W. W. WHEELER
& ASSOCIATES, INC.
Water Resources Engineers
WWW.WWWHEELER.COM

March 28, 2018

Mr. Kevin Rein, P.E., State Engineer
Colorado Division of Water Resources
1313 Sherman Street, Room 818
Denver, CO 80203

RE: 1880 – Tim and Jeanne Iverson Substitute Water Supply Plan Request
Water Division 1, District 3

Dear Kevin:

This letter is being submitted on behalf of Tim and Jeanne Iverson (Iverson) to request approval of a substitute water supply plan (SWSP). The SWSP would provide replacement of depletions attributable to evaporation from an unlined pond located on the Iverson property (Iverson Lake). The SWSP would also allow Greeley Irrigation Company shares owned by Iverson to be used for augmentation of Iverson Lake. This request is submitted pursuant to Section 37-92-308(5) C.R.S since a Water Court application has not been filed and the depletions resulting from operation under the SWSP will not exceed five years.

1.0 Project Description

Iverson Lake is an unlined pond created by gravel mining operations and is located near the Cache la Poudre River in the Greeley area. The location of Iverson Lake is shown on the attached Figures Nos. 1 and 2.

Iverson Lake was previously included in a SWSP obtained by the gravel mining operator, Martin Marietta, which was approved pursuant to 37-90-137(11) C.R.S for a period of September 15, 2017 through March 31, 2018. A copy of the approval letter for this prior SWSP is attached. The Martin Marietta SWSP was a combined plan for multiple gravel mining operations and included another gravel mining lake that is not on the Iverson property, as well as additional replacement supplies that are not owned or leased by Iverson.

3700 S. Inca Street | Englewood, CO 80110-3405
303-761-4130 | fax 303-761-2802

Mining operations at Iverson Lake have ceased, reclamation operations are nearing completion, and we understand that Iverson Lake will not be included in future renewals of the Martin Marietta SWSP. We have, therefore, filed this stand-alone SWSP request to provide replacement of out-of-priority depletions associated with evaporation from Iverson Lake using replacement sources currently available to Iverson. During the term of this SWSP, water use at Iverson Lake will be limited to evaporation from the existing lake surface.

The following replacement supplies are included in this SWSP:

1. Historical consumptive use credits associated with 6.25 shares of the Greeley Irrigation Company (GIC) owned by Iverson. This SWSP requests approval to use these shares, which have not been previously changed by a Water Court decree, for augmentation of Iverson Lake depletions. These shares were included in the prior Martin Marietta SWSP.

2. Deliveries of 40 acre-feet per year from North Gray Reservoir and South Gray Reservoir by the Lake Canal Reservoir Company (LCRC). This replacement supply was changed by LCRC in Case No. 06CW276 to include augmentation and replacement uses on the Cache la Poudre River between Boxelder Creek and the Ogilvy Ditch. This replacement supply will be provided under a lease agreement with LCRC, which is presently being finalized.

When finalized, the LCRC lease agreement will be effective for this year and can be extended for additional years. Iverson is presently investigating long-term sources of additional augmentation water on the Cache la Poudre River to provide a full, year-round replacement supply after the term of this SWSP. Upon acquiring such long-term supplies, Iverson plans to file a Water Court application for an augmentation plan and request approval of a SWSP pursuant to 37-92-308(4) while the Water Court case is pending.

2.0 Depletions

The total surface area of Iverson Lake identified on Figure No. 2 was measured to be 27.7 acres. Because Iverson Lake is no longer mined, the surface area will not increase during the SWSP term.

Pond evaporation was determined using criteria recommended in the *General Guidelines for Substitute Water Supply Plans for Sand and Gravel Pits*, issued by the State Engineer's Office (State Engineer's Guidelines). As specified in these guidelines, the average annual

gross evaporation rate from a free water surface was obtained from NOAA Technical Report NWS 33 and was determined to be 43.9 inches. This annual amount was distributed on a monthly basis using the monthly percentages specified in the State Engineer's Guidelines.

Net evaporation at a pond is equal to gross evaporation less the consumptive use of water by vegetation that naturally occurred at the site prior to construction of the pond. The net evaporation represents the additional depletions caused by the existence of the pond, and it is the amount that must be replaced under the SWSP. For the purposes of this SWSP request, the consumptive use was set equal to the effective precipitation. Consistent with the State Engineer's Guidelines, the effective precipitation was calculated as 70 percent of the monthly precipitation recorded at the Greeley UNC weather station. Finally, we set the net evaporation equal to 0 inches during December and January, when the average monthly temperature (at the Greeley UNC weather station) was less than 32 degrees.

The calculated monthly gross and net evaporation rates are summarized in the attached Table No. 1. As shown in this table, net evaporation at Iverson lake was calculated to be 31.8 inches per year. Using a surface area of 27.7 acres, net evaporation from Iverson Lake totals 73.4 acre-feet per year.

Timing of Depletions **–** The lagged depletions to the Cache la Poudre River associated with evaporation from Iverson Lake are shown in Table No. 2. The lagged stream depletions were calculated by applying the unit response function (URF) in the table below to the monthly net evaporation amounts (including evaporation that occurred prior to this SWSP term). A URF is a set of factors that express the lagged stream depletions from diverting one unit of water.

Iverson Lake URF
(Fraction of Evaporation During Month 1)

Month	URF
1	0.518
2	0.237
3	0.090
4	0.059
5	0.043
6	0.031
7	0.022
Total	1.000

The URF for Iverson Lake was calculated by applying the Glover method in the IDS AWAS model. We wrapped the tail of the URF when 95 percent of the cumulative depletion was reached. The alluvial aquifer boundary condition was selected, and the following aquifer and spatial parameters were applied:

Iverson Lake Glover Method Parameters

Aquifer Specific Yield	0.20
Aquifer Transmissivity (gpd/ft)	120,000
Distance from Lake Centroid to Stream, X (ft)	875
Distance from No-Flow Boundary to Stream, W (ft)	4,012

The aquifer transmissivity was based on a pumping test completed near Iverson Lake, and the distance from the no-flow boundary to the stream was determined from hydrogeologic mapping of the alluvial aquifer.

3.0 GIC Shares Replacement Source

The GIC shares in this SWSP request comprise 6.25 shares of the 519.7 total shares in the GIC, which is organized as a mutual ditch company. GIC owns a 5/8 interest in the water rights decreed to the Greely Canal No. 3, and the other 3/8 interest is owned by the City of Greeley. The Greeley Canal No. 3 diverts water from the Cache la Poudre River at the location shown on Figure No. 1. GIC is also the owner of 60 preferred rights in Fossil Creek Reservoir. The water rights decreed to Greeley Canal No. 3 and Fossil Creek Reservoir are summarized in the tables below.

Greeley Canal No. 3 Water Rights

Priority No.	Appropriation Date	Adjudication Date	Amount (cfs)
35	04-01-1870	04-11-1882	52.00
45	10-01-1871	04-11-1882	41.00
50	07-15-1872	04-11-1882	63.13
58	05-15-1873	04-11-1882	16.67

Fossil Creek Reservoir Water Rights

Priority No.	Appropriation Date	Adjudication Date	Amount (acre-feet)
40 (Original Construction)	03-05-1901	10-28-1909	12,052
66 (1st Enlargement)	06-01-1904	04-22-1922	1,545
Refill 136E (2nd Filing)	03-05-1901	09-10-1953	12,052

Case No. 96CW658 Quantification - The ditch-wide historical consumptive use of the GIC water rights was quantified in Case No. 96CW658, upon application of the Prairie Poudre Mutual Reservoir and Irrigation Company for the change of 67.75 GIC shares. Since entry of the decree in Case No. 96CW658, there have been 13 additional changes of water rights for GIC shares decreed by the Water Court. The most recent change of water rights was decreed in Case No. 06CW40 (East Cherry Creek Valley Water and Sanitation District and Colorado Water Network), entered July 5, 2016.

In Case No. 96CW658, the ditch-wide historical consumptive use was determined for a study period of 1950 through 1979. The average annual diversions of the direct flow rights were 11,400 acre-feet (21.94 acre-feet per share) and conveyance losses were 15 percent of the river headgate diversions. The historically irrigated acreage was 3,501 acres (6.74 acres per share). For deliveries under the direct flow rights, 52.2 percent of the farm headgate deliveries were consumed, and return flows comprised 47.8 percent of the farm headgate deliveries. For Fossil Creek Reservoir deliveries, 59.0 percent of the farm headgate deliveries were consumed, and return flows comprised 41.0 percent of the farm headgate deliveries.

The average annual historical consumptive use for the GIC system was determined to be 5,358 acre-feet (10.31 acre-feet per share) in Case No. 96CW658. Based on this finding, which was

decreed in Case No. 96CW658 and the subsequent change cases, the average annual historical consumptive use for the 6.25 Iverson shares is 64.44 acre-feet.

Case No. 96CW658 Terms and Conditions - Key terms and conditions for the changed use of GIC shares, as specified in the decree in Case No. 96CW658, are summarized below. Under the proposed SWSP, the 6.25 shares owned by Iverson would be subject to these previously decreed terms and conditions.

Continued Diversions: Water available under the changed shares continues to be diverted at the Greeley Canal No. 3, and deliveries of such diverted water to the shareholder are reduced by ditch losses.

Season of Use and Volumetric Limits: Diversions under the Greeley Canal No. 3 direct flow rights are limited to the period of April 15 through October 31. Deliveries under the direct flow rights are limited to a maximum annual farm headgate delivery of 25.27 acre-feet per share and to a maximum 10-year farm headgate delivery of 186.44 acre-feet per share.

Return Flow Obligations and Consumptive Use Credits: The historical return flow obligations are divided into surface and subsurface return flows. The surface return flow obligation is calculated by multiplying the deliveries under the direct flow rights by 0.237 and the deliveries from Fossil Creek Reservoir by 0.201. The subsurface return flow obligation is calculated by multiplying the 5-year running average deliveries by the following factors:

Subsurface Return Flow Factors

Month	Direct-Flow Deliveries	Fossil Creek Reservoir Deliveries
January	0.018	0.017
February	0.017	0.016
March	0.016	0.015
April	0.015	0.014
May	0.018	0.013
June	0.021	0.012
July	0.023	0.015
August	0.024	0.024
September	0.024	0.025
October	0.023	0.021
November	0.021	0.020
December	0.020	0.018

The amount of deliveries remaining after satisfying the historical return flow obligations represents the historical consumptive use credits attributable to the changed GIC shares, which can be fully-consumed.

Location of Return Flow Obligations: The 67.75 shares changed in Case No. 96CW658 were associated with the irrigated lands that had already been urbanized (instead of the specifically-identified parcels remaining in irrigation). For these shares, at least 41 percent of the historical return flow obligations are replaced to the Cache la Poudre River above the Ogilvy Ditch, while the remainder of the historical return flow obligations are replaced to the Cache la Poudre River below the Ogilvy Ditch. For changes of other GIC shares, the location of the return flow obligations may be modified, as long as the historical location of return flows (from the shares being changed) is maintained.

Fossil Creek Reservoir Deliveries: Deliveries from Fossil Creek Reservoir are only made when this source is called for and delivered by GIC for the benefit of its shareholders.

Ditch-Wide Restrictions: After entry of the decree in Case No. 96CW658, each GIC shareholder was prohibited from irrigating more than 7 acres per share. GIC was prohibited from issuing additional shares, and no new irrigated or irrigable lands could be served by the GIC system (unless GIC acquires new additional water rights in the future).

Dry-Up: In the Case No. 96CW658 decree, the GIC shares and the currently irrigated acreage are listed within four tables (Tables A, B, C and D of the decree). The dry-up requirements for each share are determined based on the table under which the share (and the associated acreage) is listed.

The decree in Case No. 96CW658 identified 2,098 acres of historically-irrigated lands that had already been removed from irrigation due to urbanization. In accordance with GIC policies, GIC shares in future change cases can claim a portion of this available acreage that is not already claimed in other change cases. This available dry up acreage is referred to as the "Dry-Up Pool" in this report.

Accounting and Reporting: Diversions and releases of water pursuant to the change of water rights are measured and recorded on an accounting form acceptable to the Division Engineer's Office, and such accounting is submitted on a monthly basis.

Description of SWSP Shares - The 6.25 shares in this SWSP request are associated with three parcels listed in Table A of the Case No. 96CW658 decree. These three parcels are shown on the attached Figure Nos. 1 and 3, and the information from Table A is summarized below.

Parcels Associated with Subject GIC Shares

Farm ID in Table A	Owner in Table A	Shares in Table A	Irrigated Acreage in Table A	Irrigated Acreage per Share
W-02a	Iverson	0.50	2.87	5.74
W-02b	Iverson	3.00	10.78	3.59
W-02c	Iverson	2.75	8.95	3.25
Total		6.25	22.60	3.62

Location of Historical Return Flows: The historical return flows from Farm ID W-02a, Farm ID W-02b, and Farm ID W-02c historically accrued to the Cache la Poudre River at the same location as the depletions from Iverson Pond. As shown on Figure No. 1, this location is above the Ogilvy Ditch headgate.

Dry-Up Requirements: Pursuant to the *Greeley Irrigation Company Share Transfer and Change of Use Policies*, effective April 26, 2012, the dry-up of 6.74 acres per share being

changed (i.e. the historical average ratio in Case No. 96CW658) is required for all shares, except for the shares in Table D. As mentioned above, GIC shares can claim existing acreage from the Dry-Up Pool to provide the dry-up acreage. The following table summarizes the dry-up amounts (1) to be obtained by removal of the associated parcels from irrigation and (2) to be claimed from the Dry-Up Pool during this SWSP term:

Dry-Up for Subject GIC Shares

Farm ID in Table A	Shares in Table A	Acreage Removed from Irrigation	Acreage Claimed from Dry-Up Pool	Total Dry-Up Acreage	Dry-Up Acreage Per Share
W-02a	0.50	2.87	0.50	3.37	6.74
W-02b	3.00	10.78	9.44	20.22	6.74
W-02c	2.75	8.95	9.59	18.54	6.74
Total	6.25	22.60	19.53	42.13	6.74

Farm ID W-02a, Farm ID W-02b, and Farm ID W-02c are all located on the Iverson property and were removed from irrigation when gravel mining operations on the property began in 2012.

Proposed Operation of GIC Shares - Under the SWSP, the consumptive use credits associated with the subject 6.25 shares will be delivered to the Cache la Poudre River for augmentation of depletions associated with Iverson Lake. The pro-rata diversions attributable to the subject shares, including both diversions under the Greeley Canal No. 3 direct flow rights and Fossil Creek Reservoir deliveries, will continue to be made at the Greeley Canal No. 3. Such diversions will be assessed ditch losses by GIC and delivered to the Cache la Poudre River at the following return structures shown on Figure No. 1:

1. F Street Release Structure
2. 23rd Avenue Spillway
3. 16 Street Release Structure
4. Any other structure approved by GIC.

The deliveries attributable to the subject 6.25 shares will be part of the measured deliveries at the above return structures. GIC will determine the location of deliveries to the Cache la Poudre River at any given time in coordination with the Water Commissioner, based on operations of the ditch with consideration being given to the delivery location requested by the shareholder and the needs of GIC and its shareholders.

Pursuant to the decree in Case No. 96CW658, diversions under the Greeley Canal No. 3 direct flow rights will be limited to the period of April 15 through October 31. As described above, the decree in in Case No. 96CW658 established limits on (1) the maximum annual farm headgate delivery under the direct flow rights and (2) the maximum 10-year farm headgate delivery under the direct flow rights. For purposes of this SWSP request, the farm headgate delivery under the direct flow rights will be limited to 116.53 acre-feet per year. This amount is the maximum 10-year farm headgate delivery of 1,165.25 acre-feet (186.44 acre-feet per share x 6.25 shares) divided by 10 years. The historical surface and subsurface return flow obligations will be determined using the factors provided above. The consumptive use credits available for augmentation purposes will equal the remaining amounts delivered to the Cache la Poudre, after satisfying the historical return flow obligations.

Iverson will satisfy the historical return flow obligations on a daily basis by making deliveries above the calling water right that is downstream of the historical return flow location. In addition to deliveries under the subject GIC shares, LCRC water will be delivered from North Gray Reservoir and South Gray Reservoir to provide full replacement of historical return flow obligations. During periods when the Ogilvy Ditch is placing a valid call and drying up the Cache la Poudre River, all of the return flow obligations attributable to the subject shares will be delivered above the Ogilvy Ditch to replicate the historical return flow location. Additionally, any releases made upstream of the historical return flow location from North Gray Reservoir and South Gray Reservoir should be assessed transit losses determined by the Division Engineer's Office.

Dry-Year Yield of GIC Shares - The consumptive use credits available under the subject GIC shares will vary from year to year, based on the actual Greeley Canal No. 3 diversions and deliveries through the return structures. For the purpose of preparing projections for an augmentation plan, the monthly amounts of dry-year credits available under GIC shares were previously decreed in Case No. 02CW335 (Central Colorado Water Conservancy District) and in Case No. 06CW40 (East Cherry Creek Valley Water and Sanitation District and Colorado Water Network). These previously decreed amounts are summarized in the table below, along with the proportional amounts for the 6.25 shares owned by Iverson. The consumptive use

credits in this table are equal to the dry-year deliveries minus historical return flow obligations, with negative values during November through March representing net return flow obligations.

Dry-Year Consumptive Use Credits

Month	Net Credit per Share	Net Credit for 6.25 Shares
January	-0.32	-2.00
February	-0.30	-1.89
March	-0.28	-1.78
April	0.39	2.41
May	2.82	17.62
June	2.10	13.15
July	2.05	12.81
August	2.14	13.35
September	1.11	6.92
October	0.32	1.98
November	-0.37	-2.33
December	-0.36	-2.22
Total	9.28	58.02

4.0 LCRC Lease Replacement Source

A lease agreement with LCRC is presently being finalized, under which 40 acre-feet of stored LCRC water will be delivered from North Gray Reservoir and South Gray Reservoir for replacement purposes under this SWSP. When finalized, the lease will be in effect for this year and can be extended for additional years. A copy of the lease agreement with LCRC will be provided to your office when it is executed.

The water rights decreed for North Gray Reservoir and South Gray Reservoir are summarized in the table below.

North Gray Reservoir and South Gray Reservoir Water Rights

Structure	Source	Appropriation Date	Adjudication Date	Amount (acre-feet)
North Gray Reservoir	Boxelder Creek and unnamed draw	04-01-1882	12-09-1904	135
North Gray Reservoir	Boxelder Creek and unnamed draw	11-01-1902	12-09-1904	140
North Gray Reservoir	Boxelder Creek and unnamed draw	11-15-1904	04-22-1922	57
South Gray Reservoir	Boxelder Creek and unnamed draw	04-01-1882	12-09-1904	275
South Gray Reservoir	Boxelder Creek and unnamed draw	11-01-1902	12-09-1904	236
South Gray Reservoir	Boxelder Creek and unnamed draw	11-16-1904	04-22-1922	222

The above water rights were changed by LCRC in Case No. 06CW276 to include augmentation and replacement uses on the Cache la Poudre River between Boxelder Creek and the Ogilvy Ditch. Iverson Lake is located within this reach of the Cache la Poudre River, so deliveries from North Gray Reservoir and South Gray Reservoir for replacement purposes in this SWSP are a decreed use of these water rights.

Deliveries from North Gray Reservoir and South Gray Reservoir in this SWSP will be utilized to provide both (1) replacement of evaporation depletions associated with Iverson Lake and (2) replacement of historical return flow obligations associated with the subject GIC shares. Such deliveries will be made during the periods when there are no deliveries (or insufficient deliveries) under the GIC shares for these purposes.

The location of North Gray Reservoir and South Gray Reservoir is shown on Figure No. 4. As indicated on this figure, water released from North Gray Reservoir and South Gray Reservoir is delivered to Boxelder Creek, a tributary to the Cache la Poudre River located upstream of Iverson Lake. The total stream distance from North Gray Reservoir and South Gray Reservoir to Iverson Lake is 32 miles, consisting of 7 miles on Boxelder Creek and 25 miles on the Cache la Poudre River. The Division Engineer's Office should assess an appropriate transit loss based on this distance.

5.0 Operation of Plan

A projection of SWSP operations is summarized in Table No. 2. This projection is prepared on a monthly time step and includes the lagged depletions associated with evaporation from Iverson Lake, the dry-year consumptive use credits for the 6.25 GIC shares, the historical return flow obligations for 6.25 GIC shares, and deliveries from North Gray Reservoir and South Gray Reservoir to the location of Iverson Lake. The projection analysis assumes a continuous call is placed below Iverson Lake.

As shown on Table No. 2, the consumptive use credits from 6.25 GIC shares and deliveries of 40 acre-feet per year from North Gray Reservoir and South Gray Reservoir will provide full replacement of evaporation depletions associated with Iverson Lake and historical return flow obligations associated with the subject GIC shares. Such full replacement will be provided on a year-round basis.

SWSP Accounting - Iverson will complete, and submit to the Division Engineer's Office each month, accounting calculations for the SWSP on a daily time step. A proposed accounting form for the SWSP is attached and includes the following information:

1. The calling structure located below Iverson Lake, the stream on which the call is located, the appropriation date of the call, and the administration number of the call.
2. The stream depletions attributable to evaporation from Iverson Lake.
3. Total measured diversions at the Greeley Canal No. 3 river headgate.
4. Diversions of Greeley Canal No. 3 direct flow rights.
5. Diversions of Fossil Creek Reservoir deliveries.
6. Total measured deliveries to the Cache la Poudre River at each return structure.
7. Measured deliveries to the Cache la Poudre River under the subject shares at each return structure.
8. Deliveries at each return structure that are attributable to the Greeley Canal No. 3 direct flow rights.
9. Deliveries at each return structure that are attributable to Fossil Creek Reservoir.

10. The annual total deliveries attributable to the Greeley Canal No. 3 direct flow rights to track compliance with the volumetric limitations.

11. The 5-year average deliveries attributable to the Greeley Canal No. 3 direct flow rights.

12. The 5-year average deliveries attributable to Fossil Creek Reservoir.

13. The surface, subsurface, and total return flow obligations.

14. Deliveries at each return structure to satisfy historical return flow obligations.

15. Deliveries from North Gray Reservoir and South Gray Reservoir to satisfy historical return flow obligations.

16. Transit losses assessed on deliveries for historical return flow obligations.

17. Replacement of historical return flows after transit losses are assessed.

18. The consumptive use credits that are available for augmentation of Iverson Lake depletions.

19. Deliveries from North Gray Reservoir and South Gray Reservoir for augmentation of Iverson Lake depletions.

20. Transit losses assessed on deliveries for augmentation of Iverson Lake depletions.

21. Deliveries for augmentation of Iverson Lake depletions after transit losses are assessed.

22. The net impact to the Cache la Poudre River resulting from the SWSP operations.

Proposed Terms and Conditions - It is our opinion that approval of this SWSP, subject to the terms and conditions proposed below, will not cause injury to other water users.

1. Dry-up for the subject GIC shares shall be accomplished by removal of the attached parcels from irrigation and by claiming acreage from the Dry-Up Pool. The acreages to be removed from irrigation and to be claimed from the Dry-Up Pool during this SWSP term shall equal the amounts tabulated in Section 3.0 above.

2. The pro-rata diversions attributable to the subject GIC shares, including diversions under the Greeley Canal No. 3 direct flow rights and Fossil Creek Reservoir deliveries, shall continue to be made at the Greeley Canal No. 3.

3. Deliveries from Fossil Creek Reservoir shall only be made when this source is called for and delivered by GIC for the benefit of its shareholders.

4. Diversions under the subject GIC shares shall be assessed ditch losses by GIC and shall be delivered to the Cache la Poudre River through the Greeley Canal No. 3 release structures. Such deliveries shall be measured.

5. Diversions under the Greeley Canal No. 3 direct flow rights shall be limited to the period of April 15 through October 31.

6. For purposes of this SWSP request, the annual farm headgate delivery under the Greeley Canal No. 3 direct flow rights shall be limited to 116.53 acre-feet per year (18.644 acre-feet per share).

7. The historical surface and subsurface return flow obligations associated with the subject GIC shares shall be determined using the factors provided in Section 3.0 of this report.

8. Iverson shall satisfy the historical return flow obligations on a daily basis by making deliveries above the calling water right that is downstream of the historical return flow location. During periods when the Ogilvy Ditch is placing a valid call and drying up the Cache la Poudre River, all of the return flow obligations attributable to the subject shares shall be delivered above the Ogilvy Ditch.

9. Deliveries from North Gray Reservoir and South Gray Reservoir shall be made during periods when there are no deliveries (or insufficient deliveries) under the GIC shares to provide full replacement of evaporation depletions associated with Iverson Lake and full replacement of historical return flow obligations associated with the subject GIC shares.

10. The Division Engineer's Office should assess an appropriate transit loss on deliveries from North Gray Reservoir and South Gray Reservoir under this SWSP. The total stream distance from North Gray Reservoir and South Gray Reservoir to Iverson Lake is 32 miles, consisting of 7 miles on Boxelder Creek and 25 miles on the Cache la Poudre River.

11. Iverson shall complete, and submit to the Division Engineer's Office each month, accounting calculations for the SWSP on a daily time step. The accounting shall include the information listed above.

6.0 Notice to SWSP Notification List

This SWSP request is being copied to all individuals on the current SWSP Notification List for Water Division 1. The Certificate of Service is attached. The following items are directed to the parties receiving this request:

1. The parties on the notification list have thirty-five days after the notice was provided to file comments on the proposed SWSP. The comments must include "any claim of injury or any terms and conditions that should be imposed upon the plan to prevent injury to a party's water rights or decreed conditional water rights and any other

information the opposer wishes the State Engineer to consider in reviewing the substitute water supply plan request."

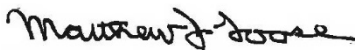
2. The State Engineer will deliver a copy of his decision to all who comment by first-class mail or electronic mail. Please indicate the preferred method of service with the comments.

3. Any appeal of the State Engineer's decision must be made to the applicable division water judge within thirty days of the decision.

Thank you for your assistance with this matter. Please let us know if you have any questions or need additional information.

Sincerely,

W. W. Wheeler & Associates, Inc.



Matthew J. Loose, P.E.

encl.
cc: Tim Iverson
Alan Hill
Ashley Pollock
Division 1 SWSP Notification List

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FIGURES

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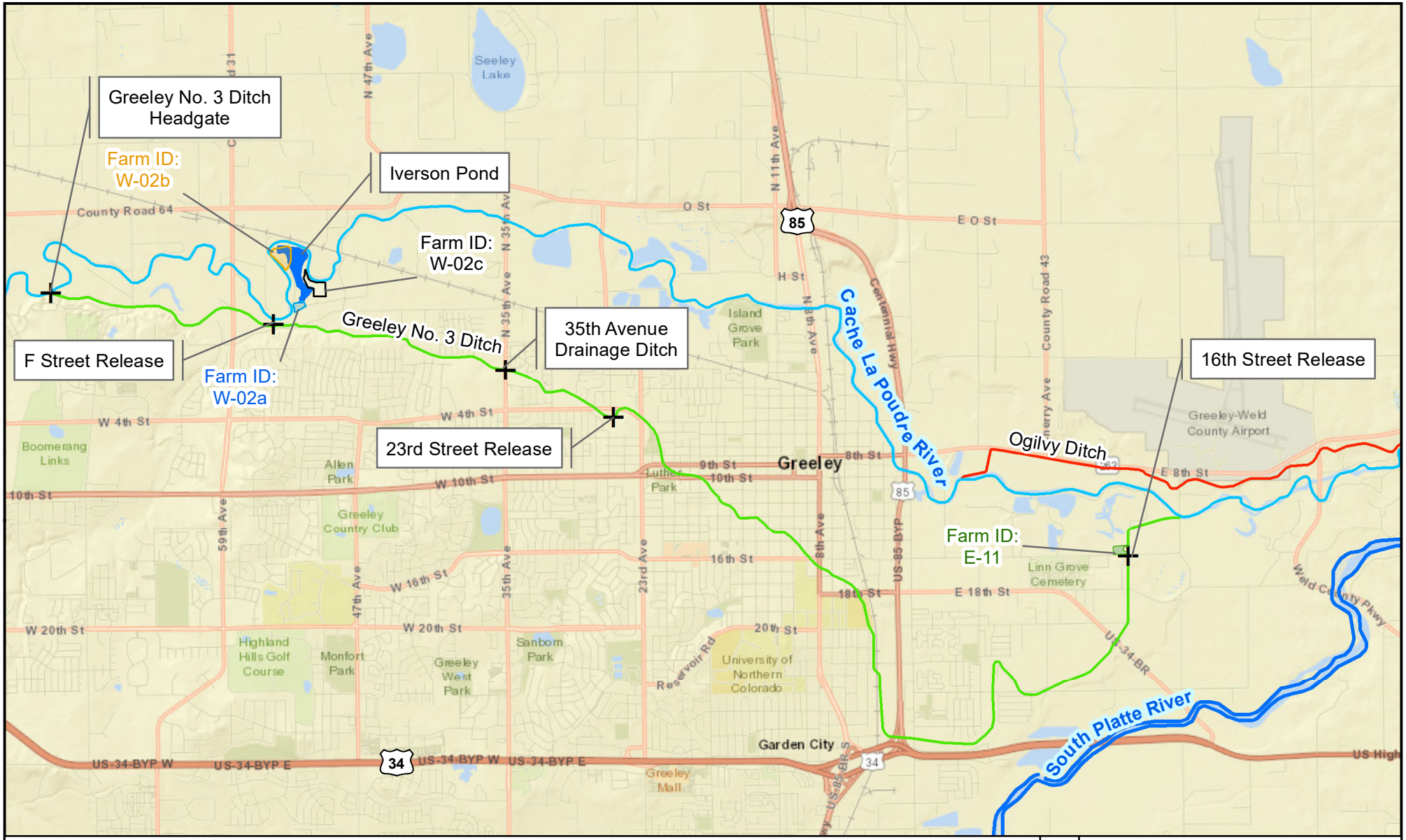
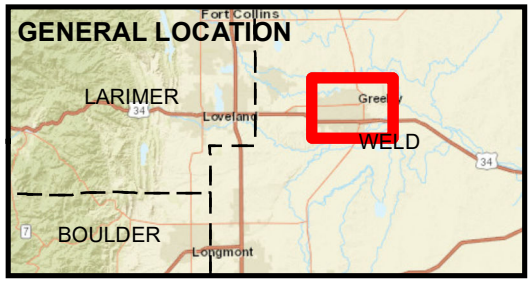




Farm ID
- W-02a
- W-02b
- W-02c
- E-11

- Cache La Poudre River
- Greeley No. 3 Ditch
- Ogilvy Ditch
- South Platte River
- Points of Delivery

0 0.5 1 2 Miles

N

JANUARY 2018

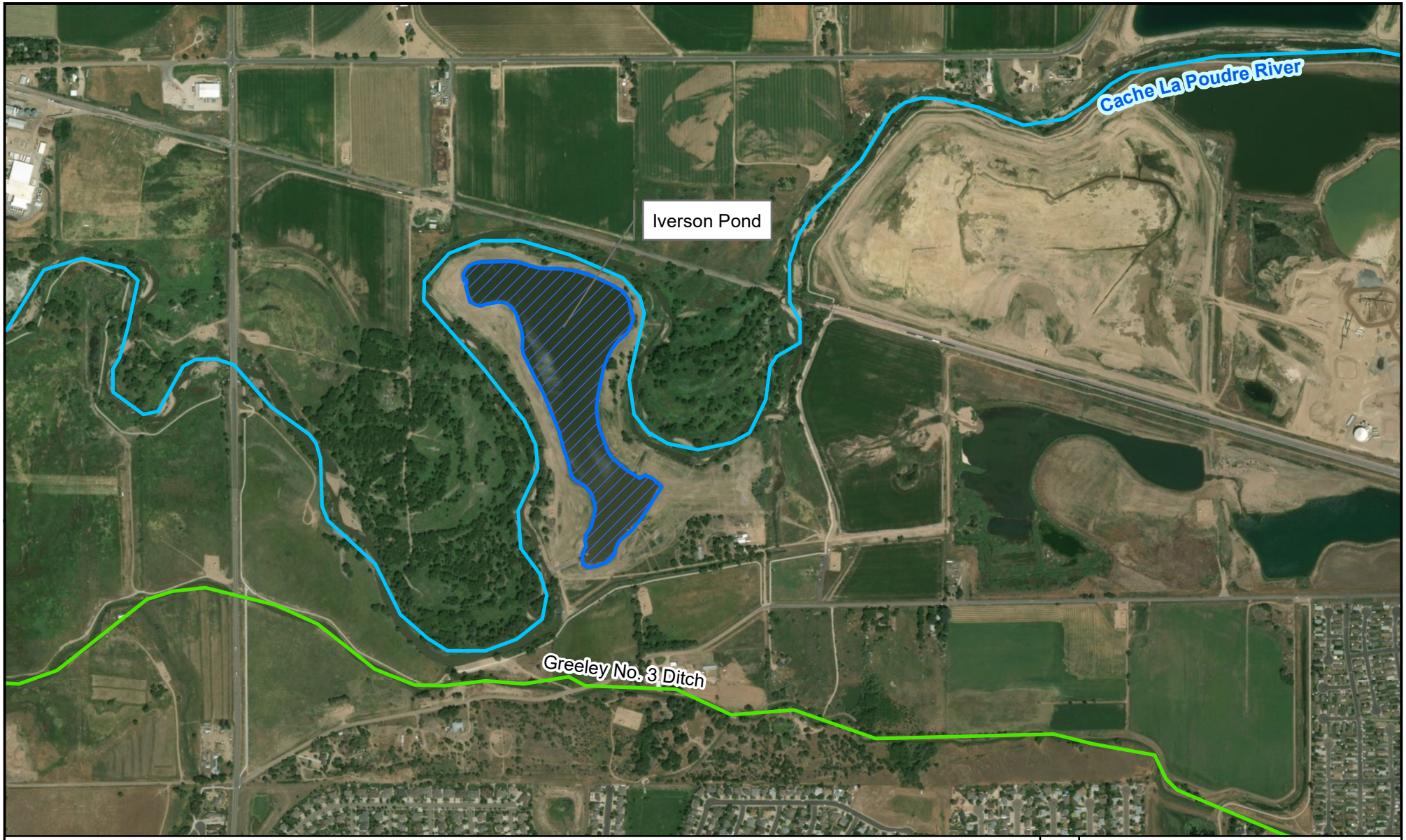
W. W. WHEELER & ASSOCIATES, INC.
Water Resources Engineers

Iverson Pond
General Location Map

Job No. 1880.00.00

FIGURE 1

R:\1800\1880\1880.00\GIS\MXD\20180111_IversonPond_FIGURE2.mxd



Iverson Pond, 27.7 acres

Cache La Poudre River

Greeley No. 3 Ditch

0 500 1,000 2,000 Feet

N

JANUARY 2018

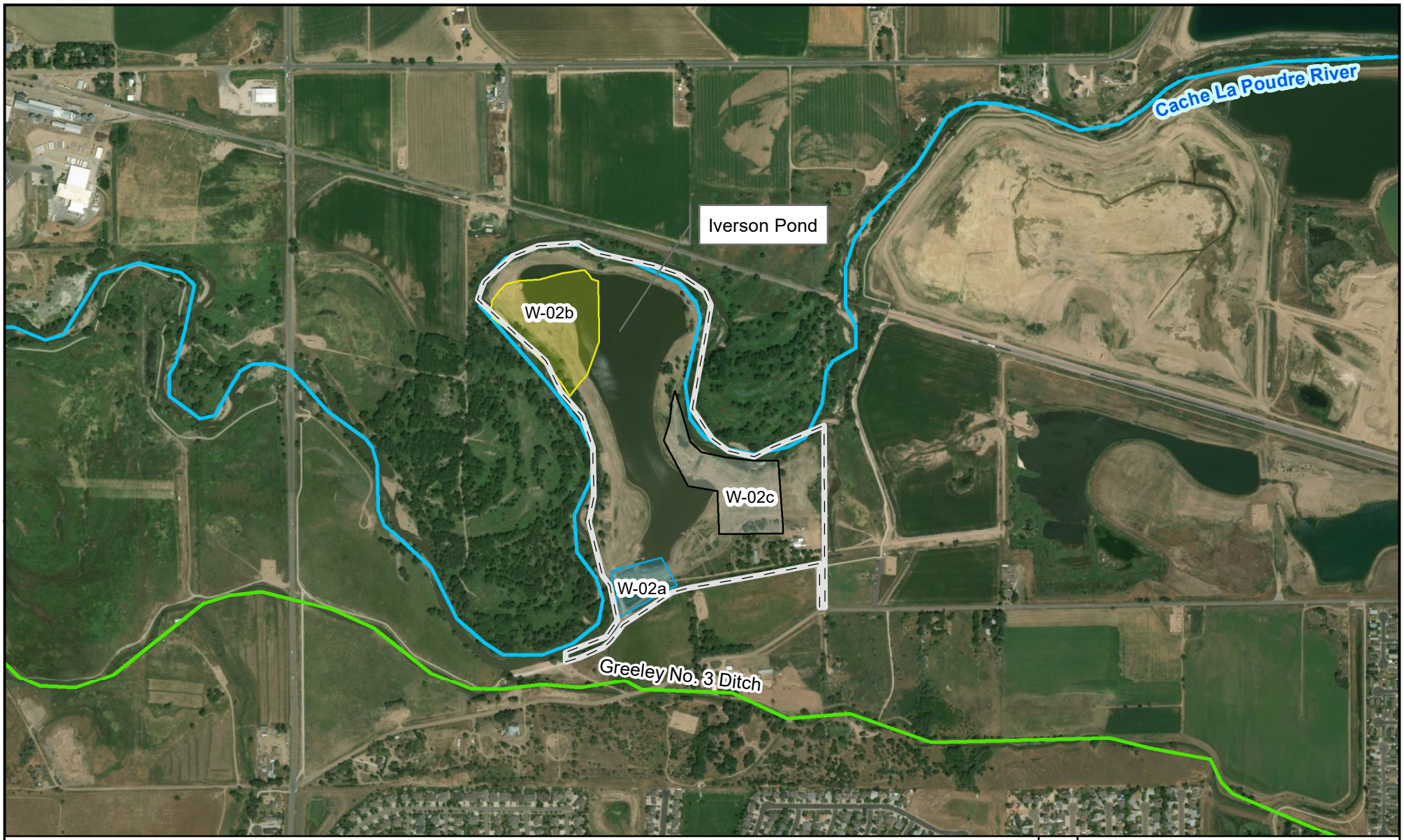
W. W. WHEELER & ASSOCIATES, INC.
Water Resources Engineers

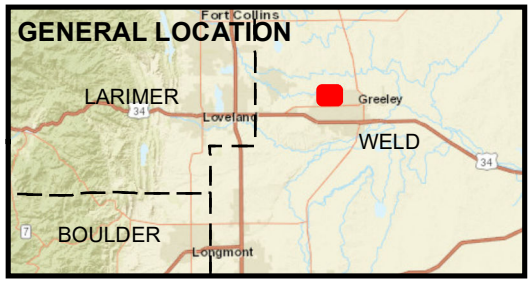
Iverson Pond Site Map

Job No. 1880.00.00

FIGURE 2

R:\1800\1880\1880.00\GIS\MXD\20180111_IversonPond_Property_Boundary_FIGURE3.mxd





Iverson Property
Cache La Poudre River
Greeley No. 3 Ditch

Farm ID
W-02a
W-02b
W-02c

0 500 1,000 2,000 Feet

N

JANUARY 2018

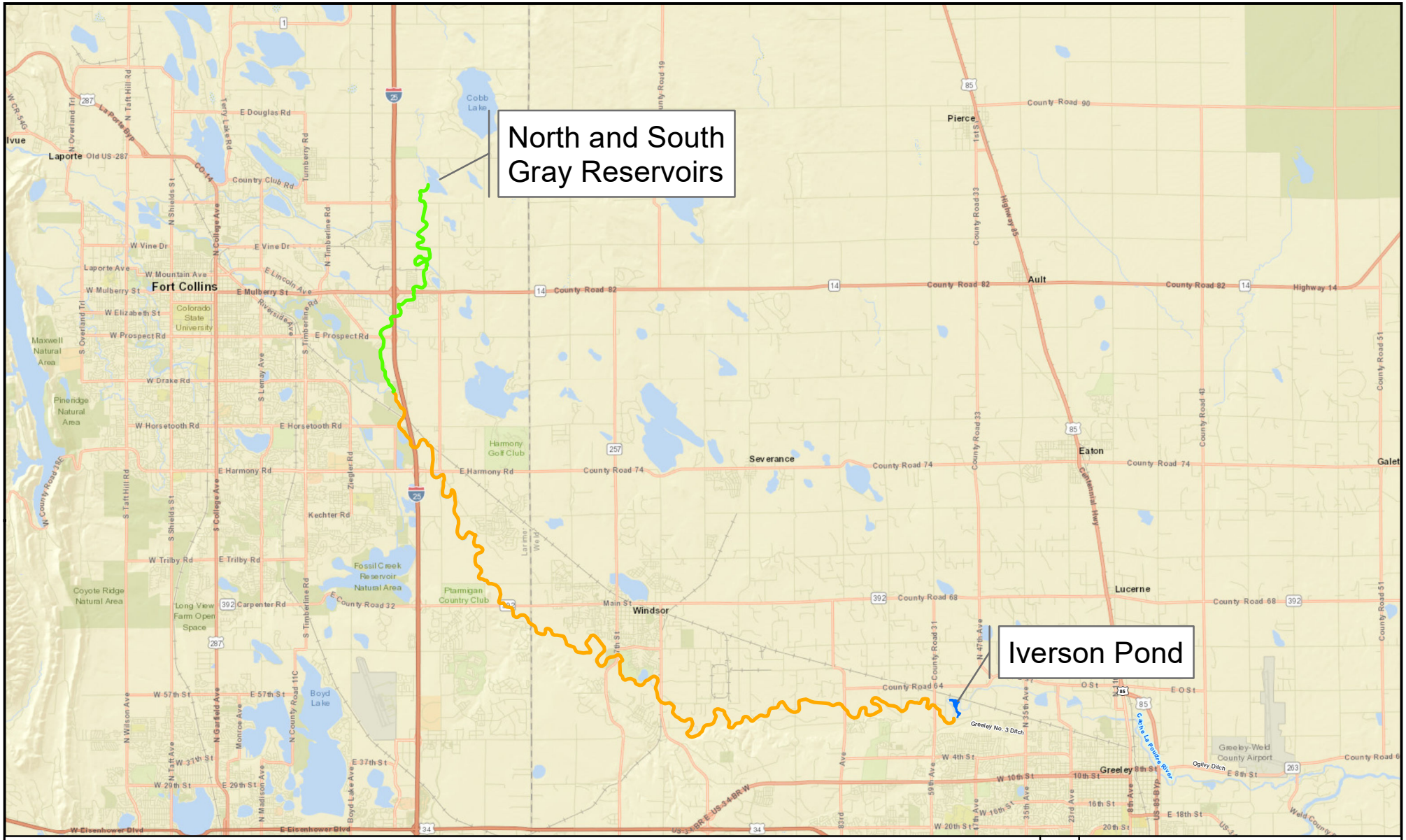
W. W. WHEELER & ASSOCIATES, INC.
Water Resources Engineers

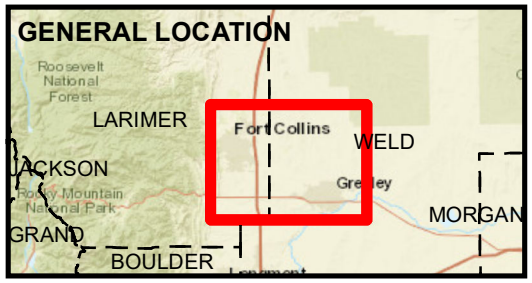
Farm ID W-02a, W-02b and W-02c Site Map

Job No. 1880.00.00

FIGURE 3

R:\1800\1880\1880.00\GIS\MXD\20180308_IversonPond_Boxelder&CacheLaPoudre.mxd





Boxelder Creek = 7 miles

Cache La Poudre River = 25 miles

0 1.5 3 6 Miles

N

MARCH 2018

W. W. WHEELER & ASSOCIATES, INC.
Water Resources Engineers

North & South Gray Reservoirs
General Location Map

Job No. 1880.00.00

FIGURE 4

TABLES

Table 1
Iverson Lake Evaporation

Basic Data:

1. Location: Iverson Lake

2. Average Annual Evaporation from NOAA Technical Report NWS 33: 43.9 inches
   FWS Evaporation Map 3 [A]

3. Pan Coefficient
   From NWS 33 Map 4 if used, or 1.00 if not: 1.00
   (If (2) is FWS evaporation, enter a value of 1.00)

4. Percentage Precipitation is effective: 70.0% [B]

5. Enter Option Number for Monthly Evaporation Distribution: 1 for elevations below 6,500 feet or 2 for elevations above 6,500 feet: 1

5. Iverson Lake Surface Area 27.70 acres [C]

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Month	Monthly Evaporation Distribution Options (percent) < 6,500 feet	Monthly Evaporation Distribution Options (percent) > 6,500 feet	Gross Evaporation (inches)	Average Monthly Precipitation (inches)	Effective Precipitation (inches)	Net Evaporation (inches)	Iverson Pond Net Evaporation (ac-ft)
Jan	3.0%	1.0%	1.3	0.48	0.3	0.0	0.00
Feb	3.5%	3.0%	1.5	0.41	0.3	1.2	2.88
Mar	5.5%	6.0%	2.4	1.00	0.7	1.7	3.96
Apr	9.0%	9.0%	4.0	1.82	1.3	2.7	6.18
May	12.0%	12.5%	5.3	2.66	1.9	3.4	7.86
Jun	14.5%	15.5%	6.4	1.79	1.3	5.1	11.80
Jul	15.0%	16.0%	6.6	1.51	1.1	5.5	12.76
Aug	13.5%	13.0%	5.9	1.37	1.0	5.0	11.47
Sep	10.0%	11.0%	4.4	1.14	0.8	3.6	8.29
Oct	7.0%	7.5%	3.1	1.07	0.7	2.3	5.36
Nov	4.0%	4.0%	1.8	0.74	0.5	1.2	2.86
Dec	3.0%	1.5%	1.3	0.53	0.4	0.0	0.00
Total			43.9	14.52	10.2	31.8	73.43

Notes:

(2) = Monthly Evaporation Distribution for elevations below 6,500 feet msl.
(3) = Monthly Evaporation Distribution for elevations above 6,500 feet msl.
(4) = Average Annual Evaporation times pan coefficient times Col. (2) or Col. (3)
(5) = Average Monthly Precipitation.
(6) = Col. (5) times percent precipitation effective.
(7) = Col. (4) minus Col. (6). Set to zero for months in which the average monthly temperature is less than 32 degrees.
(8) = Col. (7) divided by 12 inches then multiplyed by Iverson Lake surface area.
[A] = Note Pan Evaporation is for annual surface evaporation, MAP 3.
[B] = Recommended by Colorado Division of Water Resources for on-channel reservoirs.
[C] = Surface Area calculated in ArcGIS.

Table 2
Iverson Lake SWSP Projected Operations
(values in acre-feet)

	1	2	3	4	5	6	7	8
	Iverson Lake Depletions		6.25 GIC Shares		North and South Gray Reservoirs			
Month	Net Evaporation	Lagged Stream Depletions	Net Consumptive Use Credit	Net Historical Return Flow Obligation	Deliveries from Reservoirs	Transit Losses	Net Deliveries for Replacement	Net Impact
Jul	12.76							
Aug	11.47							
Sep	8.29							
Oct	5.36							
Nov	2.86							
Dec	0.00							
Jan	0.00	1.57	0.00	2.10	3.98	0.32	3.66	0.00
Feb	2.88	2.40	0.00	1.98	4.76	0.38	4.38	0.00
Mar	3.96	3.21	0.00	1.86	5.51	0.44	5.07	0.00
Apr	6.18	4.61	2.41	0.00	2.39	0.19	2.19	0.00
May	7.86	6.13	17.62	0.00	0.00	0.00	0.00	11.49
Jun	11.80	8.89	13.15	0.00	0.00	0.00	0.00	4.26
Jul	12.76	10.74	12.81	0.00	0.00	0.00	0.00	2.07
Aug	11.47	10.94	13.35	0.00	0.00	0.00	0.00	2.41
Sep	8.29	9.47	6.92	0.00	2.78	0.22	2.56	0.00
Oct	5.36	7.42	1.98	0.00	5.91	0.47	5.44	0.00
Nov	2.86	5.26	0.00	2.45	8.38	0.67	7.71	0.00
Dec	0.00	2.80	0.00	2.33	5.57	0.45	5.13	0.00
Annual Total	73.43	73.43	68.23	10.72	39.29	3.14	36.15	20.23

Col. 1 = Net evaporation from Iverson Lake.
Col. 2 = Unit response function applied to Col. 1 for the last 7 months.
Col. 3 = Dry-year deliveries minus historical return flow obligations during the irrigation season. Calculated from the amounts decreed in Case No. 02CW335 and Case No. 06CW40.

Col. 4 = Historical return flows obligation outside the irrigation season. Calculated using the return flow factors decreed in the prior change cases.
Col. 5 = Releases required to provide full replacement of stream depletions and historical return flow obligations.
Col. 6 = Estimated transit losses from North Gray Reservoir and South Gray Reservoir to location of Iverson Lake and historical return flows.
Col. 7 = Col. 5 - Col. 6.
Col. 8 = Col. 3 + Col. 7 - Col. 2 - Col. 4

PROPOSED ACCOUNTING FORM

Tim and Jeanne Iverson SWSP Accounting
Contact Information

Water Rights Owner

Tim and Jeanne Iverson
5011 F Street
Greeley, CO 80631
Phone: 970-302-9051
Email: iverjt@msn.com

Accounting Contact

Matt Loose
W. W. Wheeler and Associates, Inc.
3700 South Inca Street
Englewood, CO 80110
Phone: 720-996-0536
Email: matt.loose@wwwheeler.com

Tim and Jeanne Iverson SWSP Accounting
River Calls Below Iverson Lake

Date	Calling Structure	Stream	Appropriation Date	Administration Number	Is Ogilvy Ditch Placing a Call?
4/1/2018					
4/2/2018					
4/3/2018					
4/4/2018					
4/5/2018					
4/6/2018					
4/7/2018					
4/8/2018					
4/9/2018					
4/10/2018					
4/11/2018					
4/12/2018					
4/13/2018					
4/14/2018					
4/15/2018					
4/16/2018					
4/17/2018					
4/18/2018					
4/19/2018					
4/20/2018					
4/21/2018					
4/22/2018					
4/23/2018					
4/24/2018					
4/25/2018					
4/26/2018					
4/27/2018					
4/28/2018					
4/29/2018					
4/30/2018					

C:\Users\matt\Documents\1880.00-Iverson Pit\[Iverson SWSP Sample Acctg 2018-03-14.xlsx]Calls

Tim and Jeanne Iverson SWSP Accounting
Return Flow Factors and 5-Year Average Deliveries for 6.25 Greeley Irrigation Company Shares

	Direct-Flow Deliveries	Fossil Creek Res. Deliveries
Surface Return Flow Factor (all months)	0.237	0.201

	Subsurface Return Flow Factors (Fraction of 5-Year Avg. Deliveries)	
Month	Direct-Flow Deliveries	Fossil Creek Res. Deliveries
Jan	0.018	0.017
Feb	0.017	0.016
Mar	0.016	0.015
Apr	0.015	0.014
May	0.018	0.013
Jun	0.021	0.012
Jul	0.023	0.015
Aug	0.024	0.024
Sep	0.024	0.025
Oct	0.023	0.021
Nov	0.021	0.020
Dec	0.020	0.018

	Iverson Shares Deliveries (acre-feet)	
Year Prior to Current Year	Direct-Flow Deliveries	Fossil Creek Res. Deliveries
1		
2		
3		
4		
5		
Avg		

Tim and Jeanne Iverson SWSP Accounting
Sample Accounting Form

	April 2018	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	Monthly Totals
	Greley Canal No. 3 River Headgate Diversions																															
1	Direct flow rights diversions *(measured)*																															
2	Fossil Creek Reservoir deliveries *(measured)*																															
3	Total diversions *(line 1 + line 2)*																															
	F Street Release Structure Deliveries																															
4	Total deliveries *(measured)*																															
5	Iverson shares deliveries *(measured)*																															
6	Iverson shares deliveries from direct flow rights *(line 5 x line 1 / line 3, = 0 outside April 15-October 31)*																															
7	Iverson shares deliveries from Fossil Creek Reservoir *(line 5 x line 2 / line 3)*																															
	23rd Avenue Spillway Deliveries																															
8	Total deliveries *(measured)*																															
9	Iversion shares deliveries *(measured)*																															
10	Iverson shares deliveries from direct flow rights *(line 9 x line 1 / line 3, = 0 outside April 15-October 31)*																															
11	Iverson shares deliveries from Fossil Creek Reservoir *(line 9 x line 2 / line 3)*																															
	16th Street Release Structure Deliveries																															
12	Total deliveries *(measured)*																															
13	Iverson shares deliveries *(measured)*																															
14	Iverson shares deliveries from direct flow rights *(line 13 x line 1 / line 3, = 0 outside April 15-October 31)*																															
15	Iverson shares deliveries from Fossil Creek Reservoir *(line 13 x line 2 / line 3)*																															
	Total Deliveries																															
16	Iverson shares deliveries *(sum of lines 5, 9, 13)*																															
17	Iverson shares deliveries from direct flow rights *(sum of lines 6, 10, 14)*																															
18	Iverson shares deliveries from Fossil Creek Reservoir *(sum of lines 7, 11, 15)*																															

Tim and Jeanne Iverson SWSP Accounting
Sample Accounting Form

	April 2018	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	Monthly Totals
19	Annual total Iverson shares deliveries from direct flow rights *(line 17 annual total, should be <= 116.53 acre-feet)*																															
20	Placeholder																															
	Return Flow Obligations[1]																															
21	Surface return flow obligation for direct flow rights *(line 17 x 0.237)*																															
22	Surface return flow obligation for Fossil Creek Reservoir deliveries *(line 18 x 0.201)*																															
23	Total surface return flow obligation *(line 21 + line 22)*																															
24	Subsurface return flow factor for direct flow rights *(from monthly table)*																															
25	Subsurface return flow factor for Fossil Creek Reservoir deliveries *(from monthly table)*																															
26	Subsurface return flow obligation for direct flow rights *(line 24 x line 17 5-year average / no. days in month)*																															
27	Subsurface return flow obligation for Fossil Creek Reservoir deliveries *(line 25 x line 18 5-year average / no. days in month)*																															
28	Total subsurface return flow obligation *(line 26 + line 27)*																															
29	Total return flow obligations *(line 23 + line 28)*																															
	Return Flow Obligations Replaced by Iverson Shares Deliveries																															
30	F Street Release Structure deliveries for return flow obligations *(<= line 5)*																															
31	23rd Avenue Spillway deliveries for return flow obligations *(<= line 9)*																															
32	16th Street Release Structure deliveries for return flow obligation *(<= line 13)*																															
33	Total replacement by Iverson shares deliveries *(sum of lines 30, 31, and 32)*																															
	Return Flow Obligations Replaced by LCRC Water																															
34	Deliveries from North and South Gray Reservoirs for return flow obligations																															
35	Transit losses on North and South Gray Reservoirs deliveries *(determined by Water Commissioner)*																															
36	Replacement by North and South Gray Reservoirs deliveries *(line 34 - line 35)*																															
	Total Return Flow Obligations Replaced																															

Tim and Jeanne Iverson SWSP Accounting
Sample Accounting Form

	April 2018	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	Monthly Totals
37	Total return flow obligations replaced *(line 33 + line 36, should be >= line 29)*																															
38	Is Ogilvy Ditch placing a call? *(from "Calls" sheet)*																															
39	Replacement of return flow obligations above the Ogilvy Ditch																															
	Augmentation of Iverson Lake Depletions																															
40	Iverson Lake lagged stream depletions *(from Table 2 of SWSP request)*																															
41	Iverson shares consumptive use credits for augmentation *(line 16 - line 33)*																															
42	Deliveries from North and South Gray Reservoirs for augmentation																															
43	Transit losses on North and South Gray Reservoirs deliveries *(determined by Water Commissioner)*																															
44	Replacement by North and South Gray Reservoirs deliveries *(line 42 - line 43)*																															
45	Net impact *(line 41 + line 44 - line 40, should be >=0)*																															
46	Cumulative net impact *(line 45 annual total, should be >=0)*																															

1. The historical return flows from the subject shares accured to the Cache la Poudre River above the Ogilvy Ditch headgate

PREVIOUS MARTIN MARIETTA SWSP APPROVAL

COLORADO
Division of Water Resources
Department of Natural Resources

September 15, 2017

Mr. David M. Heintz, P.E.
Bishop-Brogden Associates, Inc.
333 West Hampden Ave, Ste 1050
Englewood, CO 80110

Re: Greeley 35th Avenue/Iverson Pit Combined Substitute Water Supply Plan (WDID 0302546, Plan IDs 2945 & 5348)
Greeley 35th Ave Pit, DRMS File No. M-1977-036 (WDID 0303022)
Iverson Pit, DRMS File No. M-2011-001 (WDID 0303039)
Sections 34 & 35, T6N, R66W, 6th P.M.
Water Division 1, Water District 3, Weld County

Approval Period: September 15, 2017 through March 31, 2018
Contact information for Mr. Heintz: 303-806-8952; dheintz@bbawater.com

Dear Mr. Heintz:

We have reviewed your letter dated July 6, 2017 requesting approval of a substitute water supply plan ("SWSP") on behalf of Martin Marietta ("Applicant" or "MM") in accordance with § 37-90-137(11), C.R.S., to cover depletions caused by two existing gravel pit operations known as the Greeley 35th Avenue Pit (M-1977-036) and the Iverson Pit (M-2011-001). The required renewal fee of $514 ($257 per gravel pit) has been received (receipt nos. 3680688 & 3680798). The most recently approved SWSP request for these sites was approved on July 16, 2012 for operations through May 31, 2013. Previous renewal requests were submitted to this office on May 24, 2013 (receipt no. 3660175) and November 3, 2014 (receipt no. 3667318) but were not approved. The Applicant shall be responsible for compliance with this SWSP, but the State Engineer's Office may also pursue the landowner for eventual compliance.

SWSP Operations

The Greeley 35th Avenue and Iverson Pits are located along the Cache La Poudre River in Sections 34 and 35, Township 6 North, Range 66 West of the 6th P.M., as shown on the attached Figure 1. During this plan period, MM will be conducting final reclamation operations at the Iverson Pit and continuing mining operations at the Greeley 35th Avenue Pit. The depletions that are projected to result from the mining operations over the period of this SWSP include evaporation from exposed ground water, water removed with the mined product, and water used for reclamation, dust suppression, and concrete production. The proposed replacement sources are a combination of reusable effluent leased from the City of Greeley, historic consumptive use attributable to 7.25 Greeley Irrigation Company shares, water stored in MM's Heaton Reservoir, and/or excess historic consumptive use credit attributable to 12 Whitney Ditch shares owned by MM. This SWSP approves operations for less than one year, through March 2018, as requested by the Applicant.

Depletions

Iverson Pit

Depletions at the Iverson Pit during this plan period are anticipated to consist of evaporation from the exposed ground water surface area and water needed for final reclamation. Water for dust suppression and additional final reclamation at the Iverson Pit will be pumped from the Greeley 35th Avenue Pit and trucked to the Iverson site.

The total maximum exposed ground water area at the Iverson Pit is 27.62 acres. Net evaporative depletions were calculated using a gross annual evaporation of 3.65 feet (43.8 inches) from the exposed water surface, with a credit of 0.84 feet (10.08 inches) for effective precipitation, based on average annual precipitation of 1.20 feet (14.42 inches) for the Greeley UNC weather station. The net depletion of ground water due to evaporation at the Iverson Pit is projected to total 51.85 acre-feet for the period of July 2017 through March 2018, as shown on the attached Table 1.

The Applicant has estimated that approximately 2.00 acre-feet of water will be pumped from the Iverson Pit for final reclamation at the site. Water used for reclamation purposes is assumed to be 100% consumed.

The total consumptive use at the Iverson Pit during the period of July 2017 through March 2018 is 53.85 acre-feet. Depletions were lagged to the Cache la Poudre River using the IDS Alluvial Water Accounting System (AWAS) analytical stream depletion model, which uses the Glover method. The following parameters were used in the model: specific yield (SY) = 0.2, distance from the centroid of the Iverson Pit site to the river = 333 feet, aquifer width (W) = 2,497 feet, and transmissivity (T) = 120,000 gallons per day per foot. The total lagged depletions for the Iverson Pit were determined to be 55.94 acre-feet for the period of July 2017 through March 2018. This amount includes lagged depletions resulting from past consumptive use at the site that are projected to impact the river during this plan period. The attached Table 1 shows the monthly breakdown of evaporative, operational, and lagged depletions for the Iverson Pit.

Greeley 35th Ave Pit

Depletions at the Greeley 35th Avenue Pit during this plan period will consist of evaporation from exposed surface area, water lost in mined product, dust suppression/reclamation at both the Greeley 35th Ave Pit and Iverson Pit (water is trucked to the Iverson Pit), and concrete production.

Pursuant to § 37-90-137(11)(b), C.R.S. and 2009CW49, a gravel pit operator or property owner does not need to replace depletions that occur due to evaporation from ground water exposed prior to January 1, 1981 ("pre-81") as a result of open mining of sand and gravel, regardless of whether mining continued after December 31, 1980. The total exposed ground water area at this site is 84.52 acres, of which 49.22 acres are a part of a total of 52 acres of groundwater recognized by this office as having been exposed within the Greeley 35th Avenue Pit reclamation permit boundary prior to January 1, 1981. Therefore, replacement of evaporative depletions is only required for the 35.3 acres exposed after December 31, 1980. The location of the 49.22 acres exposed prior to January 1, 1981 is shown on the attached Figure 3. The credits for the pre-81 area are tied to the location identified on the map and may not be re-allocated to other areas of ground water exposure within the gravel pit permit boundary.

Net evaporative depletions were calculated using a gross annual evaporation of 3.65 feet (43.8 inches) from the exposed water surface, with a credit of 0.84 feet (10.08 inches) for effective precipitation, based on average annual precipitation of 1.20 feet (14.42 inches) for the Greeley

UNC weather station. Based on the above, net evaporative depletions at the Greeley 35th Avenue Pit are projected to total 66.26 acre-feet for the period of July 2017 through March 2018.

MM is currently working on plans to construct a slurry wall encompassing the 35.3 acres of post-1980 exposed ground water at the Greeley 35th Avenue Pit. Until such time as the liner is completed and approved by this office, MM must replace evaporative depletions from all post-1980 ground water exposed at the site.

The applicant projects mining a total of 194,784 tons of aggregate from the Greeley 35th Avenue Pit during the period of July 2017 through March 2018. All of the material is mined below the water table and will be washed on site. The water retained in the mined product is therefore considered to be 4.0% of the mined material by weight, which results in a projected ground water loss of 5.73 acre-feet.

The applicant projects using a total of 13.70 acre-feet of water from the Greeley 35th Avenue Pit for dust suppression and reclamation (including liner construction) at the Greeley 35th Avenue Pit and the Iverson Pit for the period of July 2017 through March 2018.

MM also owns and operates a concrete batching plant on site. Water for concrete batching purposes will be pumped from an existing alluvial well, permit no. 47856-F, located within the DRMS permit boundary. The Applicant projects a total of 12.85 acre-feet will be pumped for concrete batching operations during the period of July 2017 through March 2018, based on meter readings from past years' operations.

The total consumptive use of ground water at the Greeley 35th Avenue Pit (including evaporative and operational losses) is estimated to be 98.45 acre-feet for the period of July 2017 through March 2018.

Depletions were lagged to the Cache la Poudre River using the IDS Alluvial AWAS analytical stream depletion model, with the following parameters: specific yield (SY) = 0.2, distance from the centroid of the 35th Avenue Pit site to the river = 1,500 feet, aquifer width (W) = 5,000 feet, and transmissivity (T) = 120,000 gallons per day per foot. The total lagged depletions for the Greeley 35th Avenue Pit were determined to be 111.44 acre-feet for the period of July 2017 through March 2018. This amount includes lagged depletions resulting from past consumptive use at the site that are projected to impact the river during this plan period. The attached Table 2 shows the monthly breakdown of evaporative, operational, and lagged depletions for the Greeley 35th Avenue Pit.

Dewatering

Dewatering of the Iverson Pit ceased in 2015. Depletions from the Iverson Pit impact the river within five months; therefore there are no ongoing depletions from past dewatering at the site.

The Greeley 35th Avenue Pit will be continuously dewatered during this plan period. As long as the site is continuously dewatered, the water returned to the stream system should be adequate to offset the depletions attributable to dewatering operations. Totalizing flow meters must be installed at each discharge location and meter readings must be reported on the submitted accounting. The meter readings will be used in calculating the post-pumping depletions that must be replaced if dewatering ceases at the site.

Replacements

The operator proposes to provide replacement for this pit using fully consumable water leased from the City of Greeley, consumptive use credits from 7.25 shares in the Greeley Irrigation Company, water stored in the Heaton Reservoir, and excess consumptive use credits from 12 shares of the Whitney Ditch.

Greeley Lease

The primary source of replacement water will be from a permanent lease of 125 acre-feet of fully consumable effluent water from the City of Greeley ("Greeley"). MM's predecessor, Lafarge West, Inc., traded its 550 Boyd and Freeman Ditch shares for 125 acre-feet of augmentation water from Greeley. MM acquired this lease from Lafarge as part of their acquisition of the Greeley 35th Avenue Pit. The lease allows MM to use this water to cover depletions at Greeley 35th Avenue Pit and surrounding land, which is considered to include depletions at the Iverson Pit. A copy of the lease with Greeley was previously submitted to this office and is attached to this letter. Fully consumable replacement water provided by Greeley will be returned to the river at one of the following locations:

a) Greeley Water Pollution Control Facility Outfall (WDID 0302312) located on the Cache La Poudre River;

b) JBS Swift Industrial WWTP Outfall (WDID 0102342) on Lone Tree Creek;

c) confluence of the 35th Avenue Drainage Ditch and Cache La Poudre River;

d) any augmentation station/release structure(s) to be constructed in the vicinity of such confluence and associated with Greeley's operation of reservoirs knows as Flatiron Reservoir Nos. 1-5 (a.k.a. Poudre Ponds/Greeley West Pit/Greeley 25th Ave Pit);

d) an augmentation station/release structure located under the Boyd and Freeman Ditch and approved by the water commissioner and division engineer for such purpose;

e) release structures from Greeley Canal No. 3 as described in Greeley's decree in case no. 99CW232, or;

f) any other release and measurement point that Greeley and MM agree upon.

The Applicant is required to coordinate with the water commissioner the delivery location of replacement water to ensure out-of-priority depletions are adequately replaced to prevent injury to other water rights. Conveyance loss for delivery of augmentation water is subject to assessment and modification as determined by the water commissioner or division engineer.

Greeley Irrigation Company Shares

The landowners of the Iverson Pit, Tim and Jeanne Iverson, are the owners of 7.25 shares in the Greeley Irrigation Company ("GIC"). According to a signed dedication dated June 23, 2017, the 7.25 GIC shares are dedicated to this SWSP to replace depletions at both the Iverson Pit and the Greeley 35th Avenue Pit.

The GIC owns a 5/8th interest in the water rights decreed to the Greeley Canal No. 3 (WDID 0300934) and 60 preferred rights in Fossil Creek Reservoir (WDID 0303774). The historical use of 519.7 outstanding shares in the GIC was previously quantified and decreed in case no. 1996CW658 using a ditch-wide analysis. The decree in case no. 1996CW658 found that 519.7 shares were used to irrigate 3,501 acres (6.74 acres per share) with an average historic consumptive use of 5,358 acre-feet per year, which yields an average consumptive use credit of 10.31 acre-feet per share (5,358 acre-feet

÷ 519.7 shares) or an average consumptive use credit of 1.53 acre-feet per acre. The Iverson's 7.25 GIC shares are therefore expected to yield a consumptive use amount of 74.75 acre-feet per year (10.31 acre-feet/share × 7.25 shares = 74.75 acre-feet). The use of GIC's 60 preferred rights in Fossil Creek Reservoir is currently in dispute between the North Poudre Irrigation Company and GIC. Until this dispute is resolved, the GIC preferred rights are not a reliable source and will not be available to GIC during the 2017 irrigation season.

The ditch-wide analysis decreed in case no. 1996CW658 determined the acreage irrigated with GIC water rights was 3,501 acres, or 6.74 acres per share. Of that, 2,098 acres were determined to have been dried up as a result of development ("dry-up pool"). The total required dry-up associated with the subject 7.25 shares is 48.85 acres. Of the 7.25 GIC shares, 6.25 shares were used to irrigate a total of 22.6 acres of the Iverson property (Farm ID Nos. W-02a, W-02b, and W-02c). The remaining 1.0 share was used to irrigate a total of 3.36 acres owned by Mary Jean Donovan Mueller (Farm ID Nos. E-109a and E-109b). The acreage irrigated by the subject shares is below the irrigated-acreage-per-share historic average of 6.74. As such, the Applicant may claim the remaining 22.89 acres of required dry-up from the "dry-up pool". All of the subject parcels have been fully dried up and no irrigation continues at the properties.

In paragraph 6.7.4. of the decree entered in case no. 1996CW658, future farm headgate deliveries of the 67.75 shares owned by Poudre Prairie Irrigation Company were limited to 1,712 acre-feet per year (25.26 acre-feet per share) and 12,631 acre-feet (186.43 acre-feet per share) in any consecutive 10 year period. For the purposes of this one-year SWSP, deliveries of GIC direct flow water associated with the 7.25 shares must be limited to a farm headgate delivery of 134.85 acre-feet (18.6 acre-feet per share).The historical return flows associated with the 7.25 shares that are the subject of this SWSP shall be maintained in accordance with the return flow factors identified in case no. 1996CW658. The return flow obligations are incorporated into the historic consumptive use credit claimed for the subject shares, as shown in column 5 of the attached Table 3, and will be replaced using MM's other available replacement sources during the non-irrigation season (November – March).

MM will continue to take the full river headgate delivery attributable to the 7.25 GIC shares at the GIC headgate and account for the farm headgate delivery back to the river through the 23rd Avenue Return Structure (WDID 0302318) located just upstream of the Iverson Pit and 35th Avenue Pit.

Heaton Reservoir

The Applicant also proposes to use water stored in Heaton Reservoir under one of the following: a conditional storage water right decreed in case no. 2001CW193, from two (2) Rural Ditch shares quantified and changed for replacement purposes in the Duckworth Pit SWSP (WDID 0602525), or from one (1) Smith and Emmons Ditch share stored under a future decree or separate SWSP. The Duckworth Pit SWSP allows MM to use the Rural Ditch shares changed therein, and subsequently stored in Heaton Reservoir, as a source of augmentation water in MM's other gravel pit operations in the South Platte River basin pursuant to an approved SWSP for that site. The historic consumptive use of the two Rural Ditch shares was found to be 82.2 acre-feet, with a return flow obligation of 81.1 acre-feet. Since the Smith and Emmons Ditch share has not been quantified and cannot legally be used for replacement purposes at this time, it will not be included as a replacement source in this SWSP, but may be added in a subsequent SWSP at such time as it can legally be used for replacement purposes.

Heaton Reservoir (WDID 0504089) is located in Section 9, T2N, R68W, 6th P.M. Water stored under the right decreed in case no. 2001CW193 is delivered to the reservoir through the Rural Ditch

(WDID 0600551). The date of appropriation for the Heaton Reservoir storage right is October 26, 2001 for 680 acre-feet, conditional, subject to the right to fill and refill as described in case no. 2001CW193. The decreed rate of diversion for filling the reservoir is 25.0 cfs. The right is decreed for a variety of uses including augmentation and replacement. Replacement water will be pumped from Heaton Reservoir directly into the St. Vrain River just downstream of the confluence with Boulder Creek, will travel to the confluence with the South Platte River and then along the South Platte River to the confluence with the Cache la Poudre River, approximately 9 miles downstream of the Iverson and Greeley 35th Avenue pits. The downstream replacement is allowed at times when the call is downstream of Heaton Reservoir and there is no dry up point between the point of depletion on the Cache la Poudre and the confluence with the South Platte River. You have reviewed call records and determined that there were no calls that would have prohibited the use of water stored in Heaton Reservoir to replace depletions at the Iverson and Greeley 35th Avenue pits during the period of November through March. The delivery schedule incorporates a transit loss of 22.25% based on the currently assessed rate of 0.5% per mile for a distance of 44.5 miles. If a different transit loss is determined by the division engineer or water commissioner, the Applicant must modify their accounting and replacements as necessary to be consistent with the determined transit loss. As shown in Column 6 of Table 3, a total of 19.07 acre-feet of water is anticipated to be released from Heaton Reservoir for replacement purposes during the period of November 2017 through March 2018, consisting of 14.83 acre-feet of replacement water and 4.24 acre-feet of transit loss.

Whitney Ditch

MM owns 12 shares of Whitney Ditch (WDID 0300930) that can be delivered directly to the river for immediate credit or delivered to a recharge pond (Parsons Mine Recharge Area, WDID 0302067) for lagged recharge accretion credits. The 12 Whitney Ditch shares are used as a replacement source in MM's Parsons Mine SWSP (WDID 0302583, Plan ID 5822). When the historic consumptive use credit from the 12 Whitney Ditch shares exceeds what is needed to replace depletions at the Parsons Mine, MM proposes to utilize the excess credit for replacement of depletions at the Iverson and Greeley 35th Avenue pits.

As more fully described in the Parsons Mine SWSP, MM's 12 shares in the Whitney Ditch Company were quantified and changed for a variety of uses including augmentation/replacement in case no. 2008CW65, which relied on a ditch-wide analysis of the 320 total shares in the Whitney Ditch. The total average annual consumptive use for MM's 12 Whitney Ditch shares was determined to equal 164.25 acre-feet per year and 337.88 acre-feet of total deliveries. A total of 212.4 acre-feet of Whitney Ditch water is projected to be diverted for use under the 2017-2018 Parsons Mine SWSP, resulting in a total of 74.06 acre-feet of consumptive use credit from direct delivery and recharge. A total of 36.63 acre-feet of excess consumptive use credit is anticipated to be utilized for replacements at the Iverson and Greeley 35th Avenue pits during the period of July through October 2017. The return flow obligations associated with the use of the Whitney Ditch shares will be calculated and replaced under the Parsons Mine SWSP. The excess credit attributable to the Whitney Ditch shares available for use in this SWSP, after accounting for return flow obligations, will be shown in the Parsons Mine SWSP accounting and will match the amount claimed in the accounting for this SWSP.

MM has executed an agreement (copy attached) with the GIC allowing MM to bypass the excess Whitney Ditch credits past the Greeley No. 3 ditch headgate in the event the Greeley No. 3 Ditch is drying up the Cache La Poudre River using the GIC' s bypass structure. A transit loss (currently 0.5% per mile) will be assessed for a distance of 7.5 miles between the point of delivery of the Whitney Ditch water and the location of the Iverson and 35th Avenue Pits. GIC requires an

additional 15% transit loss to be assessed to any water delivered through the GIC bypass structure. For projection purposes, a transit loss of 18.75% was assumed to apply to all excess Whitney Ditch credits used for replacement under this SWSP. As shown in Column 9 of Table 3, a total of 36.63 acre-feet of excess consumptive use credit is anticipated to be utilized for replacement purposes the Iverson and Greeley 35th Avenue pits during the period of July through October 2017, consisting of 29.76 acre-feet of replacement water and 6.87 acre-feet of transit loss.

A monthly breakdown of depletions and replacements from each source is shown in the attached Table 3.

Long Term Augmentation

In accordance with the letter dated April 30, 2010 from the Colorado Division of Reclamation, Mining, and Safety ("DRMS"), all sand and gravel mining operators must comply with the requirements of the Colorado Reclamation Act and the Mineral Rules and Regulations for the protection of water resources. The April 30, 2010 letter from DRMS requires that you provide information to DRMS to demonstrate you can replace long term injurious stream depletions that result from mining related exposure of ground water.

The Reclamation Plan filed with DRMS for the Iverson Pit includes MM leaving an unlined pond. Unlined ponds will create long term injurious stream depletions unless otherwise augmented. According to the mining lease MM has with the landowners, the Iversons are responsible for the permanent augmentation plan to cover evaporation from this pond. The Iversons have not yet obtained such an augmentation plan in Water Court, nor have they filed such a plan in Water Court. Tim Iverson signed a dedication of water rights, dated May 12, 2011, dedicating 6.25 GIC shares that were historically used on the Iverson Property to the augmentation of the sand and gravel operation known as the Iverson Pit for as long as there are depletions at the pit or another replacement source is obtained. Our office provided an assessment of these shares and determined that the shares can at most cover evaporative depletions from 22.1 acres at the Iverson Pit (see the attached June 8, 2011 letter), which is less than the currently exposed surface area. MM has obtained a bond in the amount of $275,300 to cover final reclamation at this site. The bond "Cost Summary Work" did not include estimates for lining or backfilling the site as the reclamation plan calls for the creation of an unlined pond. This office will not support a request for full reclamation release of the site, and the release of the bond for the site, until a permanent plan for augmentation is obtained or the site has been backfilled or lined.

MM amended the reclamation plan for the Greeley 35th Avenue Pit to change the final land use of approximately 130 acres of the western portion of the site, known as the West Pit or West Cell, to Developed Water Resources. On December 1, 2015, the slurry wall liner was approved by the State Engineer's Office as meeting the performance standard for liners, and the West Cell is now classified as a lined reservoir in accordance with the 1999 SEO Guidelines. MM has obtained a bond for $7,764,000 through DRMS which includes the cost of installing a slurry wall around the remaining (Non West Cell) portion of the site to prevent long term exposure of ground water at the Greeley 35th Avenue Pit.

Conditions of Approval

I hereby approve the proposed SWSP in accordance with § 37-90-137(11), C.R.S. subject to the following conditions:

1. This SWSP shall be valid for the period of September 15, 2017 through March 31, 2018, unless otherwise revoked or superseded by decree. If a court decreed plan for augmentation

is not obtained for the proposed uses by the SWSP expiration date, a renewal request must be submitted to this office with the statutory fee (currently $257 per gravel pit) prior to the expiration date and **no later than February 1, 2018**.

2. Well permit no. 76674-F was obtained for the current use and exposed pond surface area of the Iverson Pit in accordance with § 37-90-137(2) and (11), C.R.S.

3. The total surface area of the ground water exposed at the Iverson Pit must not exceed 27.62 acres, which results in an annual net evaporative loss of 77.69 acre-feet. The annual amount of ground water pumped from the Iverson Pit for reclamation purposes shall not exceed 2.0 acre-feet. Total consumption at the Iverson Pit site must not exceed these aforementioned amounts unless an amendment is made to this SWSP.

4. Well permit no. 81343-F has been obtained for the current use and exposed pond surface area of the Greeley 35th Avenue Pit in accordance with § 37-90-137(2) and (11), C.R.S.

5. The total surface area of the ground water exposed at the Greeley 35th Avenue Pit after December 31, 1980 must not exceed 35.3 acres, which results in an annual net evaporative loss of 99.3 acre-feet. For the period of July 2017 through March 2018, the amount of water pumped from the Greeley 35th Avenue Pit for dust suppression and reclamation (including liner construction) shall not exceed 13.70 acre-feet, and the total product mined at the Greeley 35th Avenue Pit shall not exceed 194,784 tons, which results in 5.73 acre-feet of water lost with the mined aggregate. The amount of water pumped from well permit no. 47856-F for concrete batching operations between July 2017 and March 2018 shall not exceed 12.85 acre-feet. Total consumption at the Greeley 35th Avenue Pit site must not exceed these aforementioned amounts unless an amendment is made to this SWSP.

6. All diversions shall be measured in a manner acceptable to the division engineer. The Applicant shall install and maintain such measuring devices as required by the division engineer for operation of this SWSP.

7. Approval of this SWSP is for the purposes as stated herein. This office must first approve any additional uses for the water. Any future historical consumptive use credit given (e.g., agricultural water transfer) for this site must consider all previous credits given.

8. All releases of replacement water must be sufficient to cover all out-of-priority depletions in time, place, and amount and must be made under the direction and/or the approval of the water commissioner. The release of replacement water may be aggregated to maximize beneficial use. The water commissioner and/or the division engineer shall determine the rate and timing of an aggregated release.

9. The replacement water, which is the subject of this SWSP cannot be sold or leased to any other entity. As a condition of subsequent renewals of this SWSP, the replacement water must be appurtenant to this site until a plan for augmentation is obtained.

10. The Applicant shall provide daily accounting (including, but not limited to diversions, depletions, replacement sources, and river calls) on a monthly basis, or more frequent if required by the water commissioner. The accounting must be emailed to the water commissioners (Mark Simpson at Mark.Simpson@state.co.us and Shera Sumerford at Shera.Sumerford@state.co.us) **and** DNR_Div1Accounting@state.co.us within 30 days of the end of the month for which the accounting applies. Accounting and reporting procedures are subject to approval and modification by the division engineer. Accounting forms need to

identify the WDID number for each well operating under this SWSP. **NOTE:** Monthly accounting, even during the winter non-irrigation season, is required.

For any fully consumable effluent from the City of Greeley used as a replacement water source under this SWSP, the Applicant shall verify that the entity making replacements (City of Greeley) has included the Applicant on their accounting and submitted their accounting to the division office and the water commissioner.

11. **Prior to the use of the Heaton Reservoir water or Greeley effluent water, the Applicant is required to notify the water commissioner and obtain the water commissioner's approval at least 48 hours prior to use, or less if allowed by the water commissioner**. The applicant is required to obtain the water commissioner's approval on a daily basis or other interval as required by the water commissioner. These replacement supplies may only be used at times when there is a continuous live stream between a downstream replacement location and the point of depletion and there is no call for water within that reach.
12. Conveyance loss for delivery of augmentation water is subject to assessment and modification as determined by the division engineer.
13. Applicant shall follow the attached Augmentation Plan Accounting Protocol for the operation of this SWSP.
14. The division engineer, or their designated representative, will administer all such water transported in the South Platte River or its tributaries under this SWSP, including water for replacement of depletions, past intervening headgates to ensure that such water is not intercepted or otherwise diminished in quantity by diversion, use or other interference by intervening water rights and to assure that such water remains available and suitable for Applicant's uses under this SWSP, except when any intervening headgate is diverting the entire flow of ("sweeping") the river. In the event that delivery past headgates which sweep the river requires the installation of a bypass structure or the use of an existing bypass structure by agreement with a third-party, Applicant is responsible for either installing a new bypass structure with a continuous recording measuring device(s) as approved by the water commissioner or securing an agreement with a third-party to use an existing bypass structure and providing such information and agreement to the division engineer.
15. The Division of Water Resources will not be responsible for any enforcement or administration of third party agreements that are not included in a decree of the water court.
16. Approval of this SWSP is contingent on the dry-up of the 22.6 acres of the Iverson property (Farm ID Nos. W-02a, W-02b, and W-02c) and 3.36 acres the Mary Jean Donovan Mueller property (Farm ID Nos. E-109a and E-109b). The lands to be dried up shall be monumented by the Applicant to the satisfaction of the water commissioner. In accordance with the attached *Administration Protocol - Dry-Up of Irrigated Land* the Applicant shall provide an affidavit to the water commissioner and division engineer that confirms dry-up during the 2017 irrigation season **by October 31, 2017**. A GIS shapefile outlining the dry-up must accompany the affidavit and be emailed to DNR_Div1Accounting@state.co.us. The shapefile shall include the WDID of the plan, a delineation of the dried-up land, the acreage of dry-up, and any accompanying metadata. In addition, the datum must be NAD83 and the UTM projection must be Zone 13.
17. Dewatering at the Greeley 35th Avenue Pit site will produce delayed depletions to the stream system. As long as the site is continuously dewatered, the water returned to the

stream system should be adequate to offset the depletions, thus dewatering is required to continue during the term of this plan. Once dewatering at the sites cease, the delayed depletions must be addressed, including depletions resulting from the gradual refilling of the pit. At least three years prior to completion of dewatering, a plan must be submitted that specifies how the post pumping dewatering depletions will be replaced, in time, place and amount.

18. If dewatering of the Greeley 35th Avenue Pit site is discontinued, the pit would fill creating additional depletions to the stream system due to increased evaporation. To assure that additional depletions to the river do not occur, a bond for $7,764,000 through the DRMS for lining or backfilling of the exposed ground water has been obtained. Therefore, if the dewatering is discontinued the bond can finance the completion of the lining of the Greeley 35th Avenue Pit or the backfilling, thus preventing depletions to the stream system.
19. The approval of this SWSP does not relieve the Applicant and/or landowner of the requirement to obtain a Water Court decree approving a permanent plan for augmentation or mitigation to ensure the permanent replacement of all depletions, including long-term evaporation losses and lagged depletions after gravel mining operations have ceased. If reclamation of the mine site will produce a permanent water surface exposing groundwater to evaporation, an application for a plan for augmentation must be filed with the Division 1 Water Court at least three (3) years prior to the completion of mining to include, but not be limited to, long-term evaporation losses and lagged depletions. If a lined pond results after reclamation, replacement of lagged depletions shall continue until there is no longer an effect on stream flow.
20. The State Engineer may revoke this SWSP or add additional restrictions to its operation if at any time the State Engineer determines that injury to other vested water rights has occurred or will occur as a result of the operation of this SWSP. Should this SWSP expire without renewal or be revoked prior to adjudication of a permanent plan for augmentation, all use of water under this SWSP must cease immediately.
21. In accordance with amendments to Section §25-8-202-(7), C.R.S. and "Senate Bill 89-181 Rules and Regulations" adopted on February 4, 1992, the State Engineer shall determine if the substitute supply is of a quality to meet requirements of use to which the senior appropriation receiving the substitute supply has normally been put. As such, water quality data or analyses may be requested at any time to determine if the requirement of use of the senior appropriator is met.
22. The decision of the state engineer shall have no precedential or evidentiary force, shall not create any presumptions, shift the burden of proof, or serve as a defense in any water court case or any other legal action that may be initiated concerning the SWSP. This decision shall not bind the state engineer to act in a similar manner in any other applications involving other SWSPs or in any proposed renewal of this SWSP, and shall not imply concurrence with any findings of fact or conclusions of law contained herein, or with the engineering methodologies used by the Applicant.

If you have any questions concerning this approval, please contact Sarah Brucker in Denver at (303) 866-3581 or Michael Hein in Greeley at (970) 352-8712.

Sincerely,

for Jeff Deatherage, P.E.,
Chief of Water Supply

Attachments: Figures 1 & 3
Tables 1-3
Greeley Lease
2017 GIC Share Dedication
Whitney Bypass Agreement
Letter from DRMS dated April 30, 2010
Dedication of Water Rights
June 8, 2011 Letter
Augmentation Plan Accounting Protocol
Dry-up Protocol

Cc: Michael Hein, Water Resource Engineer, Michael.Hein@state.co.us
810 9th Street, Suite 200, Greeley, CO 80631, (970) 352-8712

Mark Simpson, Water Commissioner, District 3, Mark.Simpson@state.co.us

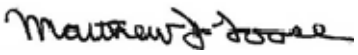
Shera Sumerford, Water Commissioner, District 5, Shera.Sumerford@state.co.us

Peter Hays, Division of Reclamation Mining and Safety, Peter.Hays@state.co.us

CERTIFICATE OF SERVICE

CERTIFICATE OF SERVICE

I hereby certify that on this 28th day of March, 2018, true and correct copies of the Substitute Water Supply Plan Request for Tim and Jeanne Iverson were served on the current Division 1 SWSP Notification List by email. In addition, this SWSP request was sent by email to the State Engineer's Office.



Matthew J. Loose, P.E.