TECHNICAL MEMORANDUM

Date:	2/18/2025
To:	Santa Margarita Groundwater Agency (SMGWA)
From:	Kiernan Kelty and Chris Hammersmark, cbec eco engineering (cbec)
Subject:	SMGWA Streamflow Monitoring, Dry Season 2024

1 INTRODUCTION

As part of the Santa Margarita Groundwater Agency's Groundwater Sustainability Plan (GSP), surface flow monitoring during the dry season (May – October) has been an ongoing effort since 2017 (SMGWA, 2021). The monitoring effort is intended to better characterize the surface-groundwater interaction within the Santa Margarita Groundwater Basin during the dry season. Historically, surface flow, stage, water temperature, and specific conductance have been collected at SMGWA's gage network, although the collection of specific conductance has tapered down at sites to reduce SMGWA expenses through time.

2 METHODS

2.1 Gaging Sites

Six active gage sites are currently monitored within the Santa Margarita Groundwater Agency (SMGWA) dry season monitoring network (Figure 1). Five gage sites (San Lorenzo River Upstream of Love Creek, Newell Creek upstream of the San Lorenzo River, Zayante Creek at Woodwardia Weir, Bean Creek at Mt. Hermon Camp, and Carbonera Creek at Carbonero Way) were actively managed and maintained by cbec during the 2024 dry season. The Carbonera Creek at Carbonero Way gage site was identified and established with SMGWA representatives on June 13th, 2024, to supplement the basin's GSP streamflow monitoring network. The Bean Creek downstream of Mackenzie Creek gage site (Figure 1) is operated year-round and maintained/reported on by Balance Hydrologics, Inc., but cbec conducted measurements of surface flow, stage, water temperature, and specific conductance for the site during the 2024 monitoring season. Prior to initiating the 2024 monitoring, cbec visited the six active gage sites and updated SMGWA staff regarding each site's necessary repairs and maintenance.

2.2 Supplemental Flow Measurements

In collaboration with SMGWA, cbec identified supplemental flow measurement sites on Zayante and Carbonera creeks (Figure 1) to assess surface-to-ground water interaction and identify potential impacts from groundwater pumping and/or natural aquifer recharge on these creeks. For Zayante Creek, the supplemental site, Zayante Creek downstream of Lompico Creek, was chosen to provide a measurement

location upstream of the San Lorenzo Valley Water District (SLVWD) production wells, Olympia #2-3 and Quail Hollow MW-A (Figure 1) and the Scotts Valley Syncline (Figure 2) that are located along Zayante Creek. The Zayante Creek at Quail Hollow Road site was chosen to align with the syncline and existing groundwater wells. The supplemental sampling site on Carbonera Creek at Bethany Drive was selected upstream of the Scotts Valley Water District (SVWD) Orchard Well, #3B, #15 MW, #11B, #11A, and AB303 MW-1 wells, and in an area where the Santa Margarita and Lompico Sandstones are known to be in direct contact with each other in the subsurface (Figures 1-3). The contact facilitates increased exchange between the two aquifers, unlike other areas of the basin where the Monterey Formation restricts this movement (SMGWA, 2021). Supplemental measurements were collected monthly along with the gage download and maintenance schedule for the dry season outlined in the following sections.

2.3 Measurements and Analysis

Gages were deployed on May 15th, 2024, and visited monthly for inspection, download, and maintenance. During monthly visits, calibration measurements of surface flow, stage, water temperature, and specific conductance were collected. Supplemental flow, water temperature, and specific conductance measurements were taken at the Zayante and Carbonera Creek gage sites. Gages were retrieved on November 5th, 2024, concluding the 2024 monitoring period. Measurements of stage and flow were utilized to develop site-specific rating curves for the gage sites managed by cbec, except for the Carbonera Creek at Carbonero Way site, as insufficient flow measurements were available to create a reliable rating curve at this time (Table 1). The rating curves were used to convert the stage records into estimated flow time series for each site. Flow measurements were compared to show potential surface-to-groundwater interactions between different reaches of Zayante and Carbonera creeks.

3 RESULTS

Calibration measurements for the monitoring network are provided in Tables 1–9. The time series of surface flow, water temperature, and specific conductance for the five gage sites managed by cbec are shown in Figures 4-14. For Carbonera Creek, time series of stage and temperature are provided, along with calibration measurements of stage, flow, temperature, and specific conductance (Figures 8, 9, & 14). A rating curve was not developed for the site due to insufficient flow measurements that captured a range of flows after the gage was installed on June 18th, 2024. Most observed measurements at Carbonera Creek were either undetectable flow or a dry streambed during site visits from August 19th to November 5th, 2024. This limited rating curve development to only two measurements taken on June 14th and July 17th, 2024. Furthermore, significant variations in stage values during the latter half of the dry season generated additional uncertainty to any rating curve development at the gage site. The observed fluctuations in stage levels are likely associated with the flushing of the SVWD Orchard Well, which discharges into Carbonera Creek between the two monitoring sites (SMGWA, 2021).

Supplemental flow measurement comparisons for Zayante and Carbonera creeks (Figures 15 & 16) were collected to identify any potential surface-to-groundwater interaction between sample sites during the 2024 dry season. The results indicate potential impacts (i.e., reductions in surface flow) on Zayante Creek on May 15th and September 17th, 2024, and on Carbonera Creek after May 15th, 2024. A detailed summary of the 2024 dry season results is provided in the following section.

3.1 Monitoring Summary

The surface flows for the 2024 dry season (Figures 4-7) were lower than previous observations from the 2023 dry season (cbec, 2023) but higher than the 2020 - 2022 dry seasons (Neill et al., 2021, Neill, et al., 2022, Balance, 2023).

Generally, each gage site displayed a typical downtrend in surface flow magnitude through the course of the dry season except for Newell Creek upstream of the San Lorenzo River (Figure 5), which is influenced by managed releases from Loch Lomond Reservoir. For the Newell Creek location, surface flow values are estimated from May 15th, 2024, 15:30 to May 16th, 2024 18:00 due to stage values being above the maximum observed stage (2.94 ft), requiring an extrapolation of the developed rating curve for the site (Figure 5). Zayante Creek at Woodwardia Weir also had a similar period of rating curve extrapolation. The Bean Creek at Mt. Hermon Camp gage flow time series was depressed from July 17th – August 13th, 2024 (Figure 7).

Supplemental flow measurement comparisons for Zayante and Carbonera creeks (Figures 15 & 16) indicate potential surface-groundwater interaction during the 2024 dry season. For Zayante Creek, differences in flow rates observed on May 15th, 2024, suggested a losing reach between Zayante Creek downstream of Lompico and Zayante Creek at Quail Hollow Rd. The Quail Hollow Rd site coincides with the Scotts Valley Syncline (Figure 2) and the SLVWD production wells, Olympia #2-3 and Quail Hollow MW-A (Figure 1), which independently or in conjunction, may have contributed to the lower flow rate observed the site. Similar flow differences (i.e., a reduction in streamflow) were not observed again until September 17th, 2024. The November 5th, 2024, flow measurements also displayed potential loss at Quail Hollow Rd; however, the differences were within the margin of measurement error for the sites. Flow measurements were lower at Carbonera Creek at Carbonero Way than at Carbonera Creek at Bethany Dr after May 15th, 2024, suggesting surface-to-groundwater exchange (i.e., a losing reach) is occurring between the two sites (Figure 16).

Water surface temperatures generally began near 15 °C for all gage sites before increasing to their respective peaks during July of the monitoring period (Figures 4 – 14). The seven-day forward rolling average threshold of 20 °C for steelhead rearing in the San Lorenzo River system (D. Alley 2015), was exceeded at the San Lorenzo Upstream of Love Creek gage site for a total of 16 days during the 2024 dry season. The threshold was not exceeded at all during the 2023 dry season. In the 2021 dry season, this threshold was exceeded for 39 days (Neill et al., 2022). Additional analysis is required to estimate total days of exceedance for the 2022 dry season (Balance, 2023).

Specific conductance was continuously measured at Bean Creek at Mt. Hermon Camp and Newell Creek Upstream of the San Lorenzo River gage sites for the 2024 dry season (Figures 11 & 13). The conductivity time series was relatively consistent at the Bean Creek at Mt. Hermon Camp gage throughout the dry season. The Newell Creek Upstream of the San Lorenzo River gage location also had generally consistent values, apart from the from May 15th – 16th, 2024. The AquaTROLL 200 conductivity gage at Newell Creek failed on July 17th, 2024 (Figure 11). SMGWA staff directed cbec to remove the AquaTROLL 200 logger and defer to the backup gage deployed at the site, which does not record conductance.

The gages deployed at the San Lorenzo Upstream of Love Creek, Zayante Creek at Woodwardia Weir, and Carbonera Creek at Carbonero Way gage sites do not measure conductance (Figures 10, 12 & 14). Specific conductance measurements were taken during site visits for the 2024 dry season (Tables 1, 3, & 6). Generally, specific conductance measurements were relatively consistent throughout the dry season for the San Lorenzo Upstream of Love Creek, Newell Creek Upstream of the San Lorenzo River, and Bean Creek at Mt. Hermon Camp gage sites. Conductivity measurements decreased at Zayante Creek at Woodwardia Weir and increased at Carbonera Creek at Carbonero Way sites as the dry season progressed.

4 REFERENCES

Alley, D., 2015, Fishery implications of water-temperature data collected in the San Lorenzo River system in 2014: Consulting report to the San Lorenzo Valley Water District, June 2015, 74p.

Balance Hydrologics, Inc. 2023. Santa Margarita Basin Streamflow Monitoring, Dry Season 2022 (Graphs Only). Prepared for SMGWA.

cbec, inc. 2023. Technical Memorandum – SMGWA Streamflow Monitoring, Dry Season 2023. Prepared for SMGWA. Santa Cruz, CA.

Neill, C., Hecht, B., Goodwin, E., and Parke, J. 2021, Water Year, 2020, Santa Margarita Basin Streamflow Monitoring and Accretion Assessment, Dry Season of 2020, consulting report 220237, 19p. Plus figures, tables, and forms.

Neill, C., Parke, J., Hecht, B., Goodwin, E., 2022, Water Year, 2021, Santa Margarita Basin Streamflow Monitoring and Accretion Assessment, Dry Season of 2021, consulting report 221237, 18p. Plus figures, tables, and forms.

Santa Margarita Groundwater Agency [SMGWA], 2021. Groundwater Sustainability Plan. Santa Cruz, CA.

5 Tables

Table 1. Station Log, San Lorenzo River Upstream of Love Creek, County of Santa Cruz, California, dry season 2024

Data is preliminary, subject to revision.

Date/Time	Observed Stage	Measured Flow	Water Temperature	Electric Conductance	Specific Conductance at 25°C	Field Notes
	(ft)	*(cfs)*	*(°C)*	*(µS)*	*(µS)*	*(-)*
5/15/2024 16:15	1.84	50.1	16.63	321.70	383.23	Visible inflow downstream of the gage site from Love Creek. Water is clear.
6/13/2024 19:15	1.58	26.8	-	-	-	Visible inflow downstream of the gage site from Love Creek. Water is clear. Handheld temperature and conductivity sensor was malfunctioning.
6/18/2024 14:45	-	-	17.20	341.70	402.40	Visible inflow downstream of the gage site from Love Creek. Water is clear.
7/17/2024 16:15	1.36	15.0	20.39	328.10	359.37	Visible inflow downstream of the gage site from Love Creek. Water is clear.
8/19/2024 17:00	1.20	9.8	19.50	353.30	394.83	Visible inflow downstream of the gage site from Love Creek. Water is clear.
9/17/2024 16:00	1.10	7.3	16.30	324.03	388.27	Visible inflow downstream of the gage site from Love Creek. Water is clear.
10/21/2024 14:30	1.07	6.3	11.90	299.80	399.47	Visible inflow downstream of the gage site from Love Creek. Water is clear.
11/5/2024 11:15	1.08	6.4	10.87	308.83	422.43	Visible inflow downstream of the gage site from Love Creek. Water is clear.

Observed Stage: *Water level noted on staff plate.* ***Electric Conductance:*** *electrical conductance of 1 cubic centimeter (cm^3) of a solution at field temperature.* ***Specific Conductance:*** *electrical conductance of 1 cubic centimeter (cm^3) of a solution at 25°C.*

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Table 2. Station Log, Newell Creek Upstream of the San Lorenzo River, County of Santa Cruz, California, Dry Season 2024

Date/Time	Observed Stage	Measured Flow	Water Temperature	Electric Conductance	Specific Conductance at 25°C	Field Notes
	(ft)	*(cfs)*	*(°C)*	*(µS)*	*(µS)*	*(-)*
5/15/2024 15:15	2.94	5.4	14.33	271.87	341.30	Water is clear, waterfowl and aquatic activity at the gage site.
6/13/2024 18:00	2.86	2.5	-	-	-	Water is clear, waterfowl and aquatic activity at the gage site. Handheld temperature and conductivity sensor was malfunctioning.
7/17/2024 17:00	2.84	1.7	16.10	266.80	322.37	Water is clear, waterfowl and aquatic activity at the gage site.
8/19/2024 16:30	2.80	1.5	16.83	263.97	313.17	Water is clear, waterfowl and aquatic activity at the gage site.
9/17/2024 14:30	2.82	1.6	16.60	262.00	312.30	Water is clear, waterfowl and aquatic activity at the gage site.
10/21/2024 13:00	2.81	1.6	15.43	255.40	312.43	Water is clear, waterfowl and aquatic activity at the gage site.
11/5/2024 11:15	2.79	1.3	11.70	236.60	316.07	Water is clear, waterfowl and aquatic activity at the gage site.

Observed Stage: *Water level noted on staff plate.* ***Electric Conductance:*** *electrical conductance of 1 cubic centimeter (cm^3) of a solution at field temperature.* ***Specific Conductance:*** *electrical conductance of 1 cubic centimeter (cm^3) of a solution at 25°C.*

Table 3. Station Log, Zayante Creek at Woodwardia Weir, County of Santa Cruz, California, Dry Season 2024

Data is preliminary, subject to revision

Date/Time	Observed Stage	Measured Flow	Water Temperature	Electric Conductance	Specific Conductance at 25°C	Field Notes
	(ft)	*(cfs)*	*(°C)*	*(µS)*	*(µS)*	*(-)*
5/15/2024 13:45	0.84	10.4	15.10	359.83 *(g)* 381.70 *(m)* 370.77 *(a)*	449.1 *(g)* 473.80 *(m)* 473.80 *(a)*	Water is clear, there is inflow from a culvert US of the gage site influencing measured conductance.
6/13/2024 16:45	0.78	7.1	-	-	-	Water is clear, there is inflow from a culvert US of the gage site influencing measured conductance. Handheld temperature and conductivity sensor malfunctioned.
6/18/2024 10:30	0.74	6.6	13.90	382.90 *(g)* 390.40 *(m)* 386.65 *(a)*	486.80 *(g)* 495.00 *(m)* 495.00 *(a)*	Water is clear, there is inflow from a culvert US of the gage site influencing measured conductance.
7/17/2024 11:30	0.70	4.5	15.57	356.37 *(g)* - *(m)* 356.37 *(a)*	434.07 *(g)* - *(m)* 434.07 *(a)*	Water is clear, there is inflow from a culvert US of the gage site influencing measured conductance.
8/19/2024 12:45	0.65	3.1	16.37	344.33 *(g)* 350.60 *(m)* 347.47 *(a)*	411.90 *(g)* 420.20 *(m)* 420.20 *(a)*	Water is clear, there is inflow from a culvert US of the gage site influencing measured conductance.

Observed Stage: *Water level noted on staff plate.* ***Electric Conductance:*** *electrical conductance of 1 cubic centimeter (cm^3) of a solution at field temperature.* ***Specific Conductance:*** *electrical conductance of 1 cubic centimeter (cm^3) of a solution at 25°C.* ***(g).*** *measured at gage site.* ***(m).*** *measured in main channel.* ***(a).*** *average of all measured data.*

Table 3. Station Log, Zayante Creek at Woodwardia Weir (continued), County of Santa Cruz, California, Dry Season 2024

Data is preliminary, subject to revision

Date/Time	Observed Stage	Measured Flow	Water Temperature	Electric Conductance	Specific Conductance at 25°C	Field Notes
	(ft)	*(cfs)*	*(°C)*	*(µS)*	*(µS)*	*(-)*
9/17/2024 10:45	*0.62*	*3.0*	*14.77*	*320.23 (g) - (m) 320.23 (a)*	*397.27 (g) - (m) 397.27 (a)*	*Water is clear, there is inflow from a culvert US of the gage site influencing measured conductance.*
10/21/2024 10:45	*0.60*	*2.7*	*10.10*	*280.27 (g) 283.13 (m) 281.70 (a)*	*413.77 (g) 428.40 (m) 421.08 (a)*	*Water is clear, there is inflow from a culvert US of the gage site influencing measured conductance.*
11/5/2024 10:00	*0.62*	*3.0*	*10.12*	*220.57 (g) 288.37 (m) 254.47 (a)*	*417.17 (g) 420.63 (m) 418.90 (a)*	*Water is clear, there is inflow from a culvert US of the gage site influencing measured conductance.*

Observed Stage: *Water level noted on staff plate.* ***Electric Conductance:*** *electrical conductance of 1 cubic centimeter (cm^3) of a solution at field temperature.* ***Specific Conductance:*** *electrical conductance of 1 cubic centimeter (cm^3) of a solution at 25°C.* ***(g).*** *measured at gage site.* ***(m).*** *measured in main channel.* ***(a).*** *average of all measured data.*

Data is preliminary, subject to revision

Table 4. Station Log, Bean Creek at Mount Hermon Camp, County of Santa Cruz, California, Dry Season 2024

Date/Time	Observed Stage	Measured Flow	Water Temperature	Electric Conductance	Specific Conductance at 25°C	Field Notes
	(ft)	*(cfs)*	*(°C)*	*(µS)*	*(µS)*	*(-)*
5/15/2024 12:15	1.94	6.0	14.30	349.83	439.70	Water is clear, no debris present.
6/18/2024 15:45	1.85	4.1	-	-	-	Handheld temperature and conductivity sensor was malfunctioning. Water is clear, no debris present.
7/17/2024 19:00	1.83	3.6	17.80	377.10	437.40	Water is clear, no debris present.
8/19/2024 19:45	1.78	2.6	18.38	348.13	398.47	Water is clear, no debris present.
9/17/2024 17:30	1.78	2.6	18.00	358.73	414.00	Water is clear, no debris present.
10/21/2024 15:45	1.77	2.5	16.23	347.30	417.23	Water is clear, no debris present.
11/5/2024 15:15	1.77	2.40	12.40	320.43	422.07	Water is clear, no debris present.

Observed Stage: *Water level noted on staff plate.* ***Electric Conductance:*** *electrical conductance of 1 cubic centimeter (cm^3) of a solution at field temperature.* ***Specific Conductance:*** *electrical conductance of 1 cubic centimeter (cm^3) of a solution at 25°C.*

Table 5. Station Log, Bean Creek Downstream of Mackenzie Creek, County of Santa Cruz, California, Dry Season 2024

Data is preliminary, subject to revision

Date/Time	Observed Stage	Measured Flow	Water Temperature	Electric Conductance	Specific Conductance at 25°C	Field Notes
	(ft)	*(cfs)*	*(°C)*	*(µS)*	*(µS)*	*(-)*
5/15/2024 10:00	1.75	2.2	13.00	396.67	514.67	Water is clear, no debris present.
6/13/2024 11:30	0.92	2.1	15.20	439.23	539.67	Water is clear, no debris present.
6/18/2024 9:15	0.85	2.1	13.80	424.63	555.00	Water is clear, no debris present.
7/17/2024 10:15	0.51	2.0	15.22	444.83	445.10	Water is clear, no debris present.
8/19/2024 11:15	0.10	1.9	15.60	444.83	546.00	Water is clear, no debris present.
9/17/2024 9:40	0.00	0.0	-	-	-	Stream is dry. No measurements taken.
10/21/2024 8:45	0.00	0.0	-	-	-	Stream is dry. No measurements taken.
11/5/2024 8:45	0.00	0.0	-	-	-	Stream is dry. No measurements taken.

Observed Stage: *Water level noted on staff plate.* ***Electric Conductance:*** *electrical conductance of 1 cubic centimeter (cm^3) of a solution at field temperature.* ***Specific Conductance:*** *electrical conductance of 1 cubic centimeter (cm^3) of a solution at 25°C.*

Table 6. Station Log, Carbonera Creek at Carbonero Way, County of Santa Cruz, California, Dry Season 2024

Data is preliminary, subject to revision

Date/Time	Observed Stage	Measured Flow	Water Temperature	Electric Conductance	Specific Conductance at 25°C	Field Notes
	(ft)	*(cfs)*	*(°C)*	*(µS)*	*(µS)*	*(-)*
5/15/2024 7:30	-	1.5	14.90	449.60	550.00	Gage housing and staff plate were not yet installed, no stage observed.
6/13/2024 8:15	1.28	0.50	14.90	462.97	574.33	Water is clear, leaf litter present.
6/18/2024	-	-	-	-	-	Gage site not visited.
7/17/2024 7:15	1.18	0.20	15.85	491.67	595.67	Water is clear, leaf litter present.
8/19/2024 8:30	1.16	0.0	17.00	572.00	676.00	Undetectable flow. No flow measurements taken. Water is clear, leaf litter present.
9/17/2024 7:15	1.05	0.0	15.00	579.00	720.33	Undetectable flow. No flow measurements taken. Water is clear, leaf litter present.
10/21/2024 7:15	0.00	0.0	-	-	-	Stream is dry. No flow measurements taken.
11/5/2024 7:00	1.10	0.0	10.87	533.67	730.67	Undetectable flow. No flow measurements taken. Water is clear, leaf litter present.

Observed Stage: *Water level noted on staff plate.* ***Electric Conductance:*** *electrical conductance of 1 cubic centimeter (cm^3) of a solution at field temperature.* ***Specific Conductance:*** *electrical conductance of 1 cubic centimeter (cm^3) of a solution at 25°C.*

Table 7. Supplemental Flow Site Log, Carbonera Creek at Bethany Dr, County of Santa Cruz, California, Dry Season 2024

Data is preliminary, subject to revision

Date/Time	Observed Stage	Measured Flow	Water Temperature	Electric Conductance	Specific Conductance at 25°C	Field Notes
	(ft)	*(cfs)*	*(°C)*	*(µS)*	*(µS)*	*(-)*
5/15/2024 8:30	-	0.6	12.00	349.03	464.10	No staff plate installed at the site. Water is clear, no debris present.
6/13/2024 10:00	-	0.5	13.33	383.73	493.70	No staff plate installed at the site. Water is clear, no debris present.
6/18/2023	-	-	-	-	-	Site not visited.
7/17/2024 9:15	-	0.30	13.72	391.87	499.33	No staff plate installed at the site. Water is clear, no debris present.
8/19/2024 9:15	-	0.2	14.37	430.13	540.00	No staff plate installed at the site. Water is clear, no debris present.
9/17/2024 8:45	-	0.1	13.30	413.23	532.00	No staff plate installed at the site. Water is clear, no debris present.
10/21/2024 8:00	-	0.1	10.40	388.27	537.67	No staff plate installed at the site. Water is clear, no debris present.
11/5/2024 10:45	-	0.20	10.2	391.90	546.33	No staff plate installed at the site. Water is clear, no debris present.

Observed Stage: *Water level noted on staff plate.* ***Electric Conductance:*** *electrical conductance of 1 cubic centimeter (cm^3) of a solution at field temperature.* ***Specific Conductance:*** *electrical conductance of 1 cubic centimeter (cm^3) of a solution at 25°C.*

Table 8. Supplemental Flow Site Log, Zayante Creek at Quail Hollow Rd, County of Santa Cruz, California, Dry Season 2024

Data is preliminary, subject to revision

Date/Time	Observed Stage	Measured Flow	Water Temperature	Electric Conductance	Specific Conductance at 25°C	Field Notes
	(ft)	*(cfs)*	*(°C)*	*(µS)*	*(µS)*	*(-)*
5/15/2024 18:45	-	4.9	-	-	-	Handheld temperature and conductivity sensor was malfunctioning. No staff plate installed at the site.
6/13/2024 15:30	-	6.0	-	-	-	Handheld temperature and conductivity sensor was malfunctioning. No staff plate installed at the site.
6/18/2024 11:45	-	4.7	14.40	471.60	591.00	No staff plate installed at the site. Water is clear, no debris present.
7/17/2024 13:00	-	3.2	17.08	482.33	568.67	No staff plate installed at the site. Water is clear, no debris present.
8/19/2024 14:00	-	1.8	17.90	510.67	591.00	No staff plate installed at the site. Water is clear, no debris present.
9/17/2024 12:00	-	1.90	15.10	475.33	585.33	No staff plate installed at the site. Water is clear, no debris present.
10/21/2024 11:00	-	1.3	10.50	422.67	585.00	No staff plate installed at the site. Water is clear, no debris present.
11/5/2024 11:00	-	1.4	10.37	419.53	582.67	No staff plate installed at the site. Water is clear, no debris present.

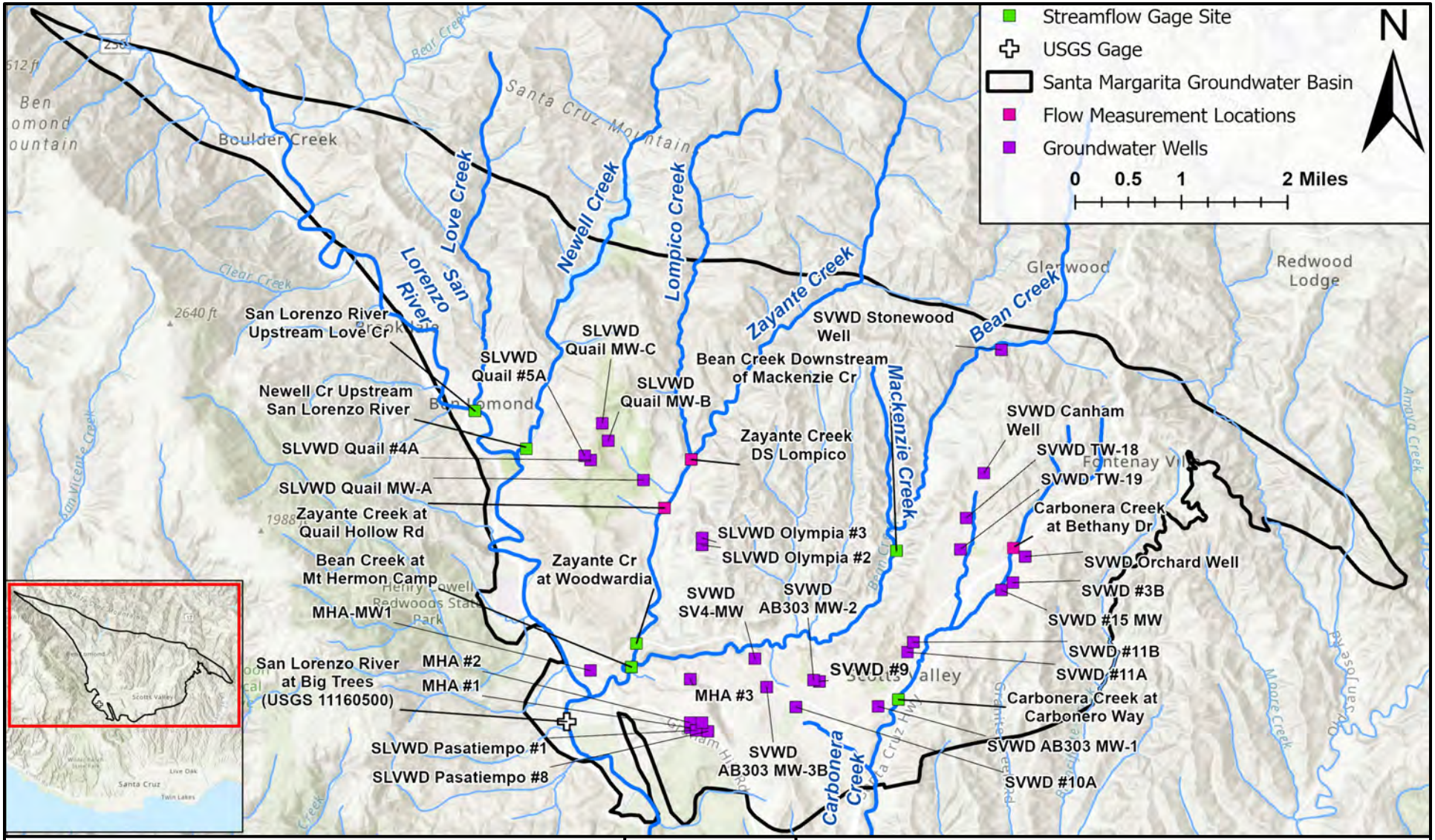
Observed Stage: *Water level noted on staff plate.* ***Electric Conductance:*** *electrical conductance of 1 cubic centimeter (cm^3) of a solution at field temperature.* ***Specific Conductance:*** *electrical conductance of 1 cubic centimeter (cm^3) of a solution at 25°C.*

Table 9. Supplemental Flow Site Log, Zayante Creek Downstream of Lompico Creek, County of Santa Cruz, California, Dry Season 2024

Data is preliminary, subject to revision

Date/Time	Observed Stage	Measured Flow	Water Temperature	Electric Conductance	Specific Conductance at 25°C	Field Notes
	(ft)	*(cfs)*	*(°C)*	*(µS)*	*(µS)*	*(-)*
5/15/2024 17:30	-	8.05	15.00	476.13	589.67	No staff plate installed at the site. Water is clear, no debris present.
6/13/2024 14:30	-	5.20	-	-	-	Handheld temperature and conductivity sensor was malfunctioning. Water is clear, no debris present.
6/18/2024 13:30	-	4.22	15.90	496.33	608.33	No staff plate installed at the site. Water is clear, no debris present.
7/17/2024 14:15	-	3.11	17.39	527.67	614.33	No staff plate installed at the site. Water is clear, no debris present.
8/19/2024 15:15	-	1.40	17.50	546.33	648.00	No staff plate installed at the site. Water is clear, no debris present.
9/17/2024 13:15	-	2.31	14.63	516.67	644.67	No staff plate installed at the site. Water is clear, no debris present.
10/21/2024 12:00	-	1.21	10.30	475.00	661.67	No staff plate installed at the site. Water is clear, no debris present.
11/5/2024 11:15	-	1.46	9.80	468.67	660.67	No staff plate installed at the site. Water is clear, no debris present.

Observed Stage: *Water level noted on staff plate.* ***Electric Conductance:*** *electrical conductance of 1 cubic centimeter (cm^3) of a solution at field temperature.* ***Specific Conductance:*** *electrical conductance of 1 cubic centimeter (cm^3) of a solution at 25°C.*



Notes: A new gage site was added at Carbonera Creek at Carbonero Way on 6/13/2024 for the 2024 dry season. Supplemental flow sampling locations were added at: Carbonera Creek at Bethany Dr, Zayante Creek at Quail Hollow Rd, and Zayante Creek DS Lompico Creek.

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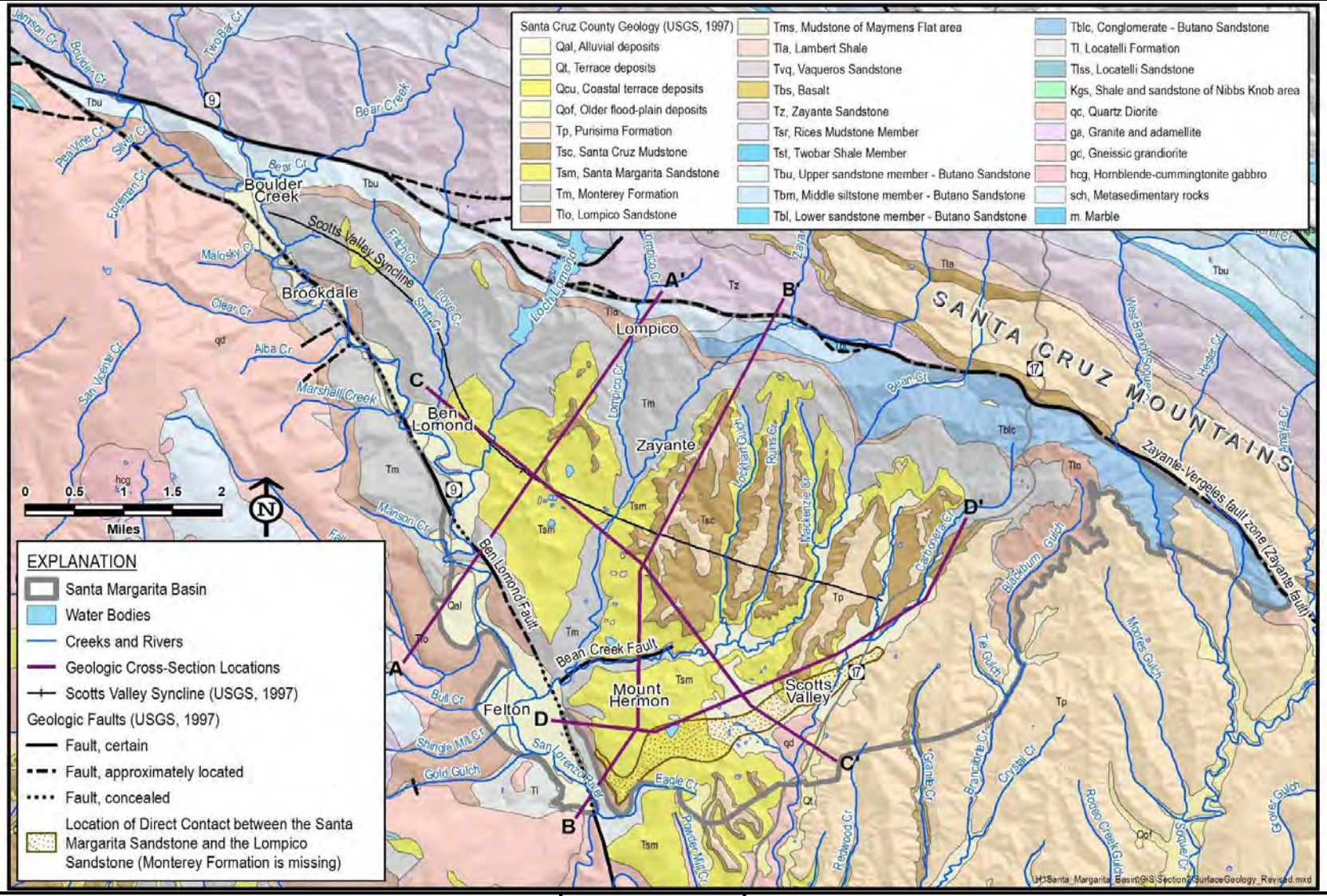
SMGWA Dry Season Stream Flow Monitoring, Dry Season 2024

Santa Margarita Groundwater Agency Streamflow Monitoring Sites

Project No. 23−1013	Created By: KMK	Figure 1



Notes: Figure adapted from SMGWA, 2021, Figure 2−18.

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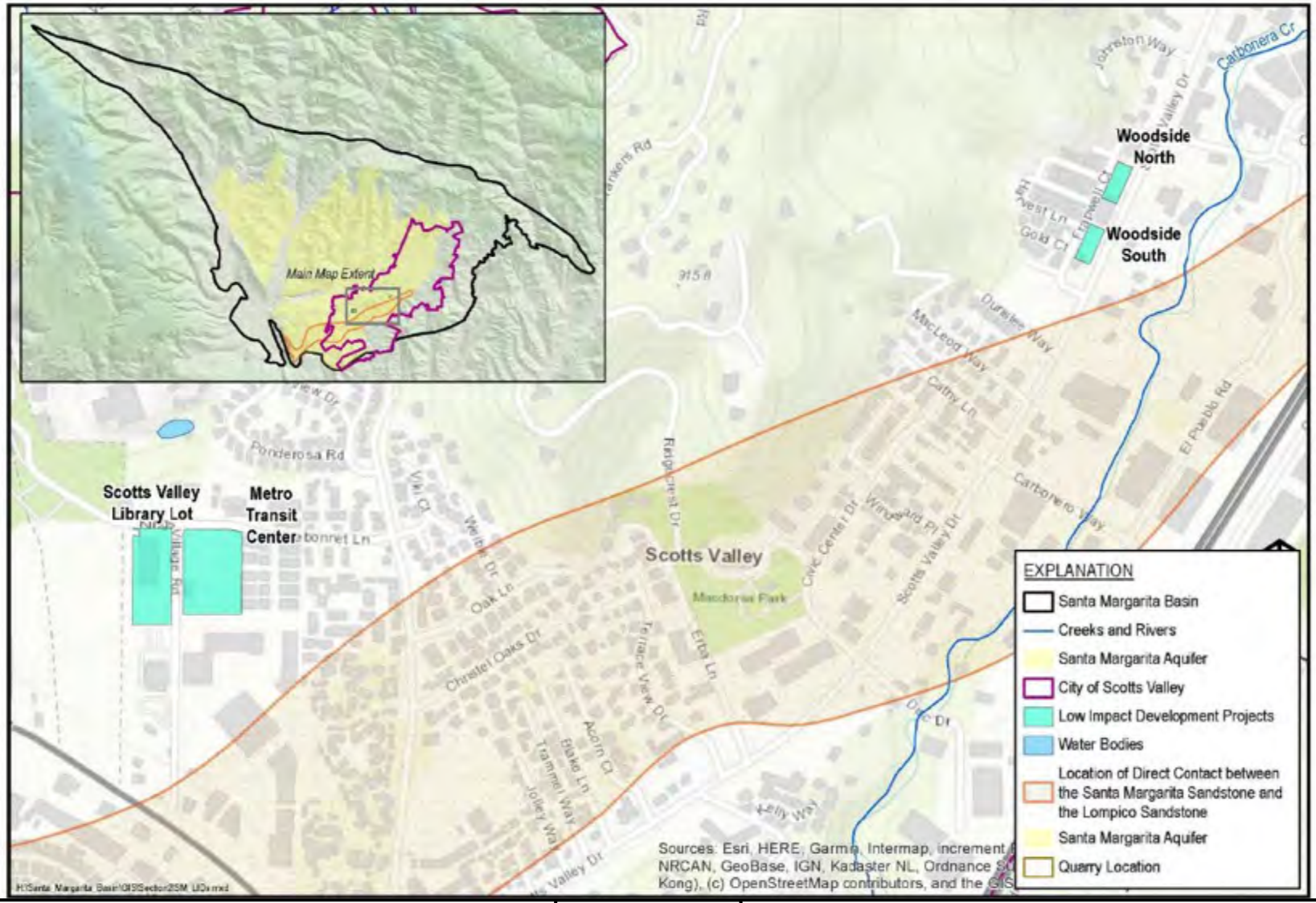
SMGWA Dry Season Stream Flow Monitoring, Dry Season 2024

Santa Margarita Basin Surface Geology

Project No. 23−1013	Created By: KMK	Figure 2



Notes: Figure adapted from SMGWA, 2021, Figure 2−7.

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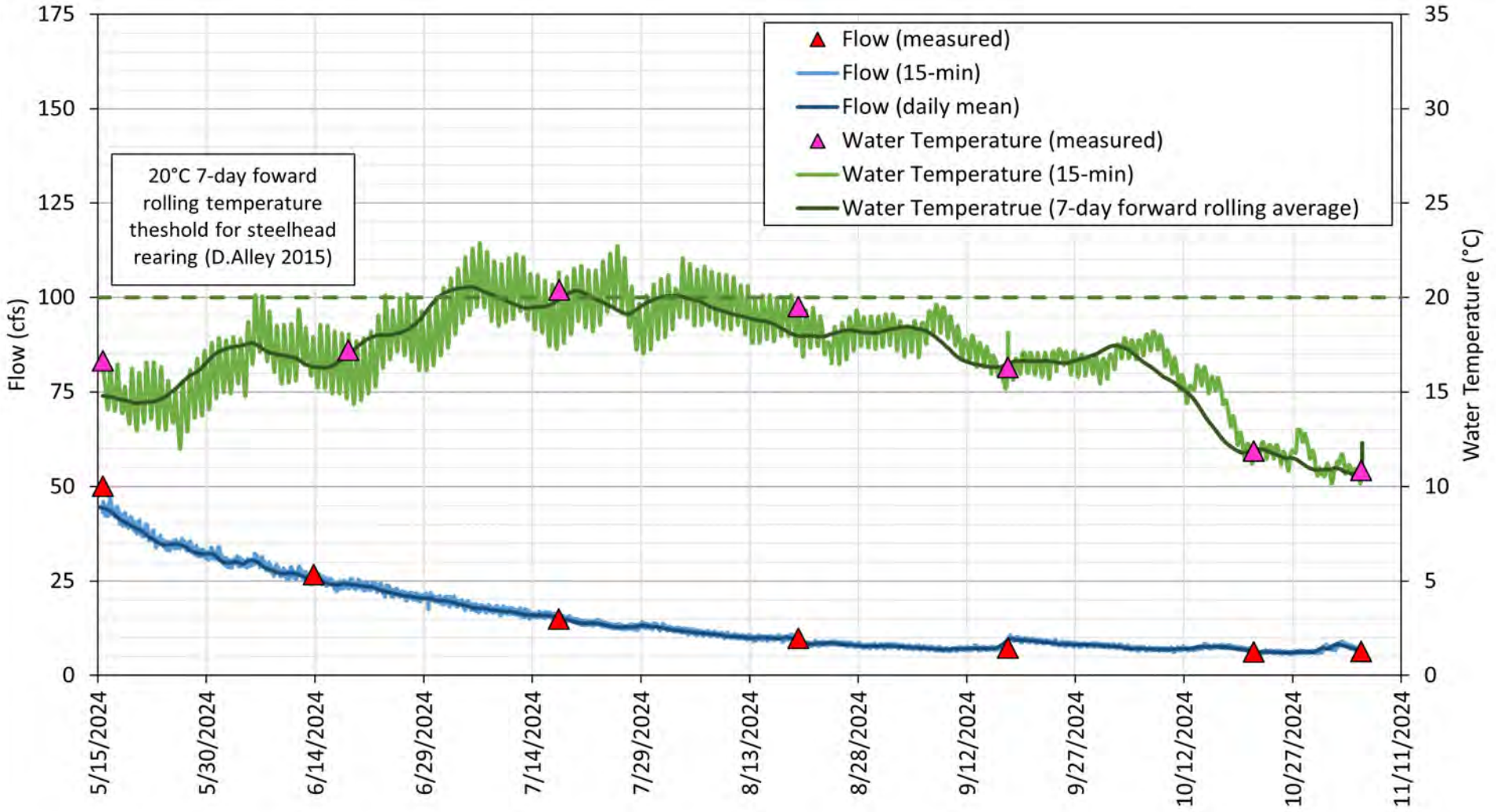
SMGWA Dry Season Stream Flow Monitoring, Dry Season 2024

Carbonera Creek: Santa Margarita Sandstone and Lompico Sandstone Connection

Project No. 23−1013	Created By: KMK	Figure 3

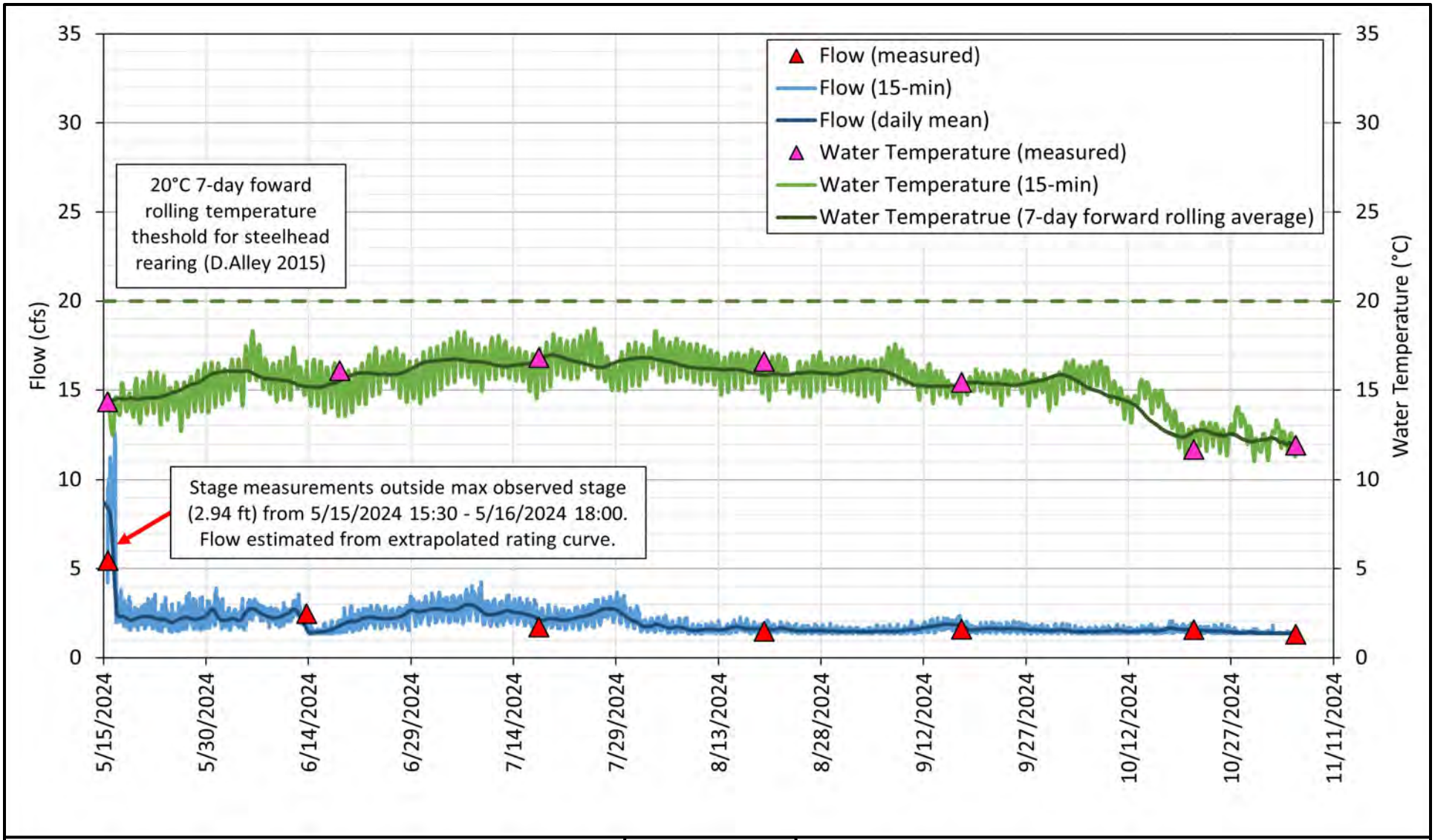


Notes:

SMGWA Dry Season Stream Flow Monitoring, Dry Season 2024

Flow and Water Temperature at San Lorenzo River Upstream of Love Creek

Project No. 23−1013	Created By: KMK	Figure 4



Notes:

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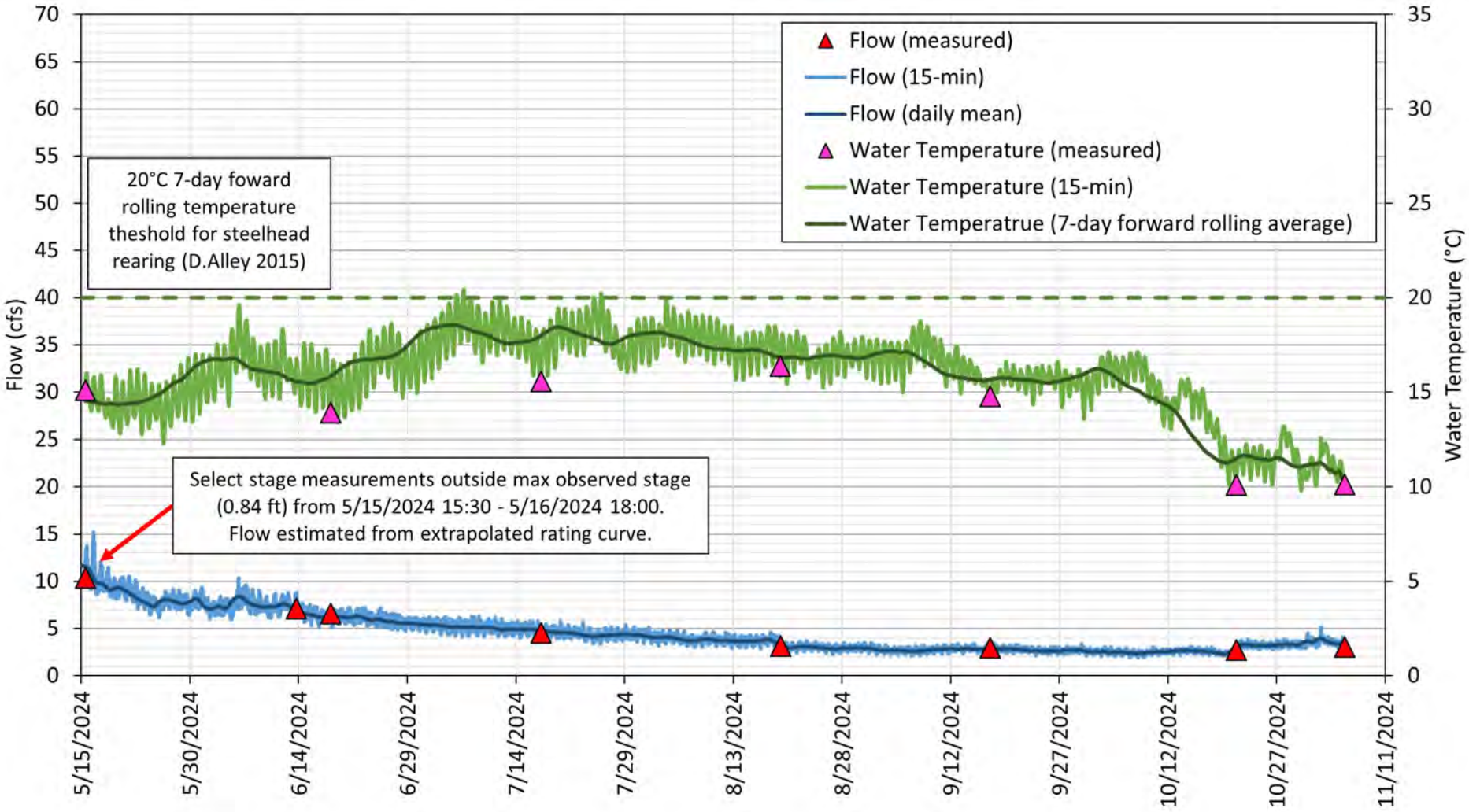
SMGWA Dry Season Stream Flow Monitoring, Dry Season 2024

Flow and Water Temperature at Newell Creek Upstream of the San Lorenzo River

Project No. 23−1013	Created By: KMK	Figure 5



Notes:

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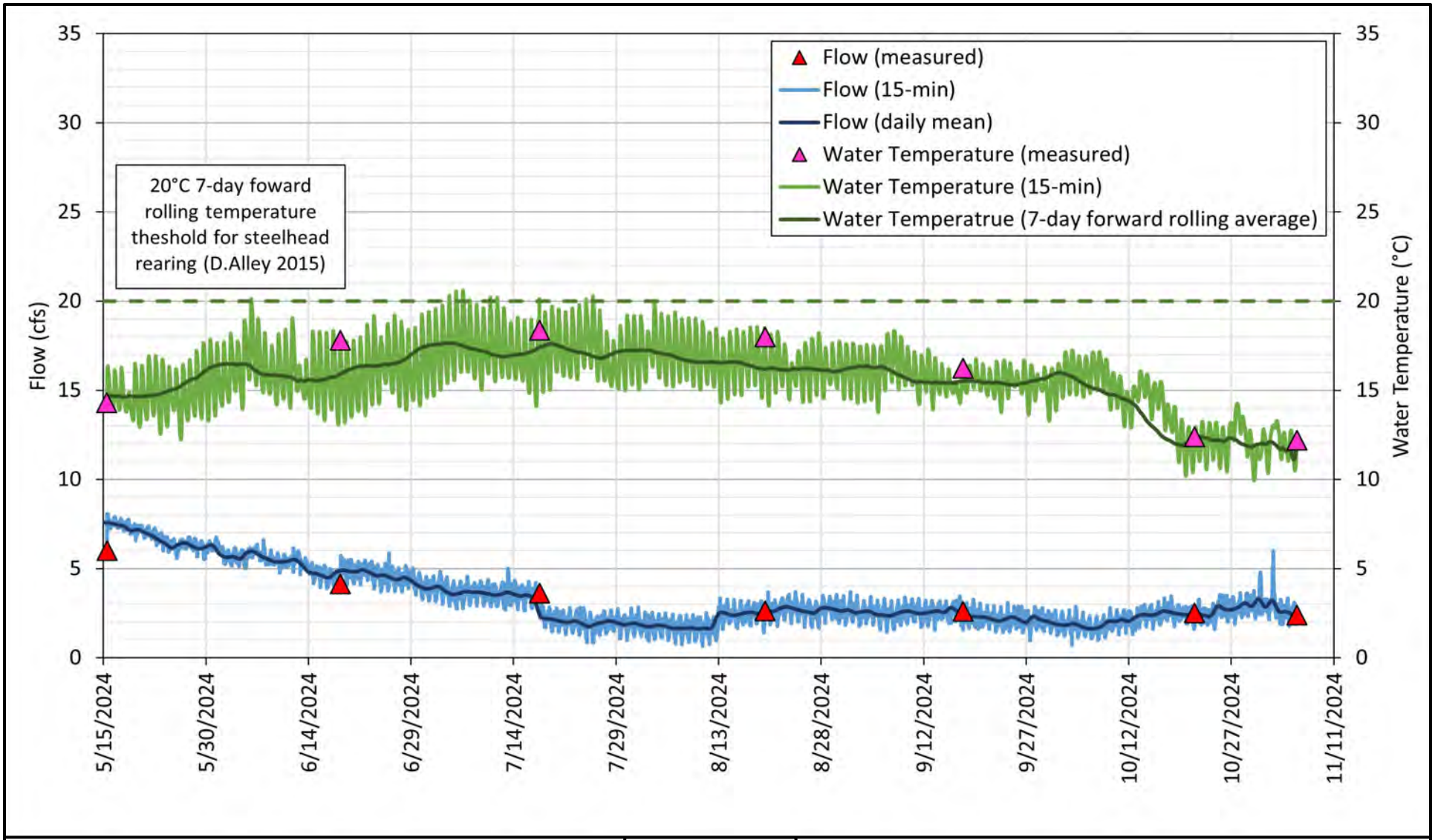
SMGWA Dry Season Stream Flow Monitoring, Dry Season 2024

Flow and Water Temperature at Zayante Creek at Woodwardia Weir

Project No. 23−1013	Created By: KMK	Figure 6



Notes:

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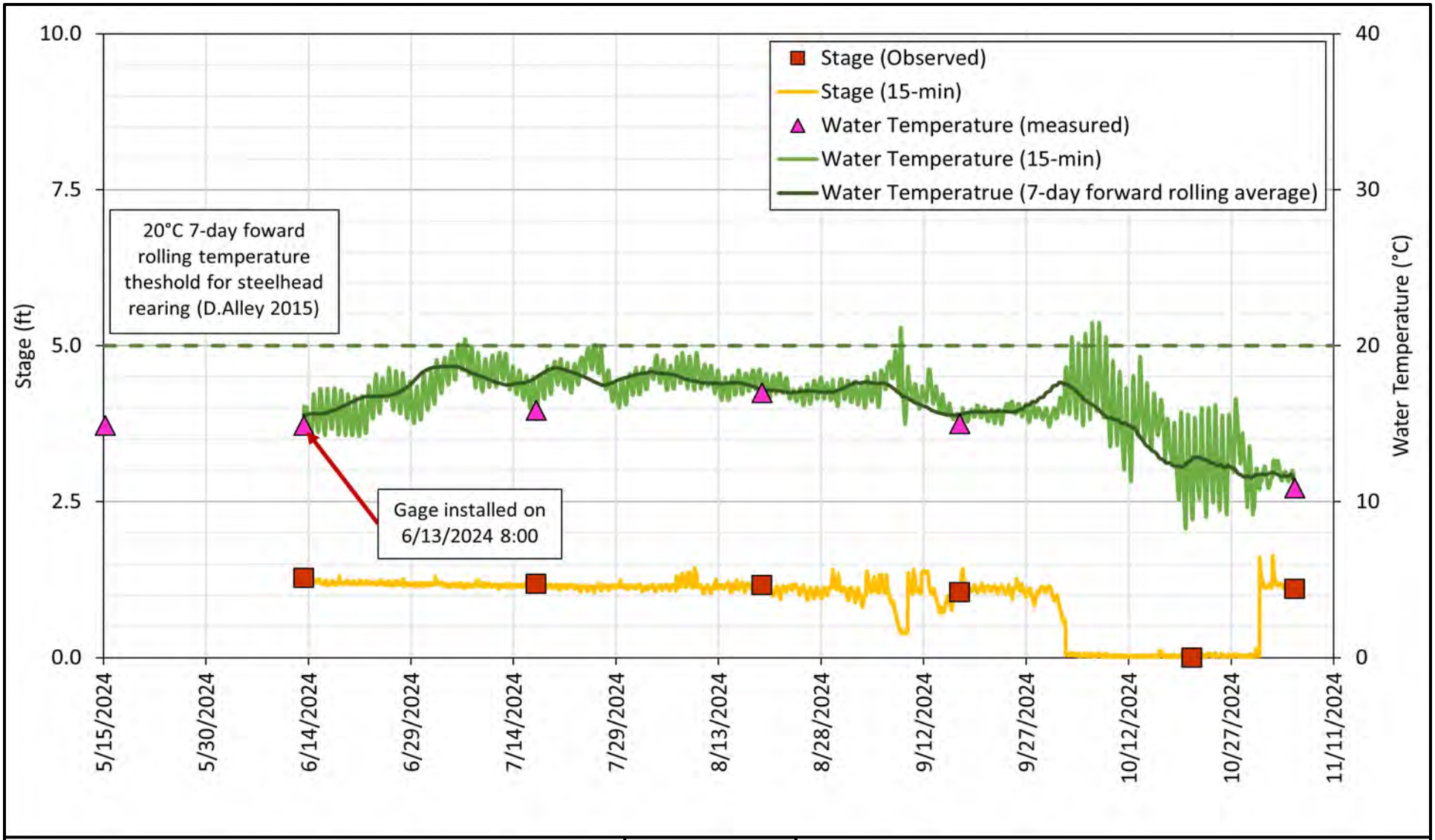
SMGWA Dry Season Stream Flow Monitoring, Dry Season 2024

Flow and Water Temperature at Bean Creek at Mt. Hermon Camp

Project No. 23−1013	Created By: KMK	Figure 7

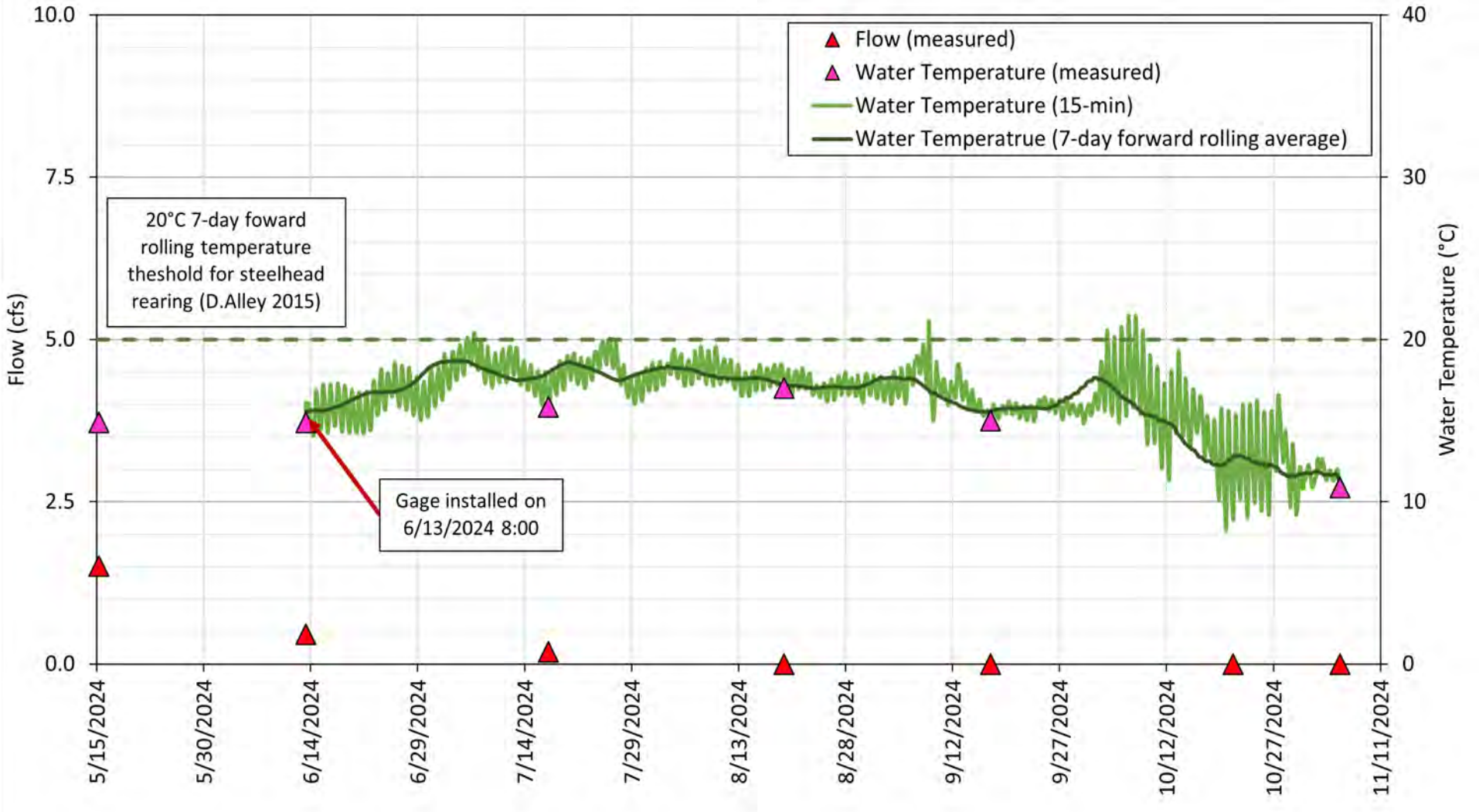


Notes:

SMGWA Dry Season Stream Flow Monitoring, Dry Season 2024

Stage and Water Temperature at Carbonera Creek at Carbonero Way

Project No. 23−1013	Created By: KMK	Figure 8



Notes: Flow samples were not collected on 6/18/2024.

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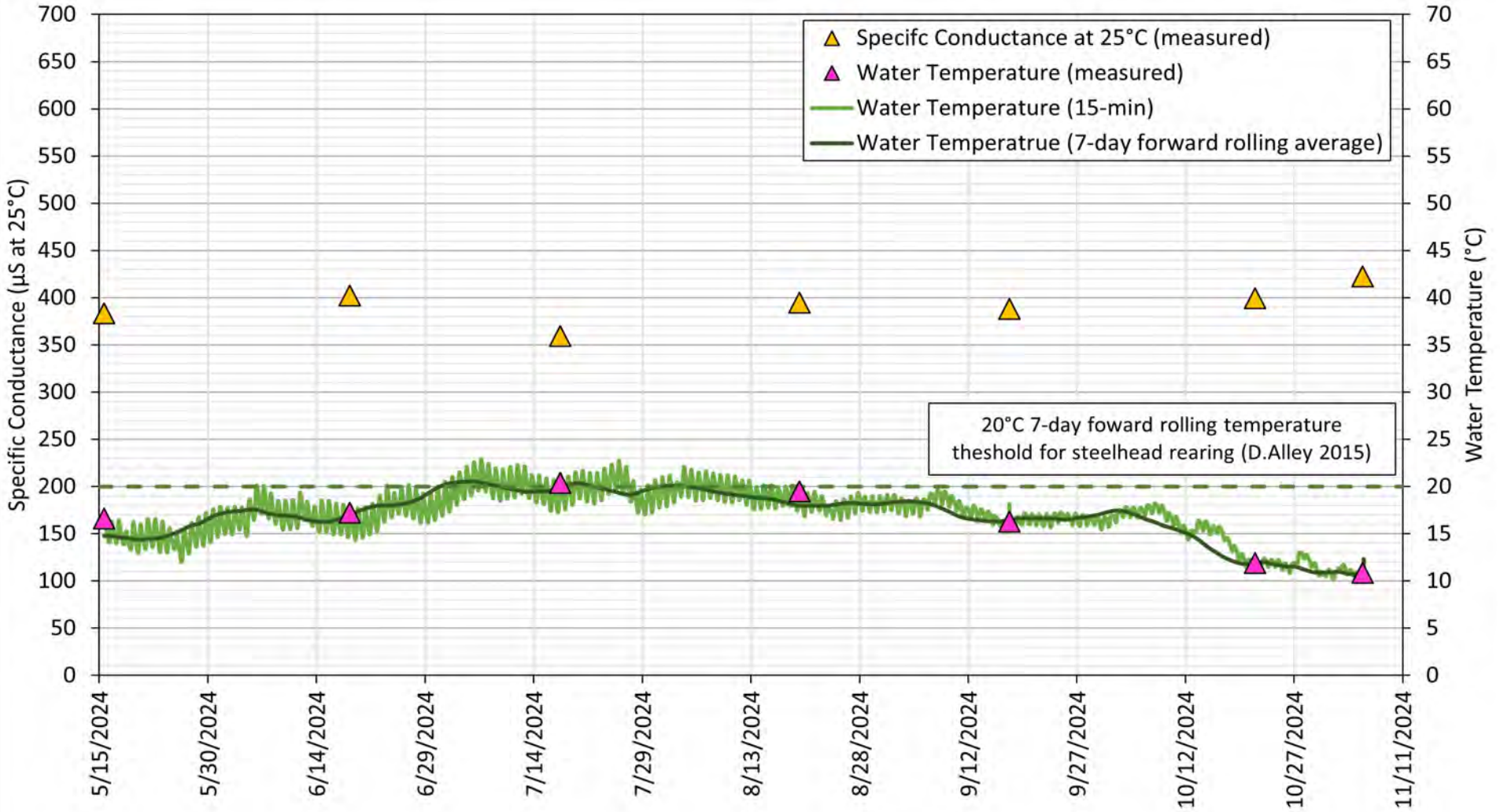
SMGWA Dry Season Stream Flow Monitoring, Dry Season 2024

Flow and Water Temperature at Carbonera Creek at Carbonero Way

Project No. 23−1013	Created By: KMK	Figure 9



Notes: Deployed gage was only caple of recording pressure and water temperature. No specific conductance time series was recorded at the site. Specific conductance field measurements were taken during site visits.

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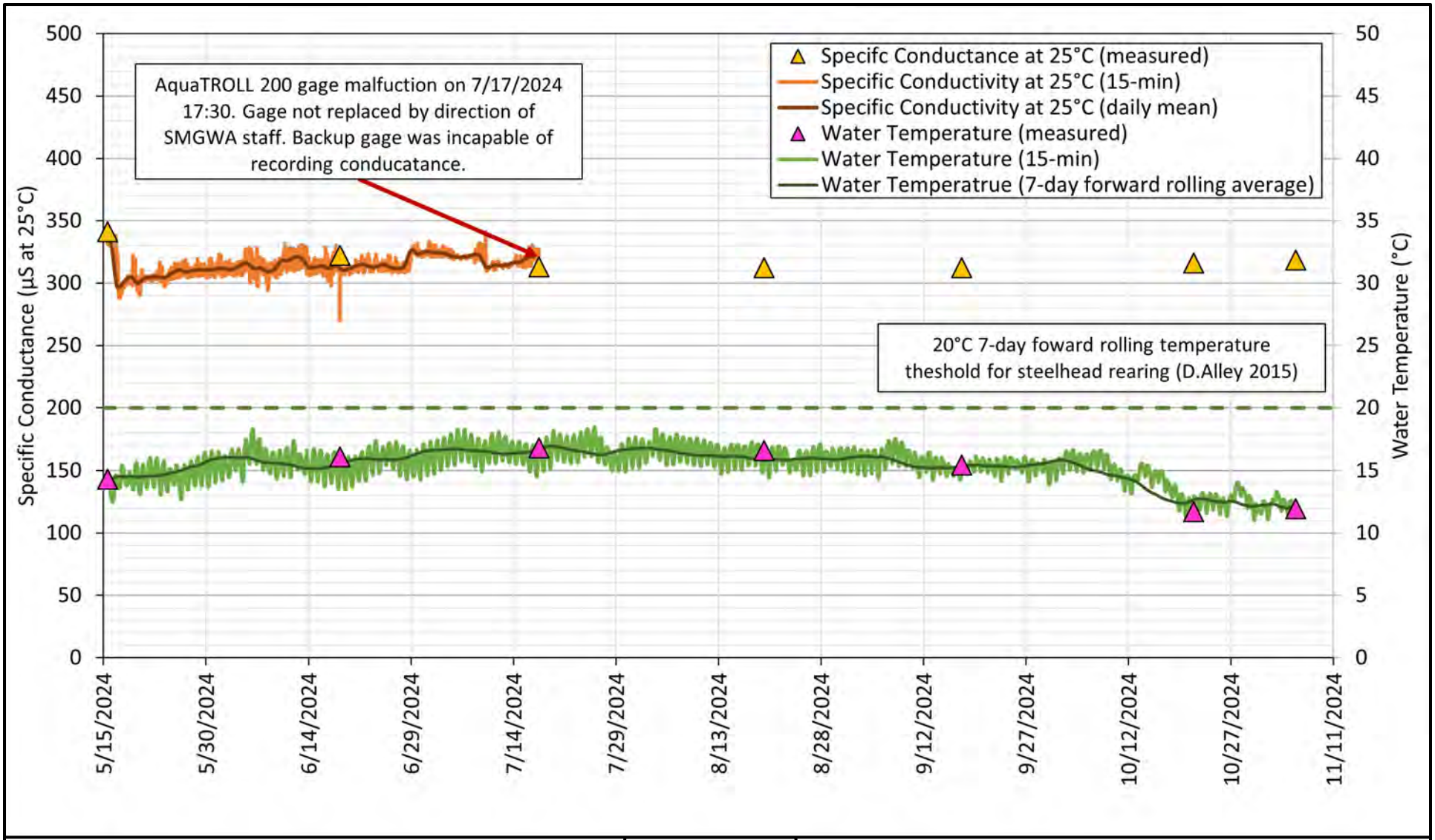
SMGWA Dry Season Stream Flow Monitoring, Dry Season 2024

Specific Conductance and Water Temperature at San Lorenzo River Upstream of Love Creek

Project No. 23−1013	Created By: KMK	Figure 10

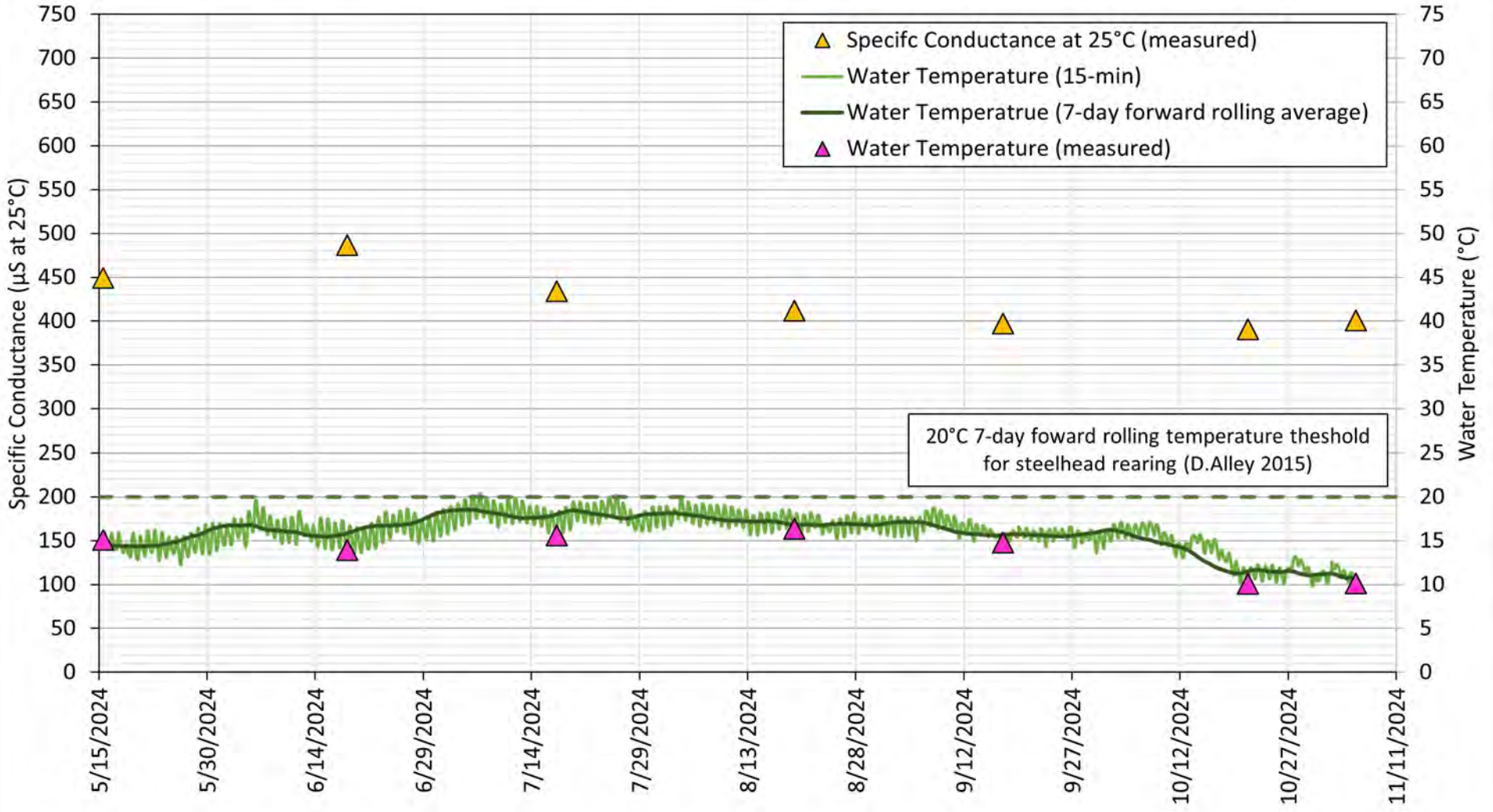


Notes:

SMGWA Dry Season Stream Flow Monitoring, Dry Season 2024

Specific Conductance and Water Temperature at Newell Creek Upstream of the San Lorenzo River

Project No. 23−1013	Created By: KMK	Figure 11



Notes: Deployed gage was only caple of recording pressure and water temperature. No specific conductance time series was recorded at the site. Specific conductance field measurements were taken during site visits.

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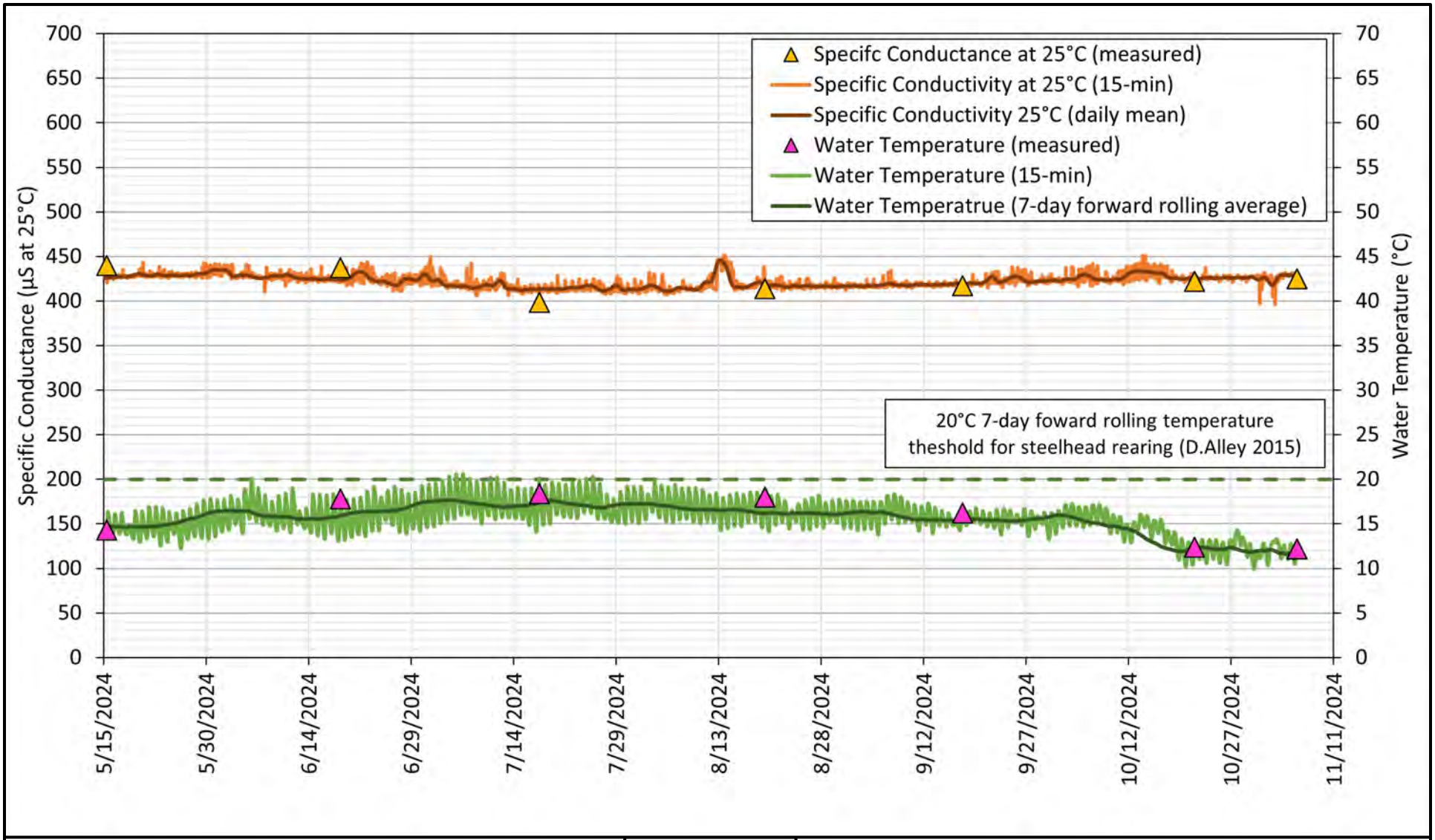
SMGWA Dry Season Stream Flow Monitoring, Dry Season 2024

Specific Conductance and Water Temperature at Zayante Creek at Woodwardia Weir

Project No. 23−1013	Created By: KMK	Figure 12

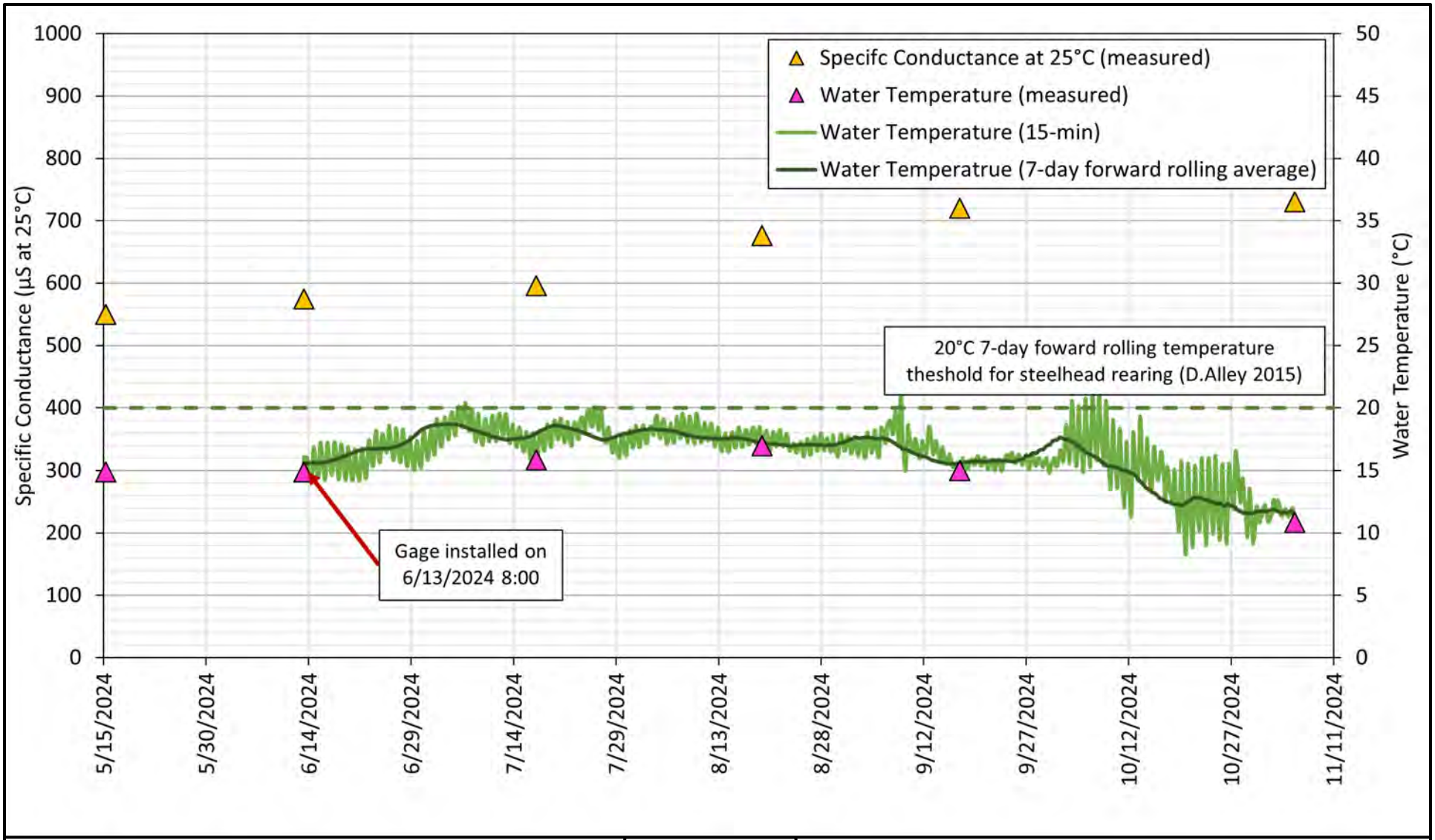


Notes:

SMGWA Dry Season Stream Flow Monitoring, Dry Season 2024

Specific Conductance and Water Temperature at Bean Creek at Mt. Hermon Camp

Project No. 23−1013	Created By: KMK	Figure 13



Notes: Deployed gage was only caple of recording pressure and water temperature. No specific conductance time series was recorded at the site. Specific conductance field measurements were taken during site visits.

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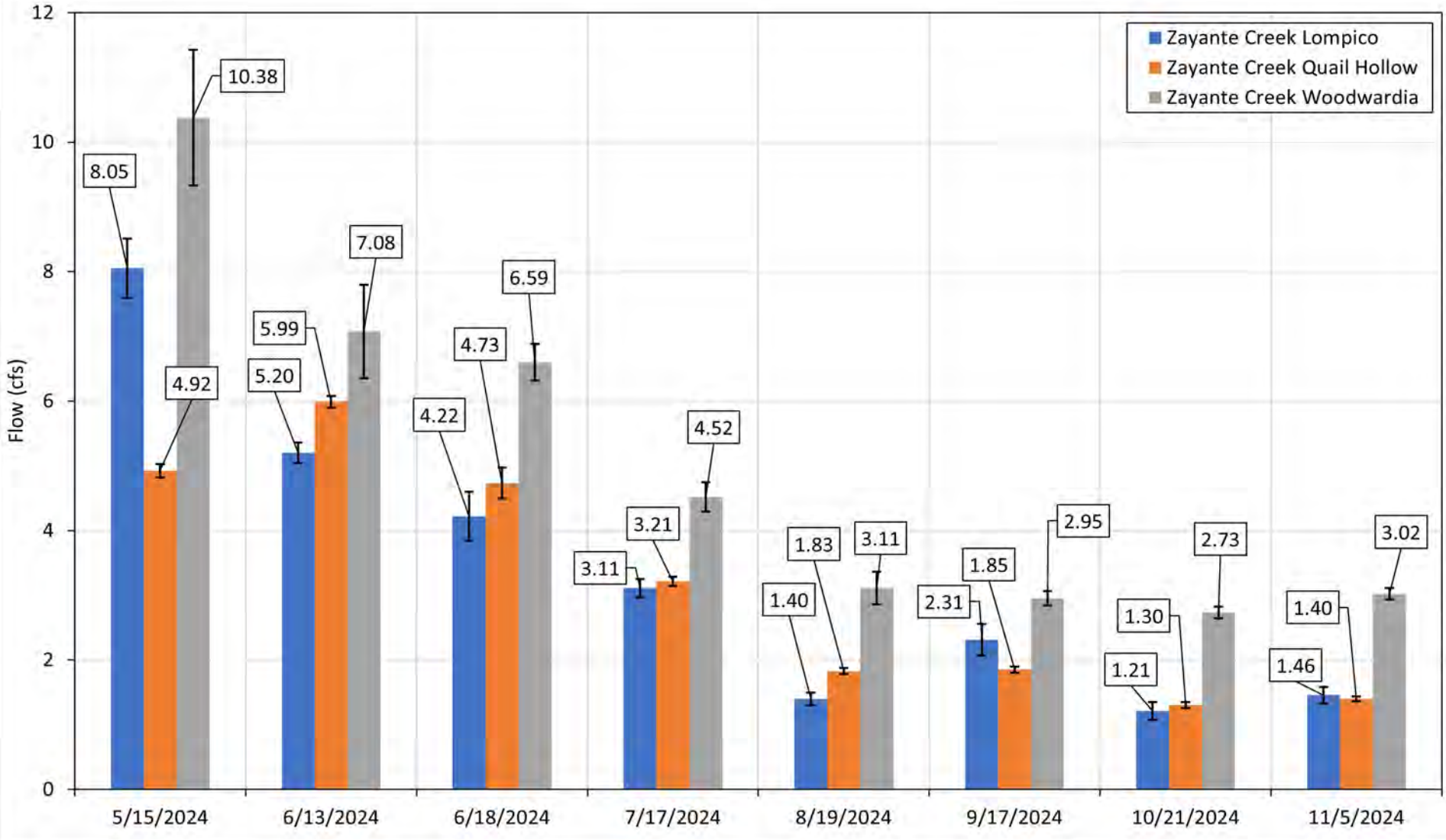
SMGWA Dry Season Stream Flow Monitoring, Dry Season 2024

Specific Conductance and Water Temperature at Carbonera Creek at Carbonero Way

Project No. 23−1013	Created By: KMK	Figure 14

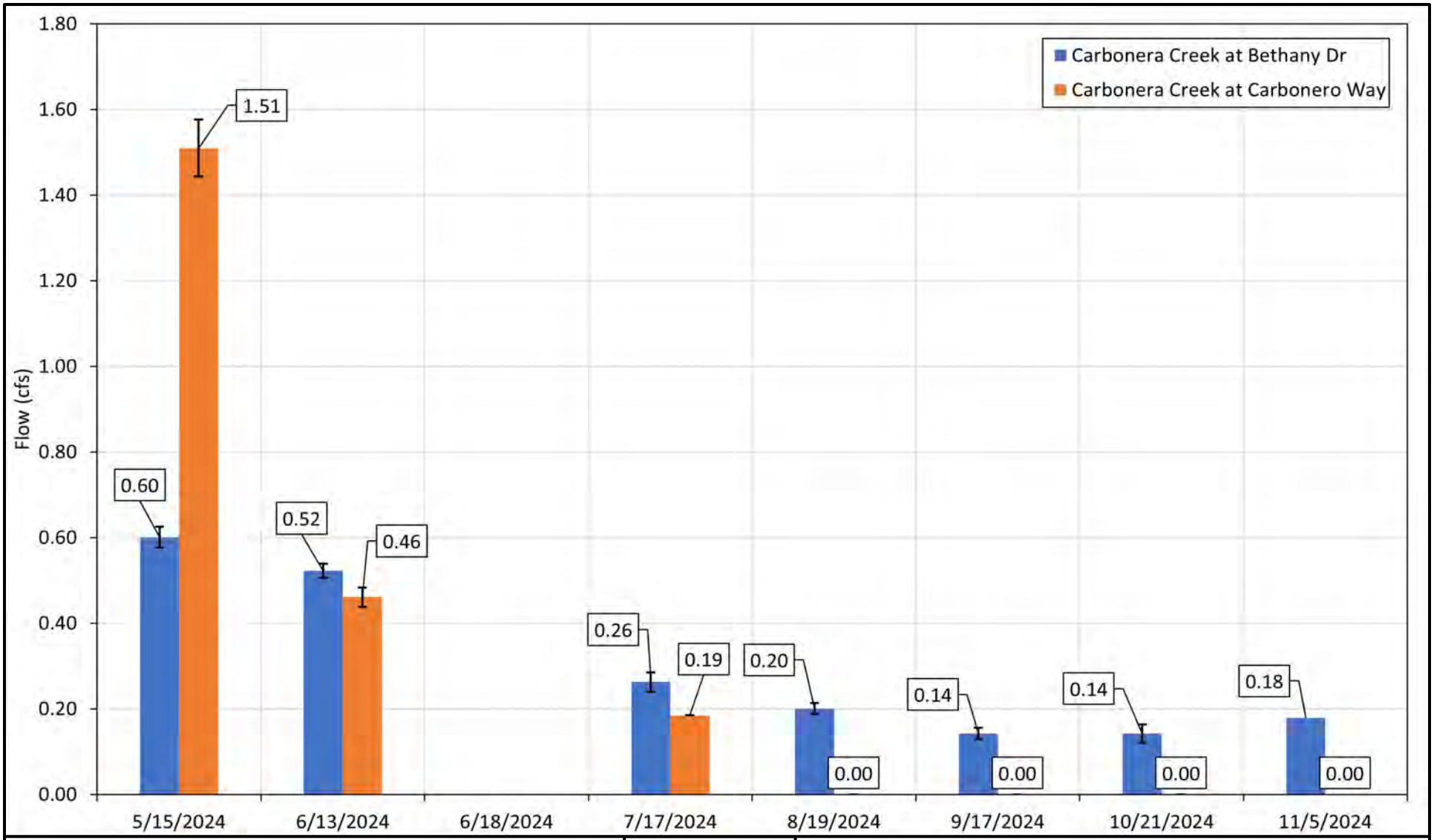


Notes:

SMGWA Dry Season Stream Flow Monitoring, Dry Season 2024

Flow Sample Comparison for Zayante Creek

Project No. 23−1013	Created By: KMK	Figure 15



Notes:

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SMGWA Dry Season Stream Flow Monitoring, Dry Season 2024

Flow Sample Comparison for Carbonera Creek

Project No. 23−1013	Created By: KMK	Figure 16