COLORADO
Division of Water Resources
Department of Natural Resources

February 24, 2023

Greg Geras, Land Resource Manager
Asphalt Specialties Co.
10100 Dallas St
Henderson, CO 80640

Re: Turnpike Mining Resource Substitute Water Supply Plan (WDID 0602547)
DRMS File No. M-2004-009 (0603016)
Part of Section 31, Twp. 2N, Rng. 68W, 6th P.M., Weld County
Water Division 1, Water District 6
SWSP ID: 4644

Approval Period: January 1, 2023 through December 31, 2023
Contact Information for Greg Geras: 303-289-8555 and GregG@asphaltspecialties.com

Dear Greg Geras:

This letter is in response to the November 1, 2022 renewal request for the above-referenced substitute water supply plan ("SWSP") for a sand and gravel pit operated by Asphalt Specialties Co., Inc. ("ASCI" or "Applicant") in accordance with section 37-90-137(11), C.R.S. The required fee of $257.00 for the renewal of this substitute supply plan ("SWSP") has been submitted (receipt no. 10025266). This plan was originally approved in 2006 and was most recently approved on April 5, 2022.

SWSP Operations

This plan seeks to replace depletions resulting from mining at the Turnpike Mining Resource Gravel Pit ("Turnpike Pit"). The site is located in Section 31, Township 2 North, Range 68 West, 6th P.M. at 599 Highway 52. Sand and gravel extraction has ceased at the site as of October 2022. No sand and gravel extraction is anticipated during 2023. Cell 1 has been reclaimed and been released from bonding as a reservoir. Cells 2 through 6 are currently being reclaimed to return the site to agricultural use and are bonded to cover reclamation activities.

ASCI will use the dewatering trenches around the perimeter of the toe of the mining slope to facilitate backfill activities which are anticipated to continue for up to 5 years. Water is directed into a pump basin to settle out fines where it is then pumped via an enclosed pipe for discharge directly to Boulder Creek. A 2-acre wash pond (Cell 2A) and a 2-acre settling pond (Cell 2B) expose groundwater at the site. Projected depletions at the site consist of evaporative depletions, dust control, dewatering, and lagged depletions from past mining activities.

The proposed replacement of depletions for this site will come from a lease of fully consumable water from the City of Louisville ("City") and dewatering credits.

In accordance with the letter dated April 30, 2010 (attached) 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 groundwater. The DRMS letter identifies four approaches to satisfy this requirement.

In accordance with approach nos. 1 and 3, ASCI has indicated that a bond has been obtained for $1,114,000.00 through the DRMS for lining of this site to assure that depletions from groundwater evaporation do not occur in the unforeseen event(s) that would lead to the abandonment of the Pit.

Depletions

Projected depletions at the site consist of evaporative depletions, dust control, dewatering, and lagged depletions from past mining activities.

Evaporation

The Applicant anticipates that groundwater will be exposed within Cells 2A, 2B, 5, and 6 as shown in Table A below. The area of exposed groundwater for the wash pond and settling pond in Cells 2A and 2B will remain 4.0 acres throughout the SWSP period. The pump basin and dewatering trench (1,060 feet x 6 feet) in Cells 5 and 6 will expose 0.75 acres.

Table A: Exposed Surface Area by Cell (Acres)

Cell 2A	Cell 2B	Cells 5 and 6		**Total**
Wash Pond	Settling Pond	Pump Basin	Dewatering Trench	
2.0	2.0	0.6	0.15	**4.75**

The Applicant proposes to replace evaporation from exposed groundwater at the site based upon evaporation atlases in NOAA Technical Report NWS 33 and the SEO monthly distribution factors for sites below 6,500 feet, as shown in attached Tables 1 and 2 (attached). Gross annual evaporation at the gravel pit location is estimated to be 39 inches per year. Net evaporation is defined as gross evaporation less the consumptive use of water by vegetation that naturally occurred at the site prior to construction of the pit. The historical consumptive use was assumed to be equal to the effective precipitation, which was estimated based on the data from the Longmont South NCWCD weather station (record 1994-2018). The net evaporation from the exposed water surface is estimated at 28.25 inches per year. Total **evaporative depletions are estimated at 11.18 acre-feet** during this SWSP period, as shown on Table 2 (attached).

Computation of evaporation under this SWSP was reduced during the ice covered period. It was assumed that the ice covered period will occur during the months of December and January based on average monthly temperatures less than 32°F taken from the Longmont South NCWCD weather station (record 1994-2016). However, for the purpose of this SWSP, the Applicant shall replace the net evaporation depletions from the exposed groundwater surface area that may occur during the assumed ice covered period (the months of December and January) for any time that the pit is not completely covered by ice. Computation of the net evaporation during any time that the pit is not completely covered by ice shall be determined as the pro-rata amount of the monthly gross evaporation rate distribution amount identified in the State Engineer's *General Guidelines for Substitute Supply Plans for Sand and Gravel Pits,* subtracting the pro-rata amount of the effective precipitation for that period.

Dust Control

The Applicant projects that **1.76 acre-feet** will be used in Cells 2A and 2B for dust control during this SWSP period, as shown in column 5 of Table 3 (attached).

Dewatering

Groundwater will be pumped from the pump basins and discharged directly to Boulder Creek from Cells 5 and 6. The **total amount of water anticipated to be dewatered is 112.27 acre-feet** during this SWSP period, as shown on Table 4 (attached).

Total Consumptive Use

The total consumptive use at this site during 2023 will be **125.2 acre-feet**, which includes 11.18 acre-feet of net evaporative loss, 1.76 acre-feet/year of water used for dust control, and 112.27 acre-feet/year of water from dewatering.

Lagged Depletions

The IDS AWAS stream depletion model was used to determine the lagged depletions from previous evaporation, operational losses, and dewatering to Boulder Creek in Cells 2A, 2B, 3*, 4*, 5 and 6. The aquifer characteristics used in the model are as shown in the following Table B using the alluvial aquifer boundary condition.

Table B: IDS AWAS Parameters

Cell	Transmissivity (gpd/ft)	Specific Yield (%)	W, distance to boundary (ft)	X, distance to stream (ft)
2A and 2B	44,883	20	3,400	3,050
3*	44,883	20	3,400	1,065
4*	44,883	20	1,350	275
5 and 6	44,883	20	1,350	600

**Remaining lagged depletions due to mining and dewatering activities during previous SWSP period.*

Lagged depletions due to dewatering are as follows:

1. 11.47 acre-feet for Cells 2A and 2B (evaporation from the wash pond and settling pond, and dust control),
2. 0.3548 acre-feet for Cell 3 (previous mining activity and dewatering),
3. 0.0026 acre-feet for Cell 4 (mining, dewatering, and evaporation from the pump basin and dewatering trench), and
4. 114.03 acre-feet for Cells 5 and 6 (mining, dewatering, and evaporation from the pump basin and dewatering trench).

The total lagged depletions for 2023 are equal to **125.85 acre-feet** (Table 5 and Table 6, attached).

For purposes of this SWSP the point of depletion for the gravel mining operation shall be on Boulder Creek where Boulder Creek crosses the north line of Section 31, Township 2 North, Range 68 West, 6th P.M.

Replacements

Out-of-priority depletions associated with the mining operation at this site will be replaced using fully consumable municipal return flows leased from the City of Louisville and with excess water returned from dewatering after lagged dewatering depletions are replaced on a monthly basis.

A copy of the lease with this City was provided to this office on February 13, 2023 and is attached to this letter. The current lease is valid for the period of January 1, 2023 through December 31, 2023 therefore

the SWSP will expire on December 31, 2023. Louisville will deliver fully consumable water to Coal Creek, a tributary to Boulder Creek, at Louisville's discharge point (WDID 0602301) on Coal Creek located in the NW ¼ of the SE ¼ of Section 9, Township 1 South, Range 69 West of the 6th P.M. If replacements are discharged at an alternate point on Boulder Creek, prior notice to and approval by the Water Commissioner is required.

A 15% transit loss will be applied to all deliveries as specified in Table 6 (attached) subject to modification as determined by the Division Engineer. The replacement water available after accounting for transit losses from the City is 47 acre-feet and the replacement water available from dewatering is 112.27 acre-feet, therefore **total replacement water available is 159.27 acre-feet** during this SWSP period. Attached Table 6 summarizes total lagged depletions, the monthly leased water schedule with the City of Louisville, monthly dewatering credits, and net effect on the river.

The replacement water in this SWSP is made available through the City of Louisville SWSP (WDID 062538, Plan ID 6159), approved pursuant to 37-92-308(5), C.R.S. which was most recently approved on January 20, 2023 and is the fifth year of that SWSP's approval. In accordance with section 37-92-308(5), C.R.S., the City of Louisville SWSP cannot be renewed or approved for more than five years. **Therefore ASCI should be aware that the return flows made available from the City of Louisville SWSP cannot be proposed as a replacement source in the following SWSP approval period.**

Conditions of Approval

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

1. This SWSP shall be valid for the period of **January 1, 2023 through December 31, 2023**, unless otherwise revoked, or superseded by decree. If this plan will not be made absolute by a water court action by the plan's expiration date, a renewal request must be submitted to this office with the statutory fee (currently $257), with all necessary leases and other supporting documentation, **no later than November 1, 2023.** If a renewal request is received after the expiration date of this plan, it may be considered a request for a new SWSP and the $1,593 filing fee will apply.

2. Well Permit 82220-F has been issued for this pit, and this permit remains valid. The permit covers up to 8 acres of exposed surface area and allows for annual water uses of up to 25.81 acre-feet for evaporation losses, water lost with the mined product, and dust control. Actual depletions cannot exceed these amounts and are limited to those uses specifically approved through this SWSP.

3. The total surface area of the groundwater exposed at the Turnpike Mining Resource site must not exceed an area of **4.75 acres (**Table A, attached).

4. The annual water used for dust control at the Turnpike Mining Resource site shall not exceed **1.76 acre-feet**.

5. Total consumption at the Turnpike Mining Resource site must not exceed these aforementioned amounts unless an amendment is made to this SWSP.

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

7. All pumping for dust control shall be measured in a manner acceptable to the Division Engineer.

8. The replacement water that 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. All replacement water must be concurrent with depletions in quantity, timing, and locations.

9. The Applicant shall provide daily accounting (including, but not limited to diversions, depletions, replacement sources, and river calls) on a monthly basis. The accounting must be uploaded to the CDSS Online Reporting Tool within 30 days of the end of the month for which the accounting applies (https://dwr.state.co.us/Tools/reporting). Instructions for using the tool are available on the Division of Water Resources website on the "Services" → "Data & Information" page under the heading of Online Data Submittal. Accounting and reporting procedures are subject to approval and modification by the division engineer. Accounting forms need to identify the WDID number for each structure operating under this SWSP. Additional information regarding accounting requirements can be found in the attached Augmentation Plan Accounting Protocol. **NOTE**: Monthly accounting, even during the winter non-irrigation season, is required.

   In addition, **the Applicant** shall verify that the entity making replacements has included the Applicant on their accounting and submitted their accounting to the Division Office and the Water Commissioner. For this SWSP, that entity is the City of Louisville.

10. The Applicant shall follow the Augmentation Plan Accounting or any other applicable protocols as referenced in the attached documents for the operation of this SWSP.

11. The name, mailing address, and phone number of the contact person who will be responsible for operation and accounting of this plan must be provided on the accounting forms to the Division Engineer and Water Commissioner.

12. Dewatering at this site will produce delayed depletions to the stream system. **Dewatering operations must be measured by totalizing flow meters that can accurately show the monthly volume of dewatered water that is pumped and returns to the stream.** At least three years prior to completion of dewatering, a plan must be submitted that specifies how the post pumping dewatering depletions (including refilling of the pit) will be replaced, in time, place and amount.

13. Conveyance loss for delivery of augmentation water to the point of depletion on the South Platte River is subject to assessment and modification as determined by the Division Engineer. Currently 15% conveyance loss is being assessed, subject to change depending on current conditions.

14. In accordance with the letter dated April 30, 2010 (copy attached) 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 groundwater. The DRMS letter identifies four approaches to satisfy this requirement.

    In accordance with approach nos. 1 and 3, the applicant has indicated that a bond has been obtained for $1,114,000.00 through the DRMS for lining of this site to assure that depletions from groundwater evaporation do not occur in the unforeseen event or events that would lead to the abandonment of the Pit.

15. All releases of replacement water must be sufficient to cover all out-of-priority depletions in time, place, and amount and be made under the direction and/or approval of the Water Commissioner (including the proposed aggregated replacement for winter depletions).

16. 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.

17. In order to prevent injury to other water rights, the division engineer and water commissioner must be able to administer Applicants' replacement water past headgates on the river at times when those headgates would otherwise be legally entitled to divert all available flow in or "sweep" the South Platte or its tributaries. Applicant shall not receive credit for replacement of depletions to the South Platte below such diversion structures unless bypass and measurement structures are in place to allow the division engineer and water commissioner to confirm that Applicant's replacement water is delivered past the headgates. In the event that delivery past dry-up points requires the use of a structure for which a carriage or use agreement with a third party is required, Applicant shall be responsible for securing such agreement. Until such time as the Applicant provides a copy of the carriage or use agreement to the division engineer and water commissioner, no credit will be allowed for replacement of depletions to the South Platte below such diversion structure.

18. 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.

19. 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 excavation of the product from below the water table, and all other use of water at the pit, must cease immediately.

20. 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 this substitute water supply plan 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.

21. 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 plans or in any proposed renewal of this plan, 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 Wenli Dickinson in Denver at (303) 866-3581 x8206 or Michael Hein in Greeley at (970) 352-8712 x1219.

Sincerely,

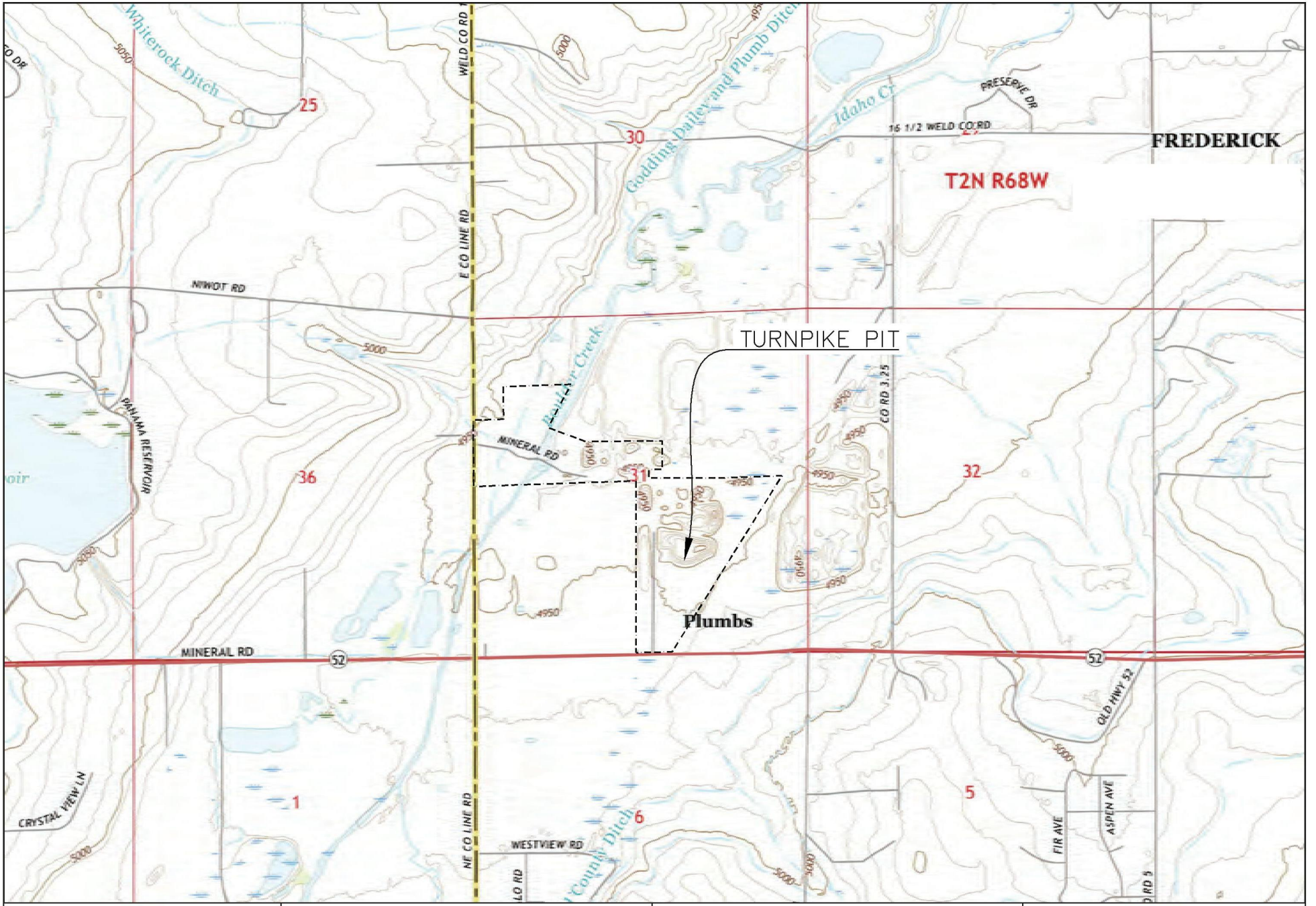
for
Joanna Williams, P.E.
Chief of Water Supply

Attachments: Figures & Tables
City of Louisville Lease
Administration Protocol "Augmentation Plan Accounting" for Division 1
Letter from DRMS dated April 30, 2010

cc: Michael Hein, Assistant Division Engineer, Div1Accounting@state.co.us
Dawn Ewing, Accounting Coordinator, Dawn.Ewing@state.co.us
Jason Smith, Acting District 6 Water Commissioner, Jason.Smith2@state.co.us
Louis Flink, Tabulations/Diversion Records Coordinator, Louis.Flink@state.co.us
Division of Reclamation Mining and Safety, Peter.Hays@state.co.us

JMW/idc/wad: 2023 Turnpike Renewal Approval.docx

FIGURES



REVISIONS			
REV	DESCRIPTION	DATE	APPROVED

Asphalt Specialties Co., Inc.
10100 Dallas Street
Henderson, CO 80640
Phone: 303-289-8555

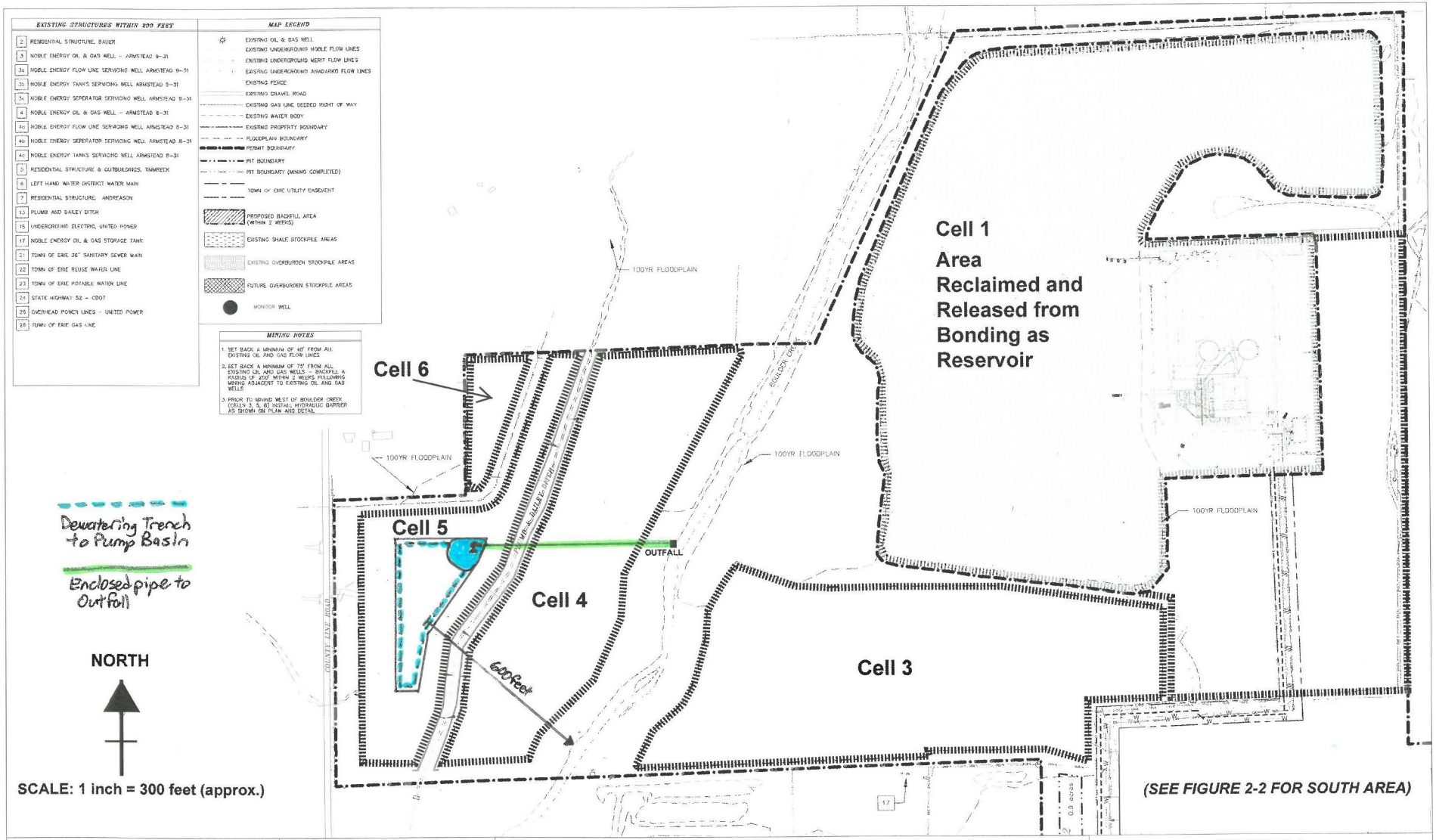
TURNPIKE MINING RESOURCE
TEMP. SUBSTITUTE WATER SUPPLY PLAN
PLAN YEAR 2023

PREPARED FOR: ASPHALT SPECIALTIES CO., INC

FIGURE 1
SITE LOCATION MAP

SCALE	DWG NO.	REV.
1"=2000'	FIGURE 1.DWG	

DRAWN BY:	CHECKED BY:	DATE:	SHEET
GRG		10/25/2022	1 OF 1



REVISIONS			
REV	DESCRIPTION	DATE	APPROVED

Asphalt Specialties Co., Inc.
10100 Dallas Street
Henderson, CO 80640
Phone: 303-289-8555
Fax: 303-289-7707

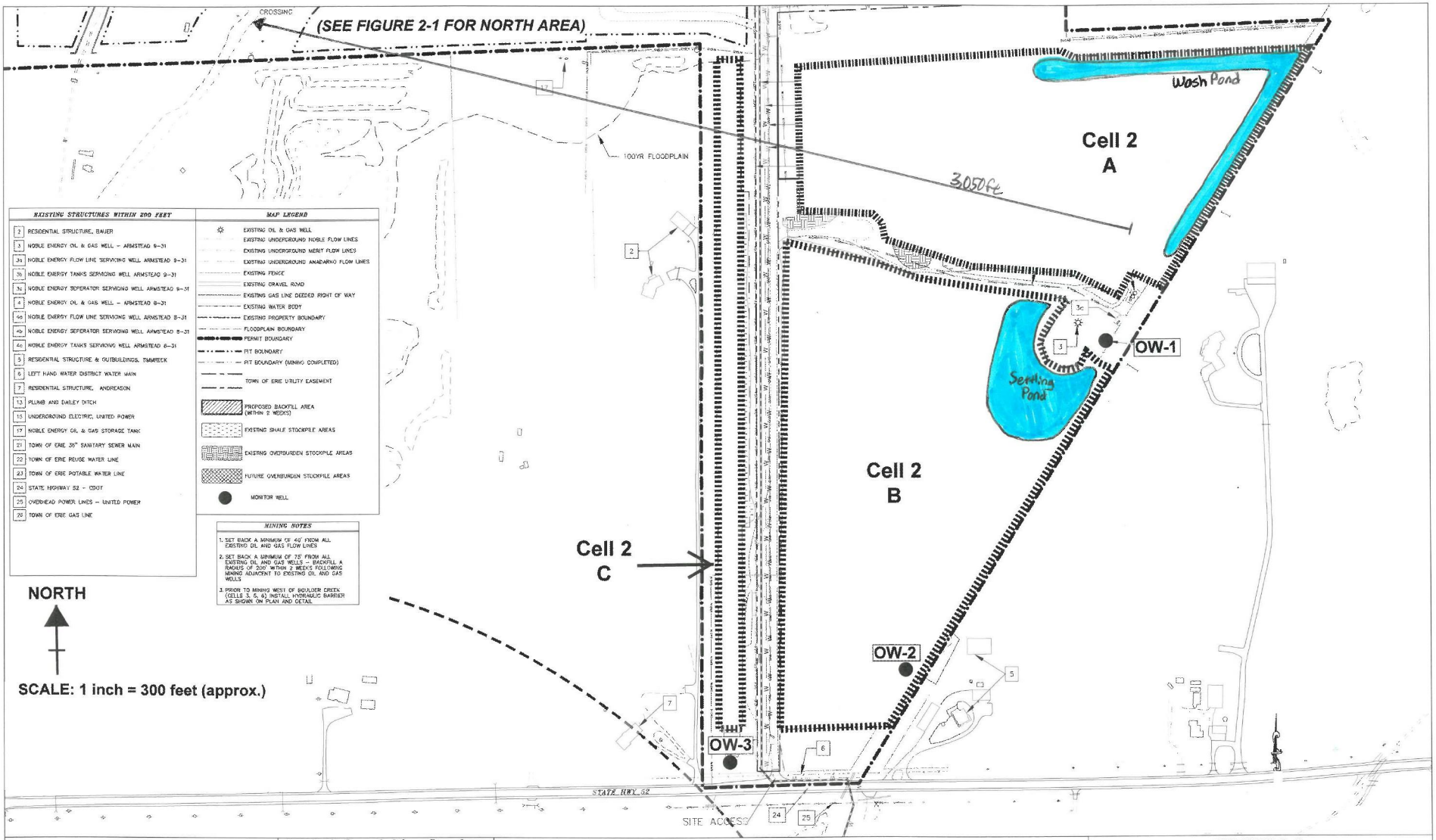
TURNPIKE MINING RESOURCE
TEMPORARY SUBSTITUTE WATER SUPPLY PLAN
PLAN YEAR 2023

PREPARED FOR: ASPHALT SPECIALTIES CO., INC.

FIGURE 2-1
SITE PLAN MAP - NORTH AREA

DRMS PERMIT #: M-2004-009 REV.

DRAWN BY: GRG DATE: 10/25/2022 SHEET 1 OF 2



REVISIONS			
REV	DESCRIPTION	DATE	APPROVED

Asphalt Specialties Co., Inc.
10100 Dallas Street
Henderson, CO 80640
Phone: 303-289-8555
Fax: 303-289-7707

TURNPIKE MINING RESOURCE
TEMPORARY SUBSTITUTE WATER SUPPLY PLAN
PLAN YEAR 2023

PREPARED FOR: ASPHALT SPECIALTIES CO., INC.

FIGURE 2-2
SITE PLAN MAP - SOUTH AREA

DRMS PERMIT #: M-2004-009 REV.

DRAWN BY: GRG DATE: 10/25/2022 SHEET 2 OF 2

TABLES

Turnpike Mining Resource **Table 1**

SWSP Plan Year 2023

Mean Climate Data

Month	Mean Tempurature 1994 - 2016[a] [°F]	Mean Precipitation 1994 - 2018[b] [inches]
January	31.29	0.41
February	32.71	0.44
March	41.34	0.88
April	47.47	1.92
May	56.35	2.27
June	66.54	1.30
July	72.13	1.08
August	70.32	1.05
September	62.06	1.40
October	49.94	1.07
November	38.97	0.61
December	30.38	0.40

Notes:

[a] = From DWR: LONGMONT SOUTH Station, NCWCD Data (1-1994 to 5-2016)

[b] = From DWR: LONGMONT SOUTH Station, NCWCD Data (1-1994 to 12-2018)

Turnpike Mining Resource
SWSP Plan Year 2023
Free Water Surface (FWS) Evaporative Water Depletions

Table 2

Cells 5 & 6:

FWS Sources	FWS Area
Pump Basin	0.6 acres
Dewatering Trench	0.15 acres

Length = 1,060 feet
Width = 6 feet

Cells 2A & 2B:

FWS Sources	FWS Area
Wash Pond	2.0 acres
Settling Pond	2.0 acres

Month - Year	Climate Data					Total FWS Area		FWS Net Evaporation		Total Evaporative Depletions
	(1) Gross FWS Evaporation [inches]	(2) Monthly Evaporation [%]	(3) Mean Precipitation [inches]	(4) Effective Precipitation [inches]	(5) Net Evaporation [inches]	(6) Cells 5 & 6 [acre]	(7) Cells 2A & 2B [acre]	(8) Cells 5 & 6 [acre-feet]	(9) Cells 2A & 2B [acre-feet]	(10) Sum of Water Evaporated [acre-feet]
January - 2023	*ice*	3.0%	0.41	0.29	0.00	0.75	4.00	0.00	0.00	0.00
February - 2023	39	3.5%	0.44	0.31	1.06	0.75	4.00	0.07	0.35	0.42
March - 2023	39	5.5%	0.88	0.62	1.53	0.75	4.00	0.10	0.51	0.61
April - 2023	39	9.0%	1.92	1.34	2.17	0.75	4.00	0.14	0.72	0.86
May - 2023	39	12.0%	2.27	1.59	3.09	0.75	4.00	0.19	1.03	1.22
June - 2023	39	14.5%	1.30	0.91	4.75	0.75	4.00	0.30	1.58	1.88
July - 2023	39	15.0%	1.08	0.76	5.09	0.75	4.00	0.32	1.70	2.02
August - 2023	39	13.5%	1.05	0.74	4.53	0.75	4.00	0.28	1.51	1.79
September - 2023	39	10.0%	1.40	0.98	2.92	0.75	4.00	0.18	0.97	1.15
October - 2023	39	7.0%	1.07	0.75	1.98	0.75	4.00	0.12	0.66	0.78
November - 2023	39	4.0%	0.61	0.43	1.13	0.75	4.00	0.07	0.38	0.45
December - 2023	*ice*	3.0%	0.40	0.28	0.00	0.75	4.00	0.00	0.00	0.00
TOTALS:		**100.0%**	**12.83**	**8.98**				**1.77**	**9.41**	**11.18**

Notes:

(1) = Gross free water surface evaporation from NOAA Technical Report NWS 33 [*ice* verified by temperature data from LONGMONT SOUTH Station, NCWCD Data (1-1994 to 5-2016)]

(2) = Evaporation monthly distribution for elevations below 6500 feet msl from *General Guidelines for Substitute Water Supply Plans for Sand and Gravel Pits*

(3) = Mean Precipitation from LONGMONT SOUTH Station, NCWCD Data (1-1994 to 12-2018)

(4) = Effective Precipitation = 70% Mean Precipitation per *General Guidelines for Substitute Water Supply Plans for Sand and Gravel Pits.*
= [Column (3) x 0.7]

(5) = [Column (1) x Column (2)] - Column (4)

(6) = Cell 5 & 6 Pump Basin Area + Dewatering Trench Area

(7) = Cell 2A & 2B Wash Pond Area + Settling Pond Area

(8) = [Column (5)/12] x Column (6)

(9) = [Column (5)/12] x Column (7)

(10) = Column (8) + Column (9)

Turnpike Mining Resource
SWSP Plan Year 2023
Operational Water Depletions

Table 3

Operational Depletion Sc	Amount
Sand & Gravel Aggregate	0 tons
Dust Control	1.76 acre-feet

Month - Year	Cells 5 & 6		Cells 2A & 2B	Operational Depletions		Total Operational Depletions
	(1) Monthly Aggregate Mined [tons]	(2) Water Extracted with Aggregate [acre-feet]	(3) Water Used for Dust Control [acre-feet]	(4) Cell 5 & 6 [acre-feet]	(5) Cells 2A & 2B [acre-feet]	(6) Sum of Operational Water Used [acre-feet]
January - 2023	0.00	0.00	0.08	0.00	0.08	0.08
February - 2023	0.00	0.00	0.08	0.00	0.08	0.08
March - 2023	0.00	0.00	0.10	0.00	0.10	0.10
April - 2023	0.00	0.00	0.14	0.00	0.14	0.14
May - 2023	0.00	0.00	0.19	0.00	0.19	0.19
June - 2023	0.00	0.00	0.22	0.00	0.22	0.22
July - 2023	0.00	0.00	0.22	0.00	0.22	0.22
August - 2023	0.00	0.00	0.22	0.00	0.22	0.22
September - 2023	0.00	0.00	0.19	0.00	0.19	0.19
October - 2023	0.00	0.00	0.14	0.00	0.14	0.14
November - 2023	0.00	0.00	0.10	0.00	0.10	0.10
December - 2023	0.00	0.00	0.08	0.00	0.08	0.08
TOTALS:	**0.00**	**0.00**	**1.76**	**0.00**	**1.76**	**1.76**

Notes:

(1) = Cells 5 & 6 estimated monthly portion of annual sand & gravel production (0 tons)

(2) = Water removed with mined product (assumes 4% water by mass per *General Guidelines for Substitute Water Supply Plans for Sand and Gravel Pits)*

= [Column (1) x (0.04) x (2,000 lbs./ton) x (1 ft^3/62.4 lbs.) x (1 acre-ft/43,560 ft^3)]

(3) = Predicted volume of water used for dust control

(4) = Total monthly water used for operations from Cells 5 & 6

(5) = Total monthly water used for operations from Cells 2A & 2B

(6) = Total operational water depletions

= Column (4) + Column (5)

Turnpike Mining Resource **Table 4**
SWSP Plan Year 2023
Dewatering Depletions

Month - Year	Cell 5 & 6 Estimated Monthly Dewatering	Total Estimated Dewatering
	(1) Average Pump Rate [gpm]	(2) Total Pumped Volume [acre-feet]
January - 2023	70	9.41
February - 2023	60	8.07
March - 2023	65	8.74
April - 2023	70	9.41
May - 2023	90	12.10
June - 2023	90	12.10
July - 2023	85	11.43
August - 2023	65	8.74
September - 2023	65	8.74
October - 2023	60	8.07
November - 2023	55	7.39
December - 2023	60	8.07
TOTALS:		**112.27**

Turnpike Mining Resource
SWSP Plan Year 2023
Unlagged/Lagged Source Depletions

Table 5

Location	Depletion Source(s)
Cell 5 & 6	Pump Basin & Dewatering Trench (Evaporative Depletions), Water Extracted with Aggregate Mined (Operational Depletion), and Pumped Volume (Dewatering Depletion)
Cell 2A & 2B	Wash Pond & Settling Pond (Evaporative Depletions) and Dust Control (Operational Depletions)
Cell 3	Remaining Lagged Depletions from Previous Mining and Dewatering of Cell 3
Cell 4	Remaining Lagged Depletions from Previous Mining and Dewatering of Cell 4

Month - Year	Unlagged Source Depletions			Lagged Source Depletions			Remaining Lagged Source Depletions				Net Water Depletions
	Cells 5 & 6		(3)	Cells 5 & 6		(6)	Cell 3		Cell 4		(11)
	(1) Mining [acre-feet]	(2) Dewatering [acre-feet]	Cell 2A & 2B [acre-feet]	(4) Mining [acre-feet]	(5) Dewatering [acre-feet]	Cell 2A & 2B [acre-feet]	(7) Mining [acre-feet]	(8) Dewatering [acre-feet]	(9) Mining [acre-feet]	(10) Dewatering [acre-feet]	Sum of Lagged Source Depletions [acre-feet]
January - 2023	0.00	9.41	0.08	0.04	8.68	0.99	0.0029	0.07	0.0001	0.0018	9.78
February - 2023	0.07	8.07	0.43	0.04	8.53	0.86	0.0024	0.06	0.0000	0.0005	9.50
March - 2023	0.10	8.74	0.61	0.07	8.53	0.76	0.0020	0.05	0.0000	0.0002	9.41
April - 2023	0.14	9.41	0.86	0.11	9.02	0.72	0.0016	0.04	0.0000	0.0000	9.88
May - 2023	0.19	12.10	1.22	0.16	10.65	0.72	0.0013	0.03	0.0000	0.0000	11.56
June - 2023	0.30	12.10	1.80	0.24	11.70	0.77	0.0011	0.03	0.0000	0.0000	12.73
July - 2023	0.32	11.43	1.92	0.29	11.64	0.89	0.0009	0.02	0.0000	0.0000	12.85
August - 2023	0.28	8.74	1.73	0.29	10.13	1.05	0.0008	0.02	0.0000	0.0000	11.49
September - 2023	0.18	8.74	1.16	0.24	9.12	1.18	0.0006	0.01	0.0000	0.0000	10.55
October - 2023	0.12	8.07	0.80	0.17	8.51	1.23	0.0005	0.01	0.0000	0.0000	9.92
November - 2023	0.07	7.39	0.48	0.11	7.85	1.20	0.0004	0.01	0.0000	0.0000	9.17
December - 2023	0.00	8.07	0.08	0.05	7.86	1.10	0.0003	0.01	0.0000	0.0000	9.02
TOTALS:	**1.77**	**112.27**	**11.17**	**1.80**	**112.23**	**11.47**	**0.0148**	**0.34**	**0.0001**	**0.0025**	**125.85**

Notes:

(1) = Cell 5 & 6 Depletions from Pump Basin & Dewatering Trench (Evaporative) and Water Extracted with Aggregate Mined (Operational)
= [Table 2 - Column (8)] + [Table 3 - Column (4)]

(2) = Depletions from Cells 5 & 6 Dewatering
= [Table 4 - Column (2)]

(3) = Depletions from Wash Pond and Settling Pond (Evaporative) and Dust Control (Operational)
= [Table 2 - Column (9)] + [Table 3 - Column (3)]

(4) = Column (1) Lagged (Real Time) Stream Depletions Using AWAS

(5) = Column (2) Lagged (Real Time) Stream Depletions Using AWAS

(6) = Column (3) Lagged (Real Time) Stream Depletions Using AWAS

(7) = Remaining IDS AWAS Lagged Depletions from previous mining of Cell 3

(8) = Remaining IDS AWAS Lagged Depletions from previous dewatering of Cell 3

(9) = Remaining IDS AWAS Lagged Depletions from previous mining of Cell 4

(10) = Remaining IDS AWAS Lagged Depletions from previous dewatering of Cell 4

(11) = Total Lagged Depletions
= Column (4) + Column (5) + Column (6) + Column (7) + Column (8) + Column (9) + Column (10)

Turnpike Mining Resource **Table 6**

SWSP Plan Year 2023

ASCI Replacement Water and Net Effect to Boulder Creek

Month	Net Water Depletions	Dewatering Water	Leased Water		Net Effect
	(1) Lagged Depletions (acre-feet)	(2) Water Pumped to Boulder Creek (acre-feet)	(3) City of Louisville Lease (acre-feet)	(4) After 15% Transit Loss (acre-feet)	(5) Boulder Creek (acre-feet)
January - 2023	9.78	9.41	1.75	1.49	1.12
February - 2023	9.50	8.07	2.00	1.70	0.27
March - 2023	9.41	8.74	1.00	0.85	0.18
April - 2023	9.88	9.41	1.00	0.85	0.38
May - 2023	11.56	12.10	1.00	0.85	1.39
June - 2023	12.73	12.10	2.00	1.70	1.07
July - 2023	12.85	11.43	4.00	3.40	1.98
August - 2023	11.49	8.74	5.00	4.25	1.50
September - 2023	10.55	8.74	3.50	2.98	1.16
October - 2023	9.92	8.07	3.00	2.55	0.70
November - 2023	9.17	7.39	2.50	2.13	0.35
December - 2023	9.02	8.07	2.00	1.70	0.75
TOTALS:	**125.85**	**112.27**	**28.75**	**24.44**	**10.85**

Notes:

(1) = Lagged Source Depletions [Table 5 - Column (11)]

(2) = Dewatering Water Pumped to Boulder Creek [Table 4 - Column (2)]

(3) = Lease Volumes from City of Louisville (submitted November 2022)

(4) = Lease Volumes after Transit Loss [Column (3) x 0.85]

Transit Loss = 0.15 (15%)

(5) = [Column (2) + Column (4)] - Column (1)

Positive Value = Creek Accretion

APPENDIX A
DWR TEMPERATURE & PRECIPITATION DATA

Data Type: Mean Temperature (degrees Fahrenheit [°F])
Station ID: 103
Station Name: LONGMONT SOUTH
Data Source: NCWCD
Data Range: 1-1994 to 5-2016

Year	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
January	32.18	30.5	25.97	27.4	33	35	33.27	30.02	30.21	36.75
February	28.95	35.6	34.72	31.2	34.51	39.21	38.94	29.3	33.41	29.28
March	42.73	39.67	36.58	42.39	37.57	43.25	40.88	39.85	34.34	42.08
April	46.61	43.31	48.69	42.15	46.28	43.77	49.99	49.05	50.27	50.18
May	59.78	49.81	58.23	57.01	59.43	54.96	60.04	56.33	55.2	56.46
June	70.57	61.24	67.37	66.47	62.46	65.01	66.62	68.18	69.72	62.67
July	69.77	69.22	70.72	71.21	72.26	73.32	73.9	74	75.71	74.08
August	70.63	72.41	68.47	69.55	70.23	69.52	71.37	70.35	69.61	71.24
September	63.27	59.37	59.53	63.97	65.98	57.91	62.11	63.32	62.52	58.25
October	49.22	49.21	50.44	49.82	49.77	50.39	49.22	50.24	43.85	54.04
November	34.66	42.35	36.71	35.38	42.57	44.48	30.18	40.83	37.39	36.16
December	32.15	33.87	34.38	31.25	28.28	35.39	28.19	32.35	34.03	31.96

Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
January	31.37	32.66	38.16	21.62	27.43	35.01	29.14	29.6	36.93	30.78
February	31.61	36.94	31.09	29.8	34.02	36.73	27.98	28.63	30.43	30.38
March	46.53	40.27	38.26	45.97	39.87	41.45	41.21	43.3	49.35	39.33
April	46.95	47.39	51.81	46.33	45.94	45.79	47.43	48.37	53.77	42.68
May	58.2	56.68	59.33	56.85	55.63	58.32	52.88	53.06	59.32	58
June	61.43	65.04	70.39	66.85	65.41	63.53	67.11	67.07	73.33	69.78
July	68.93	73.56	73.85	73.71	72.96	68.98	71.31	74.42	76.04	72.06
August	65.83	68.85	69.81	72.15	68	68.12	71.32	74.23	72.93	71.75
September	60.6	63.43	56.85	63.23	59.57	60.97	63.18	62.57	65.01	63.89
October	50.03	51.13	48.64	52.18	49.88	42.11	53.57	51.36	48.94	46.07
November	37.82	42.65	39.64	40.95	42.08	41.09	37.76	39.49	41.98	39.7
December	34.42	30.71	30.62	24.84	26.7	22.46	34.2	26.32	30.61	27.42

Year	2014	2015	2016
January	29.07	33.62	29.98
February	28.22	33.67	37.78
March	40.25	44.6	40.99
April	48.59	48.43	47.95
May	55.92	52.19	52.34
June	64.91	68.65	--
July	65.41	71.43	--
August	68.76	71.82	--
September	63.21	66.62	--
October	54.1	54.54	--
November	35.56	37.84	--
December	29.37	28.91	--

Month	MIN (°F)	MAX (°F)	MEAN (°F)
January	**21.62**	**38.16**	**31.29**
February	**27.98**	**39.21**	**32.71**
March	**34.34**	**49.35**	**41.34**
April	**42.15**	**53.77**	**47.47**
May	**49.81**	**60.04**	**56.35**
June	**61.24**	**73.33**	**66.54**
July	**65.41**	**76.04**	**72.13**
August	**65.83**	**74.23**	**70.32**
September	**56.85**	**66.62**	**62.06**
October	**42.11**	**54.54**	**49.94**
November	**30.18**	**44.48**	**38.97**
December	**22.46**	**35.39**	**30.38**

Data Type: Mean Precipitation (inches [in])
Station ID: 103
Station Name: LONGMONT SOUTH
Data Source: NCWCD
Data Range: 1-1994 to 12-2018

Year	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
January	0.43	0.28	1.1	0.48	0.11	0.25	0.24	0.53	0.62	0.01
February	0.61	0.62	0.13	0.71	0.22	0.06	0.21	0.36	0.38	0.53
March	0.76	0.57	1.18	0.44	1.45	0.56	1.07	1.24	0.57	1.65
April	2.29	2.21	0.58	3.23	2.47	5.1	0.67	2.08	0.18	1.76
May	0.61	6.07	2.72	1.16	0.73	1.18	1.8	2.6	2.16	1.92
June	1.23	3.71	1.76	3.04	0.75	0.49	0.68	0.68	0.94	2.28
July	0.37	0.29	2.06	1.21	0.82	2.12	1.15	1.02	0.04	0.32
August	0.91	0.47	0.63	2.14	0.96	1.08	0.69	0.56	0.6	2.71
September	0.71	1.2	3.52	1	0.25	1.39	1.58	0.21	0.97	0.32
October	1.46	0.13	0.39	1.25	1.07	0.65	0.48	0.15	1.04	0.03
November	1.51	0.55	0.62	0.68	0.68	0.62	0.56	0.59	0.5	0.63
December	0.28	0.07	0.18	0.38	0.66	0.33	0.28	0.2	0.03	0.36

Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
January	0.62	0.84	0.21	0.54	0.05	0.16	0.34	0.26	0.15	0.16
February	0.43	0.21	0.22	0.34	0.27	0.13	0.75	0.43	0.72	0.62
March	0.31	1.14	0.98	1.42	0.72	0.76	1.16	0.19	0	0.77
April	3	2.13	0.42	1.65	0.45	2.79	2.93	1.88	0.95	2.3
May	1.1	1.54	0.6	1.26	2.07	1.86	1.61	3.95	1.55	1.76
June	2.53	2.49	0.21	0.22	1.21	1.93	1.72	0.79	0.28	0.33
July	2.2	0.49	2.24	0.53	0	1.3	1.06	2.28	1.57	0.66
August	2.17	1.66	0.67	1.31	2.24	0.09	0.65	0.41	0.11	1.24
September	2.27	0.32	0.65	2.07	1.52	0.38	0.1	1.49	1.13	8.88
October	0.8	2.4	2.39	1.22	0.32	1.69	0.82	1.36	0.99	1.19
November	1.13	0.21	0.46	0.26	0.32	0.64	0.54	0.39	0.34	0.21
December	0.16	0.22	0.99	1.02	0.51	0.94	0.27	0.71	0.17	0.27

Year	2014	2015	2016	2017	2018
January	1.01	0.23	0.39	0.91	0.32
February	0.28	1.33	0.66	0.25	0.61
March	0.98	0.32	1.53	0.87	1.47
April	0.99	3.24	2.09	1.61	0.92
May	2.01	6.28	0.61	4.79	4.81
June	0.47	1.12	--	0.12	2.28
July	0.93	0.82	--	0.23	2.15
August	0.72	0.66	--	1.39	1.24
September	1.27	0.09	--	1.66	0.59
October	0.84	1.91	--	1.83	1.16
November	0.55	1.75	--	0.45	0.55
December	0.56	0.73	--	0.28	0.1

Month	MIN (in)	MAX (in)	MEAN (in)
January	**0.01**	**1.10**	**0.41**
February	**0.06**	**1.33**	**0.44**
March	**0.00**	**1.65**	**0.88**
April	**0.18**	**5.10**	**1.92**
May	**0.60**	**6.28**	**2.27**
June	**0.12**	**3.71**	**1.30**
July	**0.00**	**2.28**	**1.08**
August	**0.09**	**2.71**	**1.05**
September	**0.09**	**8.88**	**1.40**
October	**0.03**	**2.40**	**1.07**
November	**0.21**	**1.75**	**0.61**
December	**0.03**	**1.02**	**0.40**

APPENDIX B
IDS AWAS MODEL INPUTS AND OUTPUTS

Turnpike Mining Resource
SWSP 2023
IDS AWAS Model Inputs and Outputs

Model Parameters

(1) Well Name	(2) Boundary Condition	(3) W to Boundary [ft]	(4) Transmissivity [gpd/ft]	(5) Specific Yield	(6) Distance to Well [ft]
Cell 2A & 2B	Alluvial Aquifer	3,400	44,883	0.2	3,050
Cell 3 Mining	Alluvial Aquifer	3,400	44,883	0.2	1,065
Cell 3 Dewatering	Alluvial Aquifer	3,400	44,883	0.2	1,065
Cell 4 Mining	Alluvial Aquifer	1,350	44,883	0.2	275
Cell 4 Dewatering	Alluvial Aquifer	1,350	44,883	0.2	275
Cell 5 & 6 Mining	Alluvial Aquifer	1,350	44,883	0.2	600
Cell 5 & 6 Dewatering	Alluvial Aquifer	1,350	44,883	0.2	600

Notes:

(1) Well Name: Modeled Depletion Category
(2) Type of Aquifer: Alluvial with Boundary
(3) Distance from the River to the Boundary of the Gravel Deposit
(4) Transmissivity Value Based on SEO Recommended Value
(5) Specific Yield Based on SEO Recommended Value
(6) Distance from the Well to the Boulder Creek

cfs = cubic foot per second
ft = feet
gpd = gallons per day
gpm = gallons per minute

Cell 2A & 2B	Model Inputs		Model Outputs		
Month - Year	Pumping Rate [gpm]	Time On [month]	Dep. Rate (cfs)	Vol. of Dep. [acre-feet]	Vol. of Dep. This Step [acre-feet]
January - 2023	0.60	1.0	0.0154	65.27	0.99
February - 2023	3.22	1.0	0.0133	66.13	0.86
March - 2023	4.54	1.0	0.0121	66.90	0.76
April - 2023	6.41	1.0	0.0117	67.61	0.72
May - 2023	9.08	1.0	0.0122	68.33	0.72
June - 2023	13.40	1.0	0.0136	69.10	0.77
July - 2023	14.27	1.0	0.0161	69.99	0.89
August - 2023	12.87	1.0	0.0186	71.04	1.05
September - 2023	8.65	1.0	0.0202	72.22	1.18
October - 2023	5.95	1.0	0.0203	73.45	1.23
November - 2023	3.55	1.0	0.0192	74.64	1.20
December - 2023	0.60	1.0	0.0173	75.75	1.10

Cell 3 Mining	Model Inputs		Model Outputs		
Month - Year	Pumping Rate [gpm]	Time On [month]	Dep. Rate (cfs)	Vol. of Dep. [acre-feet]	Vol. of Dep. This Step [acre-feet]
January - 2023	0.00	1.0	0.0000	26.3738	0.0029
February - 2023	0.00	1.0	0.0000	26.3762	0.0024
March - 2023	0.00	1.0	0.0000	26.3782	0.0020
April - 2023	0.00	1.0	0.0000	26.3798	0.0016
May - 2023	0.00	1.0	0.0000	26.3812	0.0013
June - 2023	0.00	1.0	0.0000	26.3823	0.0011
July - 2023	0.00	1.0	0.0000	26.3832	0.0009
August - 2023	0.00	1.0	0.0000	26.3840	0.0008
September - 2023	0.00	1.0	0.0000	26.3846	0.0006
October - 2023	0.00	1.0	0.0000	26.3851	0.0005
November - 2023	0.00	1.0	0.0000	26.3855	0.0004
December - 2023	0.00	1.0	0.0000	26.3859	0.0003

Cell 3 Dewatering	Model Inputs		Model Outputs		
Month - Year	Pumping Rate [gpm]	Time On [month]	Dep. Rate (cfs)	Vol. of Dep. [acre-feet]	Vol. of Dep. This Step [acre-feet]
January - 2023	0.00	1.0	0.001	293.81	0.07
February - 2023	0.00	1.0	0.0008	293.86	0.06
March - 2023	0.00	1.0	0.0007	293.91	0.05
April - 2023	0.00	1.0	0.0006	293.95	0.04
May - 2023	0.00	1.0	0.0005	293.98	0.03
June - 2023	0.00	1.0	0.0004	294.00	0.03
July - 2023	0.00	1.0	0.0003	294.02	0.02
August - 2023	0.00	1.0	0.0003	294.04	0.02
September - 2023	0.00	1.0	0.0002	294.06	0.01
October - 2023	0.00	1.0	0.0002	294.07	0.01
November - 2023	0.00	1.0	0.0001	294.08	0.01
December - 2023	0.00	1.0	0.0001	294.08	0.01

Cell 4 Mining	Model Inputs		Model Outputs		
Month - Year	Pumping Rate [gpm]	Time On [month]	Dep. Rate (cfs)	Vol. of Dep. [acre-feet]	Vol. of Dep. This Step [acre-feet]
January - 2023	0.00	1.0	0.0000	7.2155	0.0001
February - 2023	0.00	1.0	0.0000	7.2155	0.0000
March - 2023	0.00	1.0	0.0000	7.2155	0.0000
April - 2023	0.00	1.0	0.0000	7.2155	0.0000
May - 2023	0.00	1.0	0.0000	7.2155	0.0000
June - 2023	0.00	1.0	0.0000	7.2155	0.0000
July - 2023	0.00	1.0	0.0000	7.2155	0.0000
August - 2023	0.00	1.0	0.0000	7.2155	0.0000
September - 2023	0.00	1.0	0.0000	7.2155	0.0000
October - 2023	0.00	1.0	0.0000	7.2155	0.0000
November - 2023	0.00	1.0	0.0000	7.2155	0.0000
December - 2023	0.00	1.0	0.0000	7.2155	0.0000

Cell 4 Dewatering	Model Inputs		Model Outputs		
Month - Year	Pumping Rate [gpm]	Time On [month]	Dep. Rate (cfs)	Vol. of Dep. [acre-feet]	Vol. of Dep. This Step [acre-feet]
January - 2023	0.00	1.0	0.0000	158.5190	0.0018
February - 2023	0.00	1.0	0.0000	158.5190	0.0005
March - 2023	0.00	1.0	0.0000	158.5200	0.0002
April - 2023	0.00	1.0	0.0000	158.5200	0.0000
May - 2023	0.00	1.0	0.0000	158.5200	0.0000
June - 2023	0.00	1.0	0.0000	158.5200	0.0000
July - 2023	0.00	1.0	0.0000	158.5200	0.0000
August - 2023	0.00	1.0	0.0000	158.5200	0.0000
September - 2023	0.00	1.0	0.0000	158.5200	0.0000
October - 2023	0.00	1.0	0.0000	158.5200	0.0000
November - 2023	0.00	1.0	0.0000	158.5200	0.0000
December - 2023	0.00	1.0	0.0000	158.5200	0.0000

Cell 5 & 6 Mining	Model Inputs		Model Outputs		
Month - Year	Pumping Rate [gpm]	Time On [month]	Dep. Rate (cfs)	Vol. of Dep. [acre-feet]	Vol. of Dep. This Step [acre-feet]
January - 2023	0.00	1.0	0.0003	2.04	0.04
February - 2023	0.49	1.0	0.0009	2.08	0.04
March - 2023	0.71	1.0	0.0014	2.15	0.07
April - 2023	1.01	1.0	0.002	2.26	0.11
May - 2023	1.44	1.0	0.0029	2.42	0.16
June - 2023	2.21	1.0	0.0044	2.66	0.24
July - 2023	2.37	1.0	0.0051	2.95	0.29
August - 2023	2.11	1.0	0.0048	3.24	0.29
September - 2023	1.36	1.0	0.0034	3.48	0.24
October - 2023	0.92	1.0	0.0024	3.64	0.17
November - 2023	0.53	1.0	0.0015	3.75	0.11
December - 2023	0.00	1.0	0.0004	3.80	0.05

Cell 5 & 6 Dewatering	Model Inputs		Model Outputs		
Month - Year	Pumping Rate [gpm]	Time On [month]	Dep. Rate (cfs)	Vol. of Dep. [acre-feet]	Vol. of Dep. This Step [acre-feet]
January - 2023	70.00	1.0	0.1501	55.75	8.68
February - 2023	60.00	1.0	0.1373	64.28	8.53
March - 2023	65.00	1.0	0.1432	72.81	8.53
April - 2023	70.00	1.0	0.1529	81.83	9.02
May - 2023	90.00	1.0	0.189	92.48	10.65
June - 2023	90.00	1.0	0.1972	104.18	11.70
July - 2023	85.00	1.0	0.1911	115.83	11.64
August - 2023	65.00	1.0	0.1559	125.96	10.13
September - 2023	65.00	1.0	0.1481	135.08	9.12
October - 2023	60.00	1.0	0.1373	143.59	8.51
November - 2023	55.00	1.0	0.1262	151.44	7.85
December - 2023	60.00	1.0	0.1321	159.30	7.86

Turnpike Mining Resource
ASCI Replacement Water & Net Effect to Boulder Creek
Revised Table 6

Month	Net Lagged Depletions	Dewatering Credit	City of Louisville Leased Water*	Actual Net River Balance
	[ac-ft]	[ac-ft]	[ac-ft]	[ac-ft]
Jan	9.78	9.41	6.75	6.38
Feb	9.50	8.07	3.50	2.07
Mar	9.41	8.74	2.75	2.08
Apr	9.88	9.41	2.75	2.28
May	11.56	12.10	3.25	3.79
Jun	12.73	12.10	4.25	3.62
Jul	12.85	11.43	5.00	3.58
Aug	11.49	8.74	5.00	2.25
Sep	10.55	8.74	4.50	2.69
Oct	9.92	8.07	3.75	1.90
Nov	9.17	7.39	3.00	1.22
Dec	9.02	8.07	2.50	1.55
Total	**125.85**	**112.27**	**47.00**	**33.42**

*Includes 15% Transit Loss

City of Louisville | Department of Public Works
COLORADO • SINCE 1882

February 6, 2023

Daniel W. Hunt, President
Asphalt Specialties Co., Inc.
10100 Dallas St.
Henderson, CO. 80640

[via email]

Subject: Annual Lease of Reuse Water for Turnpike Mining Resource, DRMS Permit No. M-2004-009, Located in Weld County, Colorado

Dear Mr. Hunt:

This is to confirm our arrangement (this "Agreement") regarding the lease of fully consumable, reusable water ("Leased Water") discharged to Coal Creek or alternate points in the Boulder Creek Basin by the City of Louisville (the "City") to be used by Asphalt Specialties Co., Inc. ("Lessee"), sometimes hereafter referred to as "Party" in the singular or "Parties" in the plural.

BACKGROUND

Pursuant to the terms and conditions of the decree entered in Case No. 92CW079, District Court, Water Division No. 1 (the "Decree"), the City can make additional and successive uses of its municipal return flow credits from the fully consumable portion of the City's decreed water rights upon approval by the Office of the State Engineer ("SEO") prior to implementation.

To obtain the necessary approval from the SEO for the Leased Water to be used by Lessee, the City submitted its request for a Substitute Water Supply Plan ("SWSP") pursuant to C.R.S. § 37-92-308(5) on November 29, 2022 ("City SWSP"). The requested period of operation for the City SWSP is March 1, 2023 through February 28, 2024.

Lessee intends to use the Leased Water for the purpose of replacing depletions to Boulder Creek in the amounts calculated in the SWSP for mining activities at the Turnpike Mining Resource - Colorado Division of Reclamation, Mining, and Safety (DRMS) Permit #: M-2004-009. Lessee will file with the SEO a request to renew its SWSP pursuant to C.R.S. § 37-92-308(5) by November 1, 2022 ("Lessee SWSP"). The requested period of operation for the Lessee SWSP is January 1, 2023 through December 31, 2023.

For and in consideration of the covenants provided for in this Agreement, the parties agree as follows:

1) Term of Lease. Subject to SEO approvals described in paragraph 7, below, this Agreement shall be effective for a 12-month period beginning on January 1, 2023 and ending on December 31, 2023.

2) Good Faith Negotiations. The Parties hereto desire to discuss satisfactory terms to make fully consumable, reusable water available to Lessee in future years and hereby agree to negotiate in good faith to enter into future annual lease agreements, subject to and in accordance with C.R.S. § 37-92-308.

3) Lease Price. Payment for the lease is $500 per acre-foot (AF) during the term of this lease. The Replacement Schedule (as provided by Lessee) is attached showing the delivery schedule of reuse water to be released by the City. Payment shall be due and owing to the City upon execution of this letter for the lease of reusable water during the term of this lease. The cost for the term of the lease has been calculated to be $23,500.00.

4) Delivery of Water. The City will deliver fully consumable, reusable water into the Boulder Creek Basin at Louisville's discharge point on Coal Creek, or at other points in the Boulder Creek Basin designated by the City and acceptable to the District 6 Water Commissioner to meet the requested needs of Lessee, per the Replacement Schedule, attached. Notwithstanding any other provision in this Agreement, the City's obligation to provide Leased Water to Lessee is expressly conditioned on the legal and physical availability of reuse water under the City's decrees and water rights and shall be subordinate to the City's water needs.

5) The fully consumable, reusable water can be provided from any of the City's decreed water rights that contain fully consumable and reusable credits. Monthly deliveries will be accounted for daily during the irrigation season and on the last day(s) of the month during the non-irrigation season. Deliveries will be made in hundredths (0.00) of an acre-foot increment. The City will provide the Lessee with monthly accounting for the reuse water delivered to the system on behalf of the Lessee. Lessee is solely responsible for meeting the terms, conditions and reporting requirements of the Lessee SWSP.

6) Lessee is responsible for calculating transit losses, including transit losses in the replacement schedule and for assuring delivery of the reuse water to the required point of return.

7) State Engineer Approval. The Parties expressly acknowledge that SEO approval pursuant to section 37-92-308, C.R.S. is necessary to put the Leased Water to the intended use. Use of the Leased Water under this Agreement is expressly conditioned on SEO approval of the City SWSP and the Lessee SWSP. All terms and conditions of SEO approved SWSPs shall be incorporated into this Agreement.

   a. The City is responsible for obtaining the approvals necessary to lease its fully consumable effluent under the terms and conditions of the Decree. All expenses associated with such approval(s), including engineering, legal and filing fees associated with the City SWSP, will be the sole responsibility of the Lessee and Lessee agrees to reimburse the City for such expenses actually incurred by the City. The City will provide Lessee with a copy of any approvals.

b. Lessee is responsible for obtaining any approvals necessary for Lessee's proposed use of the Leased Water. All expenses associated with such approval(s) will be the sole responsibility of the Lessee. All such approvals shall be done in such a manner that they will not burden the City's use of the reuse water after the end of the lease term or in the event of Lessee's breach of this Agreement. No such plan or approval sought by Lessee for use of the Leased Water may involve a change or review of the City's water rights in Water Court. The City will cooperate with Lessee to obtain any such approvals, at no cost to the City. Lessee will provide the City with a copy of any approvals.

8) Notices. All required notices shall be in writing and shall be deemed given to a Party when a copy thereof, addressed to such Party is provided herein, is actually received, by personal delivery, certified mail, commercial courier or a successful facsimile transmission at the address or facsimile number of such Party provided below. All notices to Lessee shall be address to Lessee at the following address and facsimile number or such other addresses or facsimile numbers which Lessee provides to the City:

Daniel W. Hunt, President
Asphalt Specialties Co., Inc.
10100 Dallas St.
Henderson, CO 80640
Telephone: (303) 289-8555
Facsimile: (303) 289-7707

All notices to the City shall be addressed to the following physical or email address or such other addresses or facsimile numbers which the City provides to Lessee:

City of Louisville
c/o Cory Peterson
749 Main Street
Louisville, CO 80027
Telephone: (303) 335-4610
Email: cpeterson@louisvilleco.gov

9) Warranties and Cooperation. The City makes no warranties as to quality of the reuse water. If, through no fault of the City, reuse water cannot physically or legally be delivered as provided in this Agreement, Lessee's sole remedy shall be to either cancel this Agreement and receive a refund for water not delivered or receive a prorated refund for future undeliverable water in proportion to the amount of water physically and legally unavailable. This Agreement does not preclude the City from entering into other reuse water lease agreements.

10) Assignment. Neither Party may assign this Agreement without the prior written approval of the other Party hereto, which approval shall not be unreasonably withheld.

11) Binding Effect. The agreements and obligations contained herein shall extend to, bind and inure to the benefit of the Parties hereto, as well as their respective successors and assigns.

12) Entire Agreement. This Agreement constitutes the entire agreement between the Parties pertaining to the subject matter contained herein and supersedes all prior agreements, representations and understandings of the Parties. No supplement, modification or amendment of this Agreement shall be binding unless executed in writing by the Parties hereto. No waiver of any of the provisions of this Agreement shall be deemed, or shall constitute, a waiver of any other provision, whether or not similar, nor shall any waiver constitute a continuing waiver.

13) Responsibility for Use and Indemnification. Lessee shall bear all responsibility for its use of the Leased Water upon the City's delivery of the Leased Water under this Agreement, together with all costs associated with that use. Lessee agrees to and shall indemnify, defend, save and hold harmless the City and its officers, employees and agents, against any and all claims, damages, liability and court awards including costs, expenses and attorney's fees, arising from Lessee's use of the Leased Water.

14) Governmental Immunity. No terms or conditions of this Agreement shall be construed or interpreted as a waiver, either expressed or implied, of the monetary limitations on liability or any of the immunities, rights, benefits or protections provided to the City under the Colorado Governmental Immunity Act, 5 24-1,0-101, *et seq*. C.R.S., as it shall be amended from time to time.

15) Attorney Fees. In the event of litigation or other dispute resolution process arising out of this Agreement the prevailing party shall be awarded its costs and expenses including attorneys' fees.

Agreed to as of the 14th day of Feb, 2023.

The City
Cory Peterson, Deputy Director of Utilities
City of Louisville

Lessee
Daniel W. Hunt, President
Asphalt Specialties Co., Inc.

Attachment: Replacement Schedule

ASPHALT SPECIALTIES CO., INC.
REPLACEMENT SCHEDULE
January 2023 – December 2023

Turnpike Mining Resource (DRMS Permit No. M-2004-009)
Located in Weld County, Colorado

Month	Required Deliveries (including 15% Transit Loss) [acre-ft]	Price per acre-foot [dollars]	Total Price [$]
January – 2023	6.75	$500.00	$3,375.00
February – 2023	3.50	$500.00	$1,750.00
March – 2023	2.75	$500.00	$1,375.00
April – 2023	2.75	$500.00	$1,375.00
May – 2023	3.25	$500.00	$1,625.00
June – 2023	4.25	$500.00	$2,125.00
July – 2023	5.00	$500.00	$2,500.00
August – 2023	5.00	$500.00	$2,500.00
September – 2023	4.50	$500.00	$2,250.00
October – 2023	3.75	$500.00	$1,875.00
November – 2023	3.00	$500.00	$1,500.00
December – 2023	2.50	$500.00	$1,250.00
TOTAL	**47.00 acre-ft**		**$23,500.00**

NOTES:
(1) Replacement Schedule provided by Asphalt Specialties Co., Inc.
(2) Amounts returned are in hundredth of a unit (0.00) - AF or cfs.
(3) Required Deliveries is the total amount to be returned and includes transit losses and all other required amounts.

COLORADO
Division of Water Resources
Department of Natural Resources

Augmentation Plan Accounting Protocol
June 2022

Accounting is an administrative tool to confirm water use is in accordance with a decree or other approval including that any required replacement is made to the stream system at the correct time, location, and amount. This guideline is subordinate to any decree language or Division Engineer specific accounting requirements. It describes basic augmentation plan accounting scenarios. Accounting for more complex scenarios can build on the fundamentals described herein.

Contents

1. Background and definitions

A thorough description of augmentation plans for well pumping is available in the Beginners Guide to Augmentation Plans for Wells. The following terms are used in this document:

- **Diversions** are withdrawals from a well, stream, or pond/reservoir.
- **Depletions** are the volume of reduced streamflow caused by a diversion. Lagged depletions are those that occur at a later time than when water is diverted by well pumping or groundwater pond evaporation due to the timing of water movement through the subsurface between the well/groundwater pond and the stream.
- **Hydrobase** is DWR's database of water information.
- **Colorado's Decision Support Systems ("CDSS")** is a State of Colorado website (https://cdss.colorado.gov/) providing access to water data and tools.
- **Replacement water** is a volume of water provided to the stream system to replace depletions and satisfy the unmet needs of senior water rights. Replacement water is typically provided from a reservoir release or another source that has been contracted for the purpose of replacing depletions. Replacement water may also be provided in the form of historic consumptive use ("HCU") credits derived from a change of water right where the use of a water right was changed to augmentation.
- **Transit loss** is the diminishment of the amount of water in a stream as water travels from upstream to the downstream location.
- **Priority Admin Number** indicates the seniority of a water right; equal to the number of days between a water right's priority date and the earliest decreed priority, December 31, 1849. For example, the Priority Admin Number for a water right with a priority date of May 5, 1950 is 36650.00000. The lower the Priority Admin Number, the more senior the water right. The five digits to the right of the period are used when the postponement doctrine applies to a water right due to a delay in decreeing the water right in the court (read more about this in the Administrative Call Standard, Appendix A).
- **Administrative Call** is a term that indicates there are unfulfilled downstream water rights "calling" for curtailment of upstream junior water rights to fulfill their need. In accounting, when the downstream Administrative Call is from a senior water right (with a lower Priority Admin Number), diversions/depletions are out-of-priority and replacement water must be provided.
- **Balance** is the amount of replacement water minus the depletions and obligations, not considering the Administrative Call. The balance may be negative when the diversions resulting in the depletions are in priority.
- **Net Effect** is the amount of replacement water minus the depletions and obligations, considering the Administrative Call. When the net effect is zero or positive, it shows that the Augmentation Plan prevented injury by replacing all out-of-priority diversions/depletions.

2. Methods to submit accounting

a. Accounting and Reporting Uploader (preferred)

The preferred method to submit accounting is through the use of the CDSS Accounting and Reporting Uploader tool. To set up an online account, call or email the Division contacts for the appropriate Water Division as shown in Table 1. Additional information is available on DWR's website under Data and Information/Online Data Submittal.

b. Email

Submit via email to the Water Commissioner and the Division Accounting email shown in Table 1. File names for accounting sheets should include the 7 digit Augmentation Plan WDID assigned by the Division Engineer's office.

3. Timing of accounting submittal

Accounting must be submitted as specified by your decree, DWR administrative approval (SWSP, Replacement Plan, etc.), or as requested by the Division Engineer or designated representative(s). If timing is not specified, submit accounting with the timing shown in Table 1.[1]

Table 1. Accounting Submittal Emails and Phone Number by Division

Division	Accounting Question & Submittal Email	Contact Phone Number	Standard Submittal Timing
1 - South Platte	Div1Accounting@state.co.us	970-352-8712	30 days after the end of the reporting month
2 - Arkansas	water.reporting@state.co.us	719-542-3368	10 days after the end of the reporting month*
3 - Rio Grande	kevin.boyle@state.co.us	719-589-6683	10 days after the end of the reporting month
4 - Gunnison	greg.powers@state.co.us	970-249-6622	10 days after the end of the reporting month
5 - Colorado	dnr_div5acct@state.co.us	970-945-5665	10 days after the end of the reporting month
6 - Yampa/White	brian.romig@state.co.us	970-846-0036	Annually by November 15 or as needed upon request
7 - San Juan/ Dolores	dnr_div7acct@state.co.us	970-247-1845	10 days after the end of the reporting month**
Designated Ground Water Basins	chris.grimes@state.co.us	303-866-3851 ext. 8253	Annually by February 15 for the prior year

*for approvals deemed critical for administration; all others (including simple subdivisions) bi-annual readings before and after the irrigation season

**for approvals deemed critical for administration; annual submittals for others

[1] For proper administration, Water Commissioners may request regular and direct submission of water data in addition to accounting submittals described herein.

4. Overall organization of accounting spreadsheet and required information per tab

a. Overall organization

The following are typical spreadsheet tab names in accounting. See the example and screenshots section for an overview of what this might look like:

i. Contact/Plan Information tab
ii. Input tab(s)
iii. Depletions & Obligations tab
iv. Replacement tab
v. Summary tab
vi. DWR tab
vii. DWR Meters tab
viii. Version/Notes tab

Fewer or additional tabs as necessary for more simple or complex accounting, subject to approval by the Division Engineer

b. Contact/Plan Information Tab

The accounting must provide the contact information including name and email address for:

i. The party(s) responsible for submitting the accounting
ii. The plan administrator and/or the plan attorney
iii. Water court case number (format of YYCWXXXX), SWSP name and 4-digit Plan ID, or Ground Water Commission Order represented in the accounting.
iv. The 7-digit overall WDID(s) associated with the augmentation plan (not the individual structure WDIDs).[2]

c. Input Tab(s)

When possible, all cells showing diversion of water (well pumping and stream diversions) should be located on one or multiple input tabs as shown below. Cells with regular input, such as meter readings and reservoir releases, should be shaded a specifically identified color to distinguish them from cells that use formulas to convert or summarize the input.

Depending on the specific operation, the following may be included on Input tabs:

i. Estimated water use or evaporation:

When meters or measurement structures are not required, water consumption is estimated based on counts (number of homes, number of domestic animals, acreage of pond surface area, etc.) multiplied by a factor. Include a column or row for each of the following that are relevant to the augmentation plan:

1. Type of use: single family dwellings, domestic animals, area of lawn and garden (include units - square feet or acres), area of pond evaporation (include units - square feet or acres), etc.
2. Count or area input value for each type: the number of homes or domestic animals or the area (square footage or acres of home lawn and garden irrigation or pond surface evaporation). [this is the "Input" that could change regularly]

[2] Colorado Decision Support System Tools (https://dwr.state.co.us/Tools) can be used to find WDIDs (see Structures), court case numbers (see Water Rights), and other supporting information.

3. Factor to convert input to consumption in acre-feet.
4. Acre-feet of consumption.

ii. Well diversion data using flow meters:

Enter raw readings or measurements (e.g., from totalizing flow meters) and how those raw readings or measurements are converted to volumes of water. There should be one row or column for each well with a meter as described below. Once the spreadsheet formulas have been established, generally only the meter reading is entered with every submittal. The well and meter information may be located in a separate well & meter information tab (see example and screenshots section).

1. Well WDID
2. Well Permit Number
3. Priority Admin Number
4. Flow Meter Serial Number
5. Reading Date
6. Reading[3] [this is the "Input" that will change regularly]
   Enter reading exactly as shown on the face of the meter as a non-negative integer.
7. Comment
   a. When a meter rolls over (such as from 999 to 000), is replaced or reset[4] , add a comment stating the old meter serial number, the maximum number before the rollover or replacement and then enter the number on the face of the meter at the end of the reporting period. Update the meter information section with the new meter's serial number.
8. Meter information:
   a. Make
   b. Model
   c. The units represented by the digits on the meter (such as gallons or acre-feet)
   d. Multiplier for meter reading (if applicable)
      i. Residential well meters typically have a multiplier of 1.0 with units of gallons. Readings should generally report all numbers on the face of the meter (including non-rotating digits) with a multiplier of 1.0.
      ii. Larger agricultural or commercial wells typically read in acre-feet and typically have a decimal multiplier. For instance, with a multiplier of 0.001, a meter reading of 123456 represents 123.456 acre-feet.
   e. Correction factor
      i. This is a multiplier used when a meter test shows a need to correct the installed meter to an accurate reading. This will be 1.0 when there is not a test showing a need for correction.
9. Acre-feet pumped
   Use a formula to convert from the meter reading to acre-feet using the multiplier and correction factor. To convert meter readings in gallons to acre-feet, divide by 325,851.

iii. Well diversion data using Electricity Consumption

For wells approved to use power records and a Power Conversion Coefficient (PCC) to estimate water pumped, the accounting information is similar to well diversion data using flow meters (section 4.c.ii) above with the following replacements (instead of 6. "Reading" and 8. "Meter information):

[3] A comment on the Meter Reading cell is used to note "Actual, Estimated, Corrected, or Calculated" for all wells subject to measurement rules when the entry is not based on a reading taken on the actual date specified.
[4] Resetting a meter may be prohibited by local well measurement rules.

6. Power meter reading [this is the “Input” that will change regularly]
8. Power Meter Information
    a. PCC

iv. Surface diversion data

Include a column or row for each surface diversion with the following information:

1. Diversion structure name or a.k.a.
2. Structure WDID
3. Measured flow through the measurement structure and units
    a. If more than one water right is diverted through the structure, there should be adjacent columns for each. Each source should have a designated column or row and labeling should include the measuring structure WDID and the source of the water (e.g. case number).
    b. If there is a multiplier that adjusts the standard measurement-flow relationship to reflect the actual measurement-flow relationship of the specific structure (“shift”), the adjusted value should be reflected in a separate column.
4. Priority Admin Number
5. Storage and release

If the diversion is to storage, which will be followed by a release of water, follow the instructions in the Reservoir Accounting Guideline.

v. Administrative Call (are diversions in-priority?)

In portions of Colorado, there may be times when depletions are in-priority, and do not require replacement. Depletions are in-priority when water rights on the stream system that are senior to the diversion have enough water and are not “calling” for more water.

1. **Simplified (percent of month administrative call)**
   For certain basic accounting, such as subdivision well depletions, the Division Engineer may allow or apply an estimate of the days of expected administrative call each month. Typically, replacement water is provided based on projected call days, which is later compared to actual administrative call data to ensure that adequate replacement was provided. In this case, the accounting should have an input field either for the number of call days or the percentage of days in the month with a call.
2. **Daily record of administrative call**
   Provide a column that shows whether depletions are either “IN” or “OUT” of priority each day.
    - Locations with minimal call variation: In areas with minimal variation in the call, the Division Office may not require a formula comparing Priority Admin Numbers, but will accept manual entries of “IN” or “OUT” of priority each day.
    - All other locations: “IN” or “OUT” of priority is determined daily using formulas comparing the Priority Admin Number of depletions to the Priority Admin Number of the calling water right in each depleted stream reach. Include a column for each of the following:
        - The Priority Admin Number of the calling water right. Calling structure information can be obtained programmatically from:
            - CDSS REST services - insert a link that pulls the required information directly from DWR’s database.
            - CDSS Administrative Calls tool.

          DWR accounting staff can provide guidance on incorporating this information within an accounting spreadsheet.

- The Name of the calling water right
- "In" or "Out"-of-priority either for all structures covered by the accounting or for each structure in its own column. Use a formula to compare the Priority Admin Number of the calling structure to the Priority Admin Number of the structure(s) in the accounting.

d. Depletion & Obligation tab

Used to (1) convert well pumping (and groundwater pond evaporation) to lagged depletions impacting the stream and (2) show lagged depletions that are out-of-priority, and (3) include any additional water obligations of the plan for augmentation.

i. Calculate lagged depletions - Although well pumping and modeling may use a monthly step function to determine the depletions from pumping, the monthly result may, if requested by the Division Office or required by decree, then be divided by the number of days in the month in order to calculate a daily impact for daily water administration.
   1. Well Pumping (or groundwater pond evaporation) - Reference back to the Input tab for the acre-feet of water pumped or evaporated.
   2. Consumption factor (%) - If the decree or approval describes that a percentage of the water pumped is consumed and only the consumed amount is replaced.
   3. Acre-feet consumed - Multiply the acre-feet pumped by the consumption factor.
   4. Delay Factors - show factors that convert pumping in one month to depletions in future months. These may be percentages per month, that total 100 percent over an extended period of time.
   5. Depletions - a formula that combines previous months and present month pumping with the delay factors to determine depletions impacting the stream this month and in future months.

ii. Out-of-priority depletions are combined into one column for each reach considering the administrative call information included on the Input tab.

iii. Return flow obligations (if applicable): Replacement water sources changed from a historical irrigation use usually have a return flow obligation that must also be tracked in accounting. Return flow obligations are similar to depletions because they must be replaced in time, place, and amount. Depending on decree language and preference, return flow obligations may be included under the replacement tab in section 4.e. below. For each replacement source with return flow obligations, include the following:
   - the basis and volume of the return flow obligation,
   - the location of the return flow obligation,
   - replacement of the return flow obligation.

e. Replacement tab

List each structure providing replacement water, transit loss information, and volumes released:

i. Structure providing replacement water: name of reservoir, ditch, well, leased or other replacement water, its WDID, and the water court decree allowing its use for augmentation or replacement. For instructions on accounting for replacement using recharge accretions, refer to specific recharge guidance.

ii. Replacement water travel distance (miles)
the distance from the point of release to the location of the out-of-priority depletion where replacement is owed

iii. Transit loss percent per mile (%)

iv. Total transit loss (%)
v. Volume released (acre-feet)
vi. Transit loss volume (acre-feet)
vii. Volume delivered (acre-feet) - equal to volume released minus transit loss volume
viii. Return flow obligations (acre-feet): Depending on decree language as described above, these may be included here instead of in the depletion tab. See description under section 4.d. above.

f. Summary Tab

The Summary Tab is used to calculate the Net Effect of the Plan on each impacted stream reach. The summary should reference back to information and formulas in the other spreadsheet tabs. The summary tab compares obligations, replacements and that replacements equal or exceed obligations in time, place, and amount. The Summary tab should only summarize data and calculations located in other tabs of the accounting. It should not contain manual entries, input data, or make calculations that are used in other tabs.

The Summary Tab should contain the following for each impacted stream reach (typically on a daily basis or as required by the division office):

i. Total depletions and obligations
ii. Total replacement
iii. Balance - Total replacement minus total depletions and obligations, which may be negative when the diversions resulting in the depletions are in priority.
iv. Net Effect - Total replacement minus out-of-priority depletions and obligations. If the net effect is negative, the Plan resulted in injury.

g. DWR tab for Diversion Record Data Import

A tab titled **"DWR"** can be used to convert data input or numbers calculated in other tabs into rows that represent diversion record water classes, which DWR staff can upload to create official diversion records. When appropriate, DWR staff will develop this tab or work with plan owners to develop this tab, and ensure it follows the format shown in the "Diversion Record Spreadsheet User Guide" and utilizes water classes according to the Diversion Records Standard. This format is necessary to allow the records to be imported directly into Hydrobase.

h. DWR Meters tab for Meter Reading Data Import

A tab titled **"DWR Meters"** can be included for use in bulk uploading meter readings. This calculates pumping totals in compliance with well rules or to meet other Division-specific requirements. In order for this tab to be bulk uploaded into Hydrobase, the columns in this tab must be formatted as shown in the "User Guide - How to Bulk Upload Meter Readings".

i. Version/Notes tab

A tab to document changes in accounting formulas and the date of those changes.

5. Requirements and recommendations for all tabs

a. Accounting should show how raw input data is manipulated using formulas to determine the resulting impact on the river. Accounting must therefore include a functional spreadsheet (ie no pdfs) showing all operations, formulas, etc. to clearly show calculations.

b. The use of a water year of November 1 through October 31 is required unless specifically decreed otherwise. When a different water year is required by decree, DWR may request additional months of data in the accounting to include the November 1 through October 31

time period, resulting in more than 12 months of data being reported.

c. For all tabs other than the Summary tab, include running accounting for the entire water year without monthly subtotals. Monthly subtotals commonly result in errors in the spreadsheet. The Summary tab can be used as a place to show monthly totals.

d. Date fields should be complete dates (month, day, and year, recognized as a date value by the spreadsheet software) but may be formatted to display as desired.

e. Use consistent cell color shading to clearly identify the different types of information, such as manual input cells and formula cells (provide a legend for data types, see example below)

f. Enter "0" in cells to document no diversion or use, rather than blanks, hyphens, or another character.

g. When a formula is overwritten with a manual entry, the cell should be highlighted and a comment added for the reasoning.

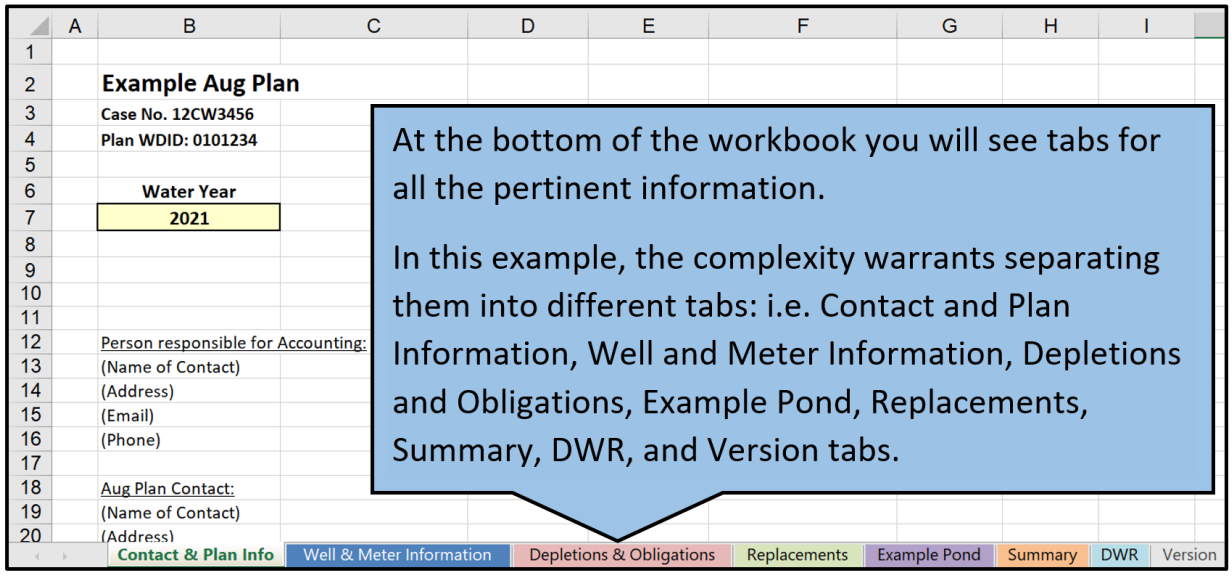
h. When there are multiple stream reaches involved, organize accounting from upstream to downstream.

i. Footnotes should be utilized, as necessary, to describe the basis for formulas, calculations imposed on the raw input data, and column descriptions.

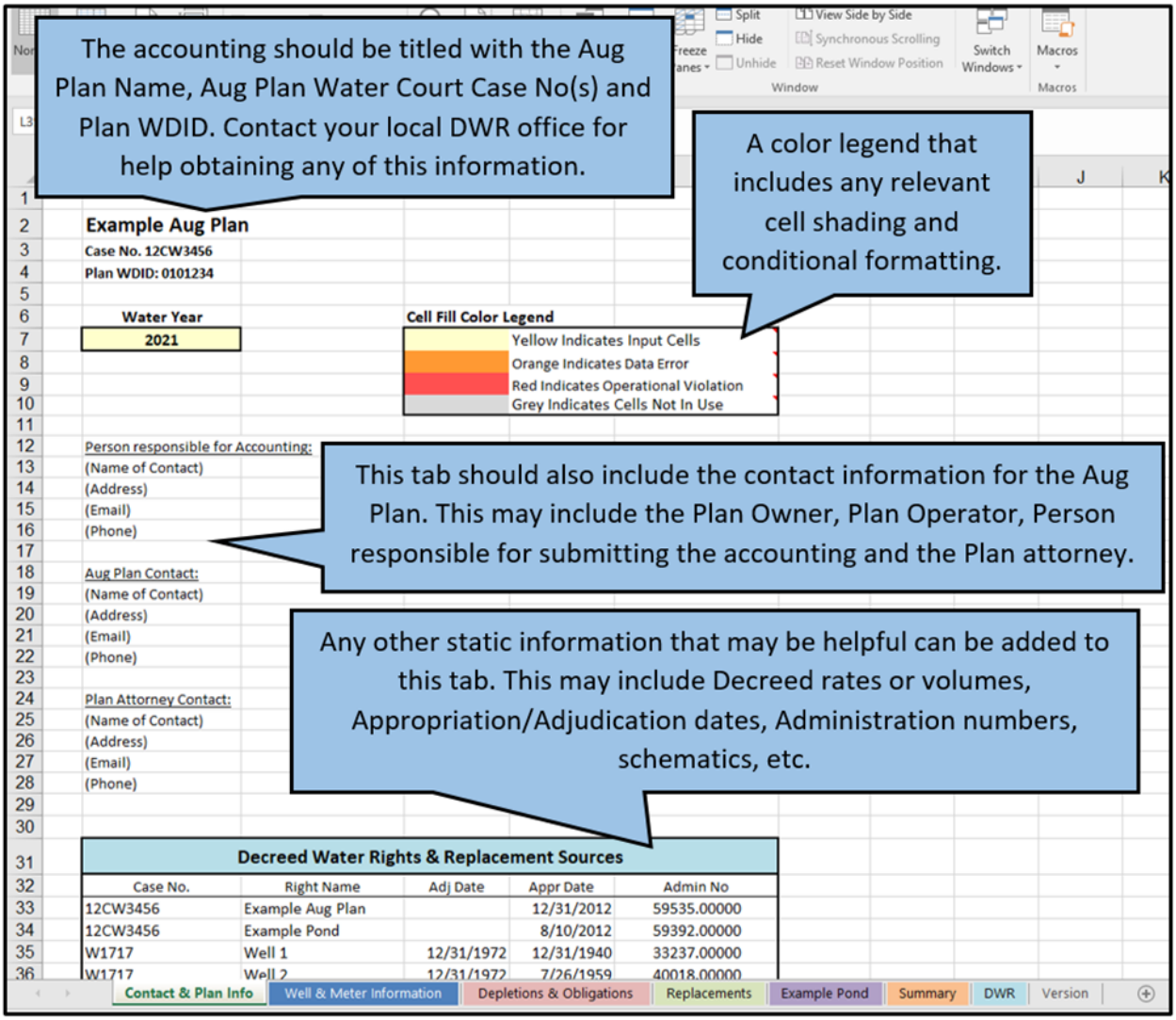
6. Example, Screenshots, and Spreadsheet Templates

Water users may request spreadsheet templates from their local division office for use as examples of how accounting may be assembled, but are responsible for developing their own functional accounting customized for their own Plan requirements. Note that example and actual accounting may have slightly different organization than what is described above.

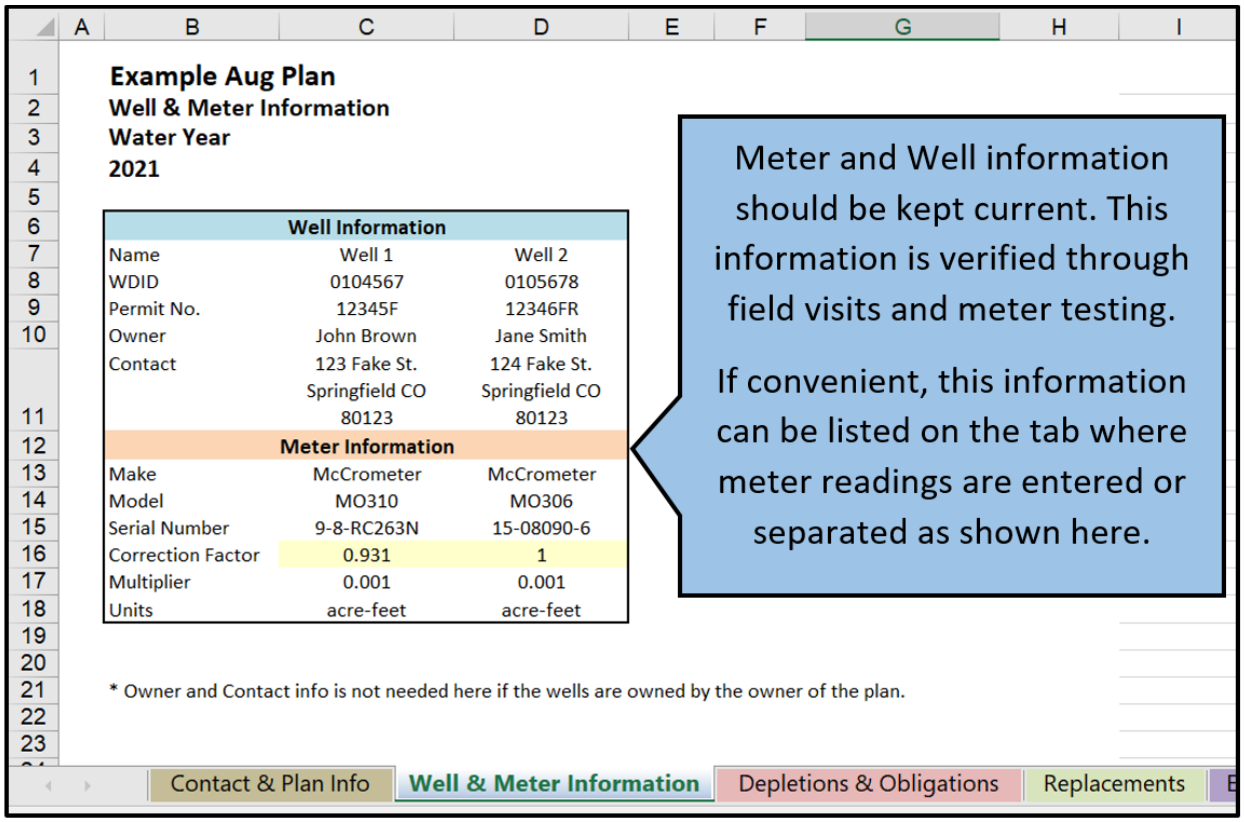
a. (List of relevant tabs)



b. (Contact & Plan Information)



c. (Well & Meter Information)



Example Aug Plan
Well & Meter Information
Water Year
2021

Well Information		
Name	Well 1	Well 2
WDID	0104567	0105678
Permit No.	12345F	12346FR
Owner	John Brown	Jane Smith
Contact	123 Fake St. Springfield CO 80123	124 Fake St. Springfield CO 80123
Meter Information		
Make	McCrometer	McCrometer
Model	MO310	MO306
Serial Number	9-8-RC263N	15-08090-6
Correction Factor	0.931	1
Multiplier	0.001	0.001
Units	acre-feet	acre-feet

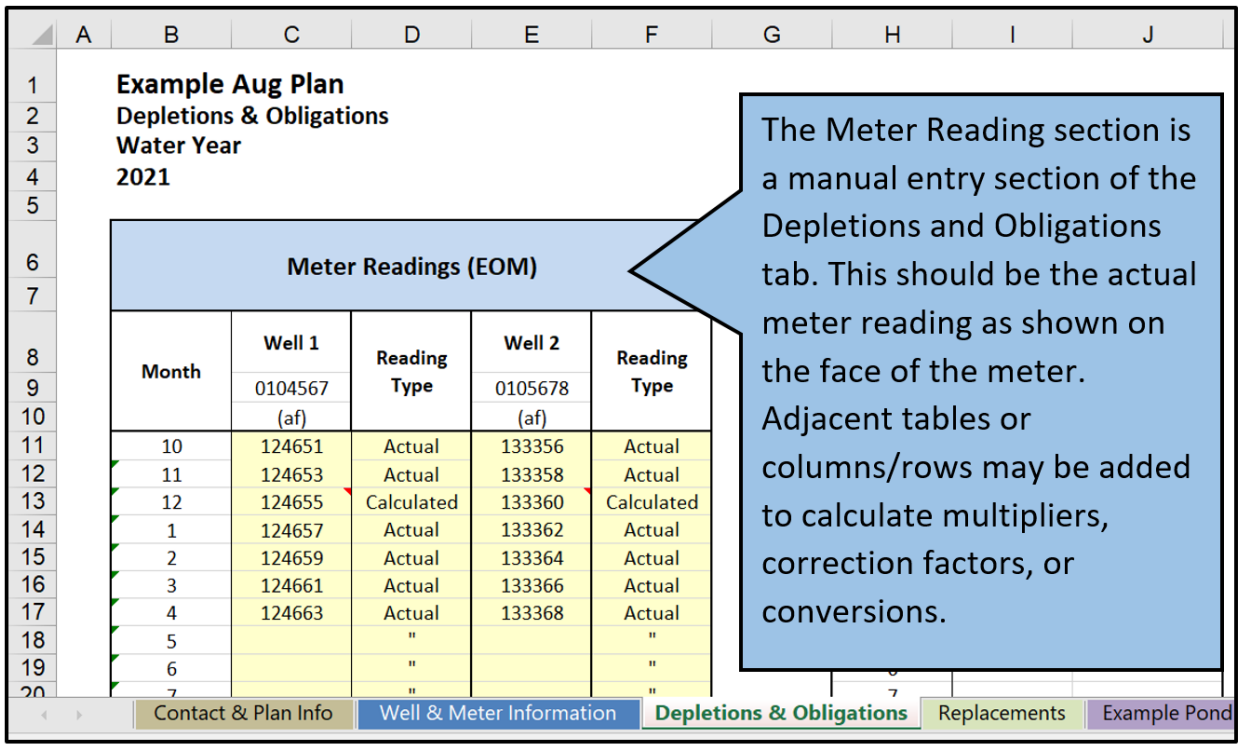
Meter and Well information should be kept current. This information is verified through field visits and meter testing.

If convenient, this information can be listed on the tab where meter readings are entered or separated as shown here.

* Owner and Contact info is not needed here if the wells are owned by the owner of the plan.

Contact & Plan Info | Well & Meter Information | Depletions & Obligations | Replacements

d. (Depletions & Obligations) - in this example, the Depletions & Obligations tab includes cells for entering meter readings, calculating well pumping over the period, and converting that to lagged depetions.



Example Aug Plan
Depletions & Obligations
Water Year
2021

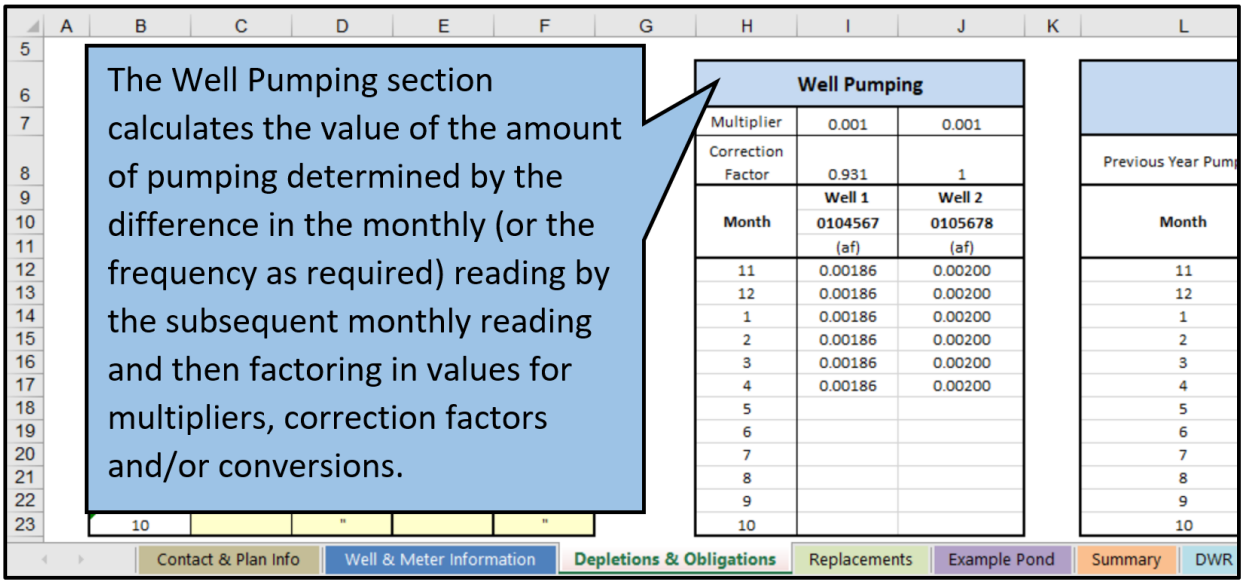
Meter Readings (EOM)

Month	Well 1 0104567 (af)	Reading Type	Well 2 0105678 (af)	Reading Type
10	124651	Actual	133356	Actual
11	124653	Actual	133358	Actual
12	124655	Calculated	133360	Calculated
1	124657	Actual	133362	Actual
2	124659	Actual	133364	Actual
3	124661	Actual	133366	Actual
4	124663	Actual	133368	Actual
5		"		"
6		"		"

The Meter Reading section is a manual entry section of the Depletions and Obligations tab. This should be the actual meter reading as shown on the face of the meter. Adjacent tables or columns/rows may be added to calculate multipliers, correction factors, or conversions.

Contact & Plan Info | Well & Meter Information | Depletions & Obligations | Replacements | Example Pond

e. (Depletions & Obligations)



The Well Pumping section calculates the value of the amount of pumping determined by the difference in the monthly (or the frequency as required) reading by the subsequent monthly reading and then factoring in values for multipliers, correction factors and/or conversions.

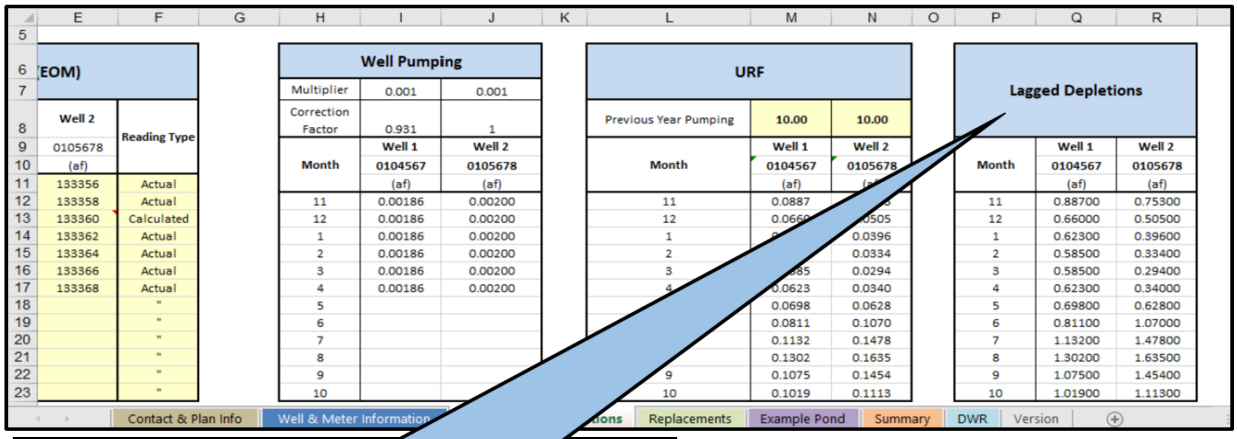
Well Pumping

Multiplier	0.001	0.001
Correction Factor	0.931	1
Month	Well 1 0104567 (af)	Well 2 0105678 (af)
11	0.00186	0.00200
12	0.00186	0.00200
1	0.00186	0.00200
2	0.00186	0.00200
3	0.00186	0.00200
4	0.00186	0.00200
5		
6		
7		
8		
9		
10		

Previous Year Pump
Month
11
12
1
2
3
4
5
6
7
8
9
10

Contact & Plan Info | Well & Meter Information | Depletions & Obligations | Replacements | Example Pond | Summary | DWR

f. (Depletions & Obligations) - calculate lagged depletions for the month



(EOM)	
Well 2 0105678 (af)	Reading Type
133356	Actual
133358	Actual
133360	Calculated
133362	Actual
133364	Actual
133366	Actual
133368	Actual

Well Pumping		
Multiplier	0.001	0.001
Correction Factor	0.931	1
Month	Well 1 0104567 (af)	Well 2 0105678 (af)
11	0.00186	0.00200
12	0.00186	0.00200
1	0.00186	0.00200
2	0.00186	0.00200
3	0.00186	0.00200
4	0.00186	0.00200
5		
6		
7		
8		
9		
10		

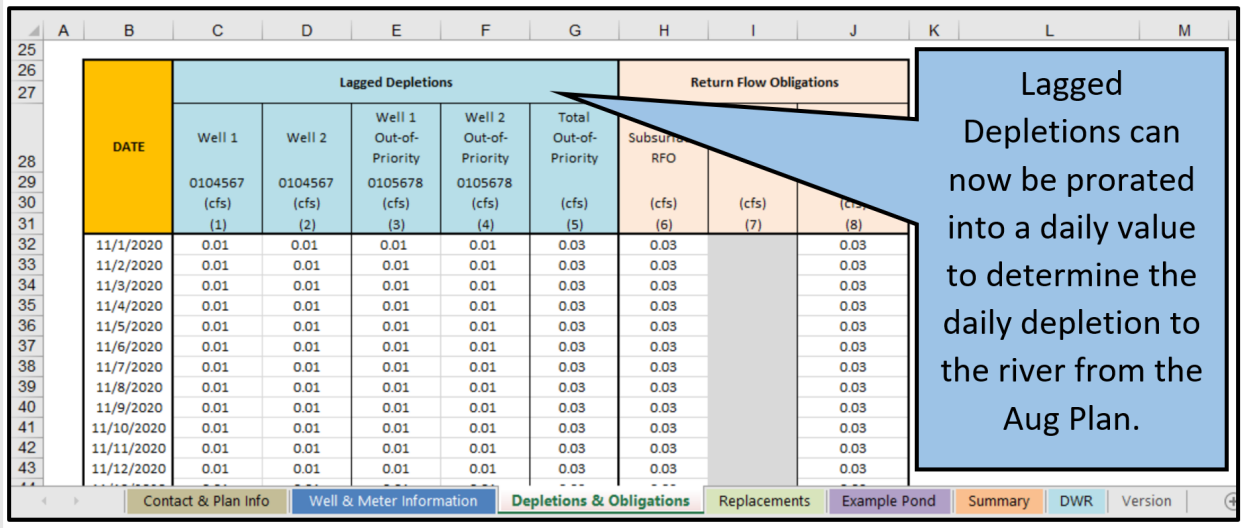
URF		
Previous Year Pumping	10.00	10.00
Month	Well 1 0104567 (af)	Well 2 0105678 (af)
11	0.0887	
12	0.0660	0505
1		0.0396
2		0.0334
3	585	0.0294
4	0.0623	0.0340
	0.0698	0.0628
	0.0811	0.1070
	0.1132	0.1478
	0.1302	0.1635
9	0.1075	0.1454
10	0.1019	0.1113

Lagged Depletions		
Month	Well 1 0104567 (af)	Well 2 0105678 (af)
11	0.88700	0.75300
12	0.66000	0.50500
1	0.62300	0.39600
2	0.58500	0.33400
3	0.58500	0.29400
4	0.62300	0.34000
5	0.69800	0.62800
6	0.81100	1.07000
7	1.13200	1.47800
8	1.30200	1.63500
9	1.07500	1.45400
10	1.01900	1.11300

Contact & Plan Info | Well & Meter Information | ...ions | Replacements | Example Pond | Summary | DWR | Version

Lagged Depletions should be calculated utilizing the Well Pumping data and the lagging method established by the relevant decree or SWSP (Stream depletion Factors or Glover Parameters).

g. (Depletions & Obligations) - convert monthly lagged depletions to daily

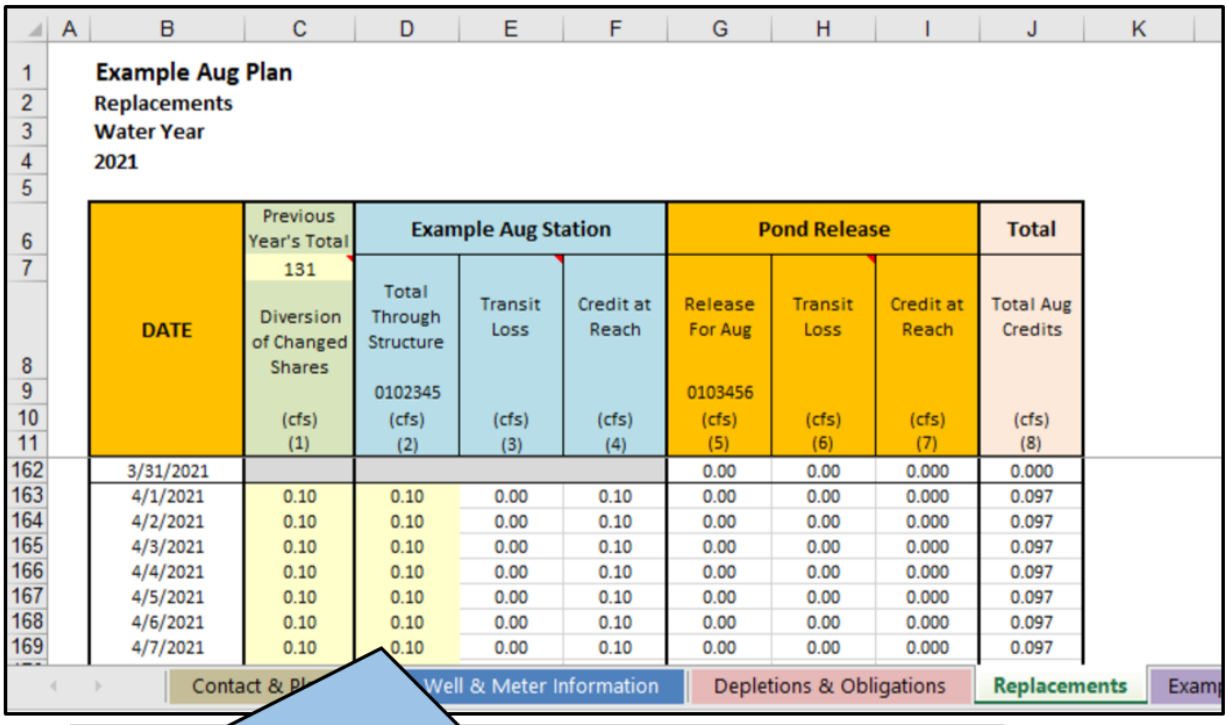


DATE	Lagged Depletions: Well 1 0104567 (cfs) (1)	Well 2 0104567 (cfs) (2)	Well 1 Out-of-Priority 0105678 (cfs) (3)	Well 2 Out-of-Priority 0105678 (cfs) (4)	Total Out-of-Priority (cfs) (5)	Return Flow Obligations: Subsurf... RFO (cfs) (6)	(cfs) (7)	(cfs) (8)
11/1/2020	0.01	0.01	0.01	0.01	0.03	0.03		0.03
11/2/2020	0.01	0.01	0.01	0.01	0.03	0.03		0.03
11/3/2020	0.01	0.01	0.01	0.01	0.03	0.03		0.03
11/4/2020	0.01	0.01	0.01	0.01	0.03	0.03		0.03
11/5/2020	0.01	0.01	0.01	0.01	0.03	0.03		0.03
11/6/2020	0.01	0.01	0.01	0.01	0.03	0.03		0.03
11/7/2020	0.01	0.01	0.01	0.01	0.03	0.03		0.03
11/8/2020	0.01	0.01	0.01	0.01	0.03	0.03		0.03
11/9/2020	0.01	0.01	0.01	0.01	0.03	0.03		0.03
11/10/2020	0.01	0.01	0.01	0.01	0.03	0.03		0.03
11/11/2020	0.01	0.01	0.01	0.01	0.03	0.03		0.03
11/12/2020	0.01	0.01	0.01	0.01	0.03	0.03		0.03

Contact & Plan Info | Well & Meter Information | Depletions & Obligations | Replacements | Example Pond | Summary | DWR | Version

Lagged Depletions can now be prorated into a daily value to determine the daily depletion to the river from the Aug Plan.

h. (Replacements)



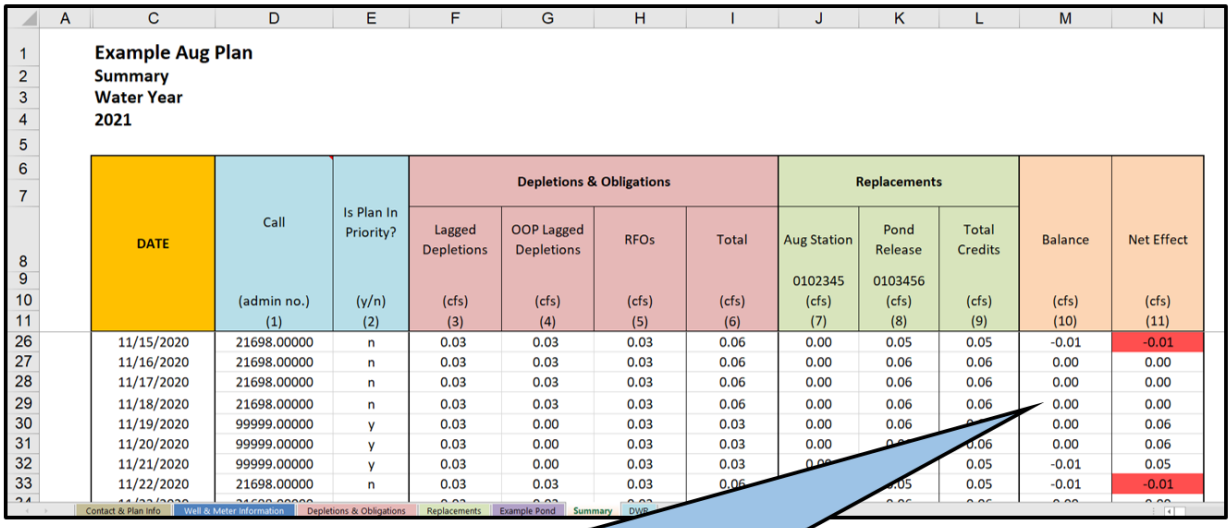
Example Aug Plan
Replacements
Water Year
2021

DATE	Previous Year's Total	Example Aug Station			Pond Release			Total
	131							
	Diversion of Changed Shares	Total Through Structure 0102345	Transit Loss	Credit at Reach	Release For Aug 0103456	Transit Loss	Credit at Reach	Total Aug Credits
	(cfs) (1)	(cfs) (2)	(cfs) (3)	(cfs) (4)	(cfs) (5)	(cfs) (6)	(cfs) (7)	(cfs) (8)
3/31/2021					0.00	0.00	0.000	0.000
4/1/2021	0.10	0.10	0.00	0.10	0.00	0.00	0.000	0.097
4/2/2021	0.10	0.10	0.00	0.10	0.00	0.00	0.000	0.097
4/3/2021	0.10	0.10	0.00	0.10	0.00	0.00	0.000	0.097
4/4/2021	0.10	0.10	0.00	0.10	0.00	0.00	0.000	0.097
4/5/2021	0.10	0.10	0.00	0.10	0.00	0.00	0.000	0.097
4/6/2021	0.10	0.10	0.00	0.10	0.00	0.00	0.000	0.097
4/7/2021	0.10	0.10	0.00	0.10	0.00	0.00	0.000	0.097

Contact & Pl... | Well & Meter Information | Depletions & Obligations | Replacements | Exam...

Input information should be shaded differently than the calculated (cells with formulas) cells. Please provide a legend with the color/shading scheme.

i. (Summary) - daily



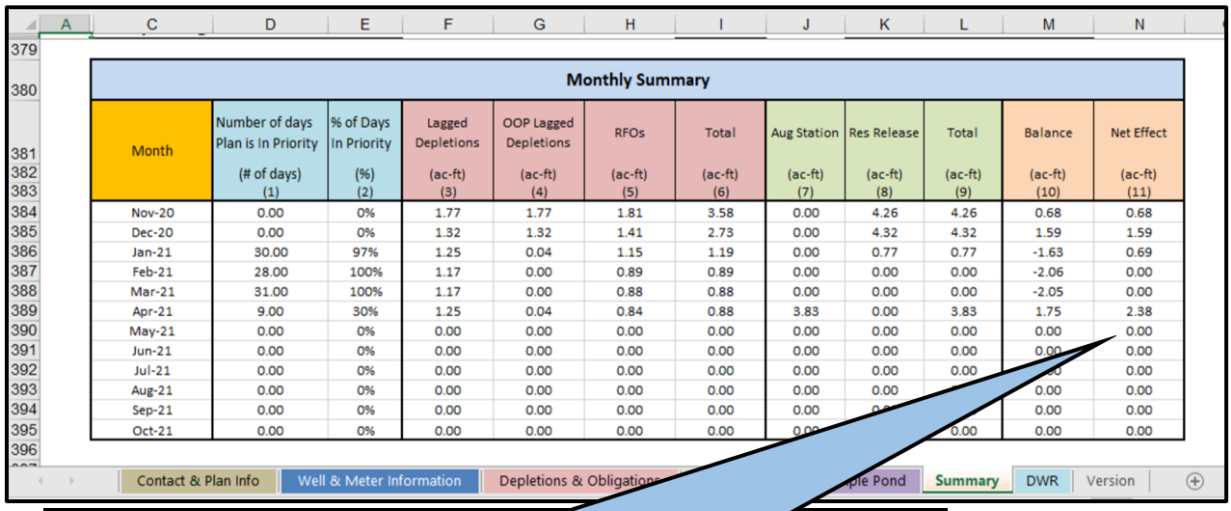
Example Aug Plan
Summary
Water Year
2021

DATE	Call (admin no.) (1)	Is Plan In Priority? (y/n) (2)	Depletions & Obligations: Lagged Depletions (cfs) (3)	Depletions & Obligations: OOP Lagged Depletions (cfs) (4)	Depletions & Obligations: RFOs (cfs) (5)	Depletions & Obligations: Total (cfs) (6)	Replacements: Aug Station 0102345 (cfs) (7)	Replacements: Pond Release 0103456 (cfs) (8)	Replacements: Total Credits (cfs) (9)	Balance (cfs) (10)	Net Effect (cfs) (11)
11/15/2020	21698.00000	n	0.03	0.03	0.03	0.06	0.00	0.05	0.05	-0.01	-0.01
11/16/2020	21698.00000	n	0.03	0.03	0.03	0.06	0.00	0.06	0.06	0.00	0.00
11/17/2020	21698.00000	n	0.03	0.03	0.03	0.06	0.00	0.06	0.06	0.00	0.00
11/18/2020	21698.00000	n	0.03	0.03	0.03	0.06	0.00	0.06	0.06	0.00	0.00
11/19/2020	99999.00000	y	0.03	0.00	0.03	0.03	0.00	0.06	[illegible]	0.00	0.06
11/20/2020	99999.00000	y	0.03	0.00	0.03	0.03	0.00	[illegible]	0.06	0.00	0.06
11/21/2020	99999.00000	y	0.03	0.00	0.03	0.03	[illegible]	[illegible]	0.05	-0.01	0.05
11/22/2020	21698.00000	n	0.03	0.03	0.03	0.06	[illegible]	[illegible]	0.05	-0.01	-0.01

Contact & Plan Info | Well & Meter Information | Depletions & Obligations | Replacements | Example Pond | Summary | DWR

The Balance column is the balance of Replacements and actual Depletions/Obligations regardless of whether the plan is in or out of priority. It is calculated by subtracting Depletions and Obligations from Replacements.

j. (Summary) - a monthly summary table may be added at the bottom of the Summary tab below the daily summary



Monthly Summary

Month	Number of days Plan is In Priority (# of days) (1)	% of Days In Priority (%) (2)	Lagged Depletions (ac-ft) (3)	OOP Lagged Depletions (ac-ft) (4)	RFOs (ac-ft) (5)	Total (ac-ft) (6)	Aug Station (ac-ft) (7)	Res Release (ac-ft) (8)	Total (ac-ft) (9)	Balance (ac-ft) (10)	Net Effect (ac-ft) (11)
Nov-20	0.00	0%	1.77	1.77	1.81	3.58	0.00	4.26	4.26	0.68	0.68
Dec-20	0.00	0%	1.32	1.32	1.41	2.73	0.00	4.32	4.32	1.59	1.59
Jan-21	30.00	97%	1.25	0.04	1.15	1.19	0.00	0.77	0.77	-1.63	0.69
Feb-21	28.00	100%	1.17	0.00	0.89	0.89	0.00	0.00	0.00	-2.06	0.00
Mar-21	31.00	100%	1.17	0.00	0.88	0.88	0.00	0.00	0.00	-2.05	0.00
Apr-21	9.00	30%	1.25	0.04	0.84	0.88	3.83	0.00	3.83	1.75	2.38
May-21	0.00	0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jun-21	0.00	0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul-21	0.00	0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	[illegible]	0.00
Aug-21	0.00	0%	0.00	0.00	0.00	0.00	0.00	0.00	[illegible]	0.00	0.00
Sep-21	0.00	0%	0.00	0.00	0.00	0.00	0.00	[illegible]	[illegible]	0.00	0.00
Oct-21	0.00	0%	0.00	0.00	0.00	0.00	[illegible]	[illegible]	0.00	0.00	0.00

Contact & Plan Info | Well & Meter Information | Depletions & Obligations | [illegible]ple Pond | Summary | DWR | Version

Net Effect is the Balance or Net Impact value with the priority of the plan included. Plans considered in priority may not be required to replace depletions. This column represents whether the Aug plan shows injury to the river or has sufficiently replaced its uses.

April 30, 2010

Permittee Address

RE: Mining Operations with Exposed Ground water

To Whom It May Concern:

The Division of Reclamation Mining and Safety is responsible for ensuring that Sand and Gravel mining operators comply with the requirements of the Colorado Land Reclamation Act for the Extraction of Construction Materials (Act) and the Mineral Rules and Regulations of the Colorado Mined Land Reclamation Board for the Extraction of Construction Materials (Rules). Among these requirements are provisions for the protection of water resources. The Act requires that reclamation plans must ensure minimization of disturbances to the prevailing hydrologic balance, including disturbances to the quantity of water in the area affected by mining and in the surrounding areas. § 34-32.5-116(4)(h). Rule 3.1.6(1)(a) requires compliance with Colorado water laws and regulations governing injury to existing water rights both during and after mining. Permits must specify how the permittee will comply with applicable Colorado water laws and regulations governing injury to existing water right rights. Rule 6.3.3(j); Rule 6.4.5(2)(c). After an extensive review, the Division determined that several operators may not have appropriate permit conditions to address certain reclamation liabilities arising from impacts to water resources.

In September 2009 the Division of Water Resources (DWR) updated its Guidelines for Sand and Gravel Pits. These guidelines provide guidance on achieving compliance with state law regarding replacement of depletions from sand and gravel mining, thus the guidelines provide a benchmark for the protection of hydrologic balance required under the Act and Rules. As noted in the Guidelines, sand and gravel operations which expose groundwater without complying with state law create a reclamation liability by impacting available groundwater.

State law requires that any person exposing ground water must obtain a well permit from the SEO pursuant to § 37-90-137(11). Because exposed groundwater results in out-of-priority water depletions, operations which expose ground water must also eventually obtain a water-court approved augmentation plan. Currently, several operators do not have either an augmentation plan or bonding to provide an alternative method to mitigate injurious stream depletions that result from mining-related exposure of ground water. The Division has a statutory duty to ensure that lands affected by mining are reclaimed in a manner that complies with state law and to ensure that operators have sufficient bonding to achieve reclamation. In order to assist operators in achieving compliance with these requirements, the Division proposes that, by April 30, 2011, operators should contact the Division and agree upon a plan for achieving compliance.

The Division has identified four approaches for operators:

1. File a financial warranty that will ensure backfilling of the pit to cover the exposed ground water to a depth of two feet above the static ground water level or,

2. Obtain a court approved augmentation plan prior to exposing ground water or,

3. File a financial warranty to cover the cost of installing a clay liner or slurry wall that meets the Division of Water Resources requirements for preventing ground water exposure or,

4. Obtain approval from the Division of Water Resources that acknowledges compliance with the SEO's requirements pursuant to § 37-90-137(11).

The Division will work with operators on an individual basis as they move to implement one of these plans. It is likely that options 1 and 3 will require the submittal of a technical revision or an amendment to the existing permit depending on the nature of the current mining and reclamation plan and the proposed changes. Increased financial warranties, as a result of these modifications, may be posted in a phased manner not to exceed three years. Amendments or revisions currently under review will be required to be approved by April 30, 2011 and may use the phased financial warranty approach described above. New applications going forward or presently under review by the Division will be required to meet the requirements of one of the options 1-4 at the time of application approval. Failure of affected operators to initiate contact with the Division and gain compliance as described above could result in an enforcement action being issued by the Division.

If you have any questions, please contact Tony Waldron at 303-866-3567, extension 8150.

cc: Permit Id Site Name