Water Year 2021 Streamflow and Temperature Monitoring for Santa Margarita Groundwater Sustainability Plan

Presented to Santa Margarita Groundwater Agency
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Balance Hydrologics

Outline

- Monitoring Goals
- Water Year 2021 Monitoring
- Water Year 2022 Monitoring

Monitoring Goals

- Characterize conditions at the inception of the Santa Margarita GSP
- Part of monitoring network to evaluate connection between surface water and groundwater within the basin
- Provide quantitative baseline against which the projects and management actions can be assessed in future 5-year assessments

Water Year 2021 Monitoring

- Operated 4 streamflow gages (dry season):
  - Flow
  - Temperature
  - Specific Conductance
- Observations at Groundwater Dependent Ecosystems

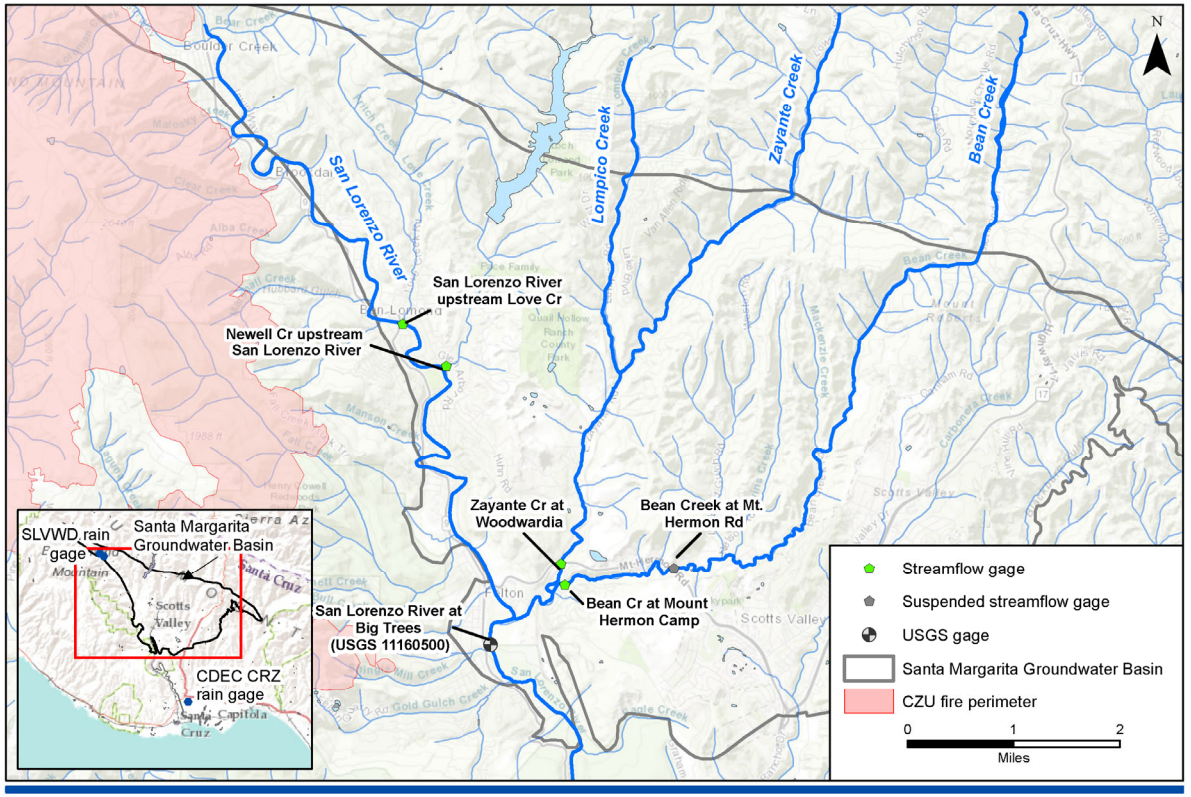

Figure 1. Santa Margarita Basin streamflow monitoring sites dry season 2021, Santa Cruz County, California

Balance Hydrologics

J:\Projects\221237 Santa Margarita Year 21\221237 site overview.mxd

Basemap: ESRI 2022

Water Year 2021 Ambient Conditions

- Water year 2021 was a critically dry year:
  - Annual rainfall was 18.75 inches at SLVWD Boulder Creek Rain Gage (37% of average)
  - Mean annual flow at the USGS big trees gage was 20.4 cfs (16 % of average)
- Second consecutive dry year
- Water year 2021 was first post-fire water year. The western portion of the San Lorenzo River watershed burned in the CZU fire

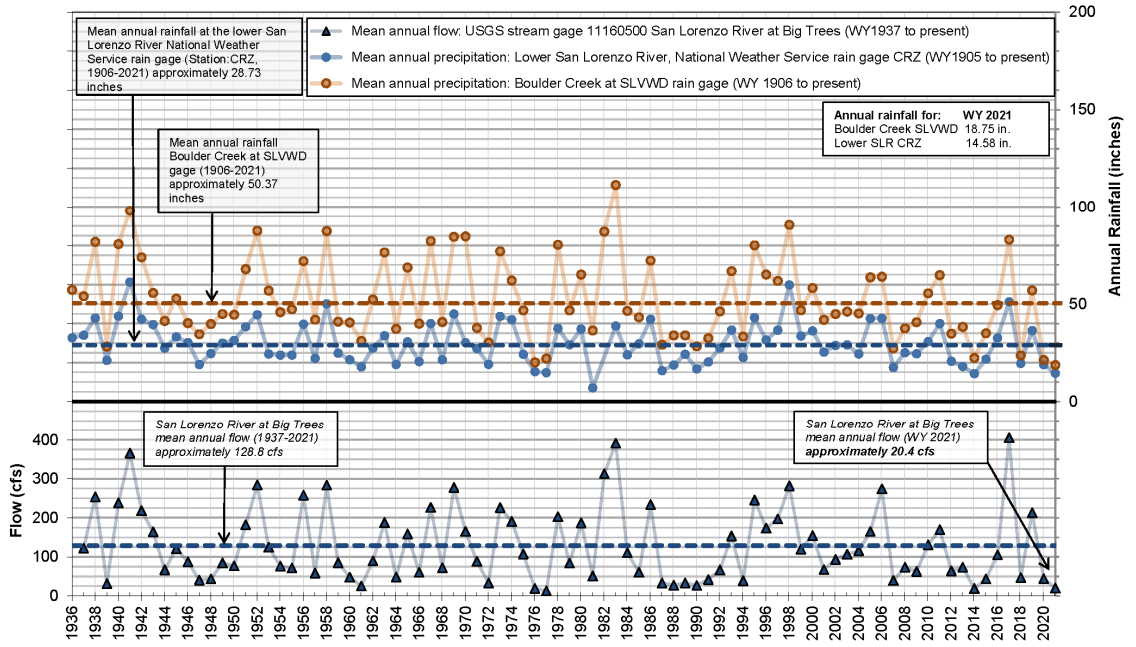

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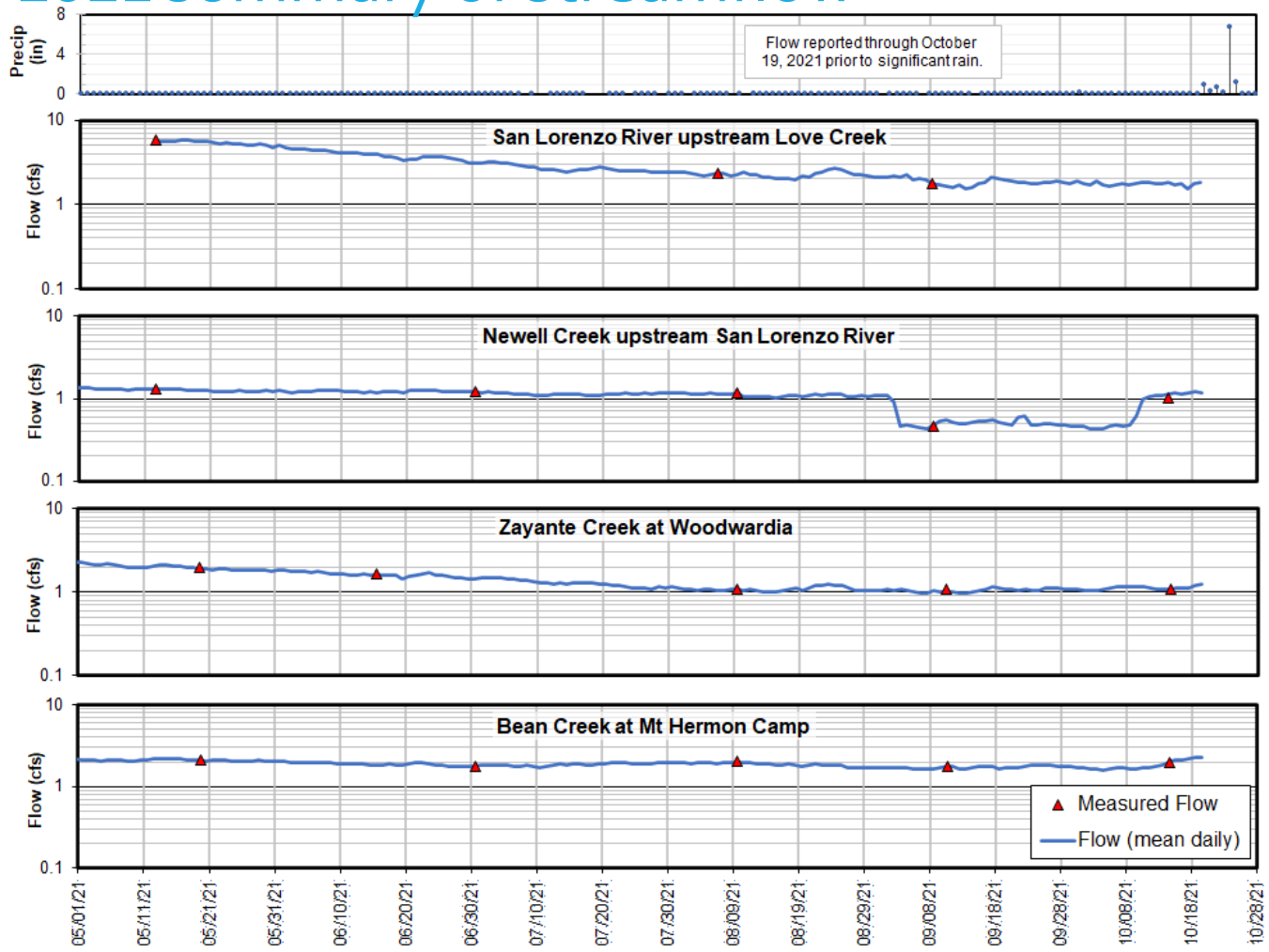
Figure 2. Comparison of historic annual rainfall in San Lorenzo Basin to annual streamflow at USGS Gage 11160500, San Lorenzo River at Big Trees, Santa Cruz County, CA

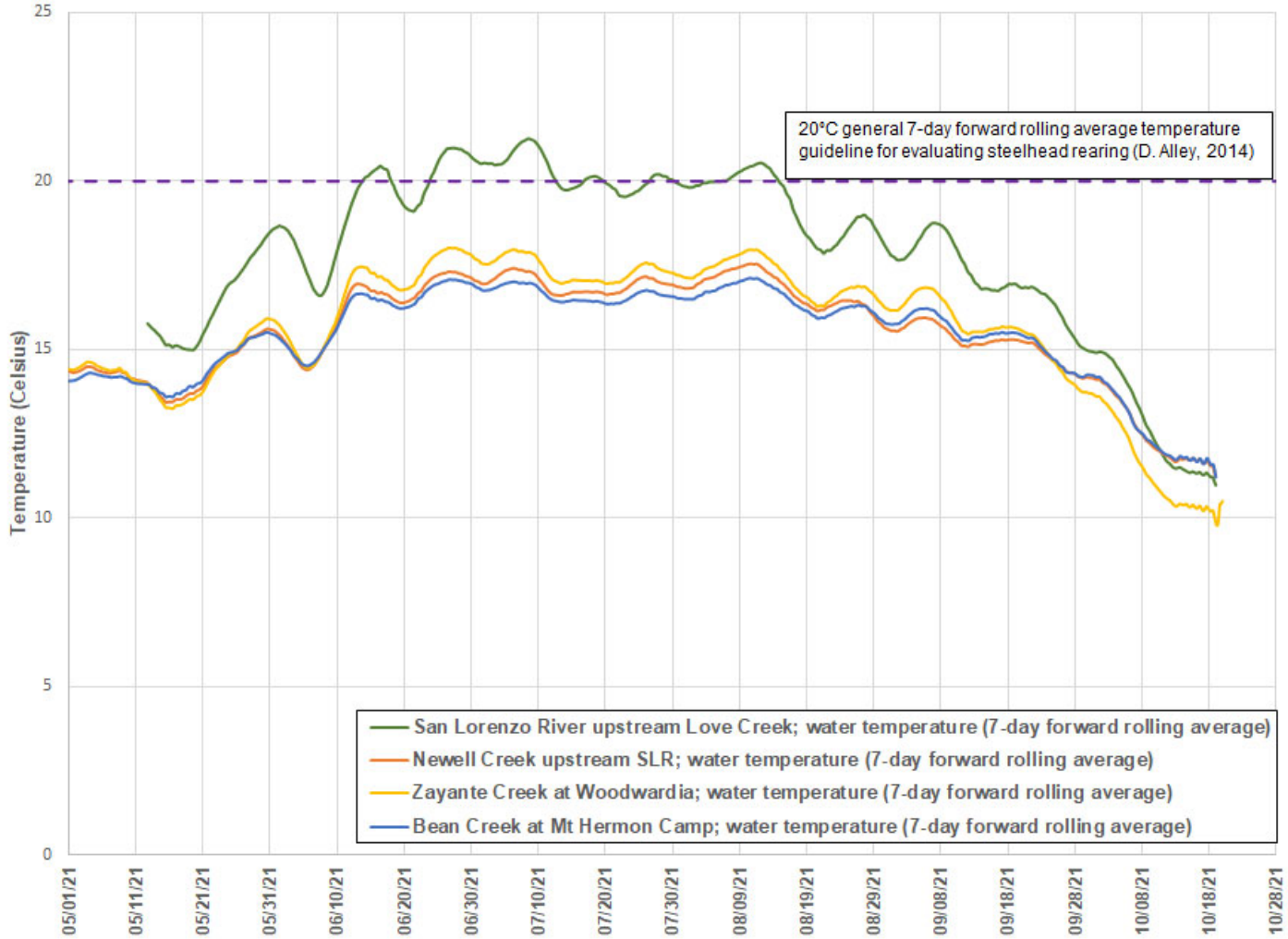
224018 Rainfall and USGS at Big Trees and others WY21 3-30-22.xlsx

Water Year 2021 summary of streamflow



* Please note y-axis is logarithmic

Water Year 2021 summary of temperature



Groundwater Dependent Ecosystem Monitoring

Spring	Water Year 2020	Water Year 2021
Eagle Creek (u/s of SLR)	Spring: 412 gpm Fall: 180 gpm	Spring: 144 gpm Fall: 103 gpm
Ferndell Creek/spring	Spring: 155 gpm Fall: 110 gpm	Spring: 81 gpm Fall: 67 gpm
Redwood Spring	Spring: 45-65 gpm (visual est.) Fall: 60 gpm	Spring: 36 gpm Fall: 34 gpm

Water Year 2021 Findings

- Data Collected during WY 2020 and 2021 establishes baseline surface water conditions during consecutive dry years
- Baseflows were generally lower during water year 2021 than 2020- consistent with second consecutive dry year
- Water year 2021 was the first water year after CZU fire, which may have impacted flow and temperatures on the San Lorenzo River.
- San Lorenzo River upstream of Love Creek was only site to exceed the 20°C temperature guideline

Monitoring for WY2022:

- Recently installed Bean Creek Gage

- Operate 5 streamflow gages (dry season):
  - Flow
  - Temperature
  - Specific Conductance

- Observations at groundwater dependent ecosystems

Questions