BOLINAS COMMUNITY PUBLIC UTILITY DISTRICT

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MEMORANDUM

TO: Board of Directors

FROM: Jennifer Blackman JNB

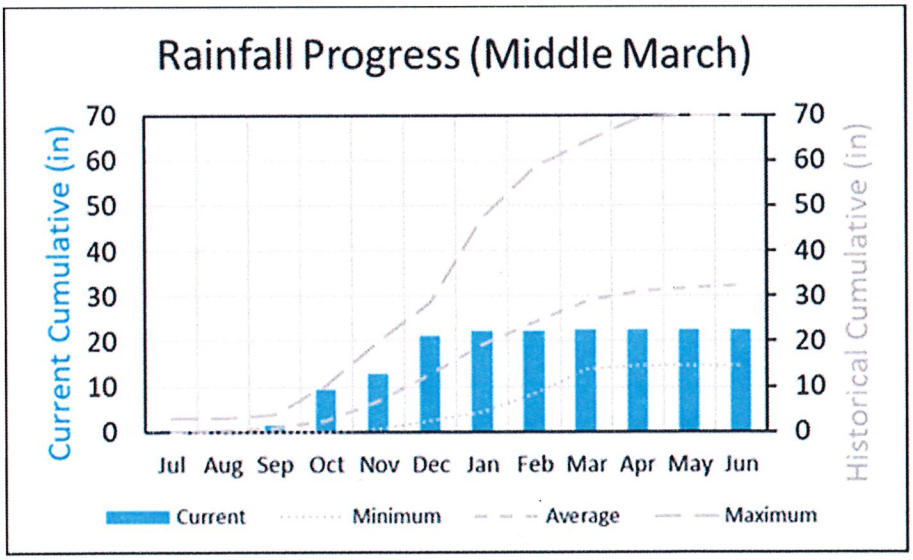
RE: Update on Water Supply

DATE: March 14, 2022

This memorandum provides a summary of the status of the District's water supply and related data and projections since the last memorandum to the Board dated February 14, 2022.

1. Rainfall: The low rainfall trend of 2022 has continued; regrettably, the district has received only 0.43 inches of rain since my last memo to the Board dated January 18, 2022, bringing our year-to-date total to 22.66 inches of rain.[1] Last year, as of the end of March 2021, the district had received only 16.2 inches of rain, so rainfall to-date remains well above last year's rainfall. As of the preparation of this memo, rain is predicted for March 19, 2022; no other significant rain events are predicted in the 10-day forecast, but there are some indications of possible rain at the very end of March.

   As depicted in the graph below, the cumulative precipitation to-date is below average:



   As for what the current rainfall total suggests for the full rain year total, the current forecast and seasonal trend suggest that the district will not receive its average annual rainfall this year (see graph on top of next page).

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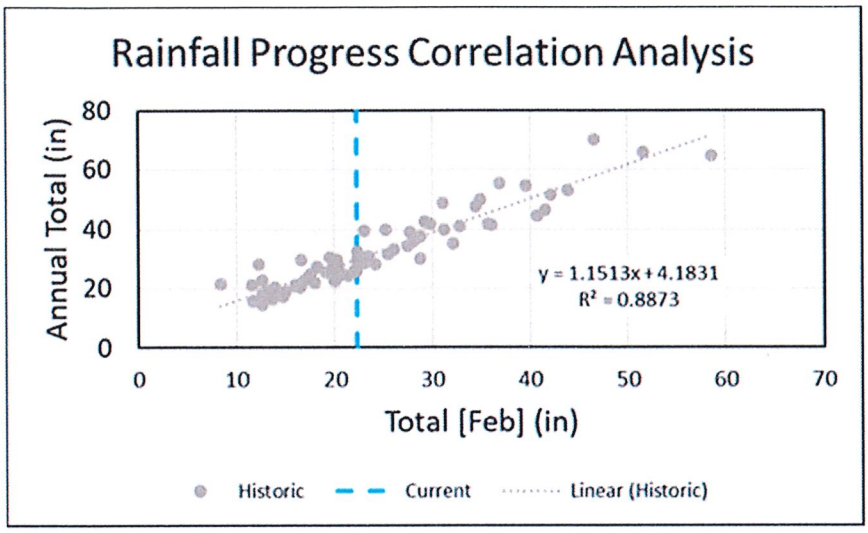
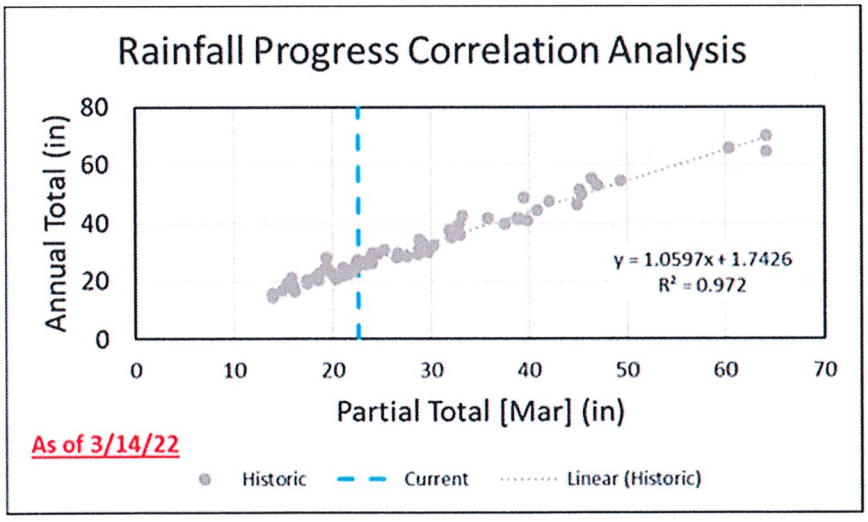
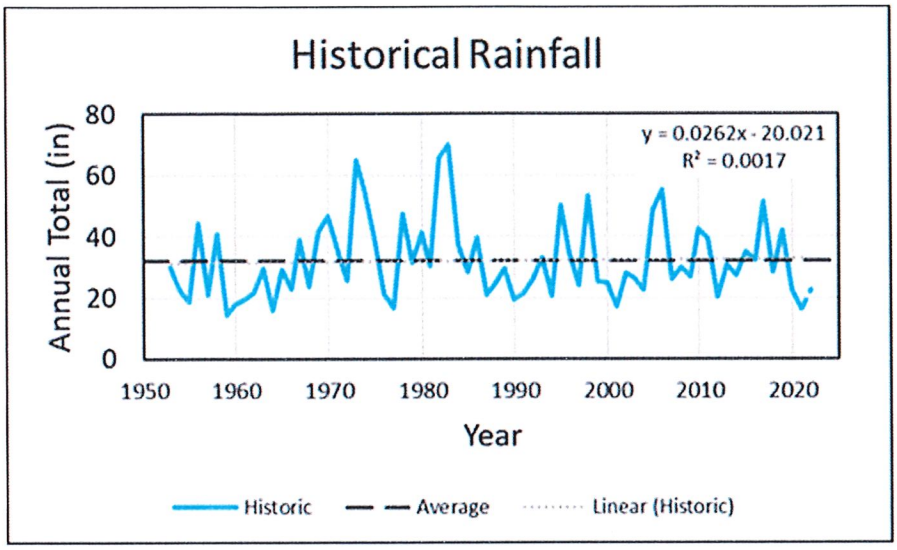
[1] Good news: as I finalized this memo on March 15th, I am pleased to report that the district received 0.55 inches of rain during the overnight "storm" last night.



The graph below correlates the rainfall progress for March (assuming somewhat pessimistically no more rain this month) with total annual rainfall for the available historical record (preceding 68 years). During that time, the district has experienced 27 other years where the rainfall received was 22.66 inches or less as of the end of March. Those rain years generally turned out to be somewhat drier than normal years with a minimum total rainfall received of 14.49 inches, a maximum of 28.30 inches, an average of 21.23 inches and a line of best fit projection of 25.75.

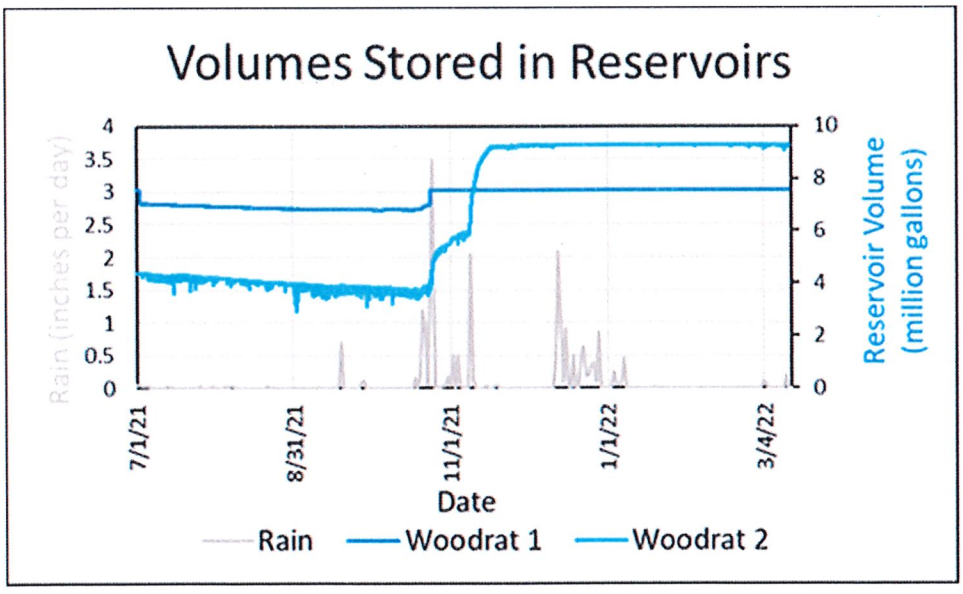


It therefore appears at this time that 2021-22 will be a third consecutive year of below average rainfall in the district (see graph on the top of the next page).



2. Water Production and Consumption: From February 15, 2022 – March 14, 2022, water *production* averaged 68,798 gallons per day (GPD) or approximately 116 GPD per connection, which is a 16% increase over the last reporting period, when production averaged 59,100 GPD, or approximately 100 GPD per connection. Water *consumption* during this same timeframe averaged 65,852 GPD, which is approximately 111 GPD per connection, which is an 8% increase over the last reporting period, when consumption averaged 61,079 GPD, or approximately 103 GPD per connection.

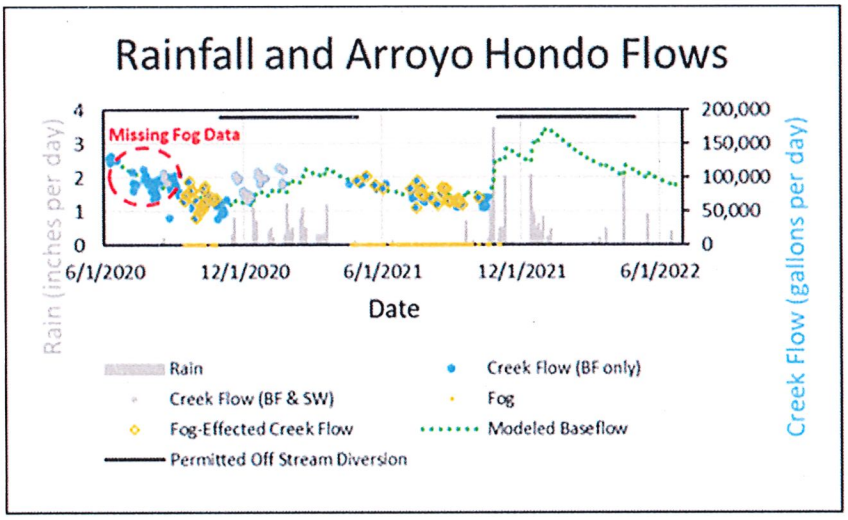
3. Water in Storage:



The updated graph on the preceding page depicts the volumes of water stored in each of the district's reservoirs (Woodrat 1 and Woodrat 2) from July 1, 2021 through mid-March 2022, with the rain events also shown. Our stored usable water supply in the two reservoirs as of March 14, 2022 (combined), plus the amount of treated water in storage, is estimated to be 16,271,754 gallons: Woodrat 1 is full and spilling and Woodrat 2 just below spilling at 99.5% capacity (although it may overtop as a result of the rains expected this weekend).

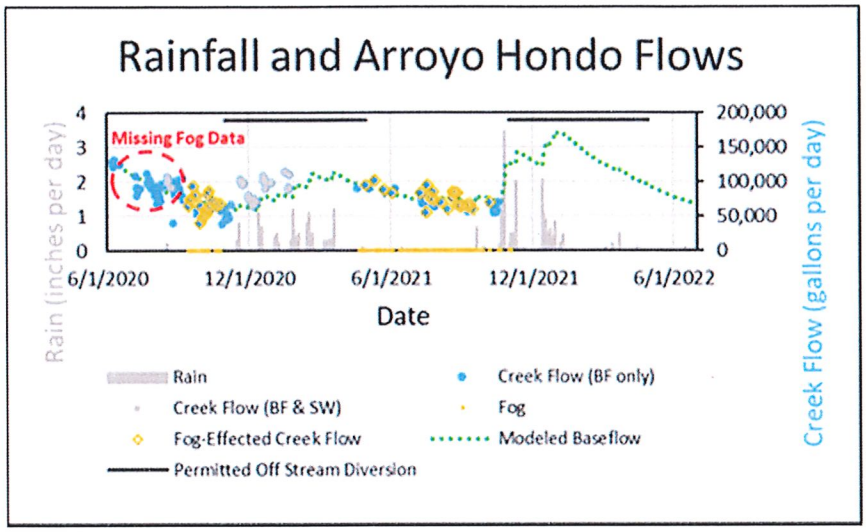
4. Updated Models:

The next two graphs are the district's base flow (BF) recession model for the Arroyo Hondo Creek, updated to depict predictions about creek flows for the remainder of the rain year.[2] The first graph shows actual conditions through March 14, 2022 and assumes 0.5 inches more rain for this month; this graph then *assumes average monthly rainfall for Bolinas for April – June 2022*. An additional somewhat pessimistic assumption is that there will be no fog during the spring. If the district does receive average rainfall in April - June, the model predicts that creek flows will be approximately 85,000 GPD by June 30, 2022, whereas flows were approximately 75,000 GPD on June 30, 2021.



The second graph (on the final page) shows actual conditions through March 14th and assumes 0.5 inches more rain for this month, but it then *assumes the same amount of rainfall we received last year for April – June 2022 and no fog in the spring.* If that lower amount of rainfall occurs, the model predicts creekflows on June 30, 2022 will be slightly lower than at the same time last year: 67,000 GPD as compared to 75,000 GPD on June 30, 2021.

[2] It has not been possible for staff to collect actual creek flow data per our existing methods since the October rains when the gate at the lower diversion point was raised in anticipation of the "atmospheric river" rain storm. As such, staff is using this model to assess creek base flow response to rains, but we currently are unable to check the model again actual flow data. Staff is working to develop a means by which to measure creek flows at the upper diversion point.


Rainfall and Arroyo Hondo Flows
Missing Fog Data
Rain (inches per day)
Creek Flow (gallons per day)
4
3
2
1
0
200,000
150,000
100,000
50,000
0
6/1/2020
12/1/2020
6/1/2021
12/1/2021
6/1/2022
Date
Rain
Creek Flow (BF only)
Creek Flow (BF & SW)
Fog
Fog-Effected Creek Flow
Modeled Baseflow
Permitted Off Stream Diversion