WWE
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December 22, 2021

Via email: [redacted]

Carol Viner
Ouray County Attorney
Viner Law
1104 South Townsend Ave.
Montrose, CO 81401

Re: Amended Consultation Report for Application for Case No. 19CW3098 dated April 14, 2021

Dear Carol,

Wright Water Engineers, Inc. (WWE), on behalf of Tri-County Water Conservancy District, Ouray County, Colorado, the Ouray County Water Users Association, and the Colorado River Water Conservation District (Applicants) is pleased to provide this supplemental Engineering Letter Report for Case No. 2019CW3098. The subject water rights are located in Water Division 4 in the Uncompahgre River Basin and its tributaries including Cow Creek and Dallas Creek in Ouray County, Colorado. This supplemental Letter Report is prepared in response to the Amended Consultation Report for Application for Case No. 19CW3098 dated April 14, 2021.

The draft ruling has been updated to address the locations of the structures and terms and conditions referenced in the Amended Consultation Report. Please let us know if you have any additional questions or comments in regard to the latest draft ruling.

As requested in the Consultation Report, this letter report is providing additional information on the proposed use of the storage of the water in Ridgway Reservoir from diversions by the Cow Creek – Ridgway Reservoir Ditch and Pipeline and associated alternate points of diversion (Ridgway Reservoir - Cow Creek Storage Right).

The attached Table 1 provides a summary of the proposed use of water stored in the Ridgway Reservoir - Cow Creek Storage Right. The storage amounts are based on information provided in the *Upper Uncompahgre Basin Water Supply Protection and Enhancement Project Phase 1 and Phase 2* reports prepared by WWE in 2016 and 2020, respectively. Both reports are available on the drop box link: [redacted] The footnotes at the bottom of the table provided the background references.

The Uncompahgre supplemental irrigation demand of 900 acre-feet (AF) is based on consumptive use shortage during a dry year for Region 1 (the Uncompahgre River downstream of Ridgway Reservoir). Currently, ditches located in Ouray County do not receive irrigation storage water from

Ridgway Reservoir. With a future storage allocation in Ridgway Reservoir, additional storage water could be released to meet existing irrigation shortages located in Ouray County downstream of Ridgway Reservoir. This is a consumptive use number and is conservative because it does not fully represent the water demand for storage from the river. The irrigation demand based on an irrigation efficiency of 40 percent equals 2,250 AF (900 AF / 40%).

The Gunnison Basin Consumptive Needs Assessment (2011) estimates year 2050 municipal and domestic water use in Ouray County ranging between 1,300 AF and 1,800 AF. The Statewide Water Supply Initiative 2010 (CDM, 2011) has similar projections. A majority of the municipal use is water delivered by the City of Ouray and the Town of Ridgway. Based on unincorporated projected water use developed in the 2016 Upper Uncompahgre Basin Water Supply and Enhancement Project, WWE calculated over 340 AF of water demands in unincorporated Ouray County. Based on a 50 percent efficiency for a combination of indoor and outdoor watering, the 340 AF of water demand translates to 170 AF of water depletion. In the 2016 Upper Uncompahgre Basin Water Supply and Enhancement Project, WWE also calculated industrial depletions for future gravel and construction products mining at over 430 AF. Thus, the combined future augmentation needs for unincorporated Ouray County domestic and industrial water use totals 510 AF (170AF + 340 AF).

For the reuse and recharge claim, an example of proposed reuse and recharge for the project is the Ouray Gravel Pit Discussed above. Water released from Ridgway Reservoir through the hydropower plant would be reused by diversion into the Ouray Gravel Pit and would generate recharge accretions back to the Uncompahgre River for use in a subsequent augmentation plan. WWE prepared a unit response function (URF) for the Ouray Gravel Pit (see Table 4) and included terms and conditions for the use of water for recharge in the draft ruling.

The Town of Ridgway and City of Ouray will likely have additional augmentation needs as they develop new water sources to meet water demands. The Town of Ridgway reported needing up to 1 cubic foot per second (cfs) from the Uncompahgre River and up to 0.5 cfs from Dallas Creek for future municipal and augmentation water use purposes. The City of Ouray plans to have augmentation or exchange requirements for junior recreational needs of up to 1.114 cfs during the winter for the Ice Park and up to 3 cfs for the hot springs if the City injects the hot springs water from the Box Canyon Line or other surface hot springs into non-tributary formation.

The 3,000 AF is based on the attached agreement with the Uncompahgre Valley Water Users Association (UVWUA). If 3,000 AF is stored in Ridgway Reservoir, the UVWUA will not place a call with its water rights located on the Uncompahgre. While this is an important agreement for Ouray County and UVWUA, there are other water rights on the Uncompahgre and Gunnison River not associated with the UVWUA located downstream of Ouray County that have historically placed calls and will likely place calls in the future.

The 1,500 AF of storage to meet existing streamflow requirements for the Uncompahgre River located downstream of the confluence of Cow Creek and the Uncompahgre River during a dry year (2012). It is important to note that Ridgway Reservoir only has in-reservoir decreed uses for fish and does not have a storage right to deliver releases downstream for aquatic habitat located

downstream of Ridgway Reservoir. Thus, Ridgway Reservoir bypasses inflow to meet the 30 cubic feet per second (cfs) minimum stream flow located downstream of the Reservoir. In addition, below the confluence of Cow Creek there is a minimum Reservoir bypass requirement of 45 cfs from November 1 to May 15th and 75 cfs from May 16 to October 31. When inflows into Ridgway Reservoir are less than the minimum bypass flows discussed above, then this proposed Cow Creek Ridgway Storage water right could be used to meet the downstream minimum flow target. The 1,500 AF of water is also intended to help in meeting the minimum flows during diurnal fluctuations in Cow Creek. Given the large diurnal fluctuations in Cow Creek, reservoir operations to release the needed water to meet the minimum flow targets downstream of the Confluence of Cow Creek and the Uncompahgre can be challenging.

As part of the 2020 Upper Uncompahgre Basin Water Supply and Enhancement Project, CPW provided a letter discussing minimum flow recommendations on both Cow Creek and the Uncompahgre River Downstream of Ridgway Reservoir (attached). The letter reported a 65 cfs recommendation (or 50 cfs if water availability is limited) during the wintertime as a starting point to preserve the tailwaters fishery above Cow Creek's confluence. WWE recommends a storage needs for a 65 cfs minimum streamflow below the reservoir of 2,628 AF from November through March (see Table 2).

As documented in the 2020 Upper Uncompahgre Basin Water Supply and Enhancement Project, in 2013, American Whitewater (AW) published a report assessing streamflow needs for whitewater boating recreation in the Gunnison River Basin (AW, 2013). AW (2013) provides a summary of minimum and optimum recreational boating flow targets for three stream segments in the UUB. Table 7 provides a summary of each UUB stream segment listed in AW (2013) and their corresponding minimum and optimal flow ranges. Figure 3 through Figure 5 provide a comparison of available streamflow data since year 2000 with minimum and maximum optimum flow ranges for each UUB recreational boating flow segment. These figures indicate that minimum optimum recreational boating flow targets were present in all years except 2002, 2012, 2013, and 2018. Based on a telephone interview with a local whitewater guide shop, which operates in UUB, the peak season for whitewater tours is between May and August (approximately 122 days per season), and their peak guided tour period typically occurs during the first two weeks in July. Table 8 provides a summary of the average daily flow needed to meet the target minimum optimum recreational whitewater boating flow for each stream segment in the UUB during years in which the minimum optimum flow targets are not met. The stream segment below Ridgway Reservoir has the highest potential for meeting the minimum optimum recreational flow target, since it is located downstream of the Ridgway Reservoir. Over the dry years of 2002, 2012, 2013, and 2018, the average daily flow volume needed to meet the minimum optimum recreational flow for two weeks a year (fourteen days total) downstream of the reservoir is approximately 600 AF per day for a total of 8,400 AF for the two-week period (see Table 3).

The average annual discharge in Cow Creek varies widely. The annual discharge of Cow Creek during 2012 was less than 50 percent of the average annual discharge. To account for the wide variations in annual streamflow it is recommended that additional water is diverted and stored in average years to provide carry over storage during dry years. WWE recommends 20 percent of

13,750 AF or 2,750 AF is diverted during average years to provide carry over storage during a dry year.

The subtotal of the water demands as described above equals over 19,678 AF, which exceeds the storage claim of 13,750 AF. In addition, when the 13,750 AF of water is stored and released, the release will be through the Ridgway Reservoir hydropower facility.

Please give us a call if you have any questions or comments regarding this letter.

Sincerely,

WRIGHT WATER ENGINEERS, INC.

By _____
Peter R. Foster, P.E.
Vice President

cc:

Aaron Clay
Peter Fleming
Jason Turner
Martha Whitmore

Attachments:

Table 1 - Summary of Proposed Water Use for Water Stored by the Ridgway Reservoir - Cow Creek Storage Right

Table 2 - Calculated Additional Winter Season Release from Ridgway Reservoir to Meet Minimum Flow Targets for Aquatic Species

Table 3 - Flow Volume Needed to Meet target Minimum Optimum Recreational Flow

Table 4 - Ouray Gravel Pit Unit Response Function (URF)

Figure 1 - Ouray Gravel Pit Glover Distances.

UVWUA No Call Agreement

Cow Creek and Uncompahgre River Environment Flow Needs CPW Letter

Table 1

Summary of Proposed Water Use for Water Stored by the Ridgway Reservoir - Cow Creek Storage Right

Case No. 19CW3098

Row	Water Use Description	Volume (AF)
1)	Uncompahgre River Supplemental Irrigation Demands	900
2)	Augmentation Water for Unincorporated Ouray County Domestic and Industrial Depletions and Industrial Water Demands Downstream of Ridgway Reservoir	500
3)	Stipulation with UVWUA	3,000
4)	Storage release to help meet existing minimum stream flow requirement on Uncompahgre River Downstream of the Confluence of Cow Creek and the Uncompahgre River from diurnal fluctuation dampening and increase in inflow into Ridgway Reservoir	1,500
5)	Flow enhancement for fisheries downstream of Ridgway Reservoir	2,628
6)	Recreational Boating to meet boating minimum target flows	8,400
7)	Carry over storage for reservoir firming	2,750
8)	Subtotal	19,678
9)	Hydropower	13,750

Row Notes:

1) From Upper Uncompahgre Basin Water Supply Protection and Enhancement Report, Sept, 2016. Table 9, consumptive use shortage for Region 1, Uncompahgre River downstream of Ridgway Reservoir divided by a 40% efficiency to provide the shortage on a diversion basis.

2) From Upper Uncompahgre Basin Water Supply Protection and Enhancement Report, Sept, 2016. Table 11, Region 1, Uncompahgre River downstream of Ridgway Reservoir Municipal, Domestic, and Industrial Water Shortage.

3) Agreement with Uncompahgre Valley Water Users Association

4) From Upper Uncompahgre Basin Water Supply Protection and Enhancement Report, Sept, 2016. Table 13, Column 2, 2009 maximum year shortage to minimum streamflow requirement from reduction in flows in Cow Creek that will need to be rereleased from Ridgway Reservoir.

5) From Upper Uncompahgre Basin Water Supply Protection and Enhancement Report Phase 2, June, 2020. Calculated volume needed for 65 cfs equals 2,628 AF, see Table 2

6) From Upper Uncompahgre Basin Water Supply Protection and Enhancement Report Phase 2, June, 2020. see Table 8 for Peak Two Weeks (600 AF) X 14 days = 8,400 AF

7) Equals 20 percent of 13,750 AF for carry over storage and reservoir firming

8) Subtotal of Columns 1 through 7.

9) All 13,750 AF stored and subsequently released from Ridgway Reservoir will run through the hydropower facility at Ridgway Reservoir.

Table 2

Calculated Additional Winter Season Release From Ridgway Reservoir to Meet Minimum Flow Targets for Aquatic Species

Case No. 19CW3098

Winter	Additional Winter Season Release From Ridgway Reservoir to Meet Minimum Flow Targets (AF)
	Minimum Flow Target Below Reservoir
	65 CFS
2014 - 2015	468
2015 - 2016	375
2016 - 2017	631
2017 - 2018	2,628
2018 - 2019	2,628
Average	1,346
Maximum	2,628
Minimum	375

Notes:

1) Winter is defined as November through March.

Table 3

Flow Volume Needed to Meet Target Minimum Optimum Recreational Flow

Case No. 19CW3098

Year	Uncompahgre River below Ridgway Reservoir			
	Average Daily Volume Needed to Meet Target Minimum Optimum Flow (AF/day)		Average Annual Volume Needed to Meet Target Minimum Optimum Flow (AF)	
	Peak Season	Peak Two Weeks	Peak Season	Peak Two Weeks
2002	676	723	83,096	10,120
2012	519	594	63,786	8,319
2013	596	574	73,346	8,033
2018	557	510	68,487	7,137
Average (AF)	587	600	72,179	8,402
Average (CFS)	296	303	36,390	4,236

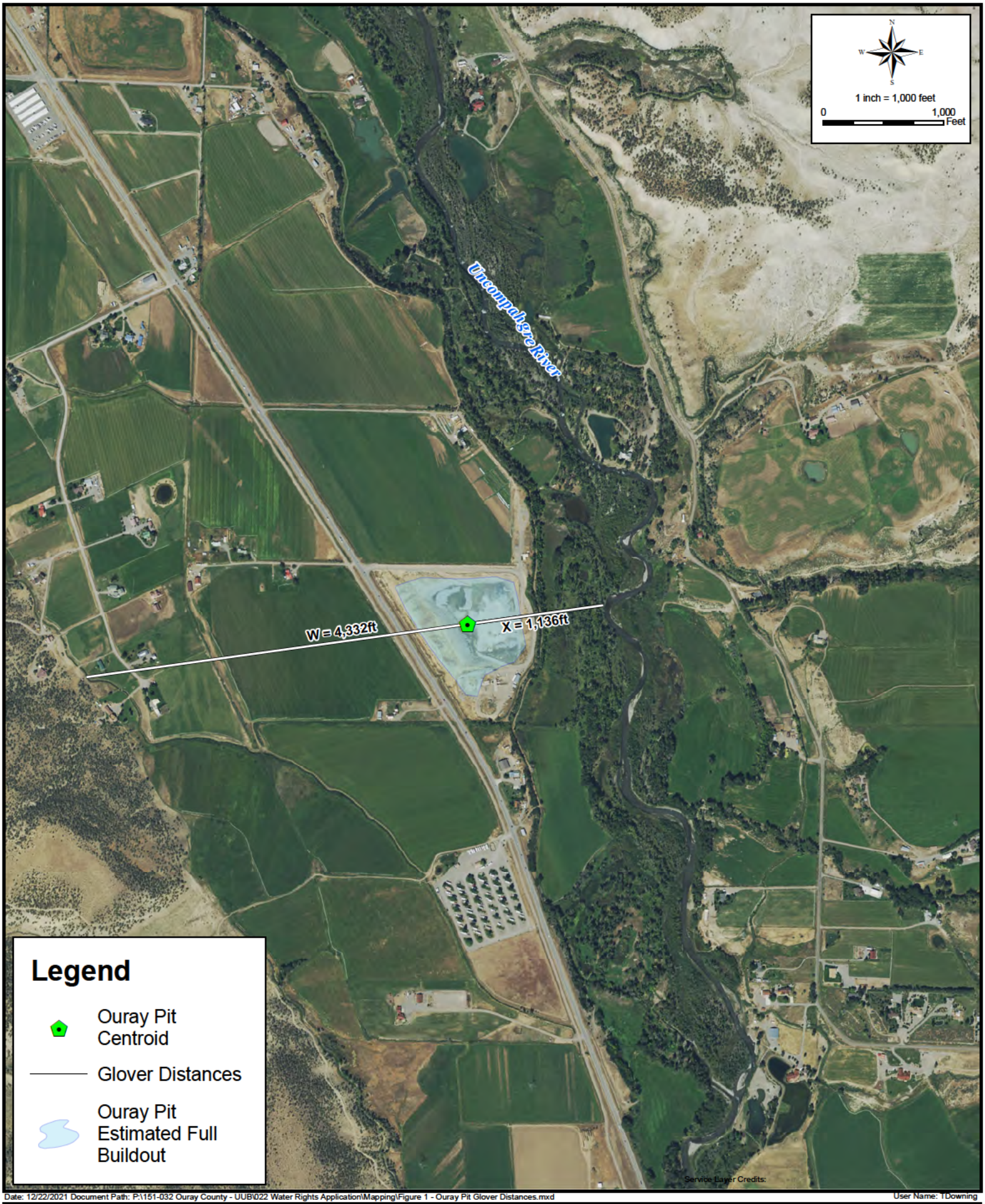
Notes:

1) Table is limited to years 2002, 2012, 2013, and 2018 because these are year when the minimum optimum flow did not occur.
2) **Peak Season:** May 1st to August 31st
3) **Peak Two Weeks:** July 1st to July 14th

Table 4
Unit Response Function
Ouray Pit

Month No	% Depletion to Uncompahgre River
1	30.2
2	28.9
3	10.5
4	6.7
5	5.2
6	4.3
7	3.6
8	2.9
9	2.5
10	2.1
11	1.7
12	1.5

Notes:
Using Glover Analysis inputs of Option No. 2, T = 50,000 gpd/ft, Specific Yield = 0.15, distance X = 1,136 feet, distance W = 4,332 feet



Date: 12/22/2021 Document Path: P:\151-032 Ouray County - UUB\022 Water Rights Application\Mapping\Figure 1 - Ouray Pit Glover Distances.mxd

User Name: TDowning

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1666 N. Main Ave., Ste.C
Durango, CO 81301
(970) 259-7411 ph 259-8758 fx

OURAY COUNTY, CO

OURAY PIT GLOVER DISTANCES

OURAY COUNTY

PROJECT NO. 151-032.022

FIGURE 1

AGREEMENT NOT TO CALL IN CERTAIN CIRCUMSTANCES

This agreement is made by and among the Board of County Commissioners of Ouray County, Colorado; Ouray County Water Users Association; Tri-County Water Conservancy District; and Colorado River Water Conservation District (hereafter Applicants) and Uncompahgre Valley Water Users Association (hereafter Association).

RECITAL

Applicants are the applicants in Case No. 2019CW3098, Water Division 4, Colorado. The Association filed a statement of opposition. The application seeks to confirm a water right for storage in Ridgway Reservoir. The stored water may come from the Cow Creek Pipeline to Ridgway Reservoir, from Ram's Horn Reservoir, or from re-allocation of other stored water. One of the uses for that stored water will be delivery to the Association for its irrigation users to augment or replace depletions resulting from diversions of water from the Uncompahgre River and its tributaries located in Ouray County which would otherwise be subject to a "call" by the senior water rights of Association. Herein the water right claimed in 2019CW3098 referred to as "the 2019 water right."

Applicants and Association seek to resolve the concerns and statement of opposition filed by Association, and this Agreement shall serve as a stipulation in 19CW3098 and agreement for a decree to be entered containing the following terms and conditions:

AGREEMENT NOT TO CALL

1. At any time that the Applicants are forecast to deliver at least 3,000 AF of water pursuant to the 2019 right in Ridgway Reservoir from Rams Horn Reservoir, Cow Creek Pipeline to Ridgway Reservoir, or have contracted for or re-allocated 3,000 AF of water in Ridgway Reservoir, the Association agrees not to place a call on the Uncompahgre River for that season. As shown on Exhibit "A", 3,000 AF is the amount of depletion to the river that occurs above the Montrose and Delta Canal in a typical dry water year. Thus, the storage or delivery allotment fully compensates the stream for the upstream depletions. The forecast shall be agreed upon by Applicants and the Association. It may be revised as needed based on hydrologic conditions and actual storage.

2. Each year when water is forecast to be delivered pursuant to the 2019 water right in Ridgway Reservoir from Ram's Horn Reservoir, Cow Creek Pipeline to Ridgway Reservoir, or have contracted for or re-allocated storage water in Ridgway Reservoir, Applicants and Association will, in coordination with the Division Engineer, determine how much water will be available to be

released to the Association. The Applicants will then designate how much of the stored water is available for satisfying the Association's call and how much will be dedicated to other beneficial uses. The parties will meet within ten days after this designation is made, to determine when UVWUA may place a call in that season. The parties will negotiate in good faith but any final decision on the call date shall be made by UVWUA. Any available water as determined by the Division Engineer must be released for use by UVWUA prior to any stored water under UVWUA's existing water right.

3. In the event that Applicant is not forecasted to deliver at least 1,000 AF from Ram's Horn Reservoir and/or Cow Creek Pipeline to Ridgway Reservoir or have contracted for or re-allocated storage water in any given water year (November 1 through October 31), Association shall be free to place a call on the Uncompahgre River at its discretion pursuant to its priority water rights.

4. The Association will support Tri-County Water Conservancy District and the Board of County Commissioners of Ouray County, Colorado on any necessary contracting, leasing, or authorizations from the United States Bureau of Reclamation to develop the storage water allocation and supply as described above.

5. The Association does not intend to abandon, relinquish, or otherwise adversely affect in any manner all or any part of its water rights or their priorities. This agreement shall not be construed as such an abandonment.

6. This Agreement is between the parties hereto and is intended to provide generalized drought relief in the Uncompahgre River Basin. This agreement is not intended to benefit any entity other than the parties who sign below. The parties agree that this agreement shall not establish nor be asserted by the parties or other entities as precedent, nor is it intended to establish any precedent concerning any action or method of operation by any of the parties with respect to any future drought condition in the Uncompahgre River Basin.

7. This agreement may be terminated or amended only by written agreement of all parties.

8. This agreement shall be binding on the parties hereto and their respective successors and assigns. This is an agreement for performances of special services and may be enforced by an action for specific performance. This agreement is made and performed in Colorado and the laws of the State of Colorado shall be implied in the interpretation, execution and enforcement of this agreement.

9. This agreement with any exhibits hereto is a complete integration of all the understandings between the parties related to this matter. No prior or contemporaneous agreement between the parties or addition, deletion, or other amendment hereto shall have any force or effect whatsoever unless agreed to in writing.

Board of County Commissioners of Ouray County, Colorado

By:_____ _____
Date

Ouray County Water Users Association

By:_____ _____
Date

Tri-County Water Conservancy District

By: Wade D. Schultz 12-8-21
Date

Colorado River Water Conservation District

By:_____ _____
Date

Uncompahgre Valley Water Users Association

By: 12-1-2021
Date

9. This agreement with any exhibits hereto is a complete integration of all the understandings between the parties related to this matter. No prior or contemporaneous agreement between the parties or addition, deletion, or other amendment hereto shall have any force or effect whatsoever unless agreed to in writing.

Board of County Commissioners of Ouray County, Colorado

By:_____ 11-23-2021
Date

Ouray County Water Users Association

By:_____ 12-7-2021
Date

Tri-County Water Conservancy District

By:_____ _____
Date

Colorado River Water Conservation District

By:_____ _____
Date

Uncompahgre Valley Water Users Association

By:_____ _____
Date

Cow Creek and Uncompahgre River Environmental Flow Needs

Katie Birch, Instream Flow Program Specialist, CPW
04/15/2020

History of CPW's ISF Effort on Cow Creek

Colorado Parks and Wildlife has been developing an instream flow (ISF) recommendation on lower Cow Creek since 2015. At that time, the reach under consideration was approximately 12 miles from the Sneva Ditch headgate (near the USFS boundary) to the confluence with the Uncompahgre River. Data collection on Cow Creek occurred in 2014 on CPW's Billy Creek State Wildlife Area (SWA) approximately 1.5 miles from the lower terminus of the proposed ISF reach. For a number of reasons, the ISF recommendation was postponed until 2020. The geomorphological setting of the stream made R2Cross analyses difficult. The hydrology of the creek is flashy; the stream exhibits very high peaks during spring runoff and a very depleted baseflow during the irrigation season because of a number of agricultural diversions above Billy Creek SWA. Many of the 2014 cross sections were outside of the accuracy range for use of Manning's equation in the R2Cross model. Another part of the reason for delaying the instream flow recommendation was to attempt to work with landowners above the SWA to understand the series of depletions, and potentially secure access for additional R2Cross cross sections to better understand the flow needs. This was unsuccessful, and ultimately additional cross sections were collected in 2019 on the SWA.

Cow Creek is a dynamic river that transports significant sediment. Considerable sections of the channel are braided, particularly near the creek's confluence with the Uncompahgre River on Billy Creek SWA. Cow Creek's flow regime is important to the Uncompahgre River tailwaters below Ridgway Reservoir. Below the reservoir, there is low diversity and high biomass of macroinvertebrates. Cow Creek improves the sediment and temperature regime of the tailwaters. Below Cow Creek's confluence, there are fresh gravels and cobbles, which provide interstitial space for spawning and macroinvertebrate production, and substrate is generally less embedded than above the confluence. This correlates to a higher number of taxa below Cow Creek's confluence – including multiple species of stonefly, mayfly, and generally more pollutant-sensitive taxa. The higher levels of macroinvertebrate diversity downstream of the confluence of Billy Creek and Cow Creek suggests that the aquatic community is healthier than the community in the Uncompahgre River upstream at Pa-Co-Chu-Pak due to these tributary inflows (UWP Water Quality Report, 2012).

Cow Creek supports populations of cutthroat, brown, and rainbow trout, along with native populations of bluehead sucker, mottled sculpin, and speckled dace. The stream supports complex fish habitat including riffles, runs, pools, and slow-velocity side channel habitat. Cow Creek exhibits a notable diurnal fluctuation, which provides important temperature refuge for the resident fish. The daily peaks in the diurnal fluctuation correlate with water temperatures that are below the state chronic standard, as evidenced by CPW's temperature loggers deployed in 2019 (Gardunio, 2019).

In 2019, CPW refined our flow recommendation on Cow Creek. We limited the proposed reach to the segment of Cow Creek flowing through Billy Creek SWA, in order to better protect the ecological values on our state wildlife area. In 2019, we surveyed suitable, representative, single-thread riffles for R2Cross analyses. Based on these field investigations, we developed a flow recommendation with the intention

of bringing the recommendation to the CWCB in 2020. The CWCB wanted to work collaboratively with the Ouray County Phase 2 Needs Study and asked CPW to postpone the recommendation for an appropriation date of 2021. Below is a summary of the current draft biological flow recommendation.

	Bankfull Channel Width	**Date Measured**	**Flow Measured**	**Model Accuracy Range**	**Flow Meeting Two Criteria**	**Flow Meeting Three Criteria**
XS-1	57 ft	8/7/2019	90 cfs	36 – 227 cfs	Out of Range[1]	53 cfs
XS-2	45 ft	9/11/2019	6.85 cfs	2.7 – 17 cfs	15	Out of Range[1]
				Mean	**15 cfs**	**53 cfs**

[1]Results are outside of recommended accuracy range for use of Manning's equation (40 to 250% of flow measured during site visit) and as such, were omitted.

Given these results, it is CPW's opinion that the following flows are needed to protect the natural environment to a reasonable degree. These recommendations may be reduced due to water availability considerations. CPW's initial biological recommendations are as follows:

- Summer Flow Recommendation: 53 cfs (April through mid-July)
- Baseflow Recommendation 15 cfs (late-July through March)

History of CPW's ISF Effort on the Uncompahgre below Ridgway Reservoir

In 1996, flow recommendations were developed for the Uncompahgre River below Ridgway Reservoir. Cross sectional work done in 1996 resulted in a biological recommendation of 100 cfs in the summer and 65 cfs in the winter. The USGS gage "Uncompahgre River below Ridgway Reservoir" (09147025) was used to refine this recommendation based on water physically available for appropriation. Water availability analysis indicated median hydrology of 90 cfs from May 1 through October 14 and 50 cfs from October 15 through April 30. The water availability-refined flow rates were recommended to the CWCB. It was also noted at this time that approximately 70 cfs was correlated with minimizing low flow conditions in the winter that caused trout mortality related to gas bubble disease from supersaturated levels of oxygen and nitrogen from the outlet releases, resulting in more severe impacts to the fishery during the winter. Ultimately, this ISF recommendation was not appropriated by the CWCB for unknown reasons.

Since this time period, new hydropower turbines installed on the dam have resulted in the gas supersaturation issue no longer being relevant. However, the current minimum bypass requirements released from Ridgway Reservoir are not optimal for the downstream fishery. When flows are less than 50 cfs between the dam and Cow Creek's confluence, habitat is restricted and the trout population experience stressful overwintering conditions. Water temperatures in the summer are too cold, and water temperatures in the winter are too warm, resulting in increased metabolism with no additional aquatic food availability. Cow Creek's contribution to the Uncompahgre tailwater fishery contributes a more natural looking hydrograph, improving the temperature and sediment regime, as well as the aquatic insect community. This contribution has minimized the "tailwater effect" below the dam.

For the Uncompahgre River below Ridgway Reservoir, there is a good amount data that can be utilized in assessing the flow needs, including PHABSIM data. Flow recommendations made by the Division of Wildlife in 1995 using R2Cross indicate a need for 65 cfs in the wintertime (or 50 cfs if water availability-limited). This quantification should serve as a starting point for determining the minimum flows necessary to preserve the tailwaters fishery above Cow Creek's confluence. Past habitat modeling indicates optimum

habitat availability can be reached with flows greater than 50 cfs, and incremental gains in weighted usable habitat for brown and rainbow trout are realized approaching 200 cfs. Given what we know about the aquatic resources in Cow Creek and Dallas Creek and as a matter of practice, Colorado Parks and Wildlife does not condone damaging or sacrificing those fisheries to in an effort to enhance the fishery below the reservoir.