

NEBRASKA

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DEPT. OF NATURAL RESOURCES

25 April 2023

Mr. Kevin Rein
State Engineer
Colorado Division of Water Resources
1313 Sherman Street, Suite 821
Denver, CO 80203



Jim Pillen, Governor

RE: Response to Kevin Rein 2 March 2023. SENT EMAIL ONLY—NO HARD COPY TO FOLLOW

Dear Kevin,

I received your above referenced letter regarding the 29 December 2022 report completed by Zanjero titled—**Evaluation of the South Platte Compact Canal and Alternatives**. We referred your comments to the consultant and their response is attached. It may also be accessed from our website.

Sincerely,

A handwritten signature in blue ink that reads "Thomas E. Riley".

Thomas E. Riley, P.E., Director

Thomas E. Riley, P.E., Director

Department of Natural Resources

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MEMORANDUM

To: Tom Riley, Director, Nebraska Department of Natural Resources
Jesse Bradley, Assistant Director, Nebraska Department of Natural Resources

Date: April 20, 2023

From: Michael Preszler, P.E.
Gwyn-Mohr Tully, J.D.
Robert Heather, E.I.T.

Subject: Response to Colorado Comment Letter of March 2, 2023 (Letter)

This memorandum addresses the comments provided by Mr. Kevin G. Rein, State Engineer and Director at the Colorado Division of Water Resources to Zanjero's December 2022 Report titled "Evaluation of the South Platte Compact Canal and Alternatives" (Report). We have reviewed the various comments and attempted to disaggregate the key components within each comment from the longer text associated with the comment. In general, our responses should bring clarity to Mr. Rein's observations about potential omissions and other conclusions contained in our initial report. Please let us know if you would like to discuss any of our findings further.

1. **Comment:** "Despite its label, Section 2.2.2.2 does not identify 'Additional Demands' that will occur due to developing projects in those [Upper Section] areas and their associated future impact on Balzac flows."

Response: The phrase *Upper Section "Additional" Demands* as used in the Report references demands associated with water rights holders in the Upper Section, but located downstream of the current Balzac stream gage – a short segment around 5 miles long. Therefore, these demands are not reflected in the stream gage data for the period Water Year 1988 through 2019. These demands were incorporated into the water supply analysis as "additional" demands for the select period. The Report and analysis did not attribute or associate this term to any future development located in the Upper Section.

Comment: "By failing to consider future development in the Upper Section, the Report overstates the future flows entering the Lower Section of the river and, therefore, the yield of the Canal."

Response: This comment reflects a misreading of the report. Contrary to this comment, and acknowledged later in the Comment Letter, the Report and analysis did develop and incorporate a method to consider future development in the Upper Section by way of the sensitivity analysis (reduction in historical Balzac flow by 10%, 20%, and 50%) as described in Report Section 2.2.3.

2. **Comment:** “But the Report fails to investigate whether all accretions would be legally available to the Canal.”

Response: With respect to Accretions as used in the Report, the term aggregates tributary inflow, return flows from previously applied water, or any combination thereof. The analysis does not attempt to specifically assign any portion of the Accretions term as tributary inflow or return flows from previously applied water. The report assumes these return flows are available for priority water uses and to Colorado’s thirty-five thousand acre- feet Compact stipulated right.

Comment: “It [the Report] also fails to consider the impact of the Canal’s operation on future accretions that result from recharge that the Canal would cause to be curtailed.”

Response: The Report and analysis does not consider this “impact” due to an understanding that curtailments of any water currently being diverted results in increased surface flow available for appropriation. That is, if a Colorado recharge project was curtailed (junior in priority to the Canal), the water referred to in the comment above would remain instream as surface flow, likely resulting in increased volumes available for downstream appropriation (when compared to the return flow portion). Further, the Report and analysis progressed with an understanding that diversion of South Platte River flows by Colorado water right holders during the non-irrigation season are typically intended to support flows in the river during the irrigation season when those uses would otherwise be out of priority.

3. **Comment:** “The Water Supply Availability analysis does not consider the impact of Julesburg Reservoir.”

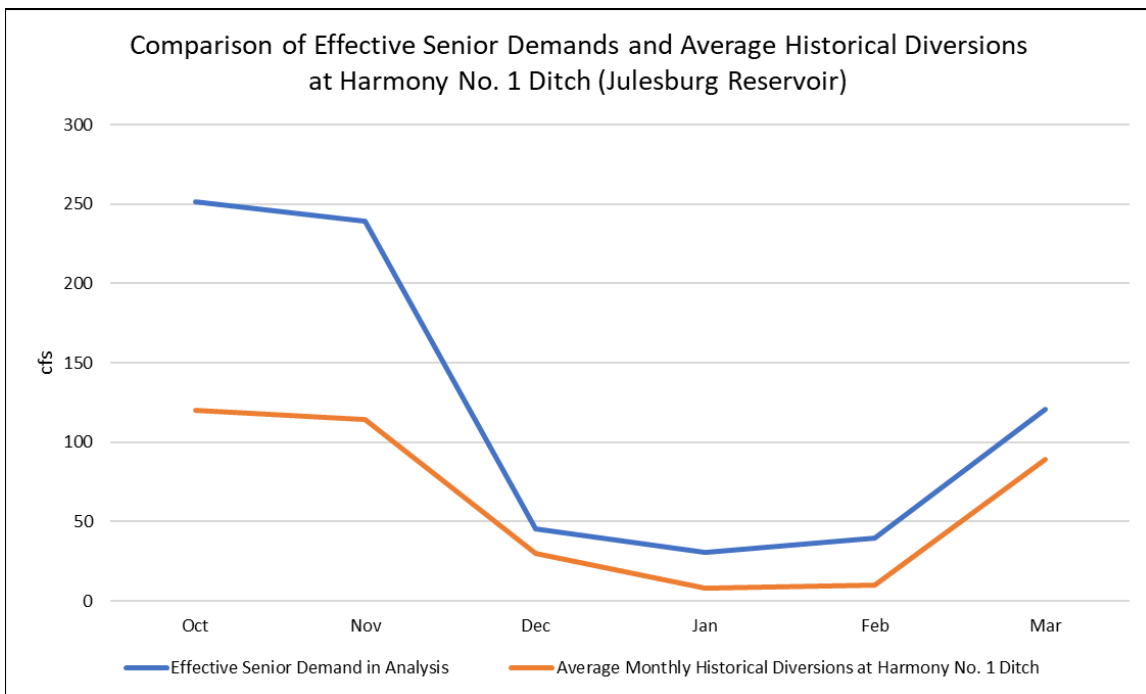
Response: Demands incorporated into the water supply availability analysis were developed from all senior water rights’ face values, including the Julesburg Reservoir water right, and a representative historical take pattern. Historical diversions, reported by CDSS, for the Pawnee, Peterson, and Lowline ditches were only used to develop the representative take pattern. A comparison was made using the take pattern developed for the analysis with historical diversions for Harmony No. 1 Ditch near Crook, the ditch used for Julesburg Reservoir diversions. Historical diversions for Harmony No. 1 Ditch near Crook were obtained from the CDSS for the period 1995 through 2022. Average monthly diversions for the non-irrigation season, along with “Effective Senior Demands” used in the analysis (see Report Table 2-5) are presented in the table and figure below. A comparison of “Effective Senior Demands” and historical average Julesburg Reservoir

diversions (using Harmony No. 1 Ditch near Crook) indicates the “Effective Senior Demands” incorporated into the analysis are in excess of historical average diversions to Julesburg Reservoir. This provides an additional factor of safety to the analysis.

Table 1: Comparison of “Effective Senior Demands” and Average Diversions at Harmony No. 1 Ditch

Month	Average Diversion at Harmony No. 1 Ditch (cfs)	Effective Senior Demands (cfs)	Percent of Effective Senior Demand
Oct	120	252	48%
Nov	114	239	48%
Dec	30	45	67%
Jan	8	30	26%
Feb	10	40	25%
Mar	89	121	74%

Figure 1: Comparison of “Effective Senior Demands” and Average Historical Diversions at Harmony No. 1 Ditch (Julesburg Reservoir)



Comment: “The methodology shows a reduction to available flows to the Canal attributable to these ditches’ diversions. However, we note that while these ditches may have water rights senior to the Canal’s data of December 17, 1921, they do not divert during the non-irrigation season with a water right senior to the Canal. As a result, this approach does not accurately reflect the potential diversions during the non-irrigation season and, therefore, does not have a basis for consideration in the Water Supply Availability analysis.”

Response: This comment reflects a misreading of the report. Contrary to the comment, the methodology does not reduce flows available to the Canal directly attributable to the three ditches (Pawnee, Peterson, and Lowline). Again, these ditches were only used to develop the take pattern, to which the total senior water rights’ face value was applied to. The approach aimed to accurately reflect the anticipated senior water rights’ diversions (as opposed to potential), based on the historical demand pattern during the non-irrigation season developed from the representative ditches.

4. **Comment:** “The Report likely overestimates Water Supply Availability through its methodology of allocating diversions for Colorado’s preferred and superior right to develop an additional thirty-five thousand acre-feet of storage, which is described in Section 2.2.2.4.”

Response: Modifying the method of distributing the thirty-five thousand acre- feet Compact stipulated right would not materially affect the results of the water availability analysis. The Report and analysis did not attempt to account, allocate, distribute, nor apportion priority between Senior Water Right holders and the thirty-five thousand acre-foot Compact stipulated right (Compact stipulated right). The Compact does not clearly mention, nor did the analysis undertake, assigning priority among water rights holders senior to the Canal and Colorado’s Compact stipulated right.

5. **Comment:** “The report fails to consider impacts from icing or to explain why icing would not impact diversions.”

Response: The Report did not aim to capture design considerations that may impact canal diversions, including icing. This item will be addressed in the canal design phase.

6. **Comment:** “The Compact does not provide for any diversion of groundwater.”

Response: The Compact does not identify a specific type of diversion to be utilized by Nebraska for diverting South Platte River flows and the evaluation was simply identifying alternative means that could be evaluated in the design phase of the project. That said, many historical documents¹ refer to the “underflow” of the River as a potential source of supply.

¹ See 1918 Report on history of Perkins County Canal by Mark Burke, which includes 1891 Report by former Colorado State Engineer Greene.

7. **Comment:** “The cost-benefit analysis misrepresents benefits from the Canal in terms of Water Supply Availability because it includes ‘benefits’ derived from diversions of excess flows during the non-irrigation season that don’t exist and appear to be only a construct of the Report.”

Response: The evaluation identified an alternative water availability scenario for canal diversions in excess of 500 cfs after all Colorado demands were accounted for during the non-irrigation season, including junior water rights holders. This analysis was provided to illustrate the potential additional water supply that could be captured should Nebraska seek to develop the infrastructure capable of capturing these surplus waters. Further, the analysis did not consider excess surplus water during the irrigation season, which the Compact establishes Nebraska can divert when available, resulting in a conservative approach with respect to total Canal diversions quantified in the Report.