



March 2, 2023

Mr. Thomas E. Riley, P.E., Director  
Nebraska Department of Natural Resources  
245 Fallbrook Road, Suite 201  
Lincoln, Nebraska 68521-6729

Subject: December 29, 2022 Nebraska Report, *Evaluation of the South Platte Compact Canal and Alternatives*

SENT BY E-MAIL ONLY

Dear Tom,

Thank you for notifying me of the release of the report titled *Evaluation of the South Platte Compact Canal and Alternatives*, which was completed by Zanjero and submitted to the Nebraska Department of Natural Resources on December 29, 2022 (“Report”). In Nebraska’s past inquiries of Colorado regarding our position on the Perkins County Canal’s (“Canal”) operations, Colorado has limited its comments due to the fact that we have not had information on Nebraska’s detailed plan. In an effort to advance those conversations, Colorado has asked Nebraska to describe its methodology for determining a projected yield from the Canal. (See my letter to you and Jesse Bradley dated July 14, 2022.) The Report addresses Water Supply Availability in section 2.0 and it gives Colorado its first insight on Nebraska’s yield analysis. Understandably, not all of the detailed methodology, data, and underlying assumptions are included in the Report. However, we are still able to review the results and offer limited and preliminary comments on the Water Supply Availability section.

At the outset, I’ll reaffirm my past statements that Colorado has always been in compliance with the Compact and will continue to be in compliance. It is in the spirit of the paramount importance Colorado gives to acting in compliance with all current and future aspects of the Compact that I offer this letter.

Our observations in this letter are limited to technical suggestions to help improve the accuracy of the Water Supply Availability analysis and they do not constitute a comprehensive review, nor do they indicate Colorado’s position on the various aspects of the Canal’s construction and operation. Further, there may be aspects of the Report’s Water Supply Availability methodology that are not apparent or that we have not commented on for other reasons, including the lack of a detailed understanding of the methodology, data, and



underlying assumptions. Therefore, these comments are not exhaustive and Colorado reserves all rights.

For the purposes of this letter, I will restate the formula used in the Report to estimate the Canal diversions:

$$Q_{Canal} = Q_{Bal} - WRSR - WR35k - WRAdd + ACC$$

Where the components of the formula are defined as follows:

$Q_{Canal}$  = Available streamflow for canal diversions.

$Q_{Bal}$  = Measured streamflow at Balzac.

$WRSR$  = Quantified Senior Water Rights in Lower Section.

$WR35K$  = 35,000 AF Stipulated in Compact.

$WRAdd$  = Additional demands located below Balzac gage and upstream of Lower Section. Only applicable for Water Years after 1987 to account for Balzac gage relocation.

$ACC$  = Accretions occurring in the Lower Section.

### Comments:

1. Section 2.2.2.2 on page 21 of the Report is labeled *Upper Section “Additional” Demands*. That section of the Report uses the term “Upper Section” incorrectly and that use is inconsistent with the Compact. Section 2.2.2.2 does not adequately consider future development in the Upper Section.

The term “Upper Section” is defined in the Compact as the entire South Platte River above and westerly from the west boundary of Washington County. This includes the reaches of the river immediately upstream of the Balzac gage and continuing west to the Denver metro area, Boulder, Fort Collins, Greeley, and areas in between. Despite its label, Section 2.2.2.2 does not identify “Additional Demands” that will occur due to developing projects in those areas and their associated future impact on Balzac flows. As you know, Nebraska has no “basis for any claim to water necessary to supply all present and future appropriations in the Upper Section of the South Platte River.” Compact, Article VI, paragraph 2.(b). 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.

The Sensitivity Analysis attempts to address the likely development in the Upper Section and the resulting diminution of flows entering the Lower Section in the



future. The sensitivity analysis considers future reductions of South Platte River streamflow entering the Lower Section from the current baseline by 10 percent, 20 percent, and 50 percent to account for this likely diminution.

Notably, the 10 percent, 20 percent, and 50 percent reductions do not result in a proportionate reduction in the amount of water available to the Canal. While we do not have the data that the Report used to calculate the impact of these reductions, it appears that the disproportionate reduction due to flows from the Upper Section is due to the high reliance on accretions in the Lower Section, ACC in the formula, for the Canal's diversions and resulting Water Supply Availability.

2. The Report does not include a Sensitivity Analysis to properly consider the nature of the accretions in the Lower Section. As mentioned above, the Water Supply Availability relies on accretions in the Lower Section for a significant portion of supply for the Canal—as much as 100 percent in some instances. But the Report fails to investigate whether all accretions would be legally available to the Canal. It 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. Section 2.2.2.5 addresses *Accretions in Lower Section (upstream of Canal Diversion)*. Some of the accretions that result from intentional recharge are from recharge water that was diverted in the Upper Section and, therefore, that accretion amount is from diversions to recharge that could not be curtailed by the Canal and further, which accretions cannot be diverted by the Canal.
3. The Water Supply Availability analysis does not consider the impact of Julesburg Reservoir. Section 2.2.2.3 is labeled “Senior Appropriators in Lower Section” and is intended to account for the reduction of water available due to diversions by Senior Appropriators, which diversions are associated with water rights that have an appropriation date before December 17, 1921.

The methodology used in Section 2.2.2.3 appears to treat three ditches, the Pawnee Ditch, the Peterson Ditch, and the Lowline Ditch, as water rights with potential diversions during the non-irrigation season. 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 date of December 17, 1921, they do not divert during the non-irrigation season with a water right senior to the Canal's date. 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.



Further, Section 2.2.2.3 states that “canals used for development of this demand pattern do not include canal diversions to reservoirs, as those diversions may not represent typical irrigation pattern demands.” Thus, the Report fails to consider the demand from Julesburg Reservoir, which is senior to the Canal and would significantly reduce the water available for diversion by the Canal. Julesburg Reservoir has water rights that divert in the Lower Section during the period of November 1 through March 30. Julesburg Reservoir may divert at a rate of up to 250 cfs with a priority date of February 12, 1904, and may divert 30,000 acre-feet or more during that time. Julesburg Reservoir has a history of diverting during much of the period of November 1 through March 31. The water availability analysis fails to consider the impact of Julesburg Reservoir.

4. The Report likely overestimates Water Supply Availability through its methodology for 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. The Report acknowledges the Compact provision that Colorado has the “preferred and superior right to...thirty-five thousand acre-feet of water to be diverted from the flow of the river in the Lower Section between the fifteenth day of October of each year and the first day of April of the next succeeding year...”

However, the Report synthetically distributes the 35,000 acre-feet among the months of October through March using a methodology that is based on factors that do not consider the time that the water is needed and/or available. The resulting reduction in flow available to the Canal will not be accurate since the distribution may allocate an unsupportable portion of the 35,000 acre-feet to months when that amount would not be physically available and limiting the portion during months when there is more water available in the river.

5. The Report fails to consider impacts from icing or to explain why icing would not impact diversions. While climatic conditions are unpredictable, we note that canals and ditches in District 64 are regularly shut down during extended periods of low temperatures due to freezing conditions, or icing, and the associated inability to divert and convey water, which includes the associated risk of damaging infrastructure, including the ditch itself.

Notably, the 1982 Bureau of Reclamation Report (BOR Report) acknowledged in its cover letter “ice buildup in the canal and at the diversion dam during a combination of low flows and low air temperatures” as an area that would require more study.



Page 4 of the BOR Report states that “...there may be periods each year when a combination of low flows and low air temperature would cause serious ice problems in the canal and the diversion structure.”

6. Section 4 of the Report analyzes alternatives for Canal design and construction and section 4.2.2 alludes to the potential for using “Ranney Wells” to divert water from the South Platte alluvium in lieu of a surface water diversion for the Canal. The Compact does not provide for any diversion of groundwater.
7. The cost-benefit analysis misrepresents benefits from the Canal in terms of Water Supply Availability because it includes “benefits” derived from diversion of excess flows during the non-irrigation season that don’t exist and appear to be only a construct of the Report. Section 2.2.4 of the Report addresses *Non-Irrigation Season Surplus Water*, by proposing that “[w]ater in excess of both Nebraska’s 500 cfs entitlement and all Lower Section water rights holders junior to the December 17, 1921 priority, is available for diversion (non irrigation season surplus water).” The Compact does not allow Nebraska to divert excess flows during the non-irrigation season.

Colorado appreciates the opportunity to review the Water Supply Availability analysis and provide our initial suggestions to improve its accuracy based on the information provided to date. By providing this letter, we do not waive any rights, including any claims or defenses, we may have or that may accrue under any existing state or federal law or administrative rule, or regulation including without limitation, the South Platte Compact. Any failure here to address specific aspects of the Report shall not be construed as an endorsement or an admission with respect to any factual or legal issues for the purpose of any future legal, administrative or other proceeding. We reserve the right to provide further comments and engage with Nebraska as it proceeds with subsequent phases of the process.

Sincerely,



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Kevin G. Rein  
State Engineer, Director

