Groundwater Report

Spring 2019

San Joaquin County

Flood Control and Water Conservation District

San Joaquin County

Flood Control and Water Conservation District

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San Joaquin County Department of Public Works, Stockton, 2021 Copies of the Spring 2019 Groundwater Report may be made available upon request from:

San Joaquin County Department of Public Works
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Acknowledgements

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This Groundwater Report is a product of the commitment that the San Joaquin County Flood Control and Water Conservation District together with many other interested agencies made to sustain and enhance the groundwater resources of the Eastern San Joaquin Basin. The District extends thanks to…

California Water Service

City of Lathrop

City of Lodi

City of Manteca

City of Stockton Municipal Utilities Department

East Bay Municipal Utility District

Morada Area Association

Pacific Gas and Electric Company

San Joaquin County Department of Public Works

State of California, Department of Water Resources

Central District Stockton East Water District

United States Bureau of Reclamation

United States Geological Survey

Most of all, we would like to thank all of the individual well owners, who give us access to their wells and in some cases some of their time.

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1 Introduction

Since the fall of 1971, the San Joaquin County Flood Control and Water Conservation District has monitored groundwater levels and groundwater quality and has published the data in the semi-annual Groundwater Report. This report utilizes data from federal, state and local government agencies as well as non-governmental sources.

Water level data is collected on a semi-annual basis, during the months of April and October, to observe groundwater levels before and after peak groundwater pumping conditions. Over 350 wells most of which are measured by County staff, are included in the Monitoring Program. The exact number of wells varies from year to year, depending on circumstances such as destructions, new well construction, well accessibility, and well condition.

1.1 Purpose

The purpose of the semi-annual Groundwater Reports is to provide information on groundwater conditions in San Joaquin County and to publish the results of the groundwater monitoring program which consists of the following:

1. Monitor groundwater quality along a North-South line from the north of the City of Stockton to the City of Lathrop.
2. Measure groundwater levels on a County-wide basis.

In general, water quality data is more meaningful after peak production which usually occurs during the summer months. Therefore, groundwater quality data is only published in the fall report. The groundwater depth and elevation data are published in both the spring and fall.

1.2 Procedure

Water level measurements are performed using either a steel chain or sounder. Data is then immediately recorded in field books and then stored in a database for accessibility and reporting requirements.

2 Rainfall Distribution

The groundwater basins in San Joaquin County responds to changes in annual precipitation. There are four stations throughout the county which track rainfall throughout the year; however, rainfall records for two of these stations (Lodi Station and Stockton Fire Station) were not available. The precipitation data from west to east, is presented in Figures 2-1 through 2-4. These graphs reflect areas located across San Joaquin County and one area in Calaveras County. These stations have been collecting rainfall data since the 1950's.

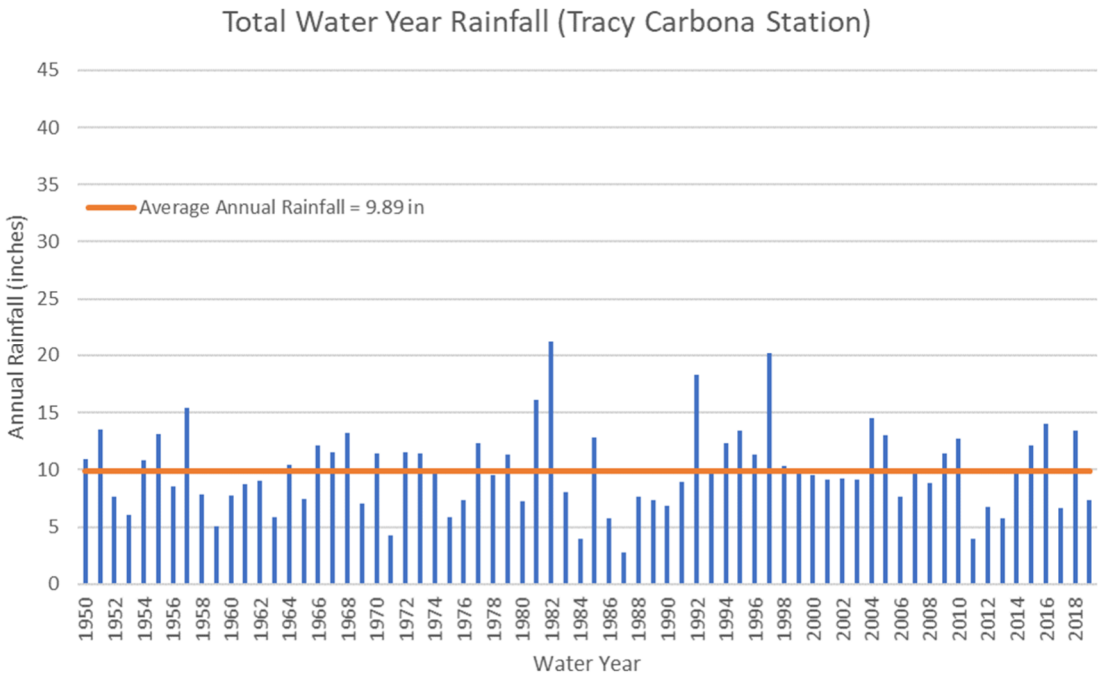


Figure 2-1 Total Annual Rainfall (Tracy Carbona Station)

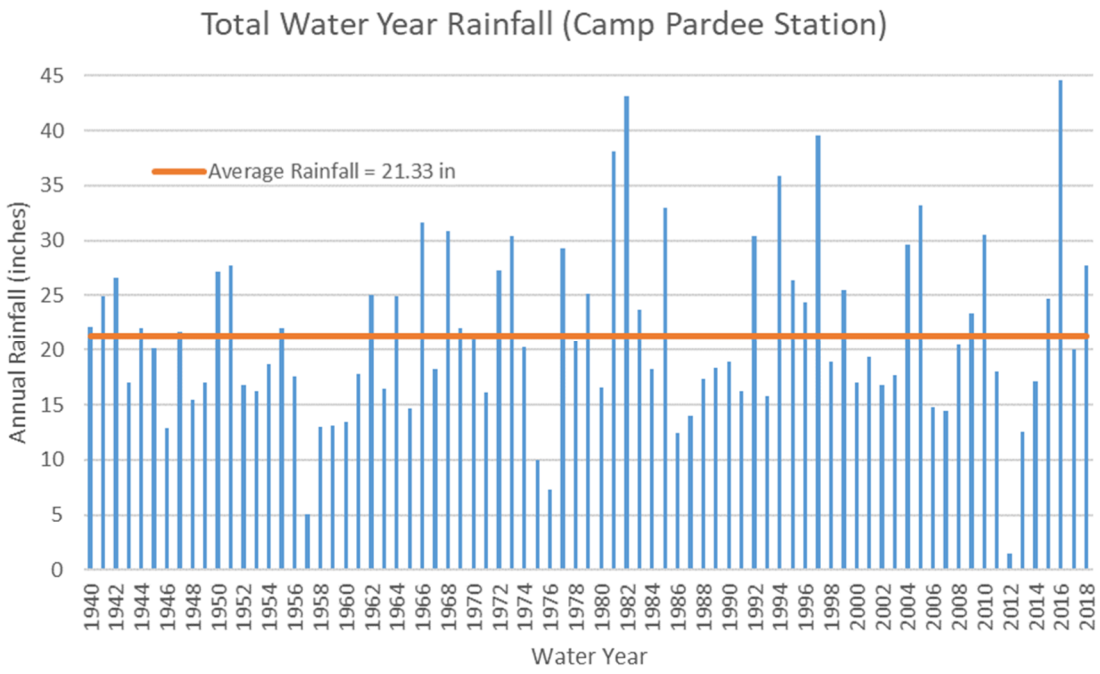


Figure 2-2 Total Annual Rainfall (Camp Pardee Station)

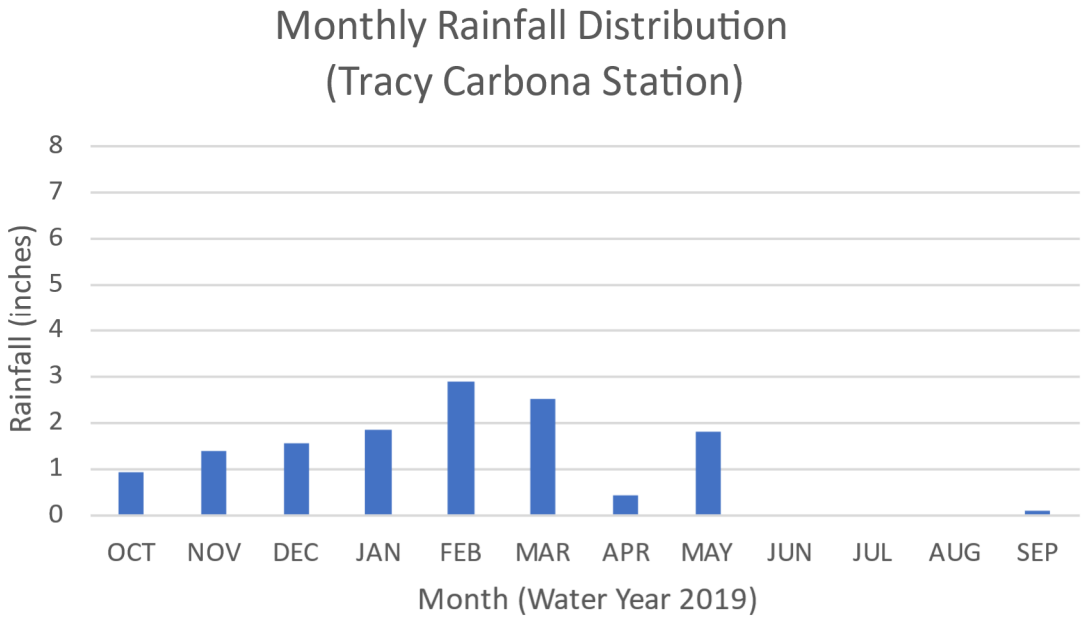


Figure 2-3 Monthly Rainfall Distribution (Tracy Carbona Station)

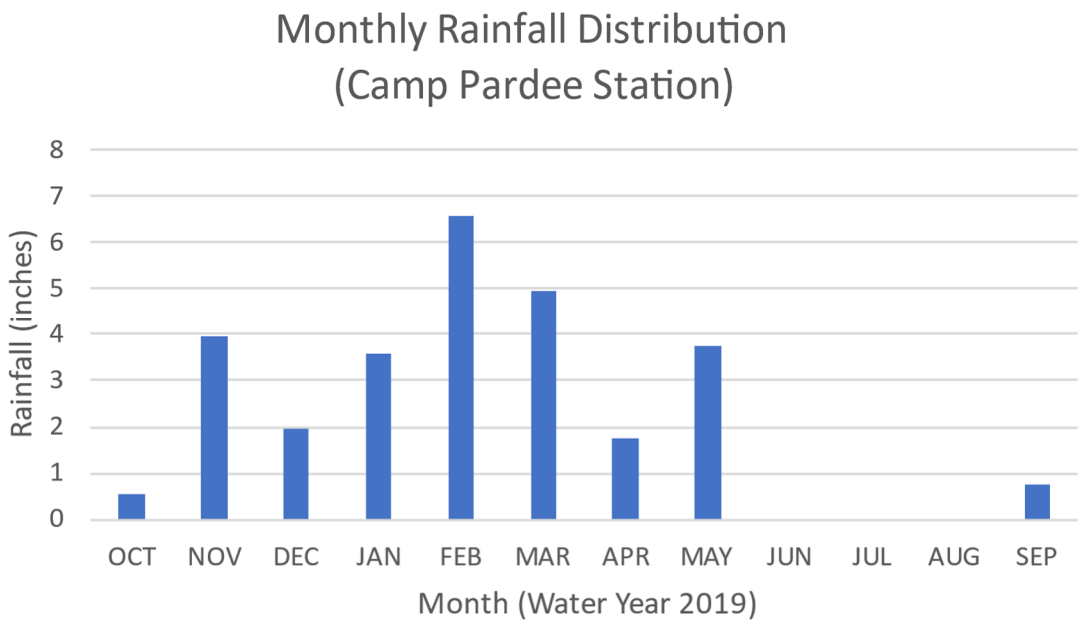


Figure 2-4 Monthly Rainfall Distribution (Camp Pardee Station)

3 Groundwater Elevation Monitoring

Groundwater level data was provided by San Joaquin County and supplemented with data available through the Department of Water Resources CASGEM program. Groundwater levels were gathered in San Joaquin County for the Eastern San Joaquin County Subbasin and the Tracy Subbasin. Groundwater levels were also gathered from collected and presented for adjacent counties within the Eastern San Joaquin County Subbasin.

3.1 Groundwater Levels in San Joaquin County

Wells included in previous reports that had no available construction details, or discontinued measurements have been removed from Tables 3-1 to 3-7. Wells with comparable data are those wells with groundwater level measurements in Spring 2018 and in Spring 2019. The information gathered is summarized as follows:

Central San Joaquin Water Conservation District (CSJWCD) – Eighteen (18) wells were able to be compared. Eight (8) wells show decreases in groundwater levels (Table 3-1). Ten (10) wells show an increase in groundwater levels. There were zero (0) wells which had no change in groundwater elevation.

North San Joaquin Water Conservation District (NSJWCD) – Twenty-seven (27) wells were compared in NSJWCD (Table 3-2). Eleven (11) wells decreased in groundwater levels. Sixteen (16) wells increased in groundwater levels. There were no (0) wells that had no change in groundwater elevation.

Oakdale Irrigation District (OID) – In the OID area, there were no comparable wells for groundwater levels (Table 3-3). Only one (1) well had a groundwater level taken in Spring 2019.

Stockton East Water District (SEWD) – Sixty-eight (68) wells were compared in SEWD (Table 3-4). Six (6) wells decreased in groundwater levels. Sixty (60) wells show increases in groundwater levels. Two (2) wells had no change in groundwater elevation.

South San Joaquin Irrigation District (SSJID) – Nineteen (19) wells were compared in the SSJID area (Table 3-5). Thirteen (13) wells declined in groundwater elevation. Five (5) increased in groundwater elevation. One (1) well had no change in groundwater elevation.

Southwest County Area in the Tracy Subbasin – Twenty-five (25) wells were compared in the Southwest County area (Table 3-6). Four (4) wells declined in groundwater elevation. Twenty-one (21) increased in groundwater elevation. No (0) wells had no change in groundwater elevation.

Woodbridge Irrigation District (WID) – Twenty (20) wells were compared in WID (Table 3-7). Two (2) wells decreased in groundwater levels. Seventeen (17) wells showed an increase in groundwater levels. There was one (1) well with no change in groundwater elevation.

3.2 Hydrographs

Hydrographs of select wells within the County are provided on Figures 3-1 through 3-27 to illustrate the changes in groundwater levels with time. Trend lines are plotted on each figure using data from 1990 to present (or shorter period if measurements are not available) to illustrate current groundwater levels, whether they are increasing or decreasing. Wells C and W are provided but monitoring at these wells has stopped at the request of the well owners.

3.3 Groundwater Level Profiles

Groundwater level profiles were developed to illustrate the relationship of where groundwater levels were increasing or decreasing in relationship to Spring 1986, recent historic high groundwater levels, and Fall 1992, historic low groundwater levels. Figure 3-28 shows the location of the profiles and Figures 3-29 through 3-31 provide the profiles.

3.4 Groundwater Level Changes

Changes in groundwater levels from Spring 2018 through Spring 2019 throughout the County are summarized on Figure 3-32. Figures 3-33 through 3-36 show depths to groundwater along surface elevation maps that were used to develop Figure 3-32.

Table 3-1 Comparison of CSJWCD Water Surface Elevations

State Well ID	Spring 2019	Spring 2018	Change (feet)
01N07E11L001	--	-70	--
01N07E14J002	--	-42.6	--
01N07E14L001	-42.41	-41.81	-0.6
01N07E26H003	--	-41	--
01N07E32A001	-14.49	-15.89	1.4
01N08E02B001	-48.34	--	--
01N08E11L001	--	-64	--
01N08E13J001	-48.7	--	--
01N08E16G001	-48.7	-63.7	15
01N08E16H002	-48.3	-77	28.7
01N08E18A002	-61.5	-60.5	-1
01N08E22J001	--	-40.5	--
01N08E26A002	--	-34.3	--
01N08E27R002	--	-40	--
01N08E29M002	-43	-65	22
01N08E35F001	--	-69.9	--
01N08E36F001	-30	-53	23
01N09E13D001	--	13	--
01N09E17D001	--	-30.5	--
01N09E17M001	--	-43.5	--
01N09E19C001	-45	-69	24
01N09E22G002	--	-34.4	--
01N09E29R001	--	-16.5	--
01N09E30C005	-27.2	-33.2	6
01S07E01J001	-42.6	-40.6	-2
01S08E04R001	-35	--	--
01S08E05A001	--	-79.4	--
01S08E05R001	-35.8	-58.8	23
01S08E06D001	--	-38.1	--
01S08E09Q001	--	-41.9	--
01S08E11F001	-39.9	-23.9	-16
01S08E14B001	-24.7	-21.2	-3.5
01S08E15A001	-23.37	-19.97	-3.4
01S08E20B001	--	-18.7	--
01S08E23A001	--	8.5	--
01S08E27A001	-2.75	-1.05	-1.7
01S09E02R001	-18.7	--	--
01S09E05H002	-7	--	--
01S09E07A001	-12.3	-32.3	20
01S09E07N001	-17.3	-31.3	14
01S09E09R001	--	-16.7	--
01S09E19Q002	1	9	-8

Number of Wells 2019-2018				Change in Storage	
Comparable	Decrease	Increase	No Change	Range	Average
18	8	10	0	-16 to 28.7	7.83

Table 3-2 Comparison of NSJWCD Water Surface Elevations

State Well ID	Spring 2019	Spring 2018	Change (feet)
03N06E04C001	9.16	6.06	3.1
03N06E25R005	--	-37.32	--
03N07E02G003	-29.54	-26.84	-2.7
03N07E03R001	-25.3	-24.8	-0.5
03N07E08E002	-21.2	-25	3.8
03N07E09C001	-23.5	-23.7	0.2
03N07E15C004	-36.3	-36.5	0.2
03N07E17D004	-23.8	-24.4	0.6
03N07E18D012	-24.3	-25	0.7
03N07E19J004	-62.5	-77	14.5
03N07E23C002	-45.8	--	--
03N07E33G002	-50	-66	16
03N08E07D002	-43.46	--	--
03N08E07J001	-49.3	--	--
03N08E19C001	--	-41.3	--
03N08E22A001	-56.5	--	--
04N06E12C004	-31.7	-32.5	0.8
04N06E12N002	-24.1	-24.8	0.7
04N06E15B002	-6.5	-7.2	0.7
04N06E23K00	2	0	2
04N06E24F001	-16	-14	-2
04N06E25R001	-1	1	-2
04N06E27D002	12.2	8.7	3.5
04N07E17N001	-30.4	-36.3	5.9
04N07E19K001	-18.6	-20.1	1.5
04N07E20H003	-24.14	-23.74	-0.4
04N07E21F001	-27	-26.8	-0.2
04N07E27C002	-27.5	-22.5	-5
04N07E28J002	-18.2	-17.7	-0.5
04N07E33H001	30.2	--	--
04N07E36L001	-26.6	-26.5	-0.1
04N08E14K001	-11.7	--	--
04N08E17J001	-34.9	-34	-0.9
04N08E21M001	-39.4	-37.1	-2.3
04N08E32N001	-42.6	-48.1	5.5

Number of Wells 2019-2018				Change in Storage	
Comparable	Decrease	Increase	No Change	Range	Average
27	11	16	0	-5 to 16	1.60

Table 3-3 Comparison of OID Water Levels

State Well ID	Spring 2019	Spring 2018	Change (feet)
01S09E21J002	26.5	--	--

Number of Wells 2019-2018				Change in Storage	
Comparable	Decrease	Increase	No Change	Range	Average
0	0	0	0	--	--

Table 3-4 Comparison of SEWD Water Levels

State Well ID	Spring 2019	Spring 2018	Change (feet)
01N06E02C001	-5.83	-9.13	3.3
01N06E04J003	-8.23	-10.43	2.2
01N06E04J004	-3.77	-6.17	2.4
01N06E04J005	0.19	-1.91	2.1
01N06E36C003	-9.8	-11.8	2
01N06E36C004	-5.5	-7.5	2
01N06E36C005	-3.9	-5.7	1.8
01N07E01M002	--	-54	--
01N07E02G001	-47.5	--	--
01N07E03M001	-8	-11	3
01N07E04R001	-12	-20	8
01N07E09E004	-18	-34	16
01N07E09Q003	-28	-35	7
01N07E10D001	-27	--	--
01N07E21R001	--	-25	--
01S06E01C002	-1	-3	2
01S06E02G002	-4.47	-2.17	-2.3
01S06E10G001	-1.8	--	--
01S07E06M002	-1	-4	3
01S07E08J002	-4	--	--
02N05E01A002	-24.34	-25.04	0.7
02N05E01A003	-14.31	-15.01	0.7
02N05E01A004	-11.76	-12.56	0.8
02N05E01A005	-10.14	-11.24	1.1
02N05E01A006	-7.98	-9.88	1.9
02N06E01A001	-32.22	-37.52	5.3
02N06E08N001	-20.98	-22.08	1.1
02N06E08N002	-19.32	-20.42	1.1
02N06E08N003	-16.41	-17.91	1.5
02N06E12H001	-34.29	-36.99	2.7
02N06E13R002			--
02N06E20E001	-12.6	-14.4	1.8
02N06E20E003	--	-12.2	--
02N06E24F001	-21.5	-31.5	10
02N06E24J002	-23.7	-29.3	5.6
02N06E24J003	-26.27	-28.17	1.9
02N07E03D001	-51	-51	0
02N07E08D001	-63.2	-56.2	-7
02N07E08K003	-50.4	-54	3.6
02N07E08R002	-47.34	-49.84	2.5
02N07E10F002	-53.5	--	--
02N07E11F001	-70	-95	25
02N07E11R002	-58	-75	17

State Well ID	Spring 2019	Spring 2018	Change (feet)
02N07E15C001	-49.3	--	--
02N07E16F002	-49.94	-63.44	13.5
02N07E16L001	-49.3	-76.3	27
02N07E20N002	-32	-35	3
02N07E21A002	-55.31	-62.81	7.5
02N07E21K002	-48.3	-61	12.7
02N07E21N001	-49	-80	31
02N07E23B001	-62	-83	21
02N07E24B001	-58.1	-59.1	1
02N07E24Q001	-62.1	-95	32.9
02N07E28K002	-51	-64	13
02N07E28N004	-48	-41	-7
02N07E28P001	-42	-58	16
02N07E29B001	-35.9	-59.5	23.6
02N07E29M002	-34.1	-30	-4.1
02N07E30H001	-25.9	--	--
02N07E32J002	-15.1	-31	15.9
02N07E32M002	-5.2	-12	6.8
02N07E32R001	-6.6	-15.6	9
02N07E33L001	-32	-31	-1
02N07E34R001	-45	-58.5	13.5
02N07E36H001	-104	--	--
02N08E03G002	-55.4	-56.7	1.3
02N08E04C001	-52.5	-72.5	20
02N08E05C001	-53.5	-82.5	29
02N08E08N001	-58.5	-81.5	23
02N08E09G002	40.8	36	4.8
02N08E10H002	-58.1	--	--
02N08E14C001	-48	-63	15
02N08E15M002	--	-61.2	--
02N08E16D001	-72.1	-88.1	16
02N08E18C001	-74.7	-89.7	15
02N08E24J001	-36.1	--	--
02N08E28H002	-40.6	-40.6	0
02N08E33E001	-55.6	-57.6	2
02N09E09D001	-2.8	--	--
02N09E28N001	-23.8	-22.3	--
03N06E35P002	-23.74	-24.64	0.9
03N07E35C002	-52.5	-64.8	12.3
03N07E35L001	-71.5	-79.5	8
03N07E36J001	-67.3	-68.3	1
03N09E25R001	82.8	87	-4.2

Number of Wells 2019-2018				Change in Storage	
Comparable	Decrease	Increase	No Change	Range	Average
68	6	60	2	-7 to 32.9	7.49

Table 3-5 Comparison of SSJID Water Levels

State Well ID	Spring 2019	Spring 2018	Change (feet)
01S07E15F002	-11.6	-6.6	-5
01S07E18L001	5.07	3.17	1.9
01S07E21G001	7.25	8.15	-0.9
01S07E25E001	-5	1	-6
01S07E27K001	3.7		--
01S07E30R001	10.56	10.46	0.1
01S07E36D001	8.35	9.55	-1.2
01S08E29K001	--	-6	--
01S08E30C002	-5	-2	-3
01S08E35R002	18.77	22.57	-3.8
01S09E29M002	--	22.5	--
01S09E33J002	44.22	46.12	-1.9
01S09E33P001	41.91	--	--
02S07E07D002	8	9	-1
02S07E11N002	25	24	1
02S07E19H001	20	--	--
02S08E04M001	16.5	17.5	-1
02S08E06J001	15	16	-1
02S08E07R001	26	--	--
02S08E08A001	21	21	0
02S08E08E001	20.2	19.2	1
02S08E09J001	30.16	30.86	-0.7
02S08E12D001	33.37	34.47	-1.1
02S08E14E001	44.27	43.97	0.3
02S09E12R001	64.65	65.65	-1

Number of Wells 2019-2018				Change in Storage	
Comparable	Decrease	Increase	No Change	Range	Average
19	13	5	1	-6 to 1.9	-1.23

Table 3-6 Comparison of Southwest Area Water Levels

State Well ID	Spring 2019	Spring 2018	Change (feet)
01S05E31R002	1.4	1	0.4
02S04E15R001	53.41	52.41	4
02S05E08B001	-0.1	-0.3	0.5
02S06E25J001	18.56	16.86	-0.9
02S06E31N001	50.38	51.38	-2.1
03S06E27N001	62.43	65.23	-2.9
03S07E06Q001	18.36	17.76	-1.9
MW-1A	-7.53	-9.85	1.97
MW-1B	-13.96	-16.89	2.96
MW-1C	-14.43	-17.48	2.83
MW-2A	-11.84	-14.55	1.73
MW-2B	-14.68	-17.63	2.45
MW-2C	-14.77	-17.8	2.63
MW-3A	-13.22	-15.82	2.52
MW-3B	-15.06	-17.86	2.26
MW-3C	-16.1	-18.93	2.39
MW-4A	-10	-12.39	2.2
MW-4B	-13.86	-16.89	2.65
MW-4C	-13.52	-16.69	2.64
MW-5A	-7.49	-11.52	4.44
MW-5B	-9.54	-13.26	2.93
MW-5C	-10.92	-13.3	2.63
MW-6A	-9.99	-12.24	2.44
MW-6B	-12.6	-15.15	2.58
MW-6C	-11.78	-14.62	2.6

Number of Wells 2019-2018				Change in Storage	
Comparable	Decrease	Increase	No Change	Range	Average
25	4	21	0	-2.9 to 4.44	1.76

Table 3-7 Comparison of WID Water Levels

State Well ID	Spring 2019	Spring 2018	Change (feet)
03N05E13L001	--	--	--
03N05E14C001	-1.3	-2.8	1.5
03N06E05N003	-1.57	-2.57	1
03N06E07H003	-8.3	-8	-0.3
03N06E10D001	4.1	4.1	0
03N06E15C004	--	--	--
03N06E17A004	-14	-14.7	0.7
03N06E18M003	-8.6	--	--
03N06E20D002	-14.5	-9.5	-5
03N06E32R001	-18.5	-19	0.5
04N05E10K001	1	-4.5	5.5
04N05E13H001	6.5	2.5	4
04N05E13R004	6.1	4	2.1
04N05E14B002	7.1	1.1	6
04N05E14P001	6	1	5
04N05E22H001	-1.5	--	--
04N05E24J004	8.4	4.9	3.5
04N05E26F001	6	2.7	3.3
04N05E36H003	2.8	2.5	0.3
04N06E17G004	8.5	5.5	3
04N06E29N002	3.1	2.8	0.3
04N06E30E001	10.2	7.2	3
04N06E34J002	26.9	24.9	2
05N05E28L003	0.7	-1.5	2.2

Number of Wells 2019-2018				Change in Storage	
Comparable	Decrease	Increase	No Change	Range	Average
20	2	17	1	-5 to 5.5	1.93

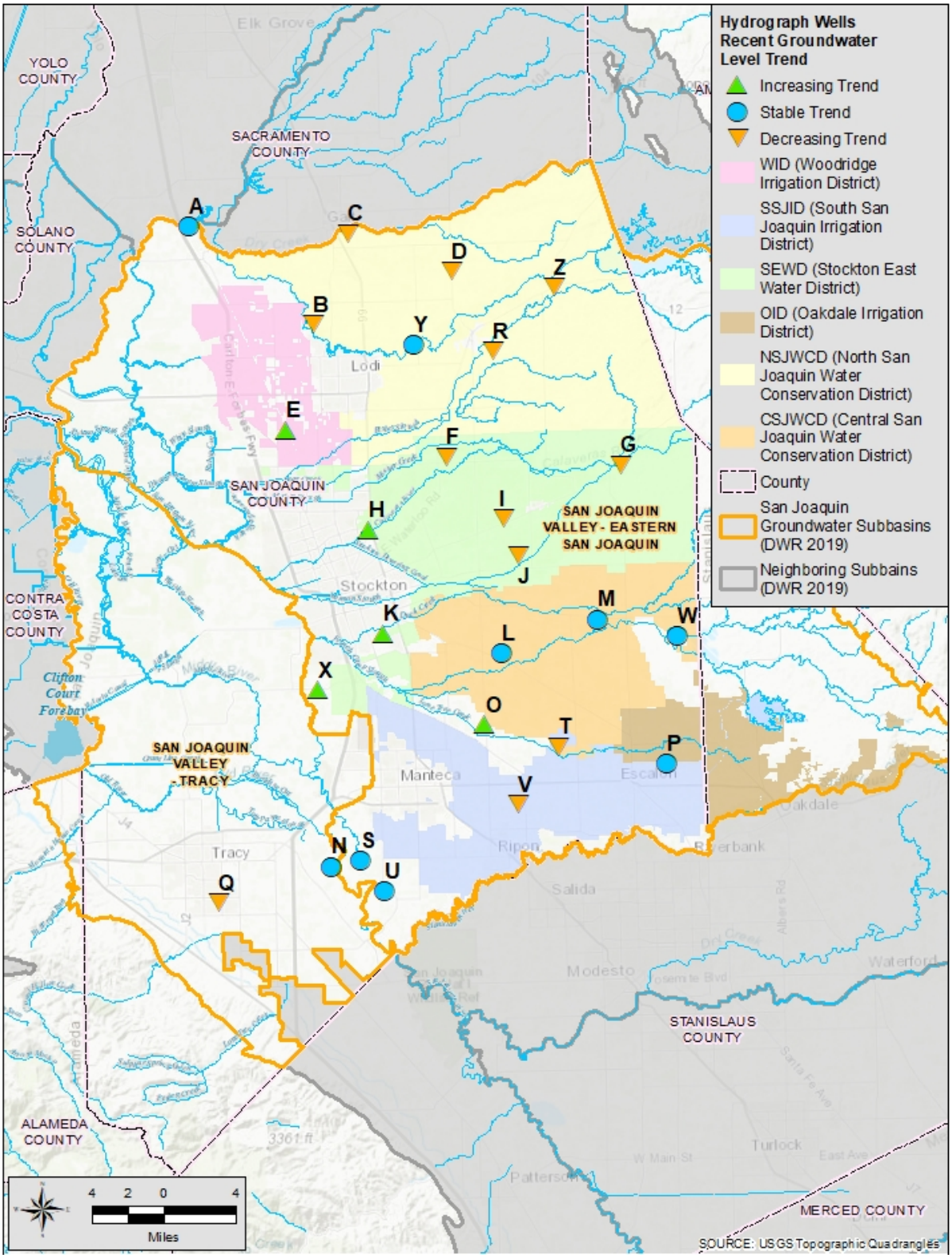


Figure 3-1 Hydrograph Well Locations

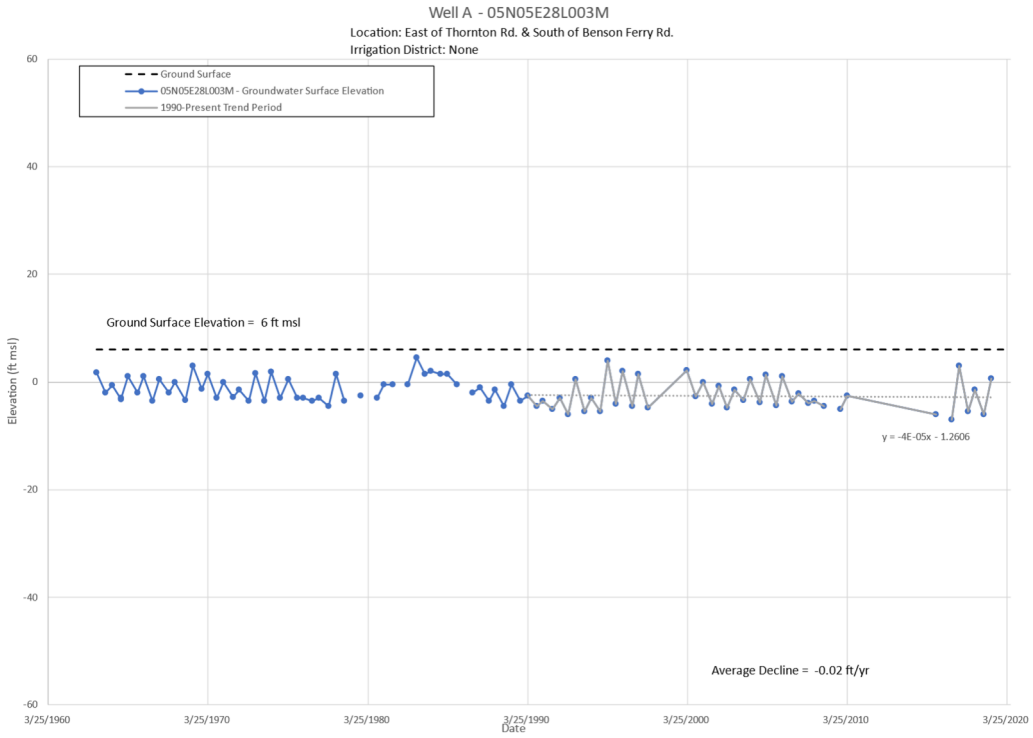


Figure 3-2 Spring Hydrograph Well A - East of Thornton Rd. & South of Benson Ferry Rd.

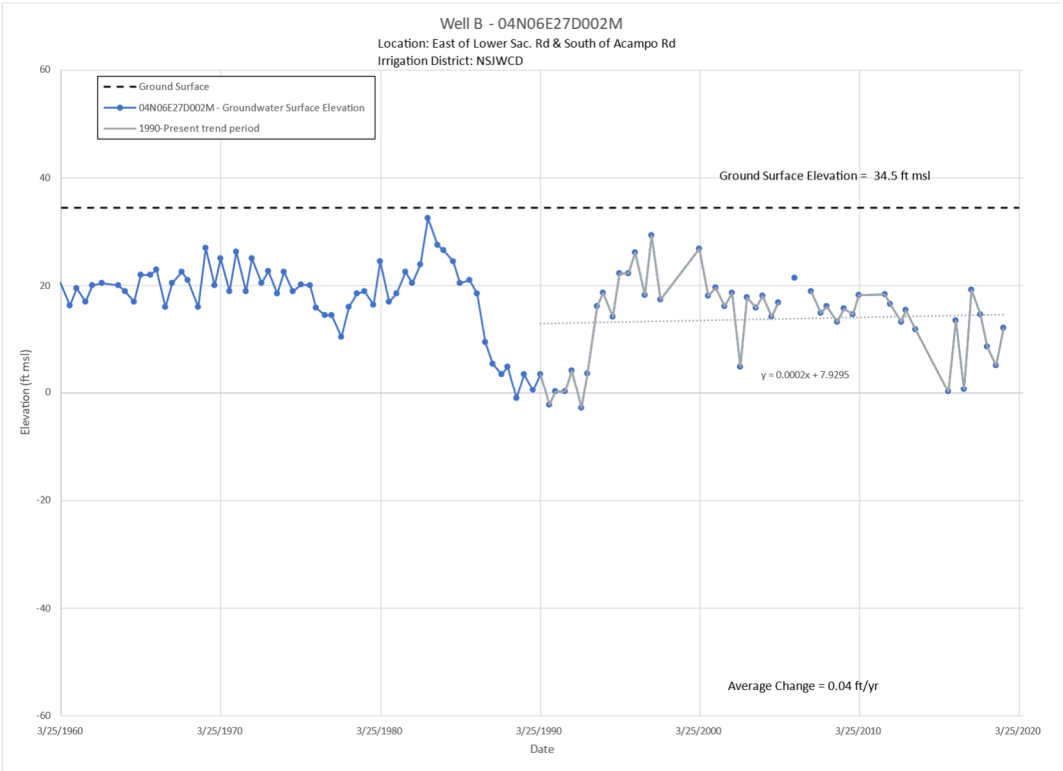


Figure 3-3 Spring Hydrograph Well B – East of Lower Sac Rd. & South of Acampo Rd.

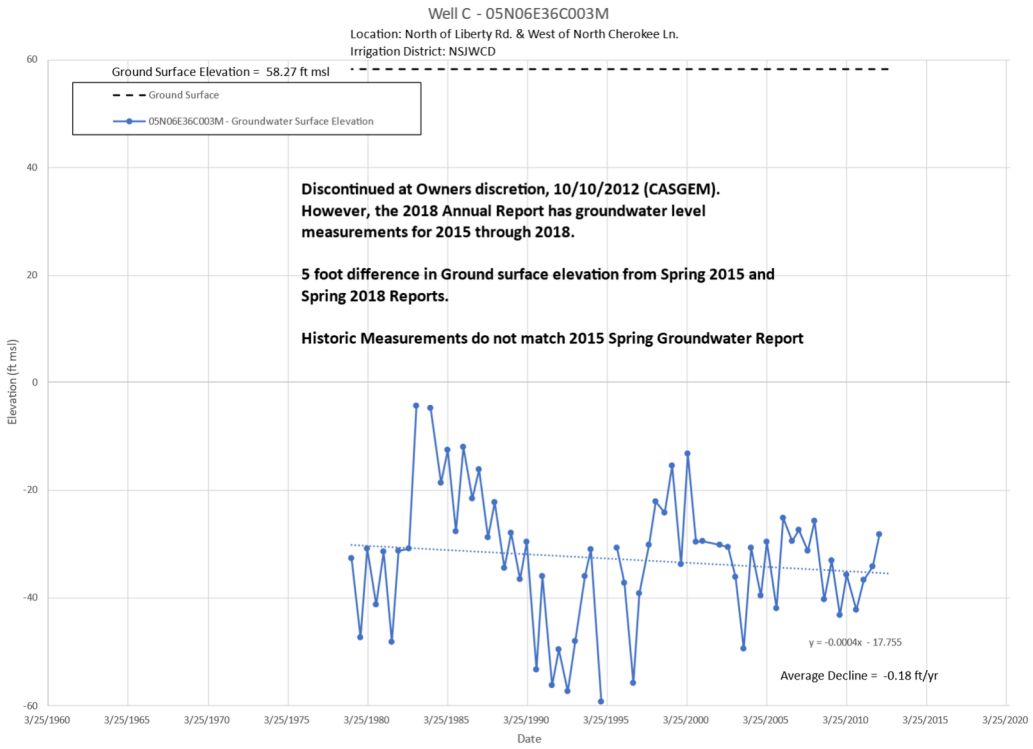


Figure 3-4 Spring Hydrograph Well C - North of Liberty Rd. & West of North Cherokee Ln.

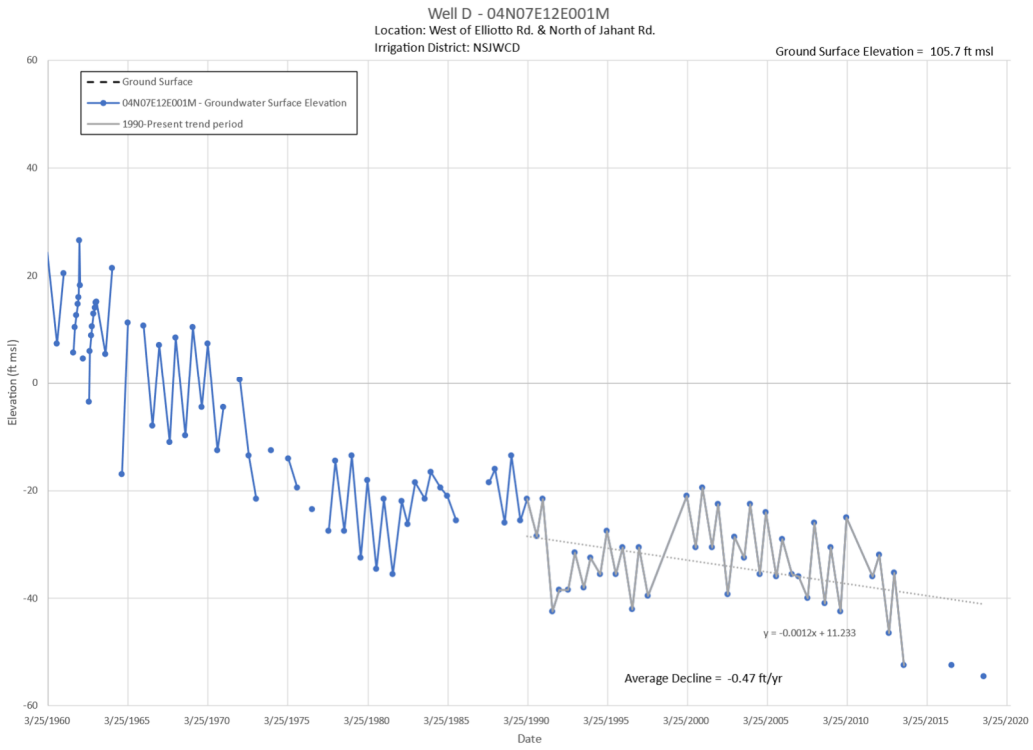


Figure 3-5 Spring Hydrograph Well D - West of Elliotto Rd. & North of Jahant Rd.

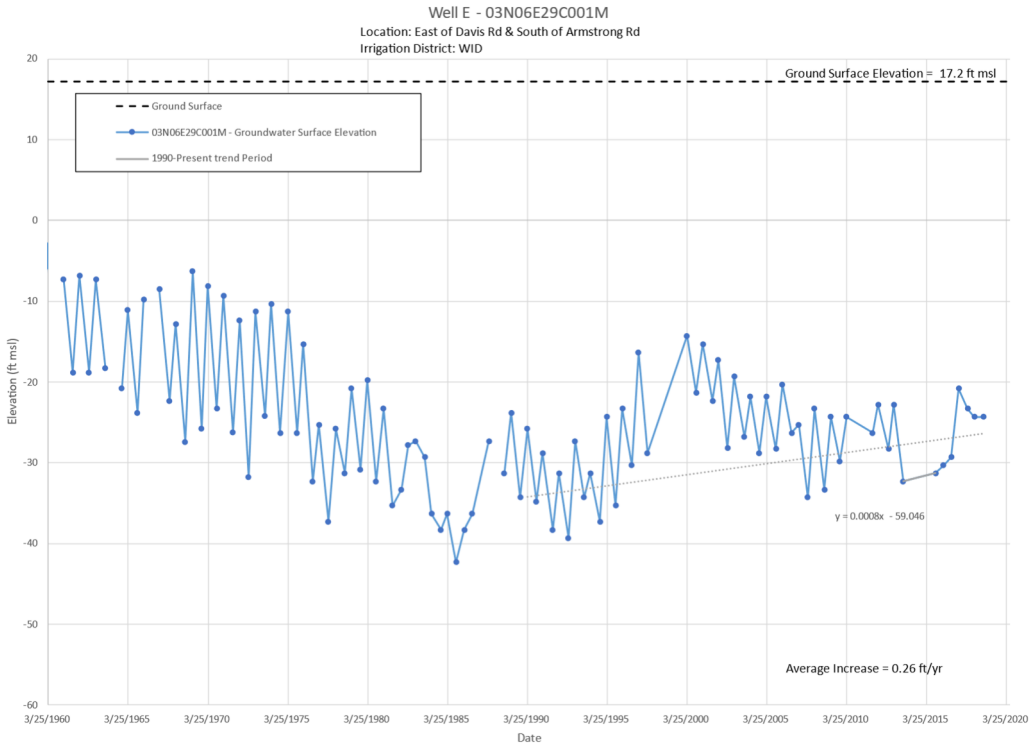


Figure 3-6 Spring Hydrograph Well E - East of Davis R. & South of Armstrong Rd.

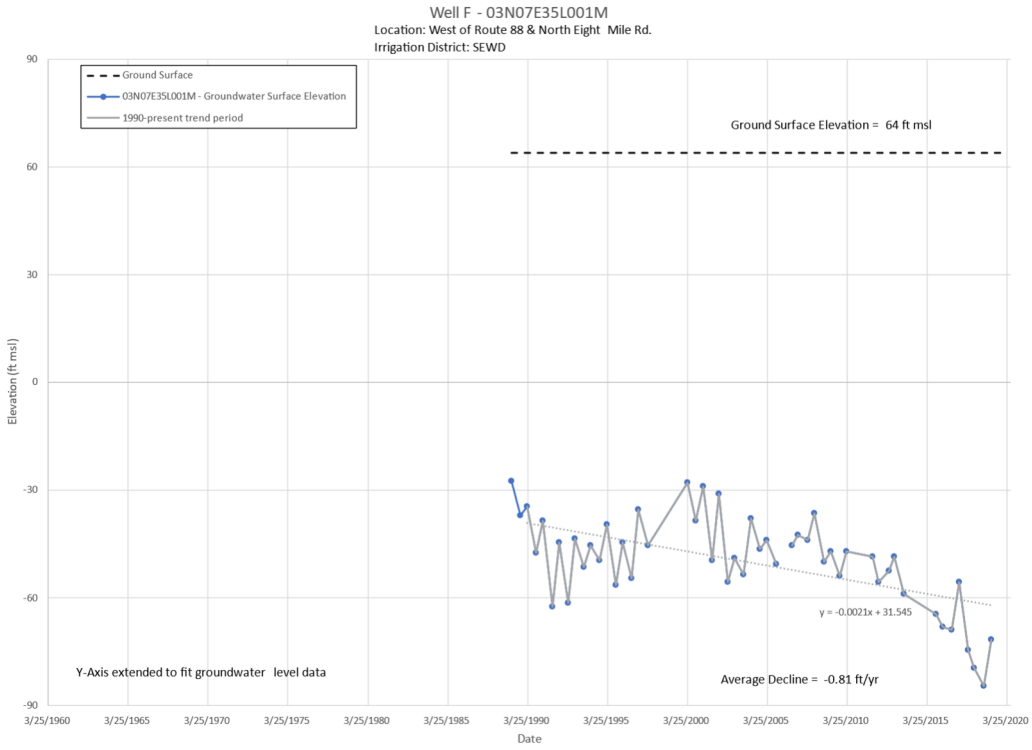


Figure 3-7 Spring Hydrograph Well F - West of Route 88 & North of Eight Mile Rd.

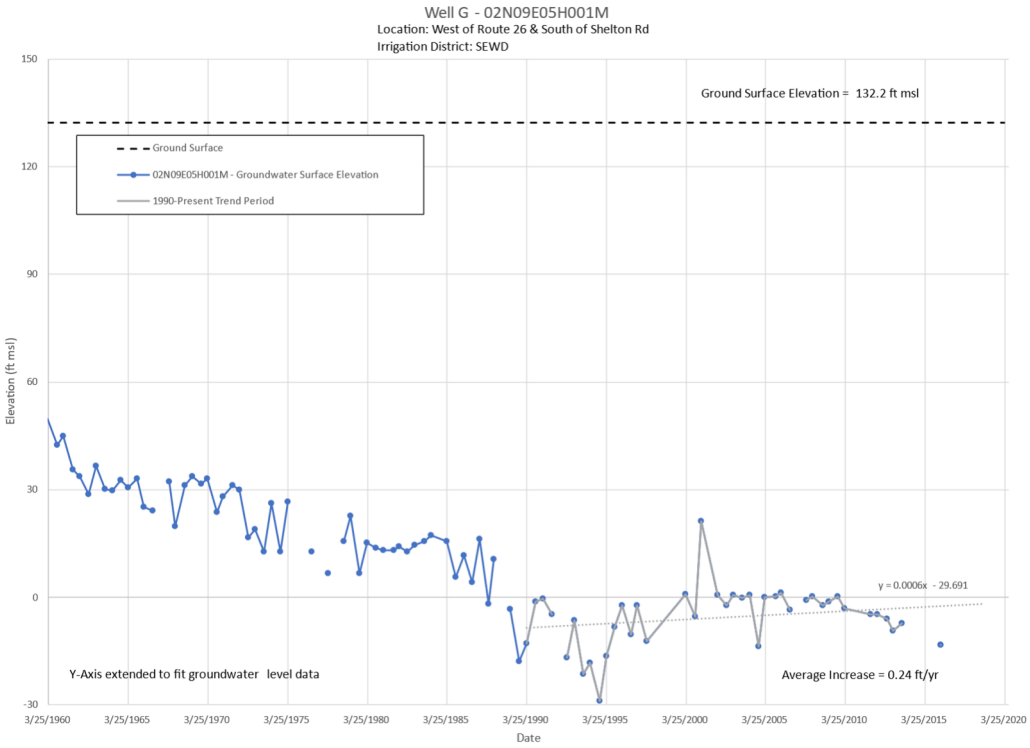


Figure 3-8 Spring Hydrograph Well G - West of Route 26 & South of Shelton Rd.

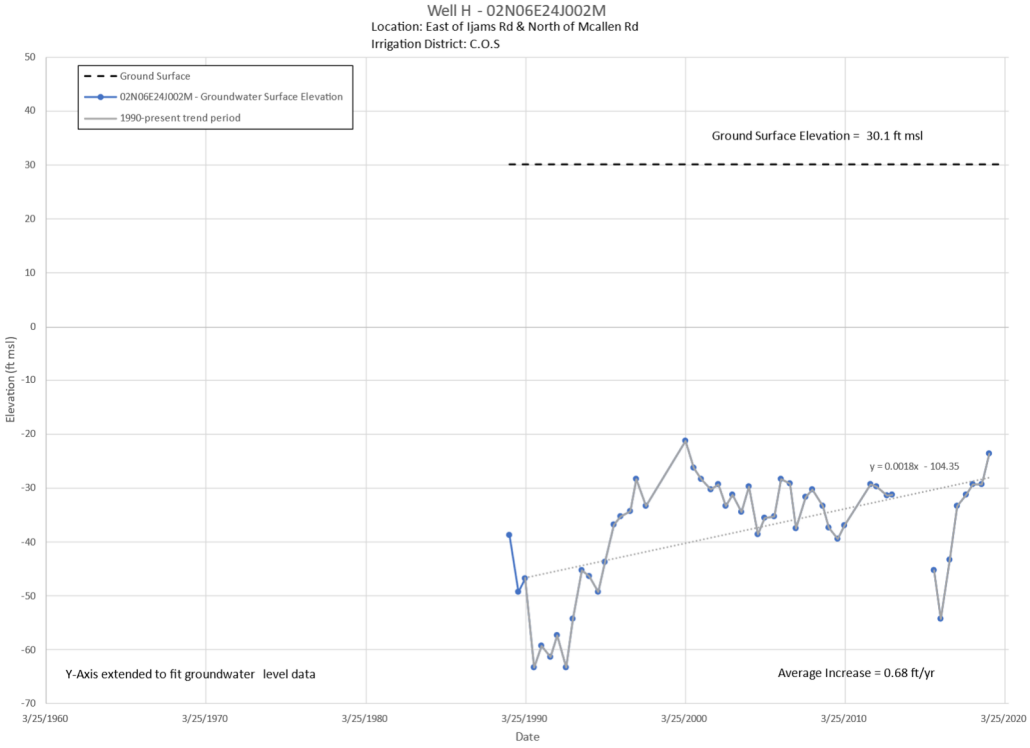


Figure 3-9 Spring Hydrograph Well H - East of Ijams Rd. & North of McAllen Rd.

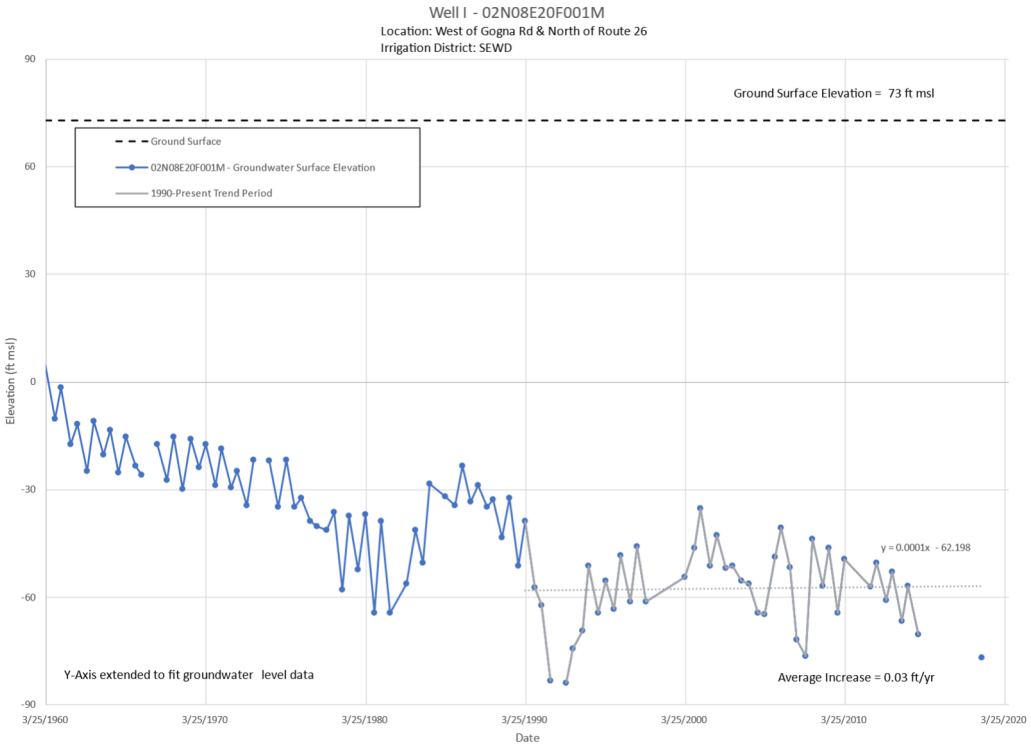


Figure 3-10 Spring Hydrograph Well I - West of Gogna Rd. & North of Route 26

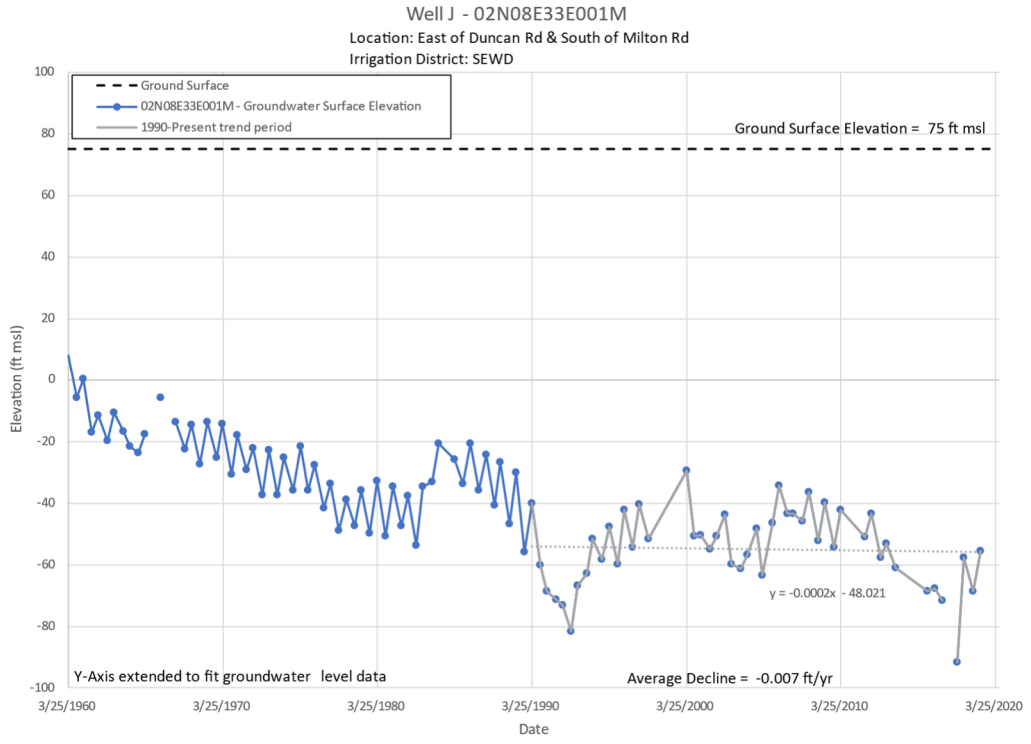


Figure 3-11 Spring Hydrograph Well J - East of Duncan Rd. & South of Milton Rd.

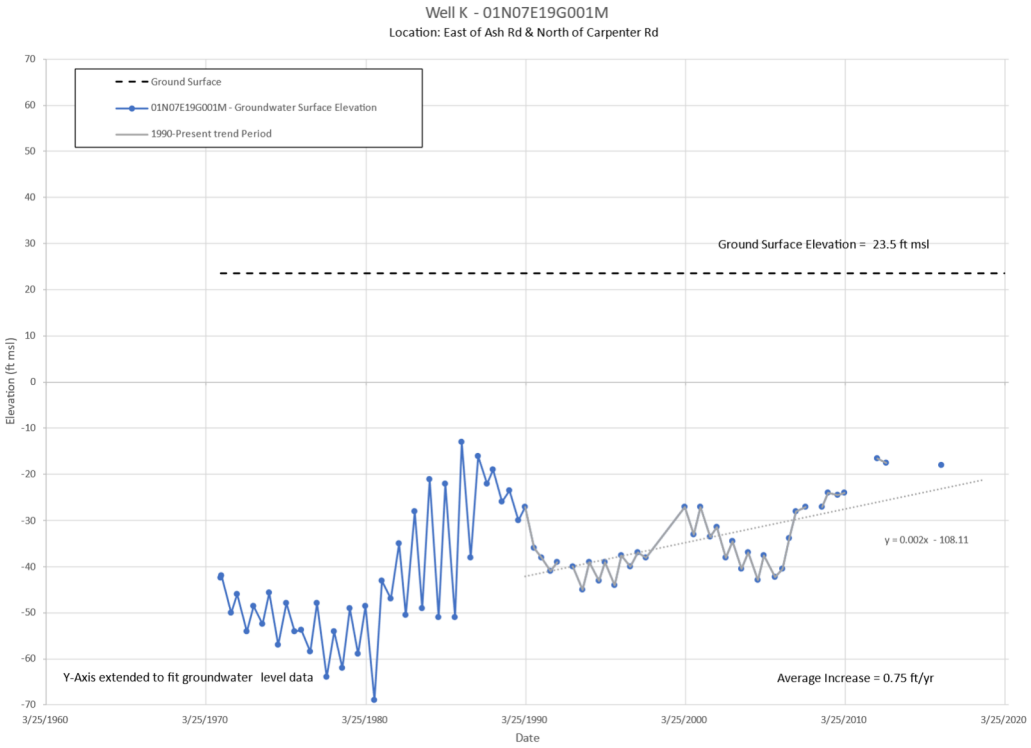


Figure 3-12 Spring Hydrograph Well K - East of Ash Rd. & North of Carpenter Rd.

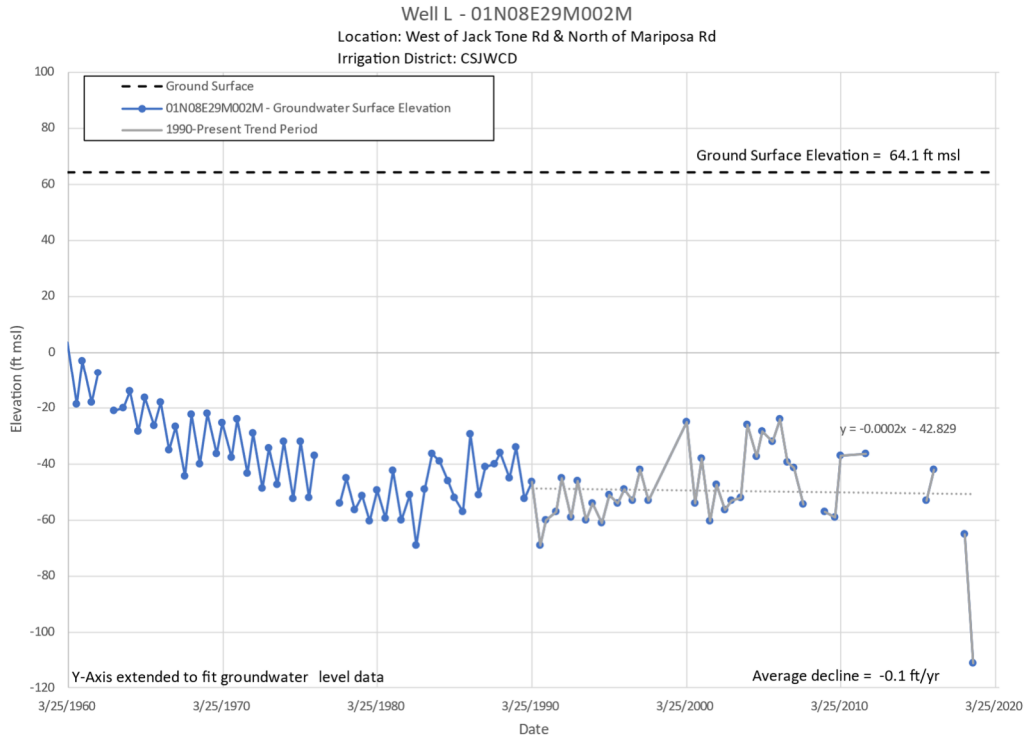


Figure 3-13 Spring Hydrograph Well L - West of Jack Tone Rd. & North of Mariposa Rd.

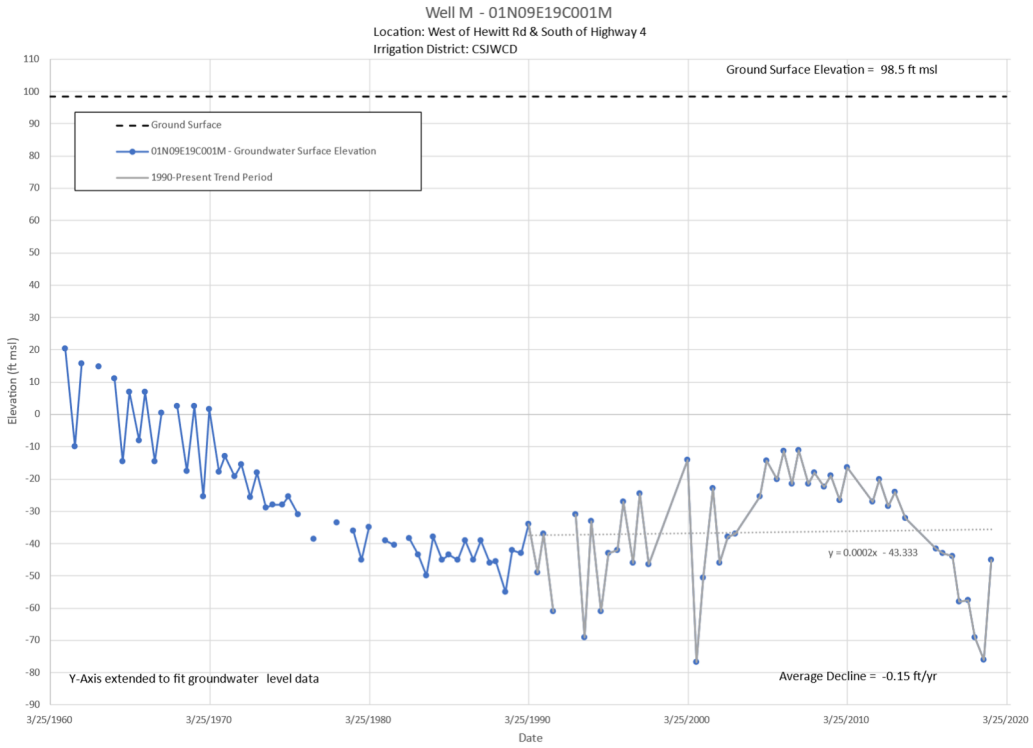


Figure 3-14 Spring Hydrograph Well M - West of Hewitt Rd. & South of Hwy. 4

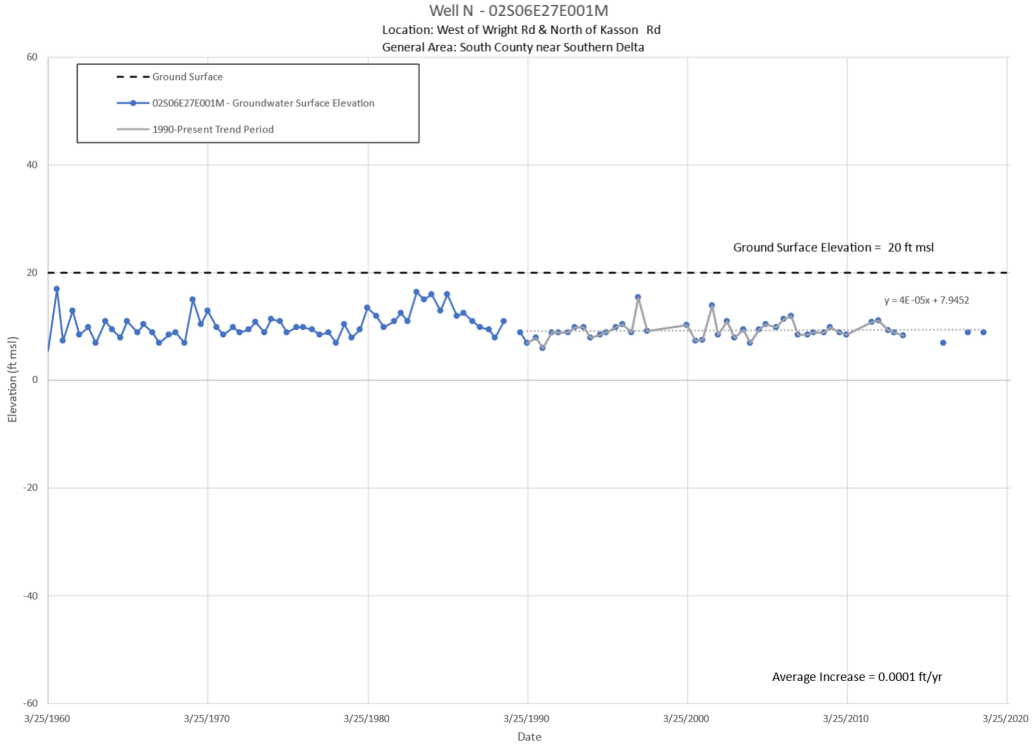


Figure 3-15 Spring Hydrograph Well N - West of Wright Rd. & North of Kasson Rd.

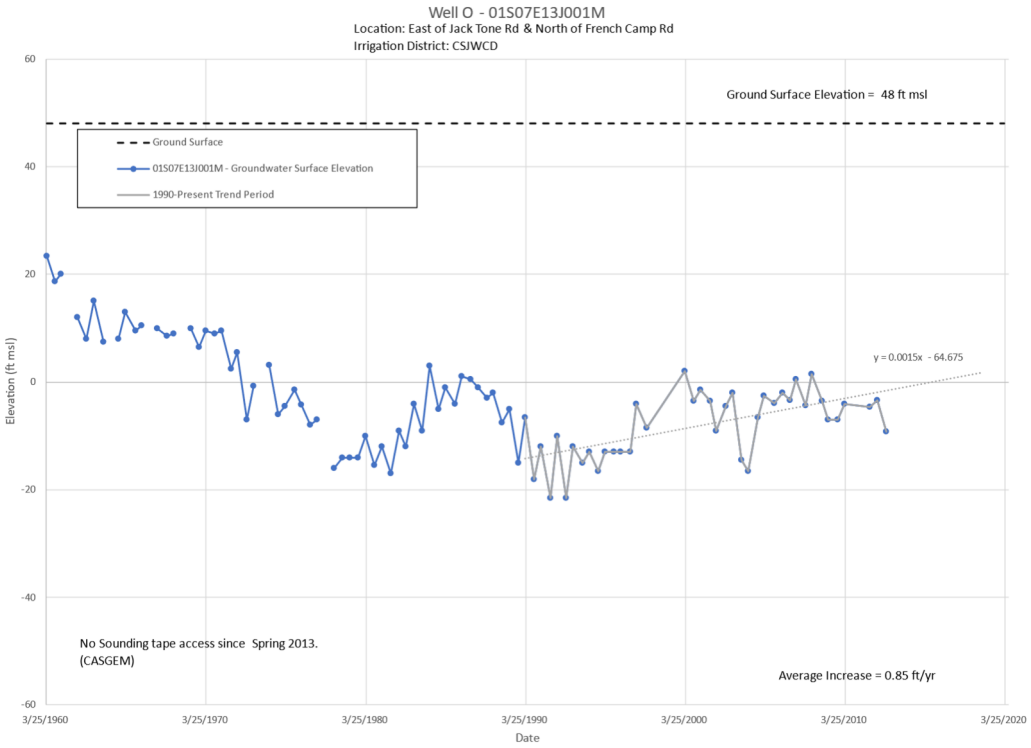


Figure 3-16 Spring Hydrograph Well O - East of Jack Tone Rd. & North of French Camp Rd.

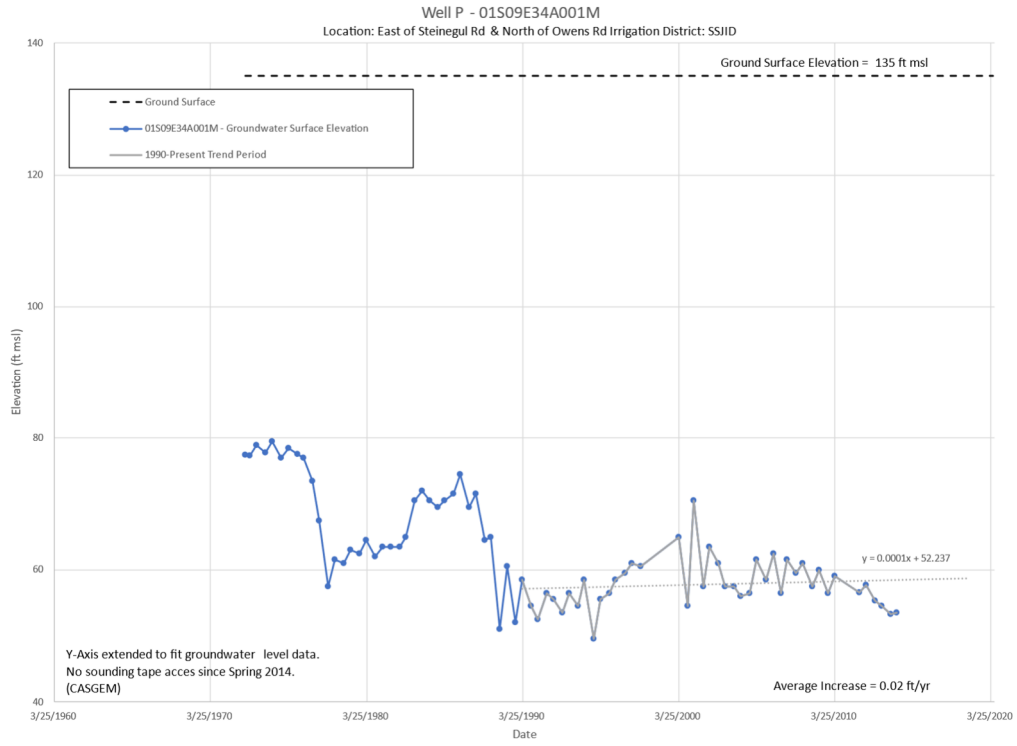


Figure 3-17 Spring Hydrograph Well P - East of Steinegul Rd. & North of Owens Rd.

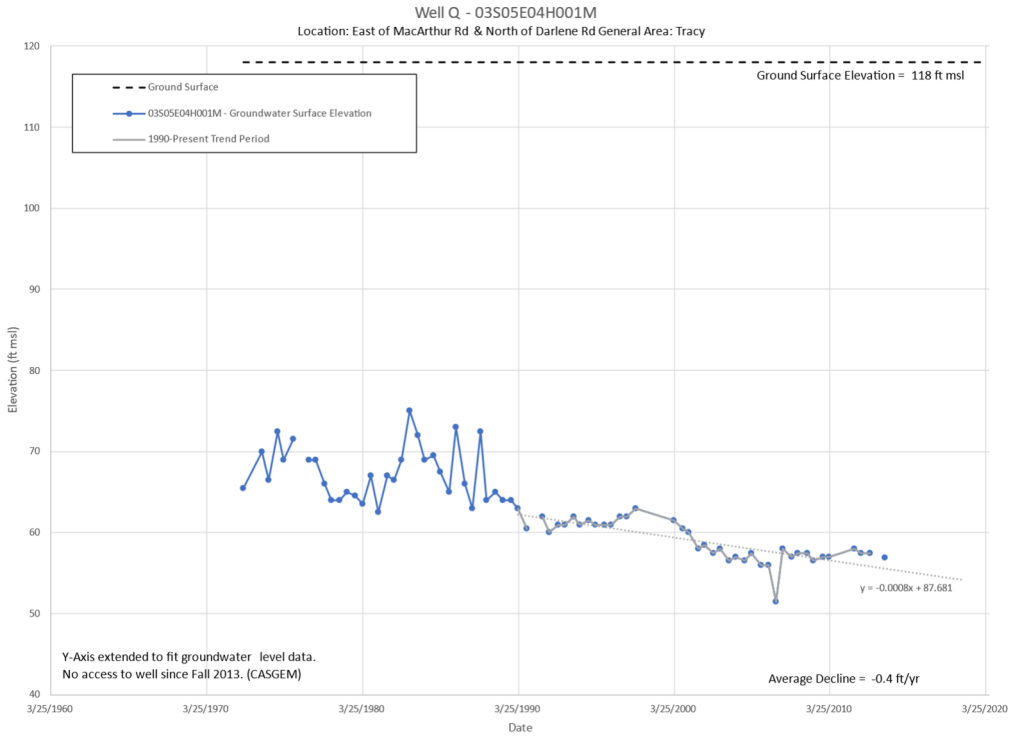


Figure 3-18 Spring Hydrograph Well Q - East of McArthur Rd. & North of Darlene Rd.

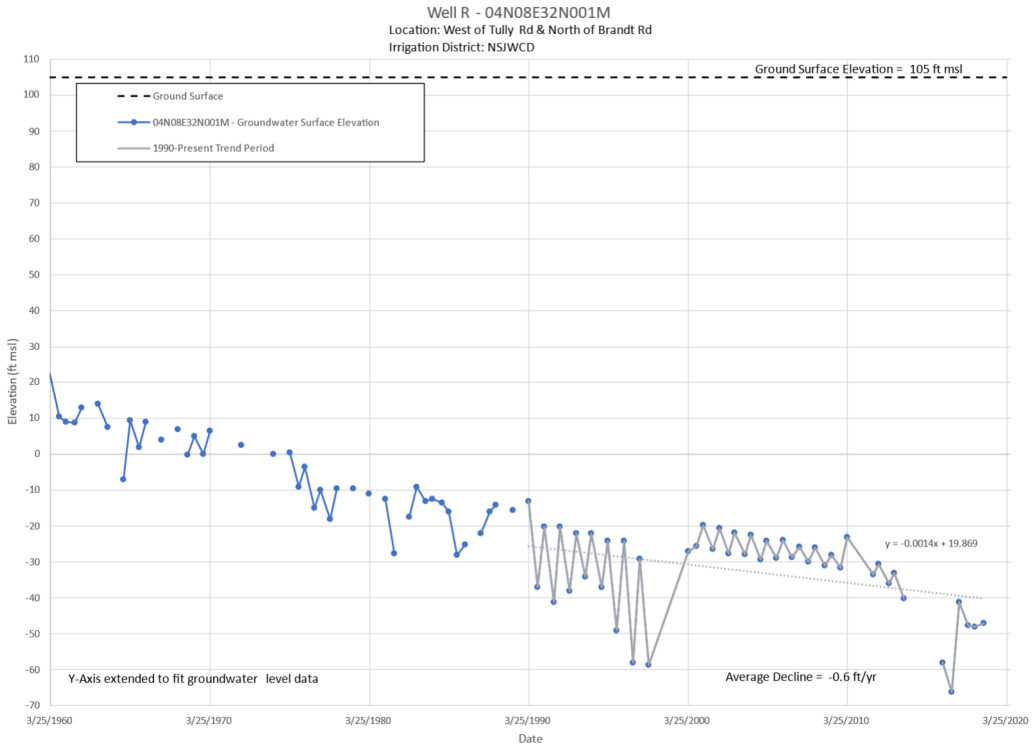


Figure 3-19 Spring Hydrograph Well R - West of Tully Rd. & North of Brandt Rd.

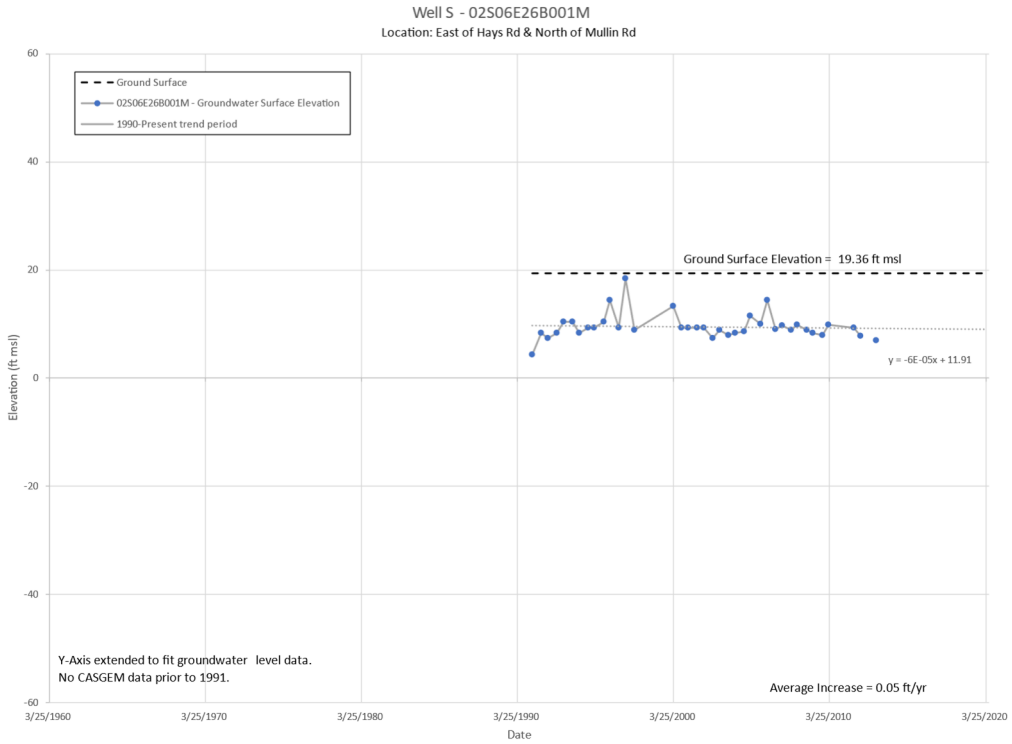


Figure 3-20 Spring Hydrograph Well S - East of Hays Rd. & North of Mullin Rd.

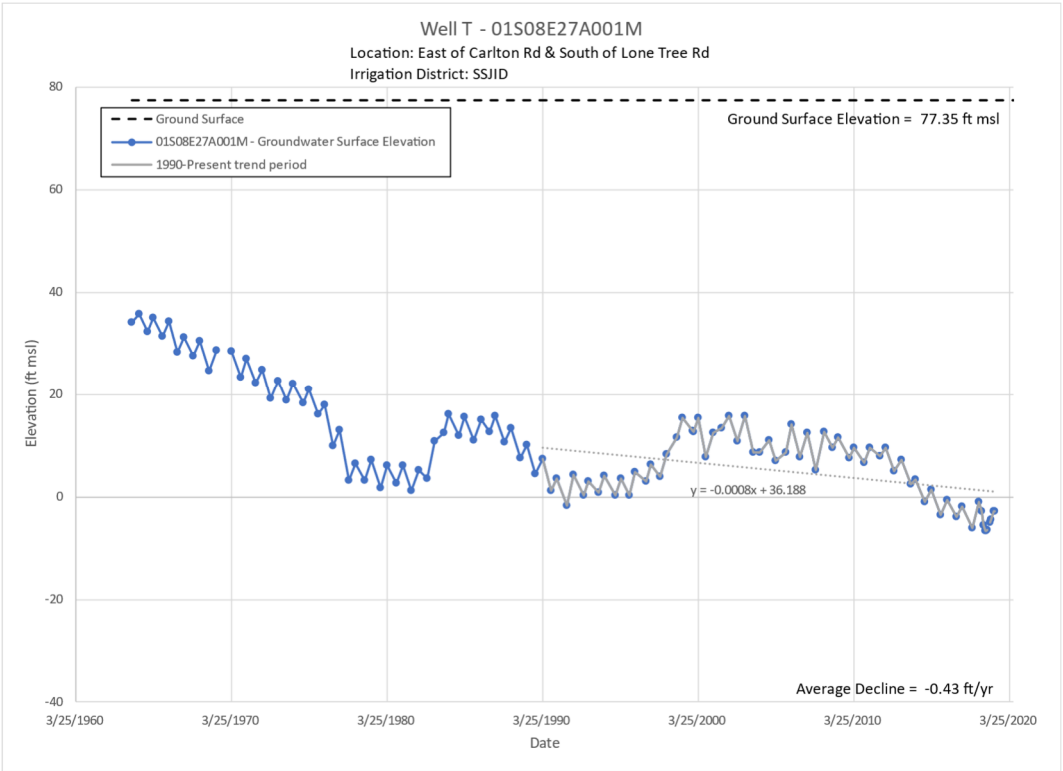


Figure 3-21 Spring Hydrograph Well T - East of Carlton Rd. & South of Lone Tree Rd.

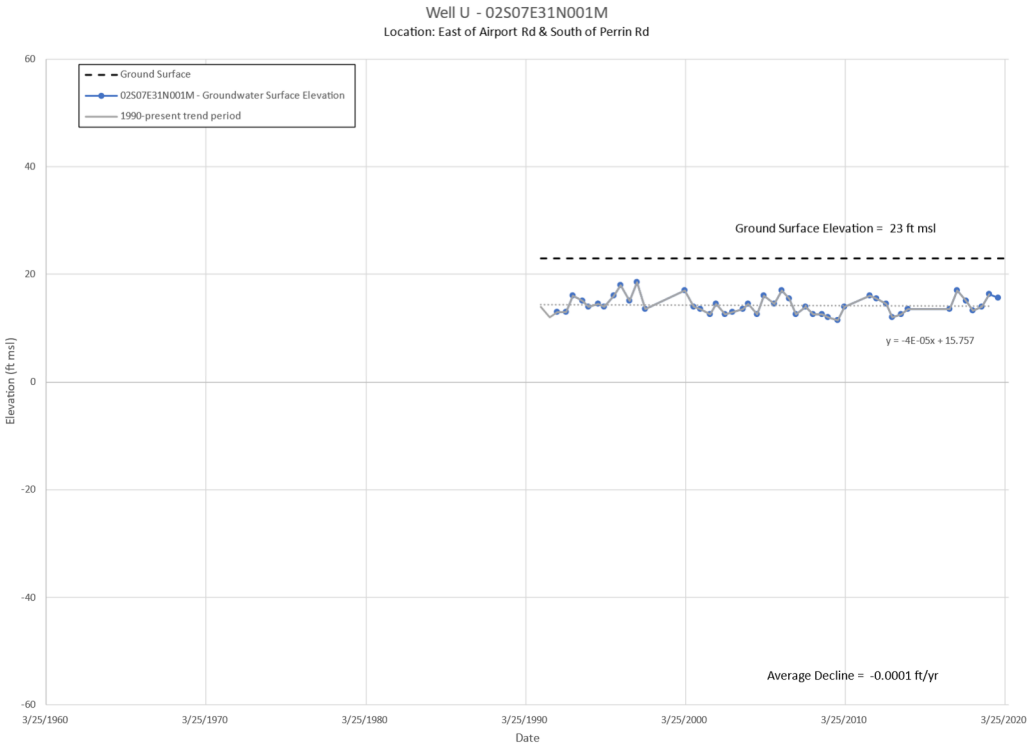


Figure 3-22 Spring Hydrograph Well U - East of Airport Rd. & South of Perrin Rd.

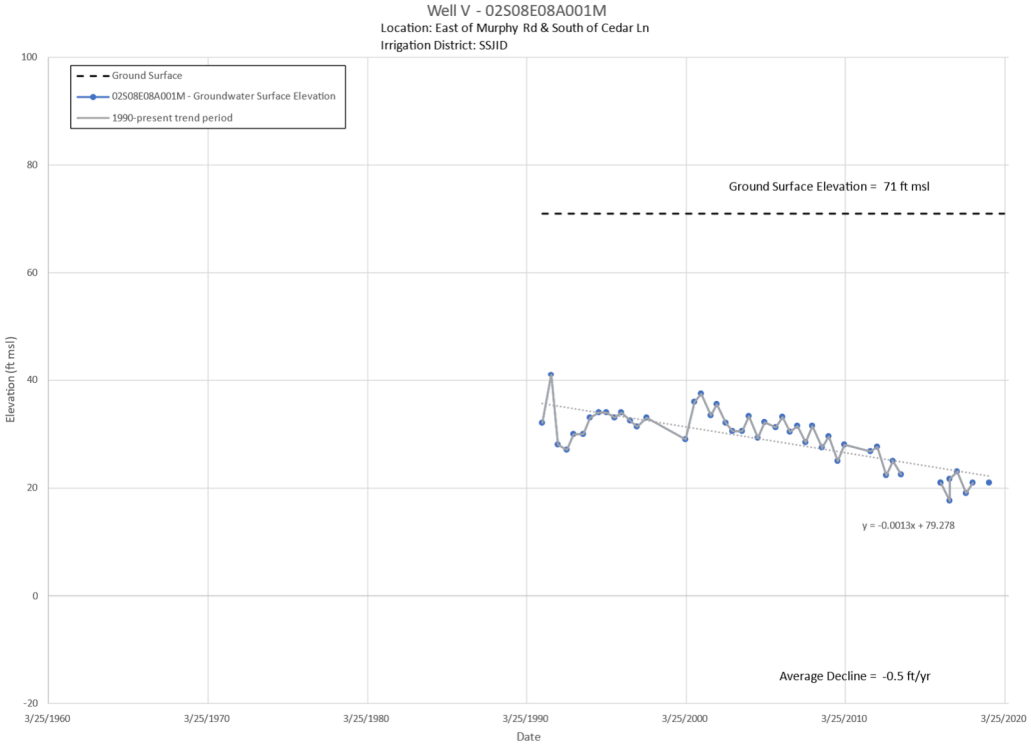


Figure 3-23 Spring Hydrograph Well V - East of Murphy Rd. & South of Cedar Ln.

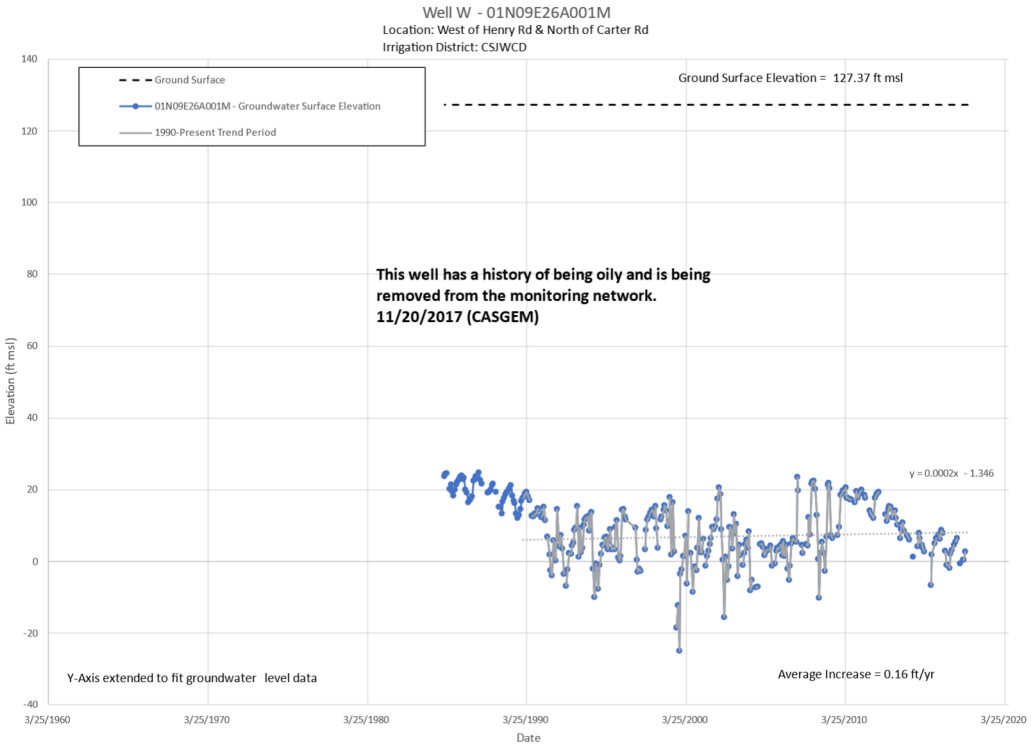


Figure 3-24 Spring Hydrograph Well W - West of Henry Rd. & North of Carter Rd.

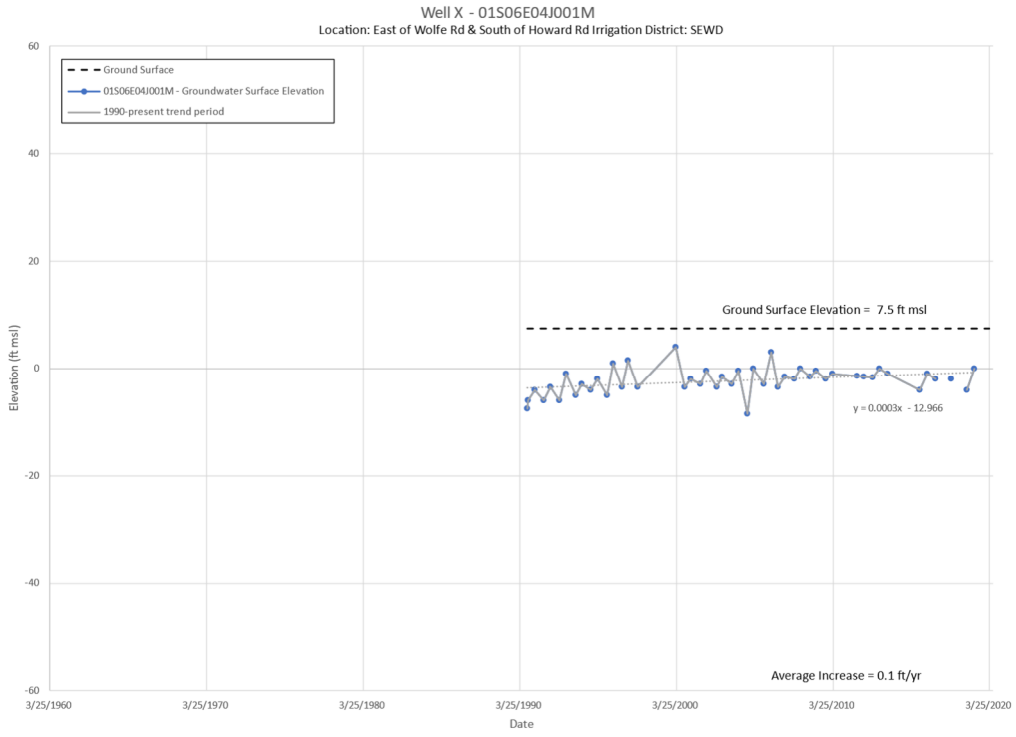


Figure 3-25 Spring Hydrograph Well X - East of Wolfe Rd. & South of Howard Rd.

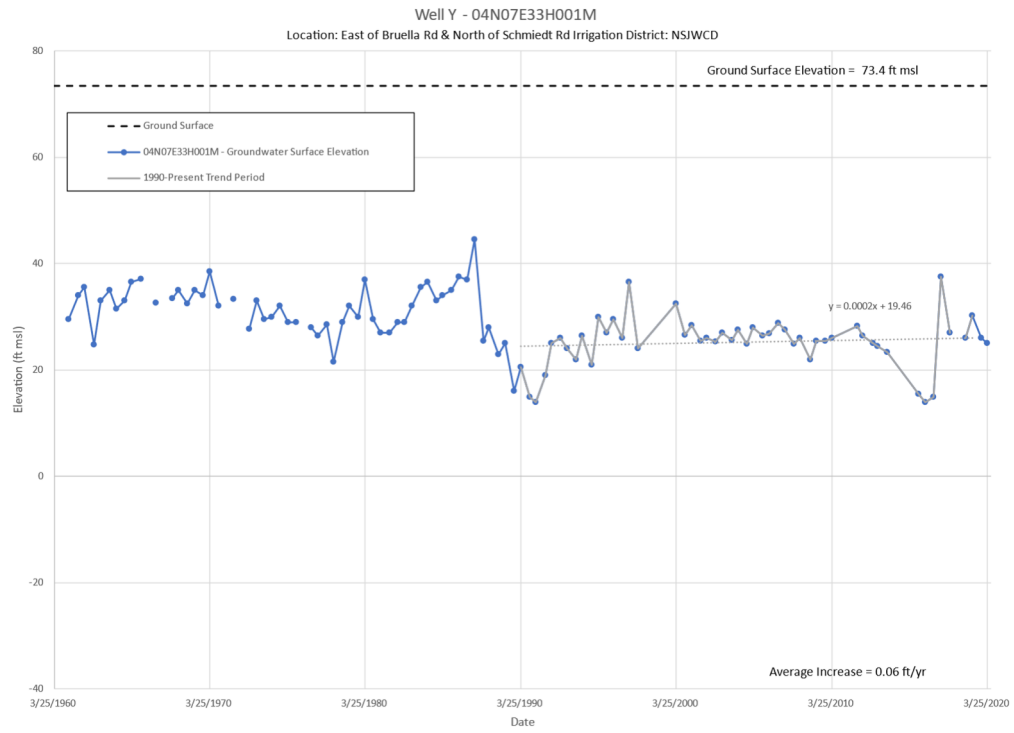


Figure 3-26 Spring Hydrograph Well Y - Esat of Bruella Rd. & North of Schmiedt Rd.

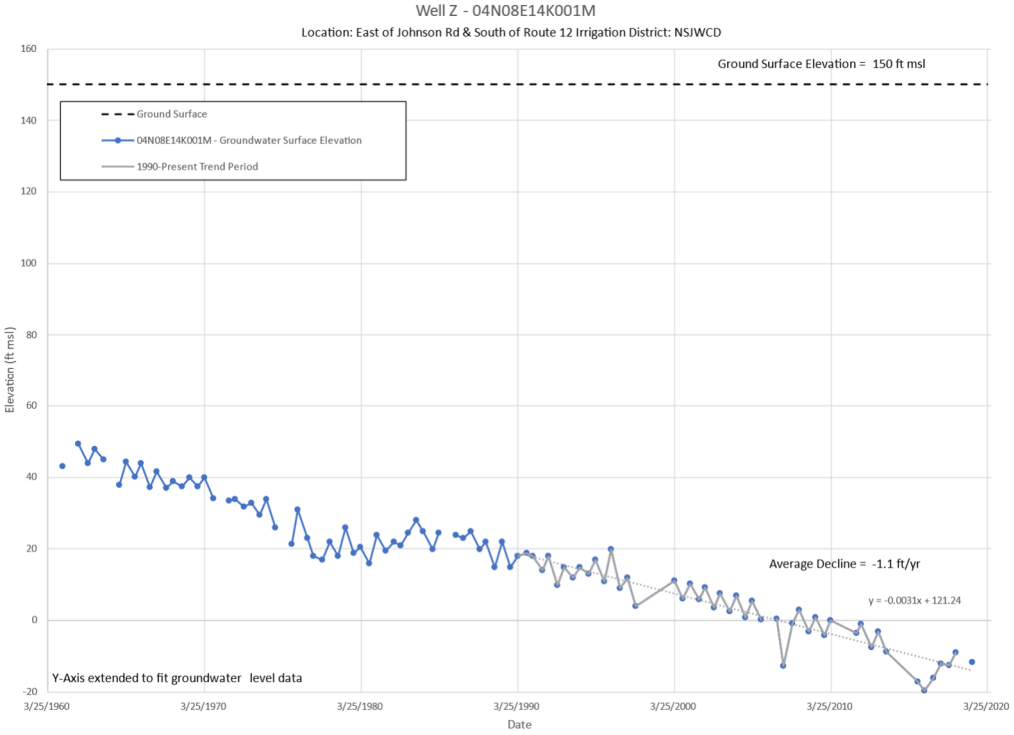
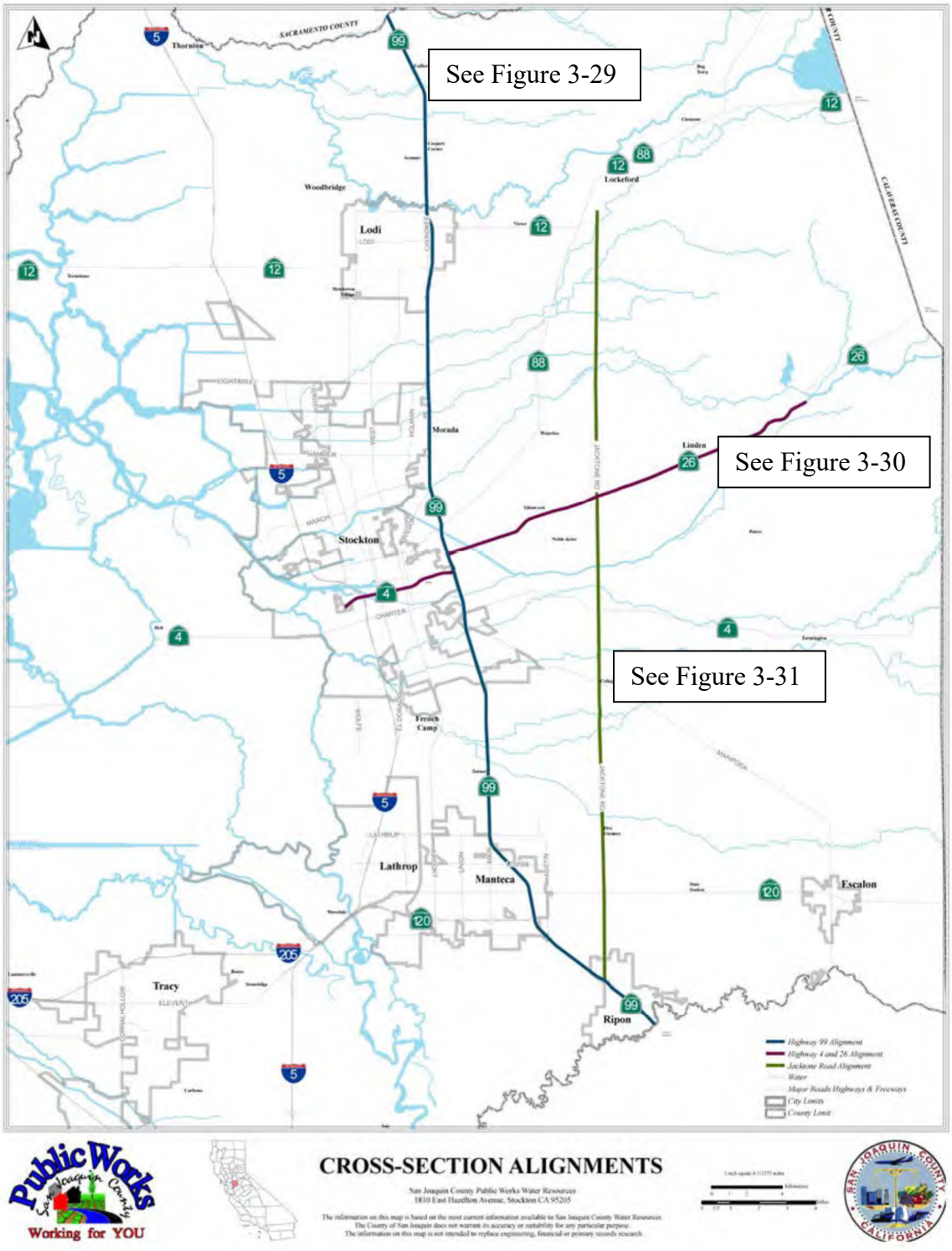


Figure 3-27 Spring Hydrograph Well Z - East of Johnson Rd. & South of Route 12

Figure 3-28 Groundwater Surface Cross Section Locations



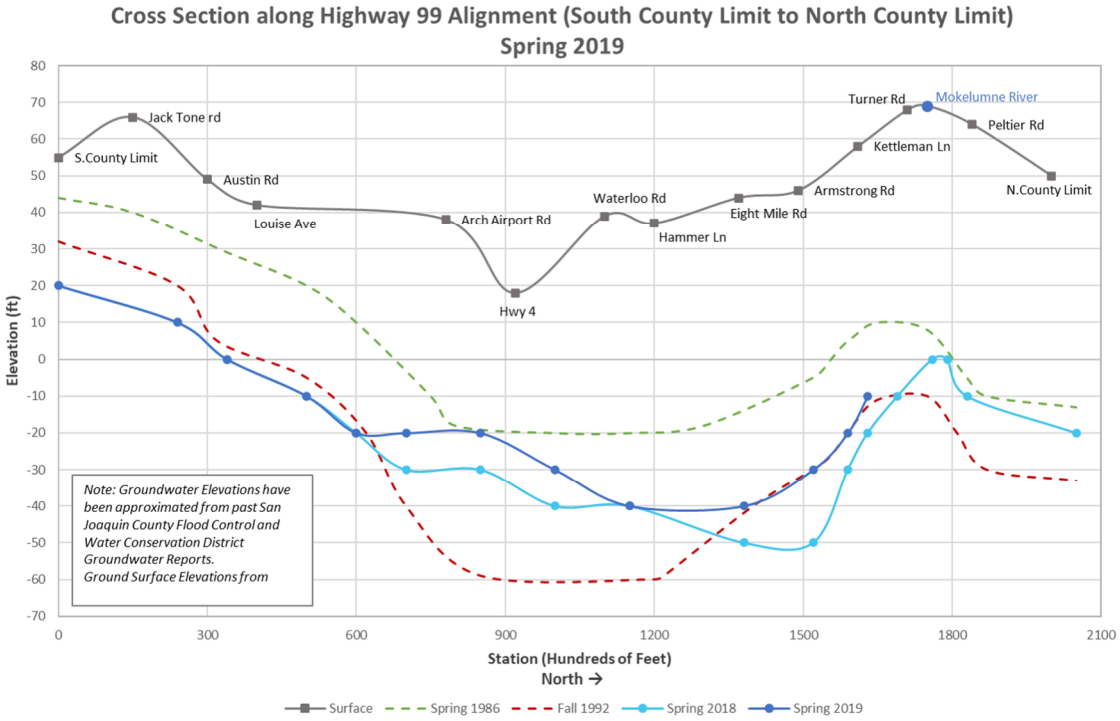


Figure 3-29 Highway 99 Cross Section Spring 2019

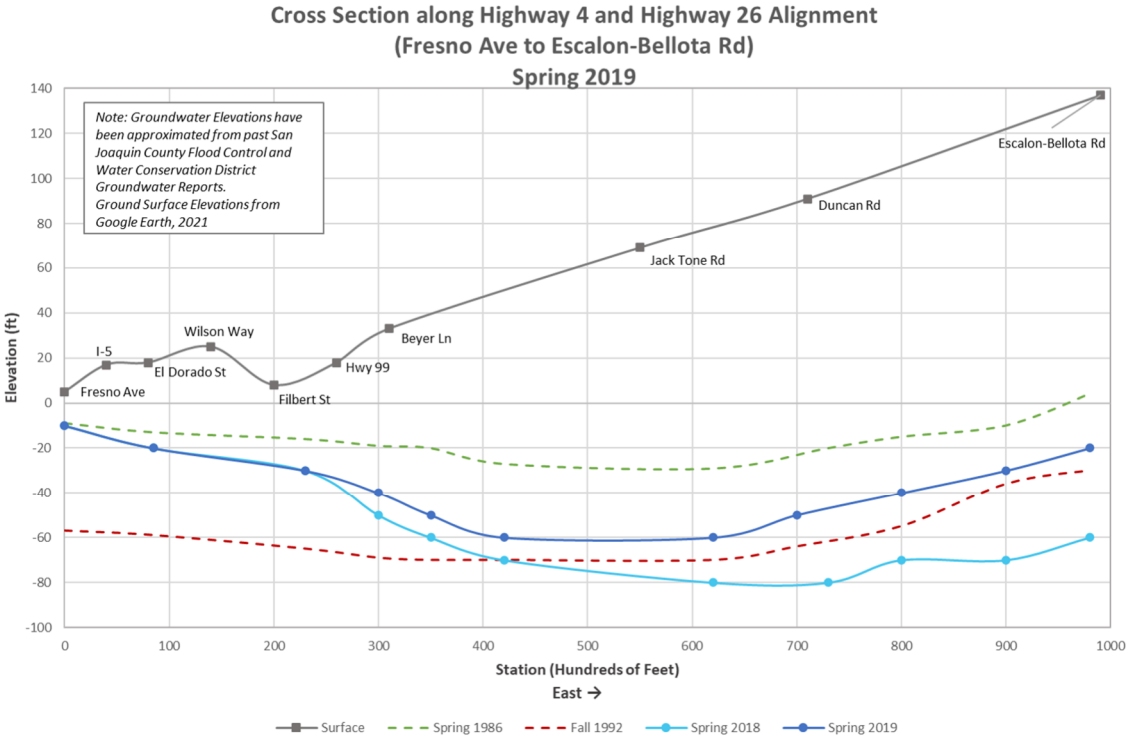


Figure 3-30 Highway 4 & Highway 26 Cross Section Spring 2019

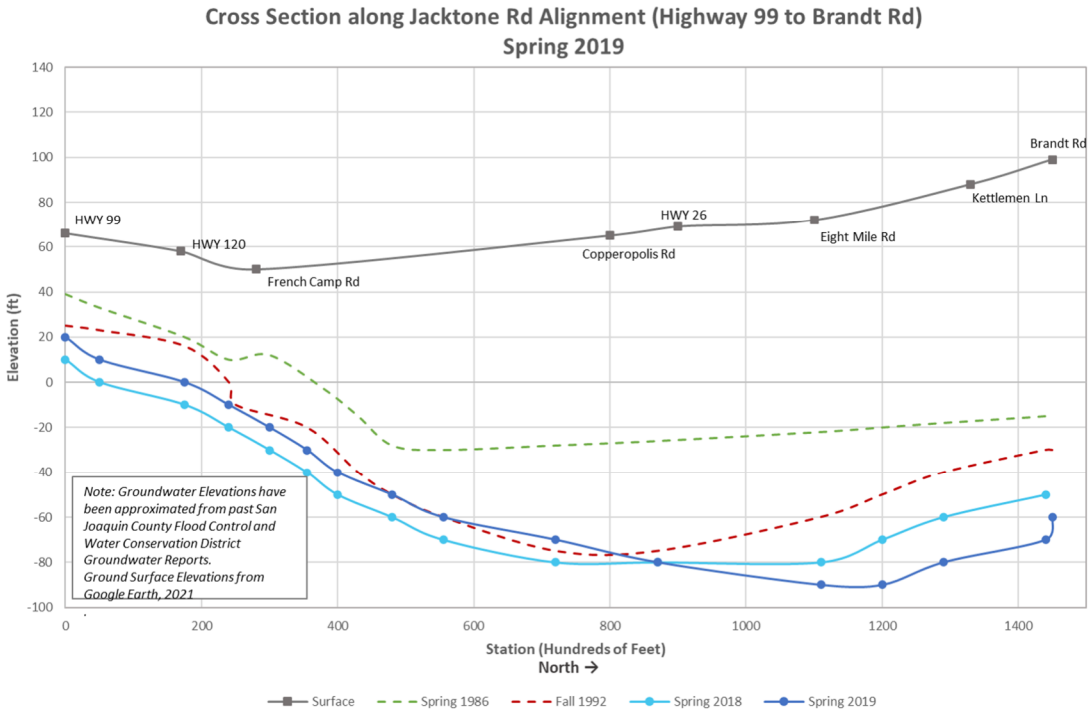


Figure 3-31 Jack Tone Rd Cross Section Spring 2019

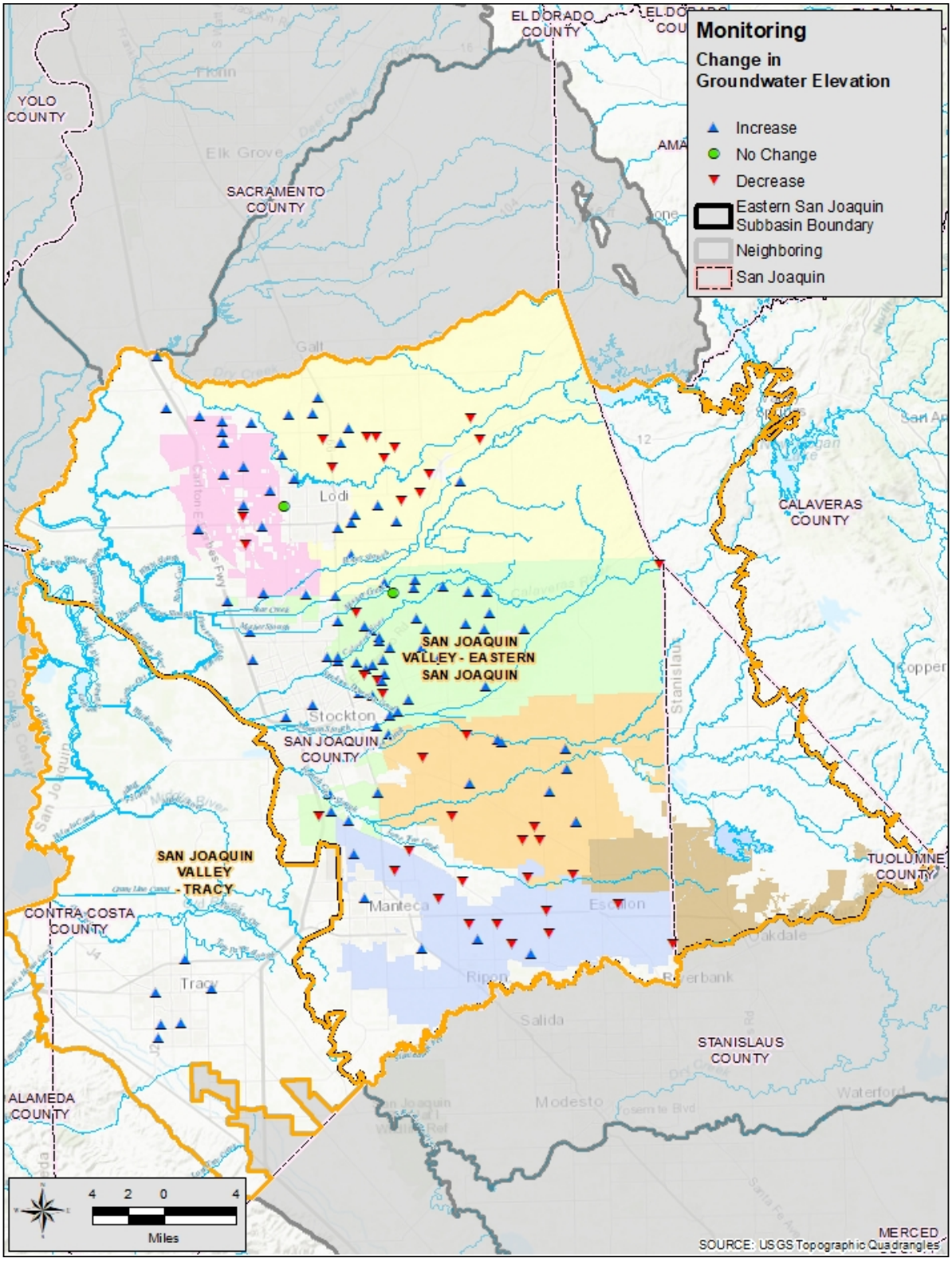


Figure 3-32 Change in Groundwater Elevation - Spring 2018 to Spring 2019

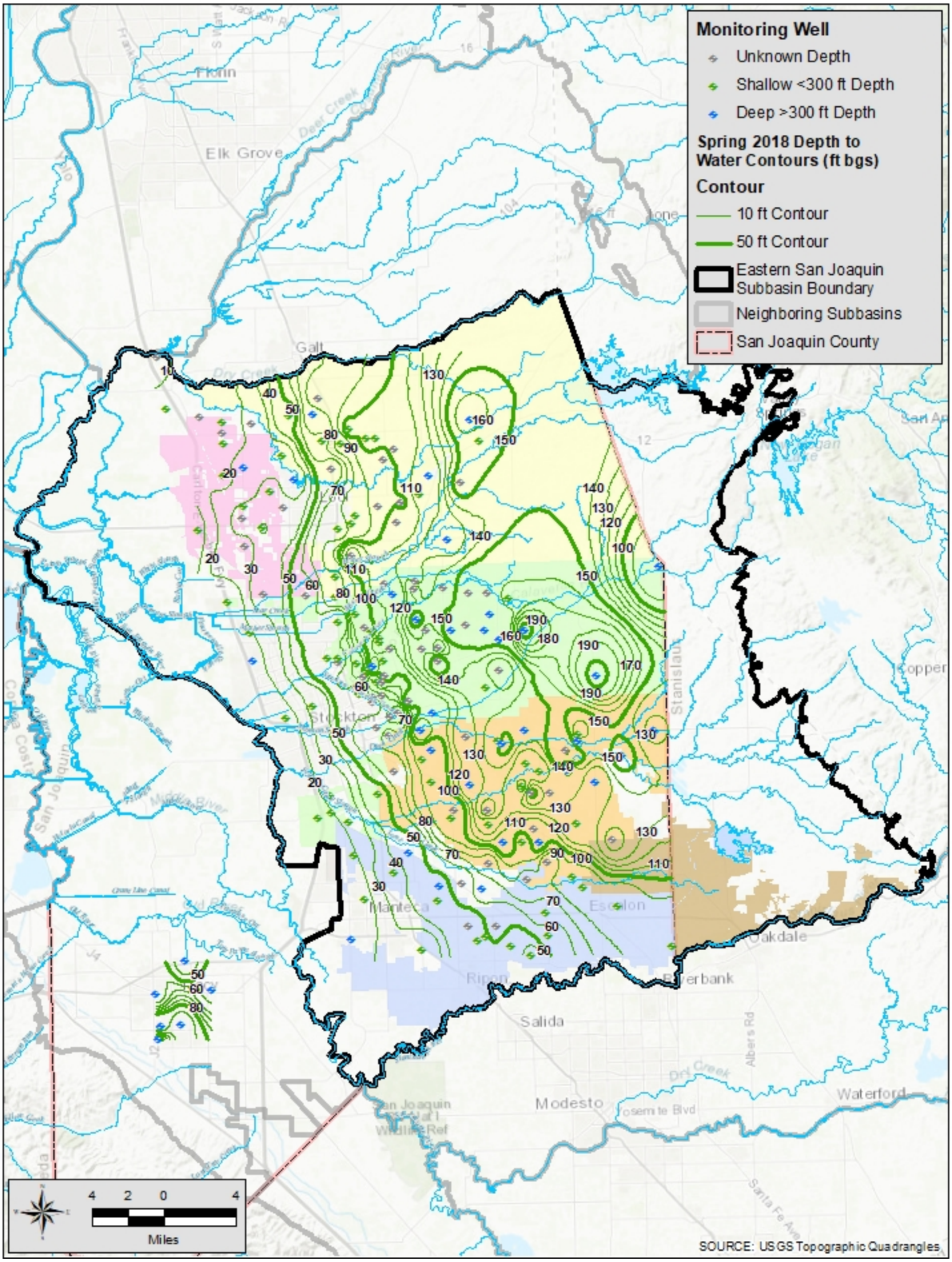


Figure 3-33 Depth to Groundwater - Spring 2018

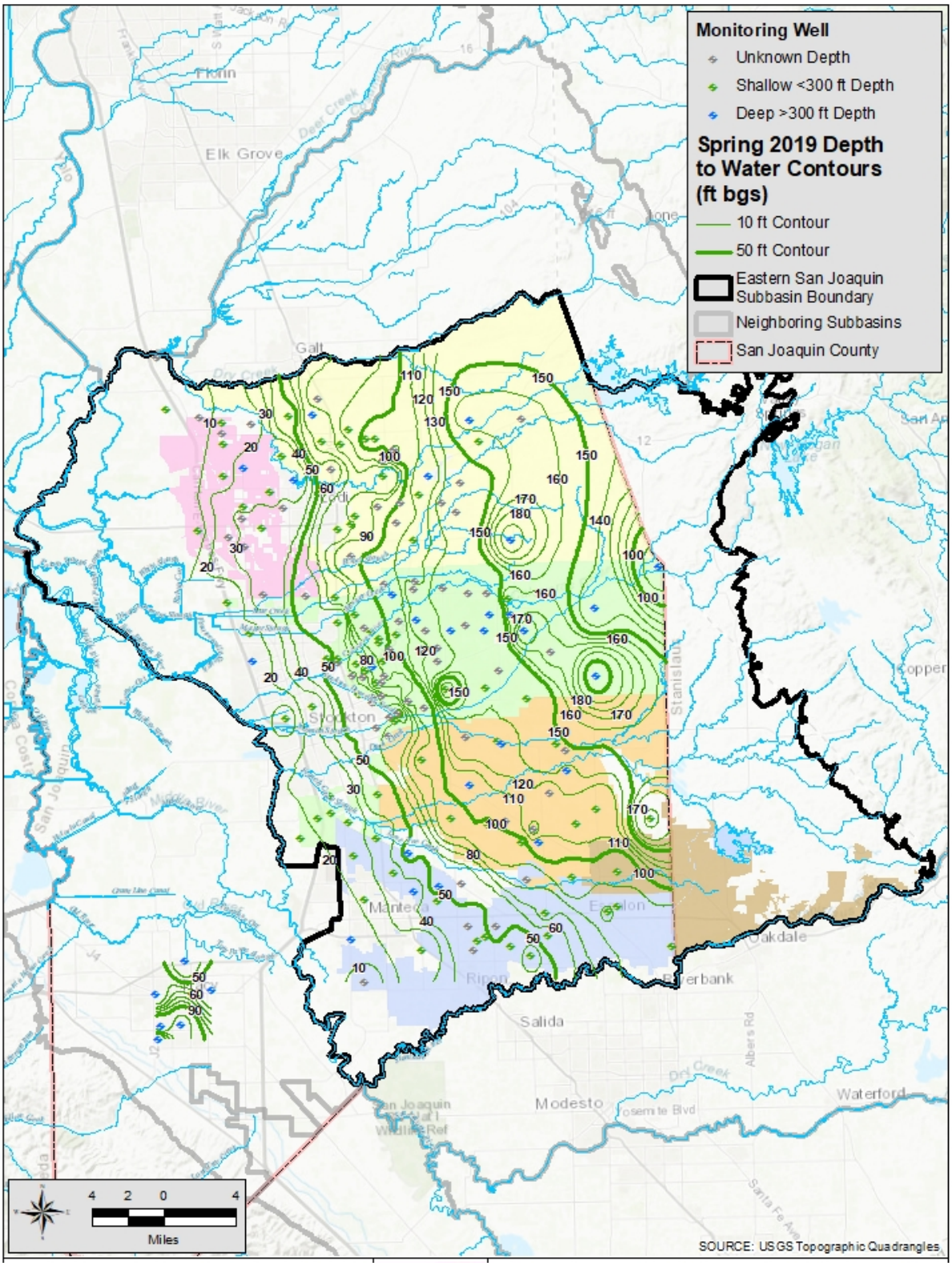


Figure 3-34 Depth to Groundwater - Spring 2019

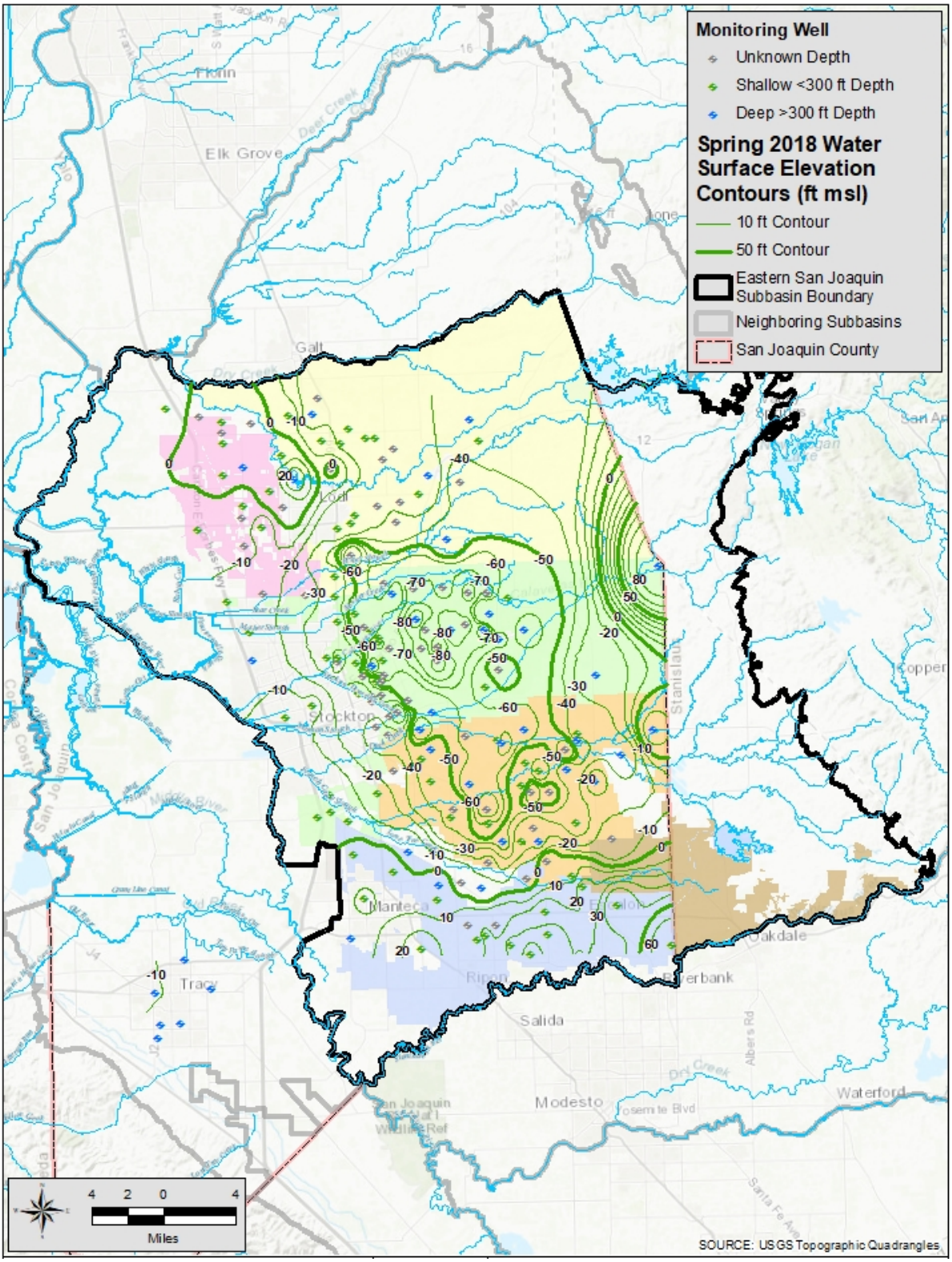


Figure 3-35 Groundwater Surface Elevation - Spring 2018

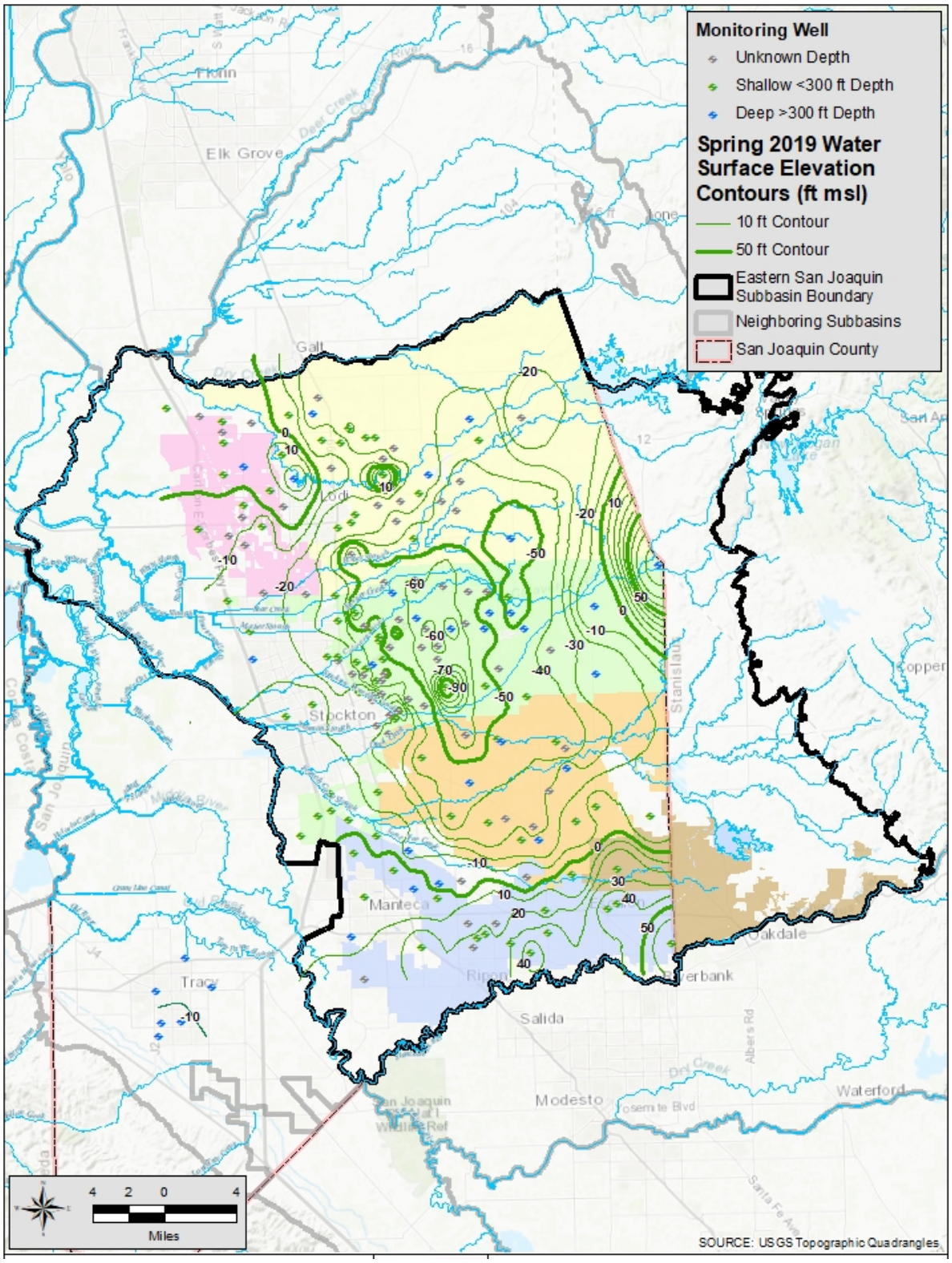


Figure 3-36 Groundwater Surface Elevation - Spring 2019