BOLINAS COMMUNITY PUBLIC UTILITY DISTRICT

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MEMORANDUM

TO: Board of Directors

FROM: Jennifer Blackman JWB

RE: Update on Water Supply

DATE: August 18, 2021

This memorandum provides a summary of the status of the District's water supply and current consumption data since the last memorandum to the Board dated July 21, 2021.

1. Water Supply: From July 20, 2021 – August 17, 2021 our diversions from the Arroyo Hondo Creek to the Woodrat Water Treatment Plant averaged 61,950 gallons per day (GPD), which was slightly higher than the average diversions to the plant the prior month (60,631 GPD). No water was diverted from the Woodrat reservoirs to meet demand during this time, once again underscoring the beneficial impact of the community's conservation efforts.

2. Rainfall: The district's total rainfall for the 2020-21 rain year (July 1, 2020 – June 30, 2021) was 16.42 inches. Virtually no rain has been received since July 1, 2021, but the persistent marine layer has resulted in heavy fog and the staff has measured 0.48 of an inch of "precipitation" thus far in the 2021-22 rain year (July 1, 2021 – August 17, 2021). The highly beneficial impacts of the fog/marine layer on both Arroyo Hondo Creek flow and evaporation/seepage from storage are discussed below.

3. Water in Storage: Our stored usable water supply in the Woodrat reservoirs as of August 10, 2021 (combined), plus the amount of treated water in storage is estimated to be 9,564,366 gallons, a modest decline in storage as compared to the 9,601,153 total water in storage on July 12, 2021.[1] Staff believes this slowed rate of decline in storage between mid-July and mid-August is due to the persistent marine layer and lack of wind during this time period, as will be further discussed below.

4. Water Consumption. From July 20, 2021 – August 17, 2021 water *production* averaged 58,124 GPD or approximately 99 GPD per connection. Water *consumption* during this same timeframe averaged 56,858 GPD, or 97 GPD per connection. As such, there is little to no "unaccounted for water loss" in the system at this time. Water consumption overall in the district has been remarkably steady for several months, indicating that the BCPUD's community outreach about the need for considerable voluntary water conservation to avoid mandatory rationing has had the desired outcome: the "seasonal" increase in water use that generally occurs beginning in late Spring and throughout the Summer has not occurred.

Individual water consumption remains uneven. For example, in July 2021, the highest 10 water users logged an average water use of 310 - 1159 GPD. In July 2021, 31 customers (including the highest 10) used more than 200 gallons GPD, whereas 26 customers did so in June, and 20 customers did so in May. In July 2021, 102 customers used more than the anticipated ration amount of 125.

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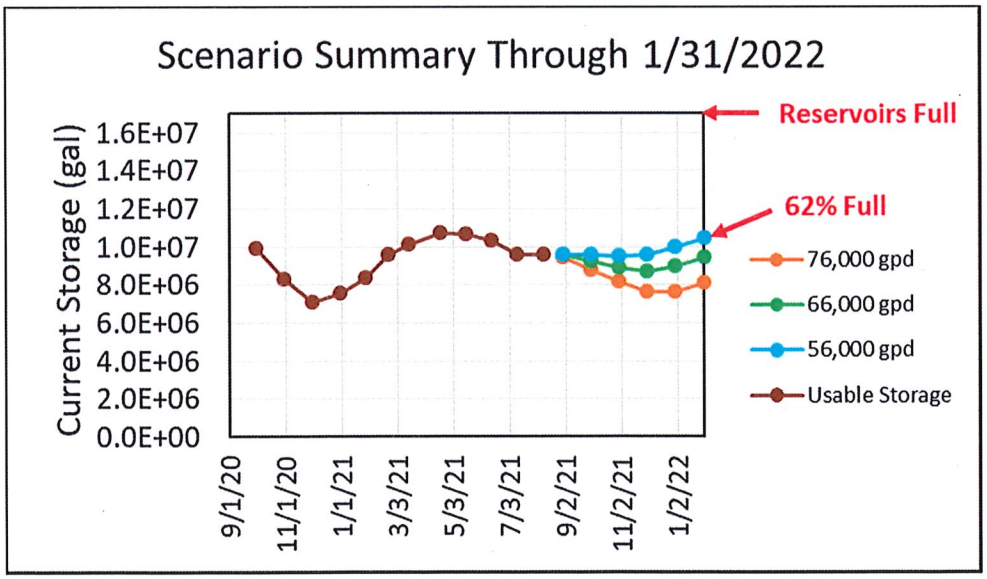
[1] Note: footnote 2 in my water supply update memo dated July 21, 2021 mistakenly "double-counted" the 792,458 gallons of treated water in storage, please disregard that footnote.

GPD, whereas in June, 99 customers did so and 108 customers did so in May 2021. In July 2021, 161 customers used more than 100 GPD, whereas in June 2021, 182 customers did so and in May, 194 did so

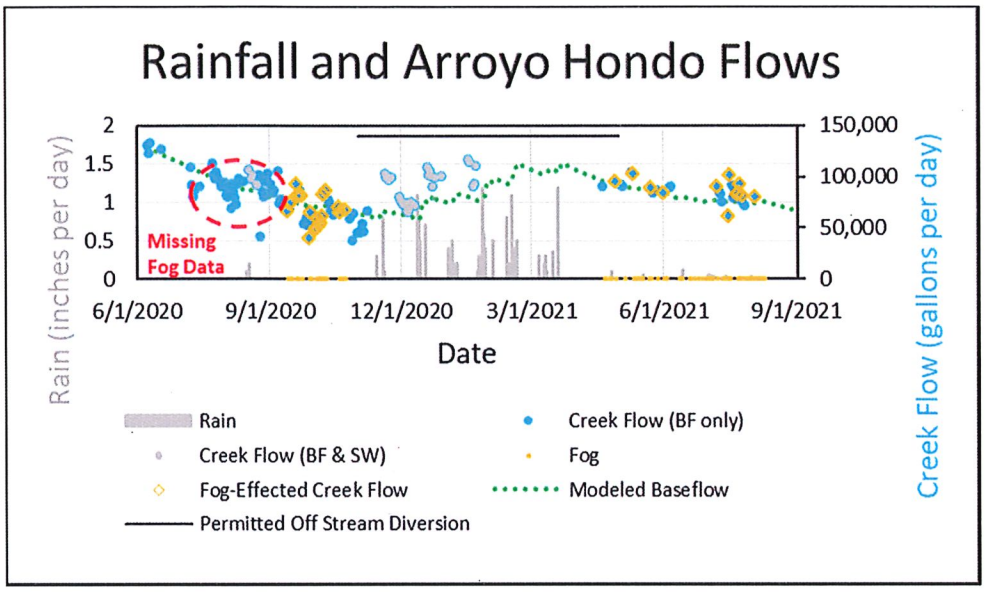
5. Updated Models: ***Note: The models in this memo assume the Hypothetical Minimum Rainfall Scenario presented in my June 2, 2021 memo, i.e., that the district will receive rainfall approximately equivalent to the 2020-21 rain year, or 9.9 inches of rainfall, between October 2021 and January 2022.***

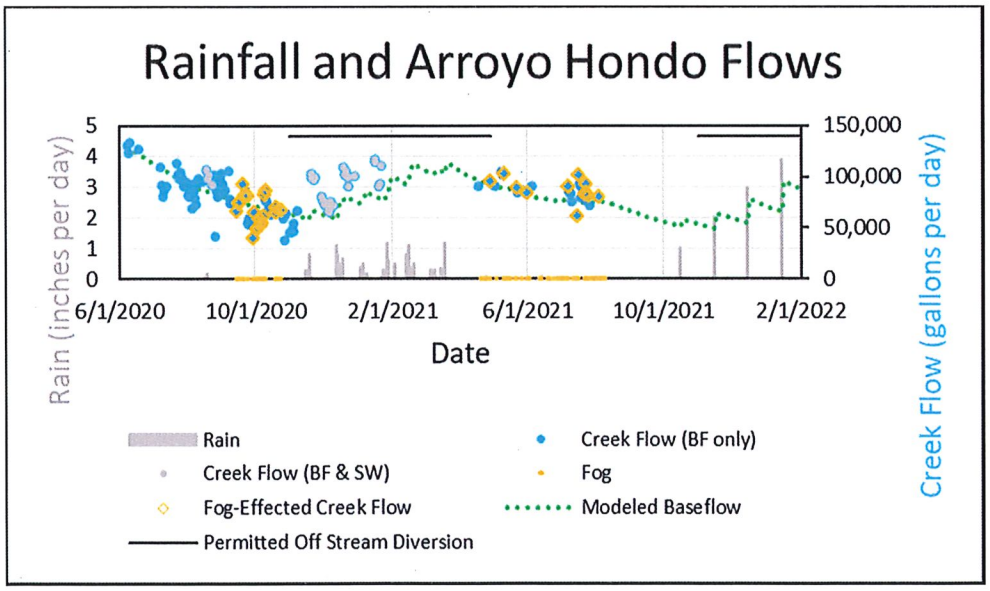
The graph below is an updated Scenario Summary reflecting the actual water storage data recorded as of August 10, 2021 (brown line in left area of graph with the twelve dots) and the "fork" of projections as to how much stored water the district will have available through January 31, 2022 based on differing rates of overall community water consumption ***and*** (1) assumed (but hypothetical) receipt of 9.9 inches of rain during October 2021 through January 2022, (2) updated projections to the Arroyo Hondo Creek base flow recession model, discussed below, including the impact of fog, and (3) an updated, measured 4 GPM (5,760 GPD) rate of seepage past the gate at the lower Arroyo Hondo diversion point.[2] The most recent seven-day running average community consumption is approximately 56,000 GPD, placing the district right on the blue line. This graph now projects that if (1) consumption stays between current levels and below the ration trigger of 66,000 GPD, (2) the 9.9 inches of hypothetical rainfall occurs by January 31, 2022, and (3) the fog gives way to the more typical warm and sunny Fall weather, the district will have between 9.5 and 10.5 million gallons of water in storage through January 2022 (green and blue dots on right side of graph box, respectively), or approximately 56- 62 percent of capacity.



[2] The 4 GPM rate is based on repeated flow measurements in August. The earlier estimated rate of seepage past the gate was 10 GPM or 14,400 GPD. Staff has documented a consistent rate of decline in the seepage rate during July and August. Staff also has formulated a plan to recapture that seepage via a solar-powered pumping system, if there is no objection from the National Park Service.

The next two graphs are updated versions of the district's base flow (BF) recession model for the Arroyo Hondo creek, which has been updated to reflect the effect of data collected by the district re: the fog/marine layer[3] (in addition to updates discussed in previous memoranda to the Board). The first graph shows conditions through August 2021, and the second projects creek flows through February 1, 2022, assuming the fog will give way to the more typically sunny and warm Fall weather the district generally experiences. The total creek flow is considerably increased as compared to previous predictions which were largely based on 2020 data (last summer was much sunnier) and which were not adjusted for fog. The model currently projects about 60,737 GPD of recoverable creek flow[4] per day by September 1, 2021 and 45,497 GPD of recoverable base flow by October 15, 2021.





[3] Please note the area of "missing fog data" in red on the top graph. District staff only began specifically tracking fog in September 2020 and is endeavoring to obtain that data for June – September 2020 . As such, this model may be further updated.

[4] Total creek flow minus estimated flows past/around the gate.

The next two graphs depict rainfall received in Bolinas between October 1, 2020 and mid-August, 2021: 16.57 inches relative to historic minimum, average and maximum rainfall (69 years of BCPUD rainfall data); as these graphs show, the district has received only slightly above the minimum recorded rainfall for this time of year. As portrayed in the bottom graph, only four years during the preceding 69 years were drier than this one.