Humboldt Bay Municipal Water,
828 7th street
Eureka, CA

Agenda for Special Meeting of the Board of Directors
February 10, 2025
Meeting Start Time: 5:30 PM

District Mission

Reliably deliver high-quality drinking water to the communities and customers we serve in the greater Humboldt Bay Area at a reasonable cost; reliably deliver untreated water to our wholesale industrial customer(s) at a reasonable cost; and protect the environment of the Mad River watershed to preserve water rights, water supply and water quality interests of the District.

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Members of the public may join the meeting online at:
https://us02web.zoom.us/j/86710296323?pwd=MjZldGxRa08wZ0FWOHJrUlNhZnFLQT09
Or participate by phone: 1-669-900-9128 Enter meeting ID: 867 1029 6323 **Enter password:** 484138
If you are participating via phone and would like to comment, please press *9 to raise your hand.

How to Submit Public Comment: Members of the public may provide public comments via email until 5 p.m. the day before the Board Meeting by sending comments to office@hbmwd.com. Email comments must identify the agenda item in the email's subject line. Written comments may also be mailed to 828 7th Street, Eureka, CA 95501. Written comments should identify the agenda item number. Comments may also be made in person at the meeting.

Announcement recording of meeting: This meeting may be recorded to assist in the preparation of minutes. Recordings will only be kept 30 days following the meeting, as mandated by the California Brown Act.

1. **ROLL CALL**
2. **FLAG SALUTE**
3. **ACCEPT AGENDA**
4. **PUBLIC COMMENT**
   Members of the public are invited to address the Board on items not listed on the agenda that are within the scope and jurisdiction of the District. At the discretion of the President, comments may be limited to three minutes per person. The public will be allowed to address items on the agenda when the Board takes up that item. Under the Brown Act, the Board may not take action on any item that does not appear on the agenda.
5. **Continuing Business**
   a. Water Resource Planning History
   b. 1707 Petitions for Change
      i. Water Right Permit 11714
      ii. Water Right Permit 11715
   c. Supplemental Data Requests from Water Board staff*
   d. Next steps

ADJOURNMENT

ADA compliance statement: In compliance with the Americans with Disability Act, if you need special assistance to participate in this meeting, please contact the District office at (707) 443-5018. Notification 24 hours prior to the meeting will enable the District to make reasonable arrangements to ensure accessibility to this meeting. (Posted and mailed February 7, 2025.)

HUMBOLDT BAY MUNICIPAL WATER DISTRICT
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Fax 707-443-5731 707-822-8245 EMAIL OFFICE@HBMWD.COM
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January 31, 2025

Mr. Matthew McCarthy
Via Email: Matthew.McCarthy@waterboards.ca.gov

Re: Permits 11714 and 11715 Petitions for Change forms 1707 Data Requests

Dear Mr. McCarthy,

We are writing to provide responses to your letter of October 17, 2024 and email of November 1, 2024. Our responses are organized in the order of your questions contained in your November 1st email and included here with our responses immediately following each question for easy reference.

October 17th Letter

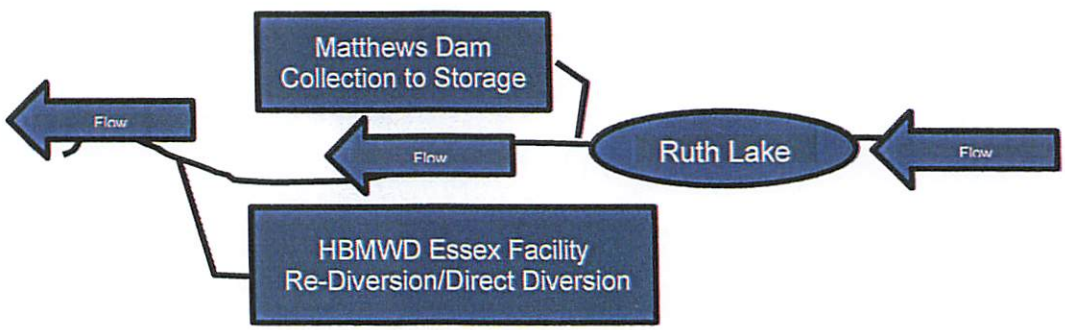
1. *A summary of water diversion data for permits 11714 and 11715 from Water Year 2009 through Water Year 2023. The data should be presented in a manner that distinguishes between the following:*
   a. *diversions under each permit, with water attributed to the most senior water right first; and,*
   b. *diversions to storage at Matthews Dam and both direct diversion and rediversion of released stored water at Essex.*

Response:

Humboldt Municipal Water District (HBMWD) operations relating to direct diversion, re-diversion, and diversion to storage operate under several permits and licenses, held by HBMWD and the City of Eureka. The allocations to the City of Eureka Licenses are managed by HBMWD. The licenses and permits, along with their associated diversion rates, volume limitations, and conditions are listed below. They are listed in order of priority with the most senior first.

1. City of Eureka License 9527 (7621) diversion to storage at Ruth – 750 ac-ft.
2. City of Eureka License 9527 (7621) direct diversion at Essex - 7.74 cfs (15.35 ac-ft/day).
3. City of Eureka License 9528 (16452) direct diversion at Essex - 1.2 cfs (2.38 ac-ft/day). License 9527 must be fully utilized prior to allocating to License 9528. Total combined allocation of City of Eureka Licenses must be less than 5780 ac-ft/yr.
4. HBMWD Permit 11714 diversion to storage at Ruth. Diversion must be less than 48030 ac-ft/yr.
5. HBMWD Permit 11714 re-diversion at Essex.
6. HBMWD Permit 11715 direct diversion at Essex. Re-Diversion and direct diversion combined must be less than 116 cfs (230.1 ac-ft/day).
7. HBMWD Permit 11715 direct diversion at Ruth Lake CDS. Re-Diversion and direct diversion combined must be less than 116 cfs (230.1 ac-ft/day). Combined diversions under Permit 11714 and Permit 11715 must be less than 132030 ac-ft/yr.
8. HBMWD Permit 11715 diversion to storage at Ruth. Diversion must be less than 20,000 ac-ft/yr.
9. HBMWD Permit 11715 re-diversion at Essex (not more than diversion to storage under Permit 11715 and less than 20,000 ac-ft/yr). Re-Diversion and direct diversion combined must be less than 116 cfs (230.1 ac-ft/day). Combined diversion from Permit 11714 and Permit 11715 must be less than 132,030 ac-ft/yr.

HBMWD's system produces water from the Mad River drainage. Water from the upper drainages is collected in Ruth Lake/Matthews Dam, which is an on-channel storage. This means that there is no flow bypass system that allows flow from the upper drainage to bypass the lake. Water flows through the lake and is released to the Mad River below Matthews Dam. The Mad River flows from Matthews Dam over 50 miles to HBMWD's Essex Facility, where water is diverted or re-diverted. All water passing past the Essex Facility is considered bypass flow. There is a USGS gage station (Arcata 11481000) directly downstream of the Essex facility. For this analysis, the Arcata gage station readings are considered as the Essex bypass flow. A schematic of the flow system is shown below.



The City of Eureka diverts flow from Mad River to storage at Ruth Lake, direct and/or re-diversion at HBMWD's Essex Facility. HBMWD diverts flow from the Mad River to storage at Ruth Lake, direct diversion to the Ruth Lake CSD at Ruth Lake, re-diversion at the Essex Facility, and direct diversion at the Essex facility.

There is a small direct diversion (under HBMWD permit 11715) of water to parcels

around Ruth Lake. These extractions are pumped from the lake by permitted property owners who are responsible for self-reporting their water usage and they are currently not metered.

2. *Information to demonstrate how you manage the operation of Matthews Dam and account for water inflow, diversion to storage, withdrawal of water for use in the area surrounding Ruth Lake, evaporation and seepage losses, bypass flows, and releases of stored water including hydropower releases.*

Response:

HBMWD operates Matthews Dam, which impounds water in Ruth Lake. Water is diverted to storage at Matthews Dam/Ruth Lake. Water flows into Ruth Lake from the upper Mad River, which is approximately 1/3 of the Mad River drainage basin. There is a stream gage, USGS Zenia gage station (11480390), on the Mad River just upstream of Ruth Lake. There are also several un-gaged creeks that flow into lake. Water from the upper drainages is collected in Ruth Lake/Matthews Dam, which is an on-channel storage. HBMWD manages the water in the lake with Matthews Dam. Water is used to produce municipal potable water, industrial water and to generate electricity. The municipal potable and industrial water are allocated under the City of Eureka Licenses and HBMWD permits (11714 and 11715). The permits for the electrical hydro power are not addressed in this analysis; however, the total volume of water is included.

Water may be released from Ruth Lake by several ways:

- Hydraulic machines – There are two hydro generators that are used to generate electricity. The flow through the machines is dependent on the level in the lake and range from 42 cfs to 240 cfs. They are typically operated year-round, except during maintenance periods or drought conditions when levels in the lake are too low to allow sufficient flow. Flows through the hydro generators are measured continuously with a flow meter and are electronically reported and recorded in HBMWD's SCADA system.

- Spillway – The spillway at Matthews Dam allows flow to leave Ruth Lake when the water level is above the spillway elevation of 2654 ft. Flow through the spillway is estimated by water level in the spillway and a rating curve. Water levels are measured visually from a staff gage and are recorded manually daily.

- Fish Bypass Pipe – The fish bypass pipe is used to supply the minimum fish flow below the dam when the lake level is below the spillway and the hydro machines and Howell Bunger valve are not in operation, which rarely occurs. The pipe and valve are regularly tested with only short duration releases. The pipe passes through the dam and is released below the dam in the tail race, where there may be fish that could be stranded if the hydro machines and Howell Bunger valve are not operational. The capacity of the fish bypass pipe is 5 cfs. Flow through the fish bypass pipe is not measured and if it was in operation, flow would be recorded as 5 cfs. Flows are manually recorded daily, if it is in operation.

- Howell Bunger Valve - The Howell Bunger valve is used to release flow from the dam without going through the hydro generator or fish bypass flow pipe. The valve is not typically used during normal operation and would only be used when

there was a need to release flow without going through the hydro generators or if there was a need to lower the lake level faster than the hydro machines could release. Flow through the valve can range from 0 cfs to 298 cfs. Flow through the Howell Bunger valve is estimated based on lake level and a rating curve. Flows are manually recorded daily, if it is in operation.

HBMWD manages the water level in Ruth Lake through releases from Matthews Dam. The primary method for releasing water from the reservoir is through the hydro generators. When the reservoir level is above the spillway of 2654 ft, water flows freely over the spillway into the Mad River. During extreme droughts, the reservoir levels may be too low to operate the hydro generators. In this case water may be released through the Howell Bunger Valve. If the hydro generators and Howell Bunger Valve are off-line, water may be released through the fish bypass pipe. During typical operation the Howell Bunger Valve is only used when the hydro generators are off-line for maintenance. The fish bypass line would only be used in extreme drought conditions, and it has only been operated for maintenance reasons for the past 20 plus years.

The direct diversions that occur at Ruth Lake under the Ruth Lake CSD agreements typically are through a direct diversion from the Lake. Property owners either have a pipe intake directly from the lake or a shallow well next to the lake. There are currently 41 permits issued under the Ruth Lake CSD. Permit holders are allowed to divert 240 gallons per day from April 1st through September 30th. Permit holders are required to self-report their actual water usage. For this analysis it is assumed that each permit diverts the maximum daily amount from April 1st through September 30th.

3. *Information to demonstrate how you account for water diversions at Essex, including the differentiation of water diversions between the direct diversion of water and the rediversion of stored water releases from Matthews Dam.*

Response:

The accounting of water diversion and re-diversion starts with a LIFO-FILO analysis of Ruth Lake. The methodology is applied on a water year basis and assumes that the last volume of water that flows into a reservoir is the first volume to flow out and that the first volume of water that flows into a reservoir is the last volume to flow out. The LIFO-FILO methodology is applicable if the reservoir serves as both water storage points and direct diversion points; and, reservoirs from which water is released and then refilled to any extent by inflow from other sources. Release of water from the reservoir after it has been initially filled is considered withdrawal from storage. Water that is diverted to storage and subsequently released from the reservoir within 30 days after the reservoir has been refilled is considered "Regulatory" collection of water until the previous draw-down level is exceeded. Once the previous draw-down level is exceeded, the volume of water released beyond this level is withdrawal from initial storage.

The analysis for Ruth Lake assumes that any increase in storage volume is a diversion to storage. Any decrease in storage volume is a release from storage. The LIFO-FILO analysis determines if the diversion to storage is an initial diversion to storage, refill to storage, regulatory diversion to storage, release from storage, or a regulatory release from storage. Initial diversion to storage and refill to storage are considered a direct diversion to storage and are allocated to the various licenses and permits. Release from storage is flow released to the Mad River and is available for re-diversion at Essex. For accounting purposes, any water released from storage is allocated to diversions at

Essex on the same day. It is acknowledged that in actuality it may take several days for that water to reach the Essex facility. Regulatory diversions to storage are held in the reservoir for less than 30 days. Any releases from Ruth that are determined to be Regulatory releases to Mad River are available for direct diversion at Essex.

Water Balance Uncertainty

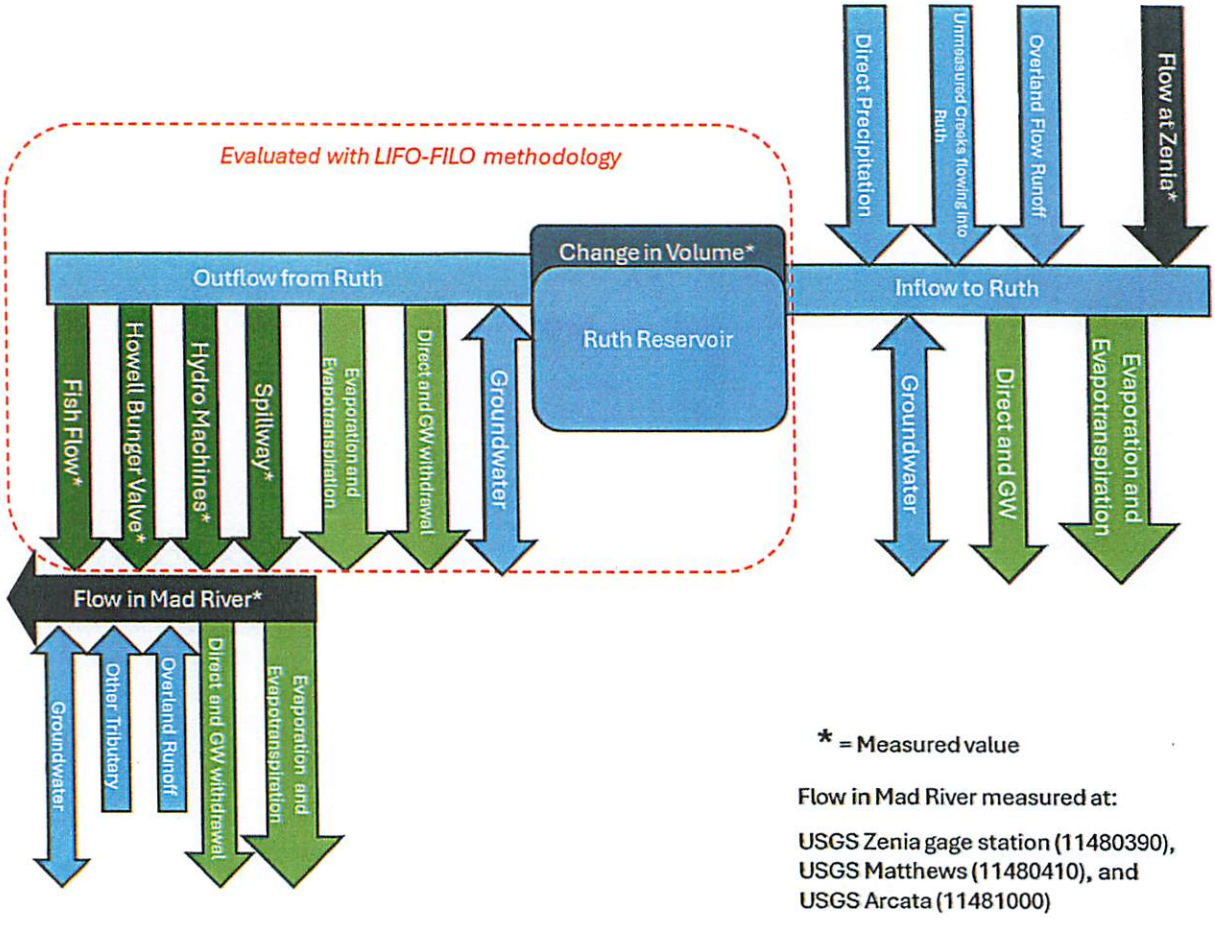
Several factors effected the uncertainty of the water balance, including: changes in the methods of data collection and storage during the period of investigation, data recording frequencies, and availability of reference data used to estimate inputs and outputs from the water balance (rain gage locations, ETo locations). The variability of this information made it challenging to accurately estimate some of the inputs to the water balance. When developing the water balance for the lake, there was limited data inputs for the period of record. HBMWD has records of flow through the hydro generators on a continuous basis. The records of flow over the spillway are based on daily reading and a rating curve. Daily readings may not be sufficient to capture peak flows that are typical during a larger rainfall event. Flows at the Zenia gage has continuous data and daily averages and estimates of flow into the lake from the upper Mad River were sufficient to estimate that inflow, however, the lake receives runoff from a significant portion of the drainage below the Zenia gage and above Matthews dam. There are a number of un-gaged creeks that also flow into the lake. Some of them have significant drainage areas. Meteorological data for this area over the period of analysis is not consistent as new gages have been added and there are few gages in the basin for the period of record. A new meteorological station was installed around 2017 and may have better data for future analysis. This will be particularly helpful in evaluating the evaporation and ETo losses from the lake. The data from earlier periods were not representative of the area with rain gages from other drainages and ETo data from near Reading or on the coast. An evaporation estimate for the lake was made for previous studies or analysis. Previous estimates of evaporation were estimated by the surface area of the lake, which is estimated with a rating curve correlated to lake level and time of year. Each month was given and evaporation rate which was multiplied an average elevation correlated surface area. It generated an evaporation volume on a monthly basis and estimates of evaporation losses ranged 1.5 ac-ft/month to 10 ac-ft/month. An initial attempt was made to correlate the evaporation and ETo rates using the available data with the previous estimates of lake evaporation. The results were within a reasonable range, but the variability of the results using the climatic data from the 2010-2023 period resulted in an uncertainty range that was sometimes greater than HBMWD's diversions. Therefore, evaporation losses that result in a decrease in the lake level or decrease in the rate of diversion to storage are accounted for and included in the District's permit allocation process, either in diversion to storage, direct diversion or re-diversion allocations. This assumption is conservative in that it would slightly overestimate the permit allocation. Based on the previous evaporation loss estimate, the overestimation would be at most 0.3 ac-ft per day when the total diversion per day are typically not less than 20 ac-ft/day.

Evaluation of water balance with the flow in at Zenia and flow out through the hydro generators and spillway also yielded an uncertainty range that was sometimes greater than HBMWD's diversions.

Matthews Dam and Ruth Lake are located in a mountainous region with no significant

water bearing aquifers nearby. The geology of the area is not indicative of a significant groundwater interaction. Therefore, interactions with groundwater and seepage were not evaluated.

For the above reasons, the LIFO-FILO analysis was based on the daily change of reservoir volume. The reservoir volume was recorded daily. Any increase in lake volume was considered a diversion to storage and any decrease was considered release from storage. This means that losses from evaporation, evapotranspiration, seepage, and groundwater interactions are conservatively included a release from storage. Flow in from the Mad River, un-gaged creeks, direct rainfall, and groundwater interactions are included in diversion to storage. A schematic of the LIFO-FILO water balance is shown below.



Once water is released from Matthews Dam, it flows over 50 miles to the Essex Facility, where it is diverted or re-diverted. There are many tributaries between Matthews Dam and the Essex Facility. The Mad River receives roughly 2/3s of the basin's drainage in this reach between the dam and the Essex facility.

HBMWD diverts or re-diverts municipal potable water and industrial water at the Essex Facility. All of the water diverted is through direct metered diversions. The allocation of diverted water is based on the license or permit water right seniority and the LIFO-FILO analysis. HBMWD has metered daily total diversions for the Essex Facility and

deliveries to the City of Eureka. The allocation to the various licenses and permits is based on seniority and is in the order shown in the list presented in the response to the first comment.

When evaluating diversions to storage at Ruth, if the diversion is determined to be a direct diversion to storage and not a regulatory diversion it is first assigned to the City of Eureka License 9527. Allocations are evaluated daily and allocation to this license continues until 750 ac-ft are stored. Further direct diversions to storage are allocated to HBMWD Permit 11714 until 48030 ac-ft are stored, then direct diversions to storage are allocated to HBMWD Permit 11715 until another 20000 ac-ft are stored.

Diversions and re-diversion at the Essex facility are first allocated to the City of Eureka License 9527. The allocation to this permit is based on the daily metered delivery to the City of Eureka. If the daily delivery was greater than 15.35 ac-ft/day (7.74 cfs), it would be allocated to the City of Eureka License 9528. If the remaining daily delivery was greater than 2.38 ac-ft/day (1.2 cfs), the remaining amount would be allocated to HBMWD Permit 11715 direct diversion.

The daily amount diverted remaining to be allocated is the total amount diverted less the delivery allocated to the City of Eureka licenses. If the FILO-LIFO analysis indicated that water was released for storage at Ruth that day, the daily amount diverted remaining is less than or equal to the amount released from Ruth, it is allocated to HBMWD Permit 11714 as re-diversion. If the daily amount diverted remaining is greater than the amount released from storage, the remainder is allocated to HBMWD Permit 11715 as direct diversion.

If the FILO-LIFO analysis indicated that water was not released from storage, then the daily amount diverted remaining to be allocated is allocated to HBMWD Permit 11715 direct diversion.

The direct diversion made at Ruth Lake for the Ruth CSD is allocated to HBMWD Permit 11715.

Combined diversion from Permit 11714 and Permit 11715 must be less than 132030 ac-ft/yr.

4. *Information to demonstrate how you account for the diversion of water to storage, direct diversion of water, and rediversion of stored water releases at both Matthews Dam and Essex for the City of Eureka's licenses 9527 (A007621) and 9528 (A016452).*

Response:

See Comment 3 response above.

November 1st Email

1. The appendix does not provide water diversion and use information for the full time period requested (2009-2023). If the information is not available, the District should provide an explanation. I note that the District has reported water diversion and use information in the past to the State Water Board via the RMS database (see item 3 below), so some data is likely available.

Response:

The time period for this analysis evaluates the direct diversion, re-diversion, and diversion to storage once the industrial water usage decreased due to mill closures. The mills ceased operation around the summer of 2009. Therefore, the water years evaluated in this analysis include the fall of 2009 through the fall of 2023 (or 2024 if we get the data in time). This includes the 2010 – 2023 Water Years. Water diversion and storage data from October 2009 through September 2023 are used in the current analysis, with data from 2009-2016, which was recovered from a previous data storage system, being added to the data from the previous analysis presented in Appendix G. HBMWD's operational conditions since the mill closures has remained relatively constant.

2. The appendix does not distinguish water diversion and use information between permits 11714 and 11715.

Response:

The updated analysis includes allocation of direct diversion, re-diversion, and diversion to storage for both HBMWD's 11714 and 11715 permits, as well as the City of Eureka's licenses.

3. Information in the appendix is inconsistent with reported diversion and use information provided by the District in annual reports to the State Water Board. For example, the Reports of Permittee that you submitted for permits 11714 and 11715 (attached) for 2016 indicate different diversion and use information than what appears to be provided in Appendix G. The table below summarizes the information:

Source	Amount Diversion to Storage (af)	Amount Direct Diversion (af)	Amount Diversion Total (af)	Amount Use (af)
2016 Reports (combined)	0	6,197.5	6,197.5	17,060.2
Appendix G*	31,095.0	3,025.1	34,120.1	n/a
*I note that regulatory storage may need to be reported as direct diversion and not storage in the District's annual permit reports. I recommend that the appendix include water diversion and use information that can be easily reported using the State Water Board's RMS database.				

I recommend that the District begin by compiling all of the information submitted to the State Water Board in the District's annual permit reports. The information should be available from the State Water Board's eWRIMS or RMS databases. Please let us know if you are having trouble accessing the information. The District should compare the information reported to the State Water Board against the information in the appendix and explain why it is different. If necessary, the information in past permit reports can be corrected.

Response:

HBMWD recognizes that the analysis presented in this letter may require revisions to its previously reported diversions. Before correcting past reports, HBMWD would like to discuss the analysis presented in this letter with Division staff to address any remaining comments or questions.

4. The appendix does not describe how water served to the parcels surrounding Ruth Reservoir is distinguished, how water diversion and use under the City of Eureka's water rights is distinguished (see item 8 below), or how Ruth Reservoir bypass flows and reservoir evaporation losses are considered.

   Response:

   See above comments 2 and 3 responses to October 17th letter.

5. Please explain how the District is complying with the SB 88 water measurement and reporting regulations. More information is available here: https://www.waterboards.ca.gov/waterrights/water_issues/programs/diversion_use/water_measurement.html

   Response:

   Our District complies with the reporting requirements of SB88. Our diversions are reported annually under the "Water Diversion Measurement" section of our annual water rights reports to the Water Board. As required, the diversions are available on our District website at: https://www.hbmwd.com/water-diversions. This website reference is also listed in the Water Diversion Measurement section of our annual reports to the Water Board.

6. *An infographic or illustration would be helpful to understand how the calculations are made regarding Ruth Reservoir and Essex operations, as well as the amounts of water released from the reservoir (both regulated water and stored water). Figure 1 in the appendix is helpful but could be expanded to show more options for water accounting.*

   Response:

   See above comment 3 response to October 17th letter – infographic to help understand the calculations.

7. *Please provide to the State Water Board, in an organized format, the raw data and calculations that were used to develop the tables in the appendix.*

   Response:

   The Excell spreadsheet with the data used, LIFO-FILA analysis, Ruth Lake hydrographs, and permit/license allocation is included with this response.

8. *Your petitions are proposing to dedicate water to instream flow in the Mad River up to a certain rate of flow (in cfs). Please describe how you would account for instream flow dedications in relation to your other water diversion and use activities. The appendix indicates that water can be released into the Mad River by several methods and that there are separate flow measurements. Those flow measurements should be provided. They can be used to validate the information about water releases when considering only reservoir volume.*

   Response:

   HBMWD's petitions for instream flow propose to dedicate water released from storage at Ruth Lake up to 31 cfs on a monthly average. As depicted in Figure 3 of HBMWD's Narrative Summary, the amount of the requested dedication is approximately equal to or greater than flow at Matthews in all months.

9. *The appendix states on page 2 that "The various methods of measuring diversions and releases pose difficulties when attempting to compare and calculate total flows and volumes of water. Additionally, it is not possible to measure inflows into Ruth Lake between the Zenia Gage and R.W. Matthews Dam. Consequently, the available measurements for inflow and outflow were not used in the analysis." Please provide more explanation for why measurements of inflow at the Zenia gage and outflow at Matthews Dam are not sufficient for quantifying inflow and outflow.*

Response:
See above comment 3 response to October 17th letter - Analysis Uncertainty described.

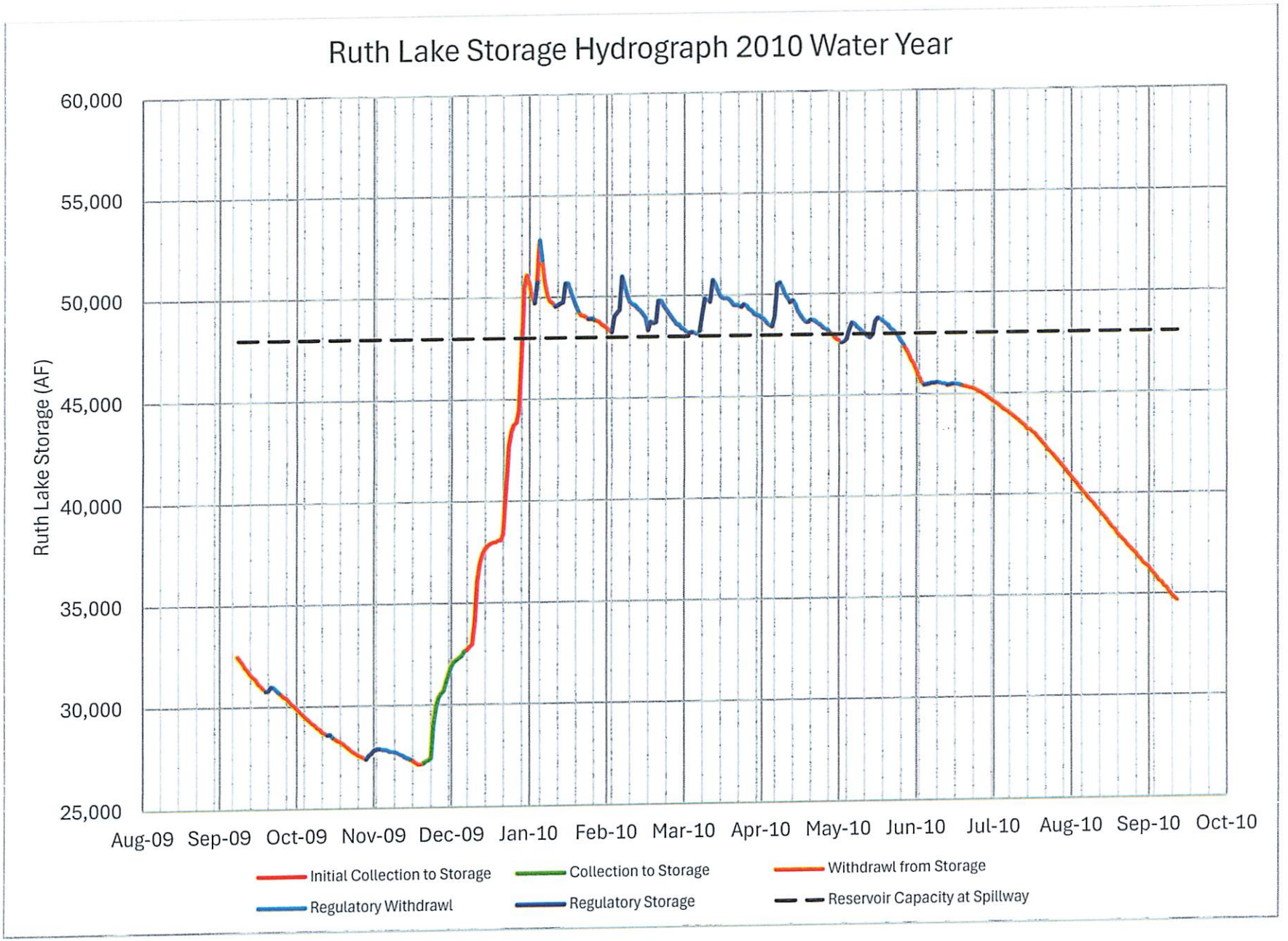
10. *As noted during our 10/31 meeting, the State Water Board requires that water diverted for use on the same place of use be allocated to the most senior water right first. This means that storage of water under the District's permits should be fully allocated to permit 11714 before it is allocated to permit 11715. In addition, for water delivered to the City of Eureka, water should be fully allocated to the City's two water right licenses before allocating water to the District's permits. I have attached some correspondence related to the City's water rights that we discussed during our meeting.*

Response:
The priority of use issues are discussed in response to items 1 and 3 of the October 17th letter. HBMWD agrees with the Division's statement that diversions to storage in Ruth Lake should be fully allocated to HBMWD's senior permit before its junior permit. However, for diversions at its Essex facility, it is HBMWD's position that direct diversion under permit 11715 should be prioritized when there is sufficient natural flow. Prioritizing direct diversion ensures that there will be a sufficient supply of stored water for later in the water year when there is insufficient natural flow to divert under permit 11715. For purposes of this response, HBMWD has allocated use by seniority as suggested by Division staff.

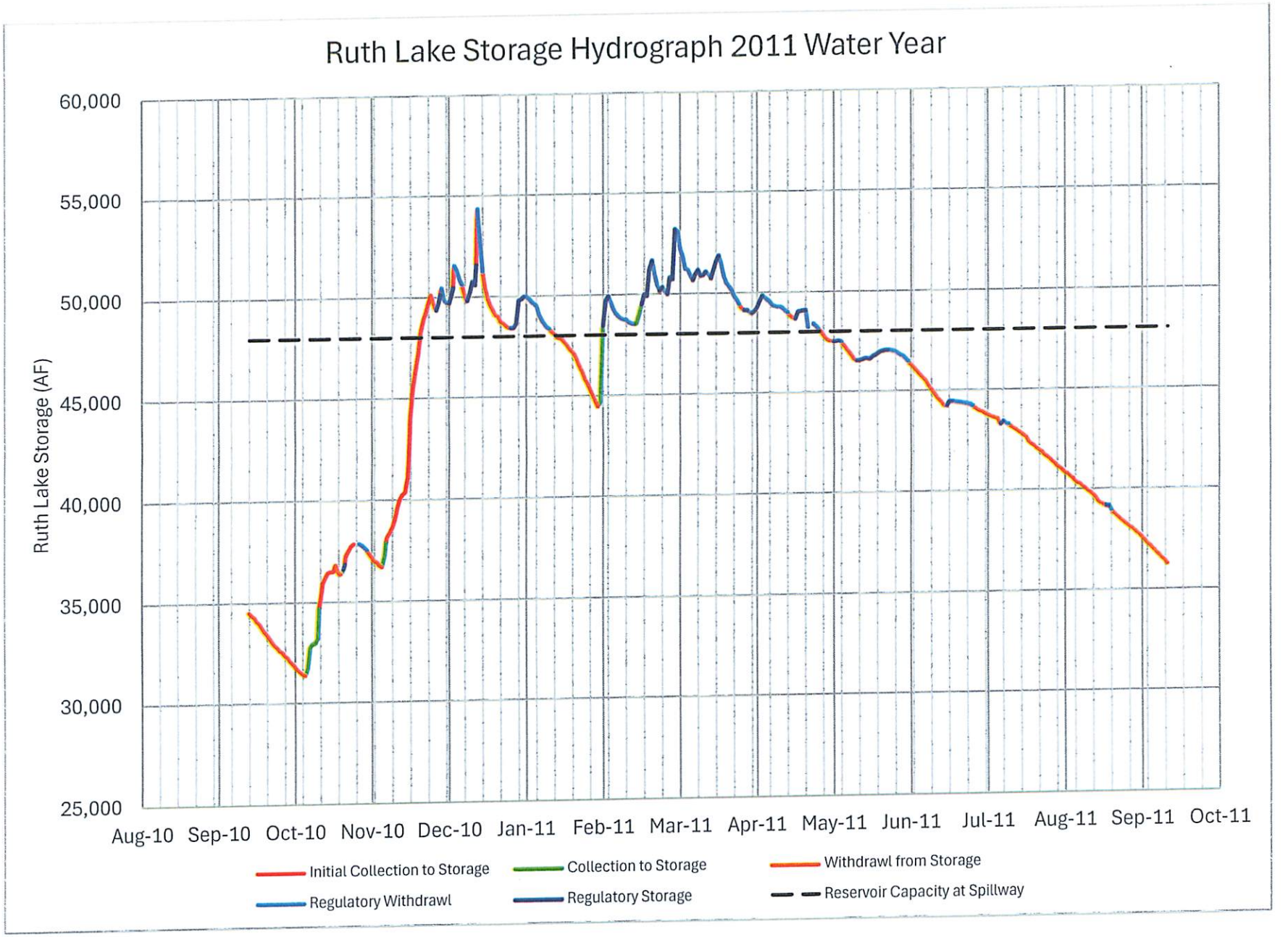
Respectfully,

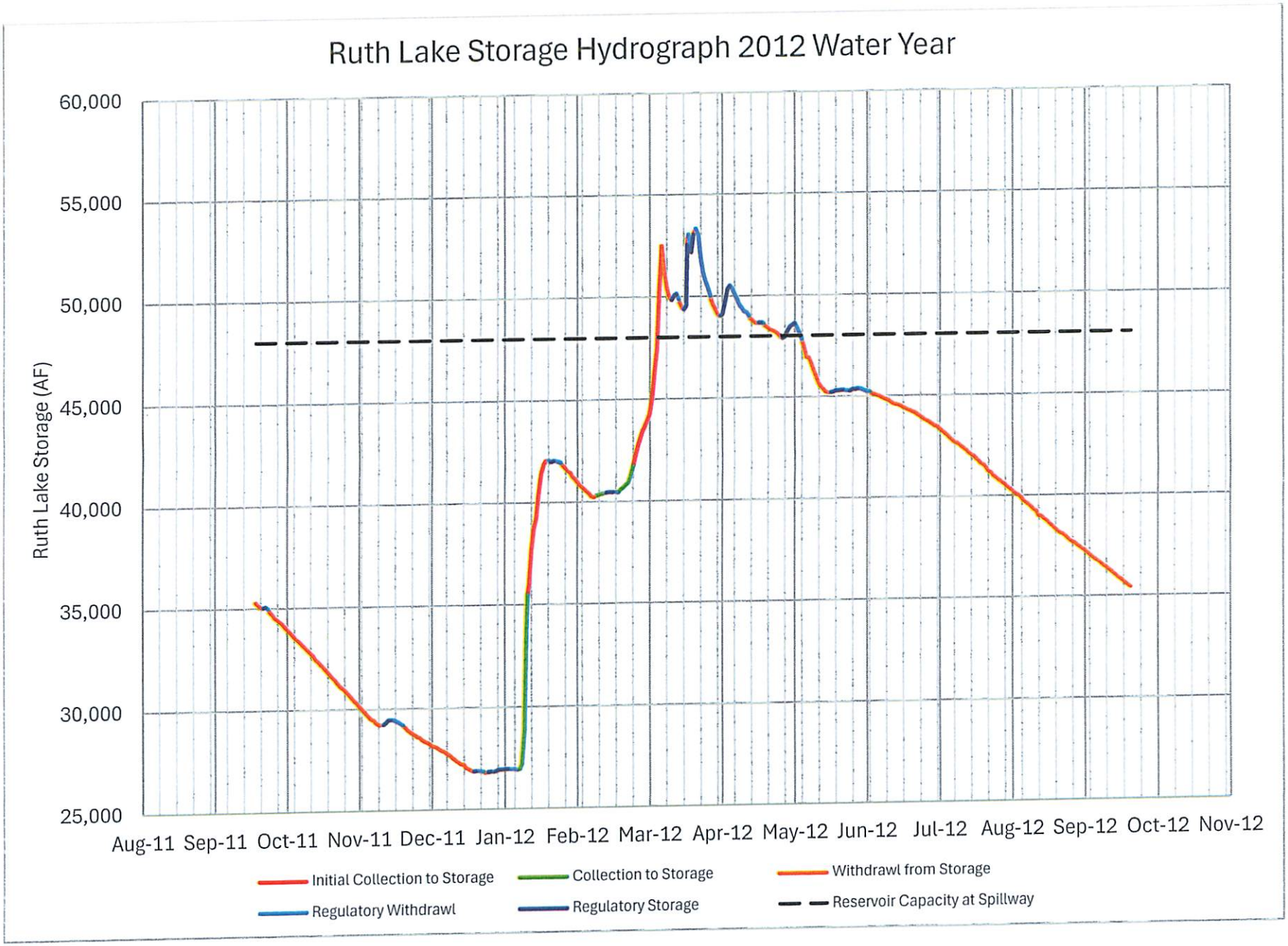
John Friedenbach
General Manager

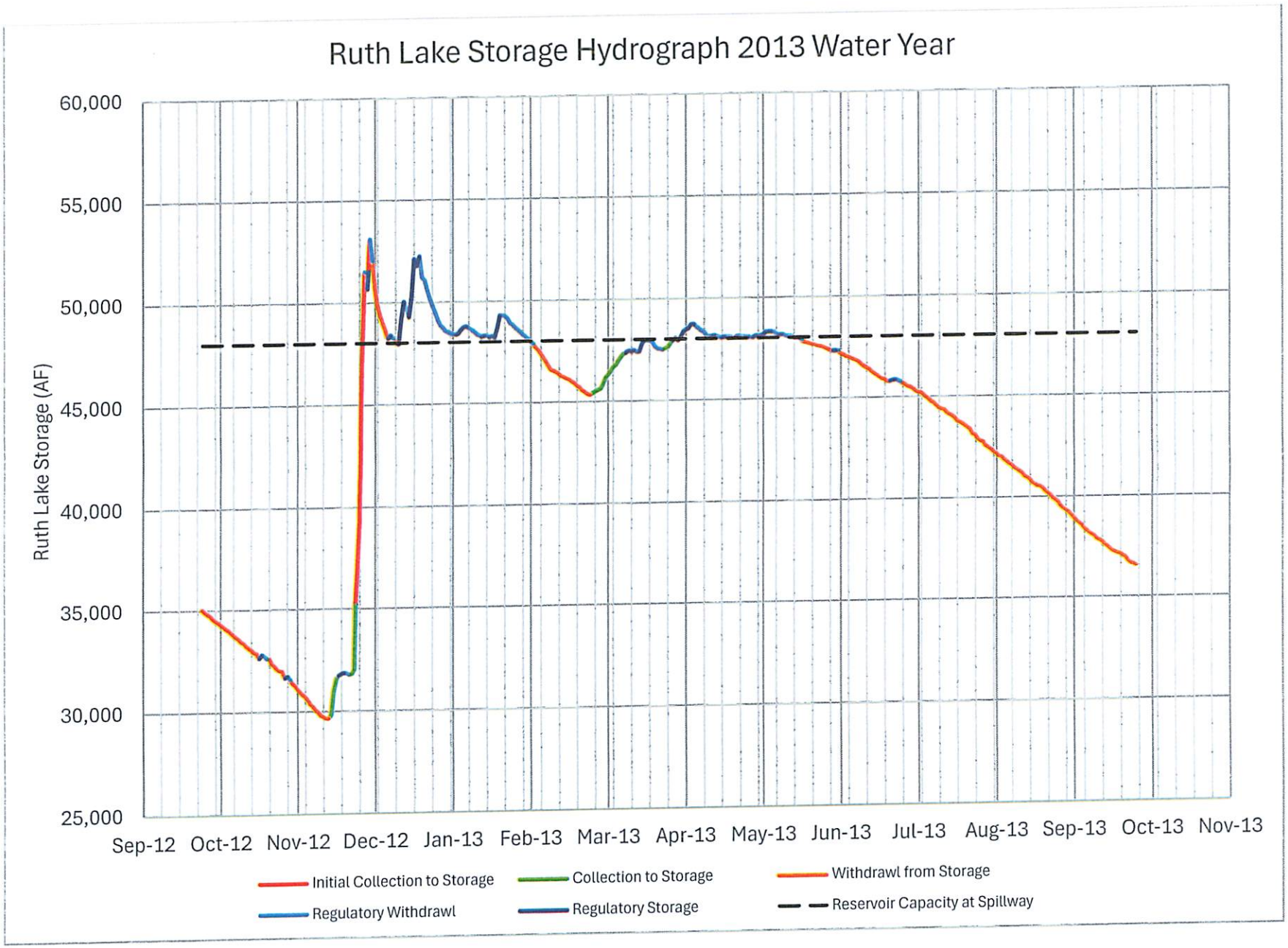
Cc: Meredith Nikkel, Downey Brand
Patrick Sullivan, GHD



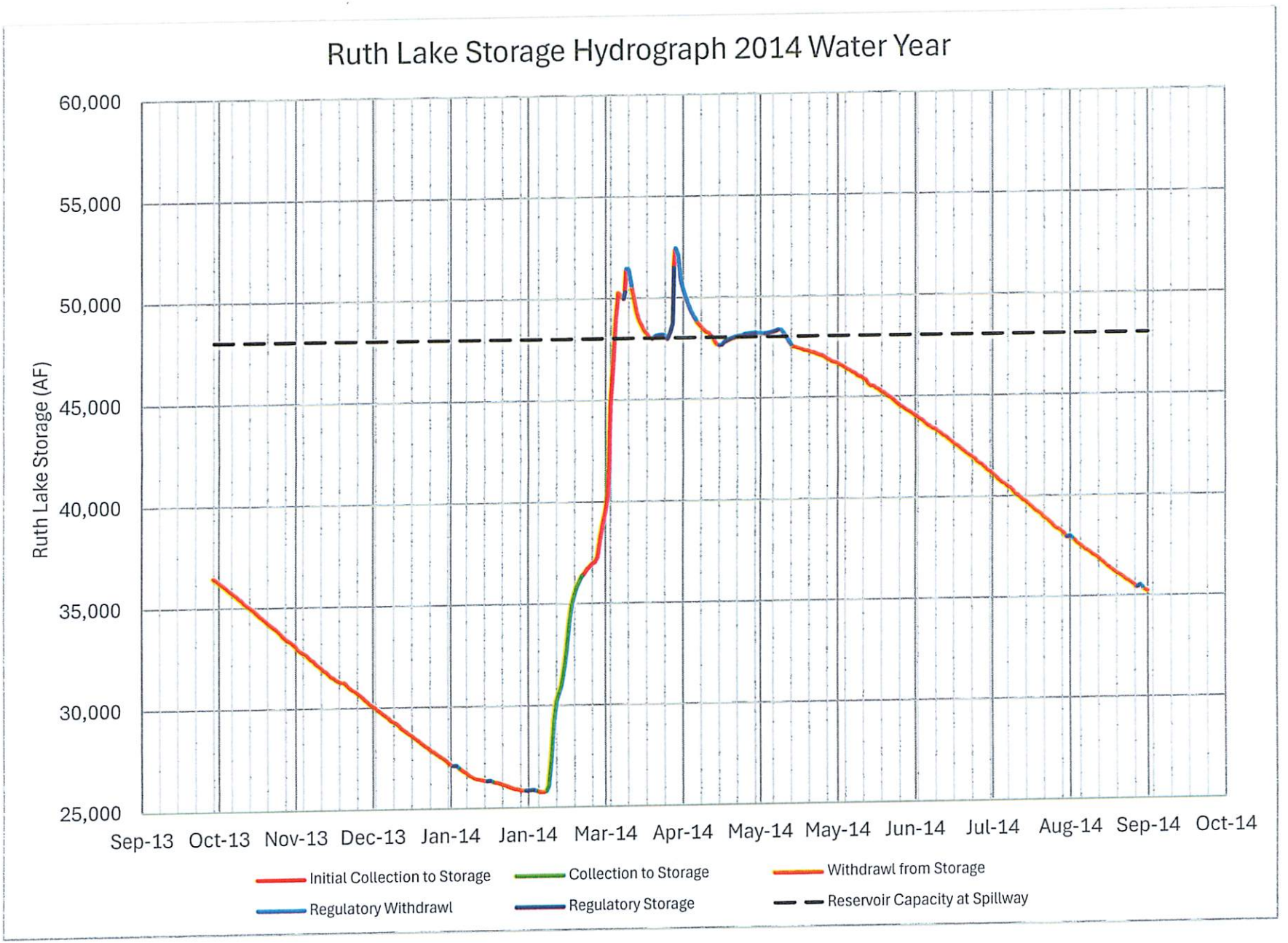
SECTION 5C PAGE NO. 11


Ruth Lake Storage Hydrograph 2011 Water Year
Ruth Lake Storage (AF)
60,000
55,000
50,000
45,000
40,000
35,000
30,000
25,000
Aug-10
Sep-10
Oct-10
Nov-10
Dec-10
Jan-11
Feb-11
Mar-11
Apr-11
May-11
Jun-11
Jul-11
Aug-11
Sep-11
Oct-11
Initial Collection to Storage
Collection to Storage
Withdrawl from Storage
Regulatory Withdrawl
Regulatory Storage
Reservoir Capacity at Spillway


Ruth Lake Storage Hydrograph 2012 Water Year
Ruth Lake Storage (AF)
60,000
55,000
50,000
45,000
40,000
35,000
30,000
25,000
Aug-11 Sep-11 Oct-11 Nov-11 Dec-11 Jan-12 Feb-12 Mar-12 Apr-12 May-12 Jun-12 Jul-12 Aug-12 Sep-12 Oct-12 Nov-12
Initial Collection to Storage
Collection to Storage
Withdrawl from Storage
Regulatory Withdrawl
Regulatory Storage
Reservoir Capacity at Spillway



SECTION 5 C PAGE NO. 14



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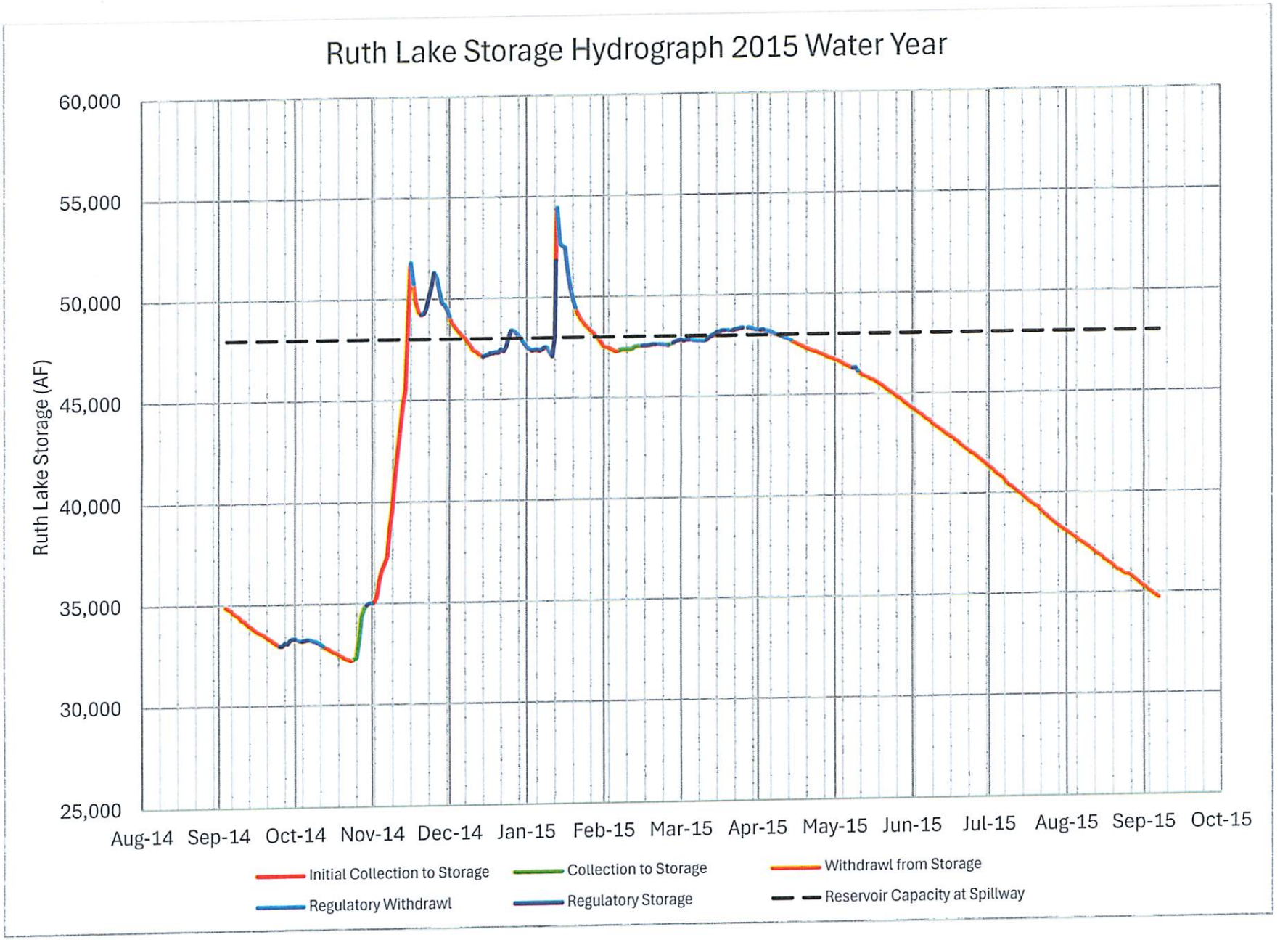

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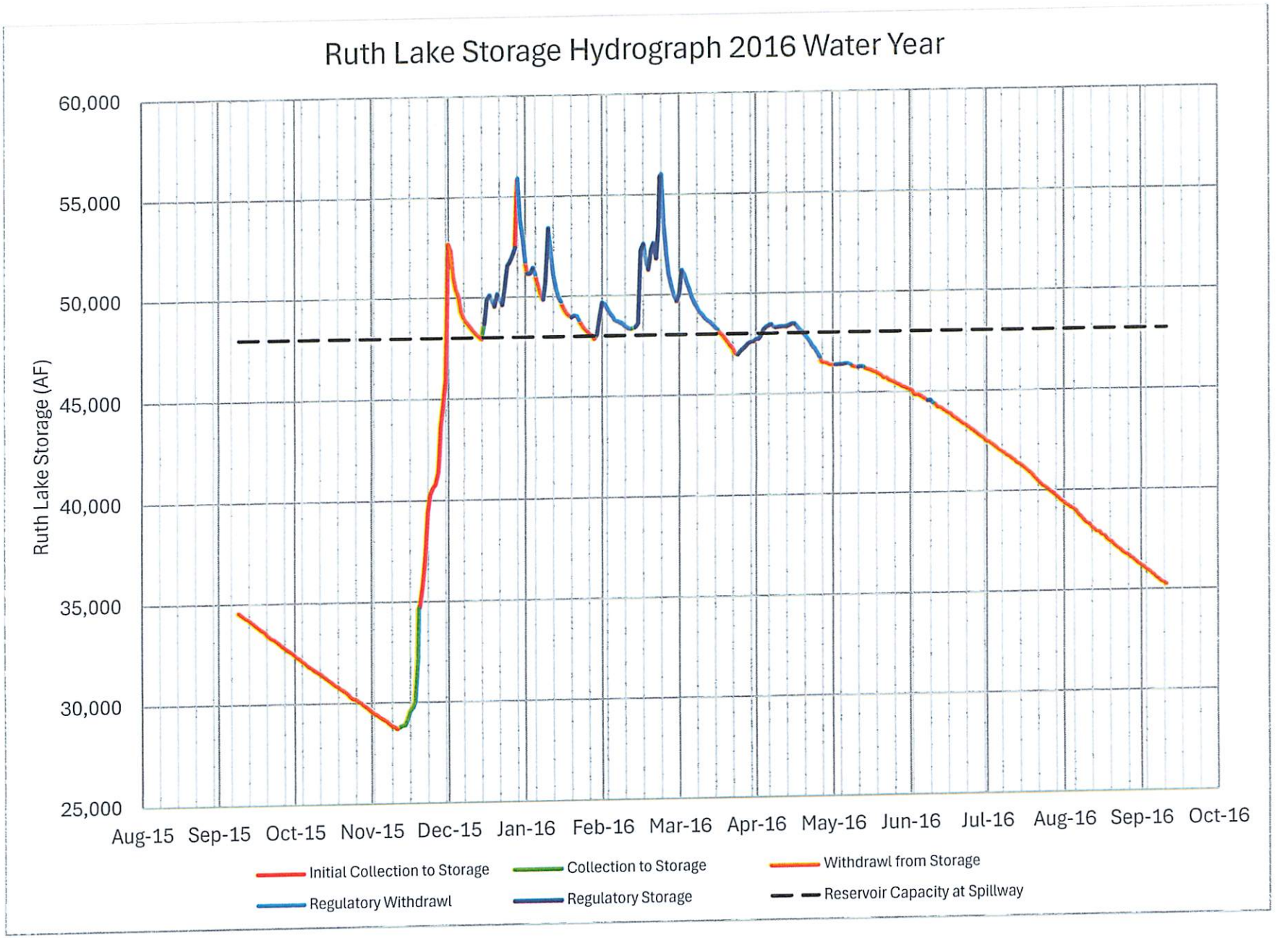
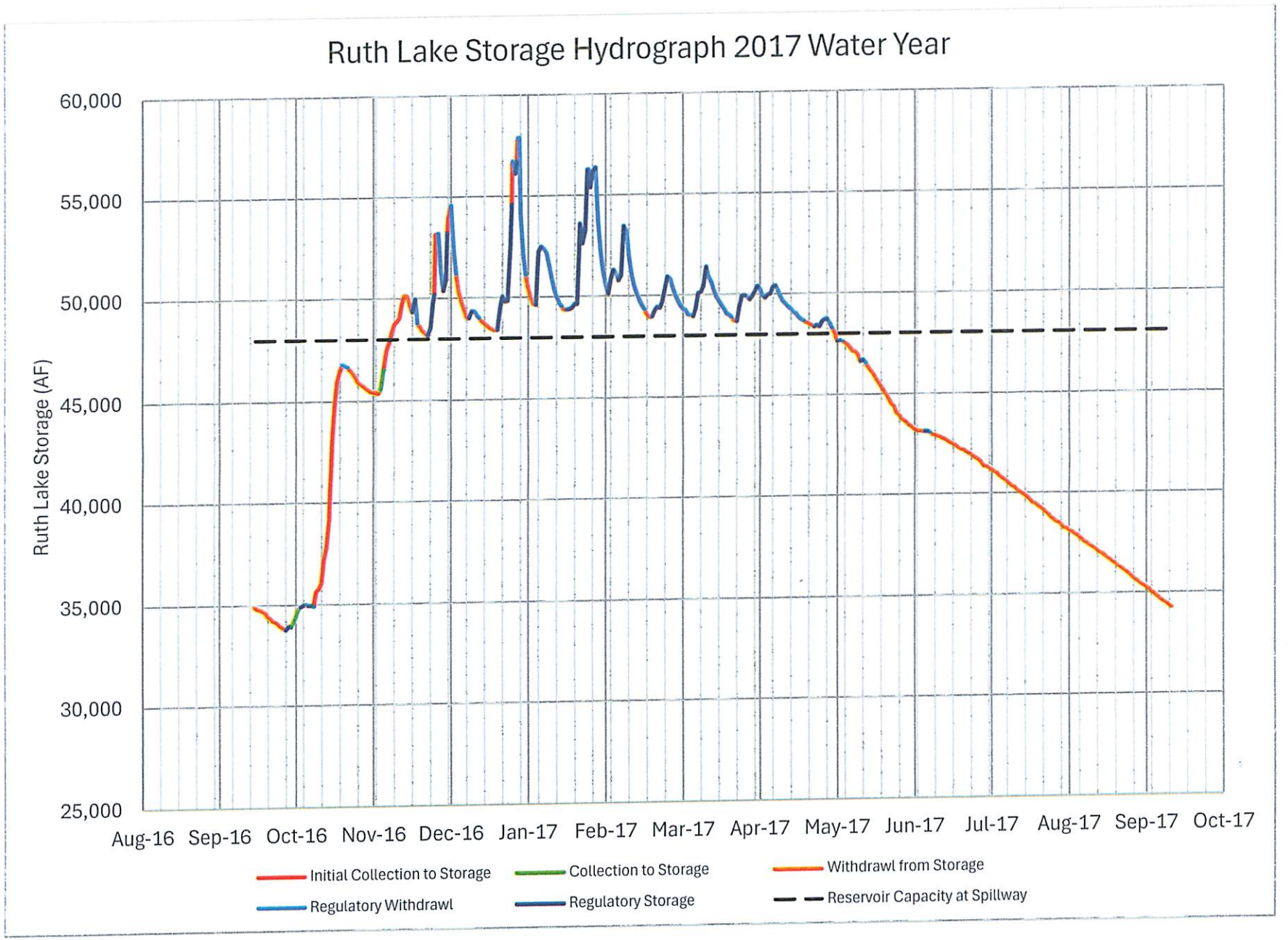


SECTION 5C PAGE NO. 17



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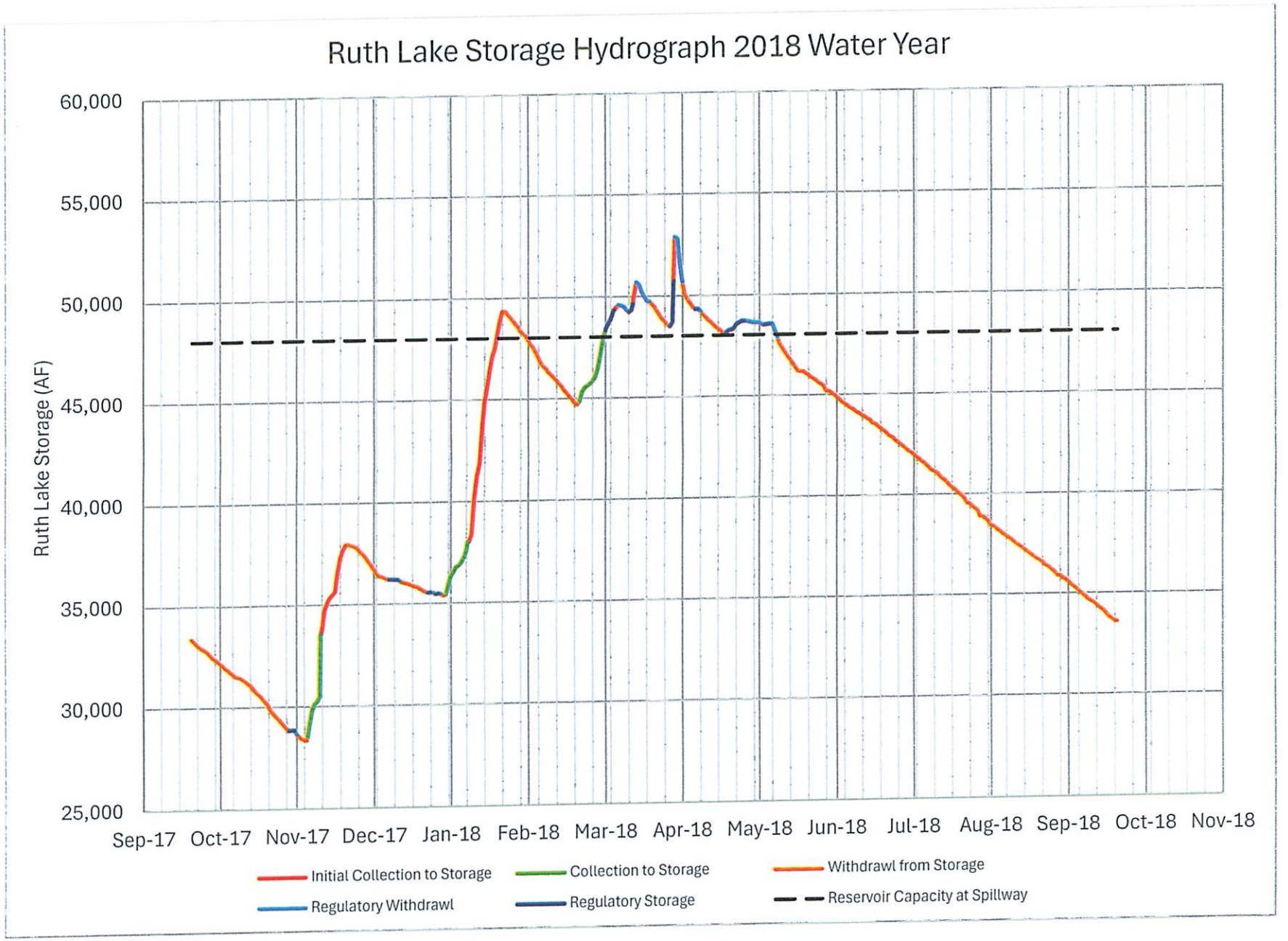
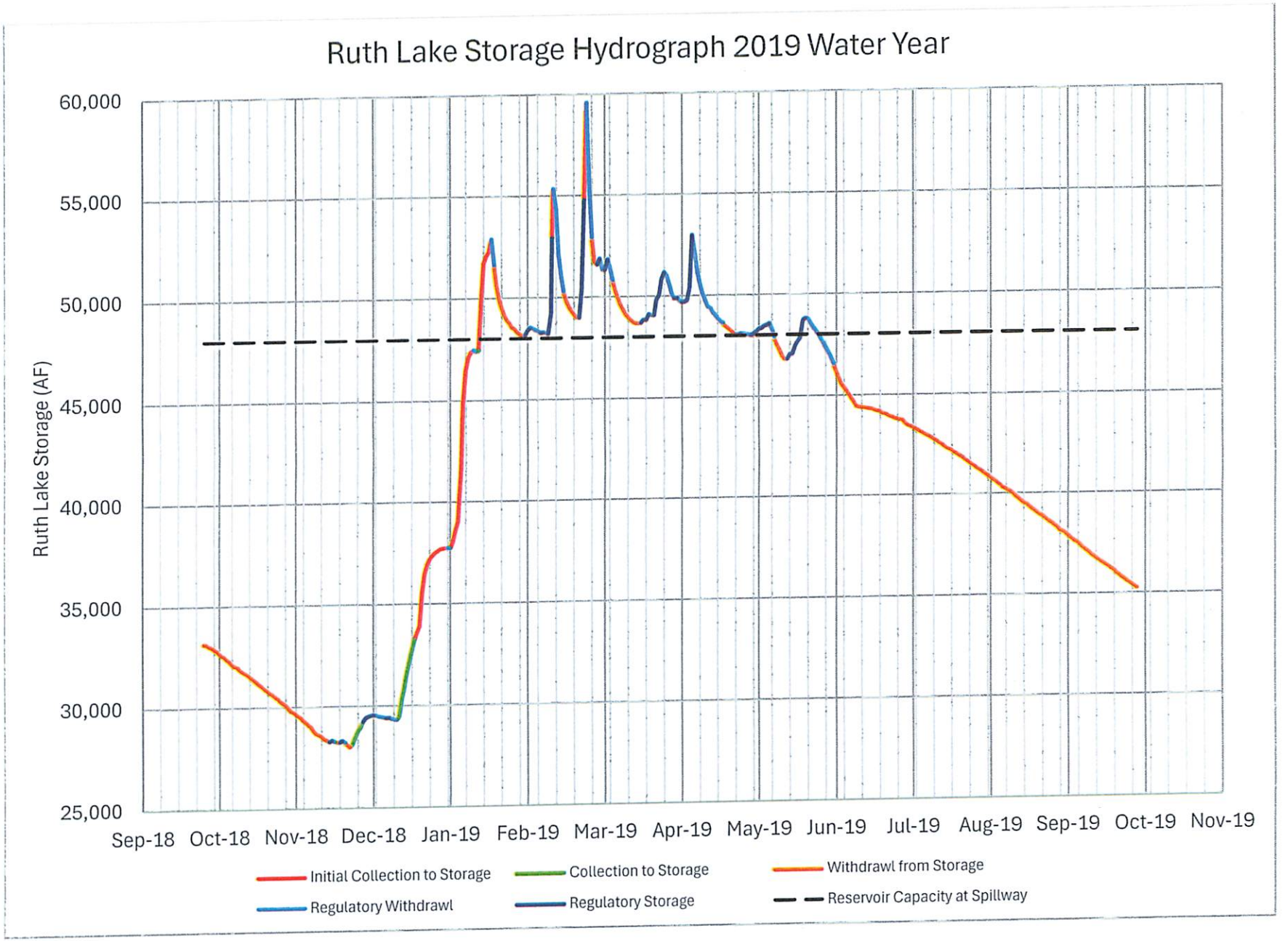
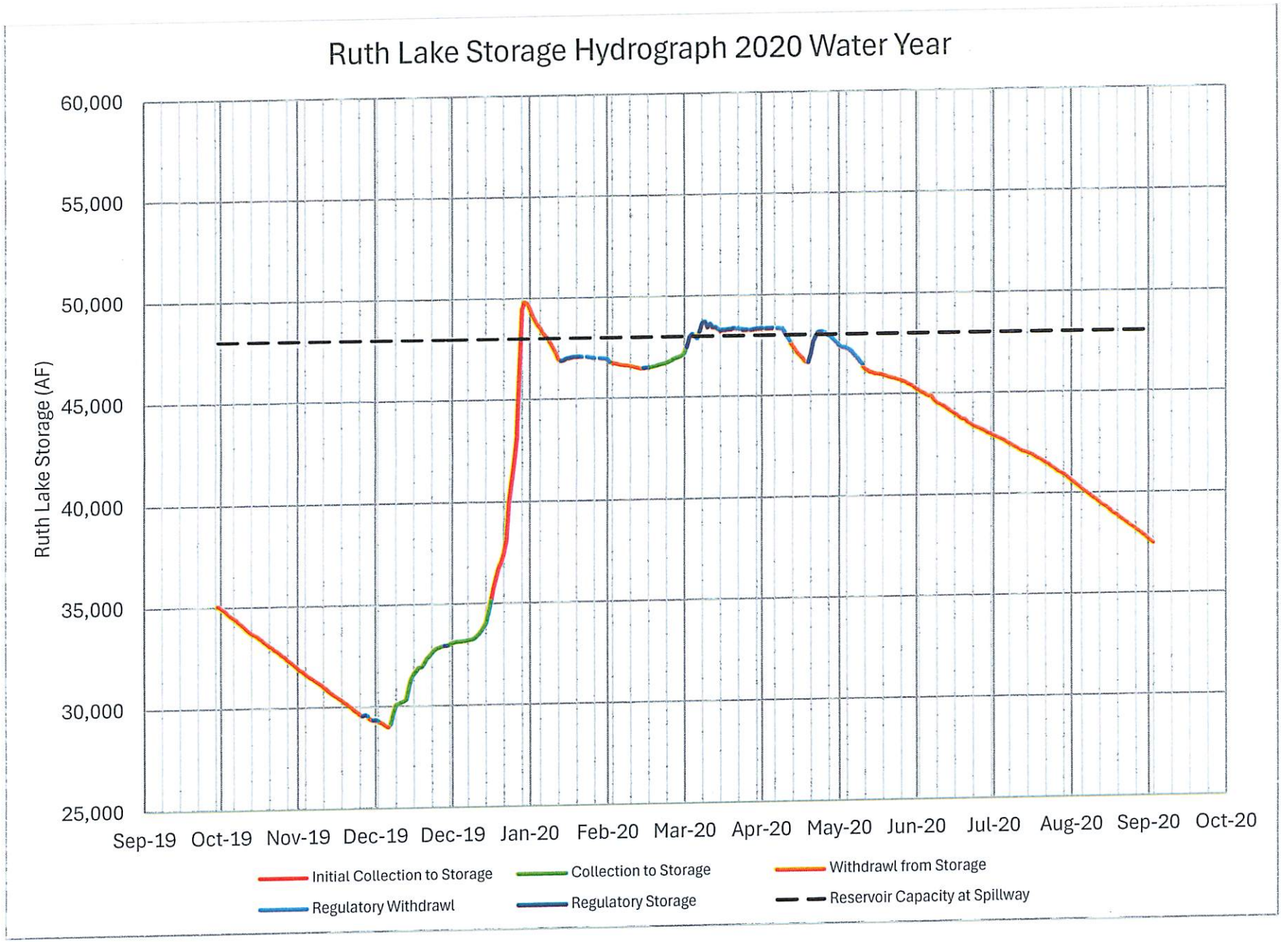
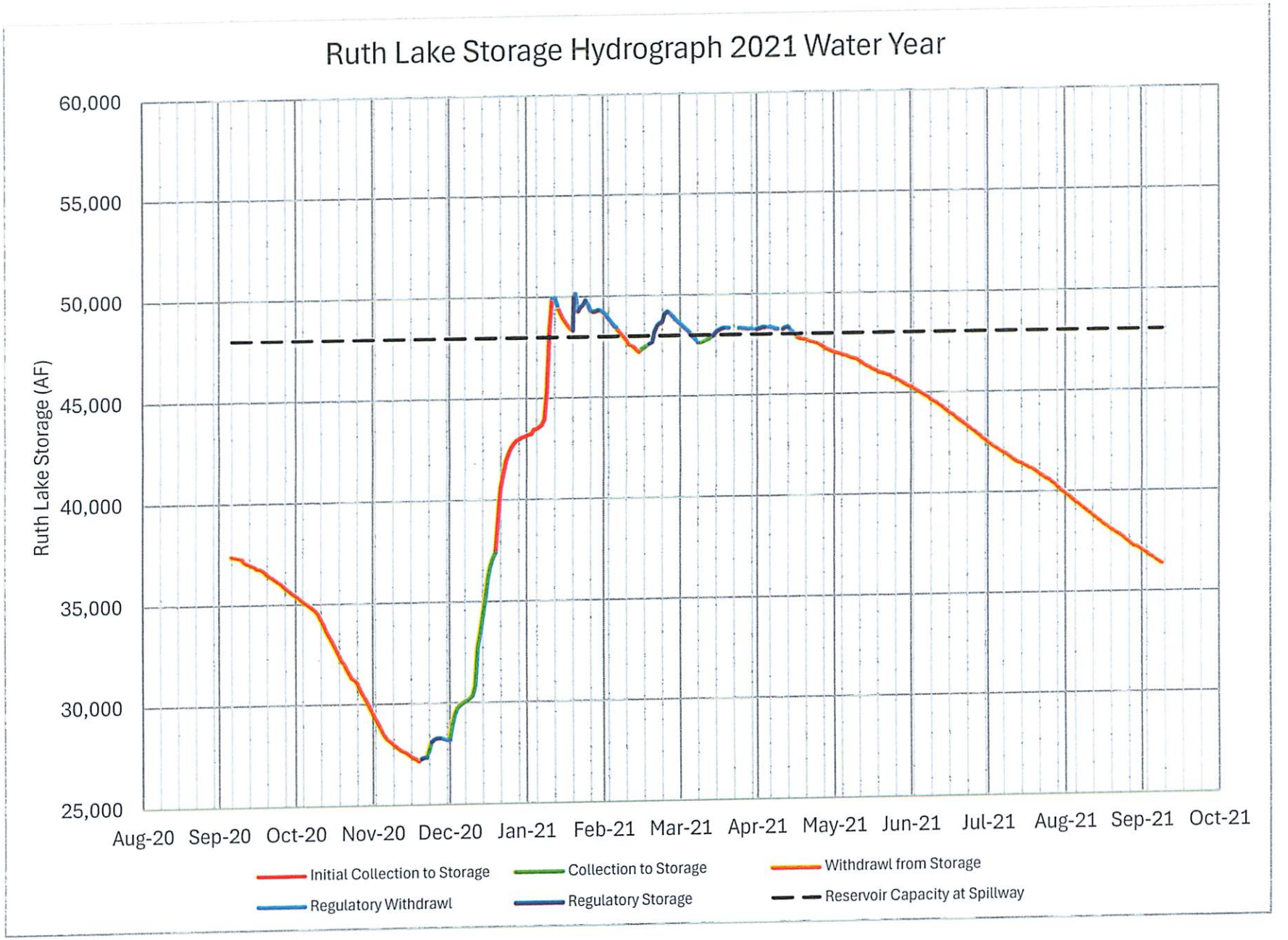

Ruth Lake Storage Hydrograph 2018 Water Year
Ruth Lake Storage (AF)
60,000
55,000
50,000
45,000
40,000
35,000
30,000
25,000
Sep-17
Oct-17
Nov-17
Dec-17
Jan-18
Feb-18
Mar-18
Apr-18
May-18
Jun-18
Jul-18
Aug-18
Sep-18
Oct-18
Nov-18
Initial Collection to Storage
Collection to Storage
Withdrawl from Storage
Regulatory Withdrawl
Regulatory Storage
Reservoir Capacity at Spillway



SECTION 5C PAGE NO. 22



SECTION 5C PAGE NO. 21



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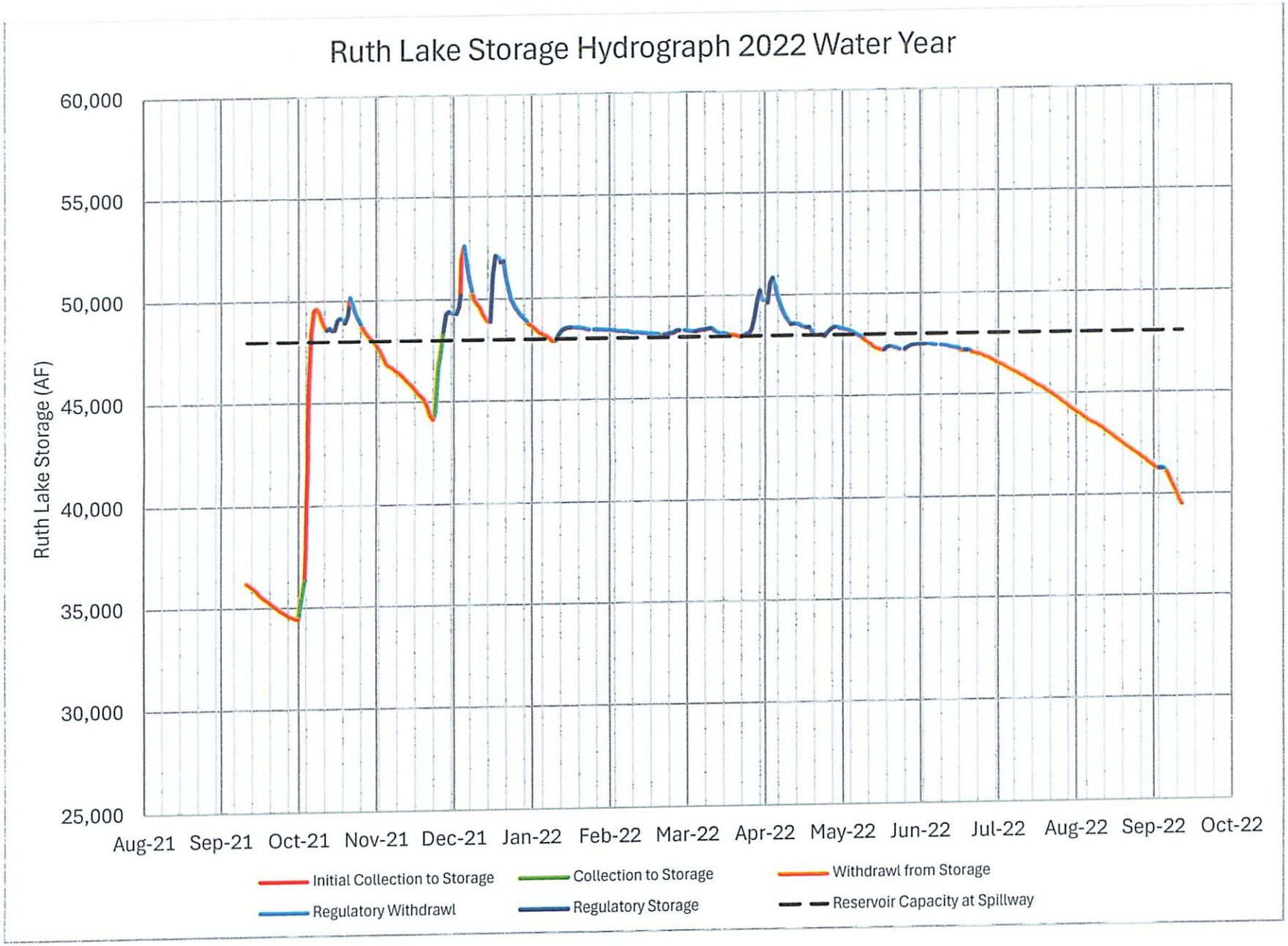
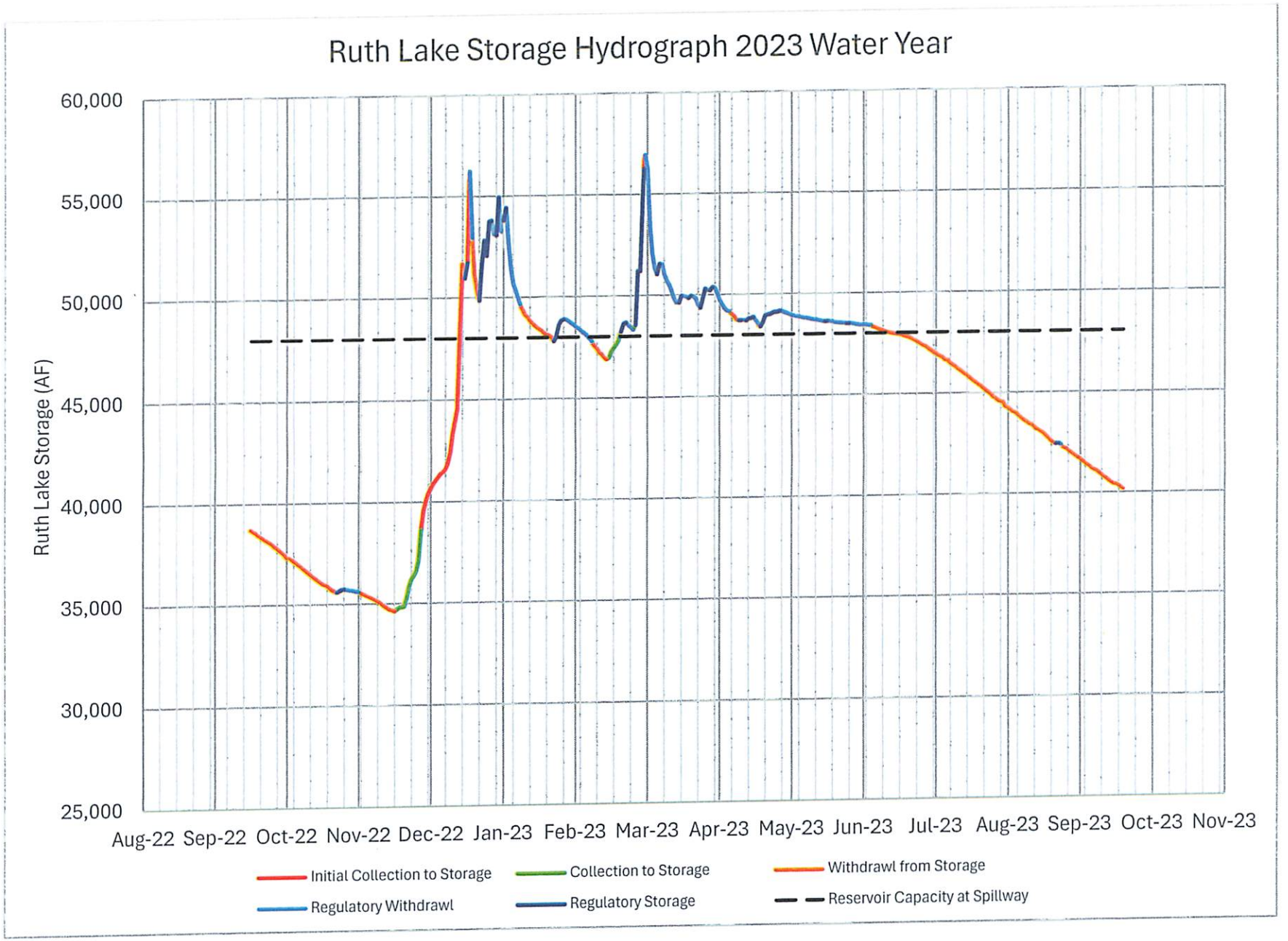
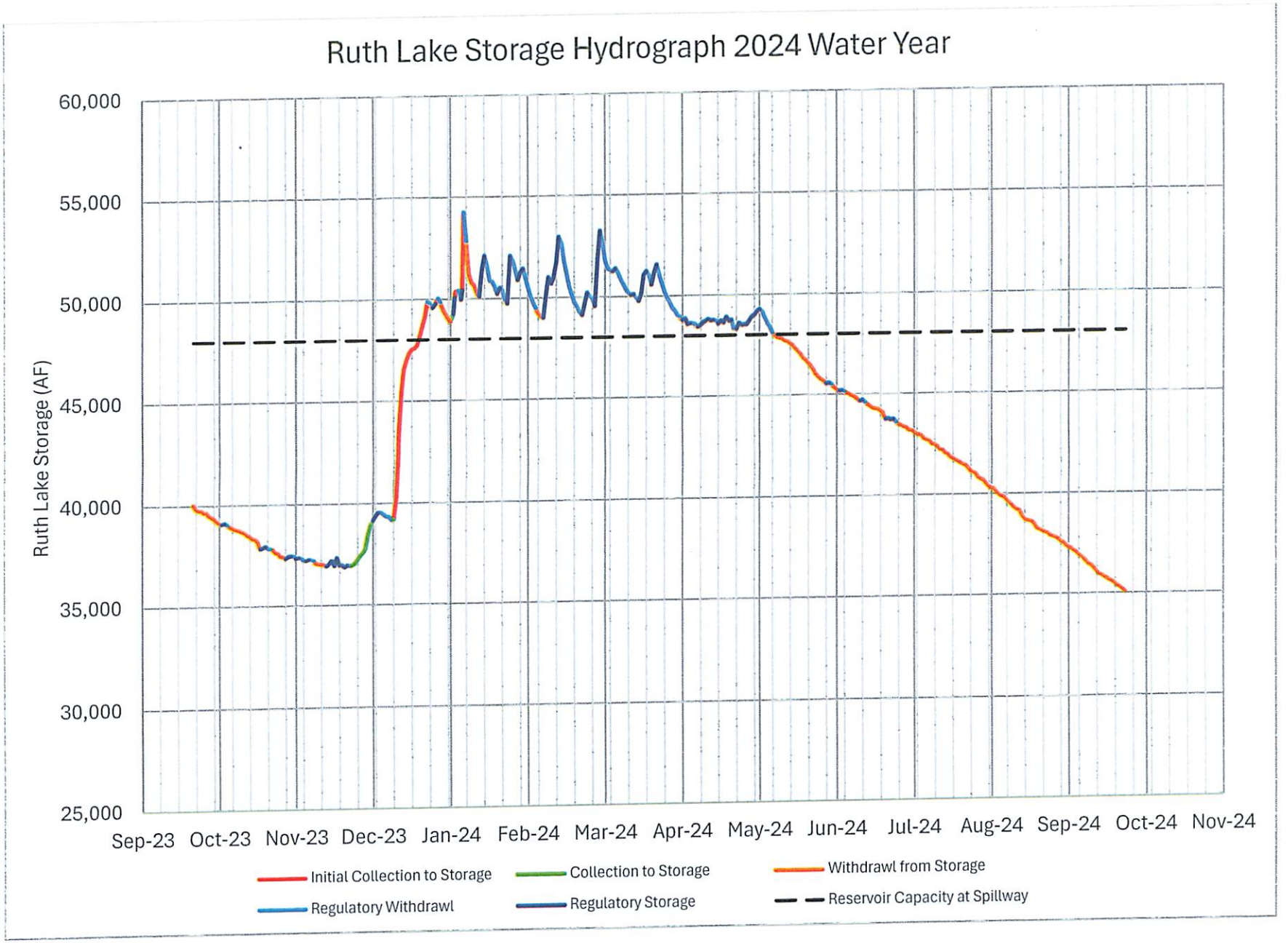

Ruth Lake Storage Hydrograph 2022 Water Year
Ruth Lake Storage (AF)
60,000
55,000
50,000
45,000
40,000
35,000
30,000
25,000
Aug-21
Sep-21
Oct-21
Nov-21
Dec-21
Jan-22
Feb-22
Mar-22
Apr-22
May-22
Jun-22
Jul-22
Aug-22
Sep-22
Oct-22
Initial Collection to Storage
Collection to Storage
Withdrawl from Storage
Regulatory Withdrawl
Regulatory Storage
Reservoir Capacity at Spillway



SECTION 5e PAGE NO. 24


Ruth Lake Storage Hydrograph 2024 Water Year
Ruth Lake Storage (AF)
60,000
55,000
50,000
45,000
40,000
35,000
30,000
25,000
Sep-23
Oct-23
Nov-23
Dec-23
Jan-24
Feb-24
Mar-24
Apr-24
May-24
Jun-24
Jul-24
Aug-24
Sep-24
Oct-24
Nov-24
Initial Collection to Storage
Collection to Storage
Withdrawl from Storage
Regulatory Withdrawl
Regulatory Storage
Reservoir Capacity at Spillway