Determination of the State Engineer

HB 13-1248 Fallowing-Leasing Pilot Project
Application of City of Colorado Springs/Super Ditch for the
Use of Catlin Canal Shares by Colorado Springs Utilities
WDID # 1707701 SWSP #6133
December 6, 2019

I. Introduction

This document serves to fulfill the State Engineer's obligations pursuant to the provisions of HB13-1248 (and as amended by SB-15-198), and the Criteria and Guidelines for Fallowing-Leasing PIlot Projects, specifically related to evaluation and review of the 2019 Colorado Springs and Super Ditch Fallowing-Leasing Pilot Project ("Pilot Project").

A pilot project proposal was submitted to the Colorado Water Conservation Board (CWCB), Rebecca Mitchell, Director, on November 16, 2018 by the Applicants: Lower Arkansas Valley Super Ditch Company (Super Ditch) and the City of Colorado Springs, acting by and through its enterprise, Colorado Springs Utilities (Colorado Springs or CS-U). Following the required comment period and additional information provided by the Applicants, the CWCB Board approved the selection of the proposal at the March 2019 CWCB meeting. The detailed project application was submitted on August 16, 2019. A 60-day comment period followed, ending on October 15, 2019. A Conference Committee meeting was conducted on November 6, 2019 in Pueblo, Colorado. A Joint Conference Report was prepared and submitted to the State Engineer and CWCB on November 21, 2019. Follow-up Memos and revised engineering information responsive to the discussion at the conference were provided by the Applicant on November 27, 2019.

This Determination of the State Engineer was prepared following review of all documents received including the project application, comments received from the interested parties, the Joint Conference Report, which identified a large number of agreed upon terms and conditions as well as some terms and conditions where some disagreement remained, and additional information and suggestions provided by the Applicants and conference participants after the conference. This Determination has also been prepared with recommendations to ensure that the two fundamental objectives identified in C.R.S. 37-60-115 (f)(I) and 37-60-115 (f)(II) will be met if the project is approved with the recommended terms and conditions. These two objectives were:

1. The project will result in only a temporary change in the historical consumptive use of the water right in a manner that will not cause injury to other water rights, decreed conditional water rights, or contract rights to water;
2. The project will not impair compliance with the Arkansas River Interstate compact.

II. Project Overview

The intent of the Pilot Project for the approval period of March 15, 2020 through March 14, 2030 is to fallow fields in three of the ten years to provide Colorado Springs with up to 1,000 acre-feet of

consumptive use water annually in each of the three years. A total of 1,573 shares and 1,433 acres are included in the Pilot Project approval. The Applicants have noted that this number of shares and acreage results in more consumptive use water than the goal of 1,000 acre-feet and that a lesser amount and shares will be fallowed pursuant to the pilot project in each of the three fallow years.

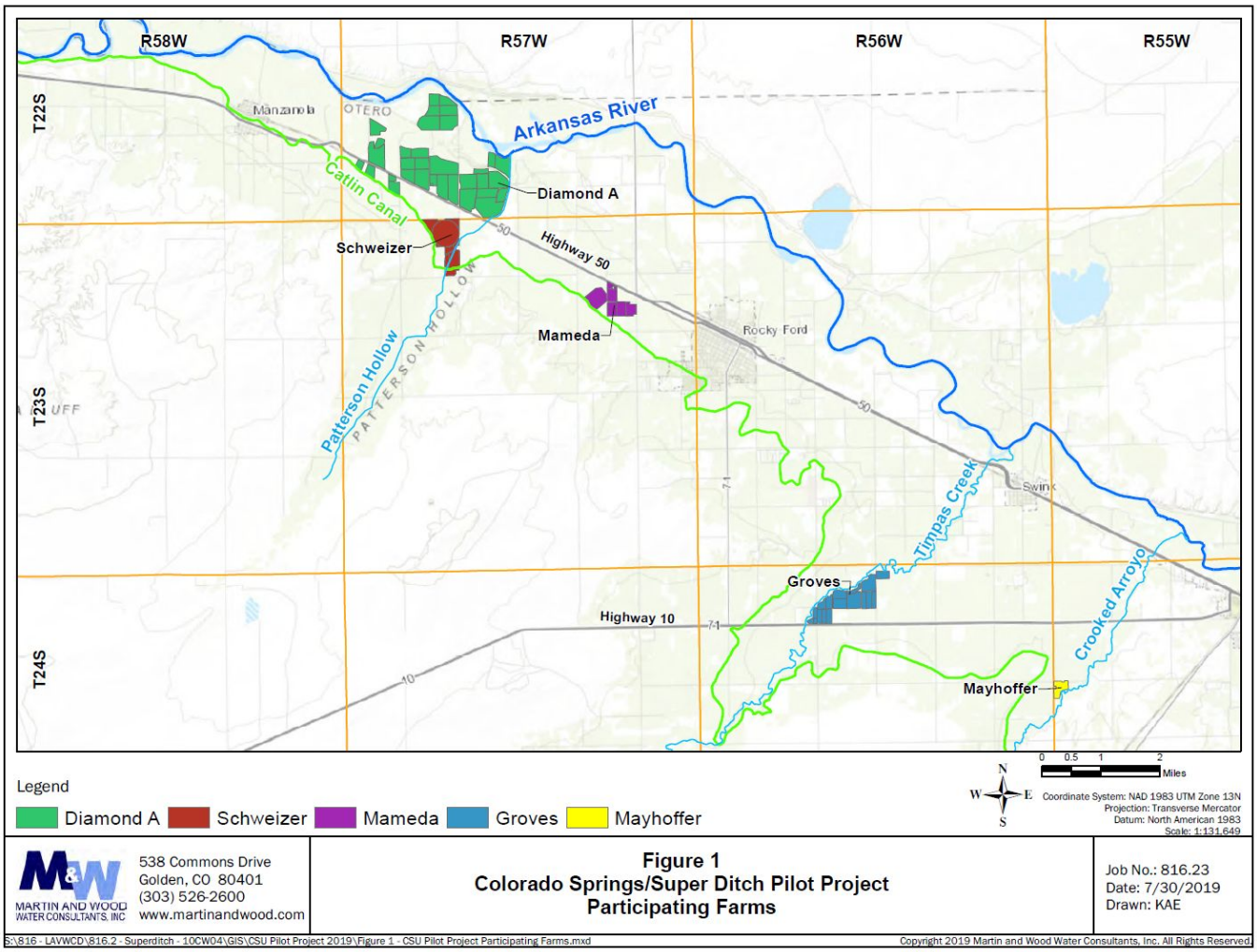
The farms and shares listed in Table A, which is excerpted from the Applicants revised HCU dated November 25 and received November 27, are included in the Pilot Project. Figure 1 shows the locations of the farms.

Table A. Pilot Project Farms and Number of Shares

Participating Farmer	Legal Description of Historically Irrigated Lands	Irrigated Acreage (2015)	Historical Irrigated Acreage[1]	Pilot Project Historical Irrigated Acres[1]	Number of Participant Shares	CPW Shares	Total Number of Shares	Shares per Acre[1]	Participant Associated Share Certificates
Diamond A	Portions of Sections 20, 28, 29, 30, 31, 32, and 33, T22S, R57W of the 6th P.M., Otero County, Colorado	1100.9	1097.71	874.15	1,087.010	278.000	1,365.010	1.244	16, 18, 21, 22, 3604, 3712
Schweizer	Portions of the E1/2 and NW1/4 of Section 5, T23S, R57W of the 6th P.M., Otero County, Colorado	196.9	174.71	174.71	195.476	0.000	195.476	1.119	91, 3493, 3498, 3703
Mameda	Portions of Section 11, T23S, R57W of the 6th P.M., Otero County, Colorado	157.6	157.08	157.08	99.000	0.000	99.000	0.630	42, 43
Groves	Portions of the SE1/4 of Section 5, portions of the NW1/4 of Section 3, and portions of Section 4, T24S, R56W of the 6th P.M., Otero County, Colorado	262.4	217.41	194.95	156.240	18.000*	174.240	0.801	2, 3, 4, 5
Mayhoffer	Portions of the NW1/4 of Section 18, T24S, R55W of the 6th P.M., Otero County, Colorado	35.2	31.61	31.61	35.000	0.000	35.000	1.107	3663
Total	-	1753.0	1678.52	1,432.5	1,572.726	296.000	1868.726	1.098	-

[1]Average for relevant study period. The CPW shares were included in the historical consumptive use analysis per dscussion at the November 6, 2019 CS-U/SuperDitch Pilot Project Conference. The CPW shares are factored out of the results by proportionately reducing the Pilot Project Historical Irrigated Acres to that irrigated only by the participant shares.

*Groves leased 30 CPW shares for 18 years of the 30-year study period. The average of 18 shares per year is used for the purposes of this table.



MARTIN AND WOOD WATER CONSULTANTS, INC
538 Commons Drive
Golden, CO 80401
(303) 526-2600
www.martinandwood.com

Figure 1
Colorado Springs/Super Ditch Pilot Project
Participating Farms

Job No.: 816.23
Date: 7/30/2019
Drawn: KAE

S:\816 - LAVWCD\816.2 - Superditch - 10CW04\GIS\CSU Pilot Project 2019\Figure 1 - CSU Pilot Project Participating Farms.mxd

The water will be diverted by the Catlin Canal and, minus ditch and lateral losses, returned to the Arkansas River via one or more augmentation stations. The deliveries to the Arkansas River will include replacement of tailwater return flows and lagged deep percolation return flows requiring replacement that day. The remaining deliveries will be exchanged to Pueblo Reservoir if exchange potential is available, or stored and exchanged later, if and when exchange potential is available.

III. Terms and Conditions to Prevent Injury and Compact Impairment

The following terms and conditions are recommended for adoption by the CWCB if this project is approved. First, the terms and conditions agreed upon by all of the participants are listed, followed by terms and conditions that were not agreed upon by all parties. Although DWR maintained the numbering of the terms and conditions submitted in the Joint Conference Report, changes were made to the language of many of the "agreed-upon" terms and conditions based on the judgement of the State Engineer and Division Engineer.

III.A: Terms and conditions agreed upon by parties

1. All water attributable to shares in the Pilot Project will first be delivered to the headgate of the Catlin Canal, and only lands irrigated under the Catlin Canal Company will be used in the leasing-fallowing operations of the Pilot Project. A plan year for the Pilot Project extends from March 15 through March 14 of the following year ("Plan Year"). Project duration is from March 15, 2020 through March 14, 2030.
2. The Pilot Project will fallow lands in no more than three of the ten years of approval ("Fallowing Years").
3. **Distribution and Posting**: All submittals by Applicants to DWR pursuant to these Terms and Conditions shall be emailed to augmentation.coordinator@state.co.us (unless another email is provided) and made publicly available by DWR on the pilot project webpage (and via Imaged Documents, Division Filing template, Plan WDID ID No. 1707701) after submittal and shall remain publicly available until all lagged return flow obligations from the Pilot Project have been replaced. The Applicants shall notify parties to the Application when documents have been submitted to DWR. A copy of the annual report required under condition no. 44 shall also be submitted to CWCB and shared on the CWCB website.
4. **Fallowed Lands**: By March 1 of each Fallowing Year, Applicants shall provide mapping of those parcels to be fallowed and the associated shares and provide notice in accordance with condition of approval no. 3. Lands and shares available and approved for fallow through operation of the Pilot Project are limited to those identified in the Pilot Project application and as approved by the State.
5. Review of the application and discussion at the conference resulted in several agreed upon changes to the historical consumptive use (HCU) analysis including the following: The Applicants have agreed to modify the consumptive use analysis to reflect a 30-year study period that does not include years when the parcels were dried up for augmentation credits in well association Rule 14 plans. All volumetric limits will be based on the revised study periods. In addition, the Applicants have agreed to use the 1985 acreage agreed to by Colorado and Kansas.
6. **Composite consumptive use calculations:** The following monthly factors, based on the November 27 revised HCU, will be used to calculate monthly composite consumptive use factors, which will be applied to augmentation station deliveries to determine monthly consumptive use. The monthly composite consumptive use factors will be calculated as the sum of monthly consumptive use for each farm multiplied by the fallowed shares for each farm,

divided by the total number of fallowed shares. The calculation of monthly composite consumptive use factors will be performed for each month from March through November.

Table B. Consumptive Use Factors (multiplied against Augmentation Station Deliveries)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Diamond A	-	-	0.042	0.126	0.282	0.493	0.495	0.497	0.352	0.151	0.044	-
Schweizer	-	-	0.051	0.151	0.367	0.525	0.529	0.534	0.454	0.263	0.197	-
Mameda	-	-	0.521	0.419	0.498	0.550	0.550	0.550	0.550	0.550	0.550	-
Groves	-	-	0.228	0.286	0.427	0.537	0.550	0.550	0.523	0.401	0.345	-
Mayhoffer	-	-	0.058	0.152	0.370	0.526	0.531	0.535	0.450	0.271	0.212	-

Note: for certain parcels on the Schweizer farm located near the canal where groundwater levels have been measured at depths of less than 8 feet, the HCU credit may be reduced if and when those parcels are fallowed as described in condition B13. Such a change will require a change to the factors applied for the Schweizer farm.

7. **Augmentation station delivery and return flow calculations:** The portion of available Pilot Project augmentation station headgate delivery that is not credited as consumptive use will first be allocated to irrigation season tailwater and irrigation season lagged deep percolation return flow maintenance owed that day. The remaining available Pilot Project augmentation station headgate delivery, less transit losses to the Arkansas River, will be available for exchange to Pueblo Reservoir. The available Pilot Project augmentation station headgate delivery will be calculated as the farm headgate delivery (share diversions minus 16.5% for ditch loss) minus lateral loss of 3.5%. Consumptive use is calculated as the available Pilot Project augmentation station headgate delivery, calculated as described above, multiplied by the composite consumptive use factor. Return flows are equal to the available Pilot Project augmentation station headgate delivery, calculated as described above, minus the consumptive use. Tailwater return flow is the return flow multiplied by 20%, and deep percolation return flow is the return flow multiplied by 80%. Condition of approval no. 10 further discusses deep percolation return flows. CS-U shall dedicate reusable water from any of its available sources identified in the application to replace all lagged return flows in any given year to the extent that return flow obligations cannot be met by augmentation station deliveries or releases of return flows previously exchanged to upstream storage.
8. **Volumetric Limits:** The monthly and annual consumptive use will be limited to the following maximum values (Table C) which are the averages of the three greatest months for each month and three greatest years of the study period, consistent with the Criteria and Guidelines. The values in the table will be multiplied by the ratio of the number of shares fallowed for each farm during a Plan Year divided by the total number of shares included in the Pilot Project for each farm, (not including shares leased from the Colorado Division of Parks and Wildlife (CPW) since the consumptive use for CPW shares is not included in the below table). Once any of the monthly or annual volumetric limits, has been met, all water available to the Subject Shares will be delivered through the augmentation stations on the Catlin Canal with no further claim of consumptive use credits or any other use until such time as use of the Subject Shares by Applicants is again allowed in accordance with the volumetric limits of this approval. These volumetric limits shall be modified at the time of any removal of shares and parcels from the Project consistent with condition 45.

Table C. Monthly and Annual Consumptive Use Volumetric Limits (acre-feet)

Farm	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Diamond A	0.0	0.0	141.6	178.8	264.3	455.0	456.6	474.3	272.9	212.5	149.5	0.0	1879.7
Schweizer	0.0	0.0	13.7	34.8	61.5	86.6	84.3	84.2	56.0	55.7	28.7	1.0	369.7
Mameda	0.0	0.0	25.6	35.8	37.5	44.3	46.3	45.5	32.6	27.5	13.6	2.0	261.1
Groves	0.0	0.0	30.9	50.5	55.4	73.8	76.7	72.2	53.4	38.2	20.8	3.0	347.2
Mayhoffer	0.0	0.0	2.7	6.2	11.2	15.5	15.0	15.0	10.0	10.0	5.3	4.0	67.1

9. Up to 1,000 acre-feet per year of consumptive use water generated during each of the three years of fallowing operations may be exchanged to Pueblo Reservoir for delivery to CS-U based on a limit in the contract between CS-U and Super Ditch ("Contract Limit"). Any of the 1,000 acre-feet per year of consumptive use water not exchanged to Pueblo Reservoir during a Fallowing Year because of insufficient exchange potential to Pueblo Reservoir, that is instead delivered to storage in a reservoir other than Pueblo Reservoir ("Remaining Consumptive Use Water"), may be exchanged to Pueblo Reservoir for delivery to Colorado Springs in a subsequent year. Remaining Consumptive Use Water shall count against the Contract Limit in the Fallowing Year and not against the Contract Limit for the year in which Remaining Consumptive Use Water is exchanged to Pueblo Reservoir for delivery to CS-U. In addition, no more than 3,000 acre-feet of consumptive use water generated in three years of fallowing operations will be exchanged to Pueblo Reservoir for delivery to CS-U during the term of the Pilot Project. All consumptive use water not delivered to CS-U by the conclusion of the Pilot Project will be returned to the Arkansas River with no claim of consumptive use credits or any other use.
10. **Deep percolation return flows:** Deep percolation return flows will be lagged using the URFs attached in Appendix G of the application or, for parcels included in the change of water right in Case No. 12CW94, the URFs decreed in case no. 12CW94 will be used. Return flows will be maintained via augmentation station deliveries attributable to the shares, releases of return flow water attributable to the shares that has been stored, or release of supplies available to CS-U. Return flows for the Diamond A, Schweizer, Mameda and Groves Farms are owed above the Fort Lyon Canal headgate and shall be delivered via the Timpas Creek Augmentation Station. Return flows for the Mayhoffer Farm are owed below the Fort Lyon Canal and shall be delivered via the Crooked Arroyo Augmentation Station. Transit losses will be assessed from the point of release to the confluence of the Arkansas River and Crooked Arroyo or Timpas Creek, as applicable. (see also condition 18)
11. **Schweizer Farm high groundwater**: Due to the potential for a canal induced high water table adjacent to the Schweizer Farm, and noting the potential for a steep gradient of the water table relative to the grade of the surface topography during the irrigation season, for any year that the following parcels are fallowed: 21721558 (NW Parcel, Division 2 Parcel ID 23570507), the west half of 21723766 (Pivot Parcel, Division 2 Parcel ID 23570516), 21723382 & 21711491 (South Parcels Division 2 Parcel ID's 23570520 and 23570510) a reduction in historical consumptive use due to the potential consumption of groundwater on those parcels will be applied for the shares used on those parcels. This reduction is discussed in condition no. B13. The parcels and monitoring well locations are shown on Attachment B.
12. **Fallowed parcels**: Fallowed parcels must be at least ten acres in size unless they comprise all of an existing CDSS parcel that is already less than ten acres. Parcels that represent a portion of an existing field can only be split in the same direction of historic irrigation unless a means of physical separation is approved by the CWCB based on the written determination of the

State Engineer. A physical separation must exist between any irrigated portion of a parcel and the dry-up portion. For dry-up fields left fallow or with a dry-land cover crop without permanent root system (that is, not alfalfa or pasture grass for example), the separation can be a ditch or tilled strip at least ten feet in width that prevents irrigation application from reaching the dry-up parcel. For partial fields containing deep-rooted crops such as alfalfa or pasture grass, a deep tilled separation of at least 25 feet must be maintained along with any ditches necessary to ensure no irrigation application to the dry-up portion. For any dry-up parcel that is planted with a dry-land crop (haygrazer, milo, millet, etc.), the crop should either be drilled at an angle to normal irrigation direction or a tilled strip maintained at the top of the field that clearly separates the crop from any possible irrigation source or both.

13. Dry-up of the fallowed fields will comply with the "Operating Procedures for Administration of Parcels Claimed for Augmentation Credits" of the Colorado State Engineer's Office (attached), with the exception of parcels with historically high groundwater, which must comply with condition B13. Re-irrigation of dry-up parcels with any source of water, including groundwater, shall not be allowed during a Fallow Year. No partial year dry-up shall be permitted.
14. Super Ditch will notify the Division Engineer of the status (dry land crop (must specify type), tilled and fallow, not tilled and fallow, stubble of past crop left on field, etc.) of each fallowed field in the Pilot Project by April 15 of each year of operations. See additional discussion of dry-land farming in condition no. B1.
15. Super Ditch shall monitor fallowed parcels on a periodic basis to confirm the adequacy of dry-up in conformance with the terms and conditions of this approval. Should noncompliance with the dry-up requirements be discovered, Super Ditch shall immediately notify the Division Engineer in writing and take such corrective action as is required by the Division Engineer. Fallowed parcels shall be subject to inspection by the Division Engineer who shall inform the pilot project sponsor if noncompliance is found.
16. Prior to any Pilot Project operations, Super Ditch will ensure that all participating farmers are contractually bound to provide for weed control and erosion protection for the lands removed from irrigation as a part of the Pilot Project. This will include the acknowledgement of, and agreement to comply with applicable County code noxious weed management requirements, including the Otero County Noxious Weed Management Plan, Otero County Code, Chapter 12 – Vegetation.
17. Tailwater return flow obligations shall be calculated daily and shall be replaced by delivery of the Subject Shares at the augmentation station(s). Applicants shall endeavor to replace the daily calculated amount of tailwater return flow obligation on a daily basis. Applicants shall demonstrate that all monthly tailwater return flow obligations have been replaced each month.
18. Lagged deep percolation return flow obligations shall be calculated daily and shall be replaced exclusively through: (a) delivery of the Pilot Project Catlin Canal shares at the augmentation station(s), (b) releases of return flows that were delivered through the augmentation stations and not needed that day and delivered to storage, and/or (c) other sources of water decreed for augmentation or replacement or approved for augmentation or replacement by a C.R.S. 37-92-308(4) SWSP. From March 15 through November 14 return flows will generally be replaced with deliveries to the augmentation station, although other approved sources may be used. During the irrigation season, on a monthly basis, Applicants shall demonstrate that all lagged deep percolation return flow obligations have been replaced. During November 15 to March 14, replacement of lagged deep percolation return flow obligations may be aggregated as approved by the Division Engineer in accordance with Exhibit M of the decree in Case No. 12CW94 so long as there is no injury to the Winter Water Storage Program, Colorado water rights, Conservation Storage in John Martin Reservoir or the Kansas-Colorado Arkansas River Compact.

19. The amount of consumptive use credits and return flow obligations and the disposition of consumptive use credit and return flow replacement water shall be calculated on a daily basis. Such consumptive use credits may be exchanged to Pueblo Reservoir for use by CS-U or to replace Pilot Project return flows as necessary, or step exchanged[1] to storage for such uses. Water allocated to replace deep percolation return flows and delivered through Catlin Canal augmentation stations that is in excess of the replacement requirement on a given day may be exchanged to Pueblo Reservoir to replace Pilot Project return flows as necessary, or step exchanged to storage for such uses on the day the excess return flow is delivered to the Arkansas River. Excess deep percolation return flow water exchanged to Pueblo Reservoir for this purpose shall be accounted for separately from the consumptive use water. (see also condition B12)
20. Consumptive use credits available from Pilot Project operations may only be used for the purpose requested in the application, municipal use by Colorado Springs or to replace return flows owed due to Pilot Project operation.
21. Calculations of return flows owed to the river must be updated as needed (at least monthly), based on actual past water availability and estimated future availability. If there is an under delivery of return flow water in any month this under delivery shall be made up in the subsequent month.
22. **Exchanges**: Exchange into Pueblo Reservoir may occur only when there is at least 100 cfs of outflow (inclusive of hatchery flows) from Pueblo Reservoir. Such diversions/exchanges may not cause the outflow from Pueblo Reservoir to be less than 100 cfs. In addition, exchanges will be operated as junior to the City of Pueblo's recreational in-channel diversion water right awarded in Case No. 01CW160, and as though the right is in effect 24 hours per day. Operations of this Pilot Project shall comply with the requirements of the Arkansas River Flow Management Program (the "FMP") established pursuant to the May 2004 Regional Intergovernmental Agreement among Pueblo, the City of Aurora, Colorado, acting by and through its Utility Enterprise, Southeastern, Fountain, CS-U, and Pueblo Water (the "IGA"), to the same extent that CS-U and Southeastern are required to comply with the FMP, which may result in additional limitations on the exchange of water into Pueblo Reservoir. Notwithstanding the foregoing, this term and condition does not require Super Ditch to comply with any terms and conditions in the IGA that are not specifically listed in the FMP.
23. No exchange will be operated under this Pilot Project past the Avondale gauge when flows at the USGS Gauge at Avondale are, or to the extent such exchanges will cause such flows at the Avondale Gauge to be, less than 500 cfs.
24. Any exchange of water as a part of this Pilot Project must be approved in advance by the Division Engineer after a determination that there is sufficient exchange potential to accomplish the requested exchange without injury to other water rights. Applicants must request to make an exchange through the Arkansas River Dashboard. If the Dashboard is not functioning properly, Applicants must request to make an exchange via an email to DNR_ROP@state.co.us.
25. Exchanges operated under the decree for Case No. 10CW04 will comply with all terms and conditions decreed therein. Any exchange operated in connection with this Pilot Project under Administrative Approval will comply with all relevant terms and conditions for the Pilot Project. No exchanges into Pueblo Reservoir will be operated under the exchanges decreed in Case No. 05CW96 under this Pilot Project except to the extent that CS-U has made a first use

[1] Stored in an intermediate storage location prior to final exchange to Pueblo Reservoir during periods when exchange potential does not allow to exchange directly to Pueblo Reservoir.

of the Consumptive Use Water and then exchanges fully consumable return flows from that first use or subsequent uses.

26. Applicants may operate an exchange only if there is a continuous live stream between the downstream exchange-from point and the upstream exchange-to point, and must cease operating at any time that a live stream ceases to exist in that reach.
27. The rate and volume of water diverted at the exchange-to point or stepped exchange points shall not be greater than the rate and volume of water introduced at the exchange-from point, after adjustment as necessary to account for losses (including but not limited to transit losses, seepage losses, evaporation, and evapotranspiration).
28. The rate of exchange shall be limited to the least of (1) the rate at which substitute supplies are delivered at the exchange-from point, (2) the rate at which the exchange is in priority within the relevant exchange reach, (3) the minimum rate of flow in the exchange reach that will preserve a live stream, (4) the amount of flow available at the exchange-to point, and (5) the physical capacity of the receiving structure at the exchange-to point that is legally available to Applicants.
29. Stored water derived from the Pilot Project and/or fully consumable sources available to CS-U will be used to meet the lagged historical return flow obligations associated with the fallowing of the historically irrigated lands. Transit losses on water delivered for replacement of the lagged historical return flow obligations as assessed by the Division Engineer will be included from the point of release to the confluence of the Arkansas River and Crooked Arroyo or Timpas Creek, as applicable.
30. Any return flows not met by delivery of that portion of the available headgate diversions shall be made up from some other source decreed for this use or approved for this use by a substitute water supply plan, or from the consumptive yield of shares included in the Pilot Project.
31. All diversions shall be measured in a manner acceptable to the Division Engineer. Super Ditch shall install and maintain measuring devices as required by the Division Engineer for operation of the Pilot Project.
32. **Accounting**: Accounting of water in this Pilot Project must be provided to the Division Engineer on forms and at times acceptable to him or her. Said accounting must be received by the 10th of the month following the month being reported.
33. The accounting will use the amounts described in this Determination to calculate consumptive use volumes and return flow obligations.
34. The name, e-mail and postal addresses, and phone number of the contact person who will be responsible for the operation and accounting of the Pilot Project must be provided with the accounting forms to the Division Engineer and Water Commissioner through the email listed in condition no. 3.
35. **Fryingpan-Arkansas Project facilities:** Pueblo Reservoir, Twin Lakes Reservoir and Fountain Valley Pipeline (or Conduit) are owned and operated as part of the Fryingpan-Arkansas Project by the United States Department of the Interior, Bureau of Reclamation. Applicants shall store water in Pueblo Reservoir only so long as they have a contract with the owners of that structure, and such storage and use is within the effective time period of such contract. Any use of Fryingpan-Arkansas Project facilities by Applicants, for storage, exchange or otherwise, will occur only with the written permission of the owner of said reservoir, and will be made consistent with such policies, procedures, contracts, charges, and terms as may lawfully be determined by the U.S. Bureau of Reclamation or its successors in interest, in their good faith discretion. Any approval of the Pilot Project will not give Applicants any rights to use of Fryingpan-Arkansas Project structures, including Pueblo Reservoir, but will not alter any

existing rights Applicants may have of any use of the Fryingpan-Arkansas Project facilities. Applicants shall not operate the Pilot Project in a manner that would interfere with the lawful operation of the Fryingpan-Arkansas Project. Applicants will operate the Pilot Project in a manner consistent with the LAVWCD's subcontract with Southeastern for excess capacity storage in Pueblo Reservoir. Prior to storing water in Pueblo Reservoir pursuant to a subcontract between Southeastern and LAVWCD, or any other excess capacity storage participant, Applicants shall obtain an assignment of all or any appropriate portion of that subcontract, approval of which will not be unreasonably withheld by Southeastern.

36. Applicants acknowledge that any Pilot Project approval does not give Applicants any rights to ownership or use of any Fryingpan-Arkansas Project structure, or any rights of ownership or rights to purchase or receive allocation of Fryingpan-Arkansas Project water, and does not alter any existing rights (including any right to renew existing contracts) Applicants may have. Applicants shall not use Fryingpan-Arkansas Project water or Project Water return flows for maintenance of return flows from irrigation use of any water rights utilized in this Pilot Project.
37. Applicants shall not operate the Pilot Project in a manner that would interfere with the lawful operation of the Fryingpan-Arkansas Project. Any water stored in Pueblo Reservoir as a part of this Pilot Project shall be beneficially used within Southeastern's district boundaries.
38. **Winter Water Storage Program:** Use of Winter Water to meet return flow obligations from the fallowing of historically irrigated lands shall be consistent with the terms and conditions contained in the Winter Water Storage Program ("WWSP") decreed in Case No. 84CW179 (Water Div. 2) and Southeastern's contract for Winter Water storage in Pueblo Reservoir. Applicants shall not operate exchanges under this Pilot Project during the WWSP storage season of November 15 through March 14. Nothing in any approval of this Pilot Project authorizes storage of Winter Water contrary to the requirements and limitations of the Decree in Case No. 84CW179 and the contract between the United States and Southeastern Colorado Water Conservancy District.
39. A portion of the water available to the Subject Shares is derived from the Catlin Canal Company's share of WWSP water in Pueblo Reservoir. During operation of the Pilot Project the portion of the Winter Water available to the Subject Shares shall be stored in Lower Arkansas Valley Water Conservancy District's excess capacity space in Pueblo Reservoir, or such other storage space that Applicants obtain all necessary approvals to utilize, and must be released to the Catlin Canal during the period of March 15 through November 14 in proportion to release of Catlin's other Winter Water and may not be booked- over to CS-U or used for replacement of winter return flows. If no excess capacity storage is available in a given year, Applicants will not have Winter Water available in Pueblo Reservoir for this Pilot Project during that year.
40. All of Applicants' Winter Water shall be delivered through the Catlin Canal during the period of March 16 through November 14, at the same time as deliveries of Winter Water are made to Catlin shareholders. Any Winter Water stored in Pueblo Reservoir under this Pilot Project will be stored pursuant to the applicable rules and regulations in effect from time to time for storage of Winter Water.
41. To the extent that the Pilot Project stores Pilot Project consumptive use water and return flow water that require delayed replacement in Pueblo Reservoir, such water may be booked over to replace return flow obligations that are owed to WWSP participant structures during the Winter Water storage period on a monthly or weekly basis, or as otherwise required by the Division Engineer, to participants in the WWSP as necessary to prevent injury to the water rights included in that Program. The Division Engineer will utilize Exhibit M of the decree in Case No. 12CW94 to determine the amount of the return flow obligation that is owed to John Martin Reservoir for changed Catlin Canal shares. The Division Engineer will be required to make

Winter Water releases from Pueblo Reservoir or other reservoirs upstream from John Martin Reservoir to deliver Winter Water to John Martin Reservoir, or to water users downstream of the confluence of the Arkansas River and Crooked Arroyo or Timpas Creek, as applicable. Applicants will pay the assessed transit loss for delivery of such water.

42. Prior to operation of the Pilot Project, Applicants shall submit proof to the Division Engineer, with distribution consistent with condition no. 3, that all agreements and approvals necessary for the operation of the Pilot Project have been obtained.

43. **Projection:** Prior to March 1 of each Plan Year, Applicants shall prepare and submit to the Division Engineer a monthly projection for the replacement of surface and lagged return flow obligations owed for deliveries to date and projected for the upcoming Plan Year and for total future monthly obligations over the lagged return flow period. The projection of lagged return flows shall be compared to the dry-year yields in Table 9, Colorado Springs Supplies for Return Flow Replacement, included with the Applicants' memorandum regarding the CS-U/Super Ditch Pilot Project Revised HCU Analysis submitted November 27, 2019. If the Division Engineer determines that such source(s) is(are) inadequate or otherwise unavailable to meet return flow obligations owed for the upcoming plan year, the Division Engineer may require Applicants to dedicate an acceptable firm source of water prior to commencement of operations for that Plan Year. The Applicants' projection shall also include information regarding Applicants' anticipated method(s) and source(s) of water anticipated to be used to meet return flow obligations beyond the upcoming Plan Year such that the Division Engineer can evaluate the likelihood that Applicants will continue to be able to meet return flow obligations in upcoming years and to take such action(s) as may be necessary to proactively address potential shortfalls in meeting long-term return flow obligations. This projection shall be submitted and made publicly available as described in condition no. 3.

44. **Annual Report:** Applicants shall prepare a report of Pilot Project operations on or before January 15 of each Plan Year. Such report must be submitted and posted consistent with condition no. 3. The report will reflect a reporting year of November 16 of the prior Plan Year through November 15 of the current Plan Year for which the report is being prepared.

    For Fallowing Years, the annual report will present: (a) a summary of Plan Year accounting, including the total amount of acres and Subject Shares fallowed, Plan Year deliveries to the Subject Shares, HCU credits generated, water exchanged to Pueblo Reservoir for use by Colorado Springs, tail water return flow obligation replaced and unreplaced, lagged return flow obligation replaced and unreplaced, sources of water used to meet lagged return flow obligation, future lagged return flow obligation and firm yield source of water that will be used to meet lagged return flow obligation; (b) any accounting errors or deficiencies discovered during the Plan Year and any accounting modifications that were made during the Plan Year or are proposed to be made for the upcoming year; (c) the number of days, if any, when there were unreplaced return flow obligations; (d) a summary of costs associated with Pilot Project operations, including lease payments made/received, operational costs, and to the extent available costs of erosion prevention and noxious weed management; (e) identification of any obstacles encountered in Pilot Project operations; and (f) any additional terms and conditions that Applicant believes may be necessary to prevent future material injury to other water rights or contract rights to water. Any proposed operational modifications shall be accompanied by such information and analysis as is necessary for the State and Division Engineer and any interested parties to evaluate the potential for injury resulting from such proposed changes.

For Plan Years that are not Fallowing Years: the report should describe that the Pilot Project was not operated, but report on return flow accounting for lagged return flows and replacements from any prior years of fallowing as applicable.

45. **Parcel removal:** Parcels fallowed in the Pilot Project may not be dried up for use in a different pilot project, Rule 14 plan, Rule 10 plan, substitute water supply plan, interruptible water supply agreement, another pilot project for the 10 years of operation of the Pilot Project. All 1,791.1 acres of the Participating Farms, as identified by Super Ditch in Figure 1 above, will be considered to be included in the Pilot Project until such time as the land is removed from the Pilot Project by Super Ditch. Super Ditch may remove land from the Pilot Project by submitting a report, in the manner described in condition no. 3, identifying the land to be removed from the Pilot Project to the Division Engineer on or before February 15th of each year of the 10-year term of the Pilot Project. The request should identify the parcels to be removed and provide revised volumetric limits to be used in place of those identified in condition no. 8. Until such time as the parcels are first removed from the Pilot Project, this term will disqualify parcels from being dried-up for augmentation credit under the 12CW94 decree until such time as the parcels are first removed from the Pilot Project because under paragraph 14.33 of the 12CW94 decree, land that is encumbered under a lease fallowing program may not also be claimed for dry-up under the 12CW94 decree. Once a parcel of land is removed from the Pilot Project it will no longer be able to participate in the Pilot Project. In other words, any parcel of land that is removed from the Pilot Project may not be added back in to the Pilot Project during the 10-year term of the Pilot Project. Once a parcel of land is dried-up/fallowed under the Pilot Project it may not be removed from the Pilot Project during the 10-year term of the Pilot Project.

III.B: Terms and conditions not agreed upon by parties

B1. **Dry-land farming on fallowed fields**: Whether or not Applicant must deliver to the Arkansas River an amount of water equal to the difference in soil moisture before and after a parcel was dry-land farmed.

Discussion: The practice of dry-land farming is described as a potential option for fallowed fields in the Criteria and Guidelines.

The Applicants supplied a memo on November 27, 2019 that determined the additional depletions to soil moisture that occur when (a) dry-land farming (based on winter wheat) is compared to (b) fallow ground. The results show that there is a potential for the soil moisture depletion of dry-land farming on the subject parcels to cause impacts. But the potential impacts from dry-land farming on soil moisture depletion are highly variable and would depend on several factors including climatic conditions, soil conditions prior to the dry-land farming, and if dry-land farming occurs for consecutive years.

The Division of Water Resources has not received an analysis with enough detail about potential impacts from dry-land farming to include a well-reasoned term and condition in this Determination that fits the goals of HB1248 pilot projects. DWR will conduct additional modeling analysis related to soil moisture depletion resulting from dry-land farming and the resulting impact when the field is subsequently irrigated. DWR will circulate the analysis to the parties and request comments. DWR will provide a summary of the analysis and input from the parties to CWCB prior to the January 2020 Board

Meeting. The summary may include a recommended additional term and condition for Board consideration.

B2. **URFs**: Whether lagged deep percolation factors should be calculated according to the Criteria and Guidelines, or according to the analysis in Case No. 12CW94.

Determination: The Applicant should rely on factors vetted during the Water Court process in Case No. 12CW94 where applicable for specific farms. For farms not included in Case No. 12CW94, the analysis provided by the Applicant is acceptable.

B3. Whether the Applicant should revise the URFs for the Schweizer Farm based on an alternative drain location.

Determination: Although LAWMA's position may technically have merit, the practical difference in timing is negligible and the Applicant's URF for this farm is acceptable for the Pilot Project operation.

B4. Whether the Applicant should use the URFs developed for the Mameda Farm in Case No. 12CW94.

Determination: The Applicant should rely on factors vetted during the Water Court process in Case No. 12CW94 for the Mameda Farm.

B5. Whether or not detailed terms and conditions related to controlling erosion and noxious weeds are necessary.

Determination: The State Engineer agrees with the Applicant's position on this issue, that the agreed upon terms and conditions and contracts with participating farmers are adequate and appropriate primarily due to the fact that Otero County has not asserted any issues with compliance under the 2014 HB-1248 Project under the Catlin Canal. LAWMA's comments and proposed additional conditions may be appropriate for future projects in other county areas or under different ditch systems to the extent that more restrictive requirements are desired by the county(s) in which the project will operate or by the ditch company under which the project will operate.

B6. Whether or not there must be a term and condition stating that "there shall be no renewal of this temporary lease/fallow project after the ten year term. Any continuation of this operation must first obtain Water Court approval under the resume-notice procedure."

Determination: Such a condition is not required by statute and is not necessary to prevent injury or impairment to interstate compacts. As required by statute and the Criteria and Guidelines, the CWCB Board would review any future Pilot Project proposals. Parties to this application may reach their own agreements about future project proposals.

B7. Whether or not lagged return flows must be replaced upstream of the location of the lagged return flow at all times.

Determination: Lagged return flows are to be replaced above the nearest downstream calling water right downstream of the location where return flows historically accrued. Such an operation prevents injury to vested water rights and issues with the interstate compact.

B8. Whether or not the terms and conditions clearly delineate how exchanges under 05CW96 may be used.

Determination: This issue has been clarified in condition no. 25.

B9. Whether or not Super Ditch's engineers must submit supplemental engineering related to whether the results of the LFT are consistent with 12CW94, and why any 12CW94 results are not being used.

Determination: The Criteria and Guidelines specify use of the Lease Fallow Tool with specific assumptions. As there isn't any specific injury identified by the commenting party, no additional analysis related to case no. 12CW94 is required.

B10. Whether or not a term and condition must be added stating that "Super Ditch must lease enough space in Pueblo Reservoir to assure that the requirements of the 10CW4 Decree are met, prior to exchanging water into Pueblo Reservoir."

Determination: This consideration is covered under condition nos. 25, 42, and 43.

B11. Whether or not additional terms and conditions relevant to the decree in 10CW4 must be added to address stepped exchanges.

Determination: If an exchange is operated pursuant to the allowance in 37-80-120, C.R.S., additional terms and conditions that apply to exchanges pursuant to case no. 10CW4 do not apply.

B12. Whether or not additional terms and conditions need to be added related to delivery of return flow water.

Determination: The Engineers believe condition nos. 7 and 19 delineate the distinction between Consumptive Use Credits and excess delayed return flow amounts available for exchange and later release to maintain historical return flows. Return flow water delivered through augmentation stations that is stored may not be used for any purpose other than replacing Pilot Project return flow through the Pilot Project approval. CS-U may seek separate administrative approval whereby a different source of water is physically provided to replace return flows and a like amount of stored return flow water (typically in Pueblo Reservoir) takes on the character of the water that was used to physically replace return flows.

B13. Whether additional terms and conditions need to be added to address the potential high groundwater issue.

Determination: Based on the two memos provided by the Applicants related to high groundwater on November 27, and additional water level data collected by DWR (see Attachment B), water levels on the Pilot Project lands are deeper than 8 feet below the ground surface in most cases. Based on Table D, there is little to no groundwater consumption by alfalfa and native grass to meet plant water requirements at groundwater depths of more than 8 feet. Some of the parcels on the Schweizer farm located closest to the canal, as described in condition no. 11, may have had groundwater levels that varied seasonally but were less than 8 feet at times, based on levels measured at nearby monitoring wells. Water levels on those specific parcels may have averaged about 6 feet below ground surface. Considering the crop mix evaluated by the applicant, which was 52 percent alfalfa and native grass with the balance from other more shallow rooted crops, combined with limited groundwater data, it is reasonable to assume that 15 percent of the HCU from those parcels was contributed by groundwater rather than applied surface irrigation water. If and when the applicant requests to fallow the specific parcels listed in condition no. 11, the applicant shall:

- reduce the HCU credit portion of the augmentation station deliveries for the shares attributable to those parcels by 15 percent with the balance of the augmentation station delivery considered a return flow obligation. Adjust volumetric limits accordingly. Or,
- provide additional groundwater level monitoring data relevant to those parcels to show that a different reduction or no reduction is necessary.

Table D. HCU Reductions due to Groundwater Contribution by Depth to Groundwater

Depth to Groundwater (ft)	Percent Reduction in HCU	
	Native Grass	Alfalfa
1	85	100
2	50	90
3	30	75
4	20	50
5	15	35
6	10	20
7	5	15
8	0	10

Adapted from EVAPOTRANSPIRATION AND AGRONOMIC RESPONSES IN FORMERLY IRRIGATED MOUNTAIN MEADOWS, South Park, Colorado, March 1, 1990; Revised September 1, 1991

Approvals

Approved this 6th day of December, 2019.

Kevin G. Rein, P.E.
Director, State Engineer

Attachments:

(A) Operating Procedures for Administration of Parcels Claimed for Augmentation Credit
(B) December 6, 2019 Groundwater Level Memo from Bill Tyner

Attachment A

Operating Procedures for Administration of Parcels Claimed for Augmentation Credit

Plans Approved by the Colorado State Engineer
Pursuant to the Amended Rules and Regulations Governing the Diversion and Use of Tributary Ground Water in the Arkansas River Basin, Colorado

September 2005

I. Selection and Approval of Parcels for Augmentation Credit

A. Colorado's Evaluation of Acreage

The Colorado Division of Water Resources (CDWR) has conducted several studies of irrigated lands in the Lower Arkansas Basin over a period of several decades. During the Kansas v. Colorado court case George Moravec developed mapping of irrigated acreage and assignments to ditch service areas using 1985 aerial photos for the area between Pueblo and the Kansas-Colorado stateline. Similarly, Spronk Water Engineers evaluated 1980 aerial photos for the State of Kansas and developed mapping of irrigated lands in the same area. Experts also reviewed historic aerial photos and data to assess changes in acreage during the period just prior to the Arkansas River Compact through 1980.

In 1998 and again in 2002 and 2003, the CDWR conducted studies of irrigated lands in the same areas using satellite imagery to classify irrigated and non-irrigated lands. Additionally, the CDWR has developed an ongoing data collection system to determine the lands irrigated by wells as a sole source of supply or as a supplemental source to surface water by conducting farm verification interviews each winter with farm operators in the lower basin. The work done by Colorado to identify and map irrigated lands has been critiqued by Kansas and by Colorado water right owners and ditch companies and corrected as applicable.

The Colorado State Engineer believes that the result of these studies is a comprehensive set of mapping that should be relied upon for evaluating claims for augmentation credit derived from the removal of pre-compact water rights for replacement of stream depletions caused by post-compact well pumping.

B. Nomination of Parcels for Dry-up Credits in Replacement Plans

Beginning with the 2006-07 Replacement Plan year, plan proponents will need to select parcels for dry-up credit utilizing the mapping developed by the CDWR for any dry-up credit to be claimed under the provisions of Rule 6 of the Amended Rules and Regulations Governing the Diversion and Use of Tributary Ground Water in the Arkansas River Basin, Colorado (Amended Use Rules). The CDWR mapping will include areas shown as irrigated in either the 1985 aerial photos evaluated by Colorado or the 1980 aerial photos evaluated by Kansas. Parcels identified within this mapped area that have not had shares moved to different locations will be eligible for dry-up crediting under Rule 6 provisions.

Mapped parcels shall be provided in GIS format compatible with the ArcView software used by the CDWR unless provisions are made to coordinate mapping with the Division 2 Office in Pueblo. Mapping for nominated parcels must be provided with the March 1, 2006 Replacement Plan submittals in order to ensure timely approval of replacement sources for the 2006-07 Plan Year and by March 1st of each succeeding plan year.

Example of CDWR Mapping

Plan proponents seeking to nominate any lands they believe were historically irrigated that do not lie within the mapped irrigated lands developed by the CDWR must seek a change of water right for the associated shares in Division 2 Water Court prior to approval in any plan approved pursuant to the Amended Use Rules.

C. Minimum Standards for Parcel Selection

Dry-up parcels must be at least five acres unless they comprise all of an existing DWR parcel that is already less than five acres. Parcels that represent a portion of an existing field can only be split with the direction of historic irrigation unless a means of physical separation is approved by the Division Engineer. A physical separation must exist between any irrigated portion of a parcel and the dry-up portion unless prior approval by the Division Engineer's Office is received. Waiver of the physical separation criteria will only occur for areas adjacent to sprinkler or drip systems and not for flood and furrow irrigation. For dry-up fields left fallow or with a dryland cover crop without permanent root system (that is, not alfalfa or pasture grass

for example), the separation can be a ditch or tilled strip at least ten feet in width that prevents irrigation application from reaching the dry-up parcel. For partial fields containing deep- rooted crops such as alfalfa or pasture grass a deep tilled separation of at least 25 feet must be maintained along with any ditches necessary to ensure no irrigation application to the dry-up portion. For any dry-up parcel that is planted with a dryland crop (haygrazer, milo, millet, etc.), the crop should either be drilled at an angle to normal irrigation direction or a tilled strip maintained at the top of the field that clearly separates the crop from any possible irrigation source (preferably both).

Example of Physical Separation Between Irrigated Parcel and Dry-up Parcel

Example of Tilled Strip at Dry-up Parcel Header for Dryland Crop

D. Dry-up Parcels Irrigated by Sole Source Wells

For any parcel from which surface water has been removed and claimed for augmentation credit, but which will be irrigated by a sole source well (e.g. drip systems or sprinkler systems or sole source flood), the following information must be provided with each March 1st Plan submittal:

1. Well ID Number(s) serving the parcel
2. Method of irrigation (Drip, Sprinkler, Flood, Etc.)
3. Description of how parcel will be separated from surface water irrigation and storm runoff from areas adjacent to the parcel
    a) Removal of header ditch
    b) Plug in header ditch or in feeder from surface water lateral
    c) Other method (describe)

E. Parcels Formerly Containing Alfalfa or Alfalfa-Grass Stands

Beginning with the 2006-07 Replacement Plan Year parcels containing alfalfa or mixed alfalfa stands must be deep tilled or chemically killed by no later than April 1st of each Plan Year unless the CDWR field staff have inspected the parcel and the Division Engineer has agreed that the alfalfa stand will not produce any significant growth due to either precipitation or sub-irrigation. Notwithstanding these provisions, for any parcel that exhibits sustained growth (i.e. plant growth to a height of more than 6 inches) during the dry-up year, the CDWR field staff shall require either immediate chemical kill or deep tillage or shall deem the parcel to be disqualified for augmentation credit.

F. Parcels with Areas of High Ground Water or Seepage

Fields containing areas of high ground water or areas effected by seepage from ditches or natural water courses, ponds or reservoirs may be disqualified or required to be chemically

killed or deep tilled if significant crop growth continues to occur during the irrigation season absent irrigation supply.

G. Plan Year and H-I Model Year Dry-up Claims

Due to the conflict between Replacement Plan years (April 1st through March 31st) and H-I Modeling periods (January 1st through December 31st), replacement plan proponents shall indicate whether a dry-up claim is for the Plan Year of calendar year. For any dry-up parcel irrigated during the period January through March of any year, but nominated for dry-up credit after April 1st (e.g. winter wheat), the plan proponent must provided a consumptive use analysis consistent with the methodology used for H-I Model crediting prepared by a registered professional engineer to determine how to pro-rate the dry-up acreage for the partial H-I Model year. This analysis must be submitted by no later than May 1st of the year in which the partial credit is being claimed. An estimate of the reduction in consumptive credit to be used in the Replacement Plan shall be provided with the March 1st plan submittal for purposes of plan evaluation and approval.

H. Mapping by Division of Water Resources for Approved Parcels

Using GIS data provided by the plan proponents, Division 2 staff will prepare dry-up shapefiles and mapping of the parcels approved in the replacement plan. This data and mapping will be used by CDWR field staff and Kansas to monitor dry-up fields. Division 2 staff will attempt to make this mapping available by April 15th of each year. Final mapping for dry-up affidavits will be produced at the conclusion of the credit period (January 15th for calendar year dry-up and April 15th for replacement year dry-up).

II. Parcel Identification

A. Parcel Identification

Parcels shall normally be identified using the Parcel ID established by CDWR unless another parcel identification system is approved by the Division Engineer. Mapping of approved parcels and data collection by CDWR field staff while monitoring parcels will rely on the Parcel ID to relate parcel information. The typical Parcel ID is in the format Township Number, Range Number, Section Number and a two-digit field number (e.g. 21573607).

B. Physical Identification of Dry-up Parcels

1. Permanent Dry-up Parcels

For parcels that have been approved for dry-up for at least three consecutive years, or that are intended for permanent removal of all types of irrigation, a sign shall be placed in a prominent location near the most logical point of observation near a public road way or the commonly used access point to the parcel. The sign shall be securely mounted on a 4” x 4” or 6” by 6” timber post and shall be at least 9” wide by 12” high, made of durable material, and with minimum 1” lettering. Signs shall state “Dry-Up Parcel ID XXXXXXXX”.

2. Temporary Dry-up Parcels

For parcels that are nominated for only temporary dry-up (less than three consecutive years), a sign shall be placed in a prominent location near the most logical point of observation near a public road way or the commonly used access point to the parcel. The sign shall be securely mounted on a steel tee-post or 4” x 4” or 6” by 6” timber post and shall be at least 12” wide by 6” high, made of durable material, and with minimum 1” lettering.

Signs shall state:

"Dry-Up Parcel ID XXXXXXXX" **"No Irrigation"**

or

"Dry-Up Parcel ID XXXXXXXX" **"Irrigated by Well ID XXXXXXX"**

3. Installation of Signs

Signs shall be installed by no later than April 1st of each year and signs on permanent dry-up fields shall be inspected for damage and possible replacement by April 1st of each year. Mapping showing sign locations or GPS locations of signs shall be provided by no later than April 15th of each year.

III. Field Monitoring of Dry-up Parcels

A. Colorado Division of Water Resources' Role

Division of Water Resources field staff shall visit dry-up parcels on a periodic basis during each irrigation season to determine adequacy of dry-up provisions and sources of irrigation supply for parcels that have ongoing irrigation by sole source wells. Data will be collected for each parcel as shown on the attached field inspection form. Data collected will be maintained in the Division 2 Office and periodically provided to Kansas and interested parties upon request. Problems discovered during the periodic inspections will be communicated to the designated person for each plan so that the problem can be resolved or credits forfeited for the specific parcel.

Dryup Field Verification Form

Date:_____ Verified By:_____

Arrival Time	DWR Parcel ID	Plan Parcel ID	Cover Vegetation Type	General Observations
GPS Point		View Type	Photo Comment	
Arrival Time	DWR Parcel ID	Plan Parcel ID	Cover Vegetation Type	General Observations
GPS Point		View Type	Photo Comment	
Arrival Time	DWR Parcel ID	Plan Parcel ID	Cover Vegetation Type	General Observations
GPS Point		View Type	Photo Comment	

Shares attributable to any parcel deemed by the Division Engineer as not actually being in a dried up condition shall be immediately removed from computations of augmentation credits.

The CDWR personnel will also conduct joint field inspections as requested with personnel from Kansas and will coordinate on communication about problems with any dry-up parcels that will affect the H-I Model input data.

B. Role of Plan Proponent and Well Owners

Each replacement plan shall designate with the March 1st Plan Application a contact person or person(s) for communications related to dry-up parcels. The contact person shall be responsible for ensuring that all mapping, signage and owner information is provided as described above. The contact person will also be responsible for contacting any owners for parcels with restricted access to arrange periodic field inspections and will be available to participate on field inspections by CDWR field staff upon request. The contact person will be responsible for communicating with owners of tracts where problems with dry-up conditions have been encountered to correct dry-up deficiencies. The plan proponent contact will also be responsible for ensuring that all dry-up affidavits are submitted in a timely manner and with complete documentation as may be required by plan approval conditions.

Owners of dry-up parcels will be responsible for notifying CDWR when any spill or irrigation occurs on a parcel that may disqualify the parcel or portions thereof from dry-up crediting. Timely notification will facilitate remediation activities that may preserve most dry-up credit for a parcel. When required by CDWR staff to take corrective actions on a

parcel the owner or contact person will prepare a report to document actions taken and submit the report to the Division 2 Office within ten days of remediation activities.

C. Resolution of Problems with Tracts

When a problem is discovered on a tract the Division Engineer or designated representative will determine whether an acreage reduction or consumptive use reduction is necessary. For parcels where dry-up has been unobtainable for the majority of a season on a discreet portion of a parcel an acreage deduction will be made for the dry-up crediting to eliminate that portion.

For parcels that experience continued growth of permanent vegetation, such as alfalfa, despite efforts to chemically kill or deep till the parcel, partial dry-up credit will only be considered if a consumptive use analysis prepared as described in Paragraph I-G above is submitted with the dry-up affidavit.

D. Dry-up Affidavits

At the conclusion of each dry-up period (either April through December or April through the following March), an affidavit shall be submitted signed by a person having knowledge of the dry-up activities and historic irrigation of the parcel. An example of the dry-up affidavit is attached. Affidavits will normally be due by January 15th for April through December dry-up or by April 15th for April through March dry-up.

Affidavits for each plan shall be submitted with a summary tabulation indicating for each parcel whether the claim is made for full credit, partial credit or whether the tract was irrigated by a sole source well. Summary tabulations shall total the claimed acreage by category under each ditch.

Affidavit of _____

(Name of individual having personal knowledge of dry up)

State of Colorado)
) SS.
County of Otero)

I _____, being sworn, state as follows:
Name

1. I am _____ (describe the position that you are in or the circumstance, which allows you to have a personal knowledge of the dry up of the parcel of land described in paragraph 3 below).

2. I reside at _____.
Address (Street/P.O., City, State ZIP)

3. The parcels of land shown on the attached map in the dried up acreage section of the Arkansas River Replacement Plan Application for *CWPDA* was irrigated by water from the Holbrook Canal prior to the dry up of the land for augmentation credit.

4. Based on my personal knowledge, the parcels of land shown on the attached map and described in the dried up acreage section of the Arkansas River Replacement Plan Application for *CWPDA* was not irrigated from the Holbrook Canal or from any other water source in 2003.

Further, the affiant sayeth not.

_____
Signature
Name _____
Address _____
_____
of Affiant

Subscribed and sworn to before me on _____.
Date

My commission expires _____.
NOTARY PUBLIC

_____
Signature
Name _____
Address _____
_____

COLORADO
Division of Water Resources
Department of Natural Resources

MEMORANDUM

To: Kevin Rein, State Engineer

From: Tracy Kosloff, Deputy State Engineer
Bill Tyner, Division Engineer, Division 2
Janet Dash, Data Analyst/Researcher
Rachel Zancanella, Assistant Division Engineer, Division 2
Lori Lest, Assistant Division Engineer, Division 2

Date: December 6, 2019

Subject: Evaluation of High groundwater - Potential Impact to Historical Consumptive Use Analysis for Super Ditch HB-1248 Project 2019

Craig Lis and Marshall Haworth of Martin & Wood provided a memorandum entitled "Memo - Schweizer Farm Groundwater Levels" dated November 25, 2019 as responsive material associated with the Joint Conference Report for the above project provided by Megan Gutwein on November 21, 2019. Craig Lis and Krystle Ervin of Martin & Wood also provided a memorandum entitled "Memo - Groundwater Levels - All Farms" dated November 25, 2019 as responsive material associated with the Joint Conference Report.

We have reviewed the Martin & Wood memos and also reviewed groundwater level data maintained by Division 2, but not yet published on the CDSS or DWR websites as well as additional published USGS data. Janet Dash compiled the relevant data and prepared the three maps attached to this memo that illustrate the locations of the wells in reference to most of the Super Ditch farm parcels and in particular related to the Schweizer farm parcels. Attachment B1 shows the mapped area of four of the farms (not including the Mayhoffer Farm) with relevant location information for the USGS and Division 2 network wells where depth to groundwater data has been maintained. Attachment B2 shows a more detailed view of the Schweizer Farm. Attachment B3 shows a graph of depth to groundwater measurements for the wells evaluated. Attachment B4 shows a map of irrigation well locations on the Diamond A Farm from which some additional depth to groundwater data was identified from historical well measurement tests.

Our review of the Martin & Wood memos and other relevant data concludes the following with respect to the Super Ditch HB-1248 Project:

1. Available data appears to confirm the conclusions made by Martin & Woods with respect to the Mayhoffer Farm, Mameda Farm and Groves Farm; namely that the depth to groundwater for each of these farms appears to be well below 8 feet below ground surface and no influence from high groundwater or subirrigation is likely to have occurred on these farms.
2. There were no relevant wells with historical depth to groundwater data directly on the Diamond A Farm as cited in the Martin & Wood memo. USGS well 380502103470200 is located less than a half mile east of the southeasternmost Diamond A Farm parcels. The data from this

well indicates a median depth to groundwater of 19.1 feet below ground surface with none of the 20 historical measurements of depth below 8 feet below ground surface. An irrigation well with WDID 1705228 from the Division 2 well network is located about a mile west-northwest of the western parcels on the Diamond A Farm. The median depth below ground surface to groundwater for the observations made at this well was 7.11 feet and were relatively static with almost all measurements recorded as 8 feet below ground surface or less (29 out of 30). Additional data was evaluated using well tests done for wells on or near the Diamond A Farm as shown in Attachment B4. Wells tests done between 1992 and 2003 to obtain a power conversion coefficient (PCC), contained pumping water levels and, in some cases, static water levels. For the wells shown on Attachment B4, there were 26 observations of depth to groundwater. Most of these observations were pumping water levels (23). The median depth to static water level from the three observations was 11.6 feet below ground surface. The median of the pumping water levels was 31 feet below ground surface. The additional data appears to confirm the Applicant's engineering analysis that the Diamond A Farm does not appear to have had any significant high groundwater issues or subirrigation.

3. With respect to the Schweizer Farm, our analysis indicated concerns about subirrigation on the farm as did the Martin & Wood memo. Two wells shown on Attachment B2 (USGS Wells 380457103484600 and 380452103484300) are on Schweizer Farm parcels at the northwest part of the farm. The depth to groundwater observations from these two wells indicated the median depth was 3.9 feet below ground surface from 13 observations between 2007 and 2018 for well 380457103484600 and was 8.6 feet below ground surface from 80 observations between 1965 and 2018 for well 380452103484300. This data raises concerns related to the historical consumptive use that may have been met by subirrigation and also concerns about the ability to properly dry up the parcel areas closest to the Catlin Canal. A recommended 15% reduction in historical consumptive use would seem reasonable based on the groundwater level data considered. Applying this reduction to the Martin & Wood analysis would result in the following factors and limits for the Schweizer Farm:

Historical Delayed Return Flow Remaining to the Steam after Diversions have Ceased											
Average	3.5	13.4	33	52.4	47.8	41.5	25.2	19.5	7.6	0	243.9
Maximum	15.7	40.6	59.5	72.2	69.9	66.1	49.6	53.2	25.8	0	322.4
Max3	11.6	29	52.2	69.4	67.4	62.2	47.6	47.3	24.4	0	314.2

On-Farm Depletion and RF Factors: Average Monthly Depletions and Returns at Farm as a percent of Average Monthly Farm Headgate Delivery									
Depletions	7.0%	16.0%	33.0%	43.0%	44.0%	44.0%	41.0%	31.0%	22.0%
TW Returns	18.6%	16.8%	13.4%	11.4%	11.2%	11.2%	11.8%	13.8%	15.6%
DP Returns	74.4%	67.2%	53.6%	45.6%	44.8%	44.8%	47.2%	55.2%	62.4%

B1

STATIC WATER LEVEL COMPARISONS

058.0W 057.0W 056.0W

022.0S 023.0S

1705228

380554103511600

380457103484600

380452103483400

380502103470200

1705558

HOLBROOK CANAL

CATLIN CANAL

ROCKY FORD DITCH

ROCKY FORD HIGHLINE CANAL

OTERO CANAL

CDWR STATIC WATER LEVEL SITES
ARKANSAS RIVER
ParcelID
SWL_SPRING_2019ws elev
Value
High : 4735.81
Low : 3390.63

COLORADO
Division of Water Resources
Department of Natural Resources

0 0.5 1 1.5 2
Miles

1:30,000

N W E S

Date: 12/4/2019

057.0W

022.0S

023.0S

PARCEL ID NUMBERS SCHWEIZER FARM

B2

380457103484600

380452103484300

23570507
21713459

21703539
23570518

21715641
23570516

21704397

23570542
21704370

23570521
21715259

23570509
21704369

21703540
23570510

23570520
21715258

CATLIN CANAL

23570506
21703712

OTERO CANAL

SCHWEIZER FARM PARCELS
CDWR STATIC WATER LEVEL SITES
ARKANSAS RIVER
RIVER_D2_Clip
ParcelID

SWL_SPRING_2019ws elev

Value

High : 4735.81

Low : 3390.63

057.0W

COLORADO
Division of Water Resources
Department of Natural Resources

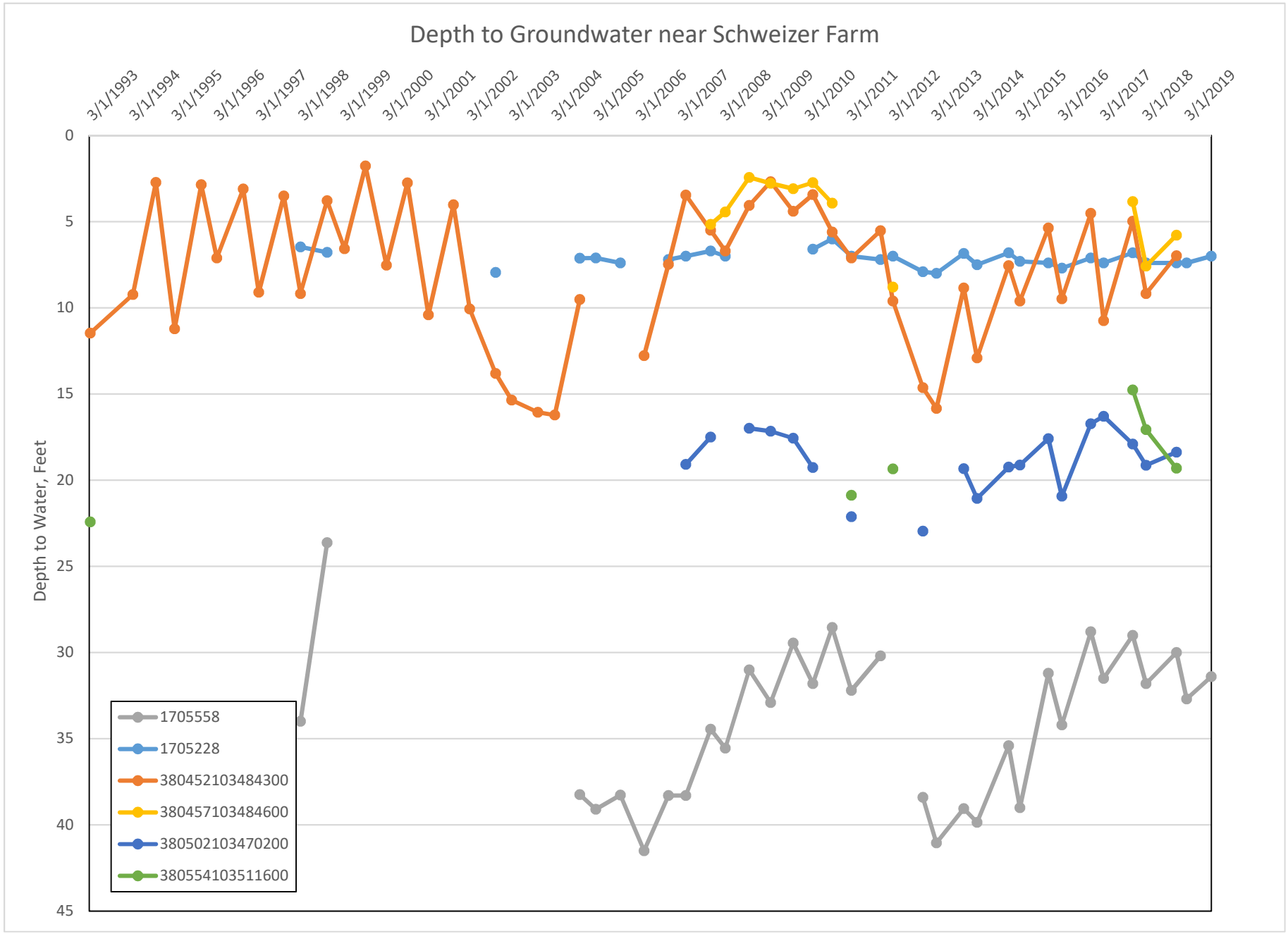
0 0.25 0.5 0.75 1
Miles

1:8,000

N W E S

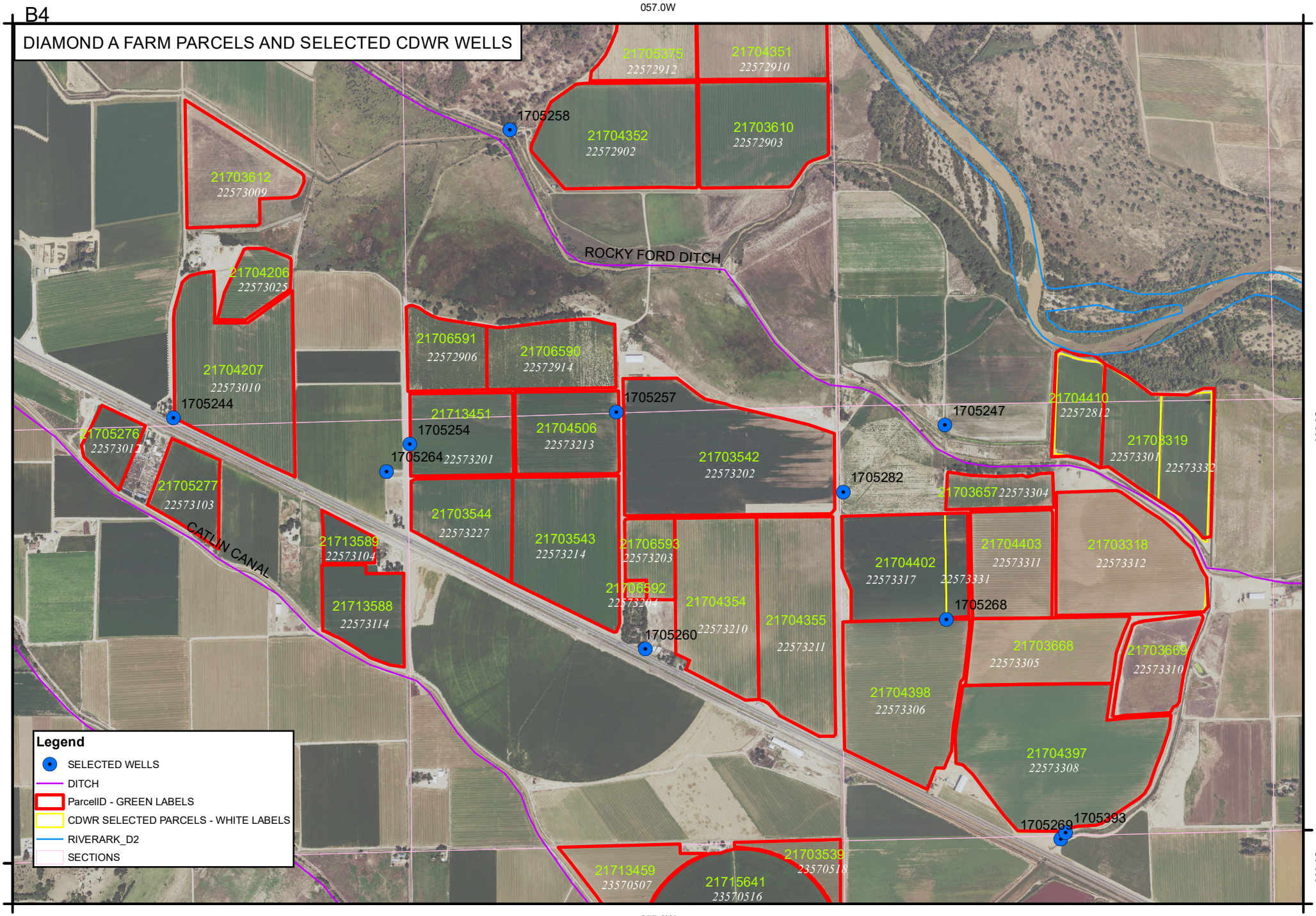
Date: 12/6/2019

B3


Depth to Groundwater near Schweizer Farm
3/1/1993
3/1/1994
3/1/1995
3/1/1996
3/1/1997
3/1/1998
3/1/1999
3/1/2000
3/1/2001
3/1/2002
3/1/2003
3/1/2004
3/1/2005
3/1/2006
3/1/2007
3/1/2008
3/1/2009
3/1/2010
3/1/2011
3/1/2012
3/1/2013
3/1/2014
3/1/2015
3/1/2016
3/1/2017
3/1/2018
3/1/2019
0
5
10
15
20
25
30
35
40
45
Depth to Water, Feet
1705558
1705228
380452103484300
380457103484600
380502103470200
380554103511600

B4

DIAMOND A FARM PARCELS AND SELECTED CDWR WELLS



Legend

- SELECTED WELLS
- DITCH
- ParcelID - GREEN LABELS
- CDWR SELECTED PARCELS - WHITE LABELS
- RIVERARK_D2
- SECTIONS

COLORADO
Division of Water Resources
Department of Natural Resources

Date: 12/6/2019

0 0.25 0.5 0.75 1
Miles

1:18,000

PROJECTION: NAD 83 UTM ZONE 13 N
BASE NAIP 2017 OTERO COUNTY