



SWSP West Farm Pit

1 message

JC York <jcyork@j-tconsulting.com>

Fri, Jul 13, 2018 at 11:07 AM

To: Amy Eschberger - DNR <amy.eschberger@state.co.us>

Cc: Todd Lambert <todd@cacompanies.com>, Karl Nyquist <Karl@cacompanies.com>, Ron Peterson <Ron@prowersag.com>

Amy –

Attached is the information that was submitted for the renewal of the SWSP for the West Farm Pit in March 2018. We have not received the formal approval back from the SEO but monthly accounting has been provided to them since the SWSP renewal was submitted by Mr. Hendrix.

Regards,

J.C.

J.C. York, P.E.

[J&T Consulting, Inc.](#)

305 Denver Avenue, Suite D

Fort Lupton, CO 80621

Office: (303) 857-6222

Mobile: (970) 222-9530

FAX: (303) 857-6224



2018-03 GP Aggregates SWSP Renewal Request.pdf
1895K

Hendrix Wai Engineering, Inc.

Water Resources, Water Rights and GIS/Computer Modeling

P.O. Box 4487
Parker, CO 80134

Telephone: (720) 930-4360
E-Mail: Randy@Hendrix-Wai.com

March 15, 2018

Melissa van der Poel, Team Leader, Division 2
Colorado Division of Water Resources
1313 Sherman Street, Suite 821
Denver, Colorado 80203

Subject: GP Aggregates' West Farm Pit Substitute Water Supply Plan, DRMS-M-2008-078, Sections 33 & 28, T22S, R46W, 6th P.M., Division 2, Water District 67, SWSP ID No. 5919, WDID 6707869 Renewal Request

Dear Ms. van der Poel:

Pursuant to C.R.S. § 37-90-137(11), GP Aggregates, LLC (GP) request renewal of the West Farm Pit Substitute Water Supply Plan (DRMS-M-2008-78) to continue mining of aggregate at a site located in parts of the S ½ of the SE ¼ of Section 28 and the NE ¼ and the NW ¼ of Section 33, Township 22 South, Range 46 West, in the 6th P.M., Prowers County, Colorado on land called the West Farm. The proposed mining site is located approximately ½ mile east of the Town of Lamar. Figure 1 shows the location of the gravel mine site. Enclosed is a check for \$257.00 for the filing fee for the DRMS-M-2008-78 renewal request. The most recent approval of this plan was August 20, 2012 for the period of May 1, 2012 through April 30, 2013. All depletions from the mining operations including evaporative losses from the dewatering trench, settling pond, moisture content, dust control and product washing have been fully replaced within LAWMA's augmentation plan originally decreed in Water Court Case No. 02CW181. This request clarifies what depletions are augmented by which plan. The evaporative losses from the dewatering trench, settling pond and moisture content will be augmented under this plan while dust control and aggregate washing will be augmented within LAWMA's augmentation plan. Approval of this plan is sought for the period of May 1, 2018 through April 30, 2019.

Project Description

Evaporative Losses associated with Mining at the Pit

GP operates a dry-mining gravel pit. Dry-mining involves the installation of an impermeable layer that prevents groundwater from entering the mining pit. GP has followed the State Engineer's Lining Criteria and has received approval of the liner for the West Farm Pit from the Division Engineer's Office. Dewatering trenches are installed and used throughout the mining site. The maximum length of the dewatering trenches will occur when the second phase of mining is completed and before any reclamation has begun. The maximum size of the dewatering trench will be 4,350 feet long and five feet wide. This equates to 0.5 of an acre in total size (4,350 ft x 5 ft /

43,560 ft² per acre). There will be evaporation of water from the exposed surface area of the dewatering trench. For purposes of this plan, we have assumed that the exposed surface area for the dewatering trench is 0.5 acres.

The water from the dewatering trench will be collected in a 50-foot by 100-foot discharge settling pond. This settling pond surface area measures 0.11 of an acre (50 ft x 100 ft / 43,560 ft² per acre). Once the sediment in the water from the dewatering trench has settled in the ponds, the water will be pumped into a lateral next to the settling pond and delivered back to the Arkansas River. The maximum exposed surface area from the dewatering trench and settling pond on the mining site is expected to be 0.61 of an acre (0.5 acre + 0.11 acre) and that is the surface area we have used to calculate evaporative losses for this plan.

Table 1 shows the monthly evaporation from the exposed 0.61 of an acre within this plan request. The values for Table 1 were obtained from paragraph A.i of Exhibit R of the Lower Arkansas Water Management Association's (LAWMA) decree in Case No. 02CW181. The total annual evaporation from groundwater exposed from 0.61 of an acre of surface area is estimated to be 2.51 acre-feet (0.61 of an acre x 4.11 feet). This amount is also shown in Table 1 and will be augmented under DRMS-M-2008-78.

A well permit (Permit No. 75864-F) has been issued for the uses at the mining site for dewatering and exposed pond surface area in accordance with C.R.S. § 37-90-137(2).

Water Losses in the Mined Material

As part of the operation of the mining of the gravel pit, water is retained in the mined material that is removed from the gravel pit site. The total projected amount of material to be mined from the gravel pit during the proposed term of this plan is anticipated to be approximately 750,000 tons. That estimate is conservatively high as compared to the 624,223 tons of material mined from January 2017 to December 2017. Material mined from the gravel pit has a 2% moisture content since the gravel pit is lined with no groundwater flowing into the pit. Therefore, the total amount of water that will be consumed in the removal of the aggregate from the mining site under this plan is estimated to be 11.04 acre-feet of water ($\{750,000 \text{ tons} \times 2,000 \text{ pounds per ton} \times 2\% / 62.4 \text{ pounds per ft}^3\} / 43,560 \text{ ft}^2 \text{ per acre}$).

Aggregate Washing and Dust Control

Groundwater from well SEO Id No. 6705375 is used to wash the aggregate and for dust control at the West Farm Pit site. Depletions from the pumping of this well, as measured through the "B" meter, are augmented at 100% in LAWMA's augmentation plan. This well was added to LAWMA's augmentation plan in Case No. 12CW37. Please see Exhibit B of Case No. 12CW37. Accordingly, the use of water pumped by the well and used at the West Farm Pit will continue to be augmented under LAWMA's augmentation plan and not under this plan.

Total Consumptive Use

The total amount of groundwater consumptive use from operation of the West Farm Pit during the proposed term of this plan will be 13.55 acre-feet (2.51 acre-feet of evaporation + 11.04 acre-feet of moisture content removal). This amount is shown in Table 2.

Mining Stream Depletions

Depletions to the Arkansas River from the mining of aggregate from the gravel pit are lagged since the centroid of the mining site is approximately 3,300 feet from the river. Lagged stream depletions were determined using the Integrated Decision Support Group's (IDS) Alluvial Water Accounting System (AWAS) model, version 1.5.85. A stream depletion factor (SDF) of 88 days¹ was used to lag the stream depletions. The SDF of 88 days was used in the prior approval of DRMS-M-2008-78 and is maintained in this request. Previous mining operations have been included in the modeling and the results with the projected mining under this plan are shown in Table 3. The total stream depletion that will occur during this plan year will be 8.15 acre-feet.

Replacement Water

GP currently owns 284 LAWMA common shares. The proposed allocation for a LAWMA common share in 2018 has been set at 100%. Therefore, GP must dedicate 9 LAWMA common shares for augmentation of the lagged stream depletions under this plan.

If GP were to continue operating the gravel pit in the same manner for the next 25-years and the same monthly total consumptive use from the operational uses then the maximum stream depletion would occur in the 25th year in the amount of 12.8 acre-feet. While this amount doesn't quite represent a steady-state condition one must take into account the expected life of the gravel pit. There is a limited amount of aggregate that can be mined from the existing site. Each year LAWMA will re-evaluate GP's need for LAWMA shares to ensure that GP has dedicated the proper amount to any requested renewal of the plan.

Table 3 shows the proposed replacement schedule of the stream depletions in this plan. LAWMA has been fully-augmenting the entire operation of the West Farm Pit (i.e. evaporative losses from the dewatering trench and settling pond, water lost as moisture content in the aggregate and water pumped from the well for gravel washing and dust suppression) within its augmentation plan. Moving forward, ongoing lagged stream depletions from past operations of the West Farm Pit and future depletions from use of the well for aggregate washing and dust suppression will continue to be augmented under LAWMA's augmentation plan. Evaporative depletions from the dewatering trench and settling pond and water lost as moisture content in the mined aggregate will be replaced under this plan and future plans pursuant to C.R.S. § 37-90-137(11).

¹ Interpolated from "Stream Depletion Factors, Arkansas River Valley, Southeastern Colorado" by C.T. Jenkins and O. James Taylor (USGS OFR 72-192).

LAWMA has the following decreed replacement sources that can be utilized for replacement of the stream depletions associated with this plan:

Replacement Source	Amount	Water Division 2 Case No.
Highland Irrigation Company	3,402 of 3,800 shares	02CW181
Highland Canal Direct Flow	169 of 3,800 shares	10CW085
Keesee Ditch	14.25 cfs of 28.5 cfs	02CW181
Keesee Ditch	14.25 cfs of 28.5 cfs	05CW052
Keesee Ditch Article II Account	Half of Account	02CW181
Keesee Ditch Article II Account	Half of Account	05CW052
Fort Bent Ditch Company	1,104 of 11,651.2 shares	02CW181
Fort Bent Ditch Company	144 of 11,651.2 shares	10CW085
Lamar Canal Company	50 of 26,127 shares	02CW181
Lamar Canal Company (Colorado Parks and Wildlife)	15 percent of 4,720 shares	02CW181
Lamar Canal Company (Colorado Beef)	3,477 of 26, 127 shares	02CW181
Manvel Canal	54 cfs	02CW181
Manvel Canal Article II Account	Entire Account	02CW181
X-Y Irrigating Ditch	67 cfs of 69 cfs	02CW181
X-Y/Graham Article II Account	Entire Account	02CW181
Stubbs Ditch	7.2 cfs	02CW181
Stubbs Ditch Article II Account	Entire Account	02CW181
Sisson Ditch	18 cfs	10CW085
Sisson Ditch Article II Account	Entire Account	10CW085
John Martin Reservoir Offset Account Transit Loss	Varies	
10-Year Credit Deliveries to the Stateline (Stateline Credit)	Varies	

Accounting

Table 4 is the proposed monthly accounting form that will be used in this plan. This accounting form has been slightly modified from the previous accounting form to separate the amount of the replacement obligation under this plan and from the amount of the replacement obligation under LAWMA's augmentation plan. The amount of aggregate mined and the meter reading for the dust control / aggregate washing will be completed by a representative of C&A Holding Company (C&A). This person is currently Sarah Morrissey, the Account Manager. C&A will e-mail the accounting form to Randy Hendrix of Hendrix Wai Engineering, Inc. to lag the stream depletions for the operational uses in this plan and for the well pumping augmented in LAWMA's augmentation plan. Mr. Hendrix will then include the accounting within his monthly submittal of substitute water supply plans to the Division 2 Engineer's Office, the District 67 Water Commissioner and Mr. Bill Tyner, the Assistant Division Engineer – Division 2. A sample of the daily accounting to be used is attached to this request.

Proposed Term

This renewal request seeks approval for one year beginning May 1, 2018.

Reclamation of Mining Site

After mining and reclamation has been completed, a lined reservoir(s) will be created with a total surface area of approximately 183 acres. Mining has been completed in the first cell and that structure is currently included in LAWMA's water court application in Case No. 15CW3067. The new approximately 183 acre cell would also be included as a place to store water within LAWMA's

augmentation plan. GP has a corporate surety bond for the mining site allowing the site to be bonded for lining or backfilling the pit in the event that GP ceases mining operations and abandons the site completely.

Summary

GP will dry-mine a gravel pit on the West Farm located about ½ mile east of the Town of Lamar. Depletions from a dewatering trench, settling pond and moisture content within the aggregate will be augmented under this plan. The depletions will be lagged back to the Arkansas River using the AWAS program and a SDF of 88 days. It is estimated that a total of 8.15 acre-feet of stream depletions will need to be augmented by this plan in 2018 using GP's LAWMA shares. The depletions will be separated from the well pumping at the site for aggregate washing and dust control that is augmented under LAWMA's augmentation plan.

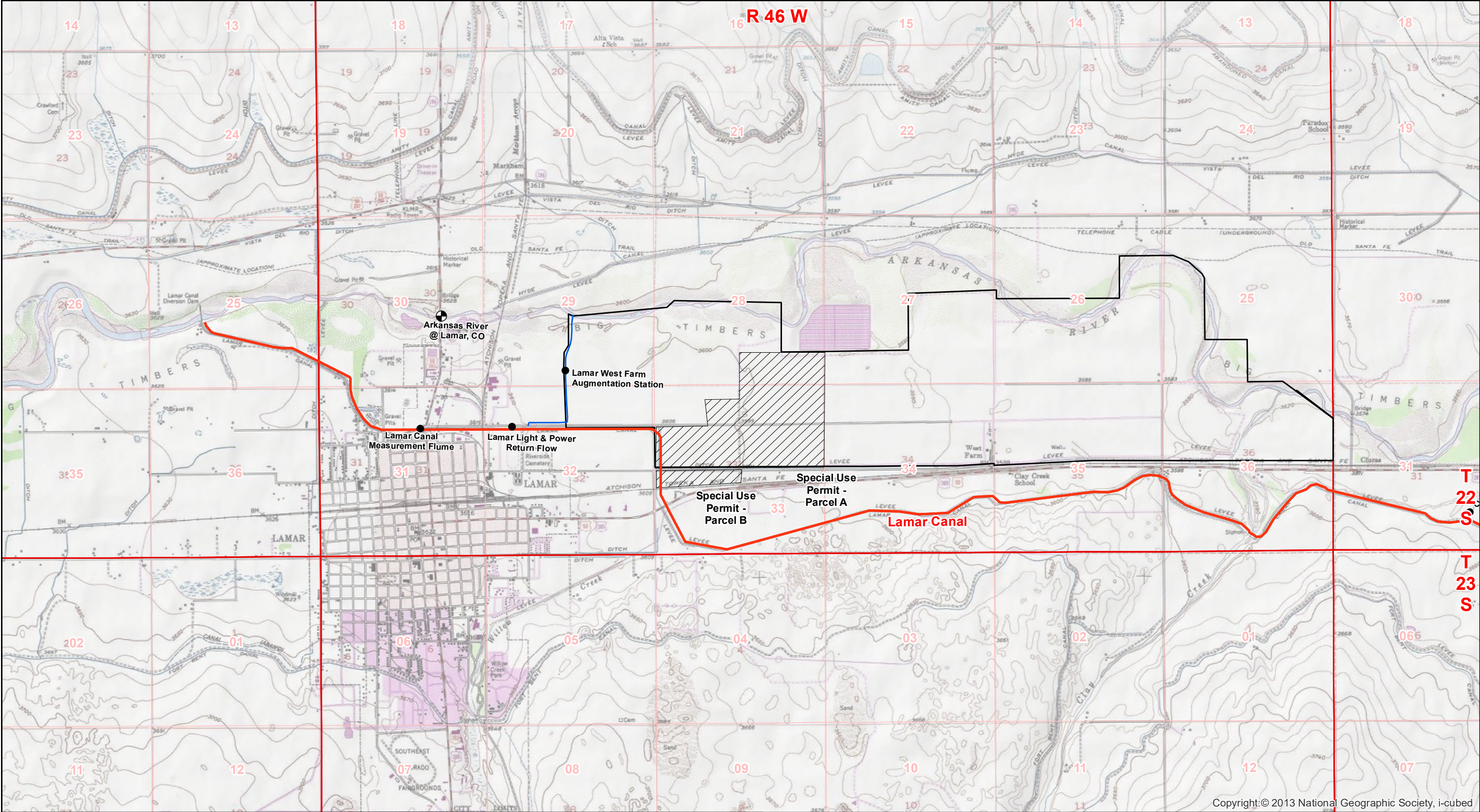
Please contact Randy Hendrix at randy@hendrix-wai.com or at (720) 930-4360 with questions regarding the accounting and operation of this plan.

Hendrix Wai Engineering Inc.



Randy L. Hendrix, P.E.

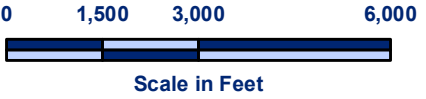
Cc: Steve Witte, Colorado Division of Water Resources – Division 2
Bill Tyner, Colorado Division of Water Resources – Division 2
Karl Nyquist, C&A Holding Company
Don Higbee, Lower Arkansas Water Management Association
Division 2 SWSP Notification List



Copyright:© 2013 National Geographic Society, i-cubed

Legend

- Lamar Canal Features
- ⦿ Arkansas River Gaging Stations
- West Farm Augmentation Station
- Lamar Canal
- ▨ Special Use Permit Area
- ▭ Property Boundary



**Hendrix Wai
Engineering, Inc.**

Job No.
G3001
File:
West Farm
Gravel Pit.mxd
Date:
03/14/18
Prepared For:
GP Aggregates, LLC

Figure 1

West Farm Gravel Pit Mining Site

Table 1
Evaporative Consumptive Use

Month	Gross Exposed Water Surface	Net Water Surface Evaporation	Total Evaporative Consumptive Use
	(ac)	(af)	(ac-ft)
(1)	(2)	(3)	(4)
May	0.61	0.46	0.28
June	0.61	0.59	0.36
July	0.61	0.62	0.38
August	0.61	0.55	0.34
September	0.61	0.43	0.26
October	0.61	0.30	0.18
November	0.61	0.17	0.10
December	0.61	0.13	0.08
January	0.61	0.12	0.07
February	0.61	0.15	0.09
March	0.61	0.22	0.13
April	0.61	0.37	0.23
	0.61	4.11	2.51

Column Explanation:

- 1) Month of the year
- 2) Exposed surface water area from dewatering trench and settling pond
- 3) Month net evaporation rates from paragraph A.i of Exhibit R of LAWMA Case No. 02CW181 decree.
- 4) Column 2 x Column 3

Table 2
Total Operational Consumptive Use

Month	Percent of Annual Aggregate Production	Aggregate Production	Water Retained in Product	Total Evaporative Consumptive Use	Total Consumptive Use
	(ac)	(tons)	(ac-ft)	(ac-ft)	(ac-ft)
(1)	(2)	(3)	(4)	(5)	(6)
May	13.0%	97,500	1.43	0.28	1.72
June	16.0%	120,000	1.77	0.36	2.13
July	17.0%	127,500	1.88	0.38	2.25
August	15.0%	112,500	1.66	0.34	1.99
September	9.0%	67,500	0.99	0.26	1.26
October	7.0%	52,500	0.77	0.18	0.96
November	4.0%	30,000	0.44	0.10	0.55
December	1.0%	7,500	0.11	0.08	0.19
January	1.0%	7,500	0.11	0.07	0.18
February	2.0%	15,000	0.22	0.09	0.31
March	6.0%	45,000	0.66	0.13	0.80
April	9.0%	67,500	0.99	0.23	1.22
	100.0%	750,000	11.04	2.51	13.55

Column Explanation:

- 1) Month of the year
- 2) Estimated percentage of the annual production during the month.
- 3) Calculated as 750,000 x Column 2
- 4) Calculated as {(Column 3 x 2,000 x 0.02) / 62.4 / 43,560}
- 5) Monthly values from Table 1 Column 4
- 6) Sum of Column 4 and Column 5

Note:

Since mining operation is considered dry-mining with an impermeable layer moisture content in mined aggregate is considered at 2%.

Table 3
Total Operational Consumptive Use with Lagged Stream Depletions

Month	Percent of Annual Aggregate Production	Aggregate Production	Water Retained in Product	Total Evaporative Consumptive Use	Total Consumptive Use	Lagged Stream Depletion
	(ac)	(tons)	(ac-ft)	(ac-ft)	(ac-ft)	(ac-ft)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
May	13.0%	97,500	1.43	0.28	1.72	0.16
June	16.0%	120,000	1.77	0.36	2.13	0.59
July	17.0%	127,500	1.88	0.38	2.25	0.91
August	15.0%	112,500	1.66	0.34	1.99	1.09
September	9.0%	67,500	0.99	0.26	1.26	1.09
October	7.0%	52,500	0.77	0.18	0.96	0.96
November	4.0%	30,000	0.44	0.10	0.55	0.82
December	1.0%	7,500	0.11	0.08	0.19	0.64
January	1.0%	7,500	0.11	0.07	0.18	0.49
February	2.0%	15,000	0.22	0.09	0.31	0.41
March	6.0%	45,000	0.66	0.13	0.80	0.43
April	9.0%	67,500	0.99	0.23	1.22	0.56
	100.0%	750,000	11.04	2.51	13.55	8.15

Column Explanation:

- 1) Month of the year
- 2) Estimated percentage of the annual production during the month.
- 3) Calculated as 750,000 x Column 2
- 4) Calculated as {(Column 3 x 2,000 x 0.02) / 62.4 / 43,560}
- 5) Monthly values from Table 1 Column 4
- 6) Sum of Column 4 and Column 5
- 7) Lagged stream depletion from monthly values in Column 6 using AWAS and a SDF of 88 days

Note:

Since mining operation is considered dry-mining with an impermeable layer moisture content in mined aggregate is considered at 2%.

Table 4
Accounting Form
GP Aggregates West Farm Pit
2018

	{A}	{B}	{C}	{D}	{E}	{F}	{G}	{H}	{I}	{J}	{K}	{L}
Month	Input Aggregate Production	Water Retained in Product	INPUT Meter Reading 6705373-B	Water Used for Washing & Dust Control	Input Exposed Surface Area	Evaporation Rate	Evaporative Consumptive Use	SWSP Total Consumptive Use	SWSP Total Lagged Consumptive Use	LAWMA Aug Plan Total Consumptive Use	LAWMA Aug Plan Total Lagged Consumptive Use	Total Replacement from LAWMA
	(tons)	(ac-ft)		(ac-ft)	(acres)	(ac-ft/ac)	(ac-ft)	(ac-ft)	(ac-ft)	(ac-ft)	(ac-ft)	(ac-ft)
Dec-17						0.13						0.00
Jan-17						0.12						0.00
Feb-17						0.15						0.00
Mar-17						0.22						0.00
Apr-17						0.37						0.00
May-17						0.46						0.00
Jun-17						0.59						0.00
Jul-17						0.62						0.00
Aug-17						0.55						0.00
Sep-17						0.43						0.00
Oct-17						0.30						0.00
Nov-17						0.17						0.00
Dec-17						0.13						0.00
Total	-	0.00		0.00		4.11	0.00	0.00	0.00	0.00	0.00	0.00

Notes:

- {A} **Input** aggregate sales or production in tons.
- {B} Water retained in product based on moisture content factor of 2% by weight
- {C} **Input** Meter reading for the meter SEO ID 6705373-B. Used as part of the gravel pit operation 100% consumptive.
- {D} The total amount used for dust control on site (calculated as Column C minus previous Column C x 0.001 multiplier)
- {E} **Input** current exposed water surface area
- {F} Net water surface evaporation
- {G} Column F x Column G
- {H} Sum of Column B and Column G
- {I} Column H lagged Consumptive Use using AWAS 1.5.85 with the SDF value of 88 by Hendrix Wai Engineering, Inc.
- {J} Value in Column D
- {K} Column J lagged Consumptive Use using AWAS 1.5.85 with the SDF value of 88 by Hendrix Wai Engineering, Inc.
- {L} Amount of replacement water delivered by LAWMA's augmentation sources.

Send Monthly Copies to:

Bill Tyner
Division 2
310 E Abriendo
Pueblo, CO 81004

Rebecca Nichols
Water Commissioner
District 67

Don Higbee
LAWMA
P. O. Box 1161
Lamar, CO 81052