the SJREC GSA. Some lands west of Folsom Avenue are in the Merced County Delta-Mendota GSA.

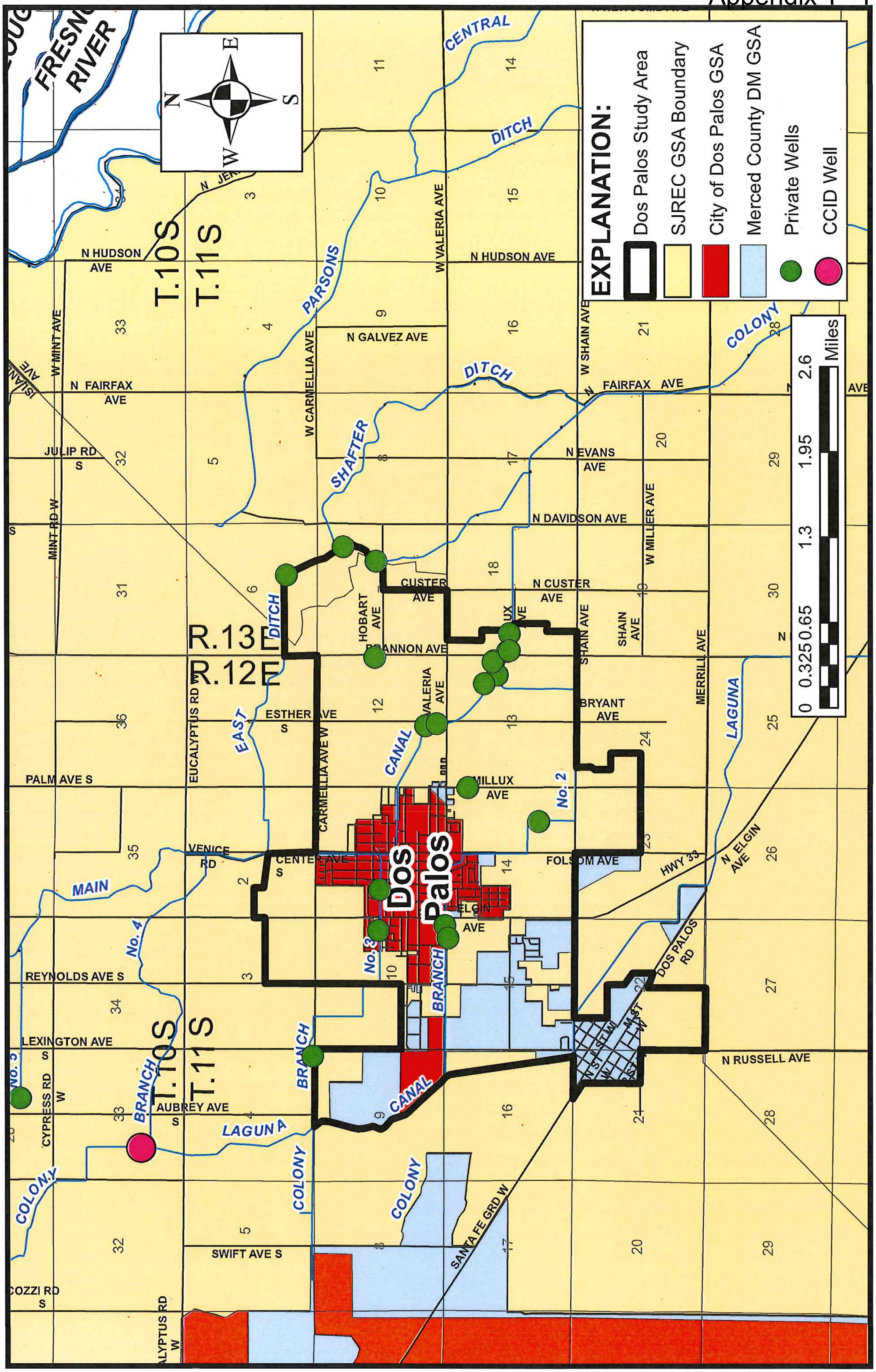

FIGURE 1-LOCATION OF DOS PALOS STUDY AREA AND SELECTED WELLS

SUBSURFACE GEOLOGIC CONDITIONS

Alluvial deposits comprise the aquifers in the Dos Palos vicinity. A regional confining bed, the Corcoran Clay, separates the upper and lower aquifers. The top of the Corcoran Clay is about 250 feet deep and the clay is about 120 feet thick beneath the City. There are numerous sand layers above and below the clay from which groundwater can be pumped.

WELL DATA

Two test holes were drilled in the City in Fall 1956. The first was a 627-foot deep hole near the City water works (west of the Joint Union High School). The second hole was drilled to a depth of 700 feet at a site about 2,000 feet east of the High School. Water samples were apparently collected from both holes, the chemical quality was determined to be unusable for public supply, and the holes were destroyed. Prior to the City obtaining water from the aqueduct, Luhdorff & Scalmanini conducted an evaluation for the City of the closest area where groundwater of suitable quality for public supply was present. They conducted a test well program near the Dos Palos Y (Highways 152 and 33). Although good quality groundwater was found, there was substantial local opposition to exporting groundwater from the Y area, and the proposed project was abandoned. In

1984, Kenneth D. Schmidt & Associates conducted an evaluation for the City and concluded that suitable quality groundwater for public supply wasn't present beneath the City. The City then went ahead with the project to obtain water from the Aqueduct. Water from the San Luis Canal (Aqueduct) was purchased from the CCID. A pipeline was subsequently built from near Eagle Field Road and the Aqueduct to the east to Russel Avenue, thence to the north and east and into the City.

Irrigation wells in the Dos Palos vicinity tap the upper aquifer, as higher salinity groundwater is normally present below the Corcoran Clay. CCID Well No. 6 is located northwest of the study area. The casing in this well is perforated between 50 and 180 feet in depth.

WATER LEVELS

Water levels in the Dos Palos vicinity are relatively shallow, generally less than 20 feet deep. Figure 2 is a water-level elevation map for the upper aquifer for Spring 2015. The City is near a groundwater divide. Groundwater northeast of the City flows to the northeast towards the San Joaquin River, groundwater to the south flows to the south and into the Panoche W.D., and groundwater northwest of the City flows to the northwest and into the Grassland W.D.

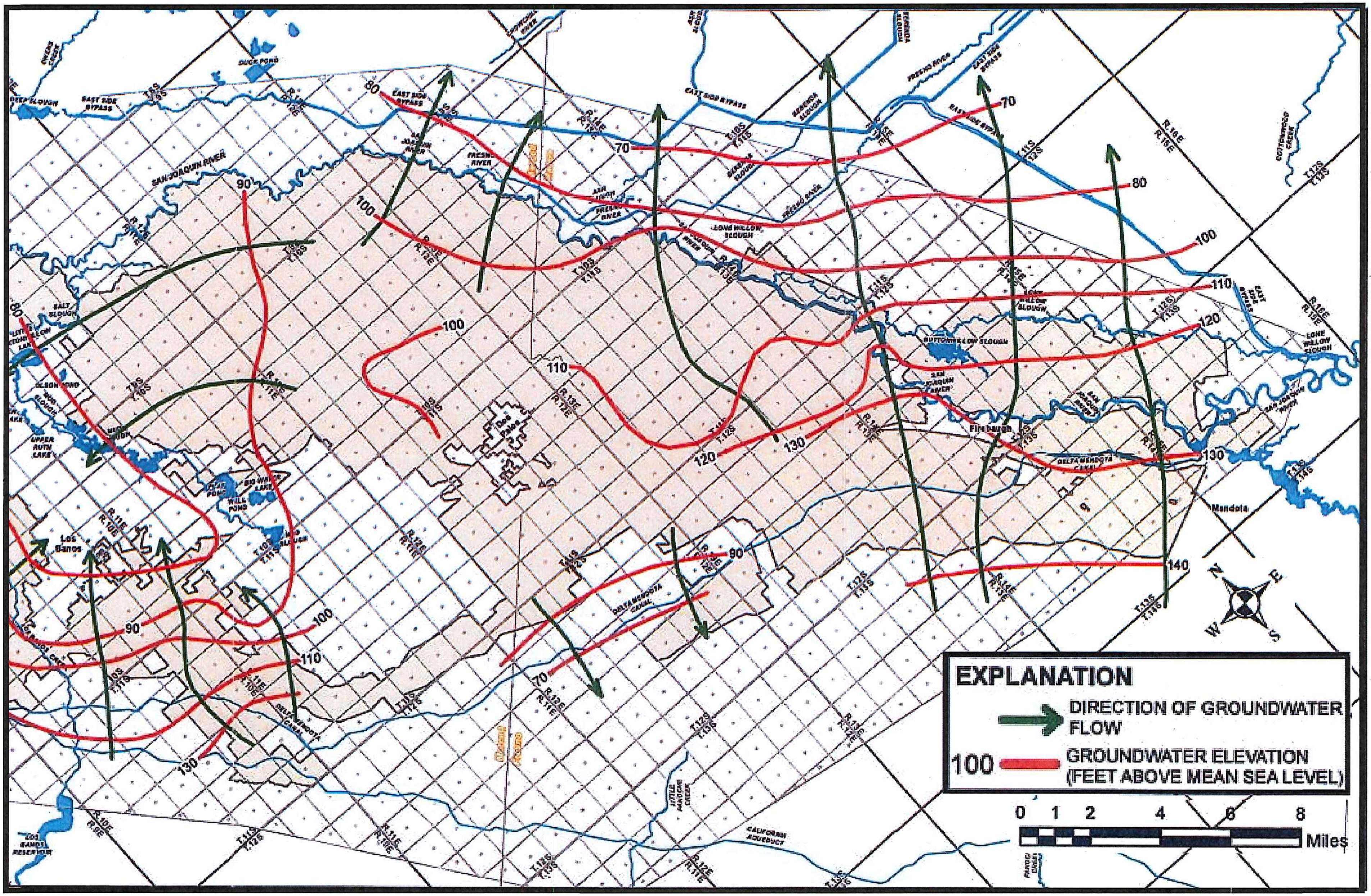

FIGURE 2 - WATER-LEVEL ELEVATIONS AND DIRECTION OF GROUNDWATER FLOW FOR THE UPPER AQUIFER (SPRING 2015)

Figure 3 is a representative water-level hydrograph for the upper aquifer in the Dos Palos area. Well T11S/R13E-17E1 is located about a mile and a quarter east of the study area. Depth to water ranged from about two to 25 feet during 1965-2017. The deepest water levels of record were in 2015-16. Except for the recent drought, water-levels were stable, usually ranging from about three to 12 feet deep.

PUMP TEST DATA

Table 1 shows pump test data for CCID Well No. 6. Pump tests are available for 11 years between 2002 and 2016. The pumping rates ranged from 825 to 1,733 gpm. Specific capacities usually ranged from about 20 to 80 gpm per foot. The highest pumping rates and specific capacities were after the well perforations had been cleaned.

PUMPAGE

Table 2 shows annual pumpage from CCID Well No. 6 and 18 private irrigation wells in the study area (estimated by the CCID). Annual pumpage from CCID Well No. 6 ranged from about 50 to 1,030 acre-feet and averaged about 490 acre-feet per year from 2003 to 2017. The highest pumpage was in 2007 and the lowest

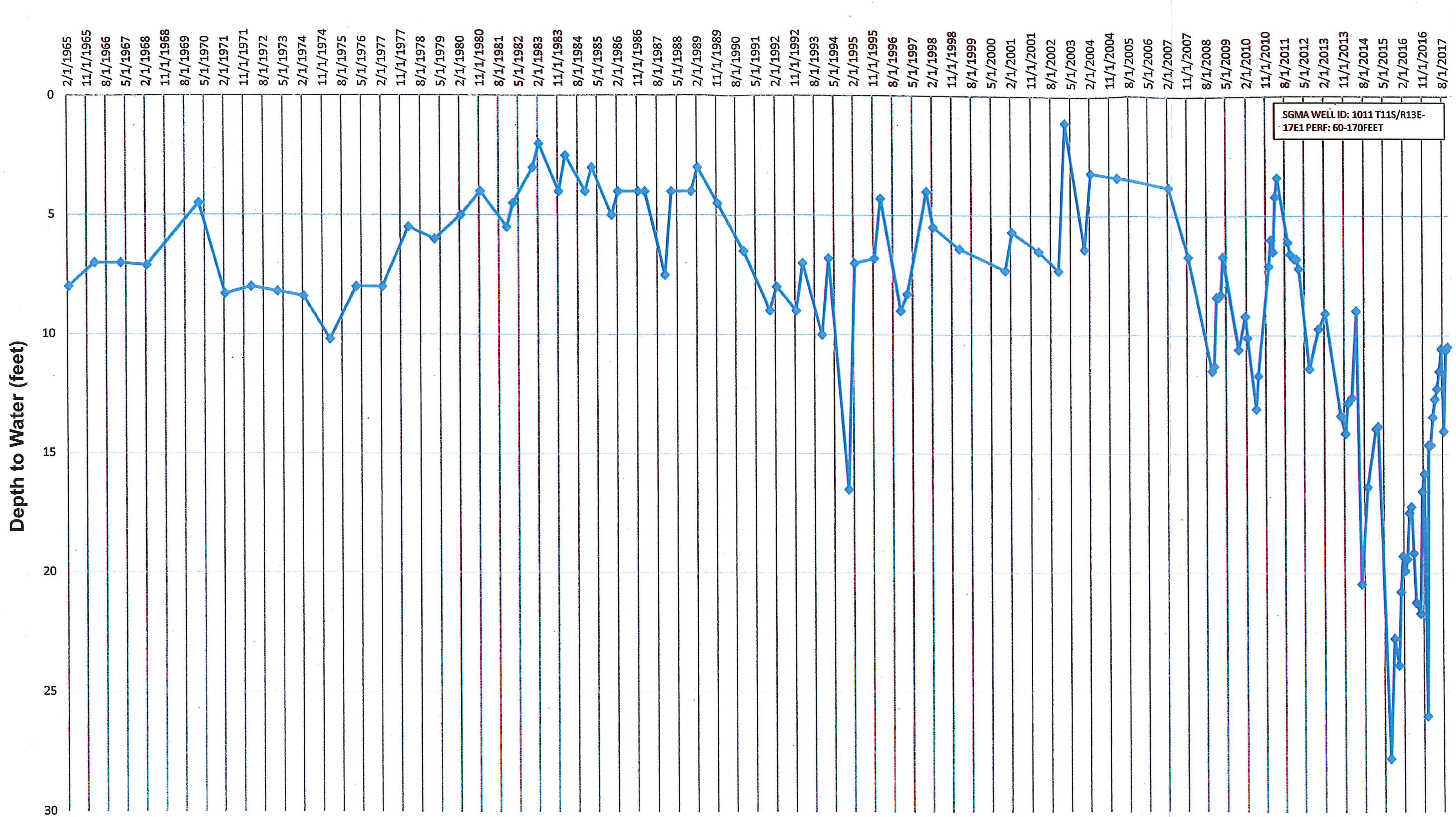

FIGURE 3-REPRESENTATIVE WATER-LEVEL HYDROGRAPH FOR UPPER AQUIFER IN THE DOS PALOS AREA

TABLE 1-PUMP TEST DATA FOR CCID WELL NO. 6

Date Tested	Pumping Rate (gpm)	Static Level (feet)	Pumping Level (feet)	Drawdown (feet)	Approximate Specific Capacity (gpm/ft)
6/3/02	1,526	29.82	64.00	34.18	44.60
7/25/03	1,532	—	78.30	78.30	—
7/28/04	1,105	20.70	76.50	55.80	19.10
6/28/05	1,002	18.70	70.00	51.30	18.80
8/31/07	825	17.30	75.00	57.70	14.30
4/1/09	1,557	25.15	49.14	23.99	64.90
10/25/10	1,328	11.20	38.20	27.00	49.20
8/1/11	1,642	24.60	48.20	23.60	69.60
9/25/12	1,634	25.00	45.50	20.50	79.70
6/24/14	825	18.00	28.00	10.00	82.50
10/15/16	1,733	12.70	42.49	29.79	58.20

TABLE 6-ANNUAL PUMPAGE FOR CCID WELL NO. 6
AND PRIVATE IRRIGATION WELLS

Year	Pumpage (AF)	
	CCID Wells	Private Wells
2003	265	5,013
2004	606	3,356
2005	382	3,639
2006	49	3,928
2007	1,028	3,121
2008	199	4,061
2009	454	4,540
2010	503	1,677
2011	413	2,353
2012	684	896
2013	813	1,718
2014	478	2,676
2015	508	7,870
2016	425	1,891
2017	178	375

pumpage was in 2006. Annual pumpage from the private irrigation wells ranged from about 380 acre-feet to 7,870 acre-feet from 2003 to 2017. The highest pumpage was in 2015 and the lowest pumpage was in 2017. The average pumpage from the private wells in the study area was about 3,360 acre-feet per year during 2003-17.

CITY AQUEDUCT WATER

Table 3 shows the water deliveries to the City from the aqueduct for 2003-16. The annual deliveries ranged from 970 to 1,778 acre-feet and averaged 1,400 acre-feet per year from 2003 to 2016.

CITY EFFLUENT

Table 4 shows annual volume of sewage effluent for the City for 2003 to 2016. The annual amount of effluent ranged from 476 to 744 acre-feet, and the average amount was about 640 acre-feet per year during this period. Net evaporation from the 54 acres of effluent ponds is estimated to average about 4.0 acre-feet per acre per year, or about 220 acre-feet per year. Most of the remainder of the effluent was used for crop irrigation.

TABLE 3-WATER DELIVERIES TO THE CITY FROM THE AQUEDUCT

Water Year	Volume (ac-ft)
2003	1,417
2004	1,495
2005	1,415
2006	1,455
2007	1,630
2008	1,664
2009	1,269
2010	1,280
2011	1,224
2012	1,346
2013	1,778
2014	1,417
2015	970
2016	1,231

TABLE 4-AMOUNTS OF CITY SEWAGE EFFLUENT AND POND EVAPORATION

Water Year	Total Effluent Volume (AF)	After Pond Evaporation Effluent Volume (AF)
2003	611	287
2004	657	333
2005	702	378
2006	688	364
2007	646	322
2008	678	354
2009	743	419
2010	694	370
2011	744	420
2012	677	353
2013	663	339
2014	536	212
2015	490	166
2016	476	152

CONSUMPTIVE USE

Urban

The urban consumptive use is from outside water use in the City, evaporation from the effluent ponds, and evapotranspiration of crops grown with effluent. The outside water use was estimated by subtracting the average amount of sewage effluent (640 acre feet per year) from the average amount of aqueduct water delivered (1,400 acre-feet per year) during 2003 to 2016. The average outside water use was thus 760 acre-feet per year for this period. The consumptive use due to outside water use in the City was estimated to be 70 percent of this, or 530 acre-feet per year. An average of about 420 acre-feet of effluent was used for crop irrigation. The estimated consumptive use was about 70 percent of this, or 300 acre-feet per year. Combined with the pond evaporation of 220 acre-feet per year, the average total urban consumptive use was thus about 1,050 acre-feet per year.

Rural

Table 5 shows CCID canal water deliveries and crop evapotranspiration from 2003-16. CCID water deliveries average 7,700 acre-feet per year. The crop evapotranspiration of applied water averaged about 5,900 acre-feet per year.

TABLE 5-CCID CANAL WATER DELIVERIES AND CROP EVAPOTRANSPIRATION

Water Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Acreage	3,100	3,100	3,100	3,100	3,100	3,100	3,100	3,100	3,100	3,100	3,100	3,100	3,100	3,100
Water Delivered (AF)	7,800	9,500	7,300	6,400	7,400	8,200	7,900	7,300	7,500	9,100	10,200	6,600	6,700	6,100
ETc (AF)	7,500	8,300	7,500	7,900	6,800	6,900	8,900	7,000	7,500	7,500	7,400	6,500	7,000	6,800
ETiw (AF)	6,600	7,200	6,200	6,400	6,200	6,200	-	-	-	6,500	-	-	-	-

Total

The total consumptive use in the study area averaged about 6,950 acre-feet per year during 2003-16.

CHANGES IN GROUNDWATER STORAGE

Long-term water-level measurements for wells in the area indicated no overall change in storage. In the Dos Palos study area this is supported by the water budget calculations, which do not indicate a water deficit.

WATER BUDGET

The total amount of surface water (urban and rural) averaged 9,100 acre-feet per year, and this exceeded the consumptive use by an average of 2,150 acre-feet per year. The groundwater flows into and out of the study area help maintain a water balance. More groundwater flows out of the study area than into the area.

LAND SUBSIDENCE

Figure 4 shows land subsidence in the area for December 2013-December 2017. Land subsidence is due primarily to pumpage from the lower aquifer. The subsidence near Dos Palos was 0.5 foot during this period. The closest wells to Dos Palos where pumpage from the lower aquifer was occurring was in the Red Top-El

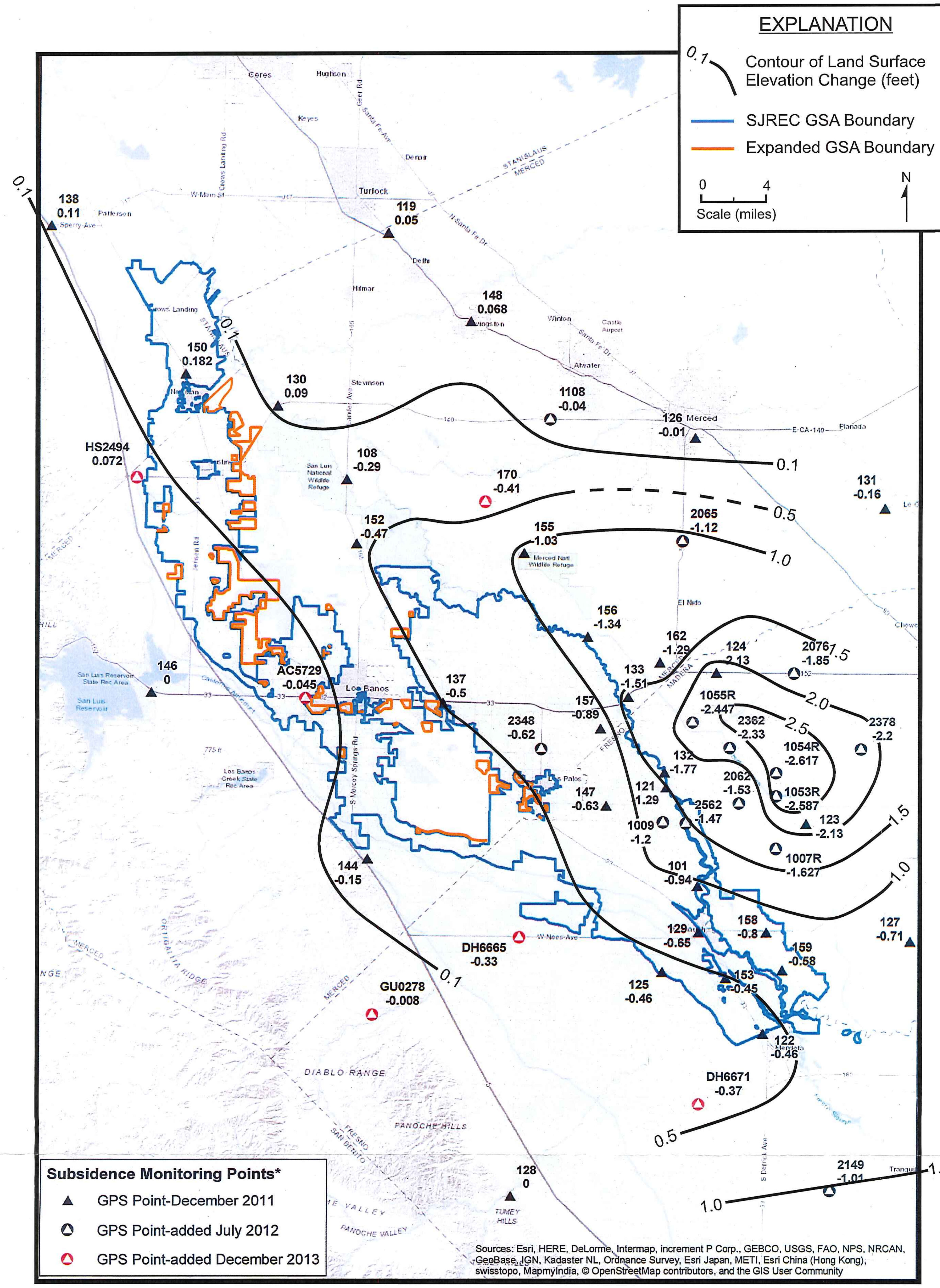

FIGURE 4-LAND SUBSIDENCE (DECEMBER 2013-DECEMBER 2017)

Nido area to the northeast and east, in the Panoche Water District to the southwest, and in the Broadview W.D. to the south. Figure 4 indicates that more than two feet of land subsidence occurred in the Red Top area during this period.

GROUNDWATER QUALITY

Water samples were collected from CCID Well No. 6 during ten years between 2003 and 2017. Table 6 shows the results of three analyses of water from this well. The water was of the sodium chloride type. Sodium concentrations ranged from 230 to 300 mg/l and chloride concentrations ranged from 450 to 550 mg/l. Nitrate concentrations were less than 1 mg/l, and boron concentrations ranged from 0.6 to 0.8 mg/l. Water from this well is of suitable quality for irrigation of crops when mixed with canal water. If used directly for irrigation, the water or soil would need to be treated because of the high sodium adsorption ratio. The boron concentrations exceeded desirable levels for direct irrigation of boron-sensitive crops, and chloride concentrations were too high for direct irrigation of some crops, such as almonds. The non-detectable nitrate concentrations indicate that the groundwater is anaerobic. Such groundwater can have high concentrations of iron, manganese, and arsenic, and have a rotten-egg odor due to hydrogen sulfide.

TABLE 6-CHEMICAL QUALITY OF WATER FROM CCID WELL NO. 6

Constituent (mg/l)	8/22/03	9/23/10	7/19/17
Calcium	91	110	120
Magnesium	52	57	59
Sodium	230	240	300
Potassium	3	4	5
Bicarbonate	170	210	180
Sulfate	130	210	200
Chloride	500	450	550
Nitrate	<1	<1	<1
pH	7.4	7.9	7.7
Electrical Conductivity (micromhos/cm @ 25°C)	2,000	2,100	2,500
Total Dissolved Solids (@ 180°C)	1,300	1,300	1,400
Boron	0.7	0.6	0.8

REFERENCES

Kenneth D. Schmidt & Associates, 2017, Letter report to QK, Inc. on Potential Well Sites between Dos Palos and California Aqueduct, 5p.

Appendix U. Updated Groundwater Conditions in the Vicinity of the City of Firebaugh

UPDATED GROUNDWATER CONDITIONS IN THE VICINITY OF THE CITY OF FIREBAUGH

prepared for
San Joaquin River Exchange Contractors GSA
Los Banos, California
and
City of Firebaugh GSA
Firebaugh, California

by
Kenneth D. Schmidt and Associates
Groundwater Quality Consultants
Fresno, California

May 2019

KENNETH D. SCHMIDT AND ASSOCIATES
GROUNDWATER QUALITY CONSULTANTS
600 WEST SHAW AVE., SUITE 250
FRESNO, CALIFORNIA 93704
TELEPHONE (559) 224-4412

May 31, 2019

Mr. Chris White, Executive Director
San Joaquin River Exchange
Contractors GSA
P. O. Box 2115
Los Banos, CA 93635

Re: Firebaugh Sub-Area of the
SJREC GSP

Dear Chris:

Submitted herewith is our report on groundwater conditions in the Firebaugh Sub-area of the SJREC GSP. We appreciate the cooperation of the CCID and City of Firebaugh in providing information for this report.

Sincerely Yours,

Kenneth D. Schmidt
Geologist No. 1578
Certified Hydrogeologist 176

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KENNETH D. SCHMIDT
NO. 1578
STATE OF CALIFORNIA

REGISTERED GEOLOGIST
KENNETH D. SCHMIDT
NO. 176
CERTIFIED
HYDROGEOLOGIST
STATE OF CALIFORNIA

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INTRODUCTION

As part of the Groundwater Sustainability Plan (GSP) for the San Joaquin River Exchange Contractors (SJREC) GSA service area, GSPs for a number of cities, including Firebaugh, are being incorporated into the SJREC GSP. Kenneth D. Schmidt and Associates (KDSA) prepared a report on groundwater conditions in the vicinity of the City of Firebaugh in 2008 for the City 2030 general plans. That report provides substantial information that was used in preparing this report.

This report is intended to provide an update on groundwater conditions within the Firebaugh Study Area boundary (Figure 1). This boundary encompasses lands that are planned for future urban development. This study area is generally bounded by west Behymer Avenue on the north, the Outside Canal on the southwest, West Bullard Avenue on the south, and Road 6 on the east. The Central California Irrigation District (CCID) virtually adjoins the City on the west and south sides, and part of the City sphere of influence is in the District.

Figure 1 shows the study area boundary, City lands, and GSAs in the vicinity. There are two small areas that are in Madera Area-3 GSA, and the rest of the area is in the SJRECWA GSA.

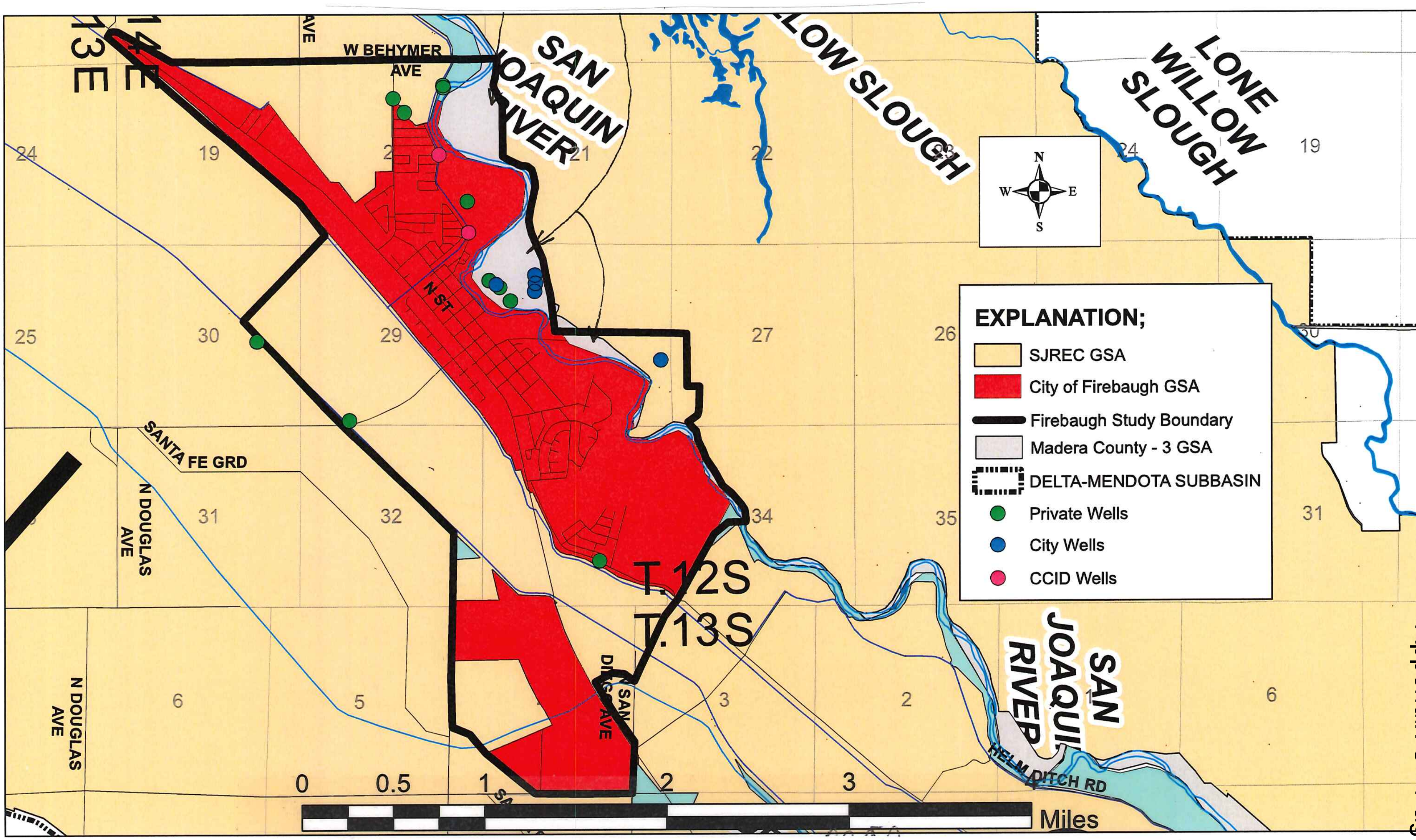


FIGURE 1-STUDY AREA BOUNDARY, CITY WELLS, AND SGMA GSAS

SUBSURFACE GEOLOGIC CONDITIONS

Alluvial deposits comprise the water producing deposits in the Firebaugh area. The Corcoran Clay is a regional, laterally extensive, confining bed beneath much of the west side of the San Joaquin Valley. Regionally, this blue clay has been used to separate an upper aquifer from an underlying lower aquifer. The focus of this evaluation focuses on groundwater in the upper aquifer, because groundwater in this aquifer is pumped by City wells. Deeper groundwater in the Firebaugh vicinity is indicated to be of unsuitable quality for public supply. The top of the Corcoran Clay is about 300 feet deep and the clay ranges from about 60 to 110 feet thick near Firebaugh. Belitz and Heimes (1990) showed that the Sierran Sands are present below a depth of about 100 feet and above the Corcoran Clay near the San Joaquin River near Mendota. These deposits are highly permeable and comprise the major aquifer that is used in the Firebaugh and Mendota areas. The top of these sands is shallower beneath Firebaugh, and these sands become thinner to the west of Firebaugh with increasing distance from the San Joaquin River. The Sierran Sands are overlain by Coast Range alluvial deposits, which are primarily fine-grained in the area west of Firebaugh.

As part of the previous evaluation, three subsurface geologic cross sections were developed (Figure 2). These cross sections were developed to focus primarily on conditions above the Corcoran

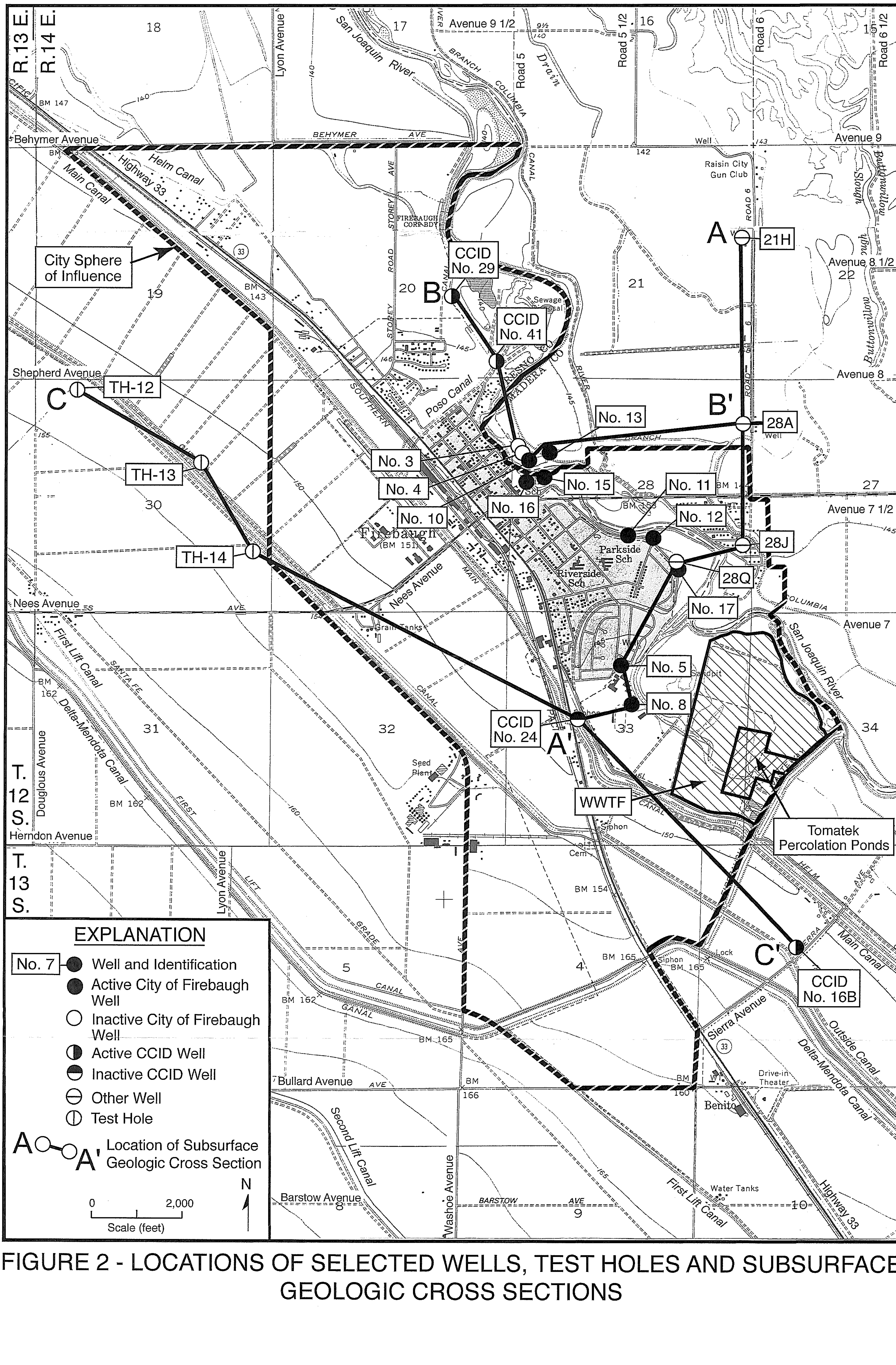


FIGURE 2 - LOCATIONS OF SELECTED WELLS, TEST HOLES AND SUBSURFACE GEOLOGIC CROSS SECTIONS

Clay at and near Firebaugh. Cross Section A-A′ extends from near Avenue 8-1/2 and Road 6, northeast of the City, to the south near the east edge of the City, and thence to the southeast through several City wells. Cross Section B-B′ extends from near the north part of the City to the southeast, through several City wells, and thence to the east to near Road 6. Cross Section C-C′ extends along the Outside Canal, west of the City to the southeast, through the southern part of the City to near Sierra Avenue.

Subsurface Cross Section A-A′ (Figure 3) shows the Corcoran Clay, which deepens to the southwest in the vicinity. The clay ranges from about 70 to 110 feet thick along this section. A more localized and thinner clay layer is present along the part of the cross section near the San Joaquin River. This has been termed the A-clay in the Mendota area and farther south. This shallow blue clay is overlain and underlain by the Sierran Sands at Firebaugh. Near Firebaugh and Mendota, the A-clay is a partial confining bed, partially separating the overlying groundwater from the underlying groundwater. The A-clay was identified at three wells (28J and former City Wells No. 5 and 8) along this section. Fine-grained deposits are predominant above the Corcoran Clay along the northeast part of the section. Near the San Joaquin River and farther southwest, sand is predominant above the Corcoran Clay along this section. Another regional blue clay,

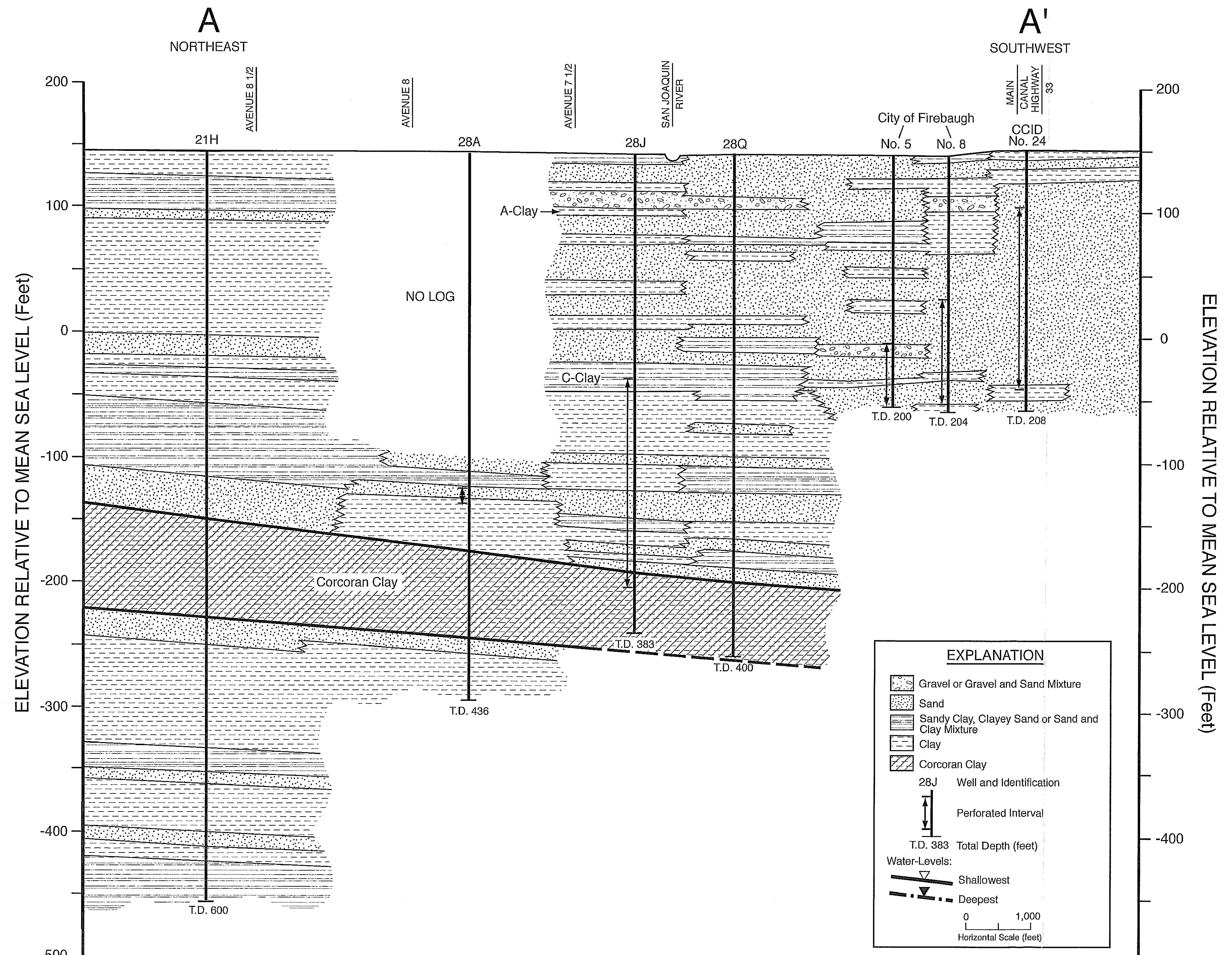


FIGURE 3 - SUBSURFACE GEOLOGIC CROSS SECTION A - A'

the C-clay, is also present near the San Joaquin River, and is about 150 to 200 feet deep beneath Firebaugh. Some stream channel deposits (coarser than sand) are present above the C-clay along this section.

Subsurface Cross Section B-B′ (Figure 4) also shows the Corcoran Clay, which is apparently about 100 feet thick along this section. The A-clay was penetrated by two wells along this section, at a depth of about 100 feet. Sand is predominant above the Corcoran Clay along the northwest part of this section. The C-clay was also penetrated by the same wells that penetrated the A-clay along this section, at a depth of about 150 to 170 feet. Stream channel deposits were encountered near the river both above and below the C-clay. The shallowest and deepest historical water levels for the two CCID wells are also shown on this section.

Cross Section C-C′ (Figure 5) extends from near Shephard Avenue and the Outside Canal to the southeast to near Sierra Avenue and the Main Canal. Three of the logs used along this cross section are for test holes done as part of a groundwater pumping/water transfer project by the Firebaugh Canal Water District and the CCID. Electric logs and geologic logs are available for these holes. The remaining two logs are for two CCID wells. Two of the test holes (TH-12 and TH-13) reached the top of the Corcoran

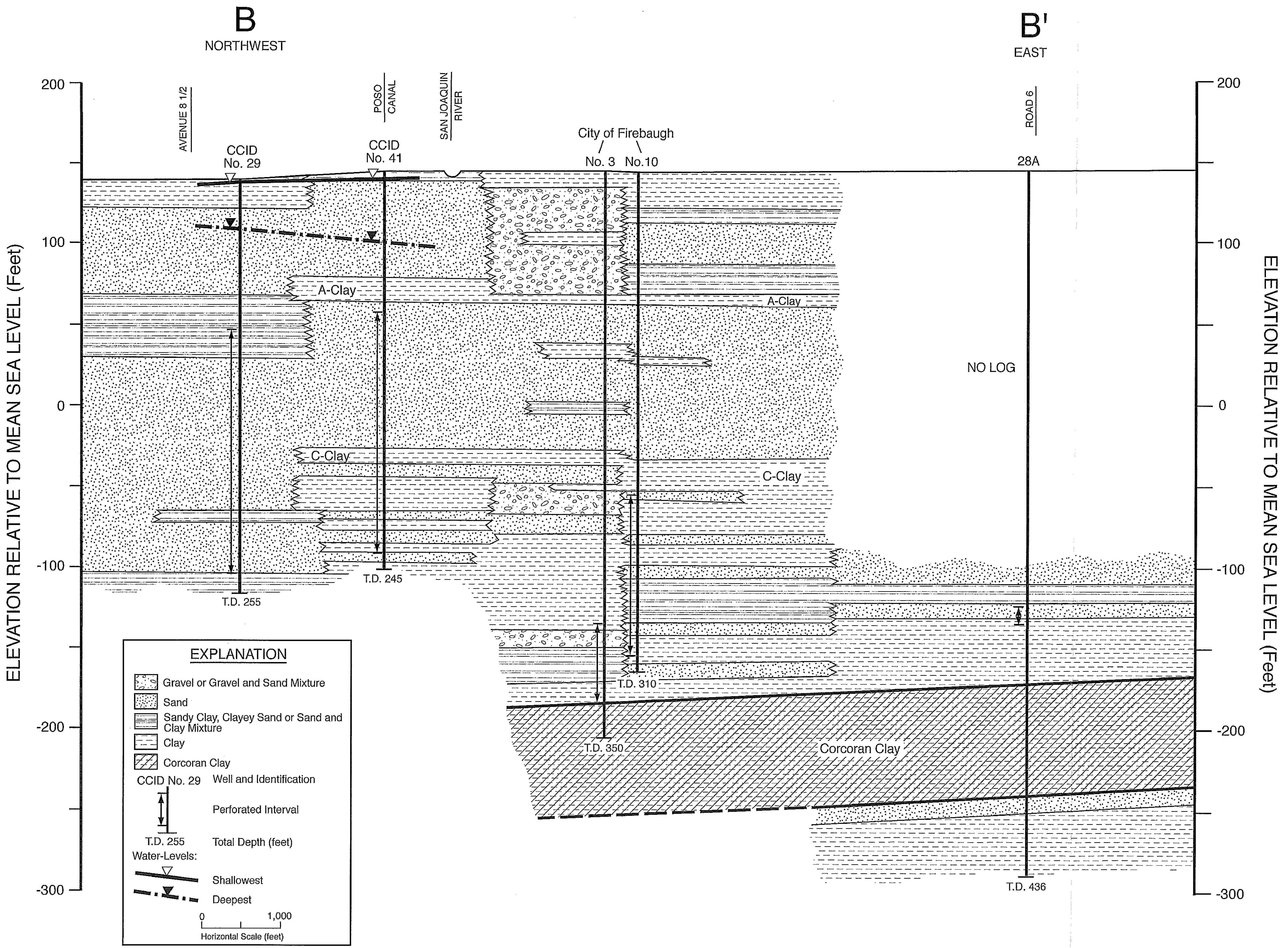


FIGURE 4 - SUBSURFACE GEOLOGIC CROSS SECTION B - B'

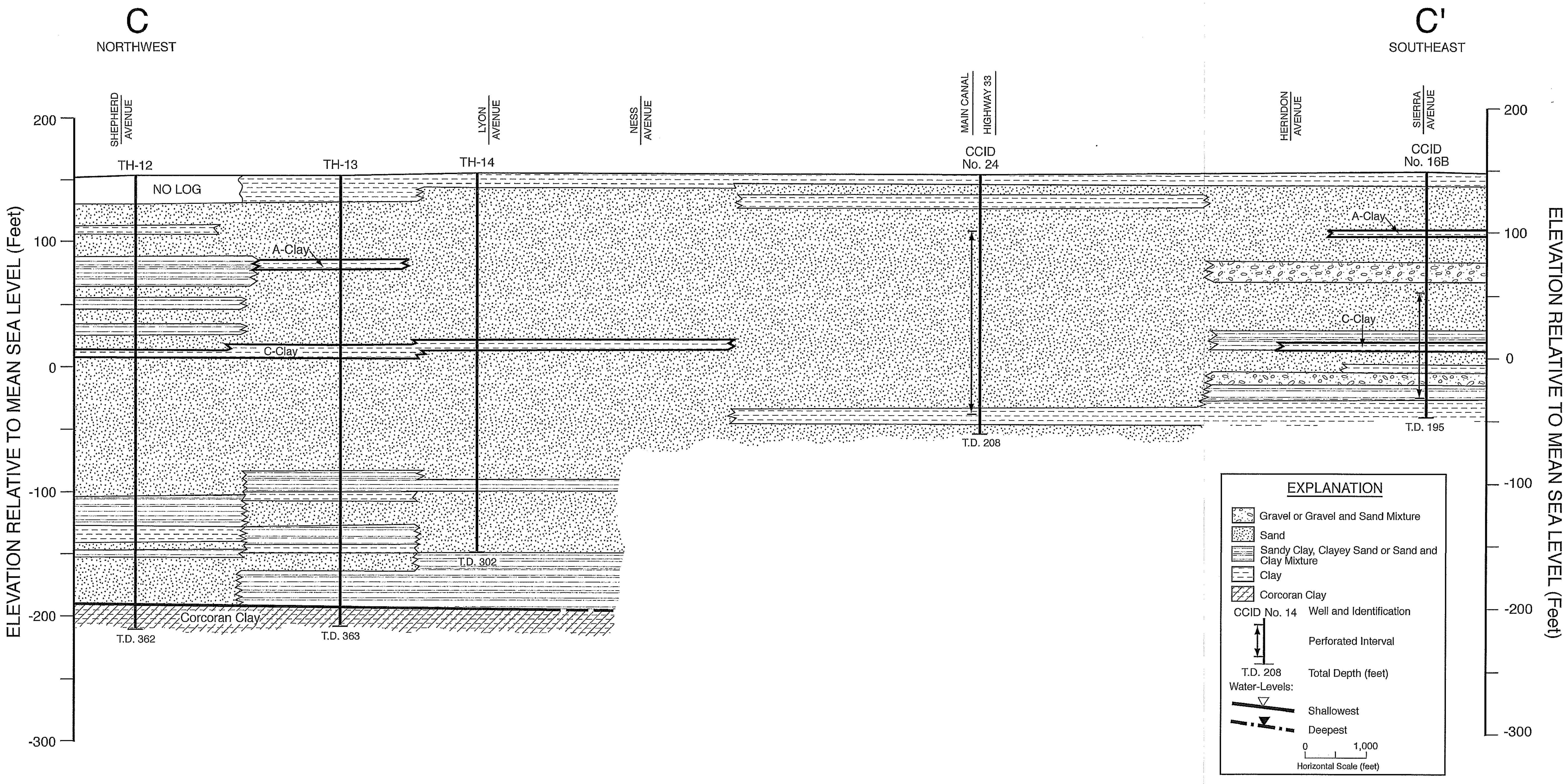


FIGURE 5 - SUBSURFACE GEOLOGIC CROSS SECTION C - C'

Clay, at a depth of 350 feet. Sand is predominant along the cross section, although there are more fine-grained deposits within the uppermost 150 feet to the northwest along this section. The A-clay was apparently at a depth of about 50 feet at CCID Well 16B and about 70 feet deep at TH-13. Some stream channel deposits were found at Well 16B. The C-clay was indicated to be present at the three test holes and at former CCID Well No. 16B.

CONSTRUCTION DATA FOR WELLS

Active City Wells

Table 1 shows construction data for the six active City wells. Cased depths range from 180 to 230 feet. The tops of the perforations range from 115 to 165 feet in depth. The more recent City wells generally have shallower depths to the top of the perforations compared to older wells. Annular seals range from 80 to 155 feet in depth.

CCID Wells

Table 2 shows construction data for two active CCID wells (No. 29 and 41) in the study area. Cased depths of these wells range from 236 to 248 feet, and the top of the perforations range from 86 to 93 feet deep.

TABLE 1-CONSTRUCTION DATA FOR ACTIVE CITY WELLS

No.	Date Drilled	Total Depth (feet)	Cased Depth (feet)	Casing Diameter (inches)	Perforated Interval (feet)	Annular Seal (feet)
11	6/91	205	200	16	165-190	0-155
12	1/94	190	180	16	155-180	0-80
13	5/97	210	200	16	160-200	0-155
15	4/05	245	230	16	115-220	0-105
16	4/05	235	230	16	115-220	0-105
17	6/14	220	200	16	140-185	0-120

Records from well completion reports.

TABLE 2-CONSTRUCTION DATA FOR CCID WELLS

No.	Date Drilled	Total Depth (feet)	Cased Depth (feet)	Casing Diameter (inches)	Perforated Interval (feet)	Annular Seal (feet)
29	01/64	-	248	18	93-105	-
41	3/67	245	236	16	86-236	-

Data from CCID.

WATER LEVELS

Depths and Elevations

Water levels in the upper aquifer in the Firebaugh area have been relatively shallow, primarily due to the small amount of groundwater that has been pumped for irrigation in the area west of the river (due to poor groundwater quality). The CCID Camp 13 Drainage District area is immediately west of Highway 33. Historically, groundwater wasn't pumped for irrigation in this area and water logging and subsurface drainage problems developed. Tile drainage systems were installed decades ago to allow irrigation to continue. Water levels are generally deeper in the area east of the river, because conjunctive use is practiced and a significant amount of groundwater is pumped for irrigation. Groundwater in that area is generally of suitable quality for irrigation. The shallowest and deepest water levels in CCID Wells No. 29 and 41 are shown on Cross Section B-B'. The shallowest levels generally coincide with the stage of the San Joaquin River. The CCID measures water levels in a number of shallow observation wells in the Camp 13 Drainage District. These measurements indicate that shallow groundwater flows into the San Joaquin River.

KDSA (2006) prepared water-level elevation maps for the upper aquifer in and near the Firebaugh area for Fall 1981 and Spring 1992. These maps were intended to portray normal conditions and drought conditions, respectively. Both of these maps indicated a northeast to north-northeast direction of groundwater flow. Groundwater was moving from beneath the CCID and Firebaugh Canal Water District (between the Main Canal and Third-Lift Canal) to the northeast, and into Madera County (Figure 6). The directions of groundwater flow shown on the map for Spring 1992 are indicated to be representative of current conditions.

Time Trends

Water-level and pumpage hydrographs were obtained from the CCID for the two District wells in the study area. Figure 7 is a long-term hydrograph for Well No. 29 and Figure 8 is one for Well No. 41. Depth to water in these wells has usually ranged from about 5 to 40 feet. The deepest water levels were during the early 1990's, in 1996, and in 2014 during heavy pumping episodes for irrigation wells in the vicinity. On the long-term, water levels in upper aquifer wells in the Firebaugh area have been relatively stable, and there is no evidence of groundwater overdraft.

AQUIFER CHARACTERISTICS

Well Capacities

Table 3 contains a summary of the results of pump tests conducted on five of the six active City wells during 2008. Pumping rates ranged from about 920 to 1,350 gpm. Specific capacities for these wells ranged from 11 to 53 gpm per foot. The highest

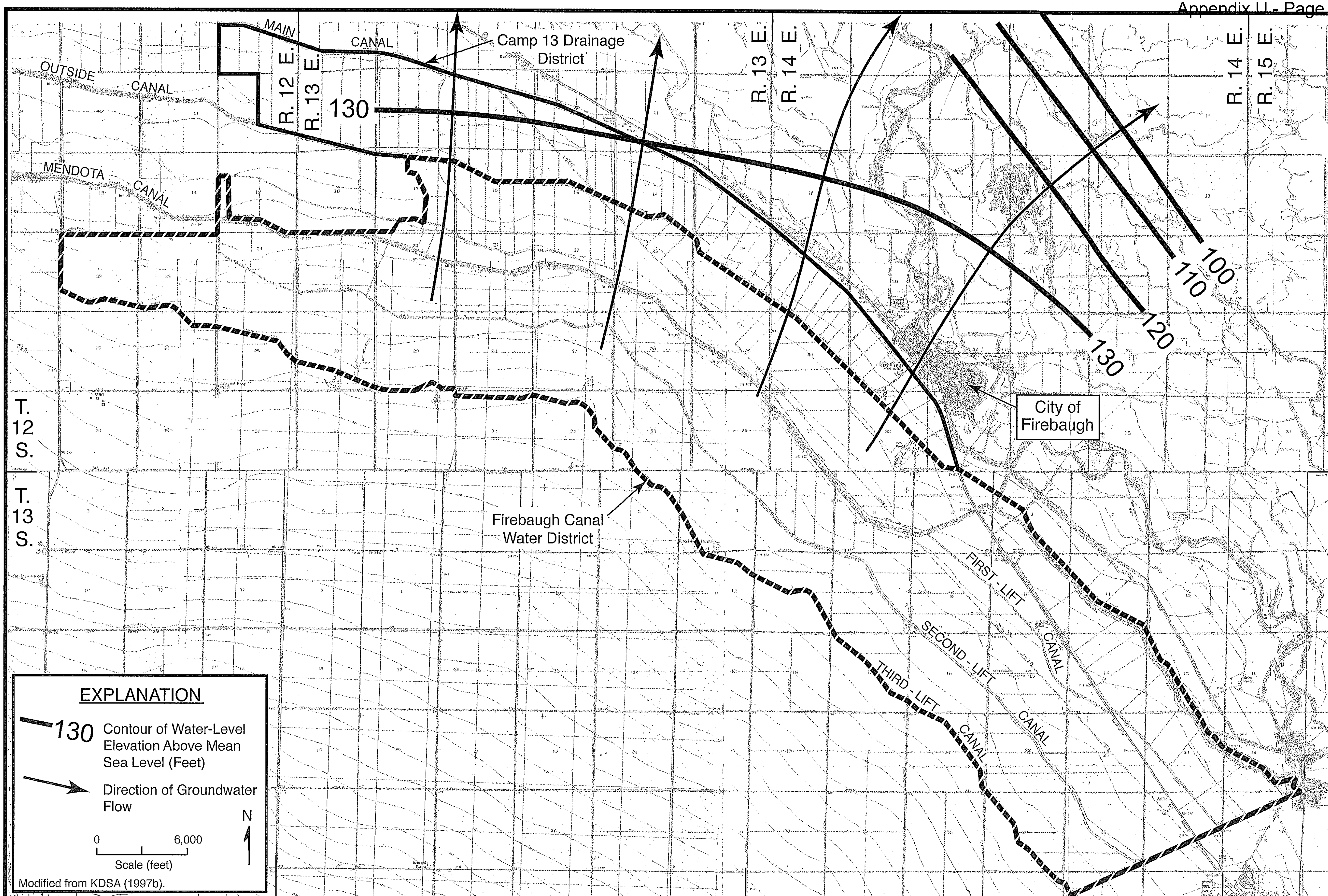


FIGURE 6 - WATER-LEVEL ELEVATION CONTOURS AND DIRECTION OF GROUNDWATER FLOW FOR UPPER AQUIFER (SPRING 1992)

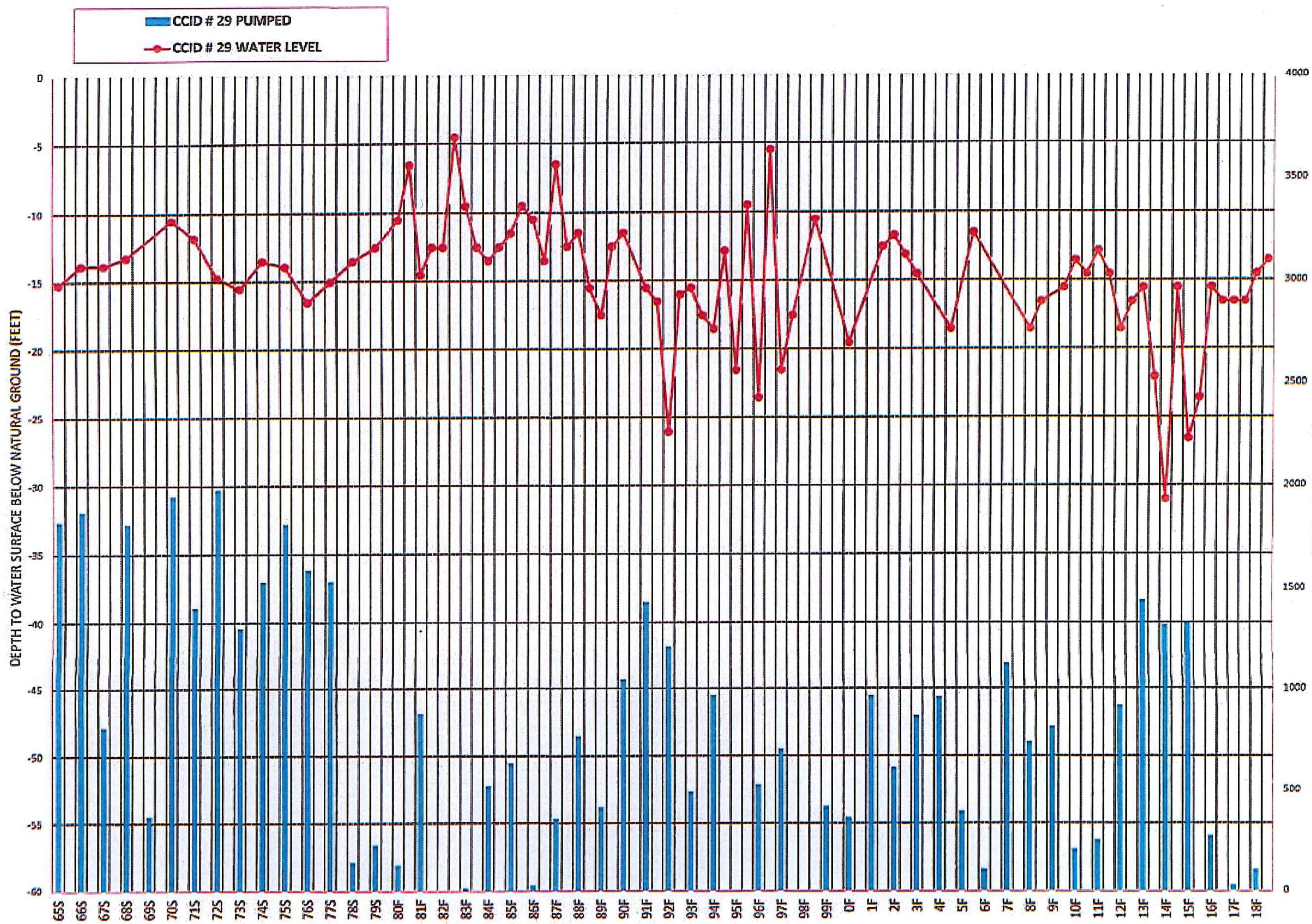


FIGURE 7 - LONG-TERM WATER-LEVEL AND PUMPAGE HYDROGRPAHS
FOR CCID WELL NO. 29

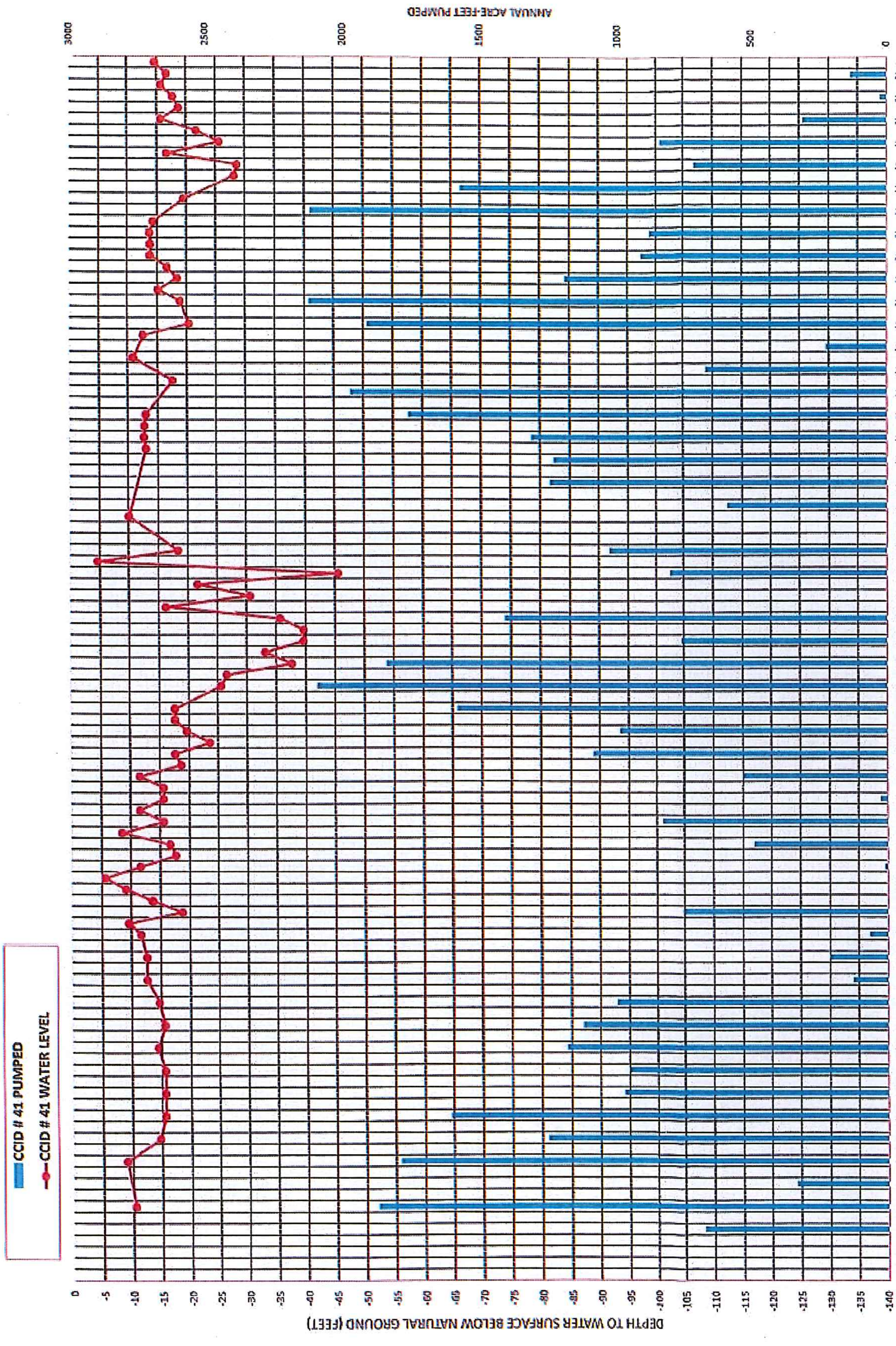


FIGURE 8 - LONG-TERM WATER-LEVEL AND PUMPAGE HYDROGRPAHS FOR CCID WELL NO. 41

TABLE 3-PUMP TEST DATA FOR CITY WELLS

No.	Date	Pumping Rate (gpm)	Static Level (feet)	Pumping Level (feet)	Drawdown (feet)	Specific Capacity (gpm per foot)
11	4/25/08	919	29	111	82	11.2
12	4/25/08	952	46.5	122	76	12.6
13	9/19/08	1,011	68.5	106	38	27.0
15	9/19/08	1,230	34	66.5	33	37.8
16	9/17/08	1,352	27.5	53	26	53
17	7/15/14	1,500	31	97	66	23

Data from City of Firebaugh

specific capacities (exceeding 25 gpm per foot) were for Wells No. 13, 15, and 16. The casings in the last two of these wells are perforated significantly shallower (115 feet) than the other active City wells.

Table 4 contains a summary of the results of pump tests that were conducted on the two CCID wells during late September 2016. Pumping rates ranged from about 1,520 to 1,640 gpm, and specific capacities ranged from about 20 to 24 gpm per foot.

Aquifer Tests

On May 11, 2005, Gleim-Crown Pump Co. of Fresno conducted a 12-hour step drawdown test on new City Well No. 15. At a pumping rate of 1,000 gpm, the drawdown was 18.5 feet and the specific capacity was 54.0 gpm per foot. Uncorrected recovery measurements for these measurements indicated a transmissivity of 87,000 gpd per foot. Uncorrected values can be used when the drawdown stabilized or nearby stabilized by the end of the pumping period. This value pertains to deposits between a depth of 115 and 200 feet (above the C-clay). During October 28-29, 1996, a 24-hour constant discharge test was conducted on CCID Well No. 41 (KDSA, 1997b). The average pumping rate was 2,210 gpm, and the specific capacity was 30 gpm. Corrected recovery measurements for this test indicated a transmissivity of 78,000 gpd per foot. This value pertains to deposits between 115 and 220 feet in depth. The results of these tests are in good agreement in terms of transmissivity.

TABLE 4-PUMP TEST DATA FOR CCID WELLS

No.	Date	Pumping Rate (gpm)	Static Level (feet)	Pumping Level (feet)	Drawdown (feet)	Specific Capacity (gpm per foot)
29	10/15/16	1,638	20.0	89.0	69.0	23.7
41	10/15/16	1,520	19.0	95.0	76.0	19.9

Pump test results from Central California Irrigation District, Los Banos.

The A-clay partly separates shallow groundwater associated with San Joaquin River streamflow from water tapped by City wells. The vertical hydraulic conductivity of the A-clay at Firebaugh has not been determined. However, several leaky aquifer tests have been conducted near Mendota, which allowed values of this parameter to be determined in that area. An average vertical hydraulic conductivity of about 0.02 gpd per square foot was determined for the A-clay. Groundwater below the A-clay is normally confined or partially confined. The storage coefficient for strata below the A-clay and above the Corcoran Clay near Mendota averaged about 0.001. These values are considered applicable to the Firebaugh study area.

PUMPAGE

Table 5 provides the annual City pumpage during 2003-07 and 2012-17. The annual pumpage ranged from 2,170 acre-feet in 2012 to 2,575 acre-feet in 2014. During 2012-13 and 2015-17, the annual pumpage was less due to water conservation measures. The average annual pumpage was 2,390 acre-feet per year.

Table 6 provides annual pumpage for the two active CCID wells in the Firebaugh area for 2003-2016. Annual pumpage has varied significantly, depending on the availability of surface water supplies in the District. The pumpage from these two wells ranged from about 325 acre-feet during 2006 to about 3,040 feet during 2007. The average pumpage from the two CCID wells was

TABLE 5-ANNUAL PUMPAGE FROM
CITY OF FIREBAUGH WELLS

Year	Pumpage (acre-feet
2003	2,436
2004	2,538
2005	2,418
2006	2,434
2007	2,569
2012	2,170
2013	2,349
2014	2,575
2015	2,312
2016	2,248
2017	2,270
Average	2,390

Records from City of Firebaugh

TABLE 6-ANNUAL PUMPAGE FROM CCID WELLS

Year	Pumpage (acre-feet)
2003	2,623
2004	2,925
2005	1,059
2006	326
2007	3,039
2008	2,856
2009	2,001
2010	1,117
2011	1,131
2012	3,033
2013	3,011
2014	2,089
2015	2,116
2016	575
Average	1,990

Records from Central California Irrigation District, Los Banos.

about 1,990 acre-feet per year during 2003-16.

Annual pumpage from private wells in the study area was estimated by the CCID for six years between 2003 and 2016. This pumpage ranged from 67 acre-feet in 2016 to 1,737 acre-feet in 2015.

CANAL WATER DELIVERIES

CCID provided records of canal water deliveries to 1,300 acres of irrigated lands in the study area for 2003-16. Canal deliveries ranged from 3,000 to 4,300 acre-feet per year and averaged 3,700 acre-feet per year, or about 2.8 acre-feet per acre.

CONSUMPTIVE USE

Rural

The CCID provided estimates of evapotranspiration for irrigated crops in the study area. Evapotranspiration of applied water ranged from 2,000 to 3,400 acre-feet per year and averaged 2,800 acre-feet per year for 2003-16, or an average of 2.2 acre-feet per year. There was some private irrigation well pumpage to supplement the canal deliveries.

Urban

The urban consumptive use is estimated by first substracting the sewage effluent for the pumpage to determine the outside water use. For 2003-16, this would be 2,400 acre-feet per year minus (700 acre-feet per year + 525 acre-feet per year for Tomatek), or 1,175 acre-feet per year. The consumptive use for outside irrigation was estimated to be 70 percent of this value, or 820 acre-feet per year. An additional 340 acre-feet per year was consumed by crop irrigation of Tomatek effluent and 100 acre-feet were evaporated from the City effluent ponds. The total urban consumptive use was 1,260 acre-feet per year.

The total urban and rural consumptive use was thus about 4,000 acre-feet per year, or about 300 acre-feet per year greater than the canal water deliveries.

SOURCES OF RECHARGE

The primary sources of recharge to groundwater in the Firebaugh Area are canal seepage, deep percolation of applied irrigation water, San Joaquin River seepage, and groundwater inflow from the southwest. Normal streamflow in the river at Firebaugh, in the absence of upstream floodflows in the Fresno Slough and the San Joaquin River east of Mendota, is due to operational releases of water from the Mendota Pool. This water is delivered to the San Luis Canal Company at Sack Dam (east of Dos Palos). Operational releases down the river range from about 50 cfs during non-irrigation periods to about 500 cfs during summer irrigation periods. The best sources of recharge to groundwater in the Firebaugh area in terms of chemical quality are river seepage and canal seepage. The poorest source of recharge in terms of groundwater is groundwater inflow from the southwest. The more recent City wells have generally been drilled adjacent to the San Joaquin River and have had shallower perforations. This has minimized the influence of inflow of poor quality groundwater from the southwest and maximized the influence of river seepage on the chemical quality of water from City wells.

There are a number of canals southwest of Firebaugh. The CCID Main Canal passes through Firebaugh primarily west of Highway 33, and a lateral, the Poso Canal, passes through the north part of the City. The Main Canal is about four miles long within the City's sphere of influence. The Poso Canal is about a mile and a half long within the City's sphere of influence. The CCID Outside Canal passes through the area west of Firebaugh. This canal is an average of about a half mile southwest of the Main Canal. CCID has estimated the amounts of seepage from District canals. The average seepage is about 0.6 cfs per mile of canal for the Poso Canal and about 1.0 cfs per mile of canal for the Main Canal. For the Main and Poso Canals in the City sphere of influence, the estimated seepage is about 2,800 acre-feet per year. The Delta-Mendota Canal (DMC) and three Firebaugh Canal Water District lift canals are located farther southwest and upgradient of the City of Firebaugh.

GROUNDWATER QUALITY

Inorganic Chemical Constituents

The total dissolved solids (TDS) concentrations of groundwater in the upper aquifer increase significantly to the southwest in the Firebaugh-Mendota area (Figure 9). This illustration was modified from KDSA (2006), and represents conditions in the early to mid-2000's. Electrical conductivities in micromhos per centimeter at 25°C can be multiplied by two-thirds to estimate TDS concentrations. Electrical conductivities of the groundwater in the upper aquifer were about 2,000 micromhos per centimeter at 25°C near the Main Canal and about 4,000 to 6,000 micromhos near the Outside Canal.

Table 7 shows the results of analyses of water collected from City wells during 2016-17 for analyses of inorganic chemical constituents and alpha activity. TDS concentrations ranged from 460 to 660 mg/l. The lowest TDS concentrations were in wells located adjacent to the river that had relatively shallow perforations. The primary source of recharge of this low salinity groundwater is indicated to be from seepage from the San Joaquin River. Water were of the sodium-mixed anion type. Nitrate concentrations in water from City wells were not detectable, indicative of reduced conditions in the groundwater. Fluoride concentrations were all well below the maximum contaminant level (MCL) of 2.0 mg/l. Iron concentrations in water from four of the wells ranged

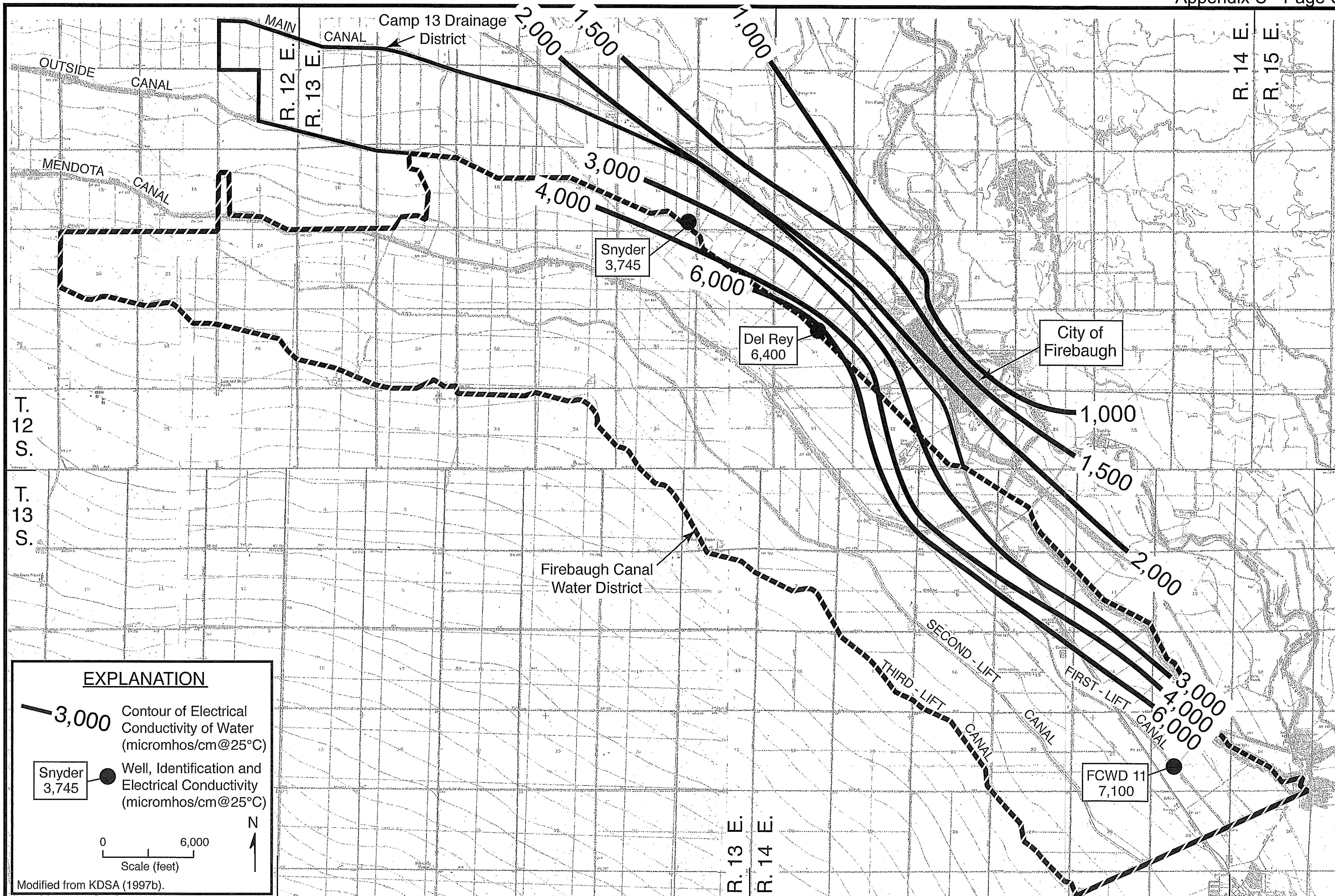


FIGURE 9 - ELECTRICAL CONDUCTIVITY OF WATER FROM WELLS TAPPING UPPER AQUIFER

TABLE 7-CHEMICAL QUALITY OF WATER FROM CITY OF FIREBAUGH WELLS

Constituent (mg/l)	No. 11	No. 12	No. 13	No. 15	No. 16	No. 17
Calcium	43	56	24	38	30	49
Magnesium	30	31	10	24	13	32
Sodium	100	140	130	150	140	130
Bicarbonate	220	317	159	159	146	342
Sulfate	110	78	94	87	83	49
Chloride	140	210	140	170	220	170
Nitrate	<2	<2	<2	<2	<2	<2
Fluoride	<0.1	<0.1	<0.1	0.2	0.1	<0.1
pH	7.4	7.3	7.8	7.8	7.8	7.9
Electrical Conductivity (micromhos/cm @ 25°C)	910	1,100	810	890	920	1,000
Total Dissolved Solids (@180°C)	550	660	460	540	530	580
Iron	0.55	0.51	<0.1	0.50	0.23	0.26
Manganese	0.73	0.85	0.27	0.53	0.40	0.58
Arsenic	7.6	7.2	6.5	13	6.3	6.4
Hexavalent Chromium (ppb)	<1	<1	<1	<1	<1	<1
Selenium	<5	<5	<5	<5	<5	<5
Alpha Activity (pc/l)	7.8	4.5	<3	<3	4.8	15.4
Date	1/10/17	1/10/17	1/10/17	1/10/17	4/9/16	1/10/17
Perforated Interval (ft)	165-190	155-180	160-170& 185-200	115-220	115-220	140-185

Samples for determination of hexavalent chromium were collected on 8/15/14.

from 0.3 to 0.6 mg/l, at or exceeding the MCL of 0.3 mg/l. Manganese concentrations ranged from 0.27 to 0.85 mg/l, exceeding the recommended MCL of 0.05 mg/l. The arsenic concentration in water from one of the wells (No. 15) was 13 ppb, exceeding the MCL of 10 ppb. Arsenic concentrations in water from Well No. 15 were below the MCL during two other sampling rounds in 2017. Arsenic concentrations in the other wells ranged from 6 to 8 ppb, below the MCL. Water from Wells No. 16 has had arsenic concentrations of 11 ppb for two other sampling rounds in 2017. Selenium concentrations in water from the City wells were less than 5 ppb, below the MCL. The primary constituents of concern in water from City wells are thus iron, manganese, and arsenic. Water from the City wells is treated for removal of these constituents.

Table 8 shows results of analyses of inorganic chemical constituents in water from two CCID wells, both of which are located along the Poso Canal. TDS concentrations ranged from 410 to 1,000 mg/l. Nitrate concentrations were less than 1 mg/l. Water from the wells was of the sodium chloride type.

Radiological Constituents

Alpha activities in water from the City wells were 8 picocuries per liter or less, well below the MCL of 15 picocuries per liter, except for Well No. 17, which had 15 picocuries per liter, (at the MCL).

TABLE 8- CHEMICAL QUALITY OF
WATER FROM CCID WELLS

Constituent (mg/l)	Well 29	Well 41
Calcium	93	75
Magnesium	19	14
Sodium	300	98
Potassium	4	3
Carbonate	<10	<10
Bicarbonate	150	96
Sulfate	250	88
Chloride	330	100
Nitrate	<1	<1
Boron	0.6	0.4
pH	8.0	0.3
Electrical Conductivity (micromhos/cm @ 25°C)	1,800	700
Total Dissolved Solids (@180°C)	1,000	410
Date	7/19/17	7/19/17
Perforated Interval	92-243	86-236

Analyses by BSK Laboratory of Fresno, from
Central California Irrigation District.

Trace Organic Chemical Constituents

Comprehensive Title 22 drinking water analyses for trace organics are periodically done for City wells. Concentrations of these constituents have generally been well below MCLs or problem levels.

WATER BUDGET FOR EXISTING CONDITIONS

CCID delivered an average of 3,700 acre-feet per year to 1,300 acres of irrigated land in the study area during 2003-16. CCID determined the evapotranspiration of crops in the study area for 2003-16. For 2003-08, the evapotranspiration of applied water ET_{IW} was determined from the ITRC water use study report for 1994-2008 (crop coefficient method). For 2009-16, the total evapotranspiration (ETc) was determined from the ITRC metric report (landsat data). The average ETc for crops in the study area was 3,300 acre-feet per year. The average ET_{IW}/ETc was 86 percent. Thus the estimated evapotranspiration of applied water for 2003-16 in the study area was 2,800 acre-feet per year. There was an additional ET_{IW} for the Tomatek effluent. An average of 525 acre-feet per year of effluent was applied to 160 acres of crops during 2003-16. The average ET_{IW} was 380 acre-feet per year. Thus the average total evapotranspiration of applied water by crops in the study area for 2003-16 was 3,200 acre-feet per year. The urban consumptive use was estimated by deducting the amount of City and Tomatek wastewater (combined 1,230 acre-feet per year) from the average City pumpage (2,390 acre-feet per year). This yielded 1,160 acre-feet per year of outside water use. Using an average urban irrigation efficiency of 70 percent, the urban consumptive use averaged about 800 acre-feet per year. The total consumptive use in the study area was about 4,000 acre-feet per year.

Groundwater is pumped within the study area by the City, CCID, the Eastside Acres water system, the High School, private irrigators, and several industries. Groundwater recharge comes from canal seepage, river seepage, deep percolation from irrigated areas including Tomatek wastewater, percolation of City WWTF effluent, and groundwater inflow.

In 2003-17, the estimated pumpage average within the study area was:

Entity	Pumpage (AF/yr)
City	2,390
CCID	1,990
Eastside Acres	100
High School	70
Private Wells	690
Total	4,550

The CCID pumpage is an average value over the long-term. The estimated total pumpage in the study area was about 4,600 acre-feet per year. In addition, about 500 acre-feet per year of tile drainage in the Camp 13 Drainage District was exported from within the

City sphere of influence (personal communication from CCID).

The City sewer collection system serves the City and Eastside Acres. The City WWTF is located northwest of the Firebaugh Wasteway, between the Main Canal and the San Joaquin River (Figure 1). There are about 30 acres of percolation ponds near the WWTF for City effluent, and another 160 acres of irrigated land where Tomatek wastewater was used. All of the City effluent was percolated from the ponds.

The average amount of City effluent was about 700 acre-feet per year for 2003-16. The average amount of Tomatek wastewater was about 525 acre-feet per year during this period. Percolation from the City wastewater ponds is estimated to have been about 700 acre-feet per year.

Amounts of recharge to the groundwater in the study area are estimated as follows:

Item	Amount (AF/yr)
Effluent and Tomatek Wastewater Percolation	800
Canal Seepage	2,800
River Seepage	2,500
Deep Percolation from Crop Irrigation	900
Groundwater Inflow	2,000

The total estimated recharge to the groundwater in the City sphere of influence during 2003-16 was about 9,000 acre-feet per. The excess of recharge above the combination of pumpage and exported tile drainage (5,050 acre-feet per year) was equal to the groundwater outflow from the sphere of influence (about 3,950 acre-feet per year).

REFERENCES

Kenneth D. Schmidt & Associates, 2008, "Groundwater Conditions in the Vicinity of the City of Firebaugh" report prepared for City of Firebaugh, 39p

Appendix V. Update on Groundwater Conditions in the Mendota Sub-Area of the SJREC GSP

UPDATE ON GROUNDWATER CONDITIONS IN THE MENDOTA SUB-AREA OF THE SJREC GSP

prepared for
San Joaquin River Exchange
Contractors GSA
Los Banos, California

and
City of Mendota GSA
Mendota, California

by
Kenneth D. Schmidt & Associates
Groundwater Quality Consultants
Fresno, California

May 2019

KENNETH D. SCHMIDT AND ASSOCIATES
GROUNDWATER QUALITY CONSULTANTS
600 WEST SHAW AVE., SUITE 250
FRESNO, CALIFORNIA 93704
TELEPHONE (559) 224-4412

May 31, 2019

Mr. Chris White, Executive Director
San Joaquin River Exchange
Contractors GSA
P. O. Box 2115
Los Banos, CA 93635

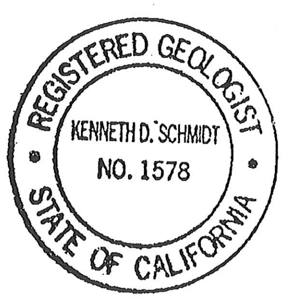
Re: Gustine Sub-Area of the
SJREC GSP

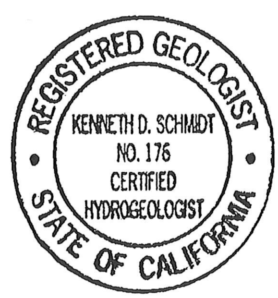
Dear Chris:

Submitted herewith is our report on groundwater conditions in the Gustine Sub-area of the SJREC GSP. We appreciate the cooperation of the CCID and City of Gustine in providing information for this report.

Sincerely Yours,

Kenneth D. Schmidt
Geologist No. 1578
Certified Hydrogeologist 176





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INTRODUCTION

As part of the Groundwater Sustainability Plan (GSP) for the San Joaquin River Exchange Contractors (SJREC) service area, GSPs for a number of cities, including Mendota, are being incorporated into the SJREC GSP. Kenneth D. Schmidt and Associates (KDSA, 1999 and 2008) prepared two reports on groundwater conditions in the vicinity of the City of Mendota for the Central California Irrigation District (CCID) and the City.

This report is intended to provide an update on groundwater conditions within the Mendota Study Area boundary (Figure 1). This boundary encompasses lands that are planned for future urban development. This study area is generally bounded by Bass Avenue on the north, N. Ohio Avenue on the west, West California Avenue on the south, and San Benito Avenue on the east. Lands northeast of Mendota are in the Aliso Water District GSA, lands north of Mendota are in the SJREC GSA, and lands east of the Mendota Sub-area are in the Farmers Water District (FWD) GSA. Several areas near the study area are in Fresno County Management Areas "A" and "B".

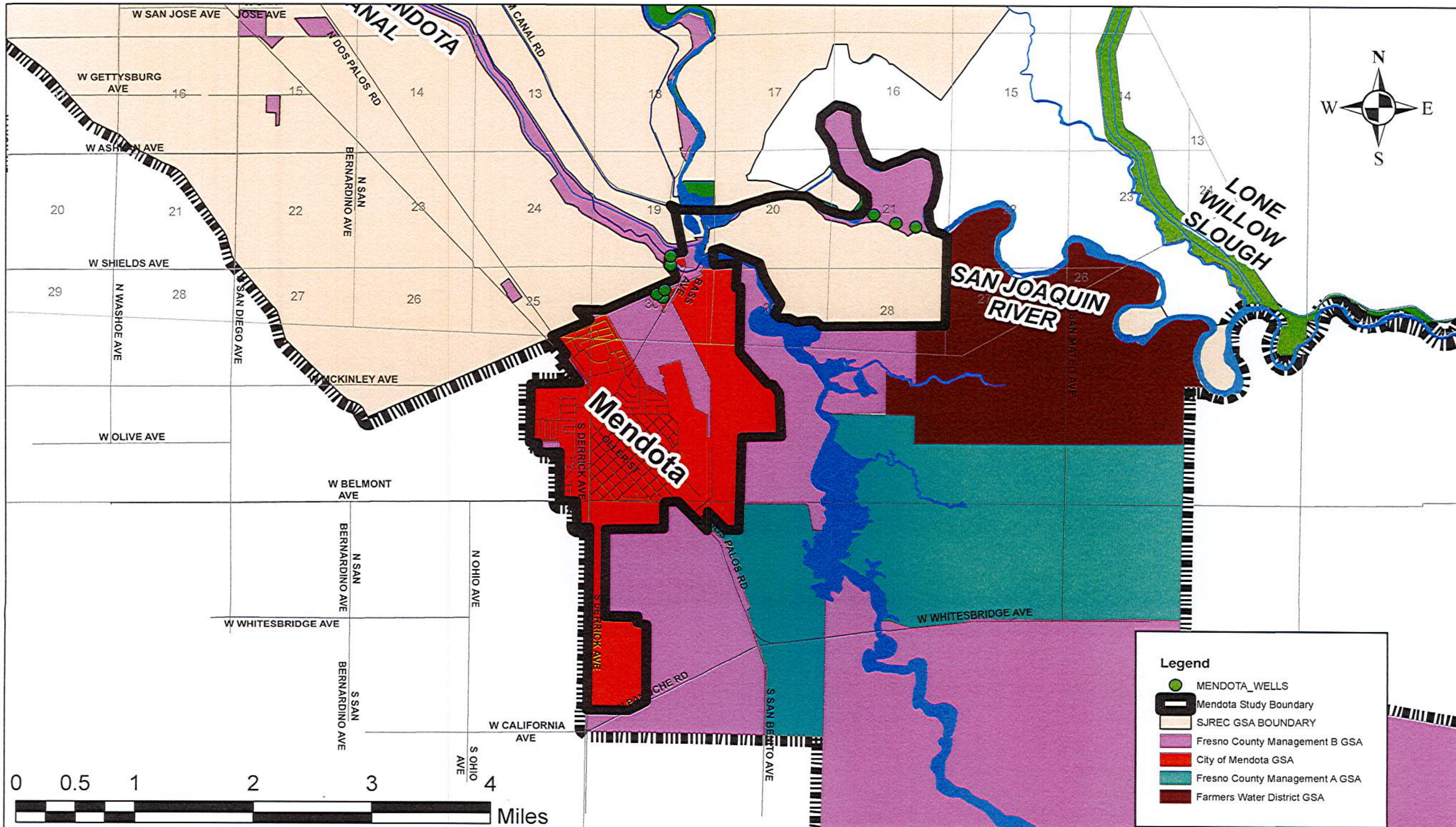


FIGURE 1-LOCATION OF MENDOTA SUB-AREA, STUDY AREA BOUNDARY, AND SELECTED WELLS

Of particular interest in this update are: 1) groundwater quality issues 2) the extent of groundwater overdraft, 3) land subsidence, and 4) the historical water budget and that for future urban development of the study area.

The Mendota Sub-area study area is within a larger area associated with a monitoring program for the Mendota Pool Group (MPG) pumping program. Some of the MPG wells are located west of the Fresno Slough branch of the Mendota Pool area near the study area. Substantial monitoring of pumpage, water levels, land subsidence, and groundwater quality has been done for the MPG program during the past 15 years. The last annual report on this monitoring was provided by Luhdorff & Scalmanini (L&S) and KDSA (2018) and provided useful information for this report.

SUBSURFACE GEOLOGIC CONDITIONS

Alluvial deposits comprise the aquifer in the Mendota area. Subsurface deposits near Mendota are termed the older alluvium and the Tulare Formation. KDSA (2019) indicated that the base of the usable aquifer in the Mendota area, or bottom of the basin in SGMA terminology, was about 500 to 800 feet deep. A major confining bed is present beneath much of the west side of the San Joaquin Valley, including the Mendota area. This clay is termed the Corcoran Clay, and divides the aquifer system into upper and lower aquifers. The Corcoran Clay is readily discernible from the drillers logs for most wells in the area, due to its blue color. The over-lying and under-lying deposits are usually tan or brown in color.

Two other confining beds that are more localized and shallower than the Corcoran Clay are important in the Mendota area. One of these is the A-Clay, which is present at an average depth of about 70 feet, and another is the C-Clay, which is present at an average depth of about 250 feet. Shallow groundwater above the A-Clay (locally termed the "shallow zone") is pumped from a number of shallow MPG wells west of the Fresno Slough between Mendota Dam and Whitesbridge Road. Groundwater between the A-Clay and Corcoran Clay is locally termed the "deep zone". Groundwater below the Corcoran Clay (the lower aquifer) is generally not tapped in the Mendota area due to higher salinity.

KDSA (1999) developed two subsurface geologic cross sections extending through the City (Figure 2). These were developed as part of a process to develop a new City well field, following degradation of groundwater quality in the City Bass Avenue well field. Drillers and electric logs for water wells and test holes were obtained from the City, the CCID, and the California Department of Water Resources in Fresno for use in developing these cross sections. Cross Section H-H' extends from north to south through the study area. Cross Section J-J' extends from

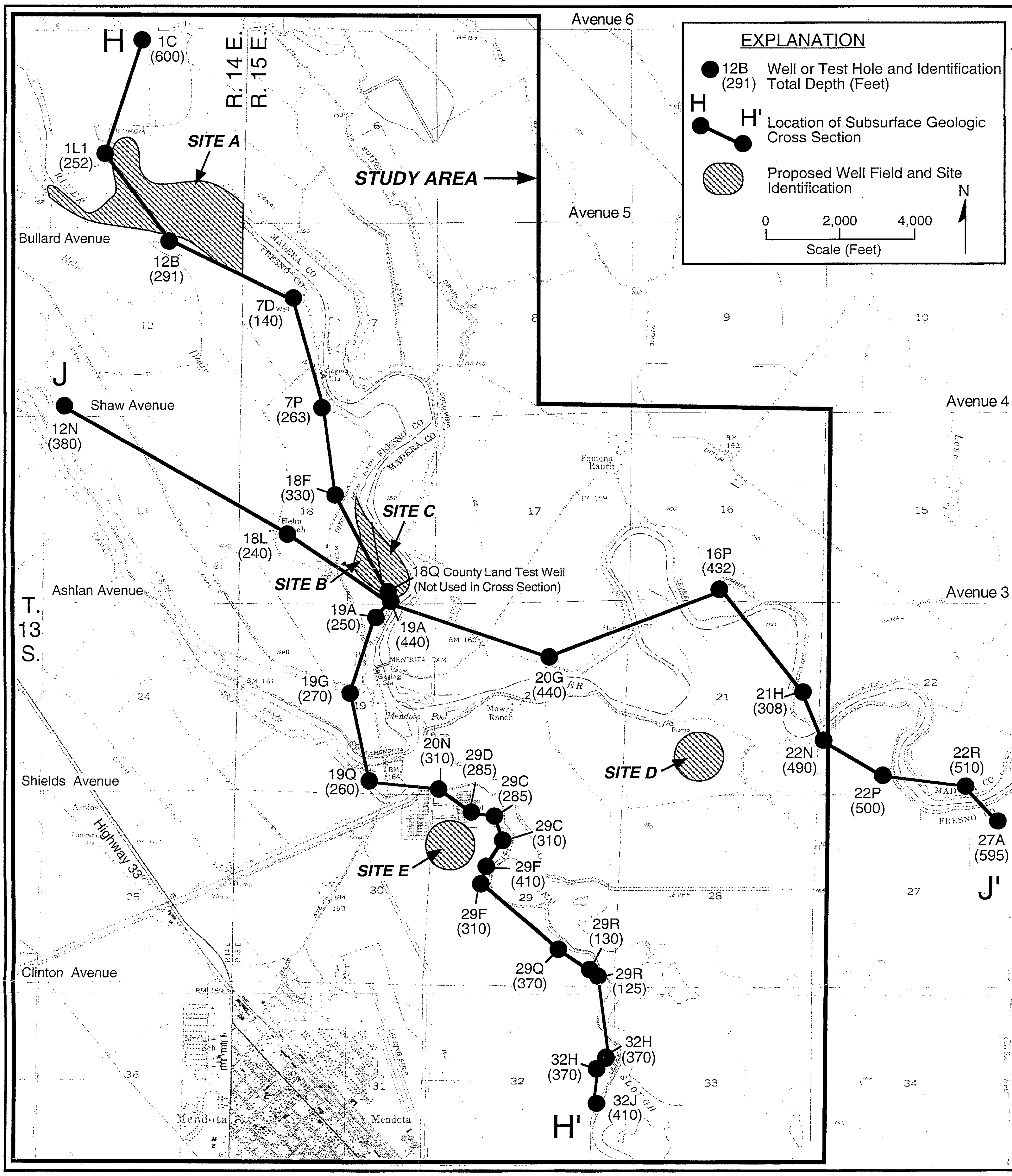


FIGURE 2-LOCATION OF SELECTED TEST HOLES AND WELLS AND SUBSURFACE GEOLOGIC CROSS SECTIONS

the northwest to the southeast, north of Mendota.

Subsurface Geologic Cross Section H-H′ (Figure 3) extends from near the extension of Avenue 6 on the north, to the southeast along the San Joaquin River, through the City wastewater treatment facility, to east of the former Mendota Biomass Plant. Only three wells or test holes along this section apparently are deep enough to have reached the Corcoran Clay. The top of the Corcoran Clay is about 400 feet deep along this section. Since the section is nearly perpendicular to the inferred dip of the Corcoran Clay, the top of the clay appears to be nearly flat along this cross section. The thickness of this clay increases to the north along the section, from about 30 feet to more than 70 feet.

The A-Clay appears to be more continuous beneath the part of the section south of Mendota Dam. In this area the top of this clay ranges from about 70 to 100 feet in depth below the land surface. The clay is normally about 10 to 20 feet thick, except near the south part of the cross section. The clay is usually only about 10 feet thick and is missing at some locations along the part of the section north of the Dam. This discontinuity may be associated with the influence of the ancestral San Joaquin River in this area. Although Section H-H' does not pass through the City wells which are along Bass Avenue south of the Main Lift Canal (No. 2, 3, and 4), geologic and electric logs for these

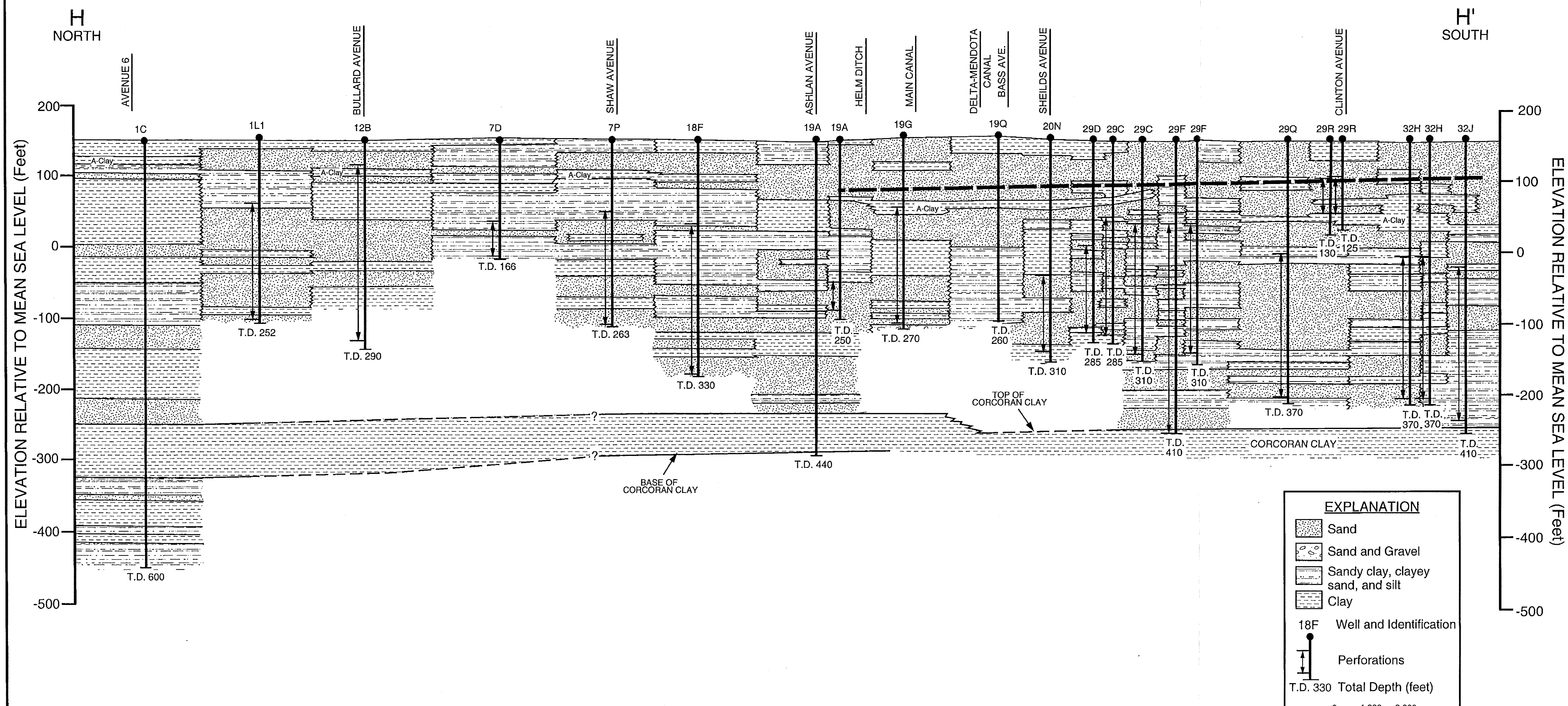


FIGURE 3-SUBSURFACE GEOLOGIC CROSS SECTION H-H’

wells indicate that the A-Clay is also missing in this area. No other laterally extensive, significant confining beds are indicated to be present along this section. Sand and gravel are common above the A-Clay along this section, and several major sand strata are present below the A-Clay and above the Corcoran Clay. These coarse-grained deposits are derived from the Sierra Nevada and are generally highly permeable.

Cross Section J-J' (Figure 4) extends from near Shaw Avenue to the southeast, along the San Joaquin River branch of the Mendota Pool to near San Mateo Avenue. Site D (Figure 2) was eventually selected for the new City well field. Eight wells or test holes along this section reached the Corcoran Clay, and many of these also penetrated the base of this clay. The top of the Corcoran Clay appears to be slightly deeper beneath the southeast part of the section. The Corcoran Clay ranges from about 40 to 60 feet in thickness along this section.

The A-Clay appears to be missing along most of this section west of the San Joaquin River. Where it is present, the clay appears to be somewhat discontinuous, and to be present at two different depths in the part of the section east of the San Joaquin River. Near and east of Site C, the top of the A-Clay is about 20 to 50 feet deep, and the clay is about 5 to 20 feet thick. Farther east, the clay is deeper, and the top ranges from about 70 to 90 feet in deep. The A-Clay appears to thicken

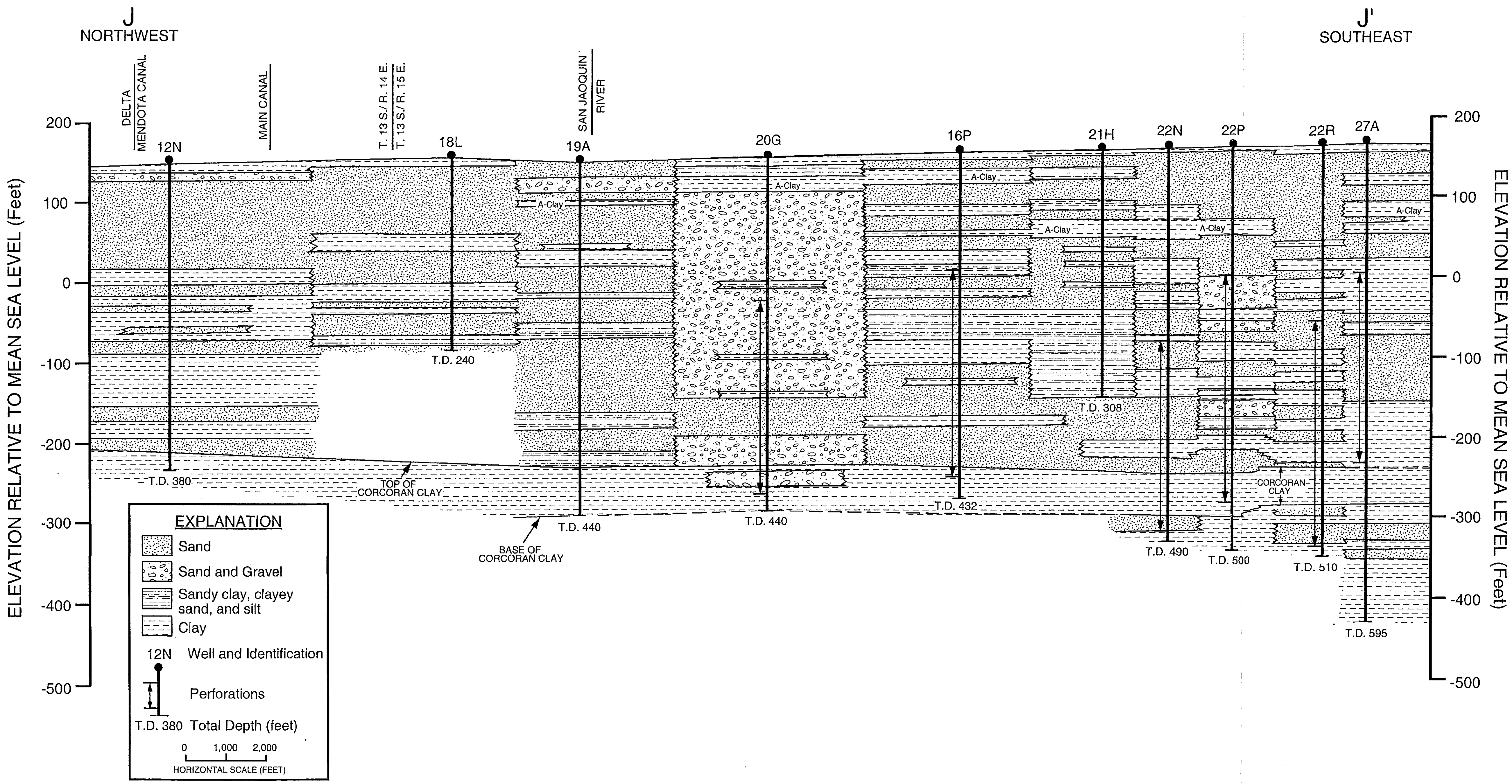


FIGURE 4-SUBSURFACE GEOLOGIC CROSS SECTION J-J'

to the east along this section, from about five feet at Well 16P almost 40 feet at Well 27A. The results of groundwater monitoring north of the San Joaquin River in the area along the east part of this section indicate that the A-Clay is a significant confining bed in this area. No other laterally extensive confining beds are indicated to be present along this section. Numerous sand and some gravel layers are present above the Corcoran Clay. These deposits are also derived from the Sierra Nevada and are generally indicated to be highly permeable.

WATER SUPPY WELLS

Figure 1 shows locations of City of Mendota and CCID wells in the study area. The active City public supply wells (No. 7, 8, and 9) are located at the B&B Ranch south of the San Joaquin River. Table 1 summarizes construction data for these wells. The wells were constructed in Summer 2001, all have cased depth of 405 feet, and they tap strata between the C-Clay and the Corcoran Clay. The City also has six wells near the north end of the Mendota Pool (the Fordel wells). Five of these wells are perforated from 50 to 100 feet in depth and primarily tap strata above the A-Clay. The sixth well (termed Fordel M-1) is perforated from 200 to 300 feet in depth, and taps strata between the A-Clay and Corcoran Clay. Water from the Fordel wells is pumped into the Mendota Pool, as part of an agreement with the B&B Ranch allowing the

TABLE 1-CONSTRUCTION DATA FOR CITY OF MENDOTA PUBLIC SUPPLY WELLS

No.	Date Drilled	Drilled Depth (feet)	Cased Depth (feet)	Casing Diameter (inches)	Perforated Interval (feet)	Annular Seal (feet)
7	06/01	420	405	14	260-395	0-240
8	08/01	405	405	14	240-375	0-230
9	08/01	405	405	16	260-395	0-240

Records from well completion reports.

City to pump water from the City public supply wells on the B&B Ranch.

Table 2 shows construction data for four CCID wells in the Headgate area. Cased depths of these wells range from 210 to 360 feet, and the top of the perforations range from 80 to 200 feet deep. Two of these wells (5A and 32C) tap strata between the A-Clay and the C-Clay. The two other wells (28D and 35A) tap strata between the A-Clay and the Corcoran Clay.

WATER LEVELS

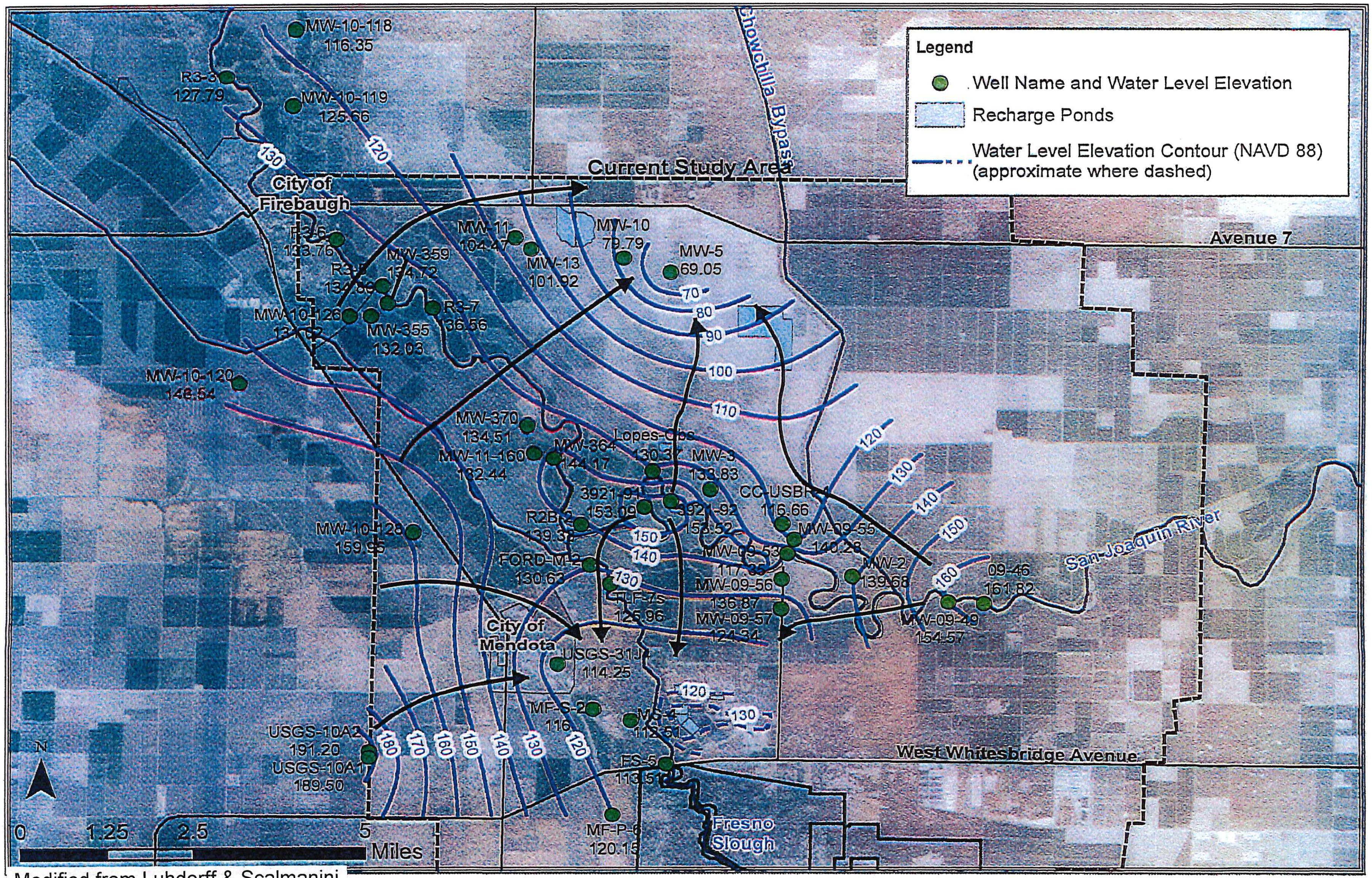
Water-Level Elevations

Water-level elevations contour and direction of groundwater flow maps are routinely prepared in the Mendota area by Luhdorff & Scalmanini for the MPG pumping program. One set of maps is for the "shallow zone", or above the A-Clay. Another is for the "deep zone", which is between the A-Clay and the Corcoran Clay. Figure 5 shows water-level elevations and the direction of groundwater flow for the shallow zone in Winter 2016-17. Water-level elevations ranged from 180 feet above mean sea level southwest of Mendota to less than 70 feet north-northeast of Mendota. Two pumping depressions were indicated. One was southeast of the City, around a number of MPG shallow wells west of the Fresno Slough branch of the pool. Another was east of the City of Firebaugh and west of the Chowchilla Bypass. A

TABLE 2-CONSTRUCTION DATA FOR CCID WELLS

No.	Date Drilled	Drilled Depth (feet)	Cased Depth (feet)	Casing Diameter (inches)	Perforated Interval (feet)	Annular Seal (feet)
5A	04/90	270	260	16	100-260	0-20
28D	04/03	378	360	17.4	200-360	0-50
32C	04/06	210	210	16	80-200	0-50
35A	02/66	311	154	16	90-154	0-30
			311	14	154-311	

Data from well completion reports.



Modified from Luhdorff & Scalmanini.

FIGURE 5-WATER-LEVEL ELEVATIONS AND DIRECTION OF GROUNDWATER FLOW FOR THE SHALLOW ZONE (WINTER 2016-17)

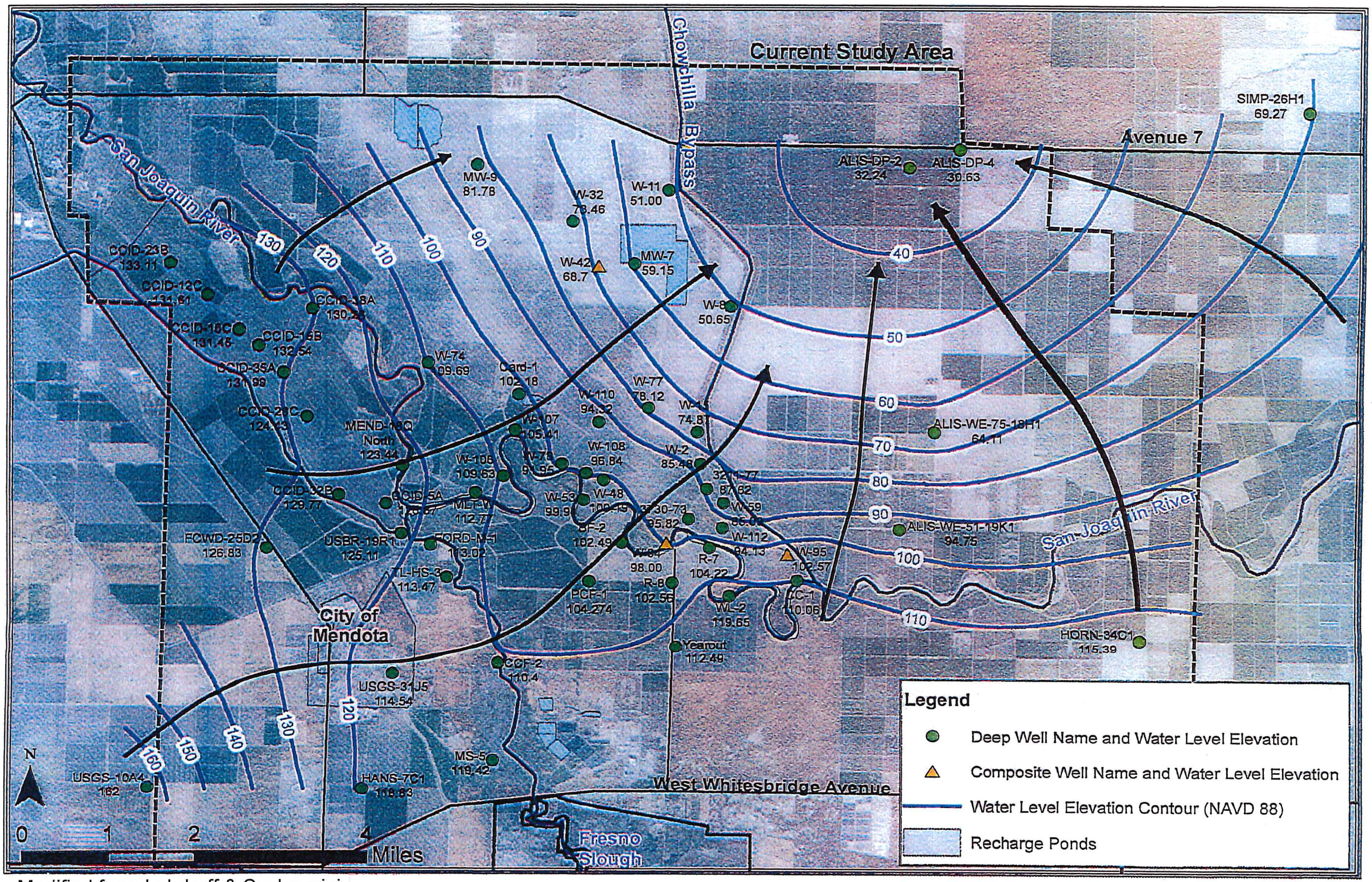
recharge ridge was indicated beneath the San Joaquin River branch of the pool. None of the MPG wells in the FWD (south of the east branch of the pool) are perforated above the A-Clay.

Figure 6 is a water-level elevation and direction of ground-water flow map for the deep zone in Winter 2016-17. Water-level elevations ranged from 160 feet above mean sea level southwest of Mendota less than 40 feet in the area west of the Chowchilla Bypass and north of Avenue 5. Groundwater was flowing from the southwest and south toward a pumping depression in the north part of the Aliso Water District. The direction of groundwater flow beneath the City was to the east. The water-level elevations for the deep zone do not indicate a recharge ridge beneath the San Joaquin River, and this is due to the A-Clay.

Time Trends

Figure 7 is a water-level hydrograph for City of Mendota Public Supply Well No. 7 for 2003-16. Depth to water has ranged from about 50 feet to about 160 feet. Overall, the shallowest levels in the winter have been relatively stable, but the deepest levels have shown a decline averaging about 4.8 feet per year.

Figure 8 is a water-level hydrograph for City of Mendota Fordel Well No. M-1 for 1993-2016. This well taps strata between the A-Clay and Corcoran Clay. Depth to water ranged from about 30 to more than 120 feet. Overall, the shallowest seasonal water levels rose from 1993-1998, associated with a reduction



Modified from Luhdorff & Scalmanini.

FIGURE 6-WATER-LEVEL ELEVATIONS AND DIRECTION OF GROUNDWATER FLOW FOR THE DEEP ZONE (WINTER 2016-17)

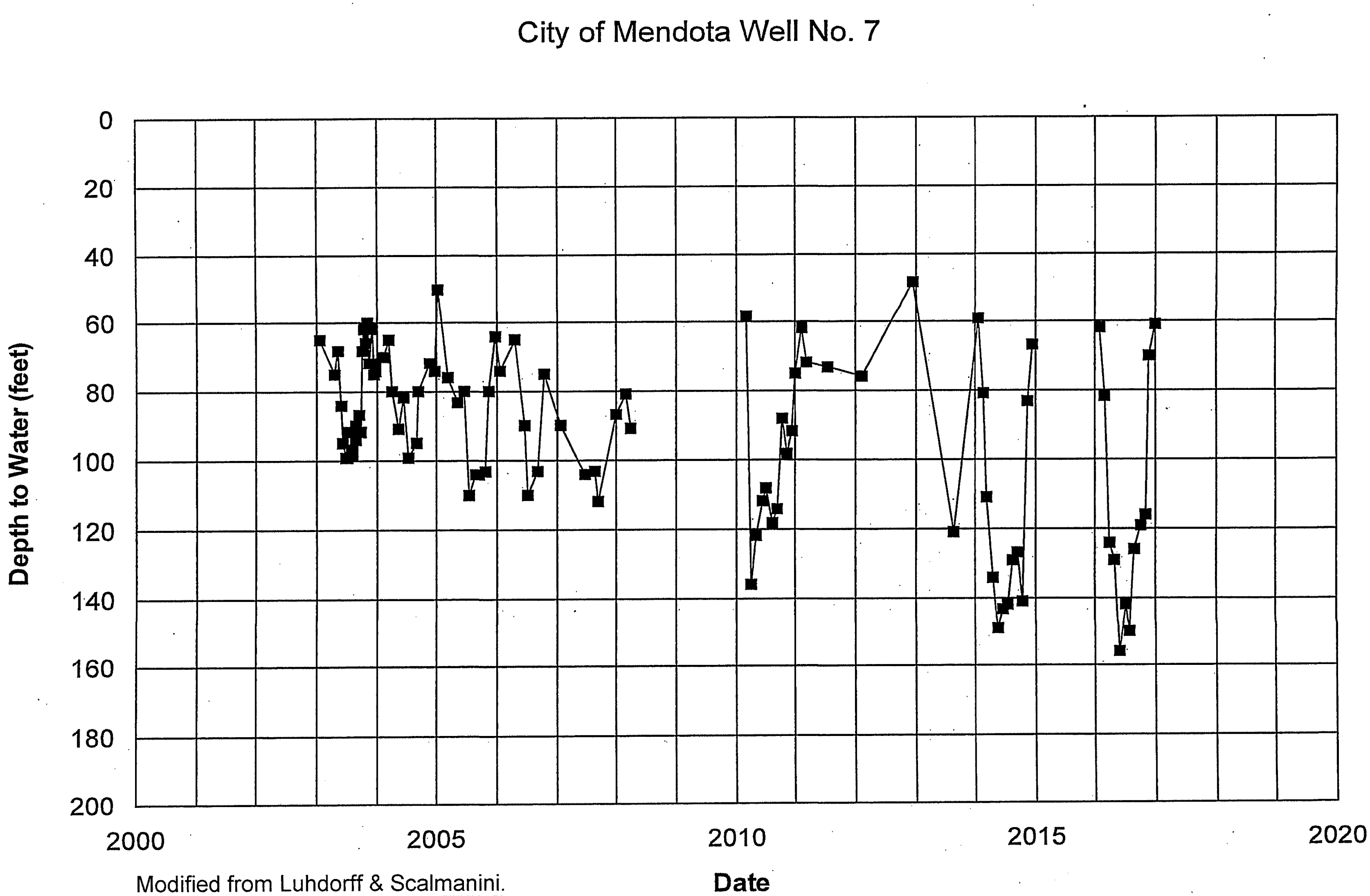


FIGURE 7-WATER-LEVEL HYDROGRAPH FOR CITY OF MENDOTA WELL NO. 7

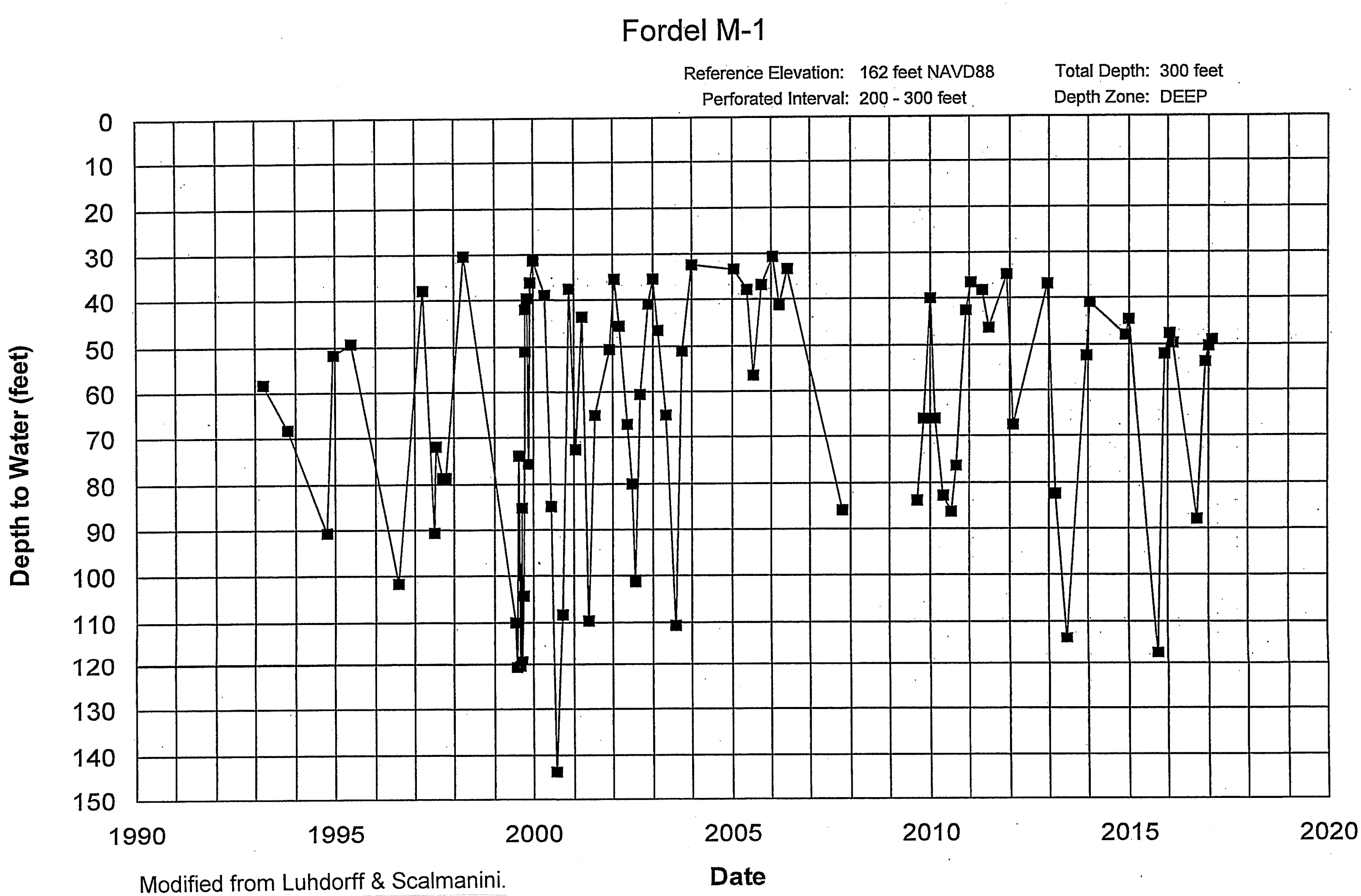


FIGURE 8-WATER-LEVEL HYDROGRAPH FOR CITY OF MENDOTA
FORDEL WELL M-1

in pumping from deep MPG wells along the Fresno Slough branch of the pool. The shallowest levels were then relatively stable through early 2013, then fell during 2013-16. The deepest seasonal levels have varied significantly.

Figure 8 is a water-level hydrograph for City of Mendota Fordel Well No. M-2 for 1993-2016. This well primarily taps strata above the A-Clay. Depth to water ranged from about 15 to almost 50 feet. The shallowest seasonal levels rose after 1993 through 1997, associated with a reduction in pumpage from shallow MPG wells west of the Fresno Slough branch of the pool. Overall, the shallowest levels were relatively stable from 1997 through 2011, then fell during 2012-16. Deepest seasonal levels have slightly risen during the period of record.

Figure 9 is a water-level hydrograph for CCID Well No. 5A, which is located close to Mendota Dam and taps strata between the C-Clay and Corcoran Clay. Depth to water ranged from about 10 to 55 feet. The shallowest seasonal water levels fell during 1993-94 due to heavy pumping from deep MPG wells west of the Fresno Slough branch of the Mendota Pool. Shallow water levels recovered after 1994, and were relatively stable until late 2011. Shallow water levels then fell during 2012-16. Deep water levels have fluctuated significantly, but show a relatively stable trend.

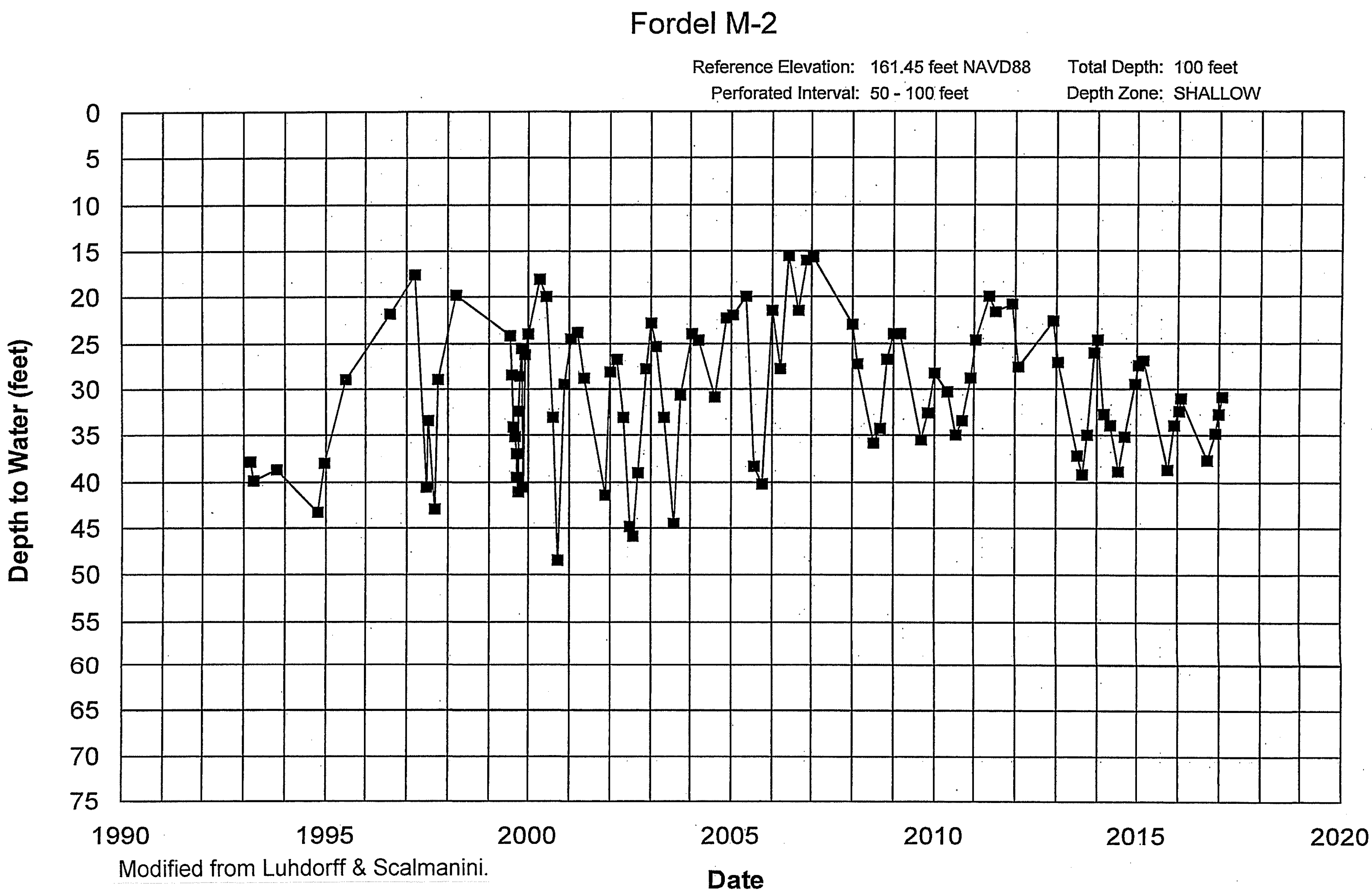
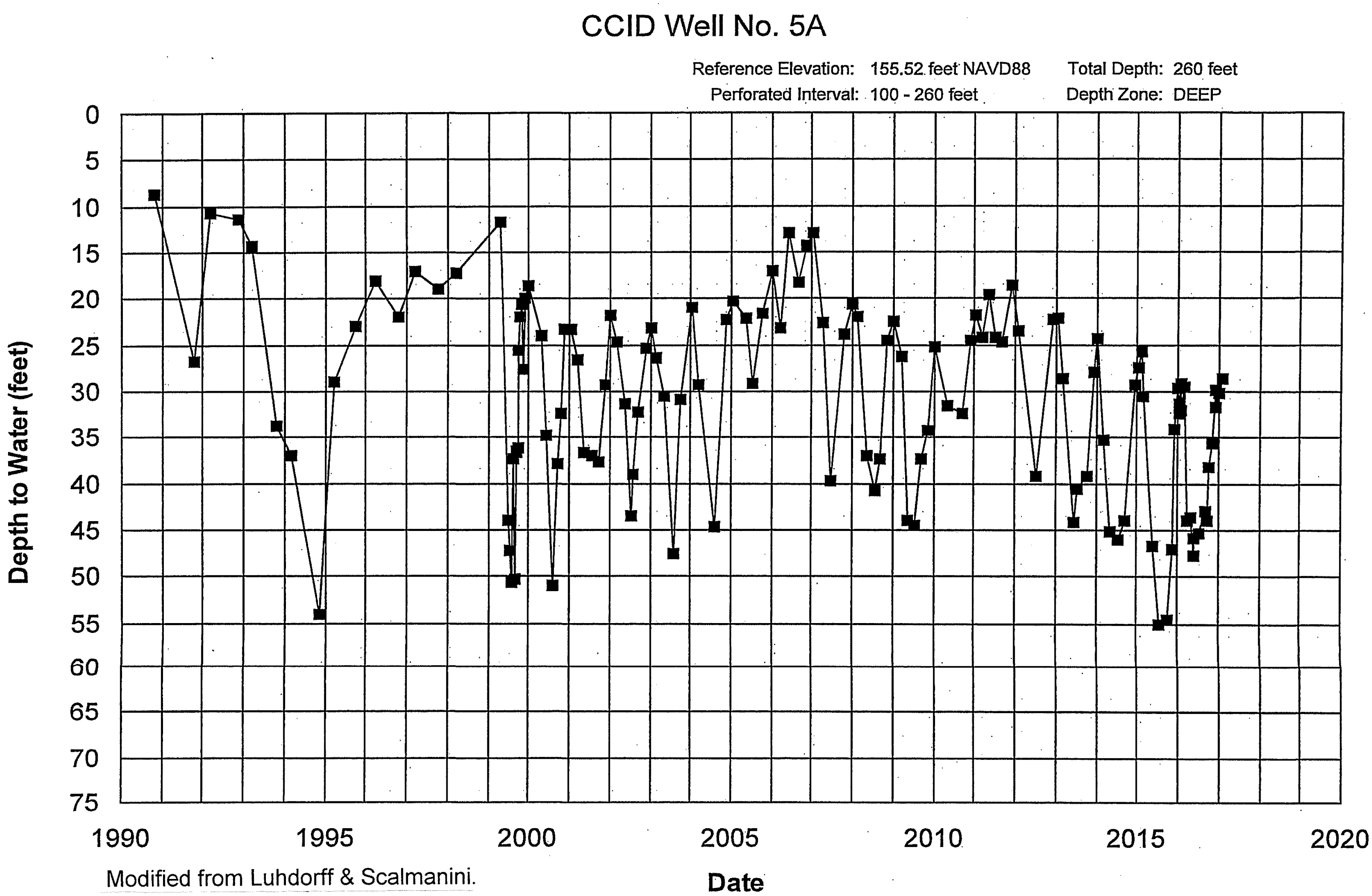


FIGURE 9-WATER-LEVEL HYDROGRAPH FOR CITY OF MENDOTA
FORDEL WELL M-2



Modified from Luhdorff & Scalmanini.

FIGURE 10-WATER-LEVEL HYDROGRAPH FOR CCID WELL 5A

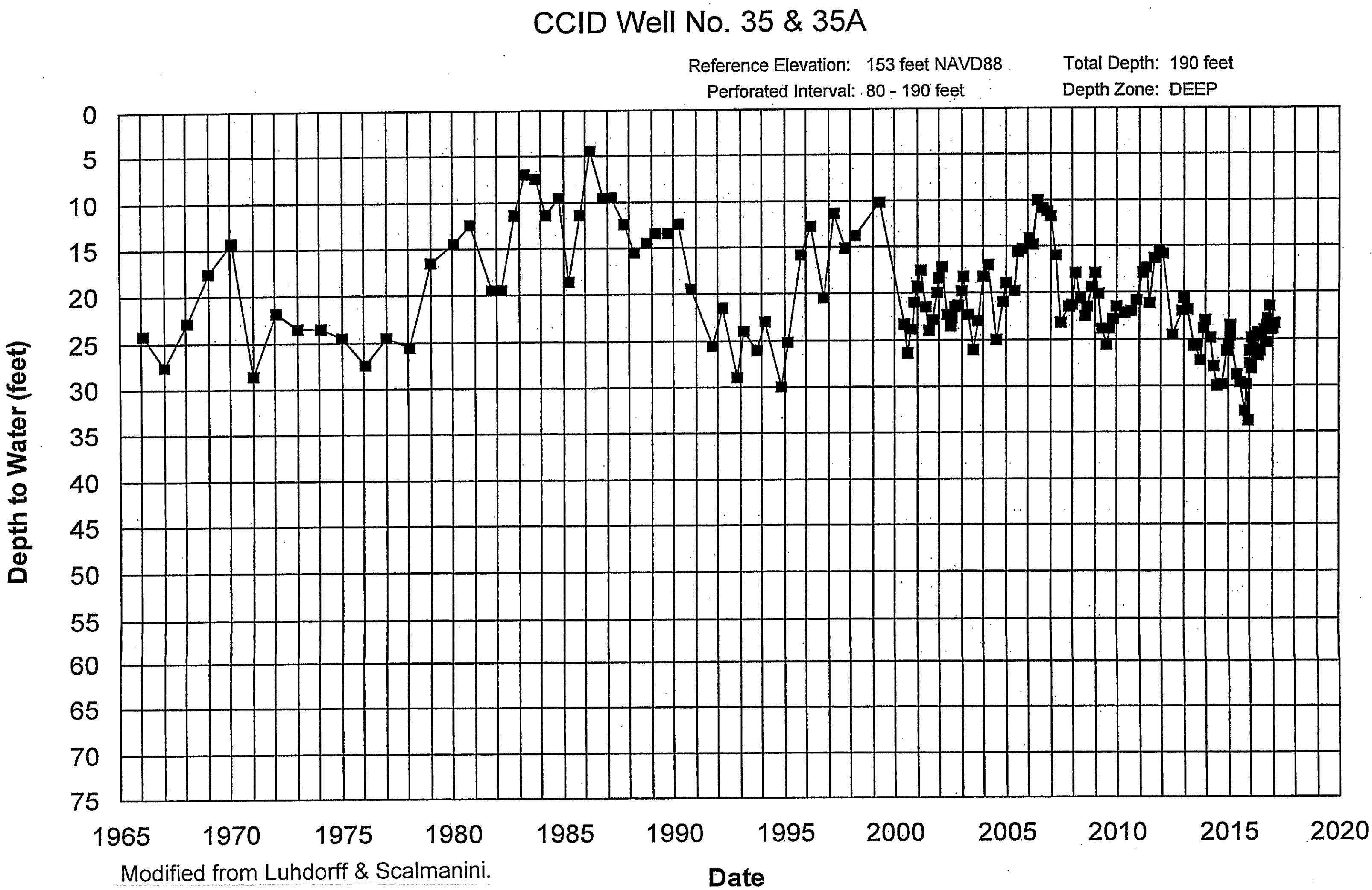
Figure 11 is a water-level hydrograph for CCID Well 35A, which is located about a mile and a half north of Well No. 5A. Records extend from 1966 to 2016. This well taps strata between the A-Clay and the Corcoran Clay. Depth to water ranged from about 5 to 35 feet. Water levels were relatively stable over the long-term, with declines during dry periods and recoveries in the following years.

AQUIFER CHARACTERISTICS

Table 3 shows pump tests for City of Mendota public supply wells in November 2016. Pumping rates ranged from about 1,080 to 1,230 gpm, and specific capacities ranged from about 37 to 46 gpm per foot of drawdown. The specific capacity values are higher than they should be, because true static water levels weren't measured. Thus the drawdowns shown aren't as large as they actually were.

Table 4 shows pump tests for the four CCID wells in the study area from 2017. Pumping rates ranged from about 600 to 1,760 gpm, and specific capacities ranged from about 8 to 37.5 gpm per foot.

KDSA (1999) summarized information on aquifer characteristics in the Mendota area. Transmissivity values for most of the tested wells tapping strata below the A-clay and above the Corcoran Clay averaged 72,000 gpd per foot. A storage coefficient of 0.001 was determined from a two-week long aquifer test on Well T13S/R14E-24M1, north of Mendota, in 1988-89. A constant



Modified from Luhdorff & Scalmanini.

FIGURE 11-WATER-LEVEL HYDROGRAPH FOR CCID WELL 35A

TABLE 3-PUMP TEST DATA FOR CITY OF MENDOTA WELLS

No.	Date Tested	Pumping Rate (feet)	Static Level (feet)	Pumping Level (inches)	Drawdown (feet)	Specific Capacity (gpm/ft)
7	11/30/16	1,200	88.0	114.0	26.0	46.2
8	11/30/16	1,231	87.0	115.0	28.0	44.0
9	11/30/16	1,081	85.0	114.0	29.0	37.3

"Static levels" are 5-minute recovery levels, and are thus deeper than true static levels.

TABLE 4-PUMP TEST DATA FOR CCID WELLS

No.	Date Tested	Pumping Rate (feet)	Static Level (feet)	Pumping Level (feet))	Drawdown (feet)	Specific Capacity (gpm/ft)
5A	7/30/18	1,179	31.7	180.8	149.1	7.9
28D	7/31/18	1,650	41.0	95.0	44.0	37.5
32C	7/30/18	600	27.0	90.0	63.0	9.5
35A	7/31/15	1,756	19.5	94.2	74.7	23.5

Data from Central Irrigation District.

discharge test was conducted on City Well No. 9 in July 2001. The average pumping rate was 1,000 gpm, the specific capacity was 30.0 gpm per foot, and a transmissivity of 69,000 gpd per foot was obtained from recovery measurements. This was in good agreement with the average transmissivity for most of the previous tests in the Mendota area.

KDSA conducted a 72-hour constant discharge test on two Coburn Ranch wells in November 2014. These wells (No. 65 and 66) were located about a mile east of CCID Well No. 28C, just west of the Helm Ditch. These wells were about 260 feet deep and tapped strata primarily between the A-Clay and C-Clay. Five other deep zone wells were used as observation wells for the test. A specific capacity of 25 gpm per foot was obtained for Well 65 and 14 gpm per foot for Well 66. A distance-drawdown plot indicated a transmissivity of 116,000 gpd per foot and a storage coefficient of 0.0013. Corrected recovery measurements for five of the wells indicated an average transmissivity of 118,000 gpd per foot. Thus the best transmissivity value for the test was 117,000 gpd per foot.

PUMPAGE

City of Mendota

Table 5 shows annual pumpage from City of Mendota public supply wells for 2003-2017. The highest pumpage was in 2008-12

TABLE 5-ANNUAL PUMPAGE FROM
CITY OF MENDOTA WELLS

	Pumpage (acre-feet)	
Year	Public Supply	Fordel
2003	1,589	1,840
2004	1,665	1,825
2005	1,622	1,993
2006	1,632	1,219
2007	1,800	1,788
2008	1,803	2,473
2009	-	1,954
2010	1,800	988
2011	-	1,912
2012	1,800	1,813
2013	1,511	2,464
2014	1,388	1,966
2015	1,397	1,972
2016	1,727	2,038
2017	1,841	83

and in 2017 (1,800 to about 1,840 acre-feet per year). During the drought in 2014-15 the pumpage was about 1,400 acre-feet per year.

The San Luis Delta Mendota Water Authority provided annual pumpage values for the City Fordel wells from 2003-2017. These values represent pumpage from the wells minus a five percent loss that was applied to each month while pumping occurred. Annual pumpage ranged from 83 acre-feet in 2017 to about 2,470 acre-feet in 2008 and 2013. Low pumpage years were when San Joaquin and/or Kings River water was entering the Mendota Pool and transfer pumping was minimal.

CCID

Pumpage from nine CCID wells in the Headgate well field was about 690 acre-feet in 2016. Of that amount, about 300 acre-feet was from wells in the study area.

CITY EFFLUENT

City of Mendota effluent is discharged to 76 acres of percolation ponds at a site west of the Fresno Slough branch of the pool and south of the San Joaquin River branch. In 2017, about 1,180 acre-feet of effluent were discharged. It is estimated that about 300 acre-feet per year of the effluent were evaporated each year, and the reminder, or about 880 acre-feet per year percolated to the groundwater.

CANAL WATER DELIVERIES

The Columbia Canal Co. delivers canal water to 800 acres of land in the study area. From 2003-2016, an average of 1,630 acre-feet per year of water were delivered.

CONSUMPTIVE USE

Urban

The amount of outside water use is estimated by deducting the amount of sewage effluent from the pumpage. For 2017, the estimated City pumpage was about 1,840 acre-feet per year and the effluent flow was about 1,180 acre-feet per year. The outside water use for the City was thus 660 acre-feet per year. Assuming an irrigation efficiency of 70 percent, the consumptive use would be about 460 acre-feet per year. Combined with about 300 acre-feet per year of evaporation from the effluent ponds, the total urban consumptive use was about 760 acre-feet per year.

Rural

For 2003-08, values of evapotranspiration of applied water (ET_{IW}) were taken from ITRC 1997-2018 water use study report. For 2009-16, the total evapotranspiration of crops (ETc) was calculated based on the relationship between Eto and Kc values.

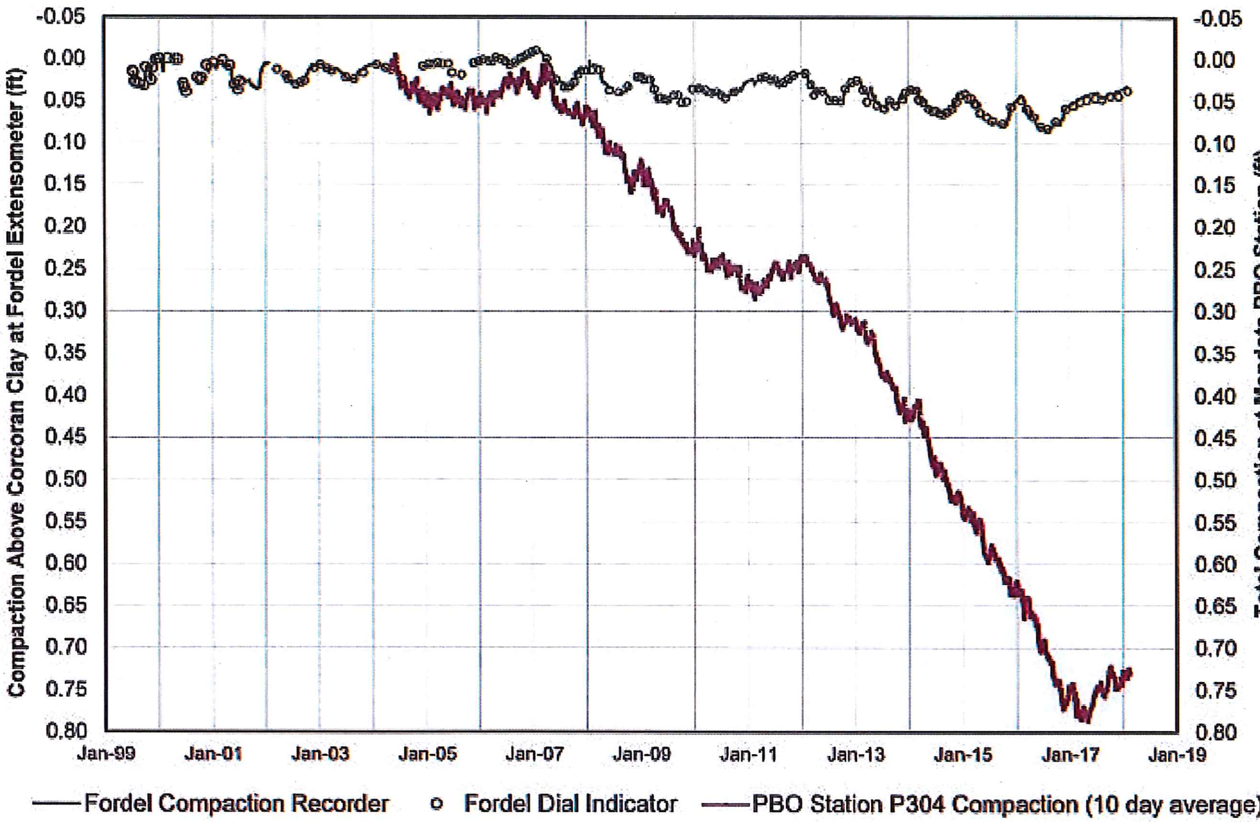
For the 800 acres of irrigated land in the Columbia Canal Co. service area south of the San Joaquin River, the estimated evapotranspiration of applied water averaged about 2,800 acre-feet per year.

Total

The estimated total consumptive use in the study area as of 2017 was 3,560 acre-feet per year. There was an estimated 3,740 acre-feet of canal water and Mendota Pool water used in the study area. Considering the error of estimate, the surface water used was slightly greater than the total consumptive use.

LAND SUBSIDENCE

As of 1972, there had been about four feet of land subsidence at Mendota. Because there has been little pumpage from below the Corcoran Clay at and near Mendota, this subsidence was attributed to pumping from below the Corcoran Clay in the area southwest of Mendota and also in Madera County, northeast of Mendota. The Fordel compaction recorder was installed near the Mendota Airport by the MPG in 1999. This recorder monitors subsidence due to compaction above the Corcoran Clay. Figure 12 shows compaction for the Fordel recorder for 1999-2018. Although there was a small amount of compaction (about 0.05 foot) above the Corcoran Clay, most of this compaction was reversible. That is, once water levels recovered after pumping episodes, the land surface rebounded.



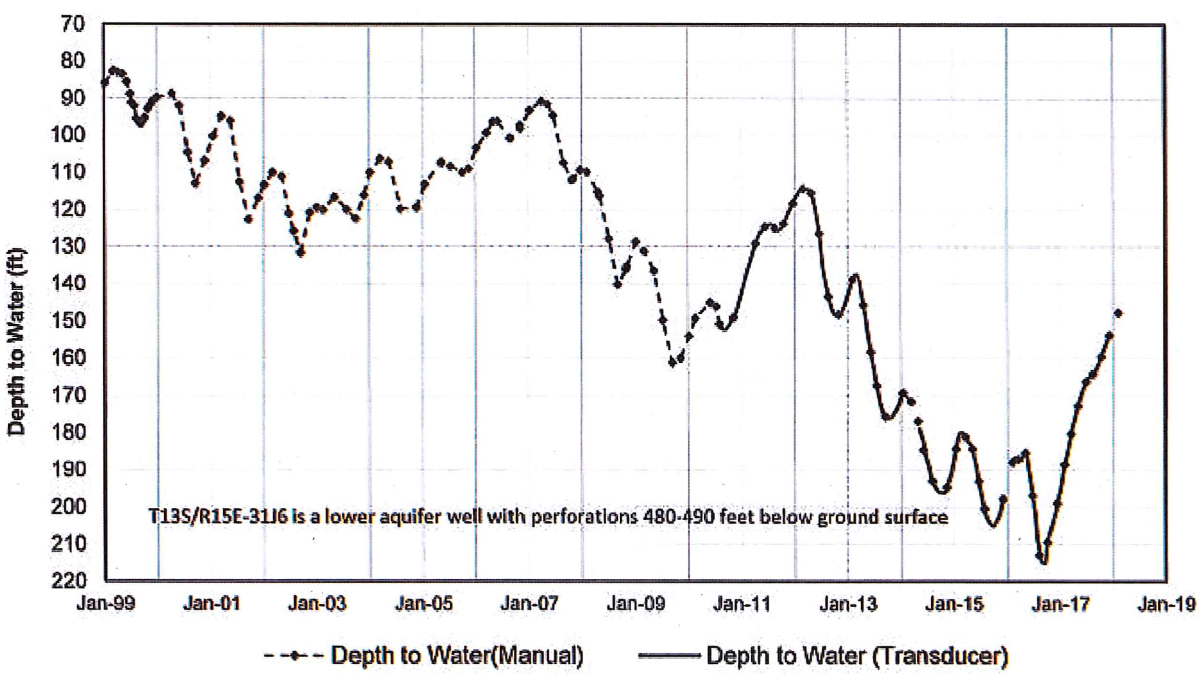


FIGURE 12 - COMPACTION AND WATER LEVELS
AT THE FORDEL RECORDER

There is a GPS monitoring station (P304) south of Mendota between Highway 33 and the Fresno Slough branch of the Mendota Pool. This station measures land subsidence due to compaction from the land surface to the depths of the deepest wells in the area (about 1,200 feet deep). There was little land subsidence at the station during 2004-2006. Total subsidence was about 0.8 feet between January 2007 and January 2018.

CHANGE IN GROUNDWATER STORAGE

Because there was no significant change in water levels for the unconfined aquifer (shallow zone) prior to the recent drought, there was no storage change over the hydrologic base period. The lower aquifer remained full of water, even though the water levels fell about 100 feet between January 2007 and January 2017. This was due to pumping in the Westlands W.D. and in Madera County, as there was insignificant pumpage from the lower aquifer in the Mendota area. There was a change in storage for the confining beds (Corcoran Clay and deeper ones). Multiplying the 0.8 foot decline in land surface elevation over a 2,400-acre area, this would be equivalent to a storage change of about 1,920 feet over ten years, or an average of about 190 acre-feet per year.

GROUNDWATER QUALITY

City Wells

Public Supply Wells

Table 7 provides chemical analyses of water from the City of Mendota Public Supply Wells. The samples were collected primarily in November 2015. The waters were of the sodium-mixed anion type. Total dissolved solids (TDS) concentrations ranged from 270 to 520 mg/l. Nitrate concentrations were less than 1 mg/l, likely indicative of anaerobic conditions, which are common in the Mendota area. Iron, manganese, arsenic, hexavalent chromium, and selenium concentrations and alpha activities were below the respective MCLs. The boron concentration was 1.1 mg/l, high enough to affect boron sensitive crops.

Fordel Wells

Table 8 provides chemical analyses of water from City of Mendota Fordel wells. Well M-1 is perforated below the A-Clay and above the Corcoran Clay. The total dissolved solids (TDS) concentration was 2,370 mg/l, much higher for this well compared to the nearby shallow Fordel wells. Water from this well was of the sodium sulfate-chloride type. The sulfate concentration was 550 mg/l, exceeding the MCL of 250 mg/l. The manganese concentration was 0.29 mg/l, exceeding the MCL of 0.05 mg/l.

Water from three other Fordel wells that were sampled, which primarily tap strata above the A-clay, had TDS concentrations ranging from about 570 to 900 mg/l. Water from these wells was

TABLE 7-CHEMICAL QUALITY OF WATER FROM
CITY OF MENDOTA PUBLIC SUPPLY WELLS

Constituent (mg/l)	No. 7	No. 8	No. 9	MCL
Calcium	3	<1	3	
Magnesium	<1	<1	<1	
Sodium	170	84	150	
Bicarbonate	195	122	180	
Sulfate	110	26	80	
Chloride	95	47	89	
Nitrate	<1	<1	<1	45
Fluoride	0.6	0.4	0.5	
pH	8.2	8.5	8.3	
Electrical Conductivity (micromhos/cm @ 25°C)	810	400	730	
Total Dissolved Solids (@ 180°C)	520	270	460	500
Iron	<0.1	0.17	<0.1	0.3
Manganese	0.03	<0.02	0.02	0.05
Arsenic (ppb)	6.7	<2	<2	10
Hexavalent Chromium (ppb)	<1	<1	<1	10
Selenium (ppb)	<5	<5	<5	10
Alpha Activity (picocuries per liter)	6.1	3.9	<3	15
Date	11/24/15	11/24/15	11/24/15	
Perforated Interval (feet)	260-395	210-375	260-395	

Samples for hexavalent chromium were collected on 12/23/14 and for alpha activity were collected on 2/12/13.

TABLE 8-CHEMICAL QUALITY OF WATER FROM
CITY OF MENDOTA FORDEL WELLS

Constituent (mg/l)	M-1	M-2	M-3	M-4
Calcium	42	28	33	29
Magnesium	5	11	15	14
Sodium	466	124	125	64
Potassium	6	3	4	3
Carbonate	<10	<10	<10	<10
Bicarbonate	200	120	140	130
Sulfate	550	86	114	38
Chloride	300	98	127	77
Nitrate	<0.5	<0.5	<0.5	<0.5
Fluoride	0.3	0.2	0.2	0.2
Boron	1.1	0.4	0.4	0.2
Iron	0.10	2.2	3.5	2.6
Manganese	0.29	0.48	0.55	0.70
pH	7.7	6.9	6.6	6.7
Electrical Conductivity (micromhos/cm @ 25°C)	2,370	760	900	571
Total Dissolved Solids	1,570	470	558	355
Sodium Adsorption Ratio	18.1	5.0	4.5	2.4
Date	8/26/15	8/26/15	8/26/15	8/26/15
Perforated Interval (feet)	200-300	50-100	50-100	50-100

Analyses by FGL Environmental of Santa Paula of the sodium bicarbonate-chloride type. Concentrations of iron and manganese exceeded the respective recommended MCLs of 0.3 and 0.05 mg/l. The chemical quality of shallow groundwater at these wells is primarily due to seepage for the Mendota Pool and the nearby City effluent ponds. Boron concentrations ranged from 0.2 to 0.4 mg/l, suitable for irrigation of crops.

CCID Wells

Table 9 provides chemical analyses of water from four CCID wells near Mendota from July 2016. TDS concentrations ranged from 680 to 1,100 mg/l. Sulfate concentrations ranged from 220 to 460 mg/l, compared to the recommended MCL of 250 mg/l. Nitrate concentrations were less than 0.2 mg/l, indicative of anaerobic conditions in the groundwater. Boron concentrations ranged from 0.4 to 1.6 mg/l. Historical analyses of water from a number of wells in the Headgate area indicate degradation in salinity, due to inflow of poor quality groundwater from the southwest, and possibly from downward flow from poor quality shallower groundwater.

WATER BUDGET

The Columbia Canal Co. delivered an average of 1,630 acre-feet per year of canal water to 800 acres of crops in the study area during 2003-16. The urban consumptive use was 760 acre-

TABLE 9-CHEMICAL QUALITY OF WATER FROM CCID WELLS

Constituent (mg/l)	Well 5-A	28D	32C	35A
Calcium	26	24	75	70
Magnesium	6	4	31	34
Sodium	200	340	230	180
Potassium	4	4	5	6
Bicarbonate	159	183	171	171
Sulfate	220	320	460	320
Chloride	120	230	140	170
Nitrate	<0.2	<0.2	<0.2	<0.2
Boron	0.48	0.96	1.6	0.4
pH	8.1	8.0	7.9	7.5
Electrical Conductivity (micromhos/cm @ 25°C)	1,100	1,700	1,600	1,400
Total Dissolved Solids	680	1,100	1,100	880
Date	7/28/16	7/28/16	7/28/16	7/28/16
Perforated Interval (feet)	100-260	200-360	80-200	90-311

Analyses by BSK Associates of Fresno.

feet per year during that period. For the rural area, the evapotranspiration of applied water averaged 2,800 acre-feet per year. The estimated total consumptive use in the study area was thus 3,560 acre-feet per year during 2003-16. There was an estimated 3,740 acre-feet per year of canal water and Mendota Pool water used in the study area. This value thus slightly exceeded the estimated total consumptive use in the study area.

The average annual pumpage for City of Mendota wells (including the Fordel wells) was about 3,500 acre-feet per year. There was another 300 acre-feet per year for CCID wells. The total pumpage was about 3,800 acre-feet per year. Sources of recharge include seepage of City effluent (880 acre-feet per year), deep percolation from urban irrigation (200 acre-feet per year), and deep percolation from irrigated lands in the CCC (about 500 acre-feet per year). There was an additional recharge due to seepage from the Mendota Pool and groundwater inflow in the upper aquifer. Water-level records indicate that there was essentially no change in storage in the unconfined aquifer during 2003-16. The groundwater inflows and outflows (above and below the A-clay) acted to maintain the water budget. This indicates that the groundwater inflow and pool seepage exceeded the outflow by about 2,400 acre-feet per year.

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Luhdorff & Scalmanini and Kenneth D. Schmidt and Associates, 2018, "Mendota Pool Group Pumping and Monitoring Program: 2017 Annual Report", prepared for SJRECWA, Wonderful Orchards, and Mendota Pool Group.

Appendix W. Groundwater Conditions in the Turner Island Water District – 2 GSA

GROUNDWATER CONDITIONS IN THE TURNER ISLAND WATER DISTRICT-2 GSA

prepared for
San Joaquin River Exchange
Contractors GSA
Los Banos, California

by
Kenneth D. Schmidt & Associates
Groundwater Quality Consultants
Fresno, California

May 2019

KENNETH D. SCHMIDT AND ASSOCIATES
GROUNDWATER QUALITY CONSULTANTS
600 WEST SHAW AVE., SUITE 250
FRESNO, CALIFORNIA 93704
TELEPHONE (559) 224-4412

May 31, 2019

Mr. Chris White, Executive Director
San Joaquin River Exchange
  Contractors GSA
P. O. Box 2115
Los Banos, CA 93635

Re: Turner Island W.D. GSP of the
    SJREC GSP

Dear Chris:

Submitted herewith is our report on groundwater conditions in the Turner Island W.D. GSP. We appreciate the cooperation of the CCID and Turner Island W.D. in providing information for this report.

Sincerely Yours,

Kenneth D. Schmidt
Geologist No. 1578
Certified Hydrogeologist 176

REGISTERED GEOLOGIST
KENNETH D. SCHMIDT
NO. 1578
STATE OF CALIFORNIA

REGISTERED GEOLOGIST
KENNETH D. SCHMIDT
NO. 176
CERTIFIED HYDROGEOLOGIST
STATE OF CALIFORNIA

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GROUNDWATER CONDITIONS IN THE TURNER ISLAND WATER DISTRICT-2 GSA

INTRODUCTION

As part of the Groundwater Sustainability Plan (GSP) for the San Joaquin River Exchange Contractors (SJREC) GSP service area, GSPs for a number of cities and other areas in Merced County, including part of the Turner Island W.D., are being incorporated into the SJREC GSP. The District (Figure 1) is located south of the San Joaquin River and west of Poso Drive, northeast of the City of Los Banos. The study area is located just to the north of lands in the service area of the San Luis Canal Co., which are part of the SJREC GSA. The report is intended to provide information on groundwater conditions within and near the Turner Island W.D. study area.

SUBSURFACE GEOLOGIC CONDITIONS

The Corcoran Clay is a regional confining bed that extends throughout much of the west part of the San Joaquin Valley. This clay divides the groundwater into an overlying upper aquifer and underlying lower aquifer. The top of the Corcoran Clay is about 180 feet deep beneath the study area. There is a shallow clay layer that is less extensive in the valley, but is important beneath the District. This is termed the A-Clay. The top of the A-clay ranges from about 25 to 60 feet deep above the District.

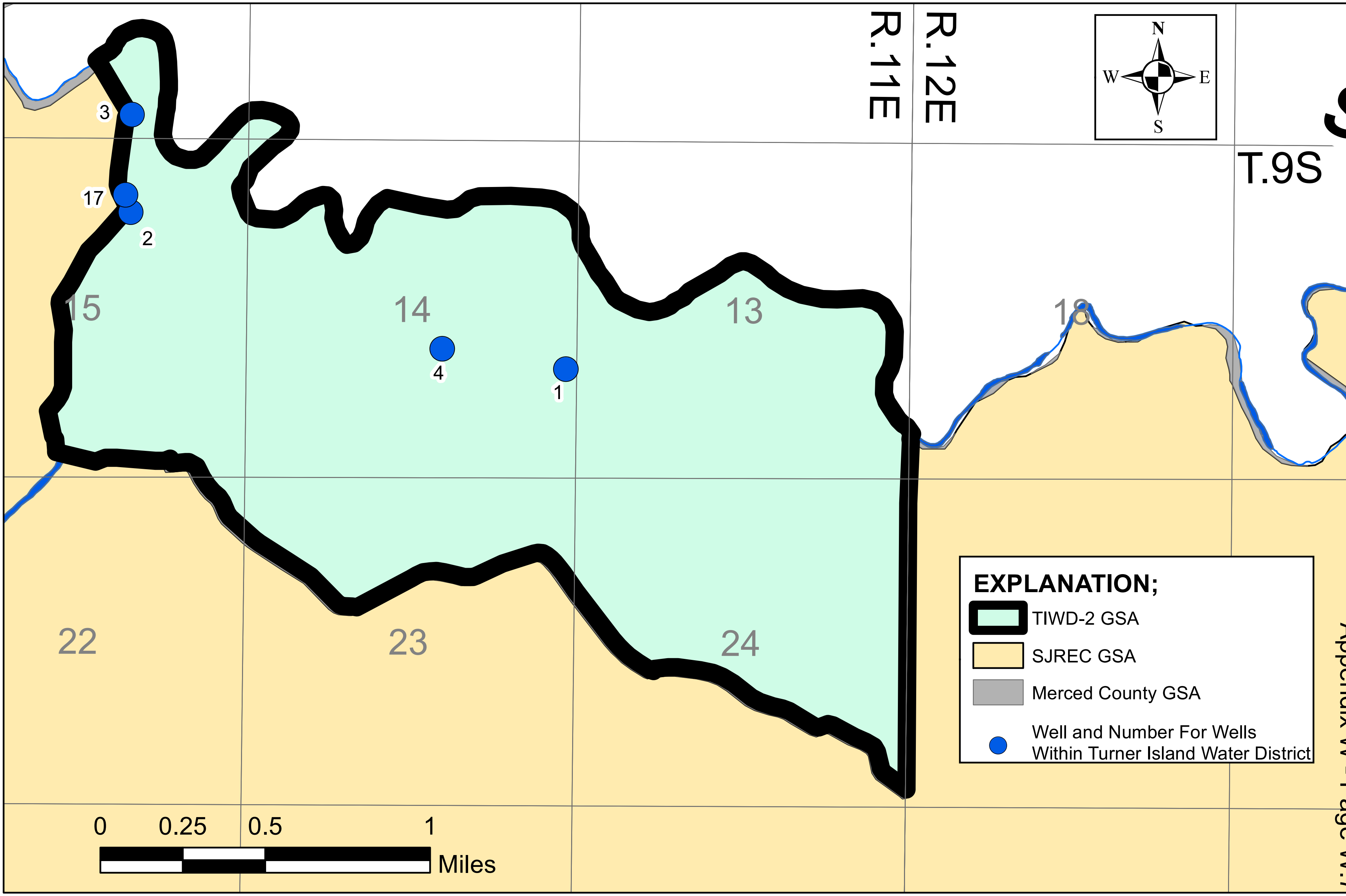

FIGURE 1 - LOCATION OF TURNER ISLAND WATER DISTRICT STUDY AREA

Shallow groundwater is often present beneath this clay layer. As part of this evaluation, a subsurface geologic cross section (A-A') was prepared (Figure 2) based on logs for District wells.

Cross Section A-A" (Figure 3) extends from District Well No. 3-TH to the northwest to the southeast through Well No.4-TH, then to the east-northeast to Well 16. The holes for Wells No. 3 and 4 extend below the Corcoran Clay. Fine-grained deposits were predominant above the Corcoran Clay at the test hole for Well No. 4, whereas coarse-grained deposits (sand) were more common above the Corcoran Clay at the test hole for Well No. 3 and at Well No. 16. The Corcoran Clay extended from about 180 to 230 feet in depth at the test hole Well No. 3 and from about 165 to 218 feet in depth at the test hole for Well No. 4. Coarse grained strata were common below the Corcoran Clay and above a depth of about 370 feet at the test hole for Wells No. 3 and 4.

WELL DATA

Table 1 provides construction data for the five wells within the District. These wells aren't owned by Districts. All of the wells tap the upper aquifer.

WATER LEVELS

Depth to water is shallow in the area, including for both upper aquifer and lower aquifer wells. A water-level elevation map is available for the upper aquifer in the San Luis Canal Co. service

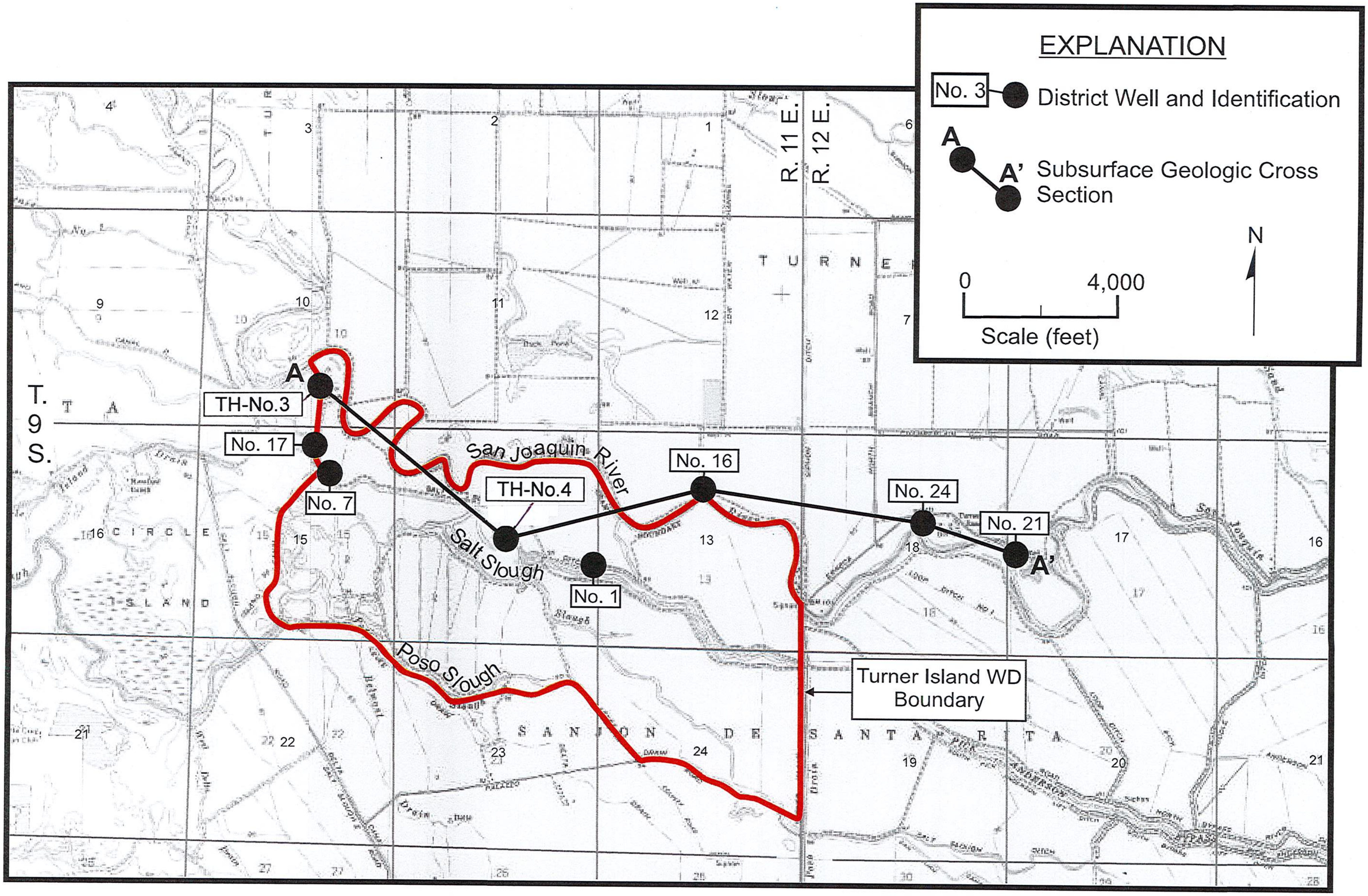

FIGURE 2 - LOCATIONS OF DISTRICT WELLS AND SUBSURFACE GEOLOGIC CROSS SECTION A-A'

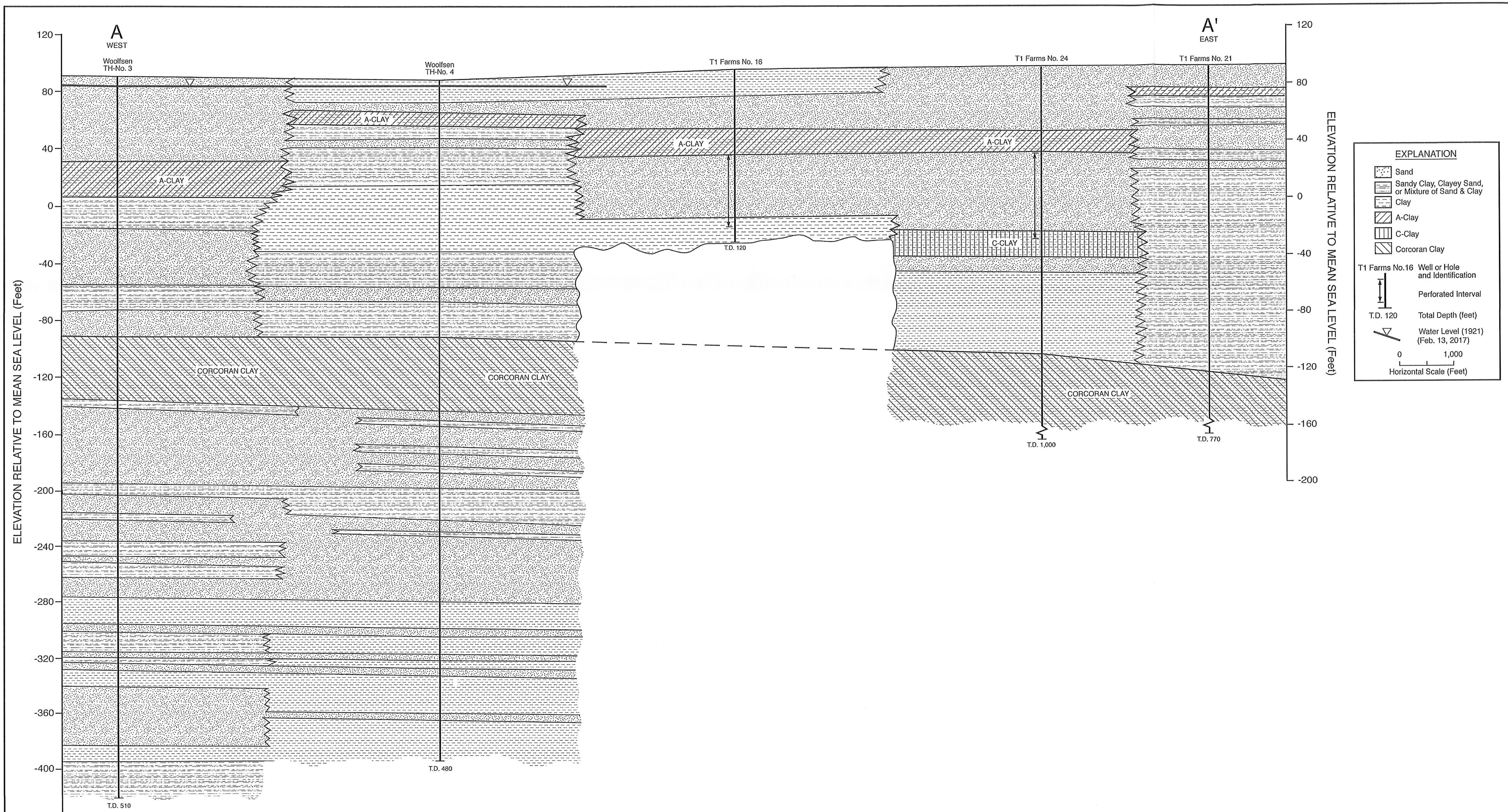

FIGURE 3 - SUBSURFACE GEOLOGIC CROSS SECTION A - A'

TABLE 1 - CONSTRUCTION DATA FOR TURNER ISLAND WD WELLS

No.	Date Constructed	Depth Drilled (feet)	Cased Depth (feet)	Casing Diameter (inches)	Perforated Interval (feet)	Annular Seal (feet)
1			150	17.4	50-180	-
2			180	17.4	60-180	-
3	9/12	-	205	16	80-200	0-50
4	9/12	-	140	16	60-140	0-50
17			140	16		

area for February 2017. This map indicates water level elevations ranged from about 83 to 88 feet above mean sea level beneath the study area. The regional direction of groundwater flow was to the northwest, generally parallel to the San Joaquin River. Monthly water-level elevations are available for the Turner Island WD wells in the study area. Water level elevations on February 13, 2017 (Figure 4) ranged from about 84 to 86 feet above mean sea level. Locally near the San Joaquin River, the direction of groundwater flow was to the southwest. On February 13, there was little difference in depth to water between the upper aquifer and lower aquifer wells.

The San Luis Canal Co. has prepared long-term water-level hydrographs for nine wells in their service area. These hydrographs extend back to the late 1990's, and show stable water levels and no indication of groundwater overdraft.

Water-level hydrographs for the five District wells in the study area for 2015-18 are provided in Appendix A. All of these hydrographs indicated rising water levels during this period. Figure 5 is considered a representative hydrograph for the upper aquifer (Well No. 1). Depth to water ranged from about five to thirteen feet. Figure 6 is considered a representative hydrograph for the lower aquifer (Well No. 3). Depth to water ranged from five to more than 36 feet.

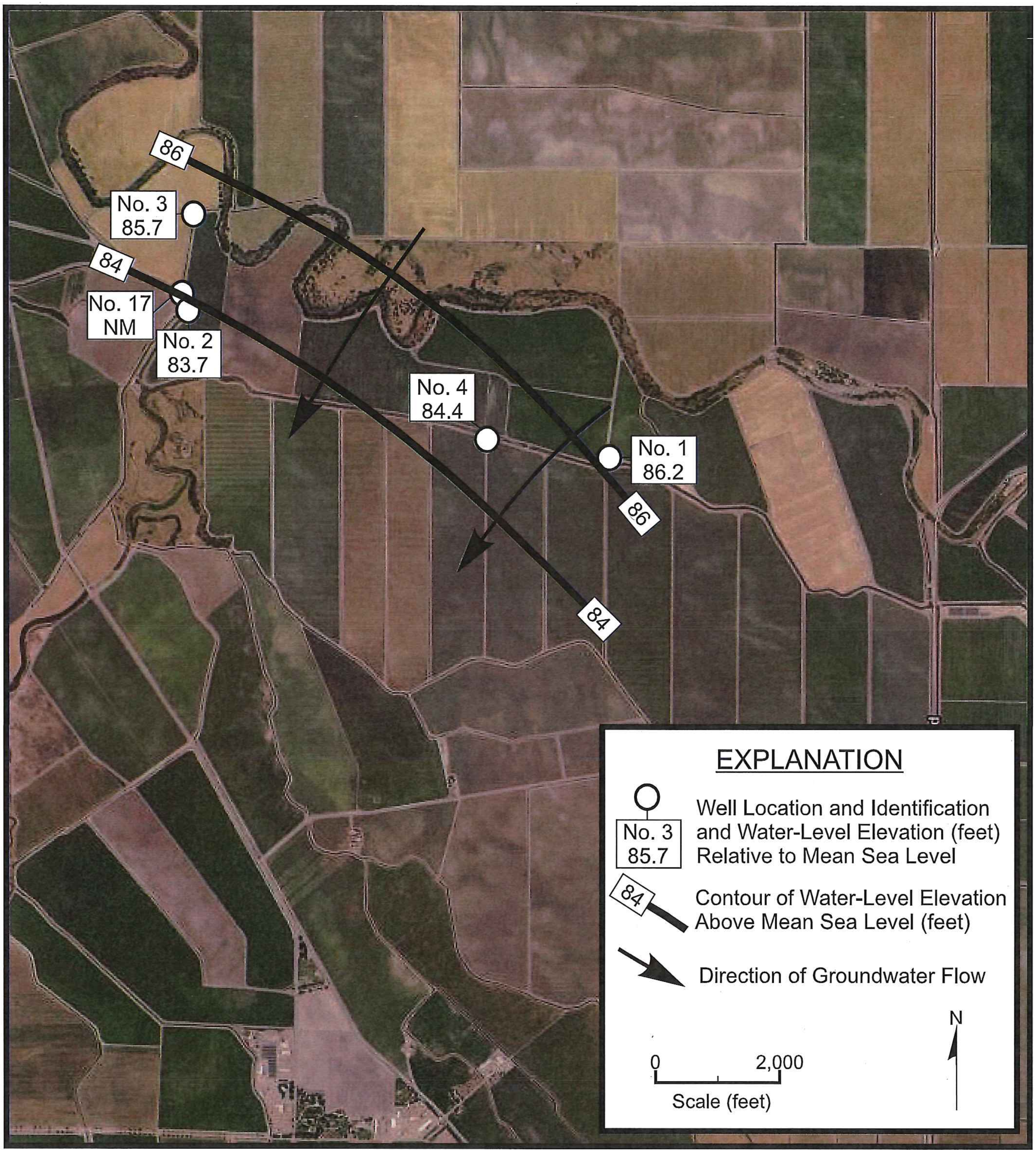

FIGURE 4 - WATER-LEVEL ELEVATIONS AND DIRECTION OF GROUNDWATER FLOW FOR FEBRUARY 13, 2017

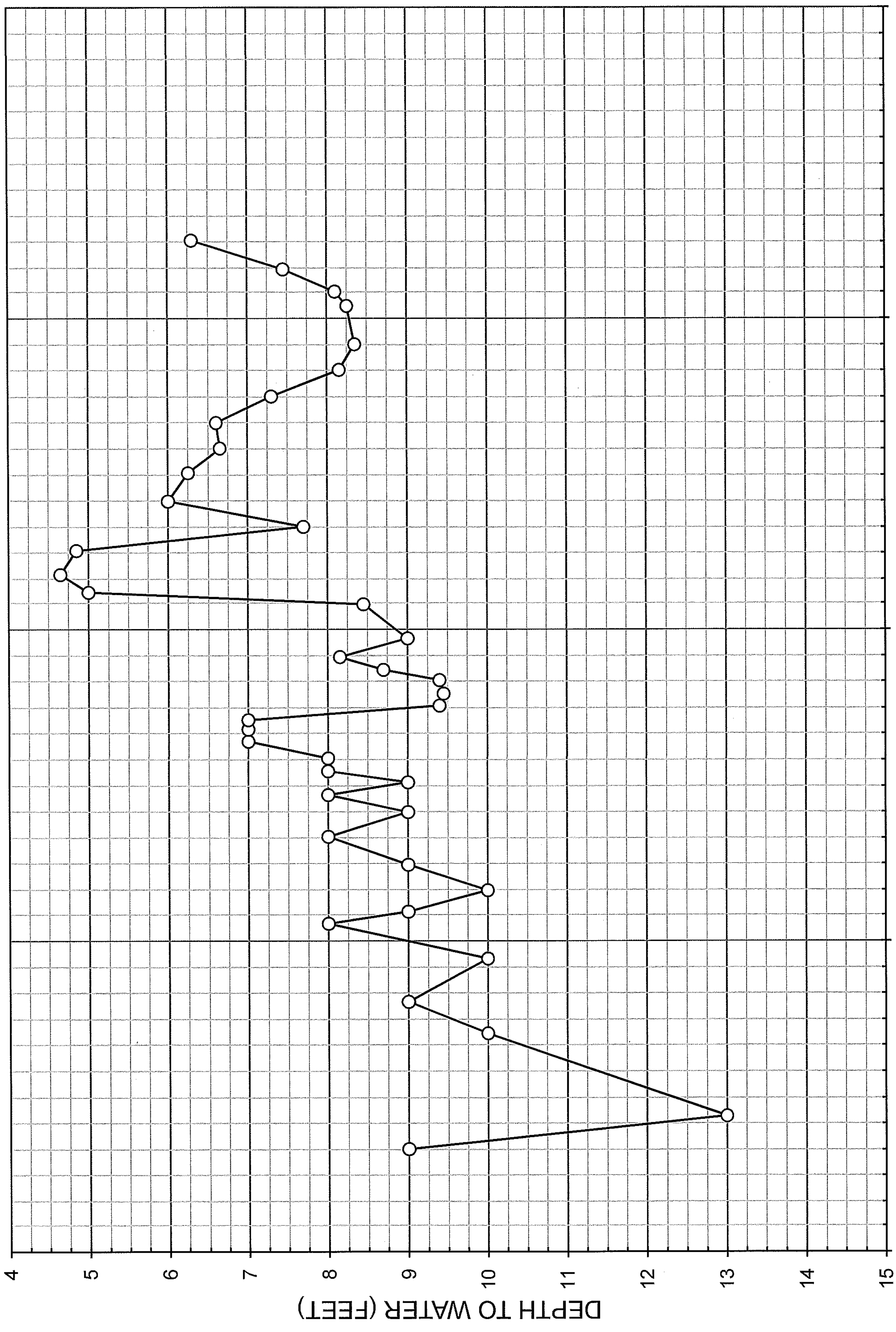

FIGURE 5-WATER-LEVEL HYDROGRAPH FOR TURNER ISLAND WD WELL NO. 1

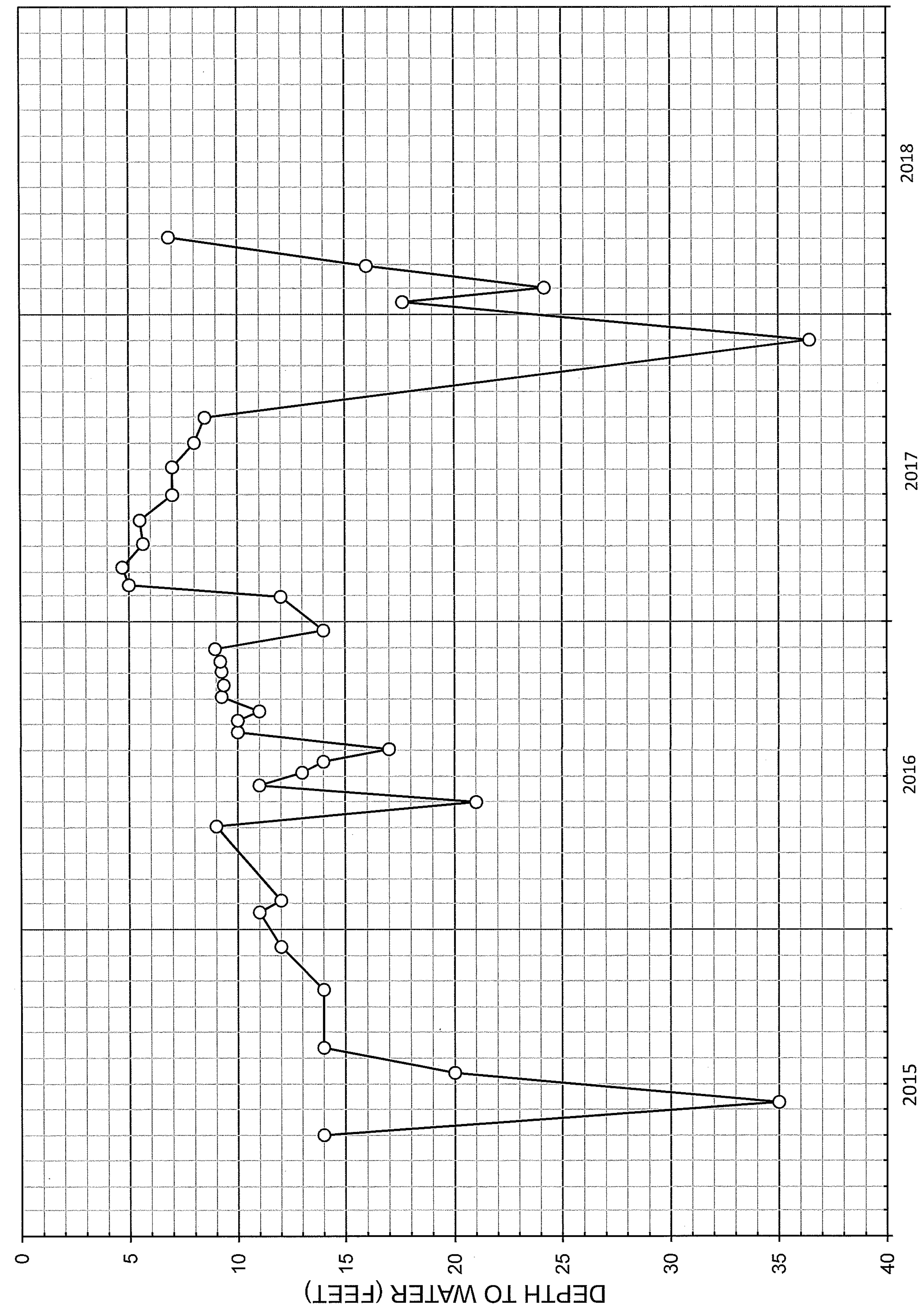

FIGURE 6-WATER-LEVEL HYDROGRAPH FOR TURNER ISLAND WD WELL NO. 3

PUMP TEST DATA

Pump test results are not available for the District Wells. However, reported pumping rates for these wells range from about 800 to 2,000 gpm.

PUMPAGE

Table 2 shows Turner Island WD pumpage for wells in the study area during 2010-16. The annual pumpage ranged from about 730 to 3,330 acre-feet, and the average pumping during this period was about 1,530 acre-feet per year. Of this pumpage, an average of 370 acre-feet per year was used for irrigation of crops in the District. The remaining 1,160 acre-feet per year was pumped to locations outside of the study area.

SLCC WATER DELIVERIES

Water deliveries to the District from the San Luis Canal Co. for 2003-16 are provided in Table 3. From 1,600 to 1,700 acres of land were irrigated with this water each year. The annual amount of surface water delivered ranged from 3,100 acre-feet to 6,500 acre-feet. The surface water deliveries averaged about 5,100 acre-feet per year. During the dry years of 2014-16, the District wells were used to supplement the SLCC deliveries.

TABLE 2-PUMPAGE FROM TURNER ISLAND WD WELLS

Year	GW Pumped to Outside Basin (ac-ft)	GW Pumped to Crops (ac-ft)	Total GW Pumped (ac-ft)
2010	731	0	731
2011	760	0	760
2012	1,142	0	1,142
2013	871	0	871
2014	2,553	775	3,328
2015	1,507	982	2,489
2016	557	865	1,422

TABLE 3-SLCC CANAL WATER DELIVERIES AND CROP EVAPOTRANSPIRATION

Water Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Acreage	1,600	1,600	1,700	1,700	1,700	1,700	1,700	1,700	1,700	1,600	1,600	1,600	1,600	1,600
Surface Water Applied (ac-ft)	6,300	5,700	6,000	6,500	6,300	5,800	4,900	4,700	5,200	4,300	5,000	3,800	3,100	3,500
Groundwater Applied (ac-ft)	-	-	-	-	-	-	-	-	-	-	-	800	1,000	900
Total Applied Water (ac-ft)	6,300	5,700	6,000	6,500	6,300	5,800	4,900	4,700	5,200	4,300	5,000	4,600	4,000	4,400
ETc (ac-ft)	4,500	4,200	3,700	4,700	4,400	3,800	3,700	3,500	4,400	4,200	4,300	4,000	2,600	3,900
ETiw (ac-ft)	3,600	3,200	2,700	3,600	3,700	3,200	2,900	2,600	3,500	3,400	3,400	3,200	1,900	3,000

CONSUMPTIVE USE

Table 3 also shows the evapotranspiration of applied water for 2003-16. These estimates were taken from the ITRC water use and ITRC metric data. The annual evapotranspiration of applied water ranged from 1,900 to 3,700 acre-feet. The average evapotranspiration of applied water was 3,100 acre-feet per year. There was thus an average surplus of about 2,000 acre-feet per year of the amount of surface water compared to the evapotranspiration of applied water by crops.

CHANGE IN GROUNDWATER STORAGE

Based on long-term water-level hydrographs for wells in the area, there has been no long-term change in groundwater storage in the District.

WATER BUDGET

An average of 5,100 acre-feet of water was delivered to the District from the SLCC during 2003-16. This exceeded the average evapotranspiration of applied water (3,100 acre-feet per year) by an average of 2,000 acre-feet per year. The average groundwater pumpage was 1,530 acre-feet per year. An average of 1,160 acre-feet per year of groundwater was pumped to locations outside of the study area during 2010-16. The net difference in the water budget (excluding groundwater flows) was an average surplus of about 470 acre-feet per year.

LAND SUBSIDENCE

Figure 7 shows land subsidence in the area for December 2011-July 2013. One of the GPS stations (T987 CADWR) used in preparing this map was near Sandy Mush Road and the Eastside Bypass, near the Crane Ranch. Subsidence of 0.1 to 0.2 foot per year was indicated beneath most of the Turner Island Ranch and the Crane Ranch over this period. The greatest subsidence has been south of Washington Road, in the El Nido and Red Top areas. Land subsidence in the Red Top area has been reduced by decreasing lower aquifer pumpage by various means, including imported surface water, and development of more upper aquifer wells.

GROUNDWATER QUALITY

Table 4 shows the results of chemical analyses of water from from two of the TIWD wells, based on samples collected by KDSA in December 2013. Well No. 2 taps the upper aquifer and Well No. 4 taps the lower aquifer. The total dissolved solids (TDS) concentration in water from Well No. 2 was 1,310 mg/l and the water was of the sodium chloride type. The chloride concentration was 444 mg/l. For the lower aquifer, the lowest TDS concentrations in the vicinity are for wells near the San Joaquin River. The TDS concentration in water from Well No. 4 was 1,990 mg/l and the water

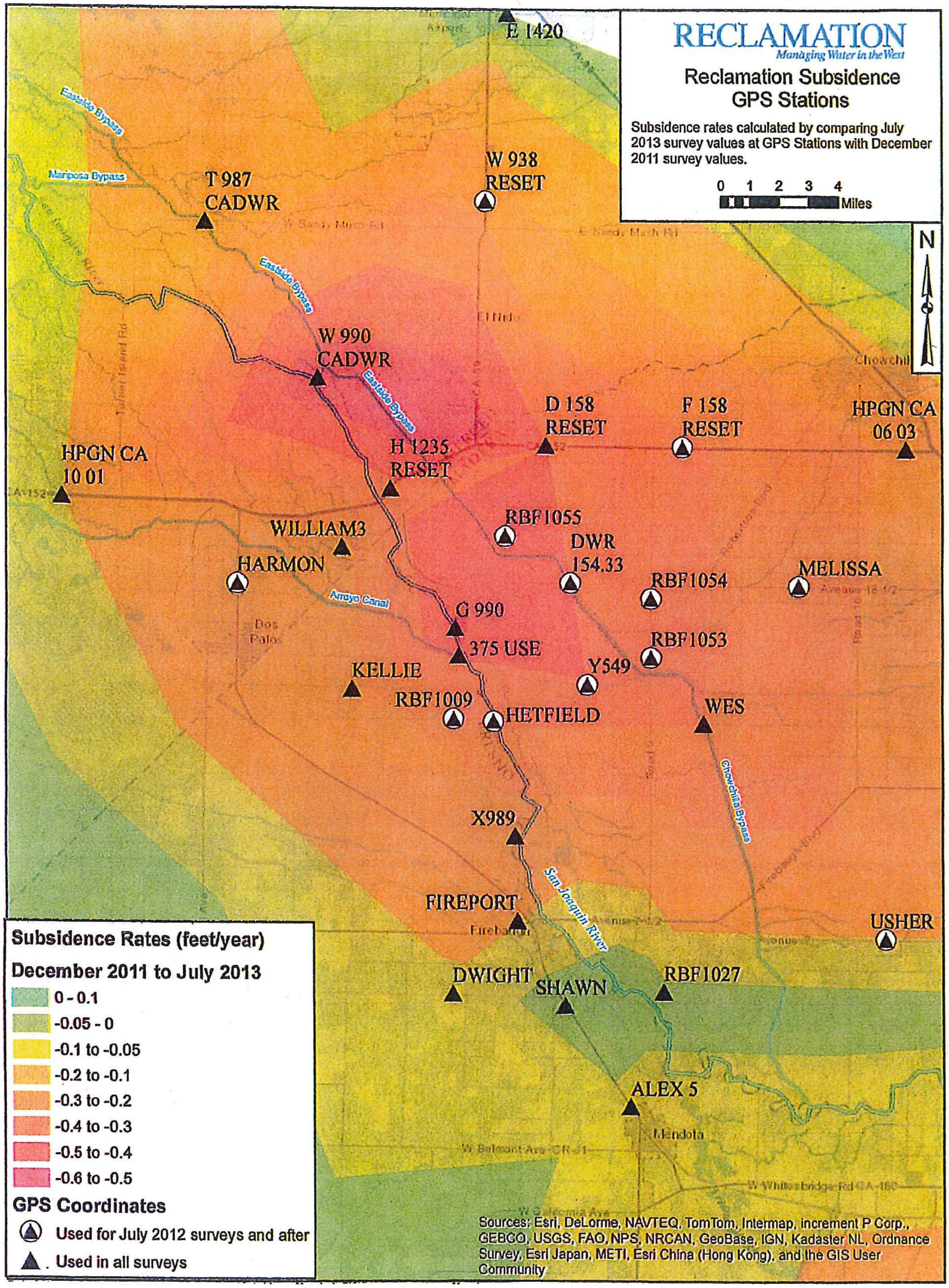

FIGURE 7-LAND SUBSIDENCE (DECEMBER 2011-JULY 2013)

TABLE 4-CHEMICAL ANALYSES OF TURNER ISLAND W.D. WELLS

Constituent (mg/l)	Well No. 2	Well No. 4
Calcium	101	160
Magnesium	47	72
Sodium	243	388
Potassium	4	3
Carbonate	<10	<10
Bicarbonate	230	220
Sulfate	240	360
Chloride	444	790
Nitrate	<1	1
SAR	5.0	6.4
Boron	0.2	0.2
pH	7.4	7.4
Electrical Conductivity (micromhos/cm @ 25°C)	1,960	3,000
Total Dissolved Solids (@ 180°C)	1,310	1,990
Date Sampled	12/3/13	12/3/13
Perforated Interval	60-180	230-450

Analyses by FGL Environmental of Santa Paula.

was also of the sodium chloride type. The chloride concentration was 790 mg/l. Sampling of other lower aquifer wells in the area indicates that TDS concentrations are lower to the northeast, and highest to the southwest and south. Also, TDS and chloride concentrations are higher in the deeper groundwater.