Groundwater Report

Spring 2023

San Joaquin County

Flood Control and Water Conservation District

San Joaquin County

Flood Control and Water Conservation District

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Copies of the 2023 Spring Groundwater Report may be available upon request from:

San Joaquin County Department of Public Works
P.O. Box 1810, Stockton, California 95201

Acknowledgements

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 Groundwater Subbasin and the Tracy Subbasin. 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 the individual well owners, who give us access to their wells and in some cases, their time.

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Figures

1 Introduction

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

This report represents data from the Eastern San Joaquin Subbasin (5-022.01) and Tracy Subbasin (5-022.15). The Eastern San Joaquin Subbasin includes portions of Calaveras County, Stanislaus County, and San Joaquin County east of the San Joaquin River. The Tracy Subbasin is located primarily in San Joaquin County west of the San Joaquin River and includes a small portion of Alameda County.

Water level data is collected on a semi-annual basis, during the months of March and October, to observe groundwater levels before and after peak groundwater pumping conditions. Over 250 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 (County) and to publish the results of the groundwater monitoring program which consists of the following:

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

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 for the fall months. The groundwater depth and elevation data are published for both the spring and fall.

Saline intrusion from the west is a continuing concern affecting the quality of groundwater in the San Joaquin groundwater subbasins. Groundwater quality analysis is completed on an annual basis, from approximately twelve (12) municipal and domestic supply wells (exact number varies from year to year) located in proximity to the saline front in the Eastern San Joaquin Subbasin.

1.2 Procedure

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

Groundwater quality sampling is conducted on an annual basis during the month of October, along with the fall measurements.

2 Rainfall Distribution

The two groundwater basins in the County (Eastern San Joaquin and Tracy) respond in part to changes in annual precipitation. There are four precipitation stations throughout and adjacent to the county which have historically tracked rainfall; however, rainfall records for one of these stations (Lodi Station) has not been updated since 2017.

Figure 2-1 shows the locations of the three active stations currently providing data. The precipitation records from west to east, are presented on Figures 2-2 through 2-7 for the entire water year. As shown, almost all of the precipitation fell during the winter and spring months. These graphs reflect areas located across the County and one area in neighboring Calaveras County. These stations have been collecting rainfall data since the 1950's. In water year 2023, rainfall was about 130 to 150 percent of average.

A Water Year (WY) is the period between October 1st and September 30th. The year in which the period ends denote the water year, e.g. September 30th 2023, is the end of the 2023 WY. The WY type is based on unimpaired river water runoff observed during the WY for the San Joaquin area is defined by the Four Rivers Index. The Four Rivers Index is the sum of unimpaired flow in million acre-feet (maf) at:

- Stanislaus River below Goodwin Reservoir (aka inflow to New Melones Res.)
- Tuolumne River below La Grange (aka inflow to New Don Pedro Reservoir)
- Merced River below Merced Falls (aka inflow to Lake McClure)
- San Joaquin River inflow to Millerton Lake

The water year types are described as follows.

Wet	Equal to or greater than 3.8 maf
Above Normal	Greater than 3.1, and less than 3.8 maf
Below Normal	Greater than 2.5, and equal to or less than 3.1 maf
Dry	Greater than 2.1, and equal to or less than 2.5 maf
Critical	Equal to or less than 2.1 maf

WY 2023 was preliminarily classified by DWR as a Wet Year with greater than 3.8 maf.

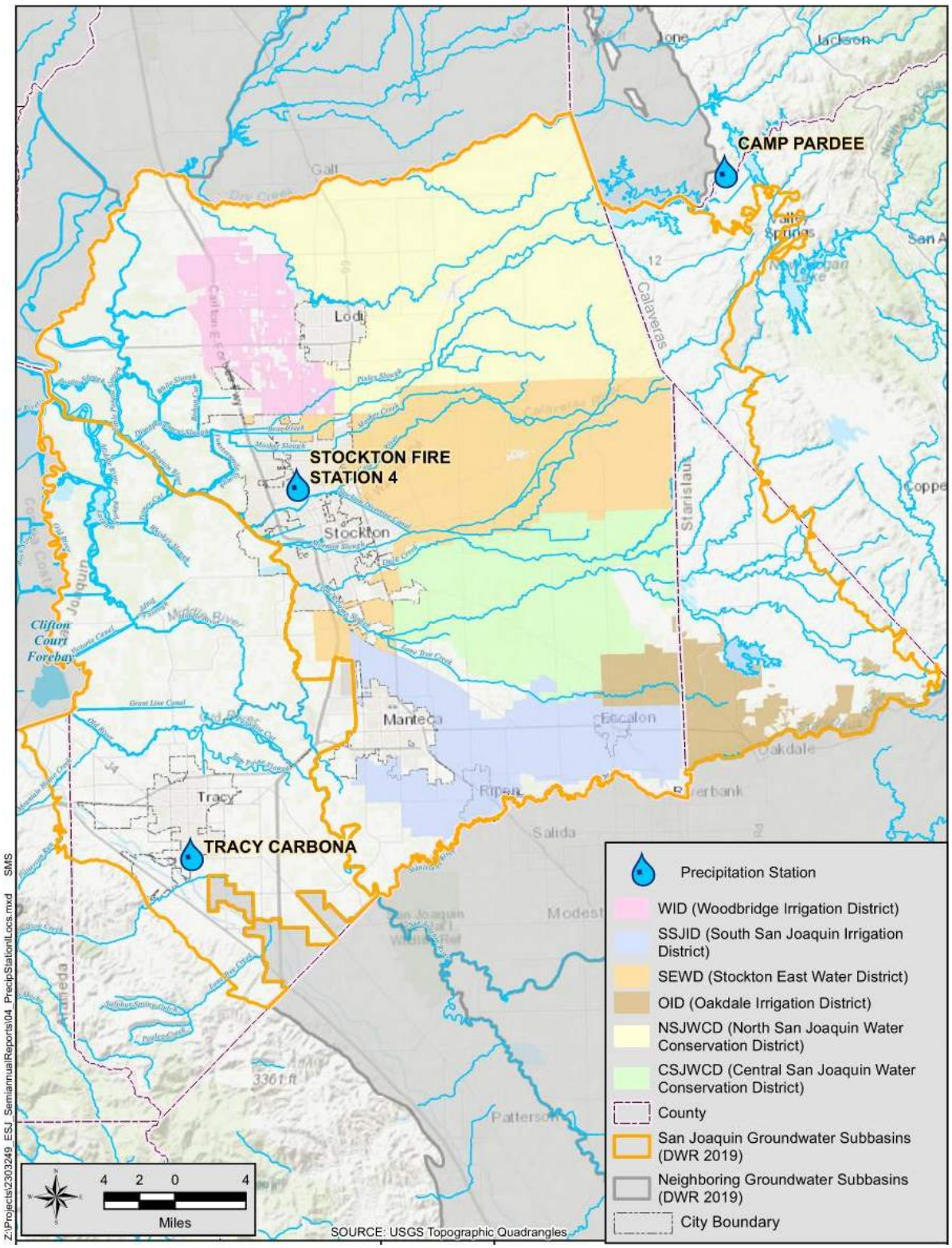


Figure 2-1 Precipitation Station Locations

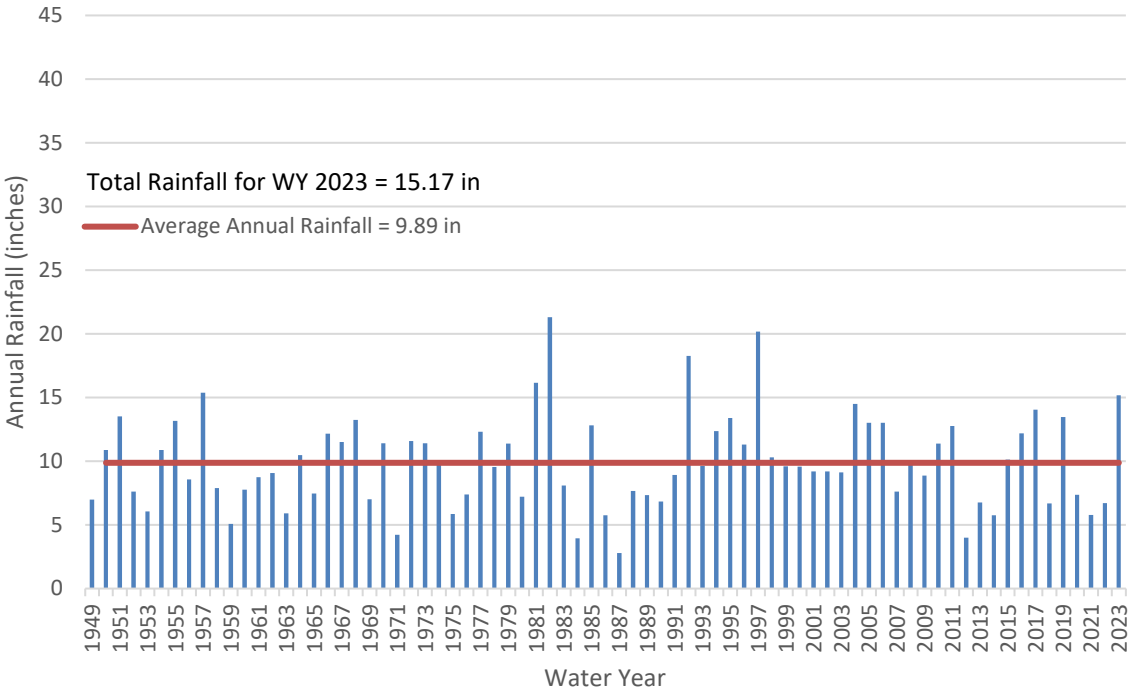


Figure 2-2 Total Annual Rainfall (Tracy Carbona Station)

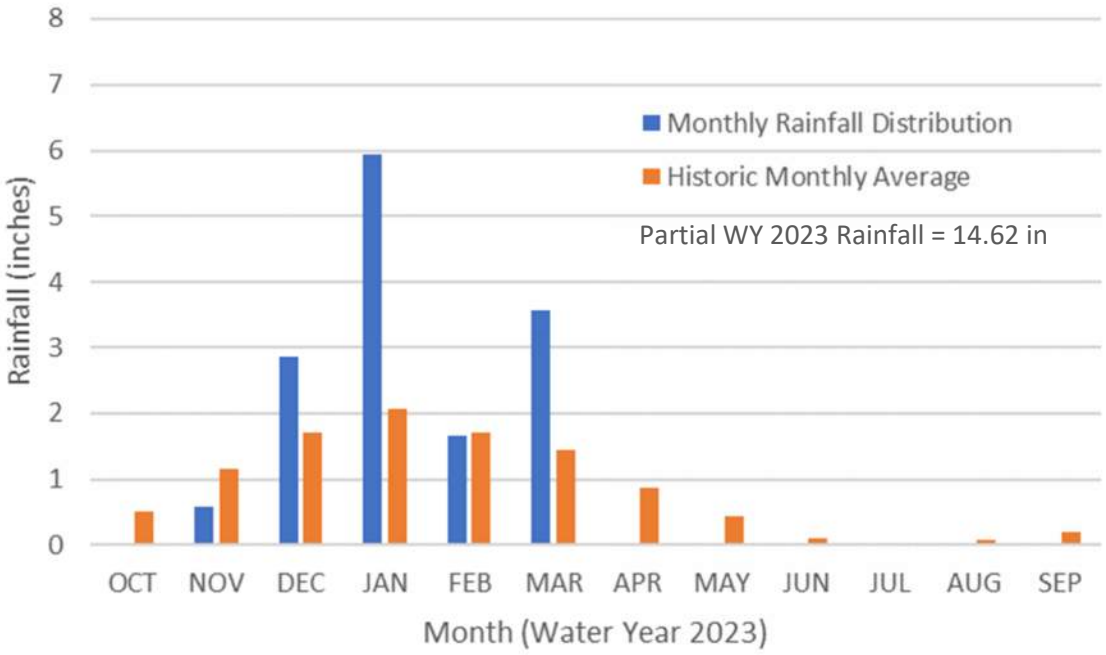


Figure 2-3 Monthly Rainfall Distribution (Tracy Carbona Station)

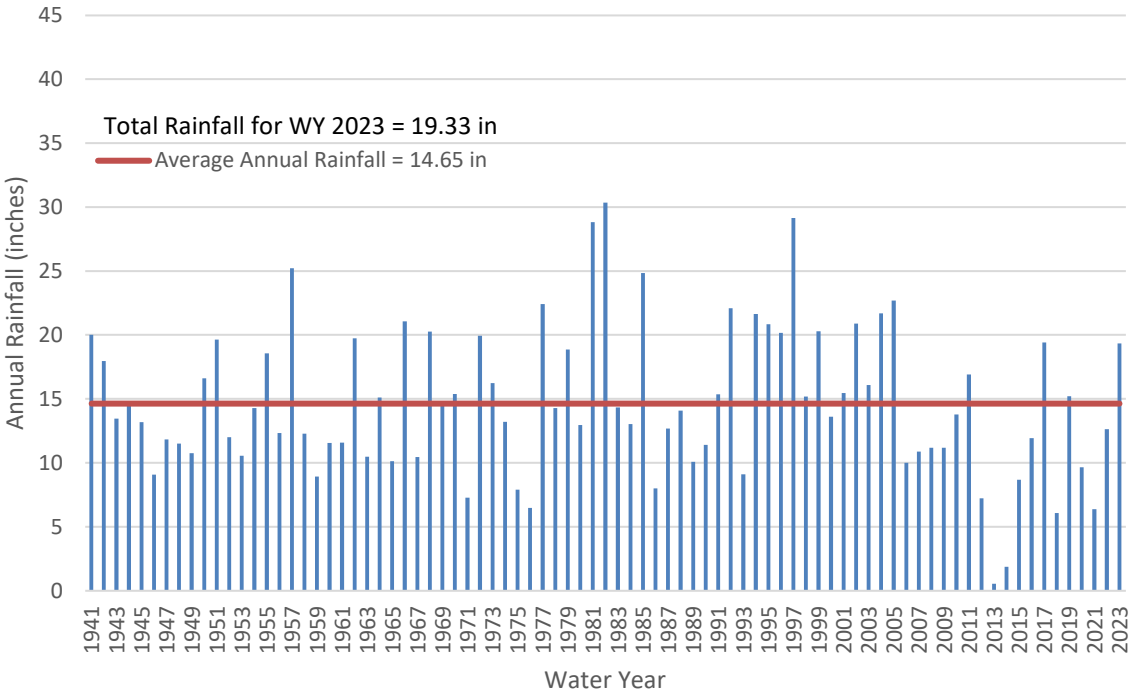


Figure 2-4 Total Annual Rainfall (Stockton Fire Station)

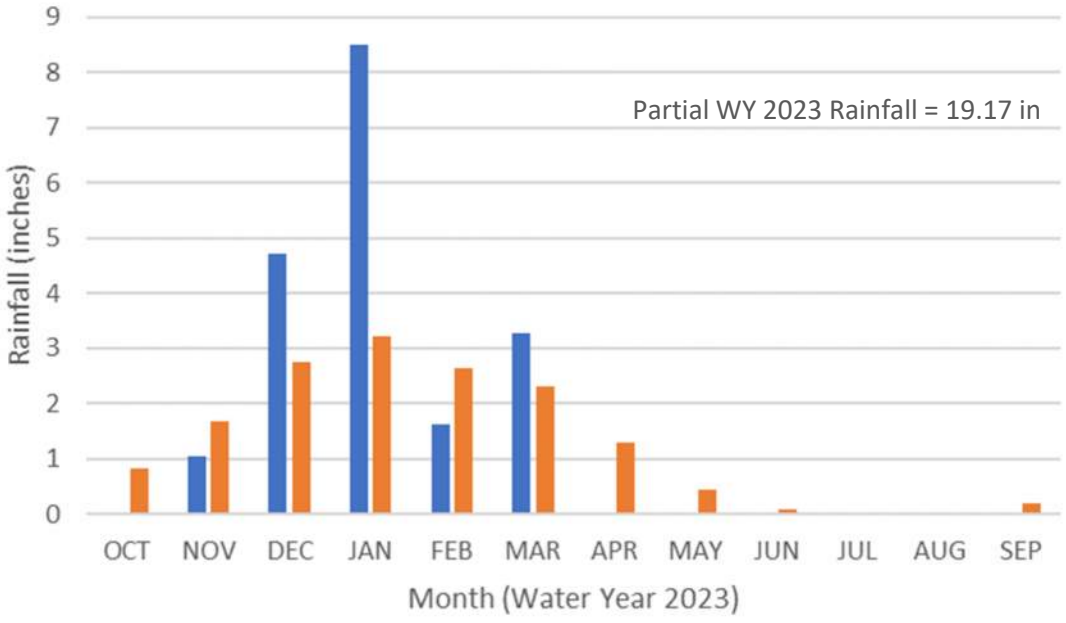


Figure 2-5 Monthly Rainfall Distribution (Stockton Fire Station)

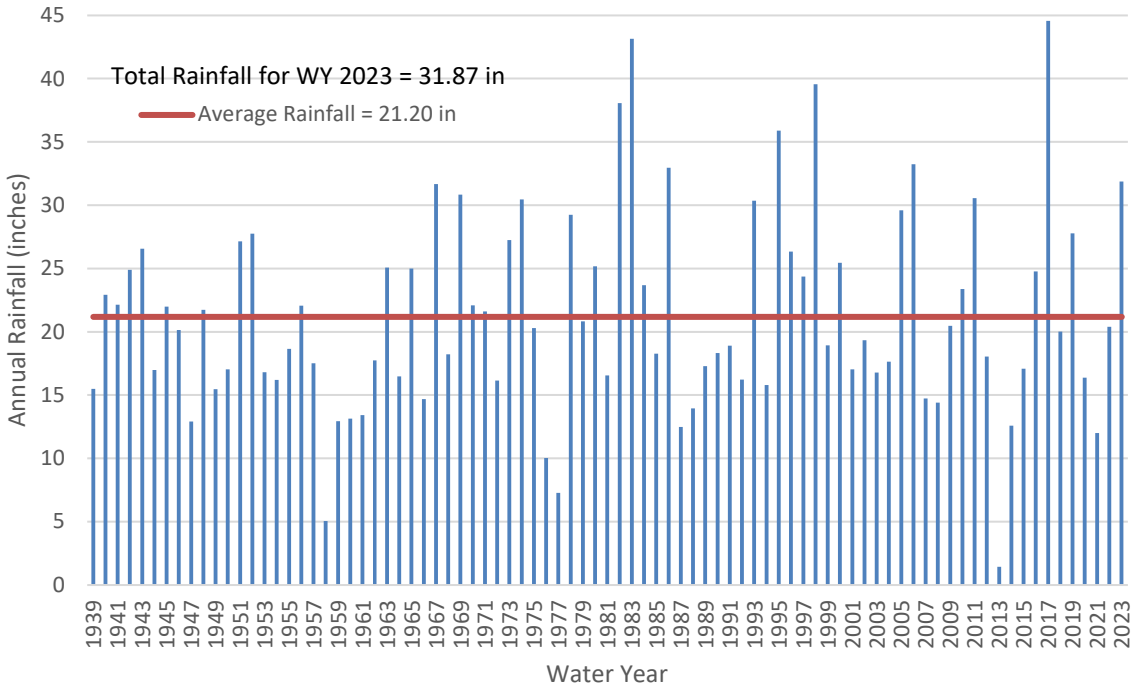


Figure 2-6 Total Annual Rainfall (Camp Pardee Station)

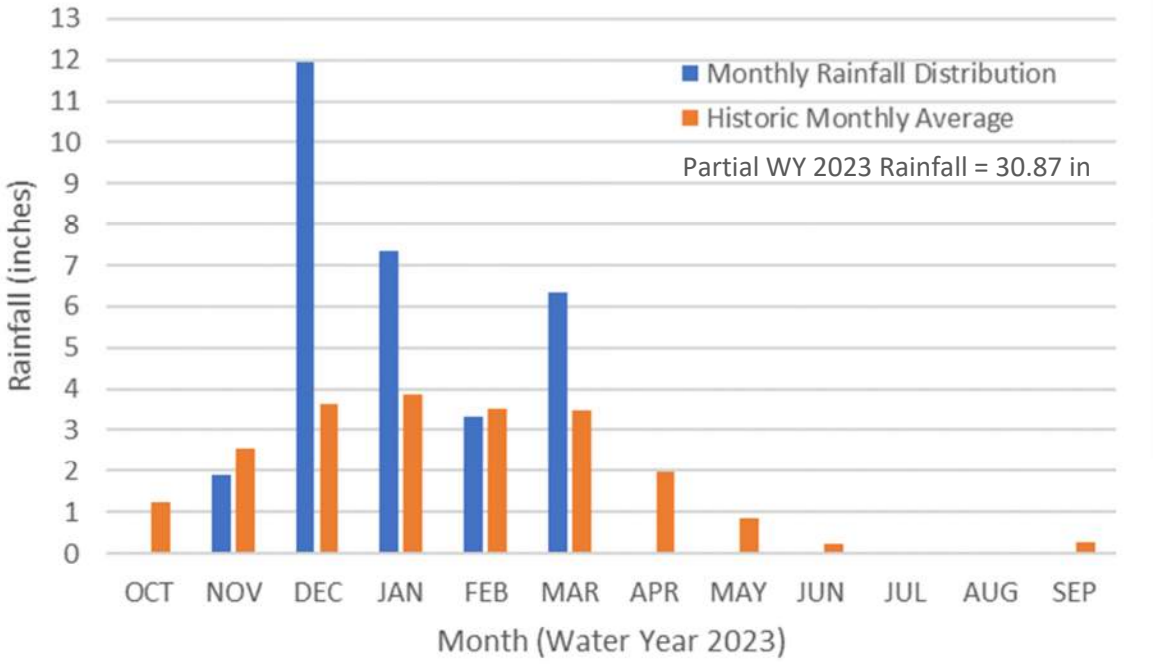


Figure 2-7 Monthly Rainfall Distribution (Camp Pardee Station)

3 Surface Water Levels and Storage

The groundwater levels in the County respond to not only changes in annual precipitation, but also to the amount of surface water in storage and flow in the rivers. Typically, lower amounts of surface water in storage indicates higher amounts of groundwater pumping. Four river gaging stations were selected along the rivers and three reservoir storage stations to represent these conditions.

Figure 3-1 shows the location of these gages and Figures 3-2 through 3-6 provide the recorded reservoir storage and outflows, and river stages for WY 2023. Rain events are shown in the high river flow spikes and reservoir increases, while lower river flow spikes represent the decreases in reservoir levels due to managed outflow.

Tables 3-1 and 3-2 detail the station info for each of the flow gages and reservoir storage totals used for Figures 3-1 through 3-5.

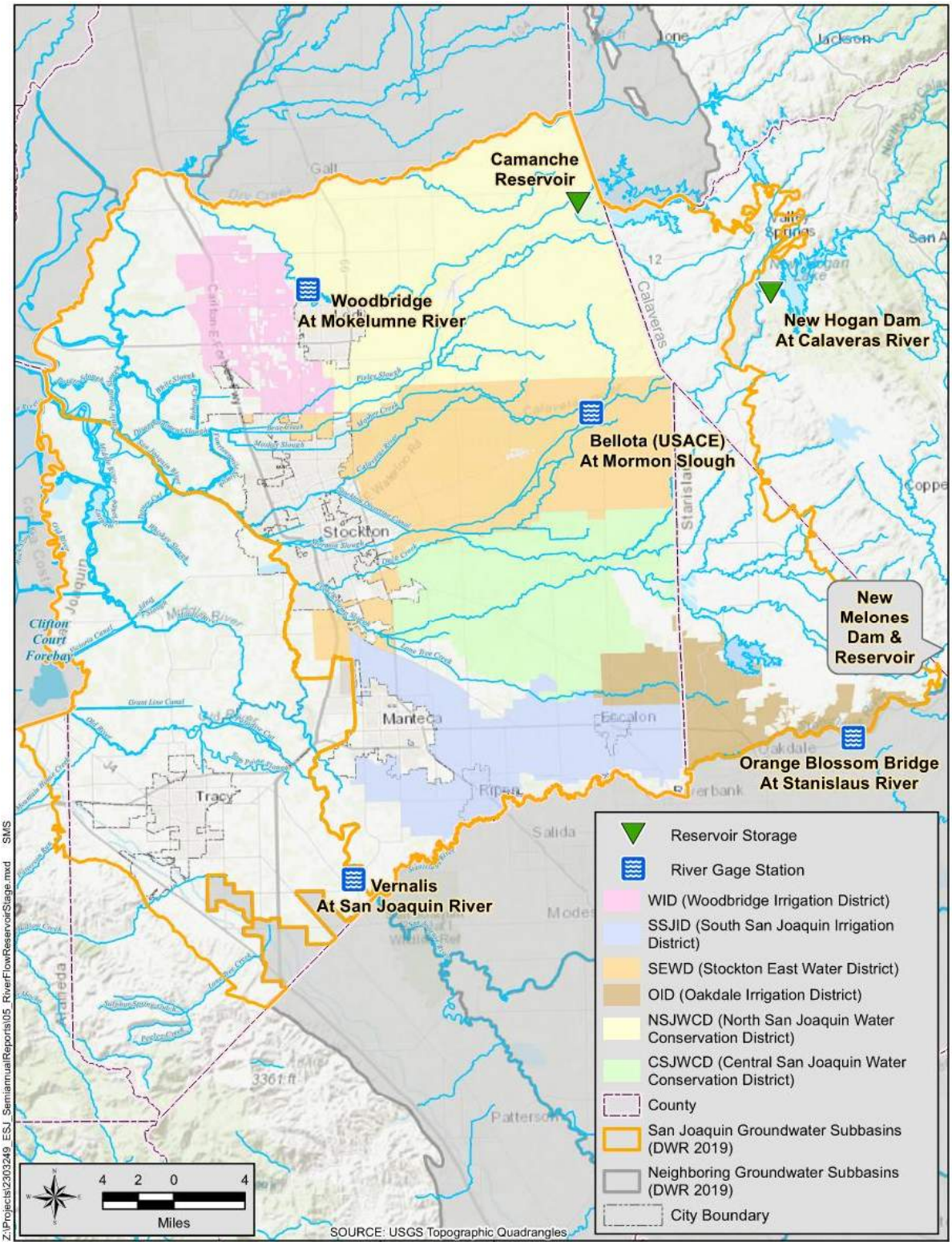


Figure 3-1 Reservoir Storage and River Gage Station Locations

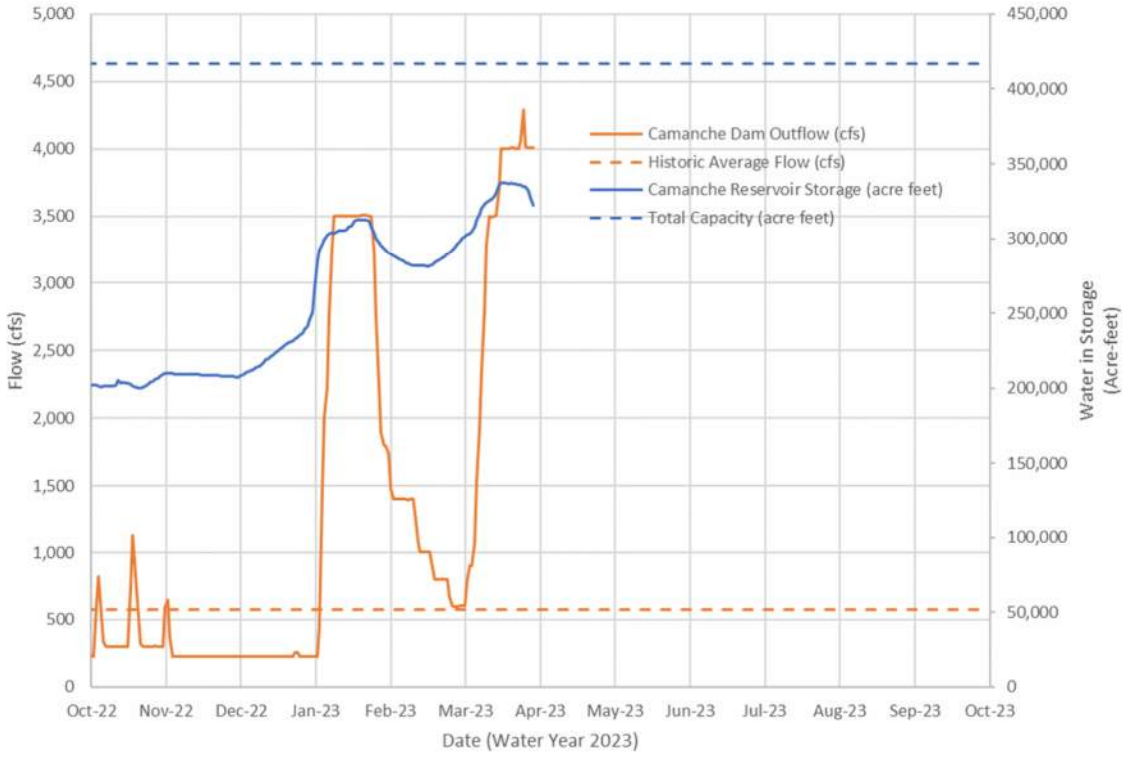
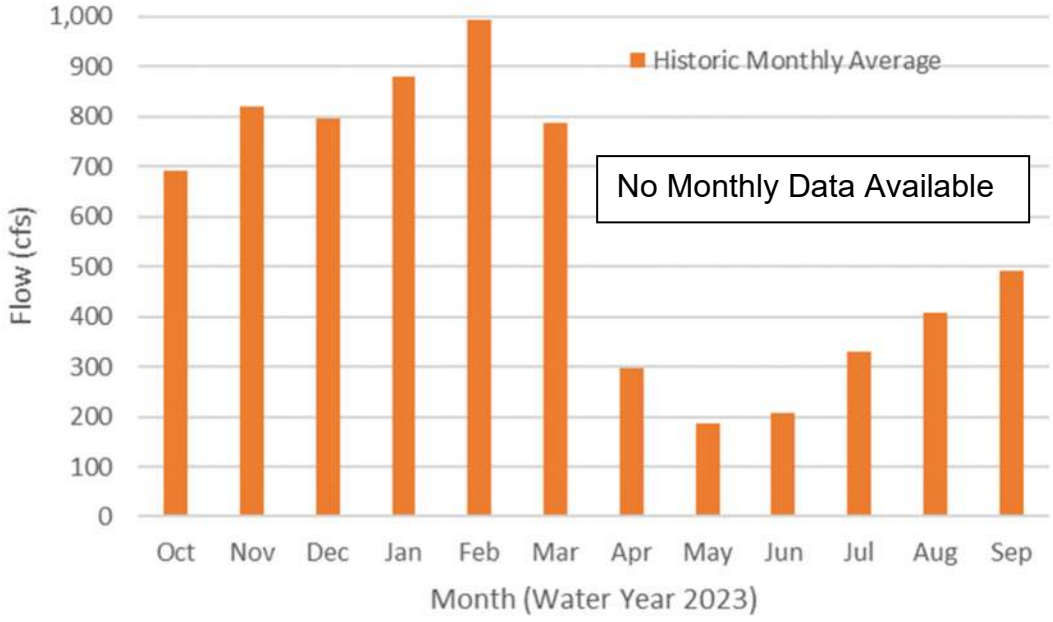


Figure 3-2 Camanche Reservoir



Note: Monthly average river flow data for Mokelumne River at Woodbridge Station is not yet available for WY 2023.

Figure 3-3 Mokelumne River Flow (Woodbridge Station) Monthly Average

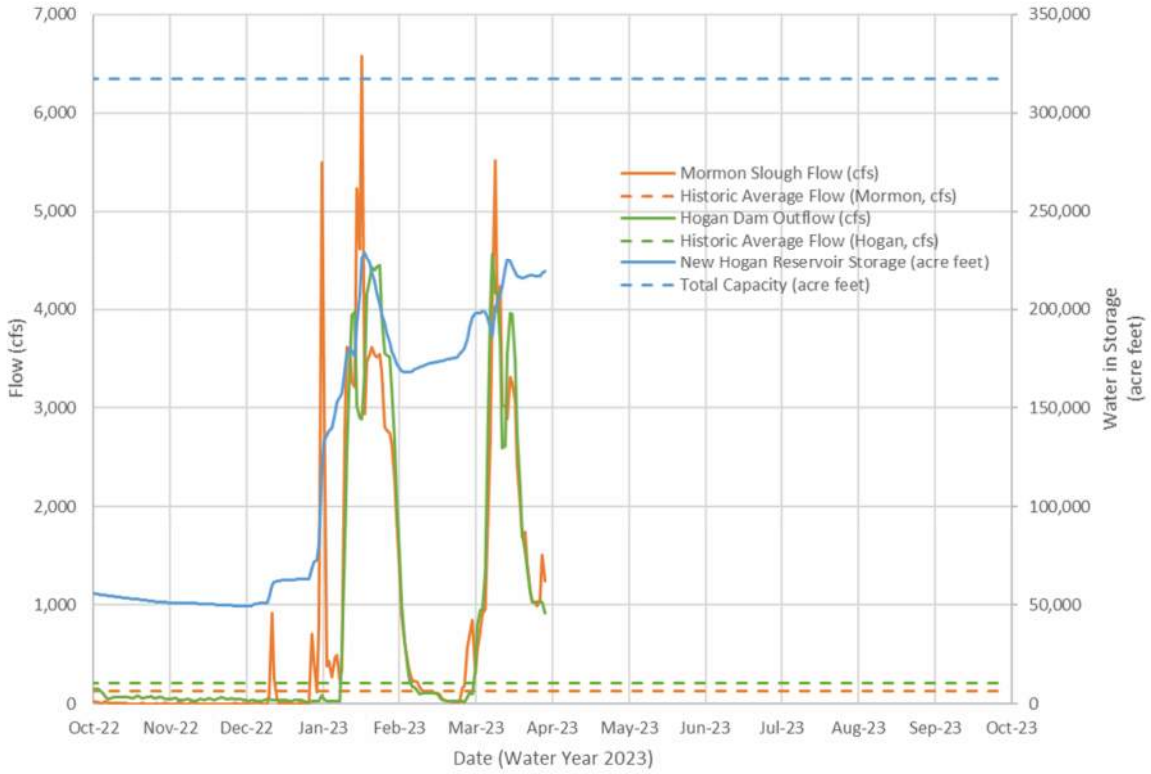


Figure 3-4 New Hogan Dam and Calaveras River (Mormon Slough at Bellota)

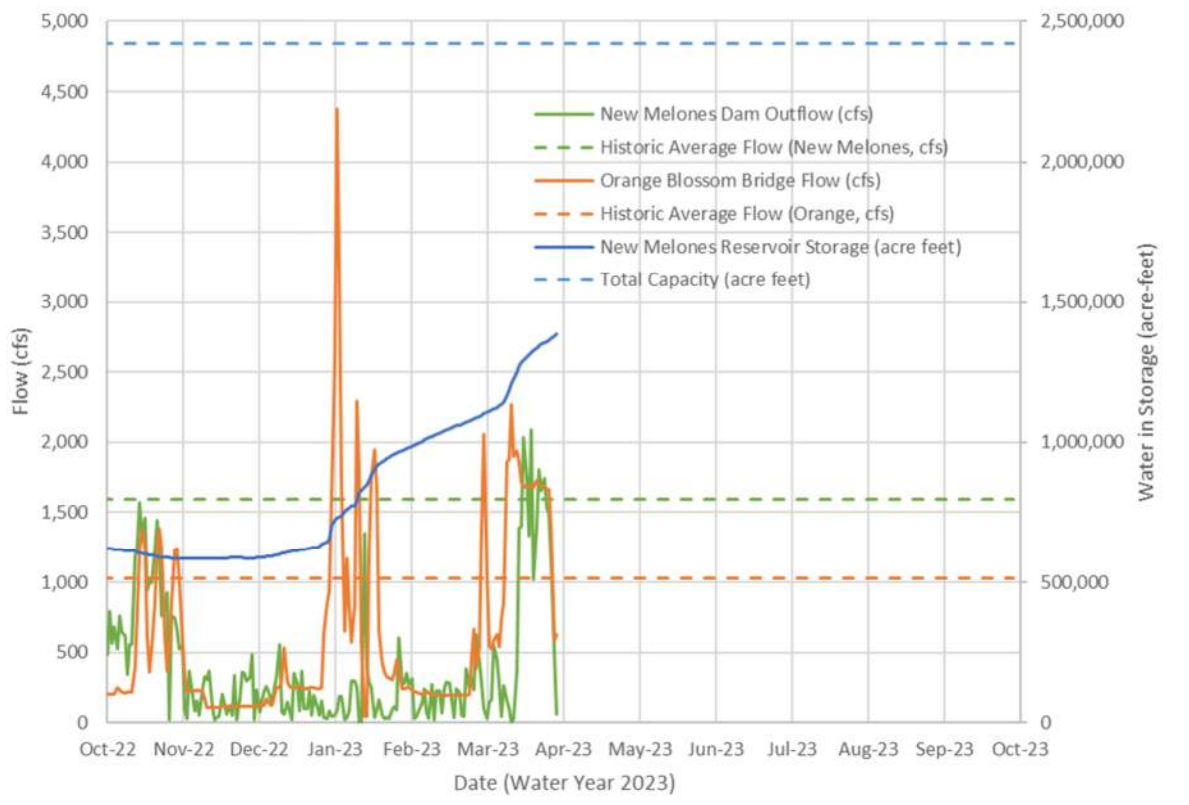
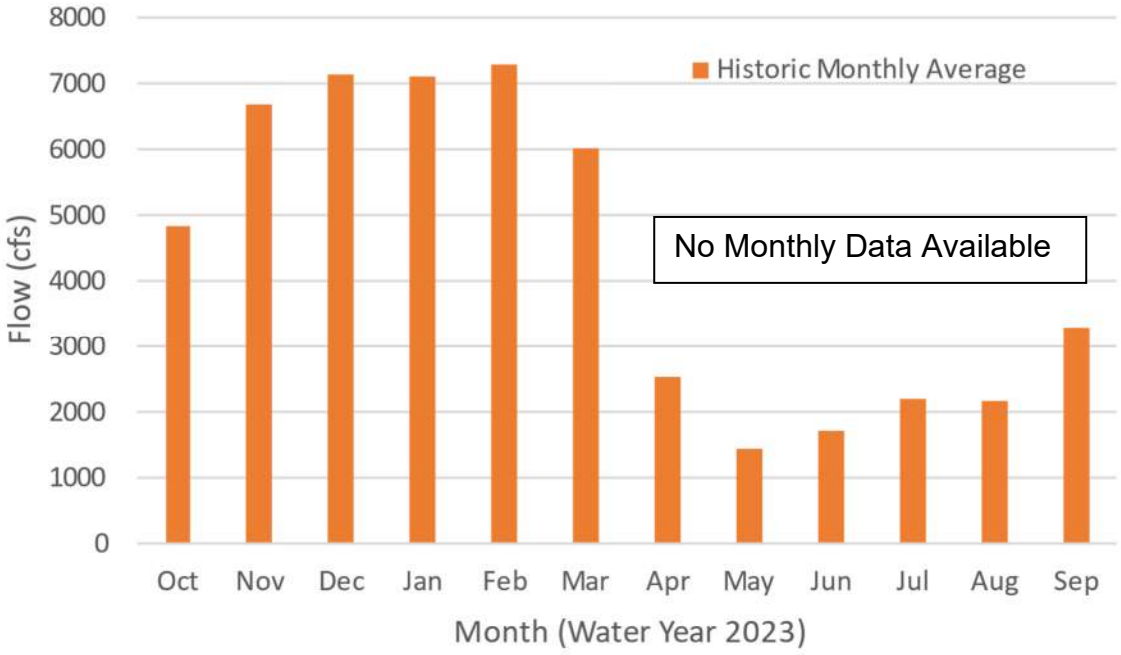


Figure 3-5 New Melones Dam at Stanislaus River (Orange Blossom Bridge)



Note: Monthly average river flow data for the San Joaquin River at Vernalis Station is not yet available for WY 2023.

Figure 3-6 San Joaquin River Flow (Vernalis Station) Monthly Average

Table 3-1 Flow Gages

Station Name	River Basin	Station Code	Station Type	Unit of Measurement	Historic Average Annual Flow[1]	Spring 2023 Average Flow	Spring 2023 % of Historic Average
San Joaquin River near Vernalis	San Joaquin	11303500	USGS River flow, Discharge 00060	cubic feet per second	52510	No Data[2]	--
Mokelumne River at Woodbridge	Mokelumne River	11325500	USGS River flow, Discharge 00060	cubic feet per second	6912	No Data[2]	--
New Melones Dam Releases	Stanislaus River	NML	USACE Outflow, Discharge	cubic feet per second	1592	859	54%
Stanislaus River at Orange Blossom Bridge	Stanislaus River	NML	USACE River flow, Discharge	cubic feet per second	1029	820	80%
New Hogan Dam Releases	Calaveras River	NHG	USACE Outflow, Discharge	cubic feet per second	208	659	317%
Calaveras River Bellota at Mormon Slough	Calaveras River	NHG	USACE River flow, Discharge	cubic feet per second	126	682	541%
Camanche Reservoir Releases	Mokelumne River	CMN	USACE Outflow, Discharge	cubic feet per second	574	1863	325%

Notes:

[1] Historic Monthly Average Flow data for USACE (United States Army Corp of Engineers) gages is not available, averages are derived from previous 4 years of data.

[2] Data not yet available for WY 2023.

Table 3-2 Reservoir Storage

Station Name	River Basin	Station Code	Station Type	Total Capacity	Unit of Measurement	Total Storage Start of WY 2023	Peak Storage Spring 2023
New Melones Dam & Reservoir	Stanislaus River	NML	USACE Storage	2.5 Million	Acre-feet	0.62 Million AF 24% Capacity	1.80 Million AF 72% Capacity
New Hogan Dam & Reservoir	Calaveras River	NHG	USACE Storage	317 Thousand	Acre-feet	56 Thousand AF 17% Capacity	241 Thousand AF 76% Capacity
Camanche Reservoir	Mokelumne River	CMN	USACE Storage	417 Thousand	Acre-feet	202 Thousand AF 48% Capacity	337 Thousand AF 81% Capacity

4 Groundwater Elevation Monitoring

Groundwater level data was provided by the County and supplemented with data available through the Department of Water Resources California Statewide Groundwater Elevation Monitoring (CASGEM) program. Groundwater levels were gathered by the County for the Eastern San Joaquin Subbasin (5-022.01) while the data for the Tracy Subbasin, and portions of Calaveras and Stanislaus County were sourced from the CASGEM or Sustainable Groundwater Management Act, Monitoring Network Module (SGMA Data Viewer, or MNM) website.

4.1 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 4-1 to 4-9. Wells with comparable data are those wells with groundwater level measurements in both Spring 2022 and Spring 2023. Figure 4-1

Measurements included in the tables are from two sources. County collected data is prioritized over CASGEM data for consistency as CASGEM data may not be measured within the same timeframe. If County data is not available or the well could not be monitored, CASGEM data was used. If a well was not measured by the County, it is reported as no measurement (NM). If comparable measurements were not available, it is reported as "--."

Due to well access issues; several monitoring wells were not able to be measured in Spring 2023, which affects the total amount of comparable wells for this report.

The information gathered is summarized as follows:

Central San Joaquin Water Conservation District (CSJWCD) – Thirty-three (33) wells were monitored in the spring of 2023, with fourteen (14) wells having comparable measurements (Table 4-1). In the spring, ten (10) wells decreased in groundwater levels, while four (4) increased. Average groundwater levels declined over two (2) feet across the district.

North San Joaquin Water Conservation District (NSJWCD) – Thirty-three (33) wells were monitored in the spring of 2023, with twenty-three (23) wells having comparable measurements (Table 4-2). In the spring, nine (9) wells decreased in groundwater levels, while fourteen (14) increased. Average groundwater levels rose over three (3) feet across the district.

Oakdale Irrigation District (OID) – Two wells were monitored in the spring of 2023, but only one measurement was obtained. There was no data from the previous year to compare it to, so no change in water level data is available for this district. (Table 4-3).

Stockton East Water District (SEWD) – Seventy-eight (78) wells were monitored in the spring of 2023, with thirty-three (33) wells having comparable measurements (Table 4-4). Twelve (12) wells decreased in groundwater levels, twenty (20) wells increased, and one (1) well had no change. Average groundwater levels rose by over six (6) feet across the district.

South San Joaquin Irrigation District (SSJID) – Twenty-six (26) wells were monitored in the spring of 2023, with sixteen (16) wells having comparable measurements (Table 4-5). Two (2) wells decreased in groundwater levels; fourteen (14) wells increased. Average groundwater levels rose by three (3) feet across the district.

Southwest County Area in the Tracy Subbasin – Twenty-five (25) wells were monitored in the spring of 2023, with twenty-two (22) wells having comparable measurements (Table 4-6). One (1) well decreased in groundwater levels, twenty-one (21) increased. Average groundwater levels rose by over seven (7) feet in the Tracy Subbasin.

Woodbridge Irrigation District (WID) – Eighteen (18) total wells were monitored in the spring of 2023, with fifteen (15) wells having comparable measurements (Table 4-7). Three (3) wells decreased in groundwater levels; twelve (12) wells increased. Average groundwater levels rose by over six (6) feet across the district.

Calaveras County Groundwater measurements have not been uploaded to the CASGEM or MNM websites and therefore were not able to be compared at the time of this report.

Stanislaus County – Eight (8) total wells were monitored in the spring of 2023, with seven (7) wells having comparable measurements. Three (3) wells decreased in groundwater levels; four (4) wells increased. Average groundwater levels declined by about two (2) feet across the district.

Changes in groundwater levels from Spring 2022 through to Spring 2023 throughout the County are summarized on Figure 4-32 with the well location symbol indicating the difference in levels.

4.2 Hydrographs

Twenty-six (26) wells were selected to represent groundwater conditions throughout the basin (A through Z). These wells have historical spring and fall groundwater level measurements. The location of these wells is shown on Figure 4-2. Hydrographs of these selected wells within the County are provided on Figures 4-3 through 4-28 to illustrate the changes in groundwater levels with time. Trend lines are plotted on each figure using data from 1984 to 2022 (or shorter period if measurements are not available

Hydrographs for Wells H and L are provided but monitoring at these wells has been prevented due to ongoing well access issues. Work is being done to resolve access.

4.3 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, the historic

high groundwater levels, and Fall 1992, historic low groundwater levels. Figure 4-28 shows the location of the profiles and Figures 4-29 through 4-31 provide the profiles.

4.4 Groundwater Level Changes

Figures 4-33 and 4-34 show depths to groundwater along with groundwater elevation maps that were used to develop Figure 4-32.

5 Summary

WY2023 was classified as a wet year and received about 150 percent of average precipitation. Combined, surface water storage in Camanche, New Melones and New Hogan reservoirs increased by nearly 2 million AF.

Groundwater levels rose in 90 wells in response to the above normal precipitation and abundant surface water for agricultural use. However, groundwater levels decline in about 30 percent of the wells, with comparable measurements. Most of the wells with declines are in the central portion of the County, generally east of Stockton. The greatest rises were present near the rivers.

The pumping depression in the central portion of the County continued to be present but the bottom of the depression rose by about 10 feet from Spring 2022 to Spring 2023.

Table 4-1 Comparison of CSJWCD Groundwater Elevations

State Well ID	Spring 2022 (feet)	Spring 2023 (feet)	Change Spring (Feet)
01N07E11L001	NM	-48	--
01N07E14J002	-62.6	-68.6	-6
01N07E24R001	-52.5	NM	--
01N07E26H003	NM	NM	--
01N07E32A001	-18.1	-9.5	8.5
01N08E11L001	-57.7	-60.5	-2.8
01N08E13J001	NM	NM	--
01N08E16G001	-56.5	-59.5	-3
01N08E16H002	-55.3	-57.8	-2.5
01N08E27R002	NM	NM	--
01N08E29M002	NM	NM	--
01N08E35F001	-67.9	-75.9	-8
01N08E36F001	-42	NM	--
01N09E13D001	NM	NM	--
01N09E17D001	NM	-43	--
01N09E17M001	-40.4	-44.5	-4.1
01N09E19C001	NM	-72	--
01N09E22G002	NM	NM	--
01N09E29R001	-37.5	-28	9.5
01N09E30C005	-43.7	-41.7	2
01S07E01J001	-41.6	-47.6	-6
01S08E04R001	-60	NM	--
01S08E05A001	-63.4	NM	--
01S08E05R001	-63.8	NM	--
01S08E06D001	NM	NM	--
01S08E09Q001	-48.9	-51.9	-3
01S08E11F001	-39.9	NM	--
01S08E14B001	-29.7	-19.7	10
01S09E05H002	-21	-24.5	-3.5
01S09E07A001	-24.3	NM	--
01S09E07N001	-13.3	NM	--
01S09E09R001	NM	-3.7	--
01S09E19Q002	-7	-34	-27

Number of Wells Spring 2022-2023					Change in Elevation	
Total	Comparable	Decrease	Increase	No Change	Range	Average
33	14	10	4	0	-27 to 10	-2.56

Table 4-2 Comparison of NSJWCD Groundwater Elevations

State Well ID	Spring 2022 (feet)	Spring 2023 (feet)	Change Spring (Feet)
03N06E04C001	NM	NM	--
03N07E02G003	NM	NM	--
03N07E03R001	-33.8	-34.3	-0.5
03N07E08E002	-29	-34	-5
03N07E09C001	-31.7	-29.7	2
03N07E15C004	-44.5	-49.5	-5
03N07E17D004	-32.4	-30	2.4
03N07E18D012	-31.6	-29.4	2.2
03N07E19J004	NM	NM	--
03N07E23C002	-60	NM	--
03N08E07D002	NM	NM	--
03N08E22A001	NM	NM	--
04N06E12C004	-38.7	-37.5	1.2
04N06E12N002	NM	-34.8	--
04N06E15B002	-14.1	-17.7	-3.6
04N06E23K00	-8	-14	-6
04N06E24F001	-31	-22	9
04N06E25R001	-6.4	-11	-4.6
04N06E27D002	2.2	16.2	14
04N07E12E001	-61	-10.5	50.5
04N07E17N001	NM	-58.3	--
04N07E19K001	-28.6	-25.6	3
04N07E20H003	-33.44	-32.88	0.56
04N07E21F001	-36.4	NM	--
04N07E27C002	-37	-37.5	-0.5
04N07E28J002	-28.7	-32.7	-4
04N07E33H001	22.6	33.5	10.9
04N07E36L001	-38.7	-38.4	0.3
04N08E14K001	-22.1	-14.1	8
04N08E17J001	-42.5	-44.1	-1.6
04N08E21M001	-52.1	NM	--
04N08E32N001	-50.6	-50.1	0.5
05N07E34G001	-49.1	-40.1	9

Number of Wells Spring 2022-2023					Change in Elevation	
Total	Comparable	Decrease	Increase	No Change	Range	Average
33	23	9	14	0	-6 to 50.5	3.60

Table 4-3 Comparison of OID Groundwater Elevations

State Well ID	Spring 2022 (feet)	Spring 2023 (feet)	Change Spring (feet)
01S09E21J002	NM	13	--
01S09E24R001	NM	NM	--

Number of Wells Spring 2022-2023					Change in Elevation	
Total	Comparable	Decrease	Increase	No Change	Range	Average
2	0	0	0	0	--	--

Table 4-4 Comparison of SEWD Groundwater Elevations

State Well ID	Spring 2022 (feet)	Spring 2023 (feet)	Change Spring (feet)
01N06E02C001	30	-10.18	-40.18
01N06E04J003	NM	-8.33	--
01N06E04J004	NM	-2.67	--
01N06E04J005	NM	1.39	--
01N06E05M004	NM	NM	--
01N06E36C003	NM	-7.6	--
01N06E36C004	NM	-1.6	--
01N06E36C005	NM	0.6	--
01N07E01M002	-125	NM	--
01N07E02G001	-44.5	NM	--
01N07E04R001	-14	-1	13
01N07E09E004	NM	NM	--
01N07E09H001	NM	NM	--
01N07E09Q003	-34	-44	-10
01N07E10D001	-23	NM	--
01N07E20G001	-17	-16	1
01S06E01C002	-1	1	2
01S06E02G002	-6.77	1.79	8.56
01S06E10G001	-13.8	-4.8	9
01S07E06M002	-10	NM	--
01S07E08J002	-10	0	10
02N06E01A001	NM	NM	--
02N06E08N001	NM	-21.58	--
02N06E08N002	NM	-19.22	--
02N06E08N003	NM	-15.91	--
02N06E12H001	NM	NM	--
02N06E20E001	NM	-13.1	--
02N06E24F001	-30.5	NM	--
02N06E24J002	NM	NM	--
02N06E24J003	NM	NM	--
02N07E03D001	-59	NM	--
02N07E08D001	NM	NM	--
02N07E08K003	-59.5	-54	5.5
02N07E08R002	-55.34	-48.84	6.5
02N07E11F001	-97	-97	0
02N07E11R002	-66	-68	-2
02N07E16F002	-59.14	NM	--
02N07E16L001	-76.3	-60.3	16
02N07E20N002	-48	-46	2
02N07E21A002	-60.91	-58.81	2.1
02N07E21K002	-52.6	NM	--
02N07E21N001	-46.9	-59	-12.1
02N07E23B001	-72.4	NM	--
02N07E24Q001	-69.4	-83	-13.6
02N07E26N001	-65.2	-66.5	-1.3
02N07E28K002	-64	NM	--
02N07E28N004	-40	NM	--
02N07E28P001	NM	NM	--

Comparison of SEWD Groundwater Elevations (continued)

State Well ID	Spring 2022 (feet)	Spring 2023 (feet)	Change Spring (feet)
02N07E29B001	NM	NM	--
02N07E29M002	-33.2	NM	--
02N07E30H001	-33.7	NM	--
02N07E31M001	10.2	NM	--
02N07E32J002	-24.1	-19	5.1
02N07E32M002	-21.3	-4.6	16.7
02N07E32R001	-21.6	-8.6	13
02N07E33L001	-18	-19	-1
02N07E34R001	-56	2	58
02N08E03G002	NM	NM	--
02N08E04C001	NM	NM	--
02N08E05C001	-85.5	-72.5	13
02N08E08N001	-69.5	NM	--
02N08E09G002	-74	-31	43
02N08E10H002	-63.6	-67.1	-3.5
02N08E14C001	-68	-72	-4
02N08E16D001	-83.1	-65.1	18
02N08E18C001	-98.7	NM	--
02N08E20F001	NM	-63.4	--
02N08E24J001	NM	-67.1	--
02N08E28H002	NM	-58.6	--
02N08E33E001	-64.6	-67.6	-3
02N09E05N001	-37.69	-39.69	-2
02N09E09D001	NM	-10.8	--
02N09E28N001	-24.1	15.9	40
03N06E35P002	NM	NM	--
03N07E35C002	-59.9	NM	--
03N07E35L001	NM	-91.5	--
03N07E36J001	-73.3	-75.3	-2
03N09E25R001	71.5	96	24.5

Number of Wells Spring 2022-2023					Change in Elevation	
Total	Comparable	Decrease	Increase	No Change	Range	Average
78	33	12	20	1	-40.18 to 58	6.43

Table 4-5 Comparison of SSJID Groundwater Elevations

State Well ID	Spring 2022 (feet)	Spring 2023 (feet)	Change Spring (feet)
01S07E14M001	NM	-19.1	--
01S07E14P003	NM	-24.8	--
01S07E15F002	-24.6	-22.6	2
01S07E18L001	-2.93	6.91	9.84
01S07E21G001	1.05	5.33	4.28
01S07E25E001	NM	-19	--
01S07E26G001	NM	-14	--
01S07E27K001	-3.5	-0.9	2.6
01S07E30R001	6.16	12.54	6.38
01S07E36D001	2.95	4.985	2.035
01S08E30C002	NM	NM	--
01S09E29M002	NM	NM	--
01S09E33J002	40.12	39.45	-0.67
01S09E33P001	35.71	37.01	1.3
02S07E07D002	7	9	2
02S07E11N002	NM	NM	--
02S07E19H001	20	21	1
02S08E04M001	8.5	17.5	9
02S08E06J001	2	11	9
02S08E07R001	NM	11	--
02S08E08A001	15	18	3
02S08E08E001	12.2	2.2	-10
02S08E09J001	NM	NM	--
02S08E12D001	28.47	31.295	2.825
02S08E14E001	NM	NM	--
02S09E12R001	57.55	60.94	3.39

Number of Wells Spring 2022-2023					Change in Elevation	
Total	Comparable	Decrease	Increase	No Change	Range	Average
26	16	2	14	0	-10 to 9.84	3.00

Table 4-6 Comparison of Southwest County Area in Tracy Subbasin Groundwater Elevations

State Well ID	Spring 2022 (feet)	Spring 2023 (feet)	Change Spring (feet)
01S05E31R002	NM	1.1	--
02S04E15R001	50	51.5	1.5
02S05E08B001	NM	0.3	--
02S06E25J001	10.5	18.2	7.7
02S06E31N001	44	53	9
03S06E27N001	55.8	36.8	-19
03S07E06Q001	NM	NM	--
MW-1A	-18.35	-9.4	8.95
MW-1B	-31.2	-20.38	10.82
MW-1C	-32.65	-18.64	14.01
MW-2A	-25.14	-17.58	7.56
MW-2B	-30.56	-20.63	9.93
MW-2C	-30.38	-20.77	9.61
MW-3A	-22.24	-20.23	2.01
MW-3B	-30.83	-22.05	8.78
MW-3C	-31.41	-24.21	7.2
MW-4A	-26.13	-16.18	9.95
MW-4B	-30.27	-19.26	11.01
MW-4C	-30.01	-19.57	10.44
MW-5A	-24.92	-11.97	12.95
MW-5B	-25.84	-17.5	8.34
MW-5C	-23.7	-15.88	7.82
MW-6A	-21.13	-12.78	8.35
MW-6B	-29.87	-17.71	12.16
MW-6C	-25.15	-15.63	9.52

Number of Wells Spring 2022-2023					Change in Elevation	
Total	Comparable	Decrease	Increase	No Change	Range	Average
25	22	1	21	0	-19 to 14.01	7.66

Note: Monitoring wells MW-1 through MW-6 measured by City of Tracy. All wells monitor aquifers below the Corcoran Clay.

Table 4-7 Comparison of WID Groundwater Elevations

State Well ID	Spring 2022 (feet)	Spring 2023 (feet)	Change Spring (feet)
03N05E14C001	NM	-0.8	--
03N06E05N003	-11.5	-15	-3.5
03N06E07H003	-13.6	-9.5	4.1
03N06E17A004	-21.3	-16.4	4.9
03N06E18M003	-13.6	-16.1	-2.5
03N06E20D002	-23.5	-16	7.5
03N06E32R001	-27	-19	8
04N05E10K001	NM	2.1	--
04N05E13H001	-3	3	6
04N05E13R004	-5.8	-7.1	-1.3
04N05E14B002	-2.4	8.1	10.5
04N05E24J004	NM	3.9	--
04N05E36H003	-6.5	4.3	10.8
04N06E17G004	-2	12.5	14.5
04N06E29N002	-9	0	9
04N06E30E001	-1.3	12.2	13.5
04N06E34J002	17.4	26.4	9
05N05E28L003	-3.5	1.5	5

Number of Wells Spring 2022-2023					Change in Elevation	
Total	Comparable	Decrease	Increase	No Change	Range	Average
18	15	3	12	0	-3.5 to 14.5	6.37

Table 4-8 Comparison of Calaveras County Groundwater Elevations

Local Well ID	Spring 2022 (feet)	Spring 2023 (feet)	Change Spring (feet)
CCWD 001	NM	NM	--
CCWD 002	NM	NM	--
CCWD 003	NM	NM	--
CCWD 004	NM	NM	--
CCWD 005	NM	NM	--
CCWD 006	NM	NM	--
CCWD 007	NM	NM	--
CCWD 008	NM	NM	--
CCWD 009	NM	NM	--
CCWD 010	NM	NM	--
CCWD 011	NM	NM	--
CCWD 012	NM	NM	--
CCWD 014	NM	NM	--
CCWD 015	NM	NM	--

Number of Wells Spring 2022-2023					Change in Elevation	
Total	Comparable	Decrease	Increase	No Change	Range	Average
14	0	0	0	0	--	--

*Calaveras County 2022 & 2023 data has not been uploaded to DWR databases as of October 2023.

Table 4-9 Comparison of Stanislaus Groundwater Elevations

State Well ID	Spring 2022 (feet)	Spring 2023 (feet)	Change Spring (feet)
01S10E04C001	65.32	53.52	-11.80
01S10E21A001	84.815	NM	--
01S10E26J001	79.12	79.9	0.78
01S10E27Q001	70.63	70.08	-0.55
01S10E34R001	71.17	71.54	0.37
01S11E25N001	109.31	101.31	-8.00
02S10E02P001	82.13	84.81	2.68
02S10E10M002	70.58	73.2	2.62

Number of Wells Spring 2022-2023					Change in Elevation	
Total	Comparable	Decrease	Increase	No Change	Range	Average
8	7	3	4	0	-11.8 to 2.68	-1.99

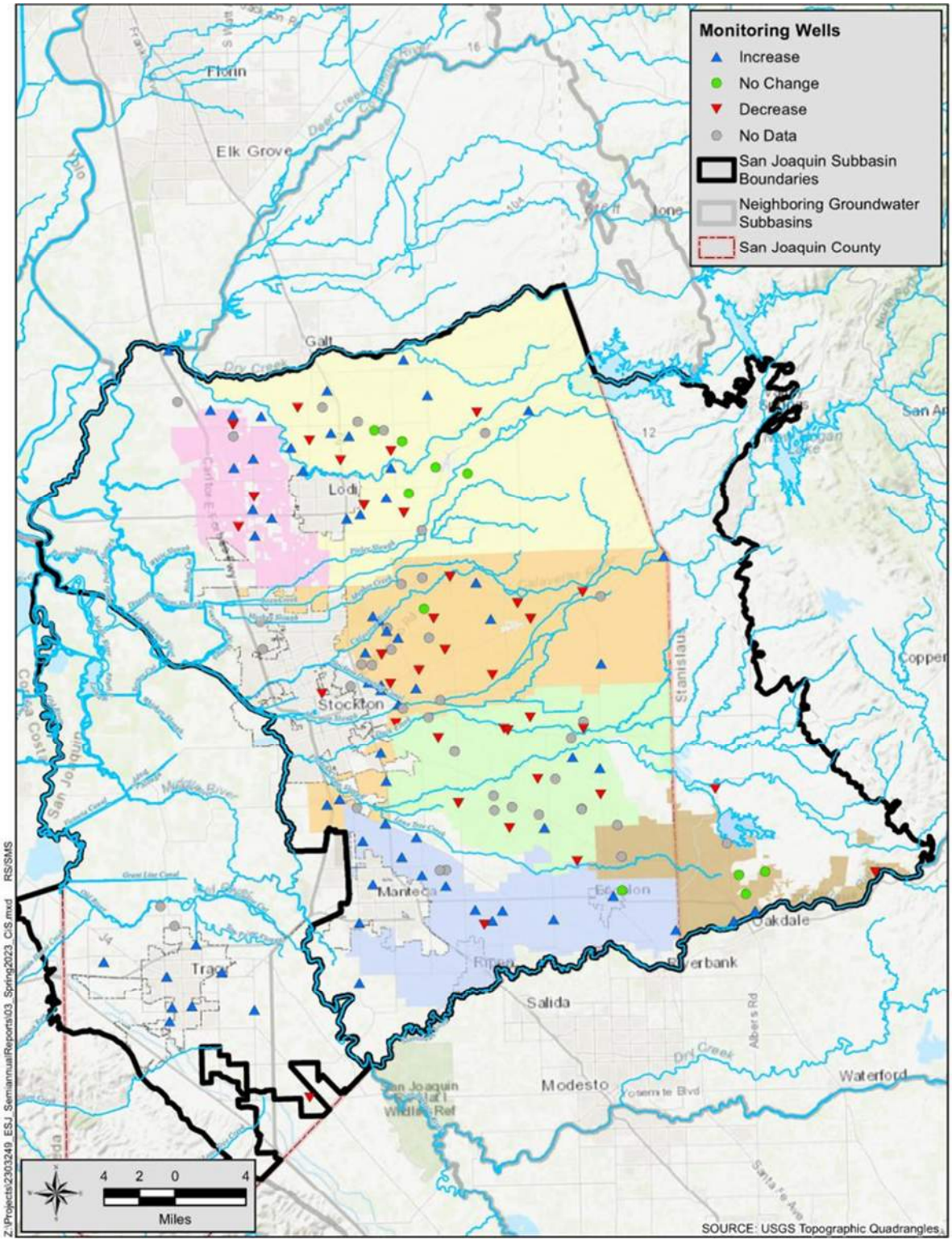


Figure 4-1 Change in Groundwater Elevation – Spring 2022 to Spring 2023

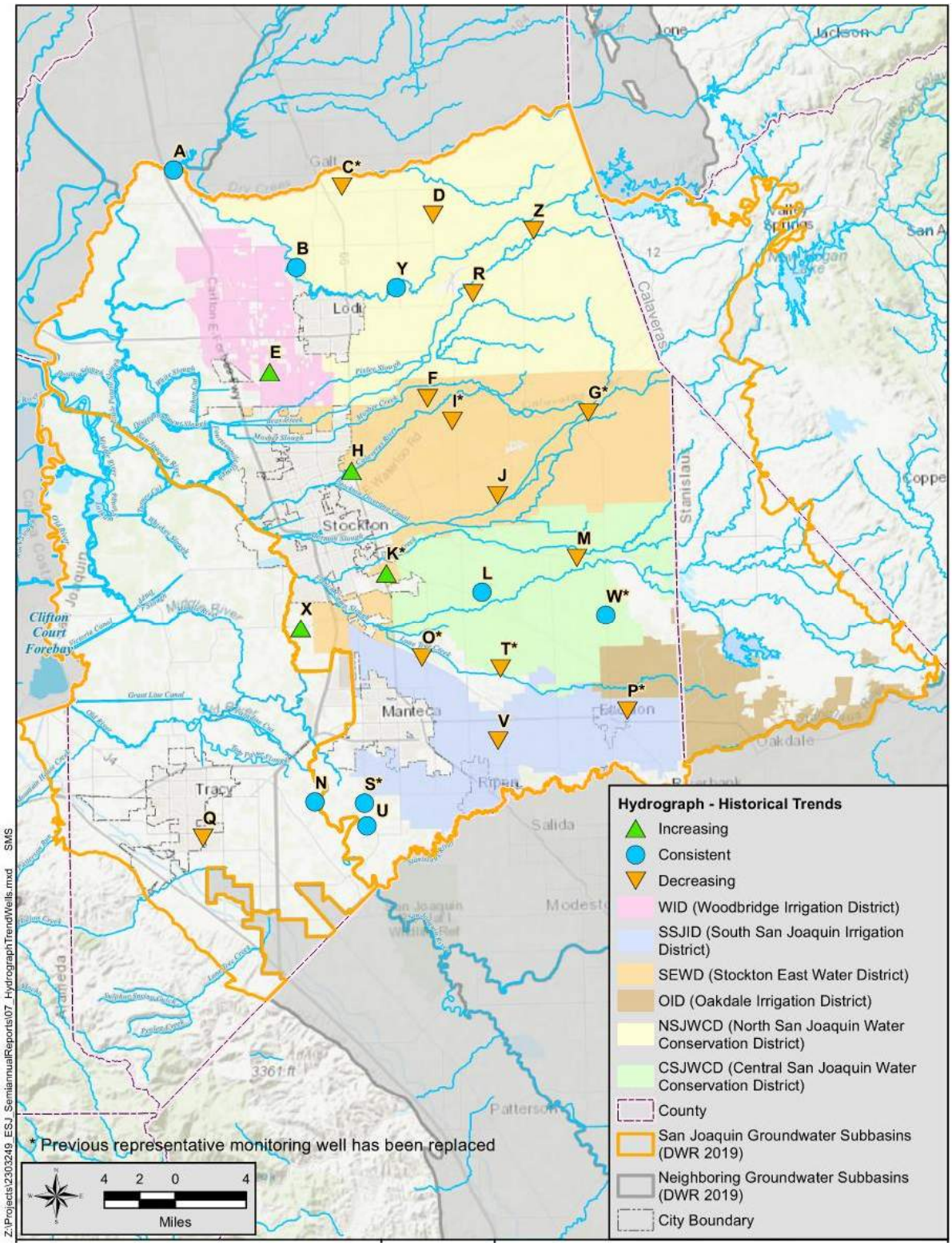


Figure 4-2 Selected Hydrograph Well Historic Trends

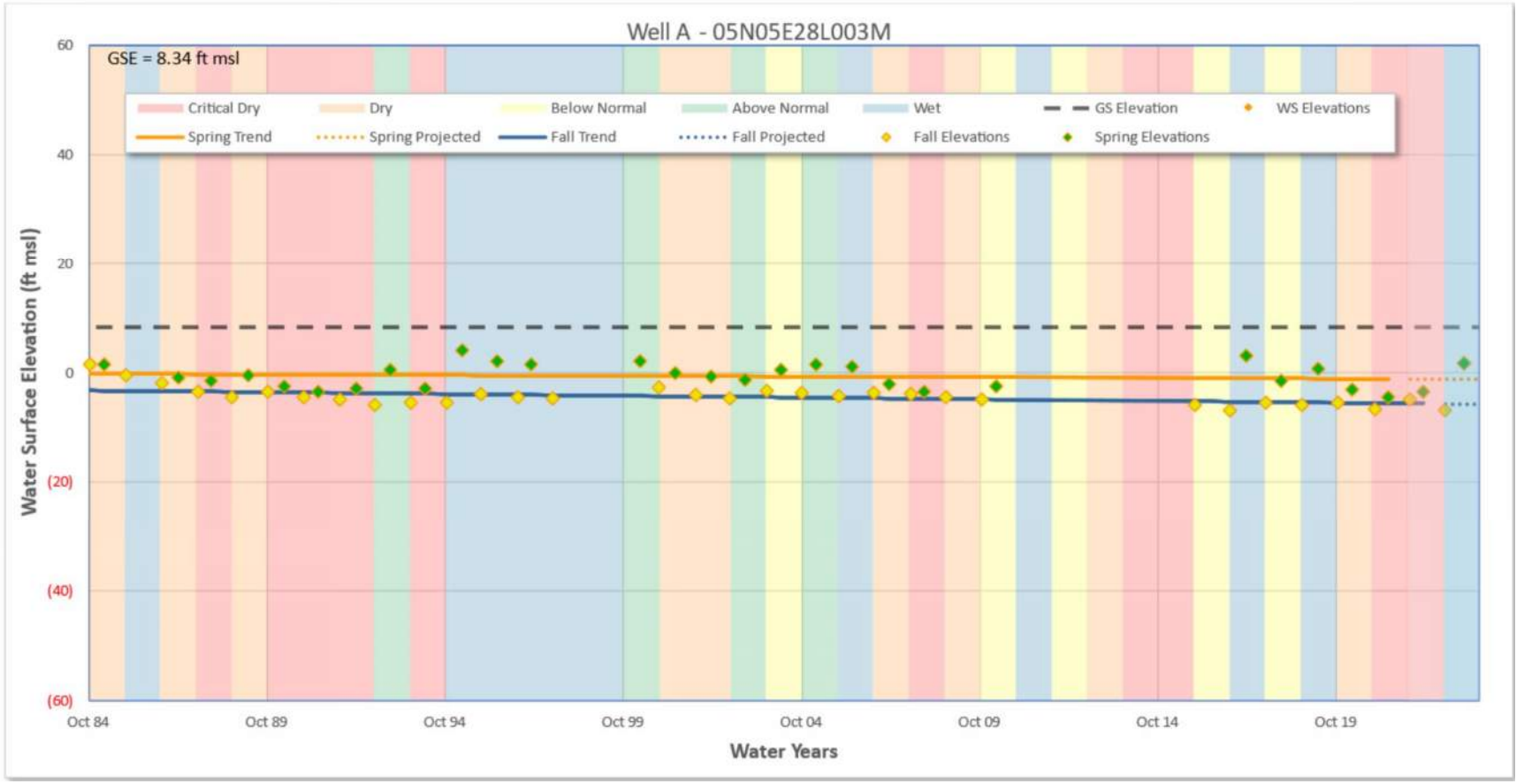


Figure 4-3 Hydrograph Well A - East of Thornton Rd & South of Benson Ferry Rd.

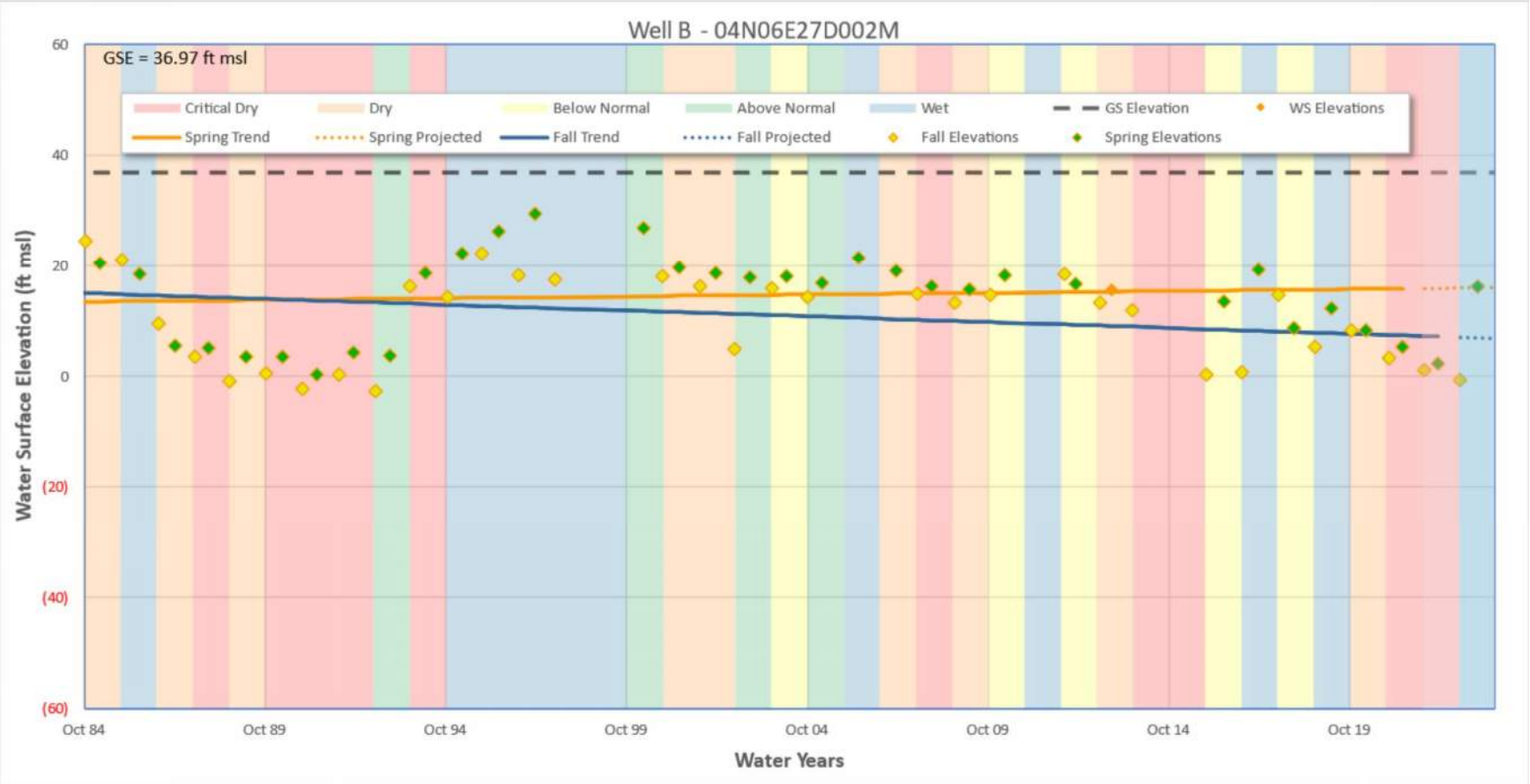


Figure 4-4 Hydrograph Well B - East of Lower Sac Rd. & South of Acampo Rd.

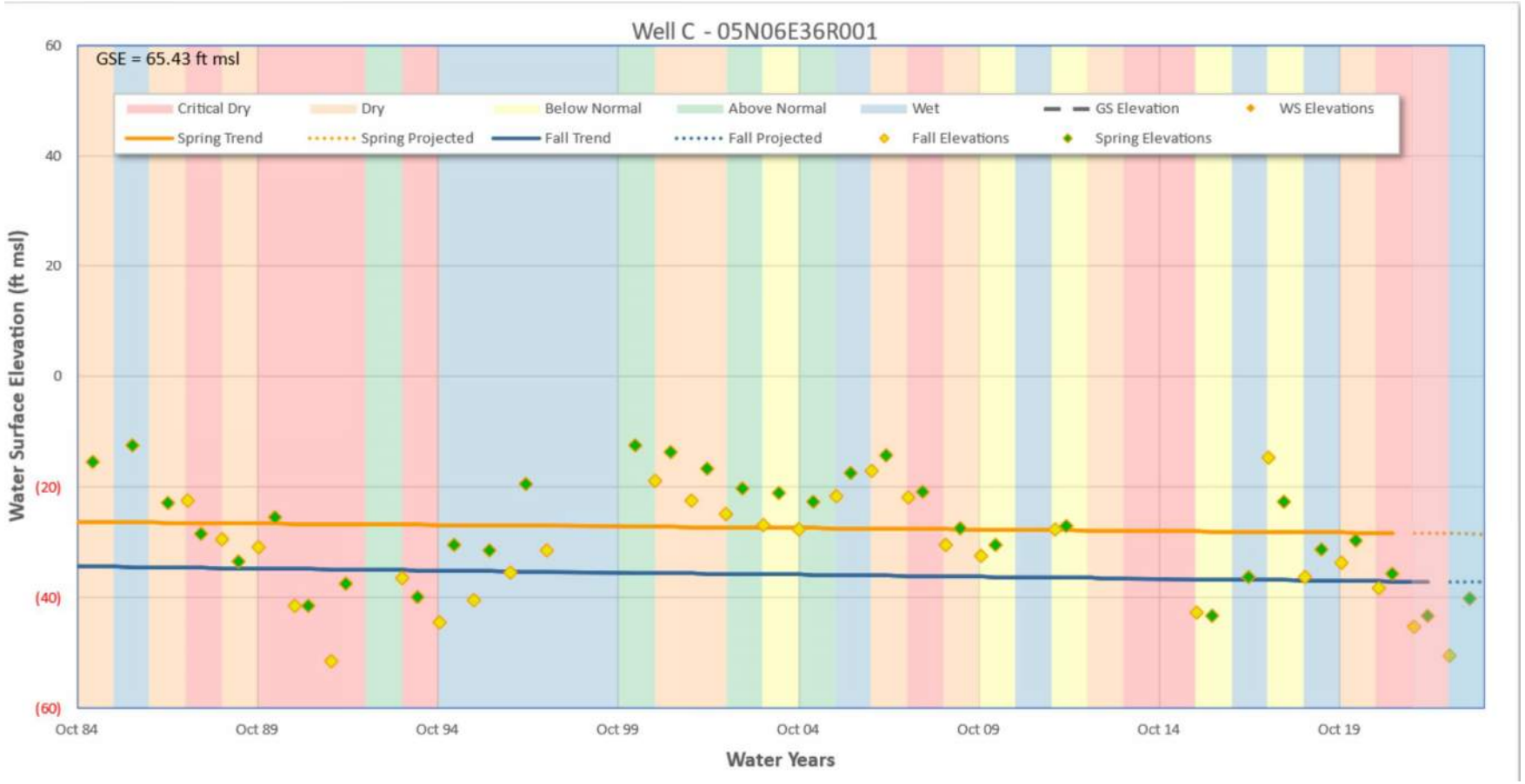


Figure 4-5 Hydrograph Well C - North of Liberty Rd. & West of North Cherokee Ln.

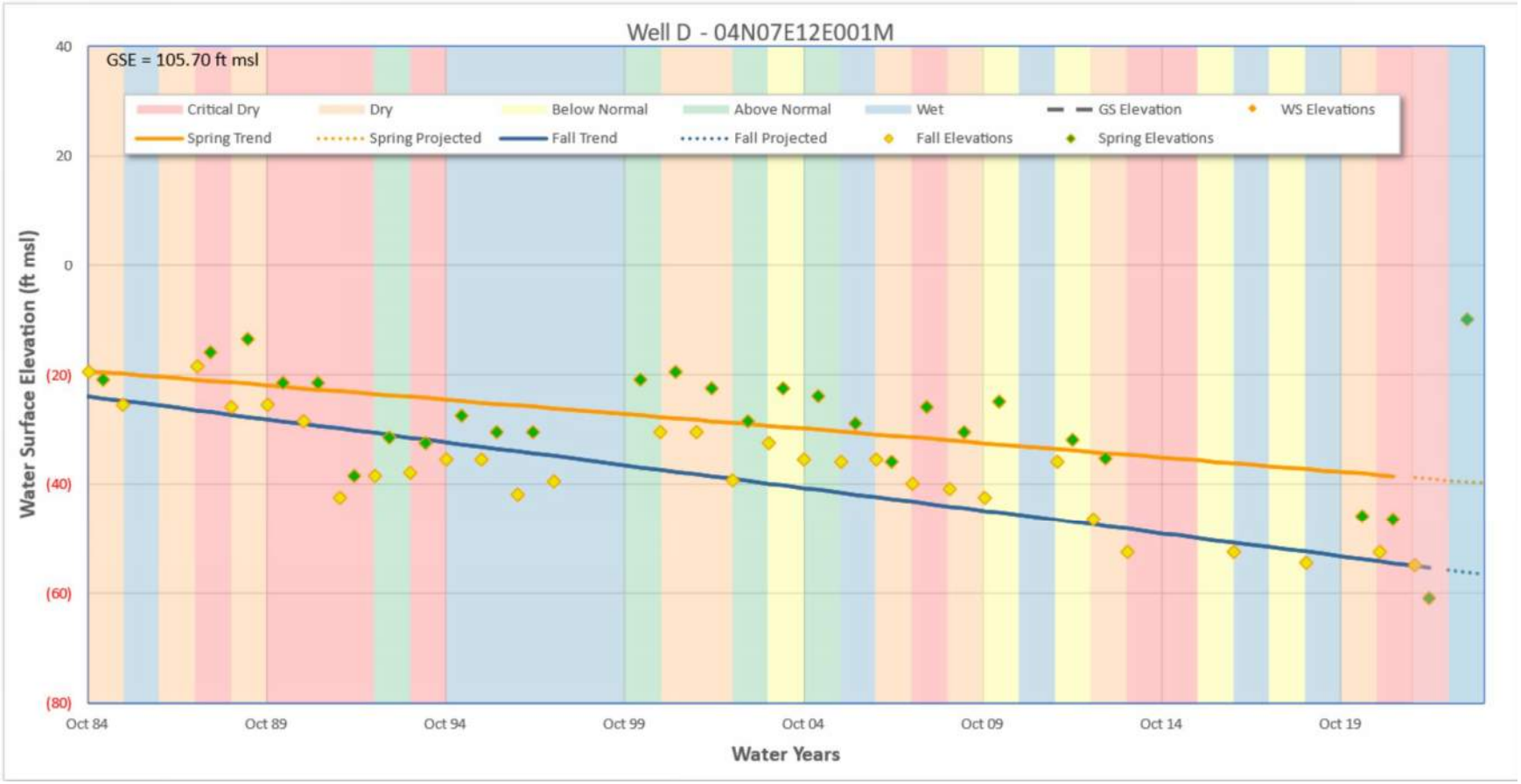


Figure 4-6 Hydrograph Well D - West of Elliotto Rd. & North of Jahant Rd.

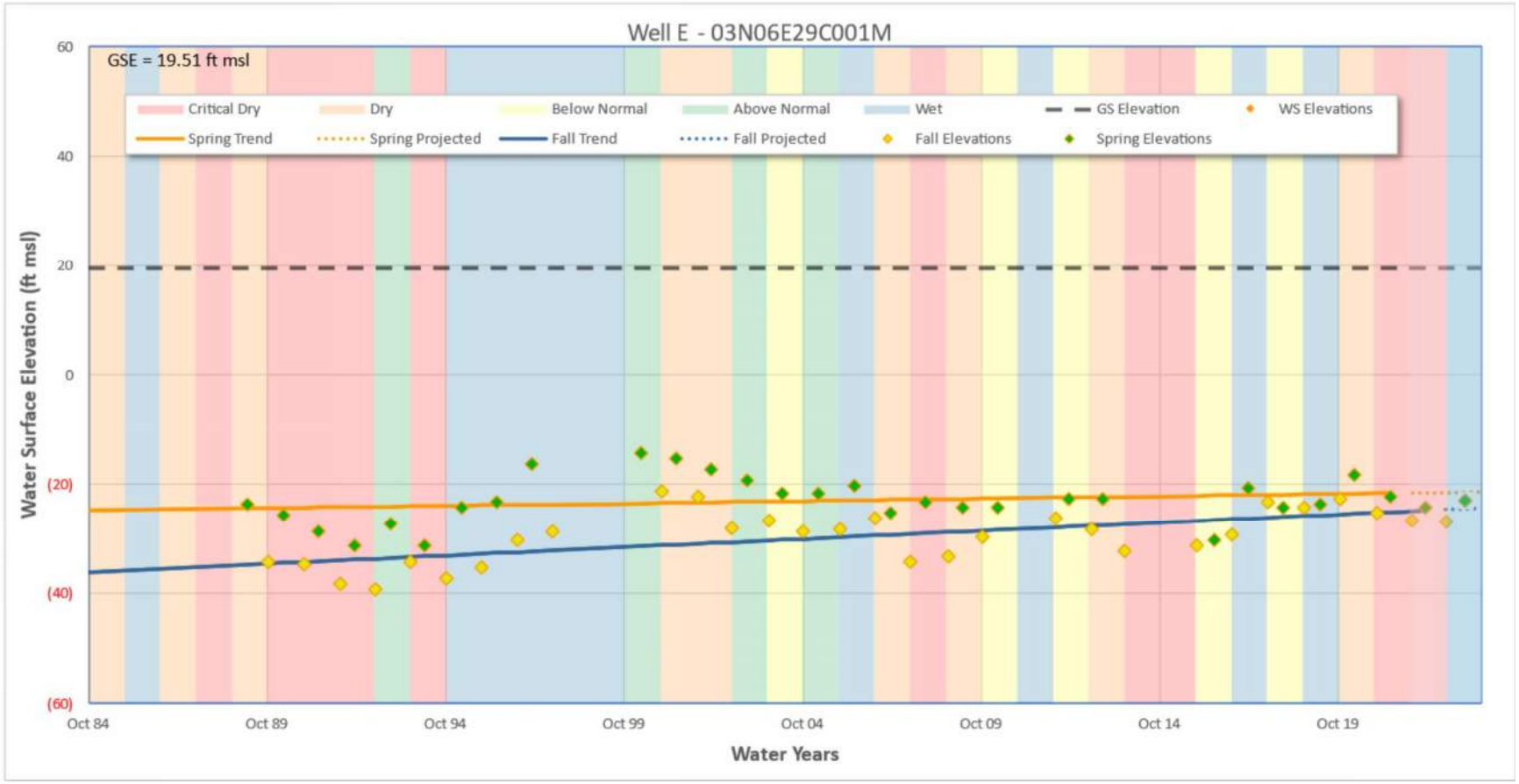


Figure 4-7 Hydrograph Well E - East of Davis R. & South of Armstrong Rd.

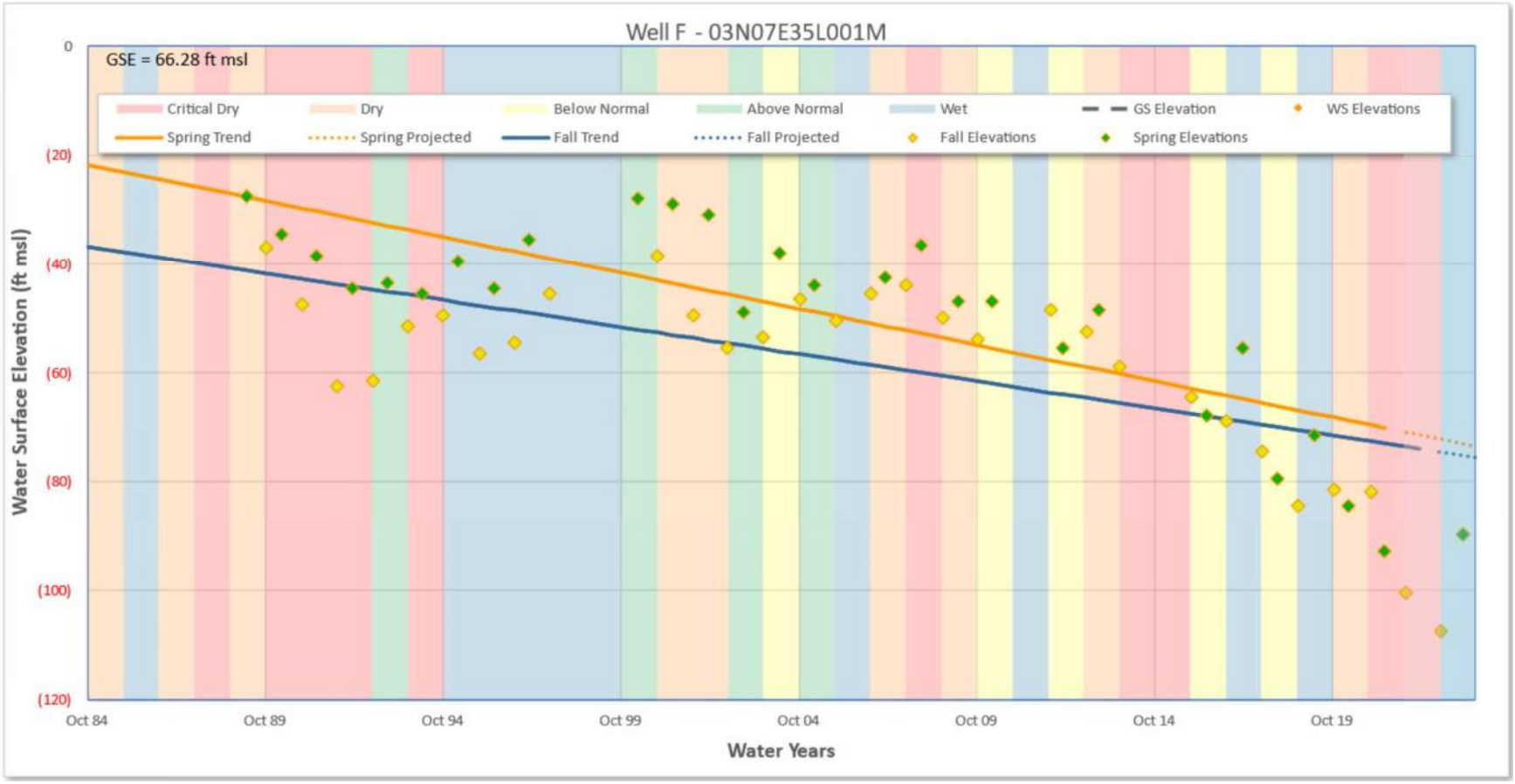


Figure 4-8 Hydrograph Well F - West of Route 88 & North of Eight Mile Rd.

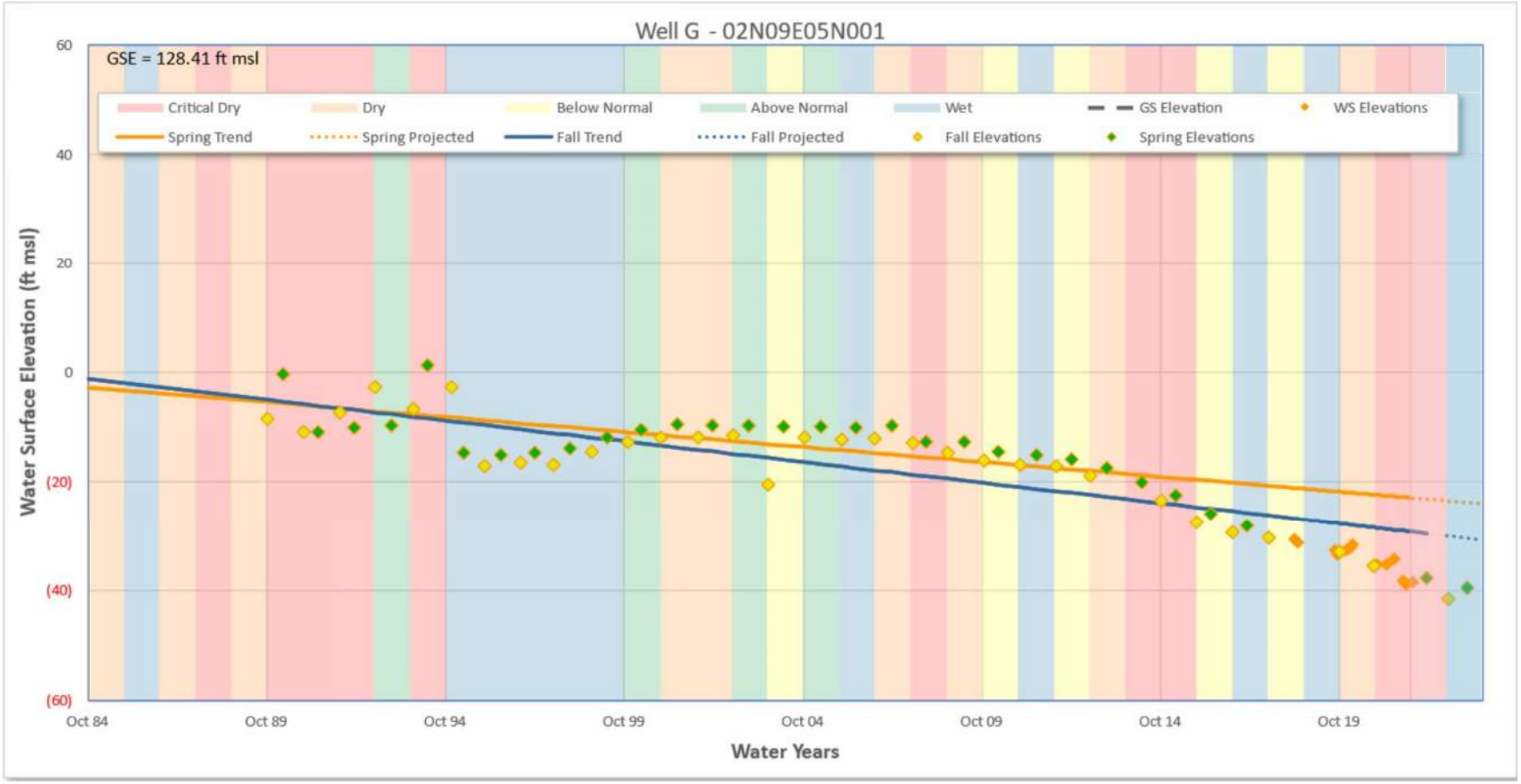


Figure 4-9 Hydrograph Well G - West of Route 26 & South of Shelton Rd.

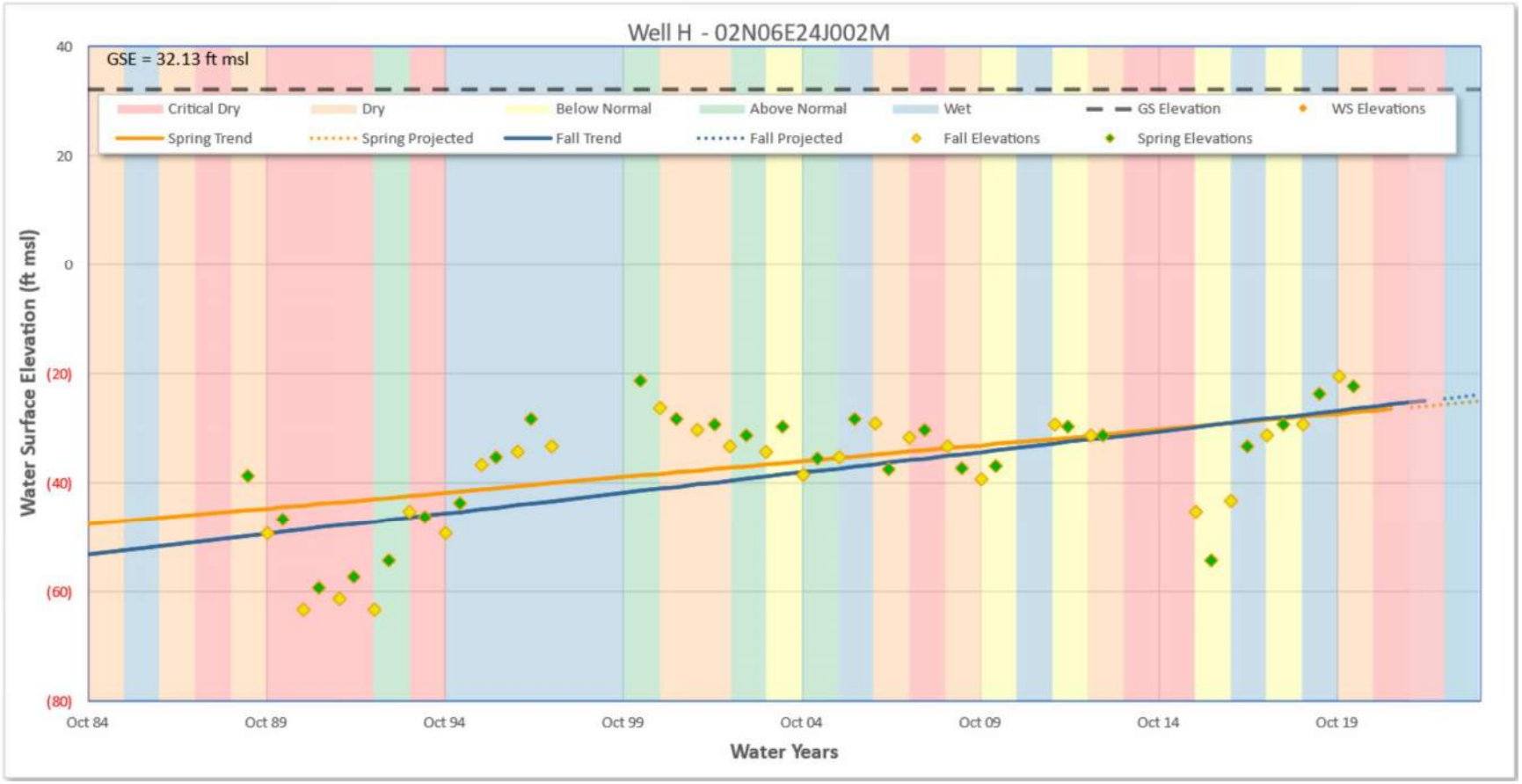


Figure 4-10 Hydrograph Well H - East of Ijams Rd. & North of McAllen Rd.

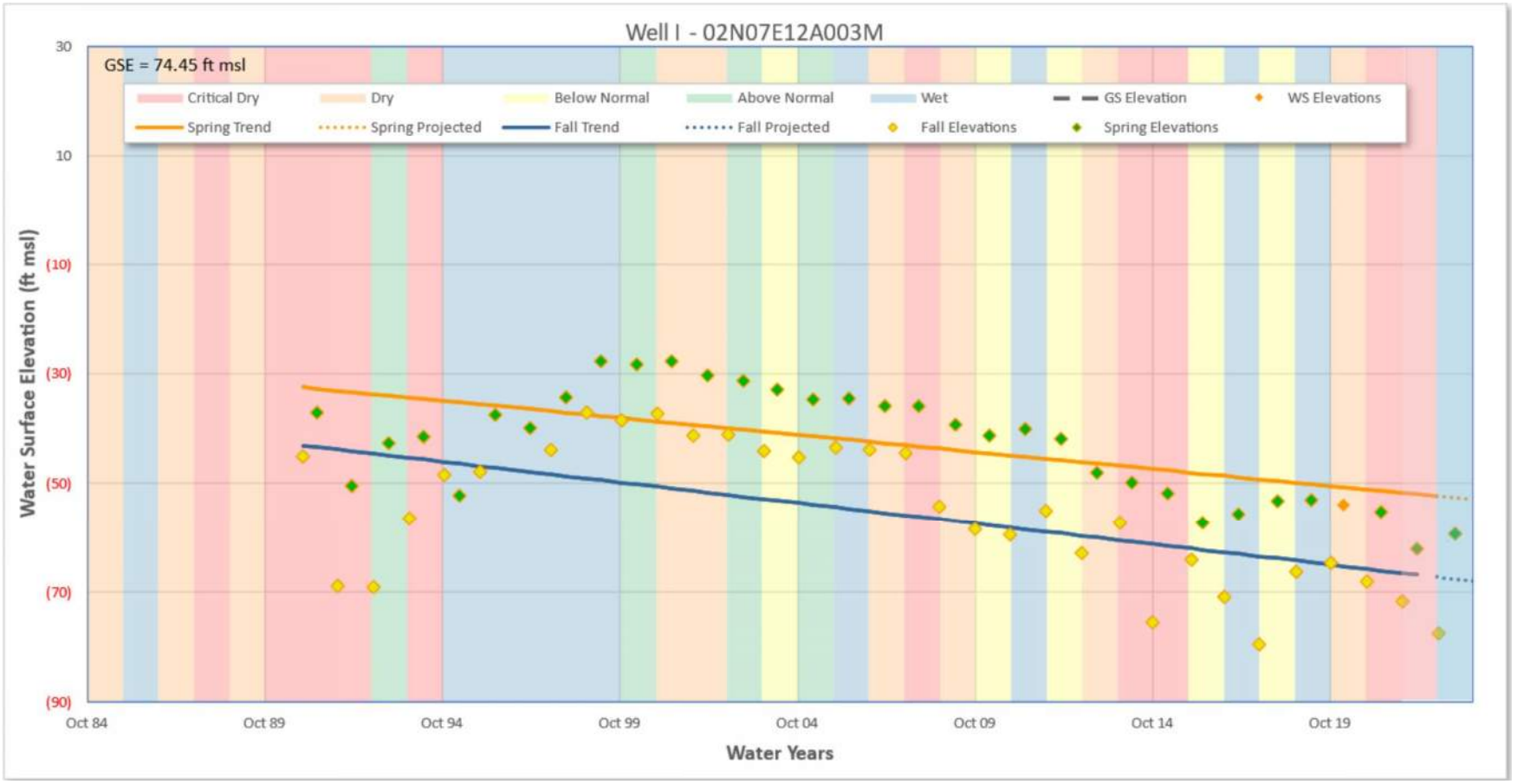


Figure 4-11 Hydrograph Well I - West of Gogna Rd. & North of Route 26

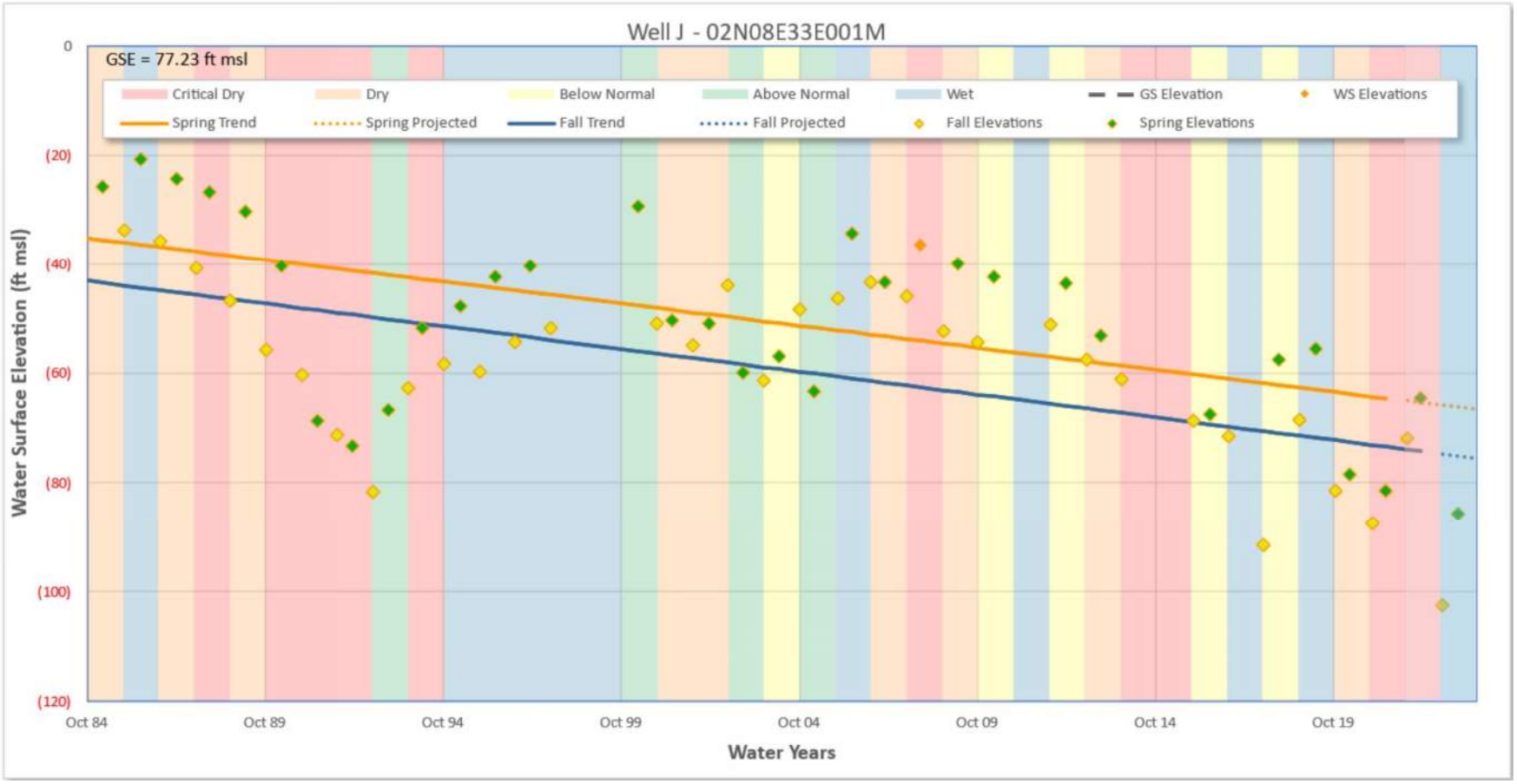


Figure 4-12 Hydrograph Well J - East of Duncan Rd. & South of Milton Rd.

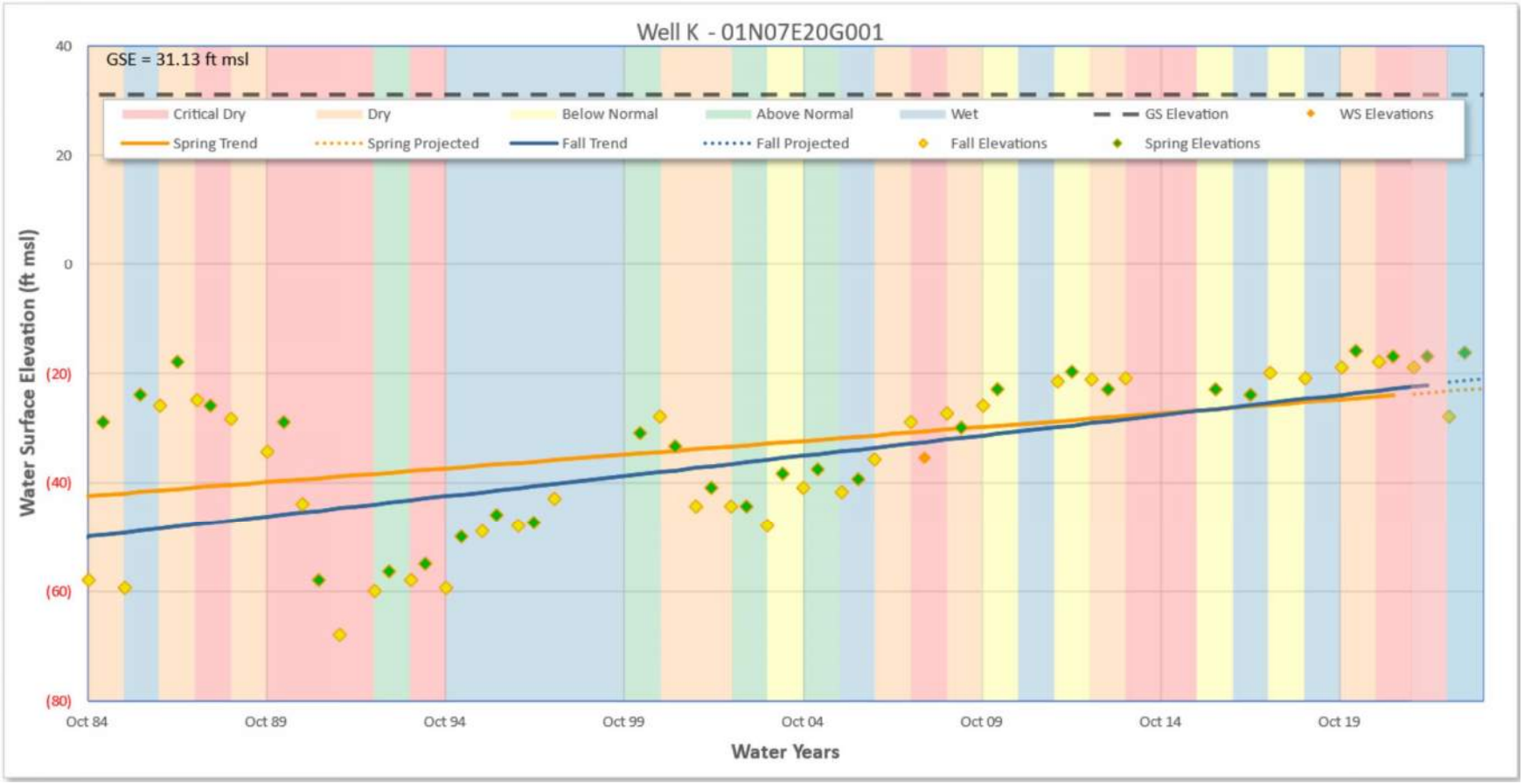


Figure 4-13 Hydrograph Well K - East of Ash Rd. & North of Carpenter Rd.

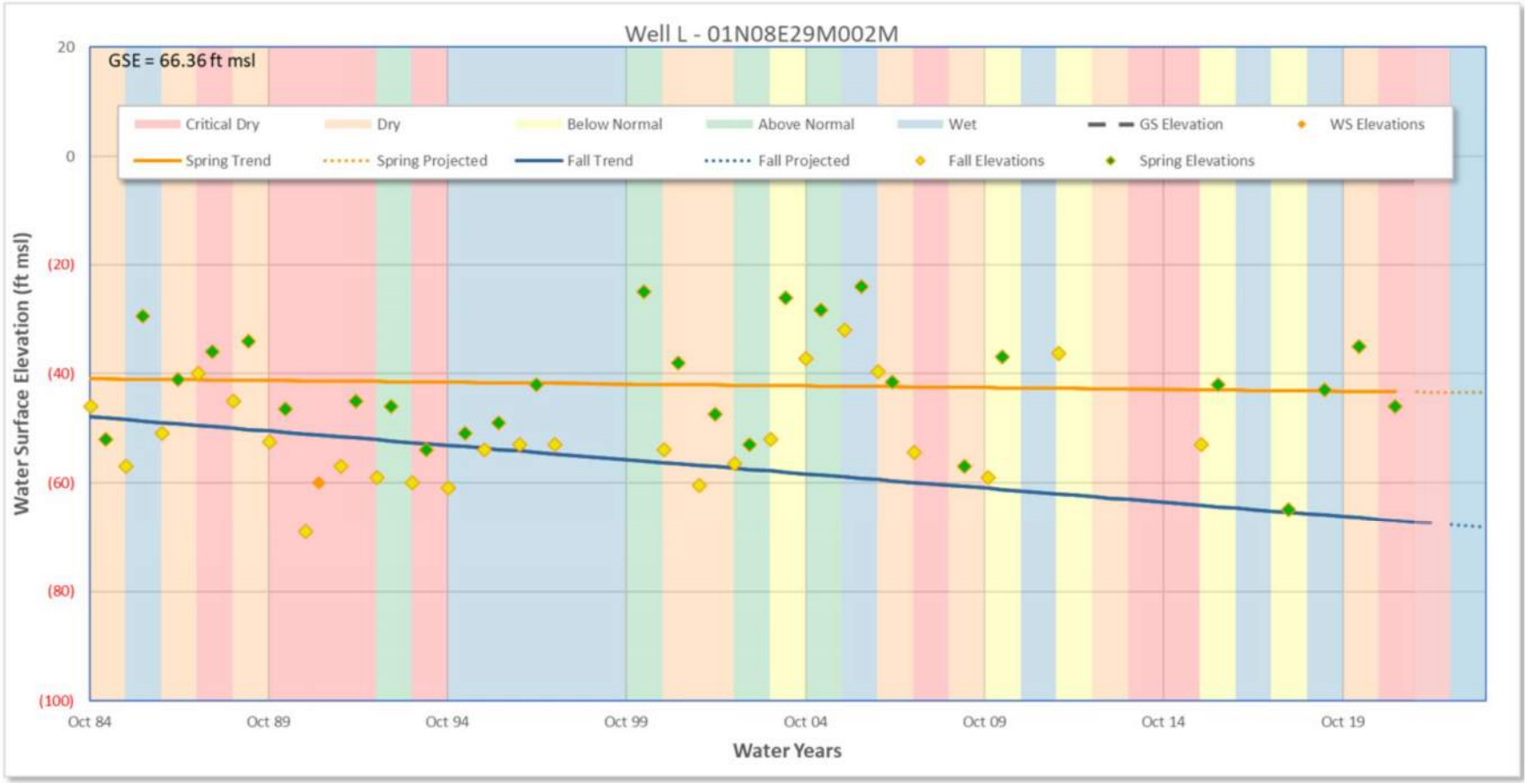


Figure 4-14 Hydrograph Well L - West of Jack Tone Rd. & North of Mariposa Rd.

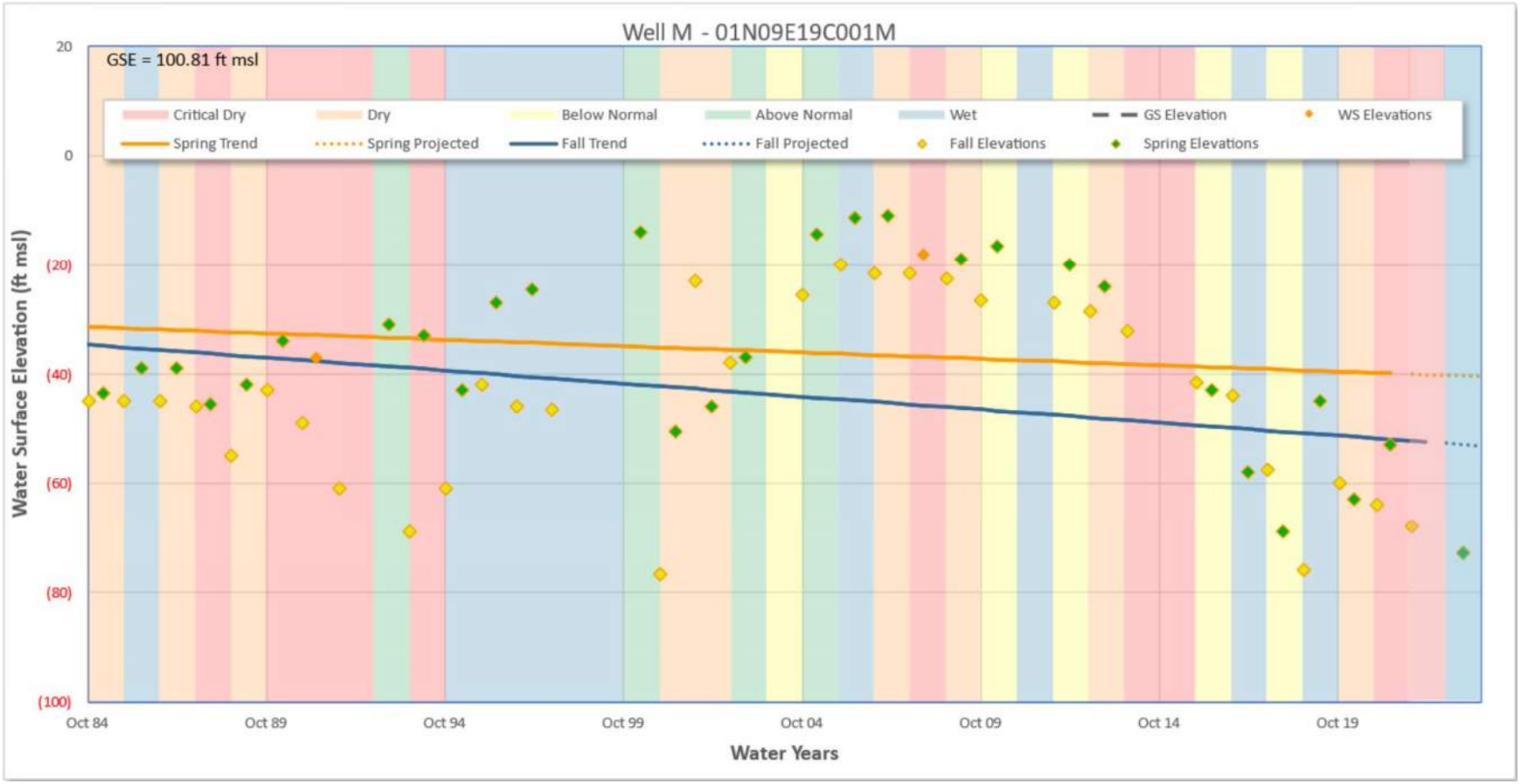


Figure 4-15 Hydrograph Well M - West of Hewitt Rd. & South of Hwy. 4

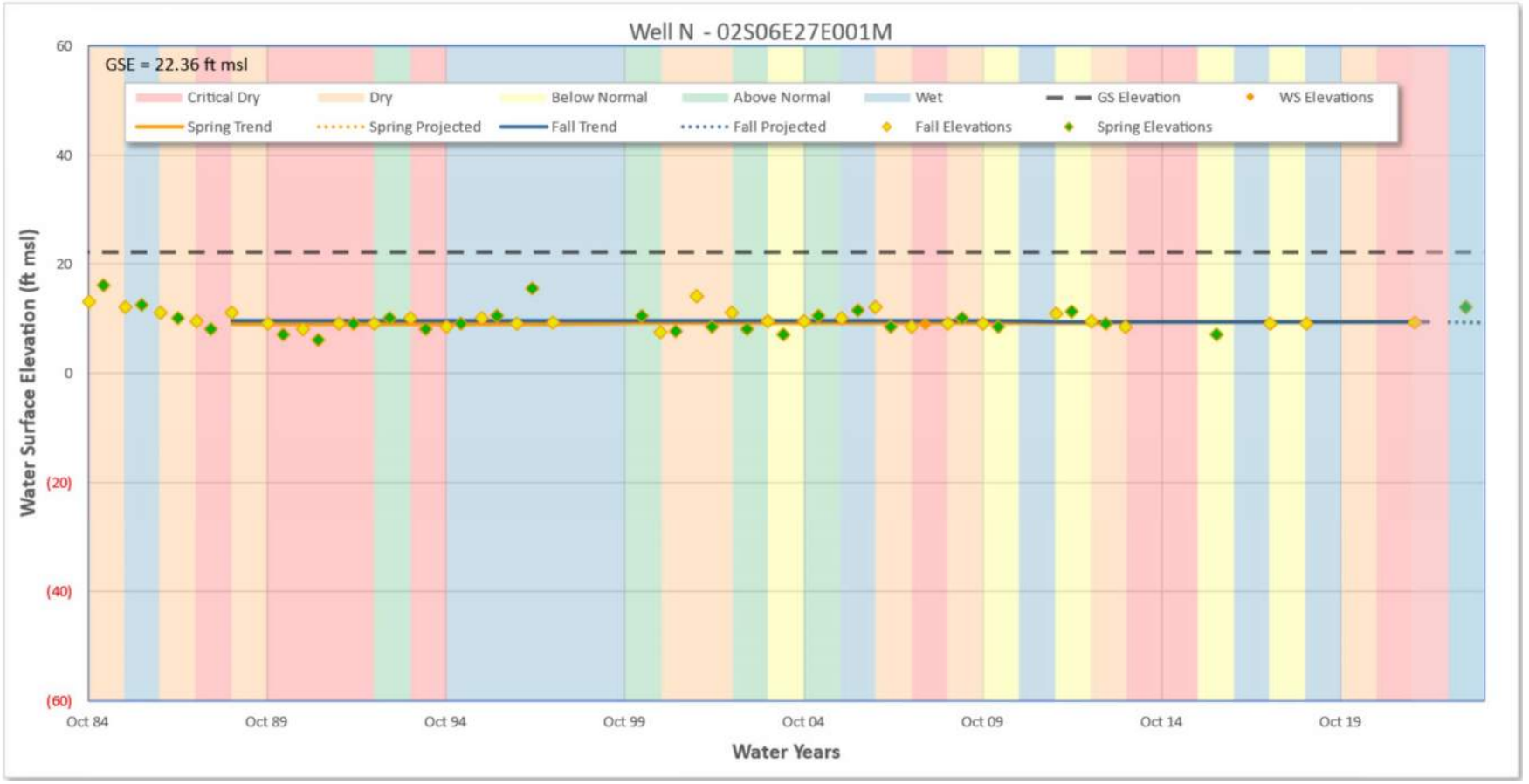


Figure 4-16 Hydrograph Well N - West of Wright Rd. & North of Kasson Rd.

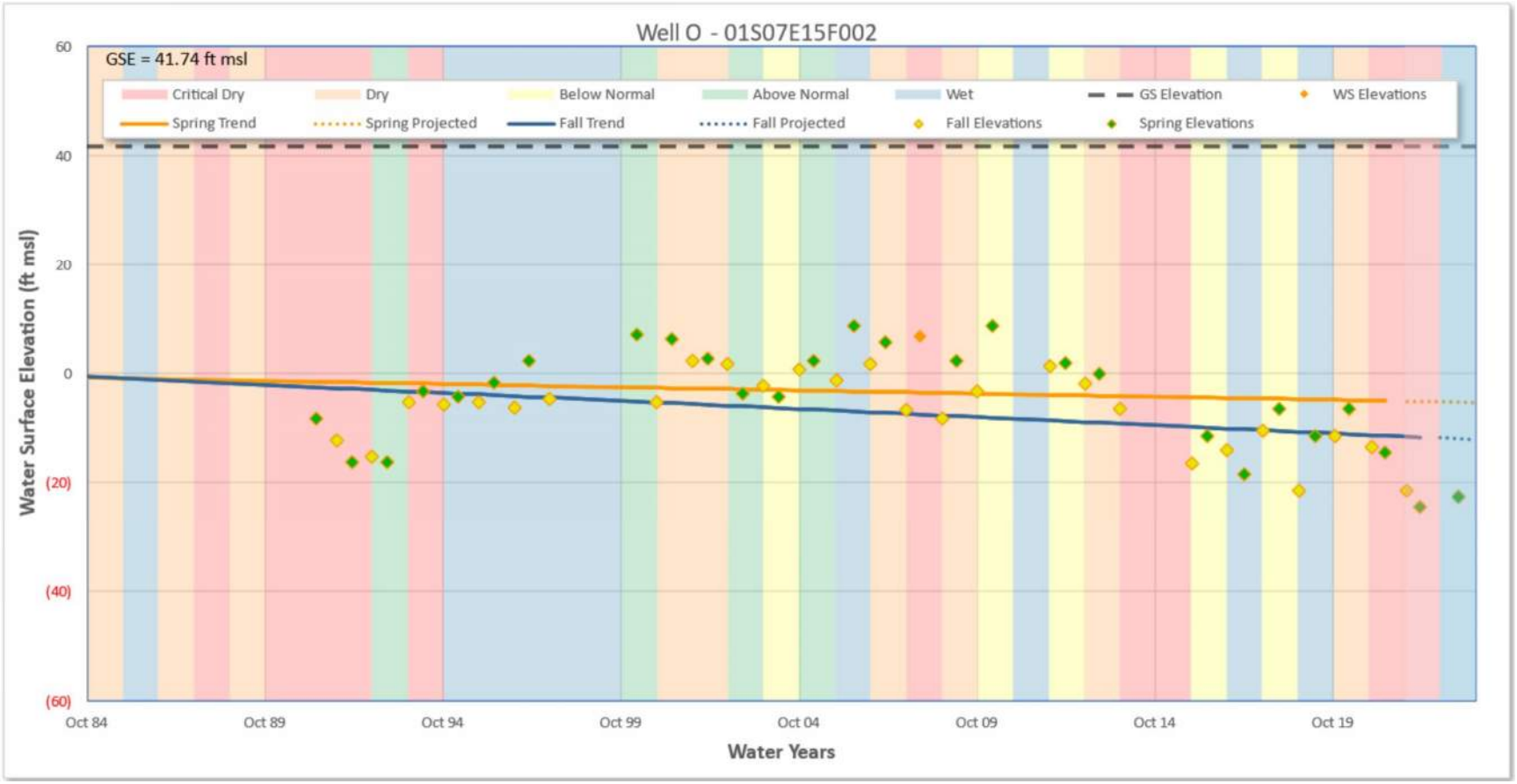


Figure 4-17 Hydrograph Well O – West of Austin Rd. & North of French Camp Rd.

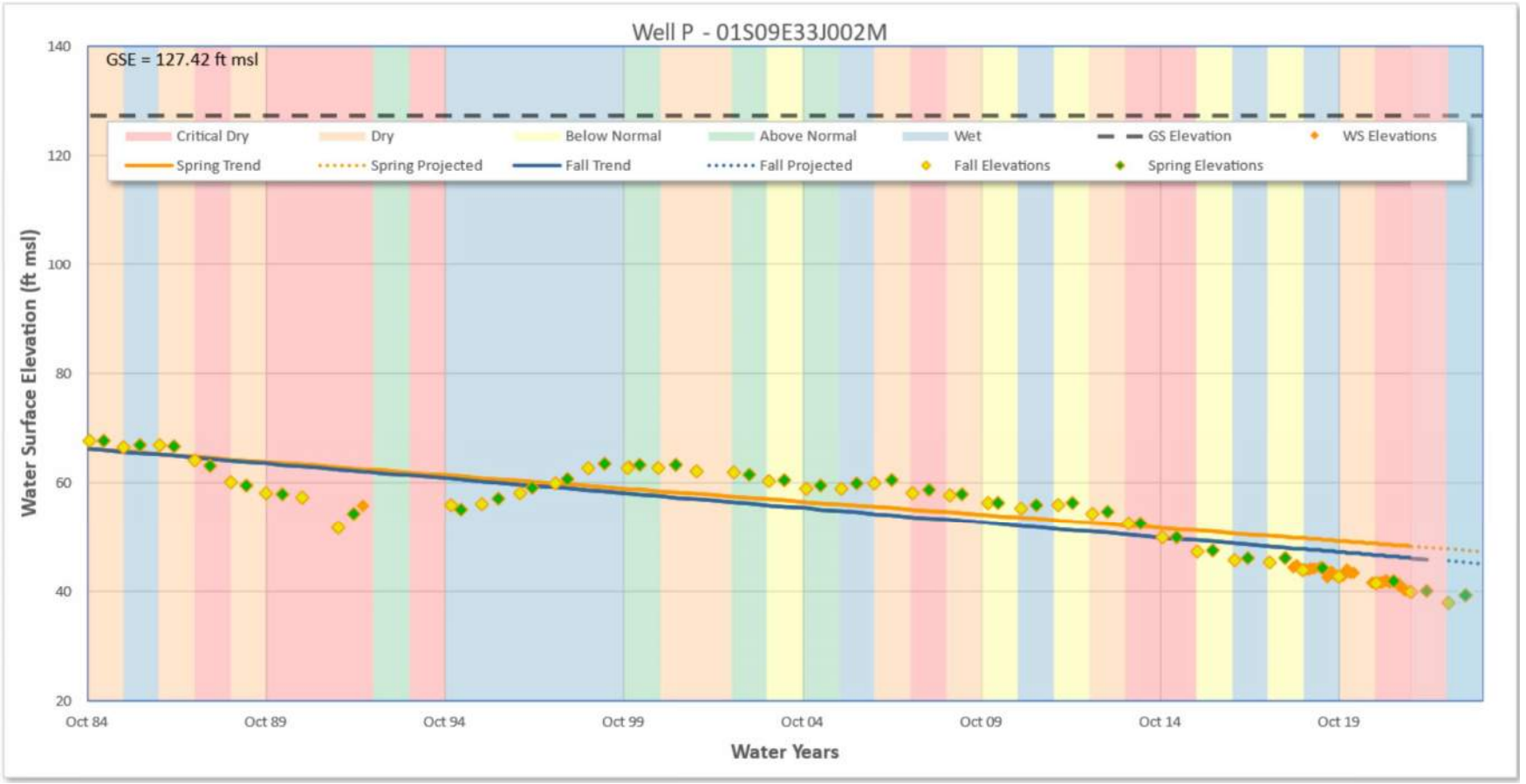


Figure 4-18 Hydrograph Well P - West of Campbell Ave. & North of Hwy 120.

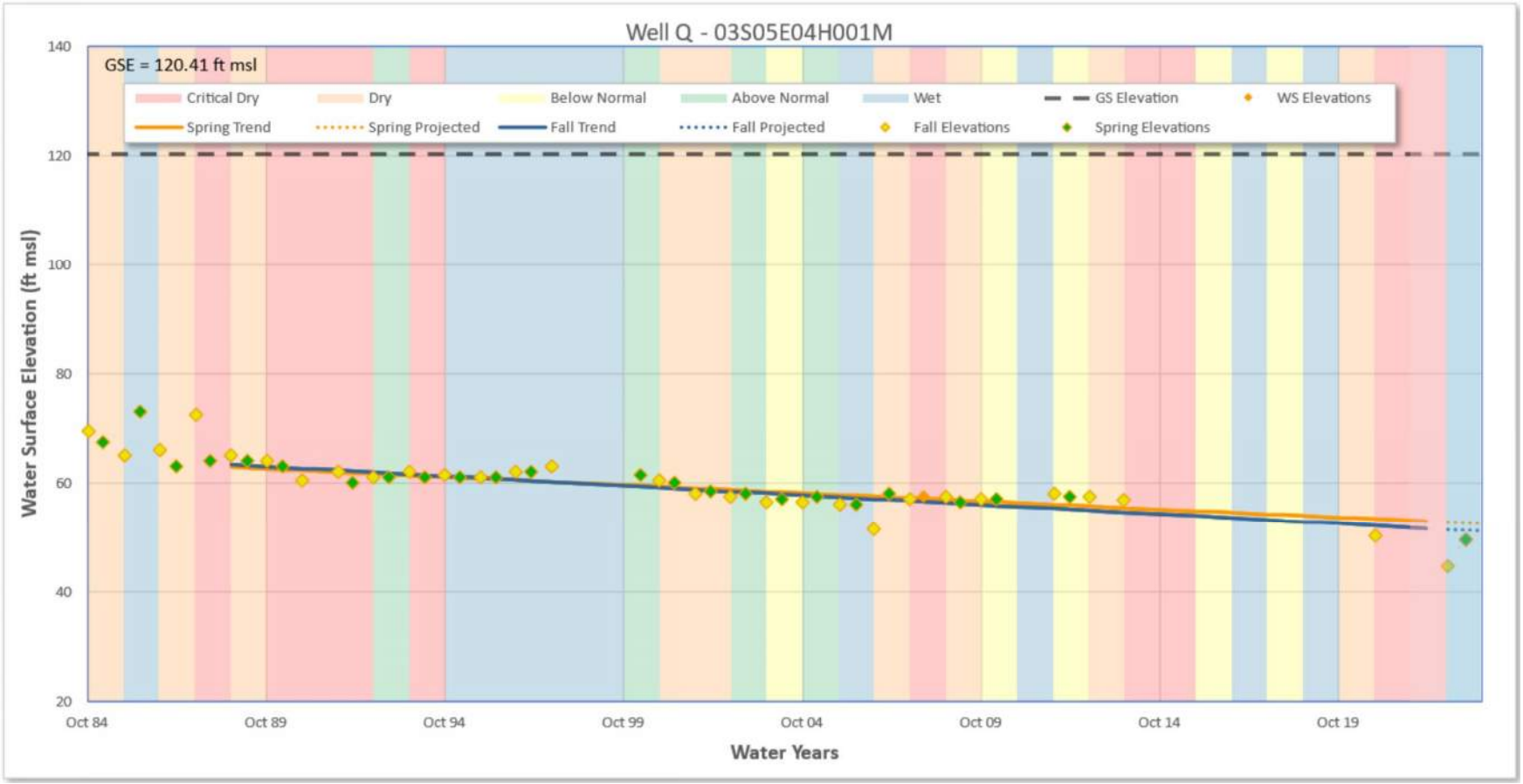


Figure 4-19 Hydrograph Well Q - East of McArthur Rd. & North of Darlene Rd.

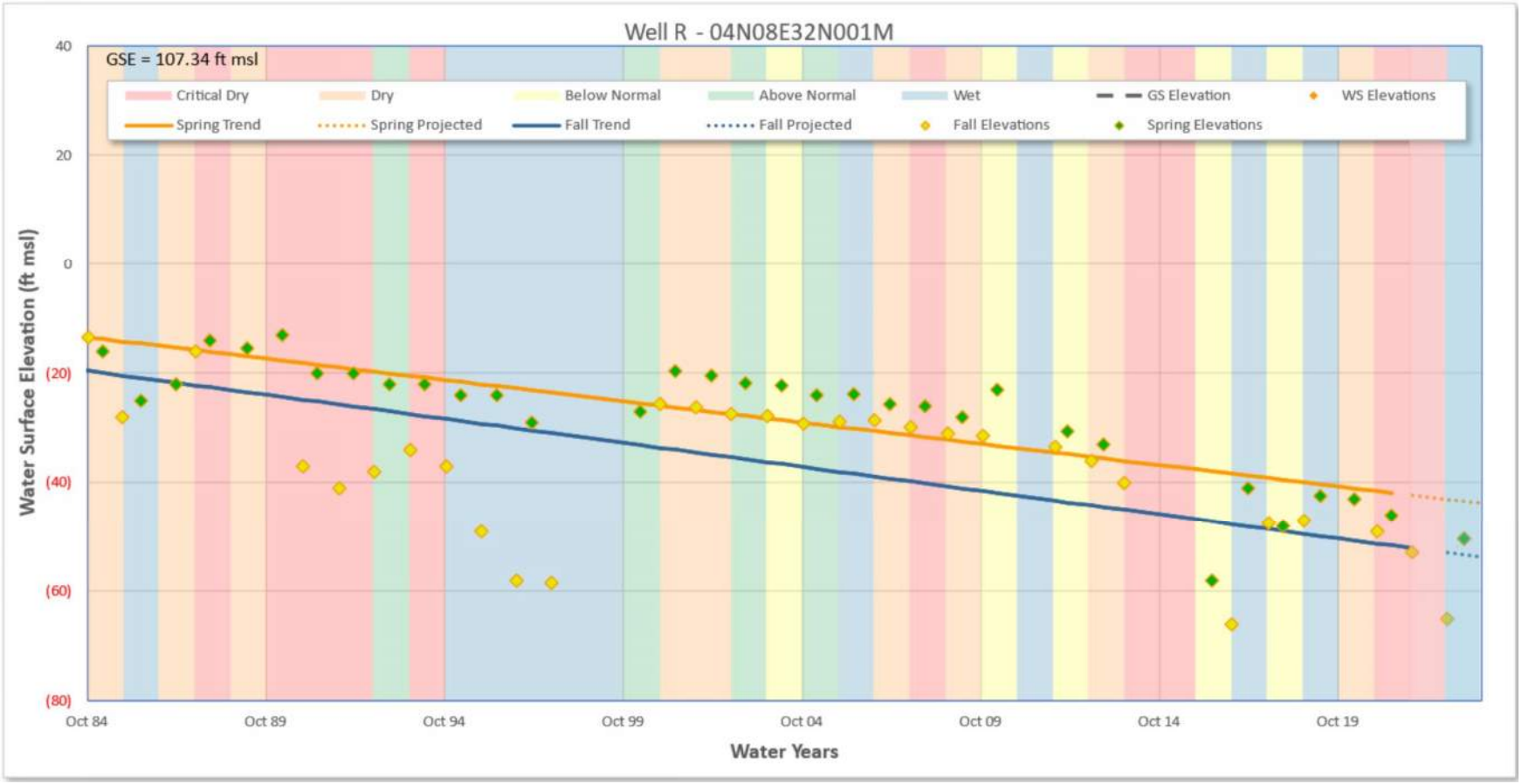


Figure 4-20 Hydrograph Well R - West of Tully Rd. & North of Brandt Rd.

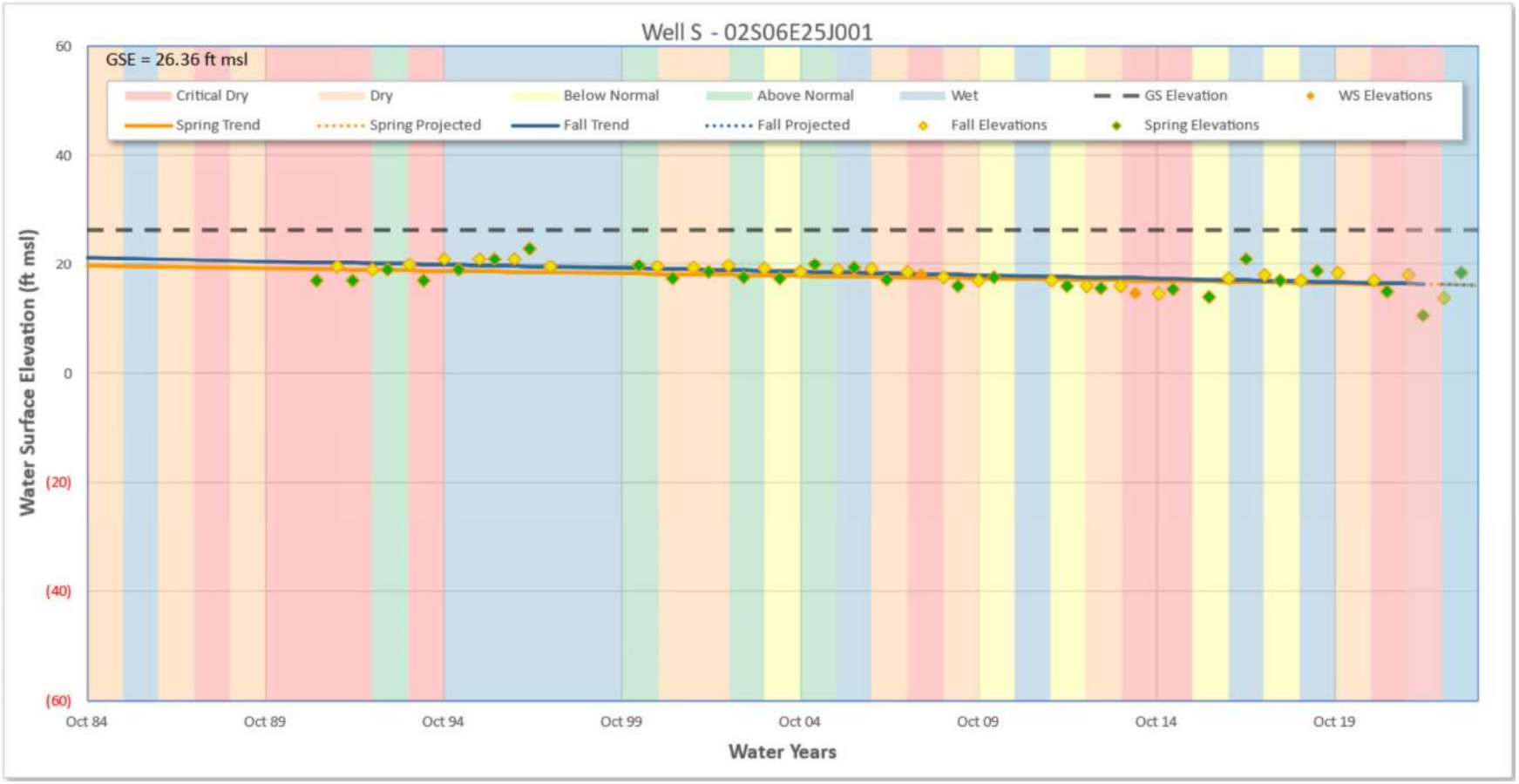


Figure 4-21 Hydrograph Well S - East of Hays Rd. & North of Mullin Rd.

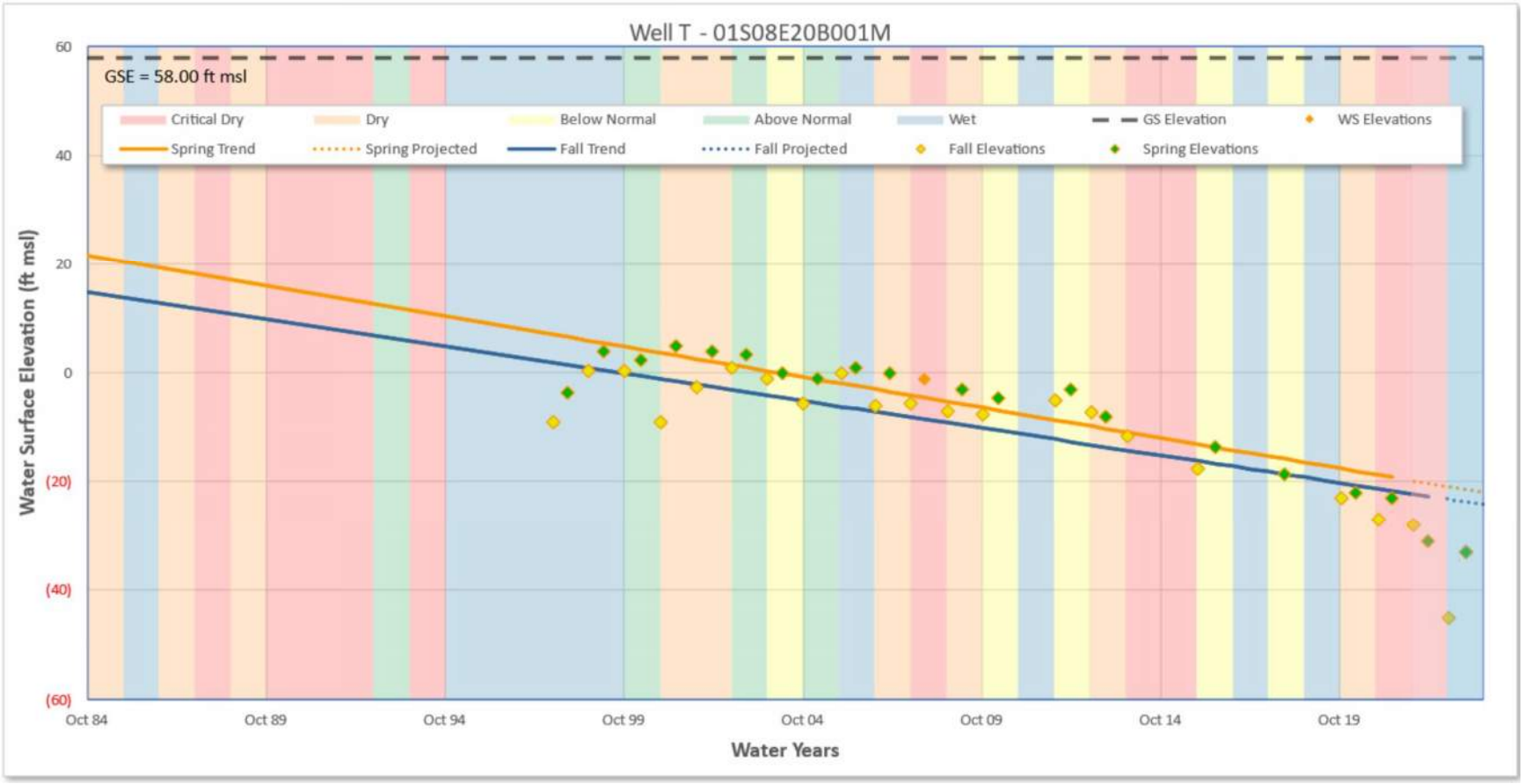


Figure 4-22 Hydrograph Well T - West of Murphy Rd. & South of Avena Rd.

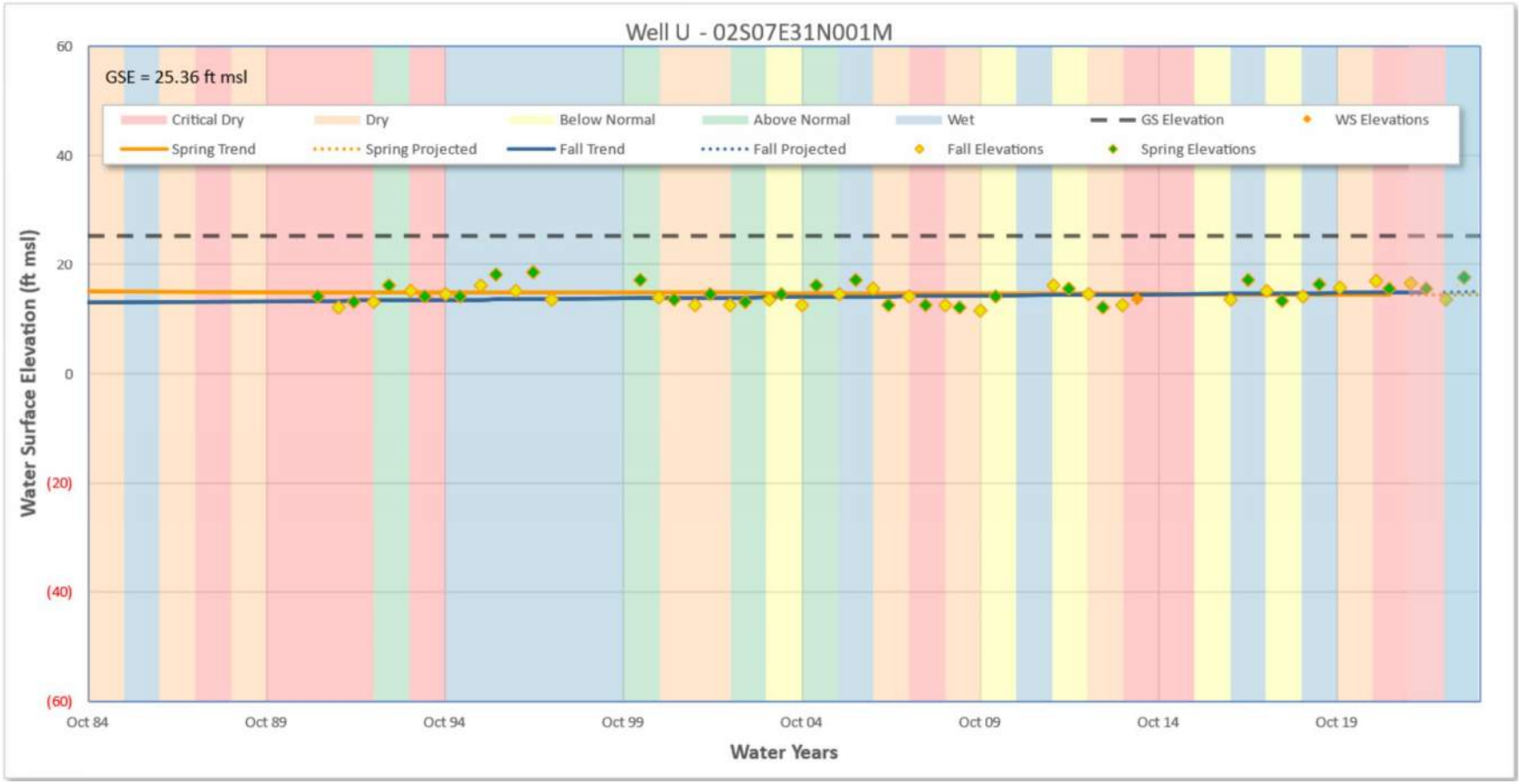


Figure 4-23 Hydrograph Well U - East of Airport Rd. & South of Perrin Rd.

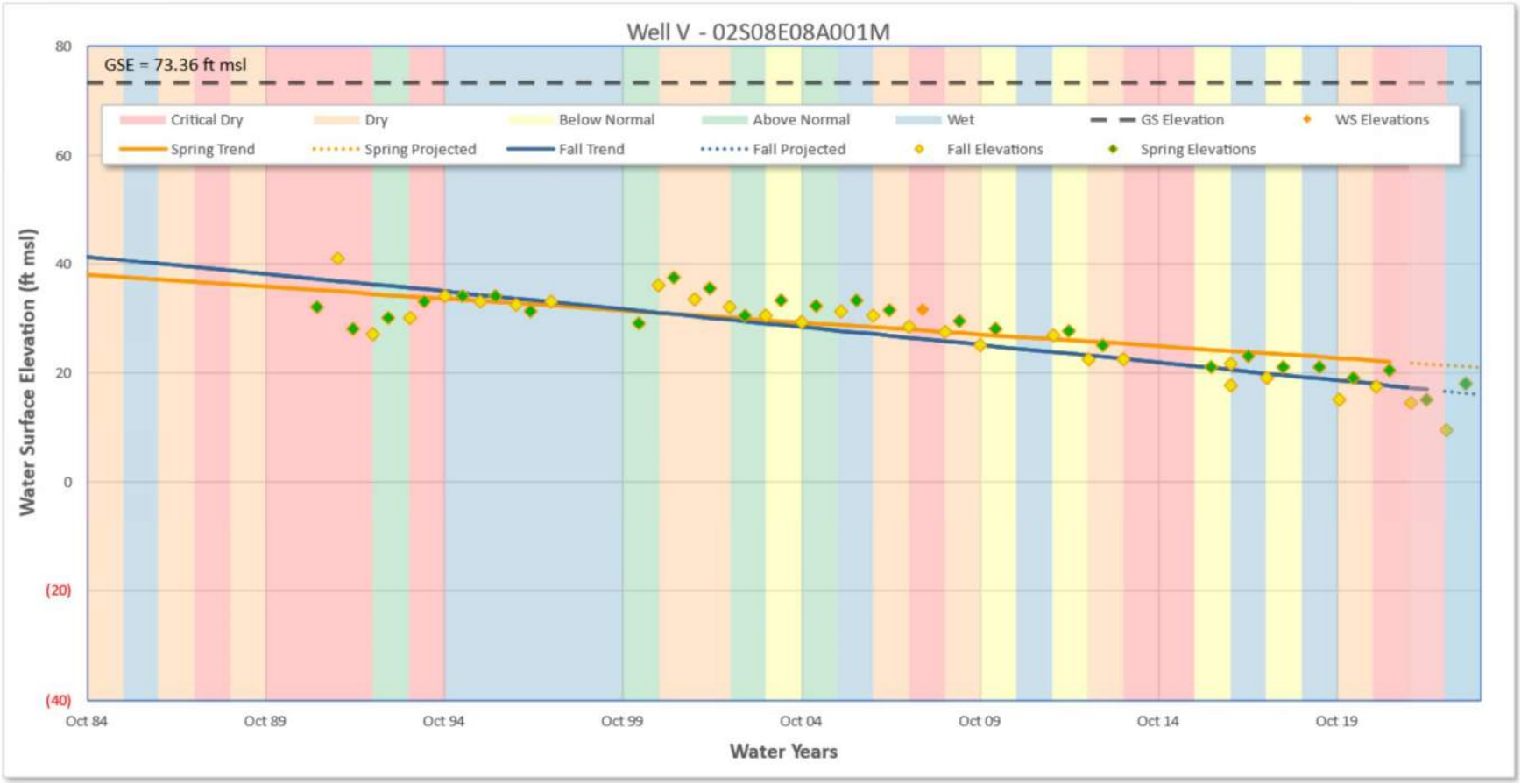


Figure 4-24 Hydrograph Well V - East of Murphy Rd. & South of Cedar Ln.

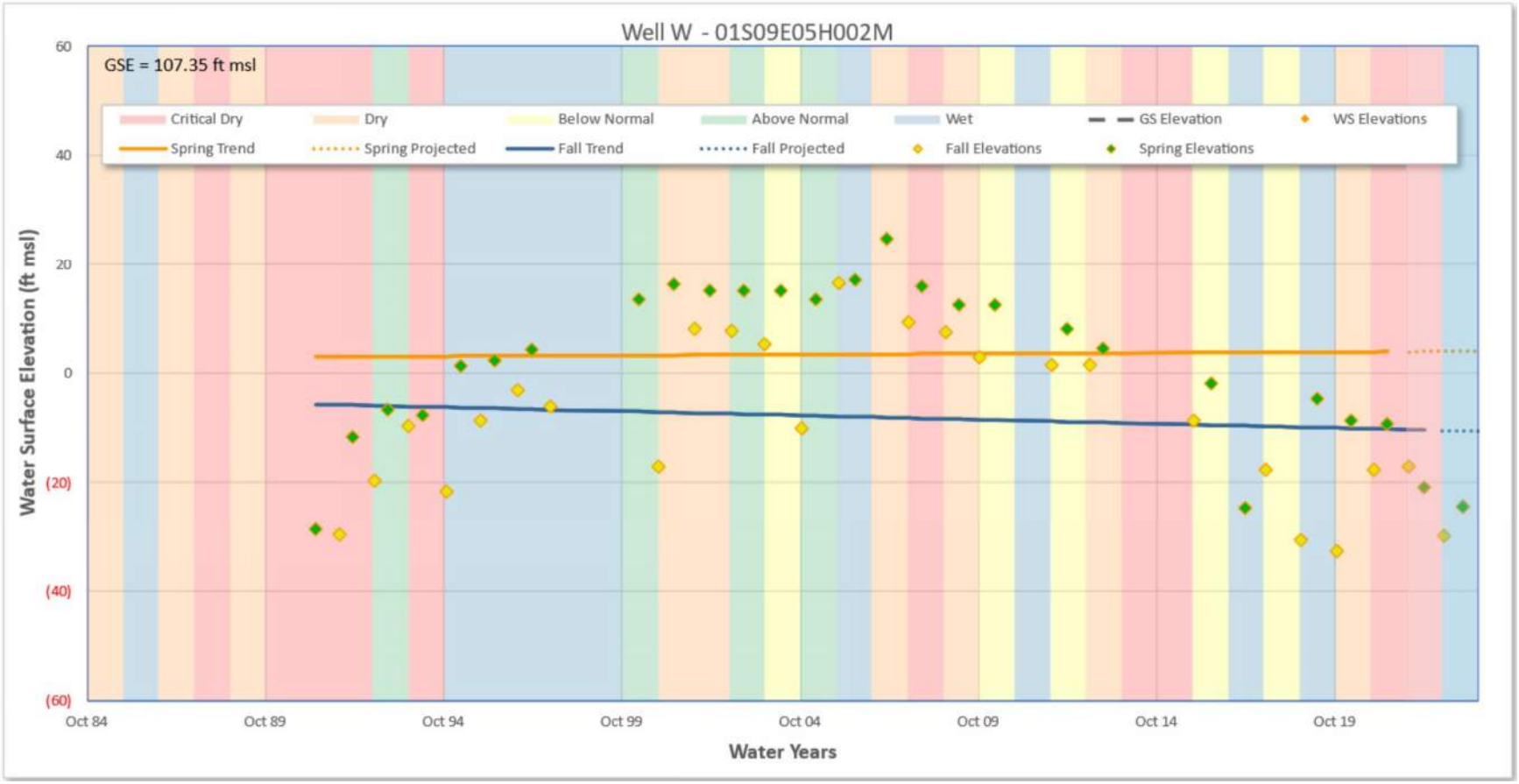


Figure 4-25 Hydrograph Well W - West of Henry Rd. & South of Sonora Rd.

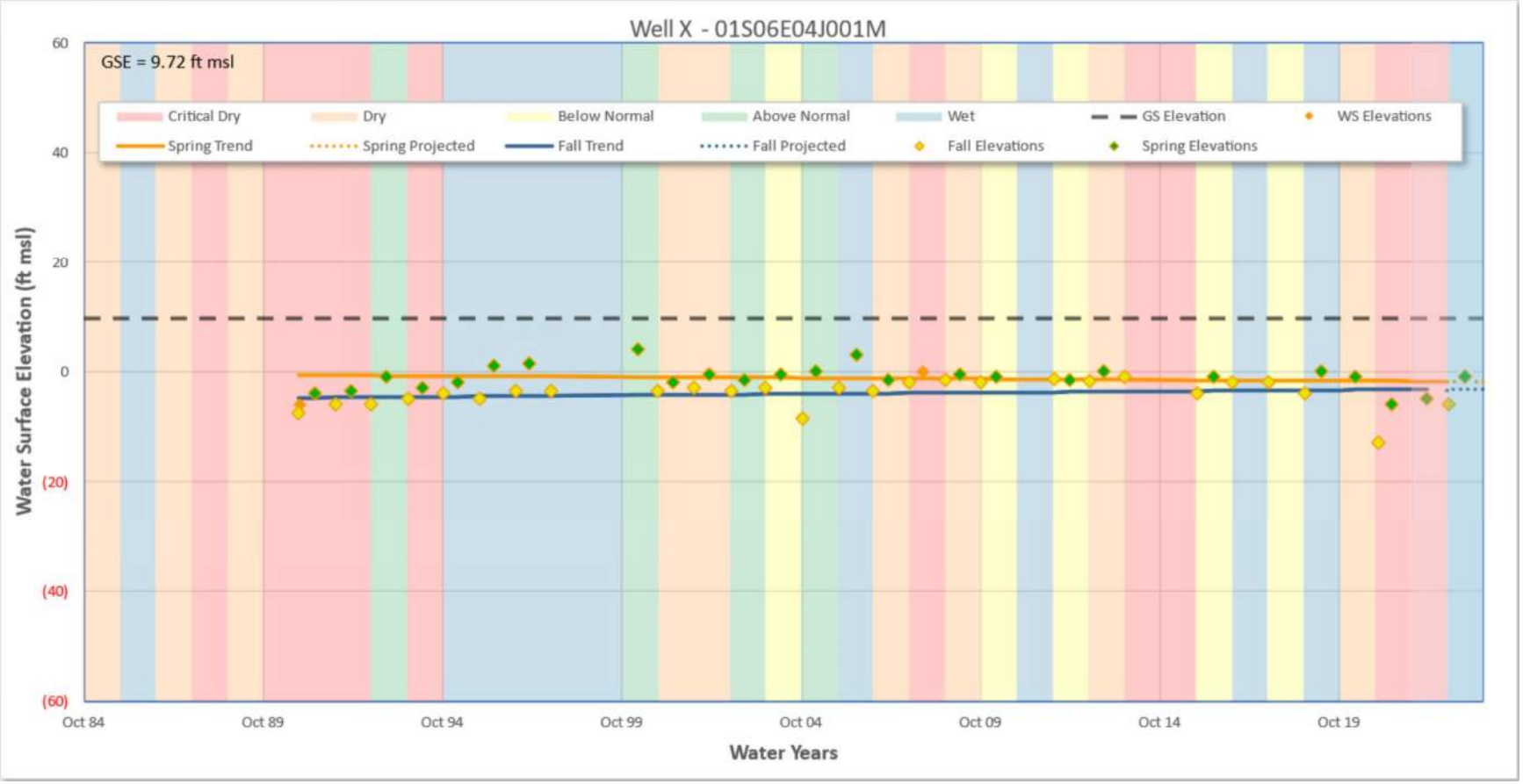


Figure 4-26 Hydrograph Well X - East of Wolfe Rd. & South of Howard Rd.

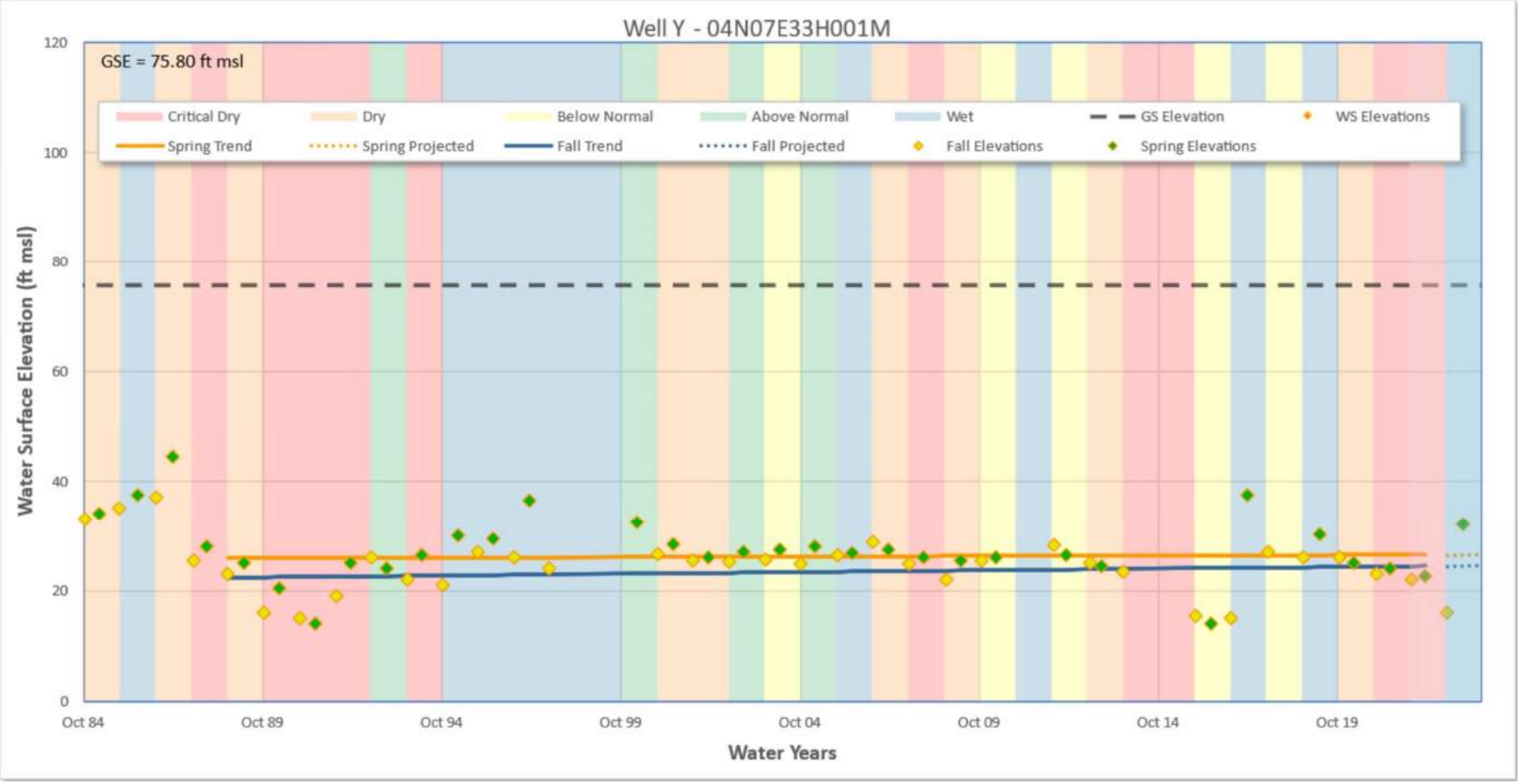


Figure 4-27 Hydrograph Well Y - East of Bruella Rd. & North of Schmiedt Rd.

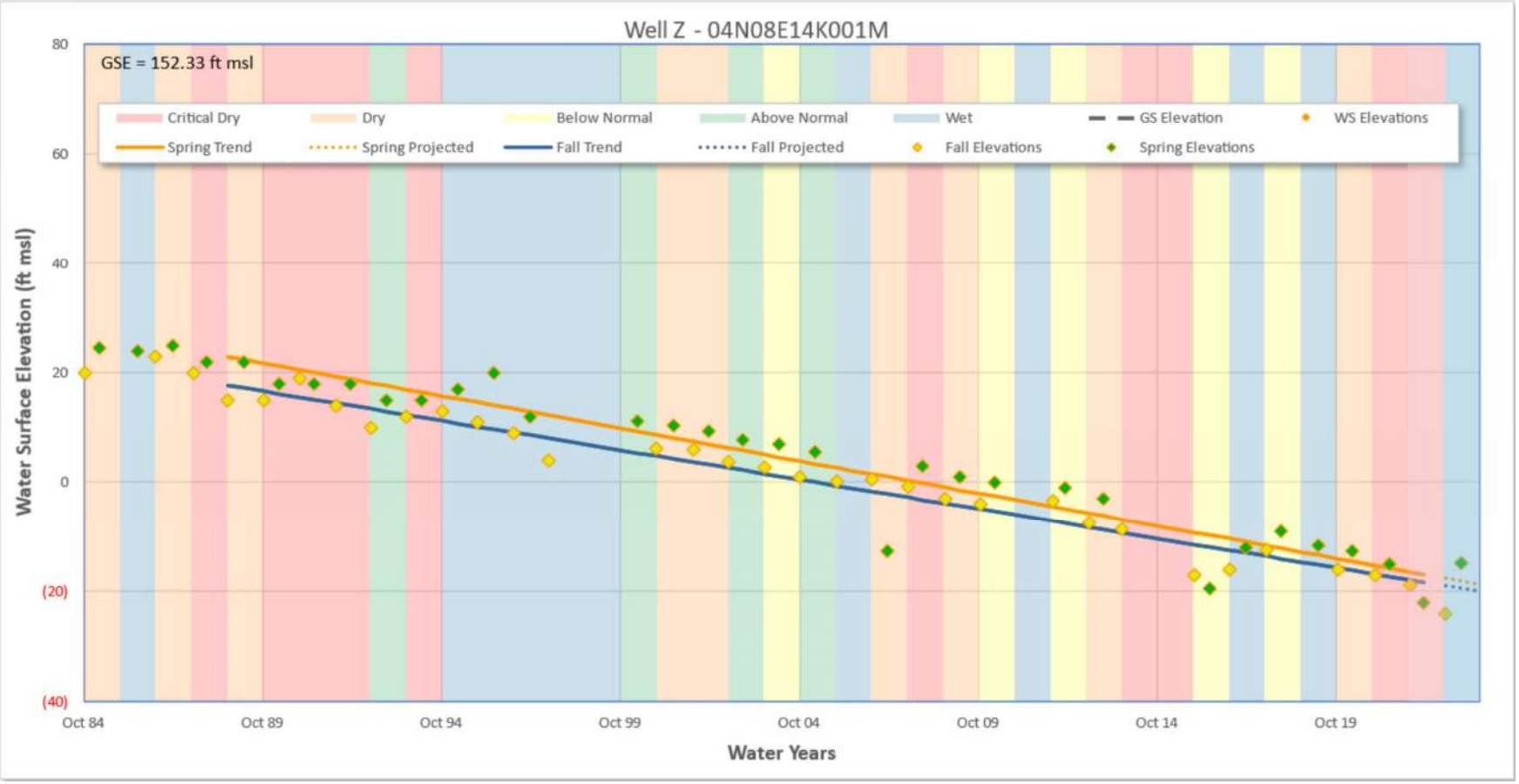


Figure 4-28 Hydrograph Well Z - East of Johnson Rd. & South of Route 1

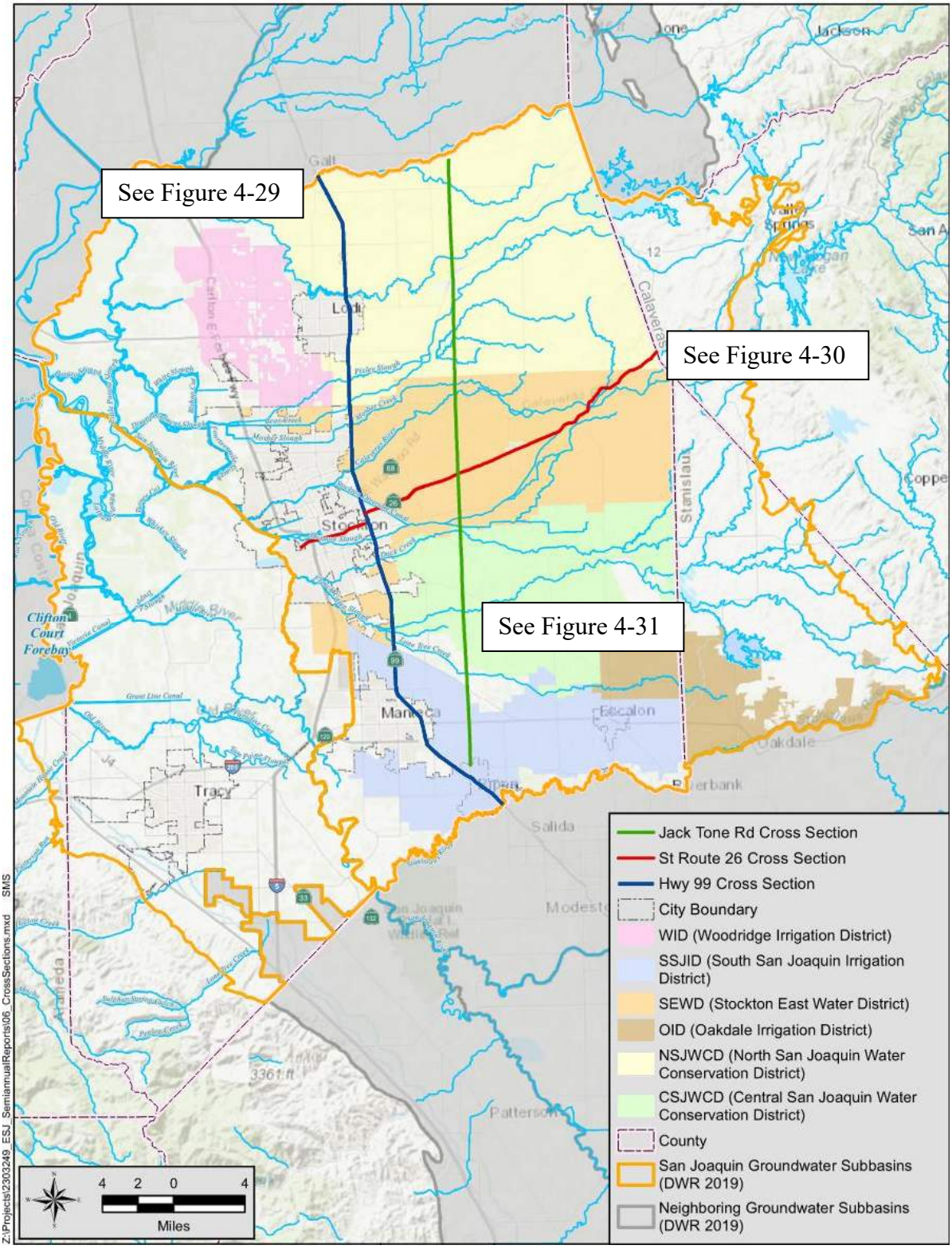


Figure 4-29 Groundwater Surface Cross Sections

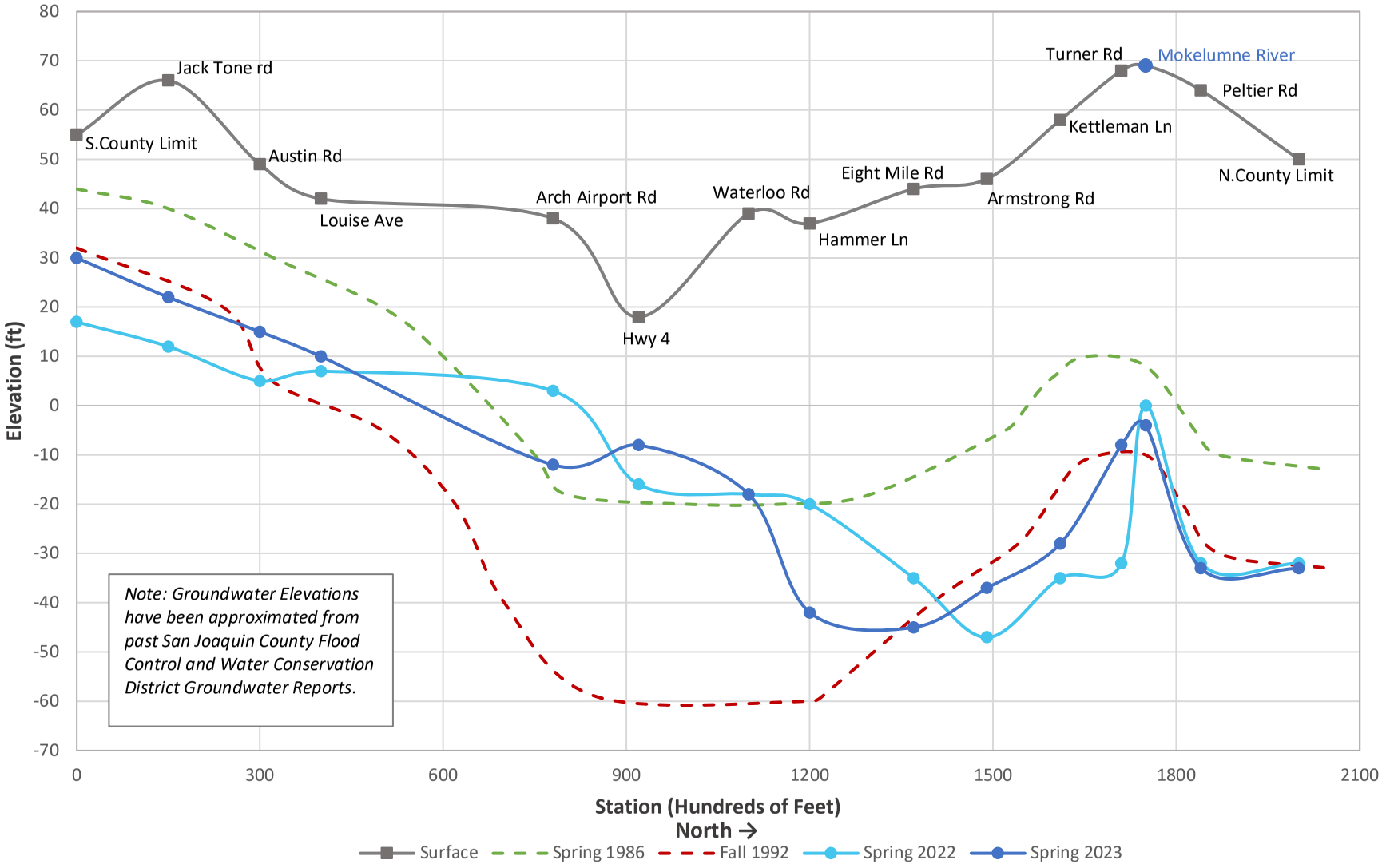


Figure 4-30 Highway 99 Cross Section Spring 2023

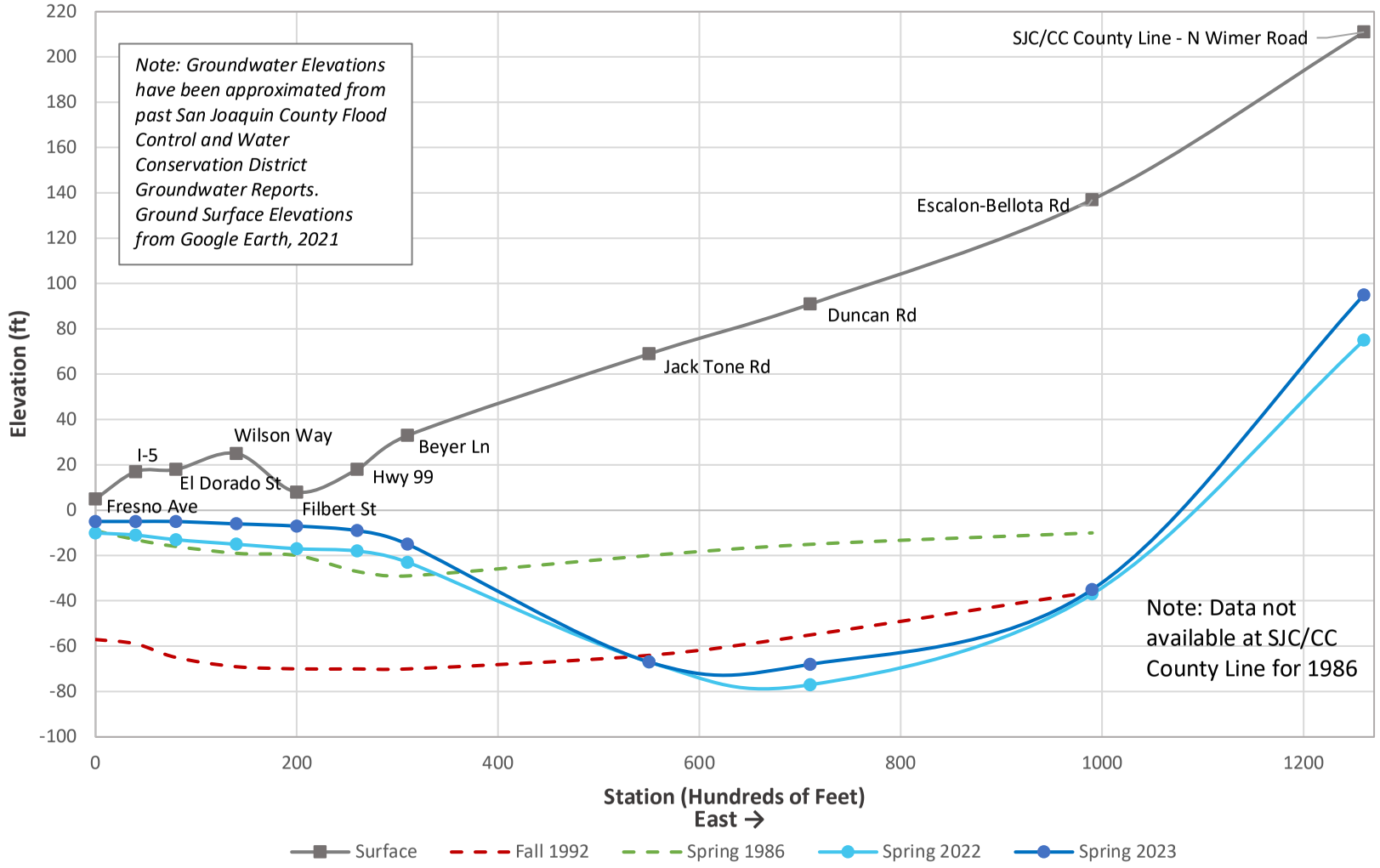


Figure 4-31 Highway 4 & Highway 26 Cross Section Spring 2023

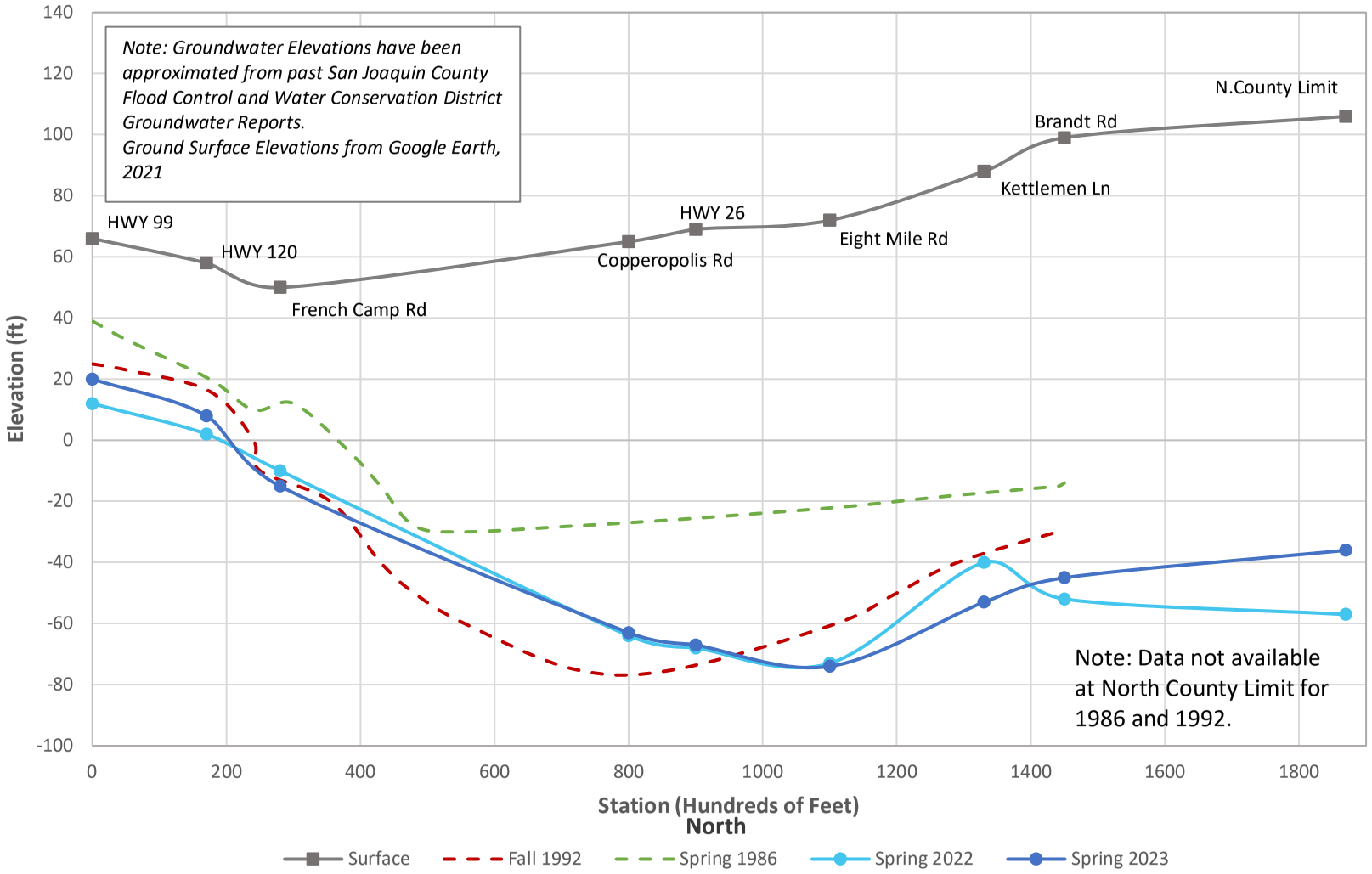


Figure 4-32 Jack Tone Rd Cross Section Spring 2023

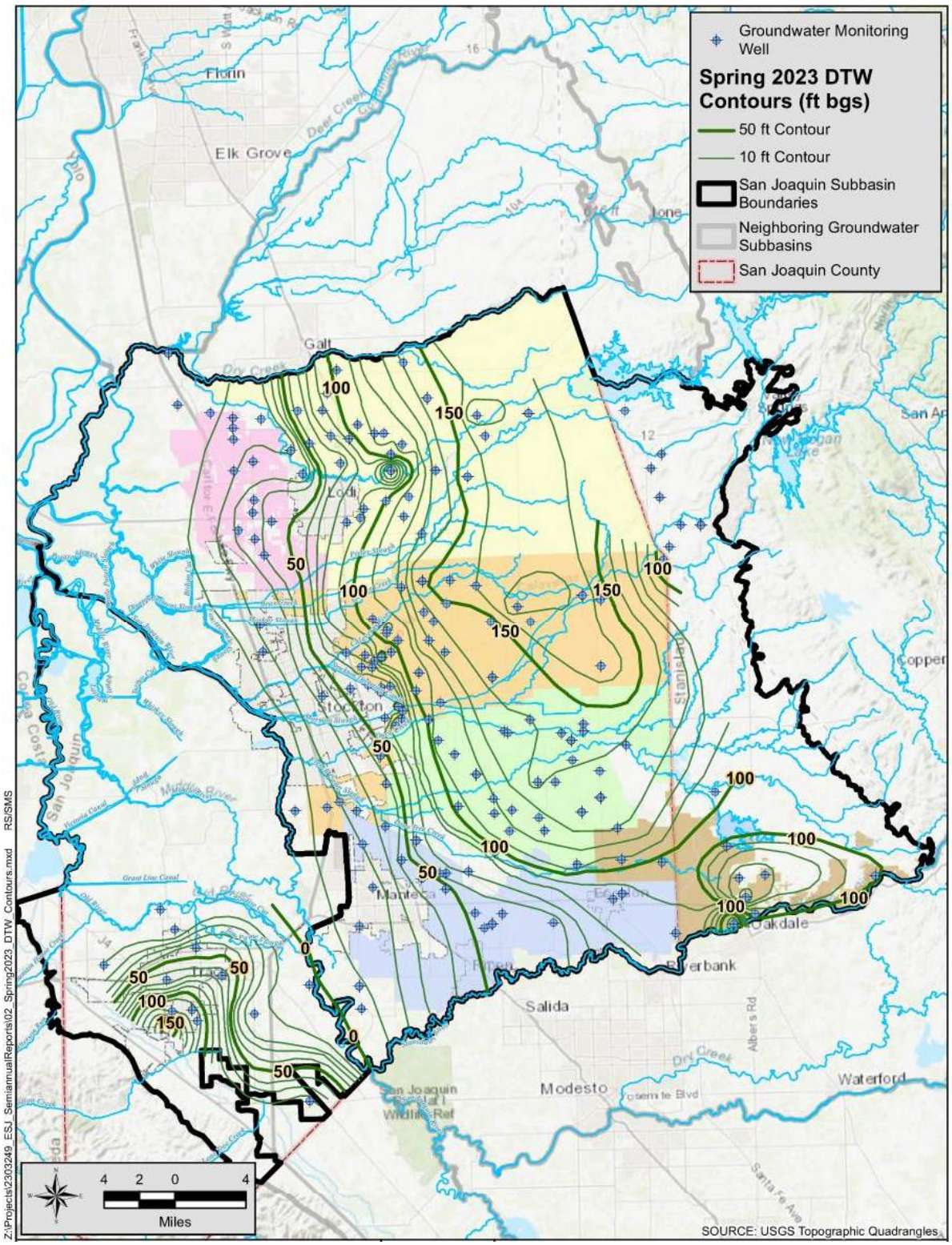


Figure 4-33 Depth to Groundwater – Spring 2023

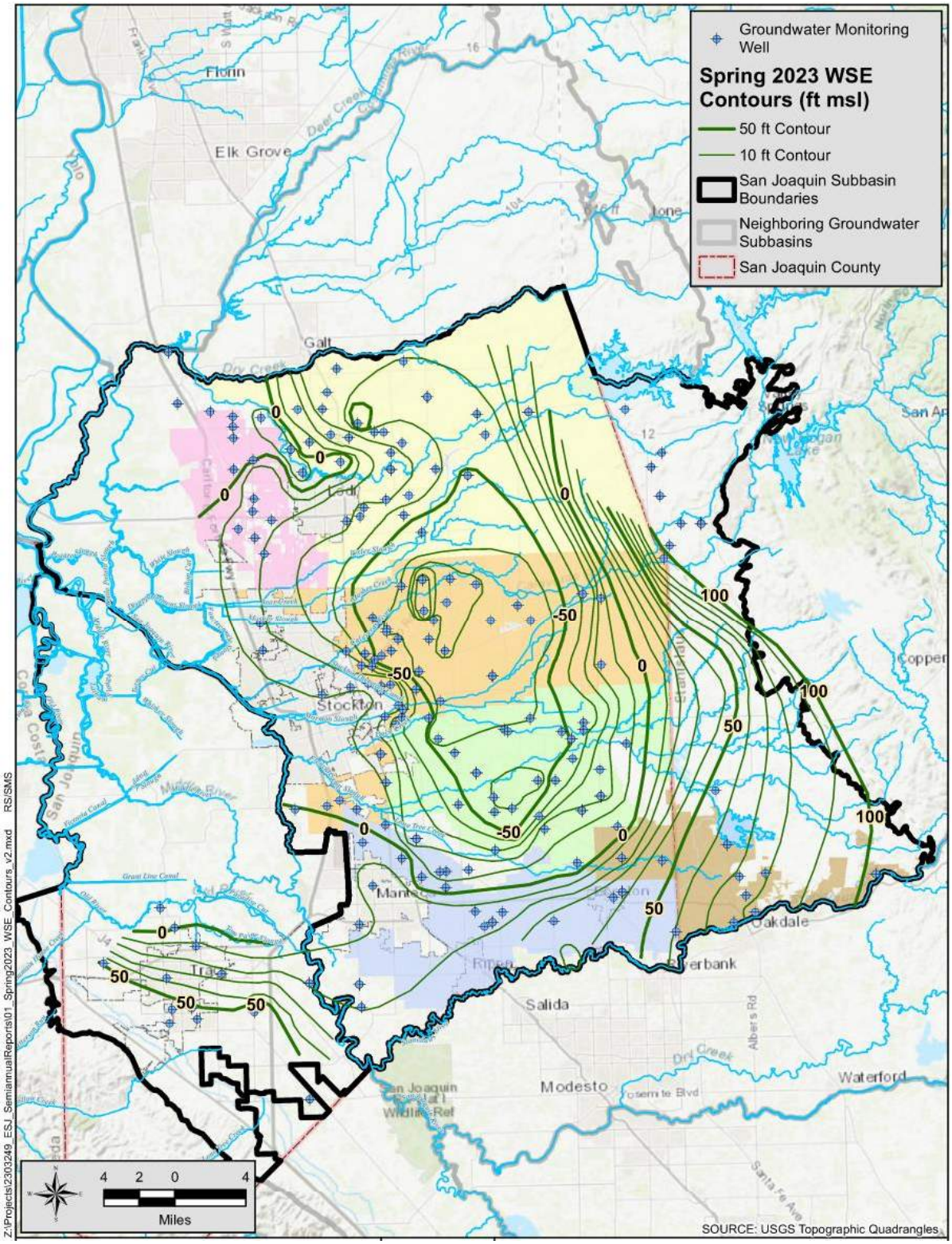


Figure 4-34 Groundwater Surface Elevation – Spring 2023

Note: Tracy Subbasin, only wells above the Corcoran Clay were used for contouring.