



October 12, 2017

Via U.S. Mail and e-mail

Mr. Tim Cazier
Colorado Division of Reclamation, Mining, and Safety
1313 Sherman Street, Room 215
Denver, CO 80203

**RE: RED CANYON QUARRY, DRMS FILE NO. M-1985-043
FREMONT COUNTY, COLORADO
POSSIBLE VIOLATION – HYDROLOGIC BALANCE
PROPOSED CORRECTIVE ACTION**

Dear Mr. Cazier,

Martin Marietta received a notice of possible violation regarding the hydrologic balance at the Red Canyon Quarry, Colorado Department of Reclamation, Mining, and Safety (DRMS) File No. M-1985-043. We understand that the possible violation stems from a groundwater exposure event at the sediment pond/pit area on the site, as reported to DRMS by the Colorado Division of Water Resources (DWR). DWR became aware of the issue as a result of our filing a request for approval of a substitute water supply plan (SWSP) for the site.

Appended, please find a copy of a form GWS-27 Gravel Pit Well Permit Application and accompanying SWSP that has been submitted to DWR. Once we know the status of the SWSP, we will be submitting a request for a technical revision to the mine plan to DRMS for an increase in area/volume for the sedimentation pond. If applicable, the request for technical revision will also specify that post-mining site reclamation will include backfilling the sedimentation pond to two feet above the level of static groundwater. If the SWSP is not approved, we will take immediate and appropriate action to mitigate the exposed groundwater by backfilling the area of exposed groundwater to two feet above the level of static groundwater, as specified in the notice of possible violation.

If you have questions about this response, please contact me at (720) 245-6423 or e-mail at david.bieber@martinmarietta.com.

Sincerely,

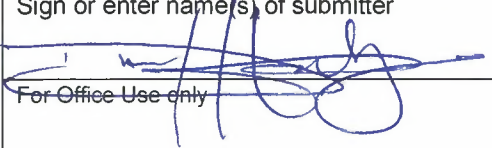
Martin Marietta Materials Inc.

A handwritten signature in black ink, appearing to read 'David Bieber', written over the company name.

David Bieber, Manager of Geology/Survey, Rocky Mountain Division

Attachments:

Form GWS-27 Gravel Pit Well Permit Application
Substitute Water Supply Plan

Form No. GWS-27 5/2012	COLORADO DIVISION OF WATER RESOURCES DEPARTMENT OF NATURAL RESOURCES 1313 Sherman St., Ste 821, Denver, Colorado 80203 Phone: (303) 866-3581 DWR Web: www.water.state.co.us Email: dwrpermitsonline@state.co.us	For Office Use only
REVIEW INSTRUCTIONS PRIOR TO COMPLETING FORM		
GRAVEL PIT WELL PERMIT APPLICATION		
1.	TYPE OF PERMIT ☐ NEW PIT(S) ☒ PIT(S) EXIST, CONSTRUCTED AFTER DEC. 31, 1980	
2.	APPLICANT INFORMATION NAME(S) <u>Martin Marietta</u> Mailing Address <u>1627 Cole Blvd Suite 200</u> City, St. Zip <u>Lakewood, CO 80401</u> Phone (w/ area code) <u>720-245-6400</u> Email: <u>james.sharn@martinmarietta.com</u>	
3.	CONSULTANT/ATTORNEY/OPERATOR CONTACT (If different than #2) NAME(S) <u>Bishop-Brogden Associates, Inc.</u> Mailing Address <u>333 W Hampden Ave, Suite 1050</u> City, St. Zip <u>Englewood, CO 80110</u> Phone (w/ area code) <u>303-806-8952</u> Email: <u>dheintz@bbawater.com</u>	PIT NAME <u>Red Canyon</u> DRMS NO. <u>M-1985-043</u>
4.	GENERAL LOCATION OF PIT(S): COUNTY <u>Freemont</u> <u> </u> 1/4 <u> </u> 1/4, Sec. <u>1</u> Twp. <u>17</u> ☐ N. ☒ S., Range <u>68</u> ☐ E. ☒ W. <u>6th</u> P.M.	
5.	Estimated maximum water surface to be exposed: <u>1</u> Acres. Number of Pits <u>1</u>	
6.	Estimated depth of pit(s) <u>15</u> Ft. Estimated depth to groundwater <u>10</u> Ft.	
7.	Estimated date to expose groundwater <u>08/31/2017</u> ; date to complete mining <u>08/31/2037</u>	
8.	ATTACHMENTS: (Check which have been attached.) (a) ☒ Scaled map of pit area with range, township, & section clearly identified (REQUIRED). (b) ☐ Copy of the reclamation permit, if applicable. (c) ☐ Copy of pre 1/15/89 water conservancy dist. or water user assoc. augmentation agreement, if applicable. (d) ☒ Copy of proposed substitute water plan or augmentation plan application, if applicable. (e) / ☐ Copy of court approved augmentation plan, if applicable. Case No. _____ (f) ☐ Other _____	
9.	Detailed description of any use, other than evaporation, and method of diversion, rate of diversion, and annual amount of diversion of any water withdrawn from the pond. <u>20 ac-ft per year for dust suppression pumped at a maximum rate of 100 gpm</u>	
10.	Will dewatering occur within the DRMS permit boundary ☐ Yes ☒ No	
11.	I (we) have read the statements made herein and know the contents thereof, and that they are true to my (our) knowledge. [Pursuant to Section 24-4-104 (13)(a) C.R.S., the making of false statements herein constitutes perjury in the second degree and is punishable as a class 1 misdemeanor.]	
Sign or enter name(s) of submitter 		If signing print name & title David M. Heintz, P.E., Water Resources ☒
For Office Use only		Date (mm/dd/yyyy) 09/15/2017
Court Case No. _____ Div. _____ Co. _____ WD _____ Basin _____ MD _____ Use _____		

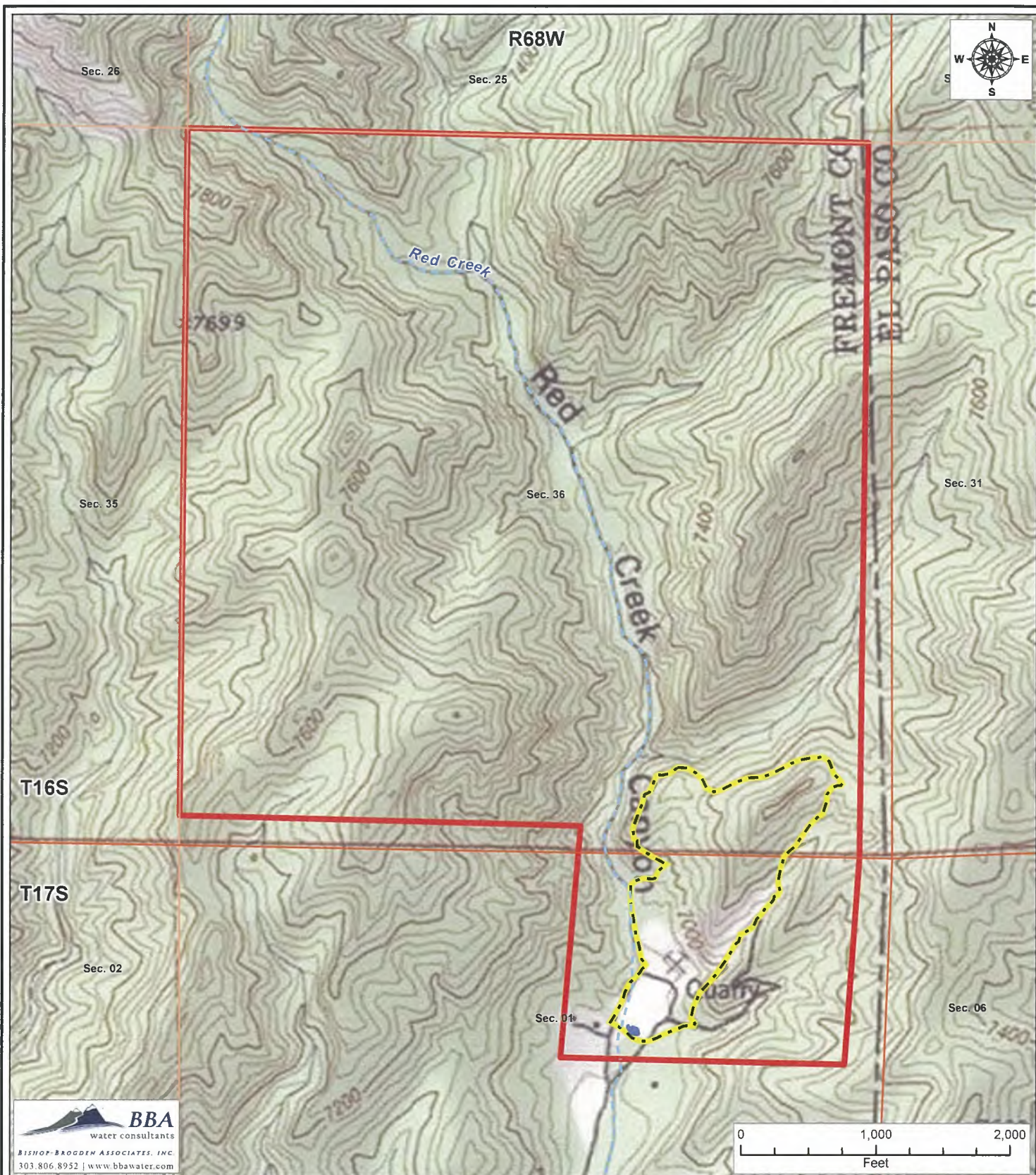


Figure 1
Martin Marietta
Red Canyon Mine
Mining Area Map

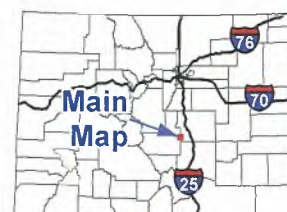
Date: 9/15/2017 | Job No. 1204.11

Legend

- Exposed Ground Water
- DRMS Permit Boundary (Approx.)
- Current Mining Area (Approx.)

Data Source: CDOT, CDSS, USGS, BLM

Colorado





BISHOP-BROGDEN ASSOCIATES, INC.

Christopher J. Sanchez
Jeffrey A. Clark
Daniel O. Niemela
Jonathan D. George
Michael A. Sayler
Charles E. Stanzione

September 14, 2017

Ms. Melissa Peterson
State Engineer's Office
Division of Water Resources
1313 Sherman Street, Room 818
Denver, CO 80203

Re: Substitute Water Supply Plan Request for Martin Marietta's Red Canyon Mine, Water Division 2, Water District 12

Dear Melissa:

On behalf of our client, Martin Marietta ("MM"), this letter provides a request for a Substitute Water Supply Plan ("SWSP") for MM's Red Canyon Mine (DRMS Permit M-1985-043) pursuant to C.R.S. Section 37-90-137 (11). This is the first SWSP requested for the Red Canyon Mine. The term of this SWSP request is for a period of two (2) years from September 1, 2017 through August 31, 2019.

Pursuant to 37-90-137(11) payment for the \$1,593 fee associated with the original SWSP application for the Red Canyon Mine was made to the Records Section on March 2nd, 2017.

1. PROJECT DESCRIPTION

MM's Red Canyon Mine is an existing gravel/aggregate mine located along Red Creek, a tributary to the Arkansas River. The mine is generally located in Section 36 of Township 16 South, Range 68 West of the 6th P.M. and Section 1 of Township 17 South, Range 68 West of the 6th P.M. as shown in Figure 1.

MM and its predecessor has historically trucked water to the site for dust suppression at the mine. MM has recently completed test-drilling at the site and plans on converting two of the test wells to production wells to reduce or eliminate the need to haul water. During the term of this SWSP, consumptive use at the Red Canyon Mine will consist of dust suppression and evaporation of groundwater at the site as described further below. All dust suppression uses will be 100 percent consumptive.

Under the requested plan, MM will replace all calculated depletions from the Red Canyon Mine to the Arkansas River using a lease for augmentation water with either the Arkansas Groundwater Users Association (“AGUA”) or Pueblo Board of Water Works (“PBWW”). For 2017, MM has finalized a lease with PBWW and copy of the lease award letter is attached in Appendix A. MM will provide a copy of any lease obtained for this SWSP after 2017. Pursuant to the planned lease, MM will provide accounting to the lessor, which will incorporate the MM data into their accounting, and then the appropriate replacement releases will be made in coordination with the Division Engineer’s Office. The calculation of depletions and replacement supplies planned for this SWSP are described in more detail respectively in Sections 2 and 3 of this letter.

2. DEPLETIONS

The depletions at the Red Canyon Mine during the term of this SWSP will consist of dust suppression and evaporation of exposed groundwater.

2.1 Dust Suppression

The use of water for dust suppression at the Red Canyon Mine will occur throughout the entire SWSP period. MM plans to pump water from the wells for dust suppression use within the mining area. Depending on the water production from the two wells, MM may also supplement the well pumping with continued deliveries of trucked-in dust suppression water. The total annual pumping for dust suppression is estimated to be approximately 20 ac-ft at the Red Canyon Mine, as shown in Column 4 of Table 1. MM will meter all water pumped for dust suppression purposes.

2.2 Evaporation

Exposed Surface Area

Based on discussions with MM and site investigations, we have determined that a portion of the mine site includes a pit located on the south side of the mining site that exposes groundwater. The pond level varies throughout the year, but has a maximum surface area of 0.1 acres, as shown in Figure 2. For purposes of this SWSP request, we have assumed the maximum surface area will be exposed year-round.

Gross and Net Evaporation

The NOAA Technical Report NWS 33, Evaporation Atlas for the Contiguous 48 United States (TR-NWS 33) was used to determine the gross evaporation at the Red Canyon Mine. According to TR-NWS 33, the total average annual gross evaporation at the site is equal to 46 inches, or 3.83 feet. The total annual gross evaporation is distributed monthly according to Senate Bill 89-120¹,

¹ Senate Bill 89-120 distributes gross evaporation for elevations below 6,500 feet as follows: November: 4%, December: 3%, January: 3%, February: 3.5%, March: 5.5%, April: 9%, May: 12%, June: 14.5%, July: 15.0%, August: 13.5%, September 10%, October 7%.

as shown in Table 2. Net evaporation is equal to the gross evaporation less the effective precipitation, which is equal to 70% of the average monthly precipitation. Average monthly precipitation at the Red Canyon Mine is based upon the precipitation at the Cripple Creek 3NNW (USC00051977) NOAA weather station for the time period 2006-2017 which averages 16.39 inches per year, or 1.37 feet per year. Therefore, the net evaporation rate for the Red Canyon mine site is 2.87 feet per year. As described above, we have assumed that the maximum of 0.1 acres of ground water will be exposed throughout the SWSP period. During the SWSP period, the resulting annual net evaporative depletion is 0.29 ac-ft, as shown in Table 2.

2.3 Lagged Depletions

The wells will pump water and the pond exposes groundwater tributary to Red Creek, which is normally a dry channel downstream of the mine site. Red Creek is tributary to Beaver Creek and the total distance between the mine site and the confluence of Beaver Creek and the Arkansas River is approximately 20 miles. There are no known water rights located on Beaver Creek between Red Creek and the Arkansas River, which confirmed by the Water Commissioner. The projected point of depletion on the Arkansas River is at the confluence with Beaver Creek, located above Pueblo Reservoir, as shown in Figure 1. Due to the distance from the Red Canyon Mine to the Arkansas River and the indeterminate hydrologic connection, the delayed effects of the depletions to the river are assumed to be similar to the “bedrock”, steady-state well conditions described in the Colorado Water Protective and Development Association’s (“CWPDA”) decree in Case No. 07CW128. As a result, for this SWSP the mine use water depletions will be replaced based on using the average of the total pumping from the prior five (5) years of operations. Specifically, MM proposes to measure and record the total annual well pumping from both wells for dust suppression. This will be combined with the maximum total evaporation of exposed groundwater. The volume of water to be replaced in any one year will be the average of the prior five years total pumping and evaporation. Replacement water from the leased augmentation supplies will be provided on a daily basis throughout the year, or as otherwise allowed by the Division Engineer.

As indicated above, the site hydrology, ground water hydrology between the site and the river, the impacts to the Arkansas River and the proposed replacement methodology for the Red Canyon wells is very similar to the ‘bedrock’ or ‘steady state’ wells described in Colorado Water Protective & Development Association’s (CWPDA’s) decree in Case No. 07CW128. For this SWSP request, we are proposing to replace the lagged depletions using a similar approach as presented below. We have discussed this approach with the Division Engineers Office to confirm its applicability to the Red Canyon Mine.

2.4 Total Plan Lagged Depletions

As described above, MM proposes to replace the depletions from the well pumping and from the exposed groundwater evaporation in any year based on an average of the annual total pumping and evaporation from the prior five years. Given that this SWSP period would constitute the first two years of operation under this methodology, MM proposes to operate the first and second years as follows.

First Year

During the first year of operations under this methodology, there would be no prior pumping and a total of 0.29 ac-ft of evaporation, and the total lagged depletions from the Red Canyon Mine would be minimal. Nevertheless, as discussed with the Division Engineer, MM proposes to replace during this first SWSP plan year the volume of water that would be due as if MM had pumped an annual total of 20 ac-ft the prior year, averaged with 4 years of zero. Specifically, MM proposes to replace under this SWSP plan year 4 ac-ft, or 20 ac-ft divided by five, associated with pumping in addition to the 0.29 ac-ft of evaporation.

Second Year

During the second year of operations under this SWSP, MM will replace the 'projected' pumping in year 1 with the actual metered total pumping during the first year of operation, averaged with 4 years of zero in the prior years, and use that volume along with 0.29 ac-ft of annual evaporation. Total actual pumping from years 1 and 2 will then be carried over and included future SWSP renewals.

3. REPLACEMENT SOURCES

Depletions from pumping under the first and second year of this SWSP described above will be replaced pursuant to the water lease with PBWW or AGUA. The lease amount in the first year is 5 ac-ft, and MM plans to lease additional water as needed in subsequent years. MM will provide a copy of the lease for subsequent years under this SWSP. The leased water will be delivered in adequate amount, timing, and location to protect existing water rights.

4. OPERATION OF PLAN

4.1 SWSP Operation

MM will pump water from the two wells and meter total annual pumping, which shall be considered 100% consumptive. MM will also replace the evaporative losses from the maximum exposed surface area of 0.1 acres. Under this SWSP plan, and any future renewals, MM will replace to the Arkansas River a volume equal to the average of the total annual well pumping plus the evaporative depletions from the prior five years. The water replaced under this SWSP shall be provided on an average daily basis throughout the year, or as otherwise directed by the Division Engineer. The total out-of-priority depletions will be replaced pursuant to the water lease with AGUA or PBWW.

Under the first year of this SWSP, MM will replace water as if these wells had pumped a total annual volume of 20 ac-ft in the prior year, averaged with zeros for the other four years along with the 0.29 ac-ft of evaporative depletions. Under the second year of this SWSP, MM will use the actual total pumping from the prior, averaged with zeros for the other four years, along with the 0.29 ac-ft of evaporative depletions. In future years' SWSP, this volume will be replaced with actual annual pumping total for next year and for the following years added to the 0.29 ac-ft of

evaporative depletions. Accordingly, the average depletions will increase for the first four years of this SWSP.

4.2 Measurement and Accounting

MM will meter and will keep records of all well pumping for dust suppression water use from the wells at the Red Canyon Mine. MM will also monitor the exposed ground water area to ensure that it does not exceed 0.1 acres. MM will provide accounting for site operations on a monthly basis, or as otherwise required by the Division Engineer's Office. The accounting forms will be substantially the same as Tables 1 and 2, with the actual depletion and replacement volumes shown for each month instead of the projections shown in this SWSP request.

4.4 Well Permit

The two wells located on the Red Canyon Mine are currently permitted as monitoring wells under Permit Nos. 302359 and 302360 as seen in Figure 1. Well permit applications were submitted to the State Engineer's Office on April 20, 2017 to convert the two wells from monitoring wells to production wells to be used at the Red Canyon Mine. The receipt numbers for each of the well permit applications are 3679456A and 3679456B. Additionally, MM will provide a gravel pit well permit application concurrently with this SWSP request and a receipt number will be provided once received.

5. TERMS AND CONDITIONS

1. The SWSP shall be valid for the two-year period from September 1, 2017 through August 31, 2019.
2. All pumping for dust suppression will be metered and included in the accounting.
3. The exposed surface area of groundwater will not exceed 0.1 acres during the SWSP period.
4. The total depletions requiring replacement at the Red Canyon Mine for the SWSP period are projected to be 4.29 ac-ft for the first year of this plan period, which will be replaced with actual first-year pumping totals for the second year of this plan period.
5. Depletions to the Arkansas River will be replaced on a daily basis, or as directed by the Division Engineer, using water leased from AGUA or PBWW.
6. MM will submit accounting for the Red Canyon Mine to the Division Engineer on a monthly basis, or as directed by the Division Engineer.
7. For matters related to this SWSP please contact:

David M. Heintz, P.E.
Bishop-Brogden Associates
333 West Hampden Avenue, Suite 1050
Englewood, CO 80110
303-806-8952
dheintz@bbawater.com

Ms. Melissa Peterson
September 14, 2017
Page 6

Opinion of Non-Injury

It is our opinion that so long as the terms and conditions in this SWSP request are followed, no injury to other water rights will result.

Please feel free to give us a call if you have any questions or need any additional information.

Very truly yours,

BISHOP-BROGDEN ASSOCIATES, INC.



David M. Heintz, P.E.
Water Resources Engineer

Reviewed by:



Jeffrey A. Clark
Principal - Hydrologist

DMH/JAC/jeb
Enclosures
1204.11

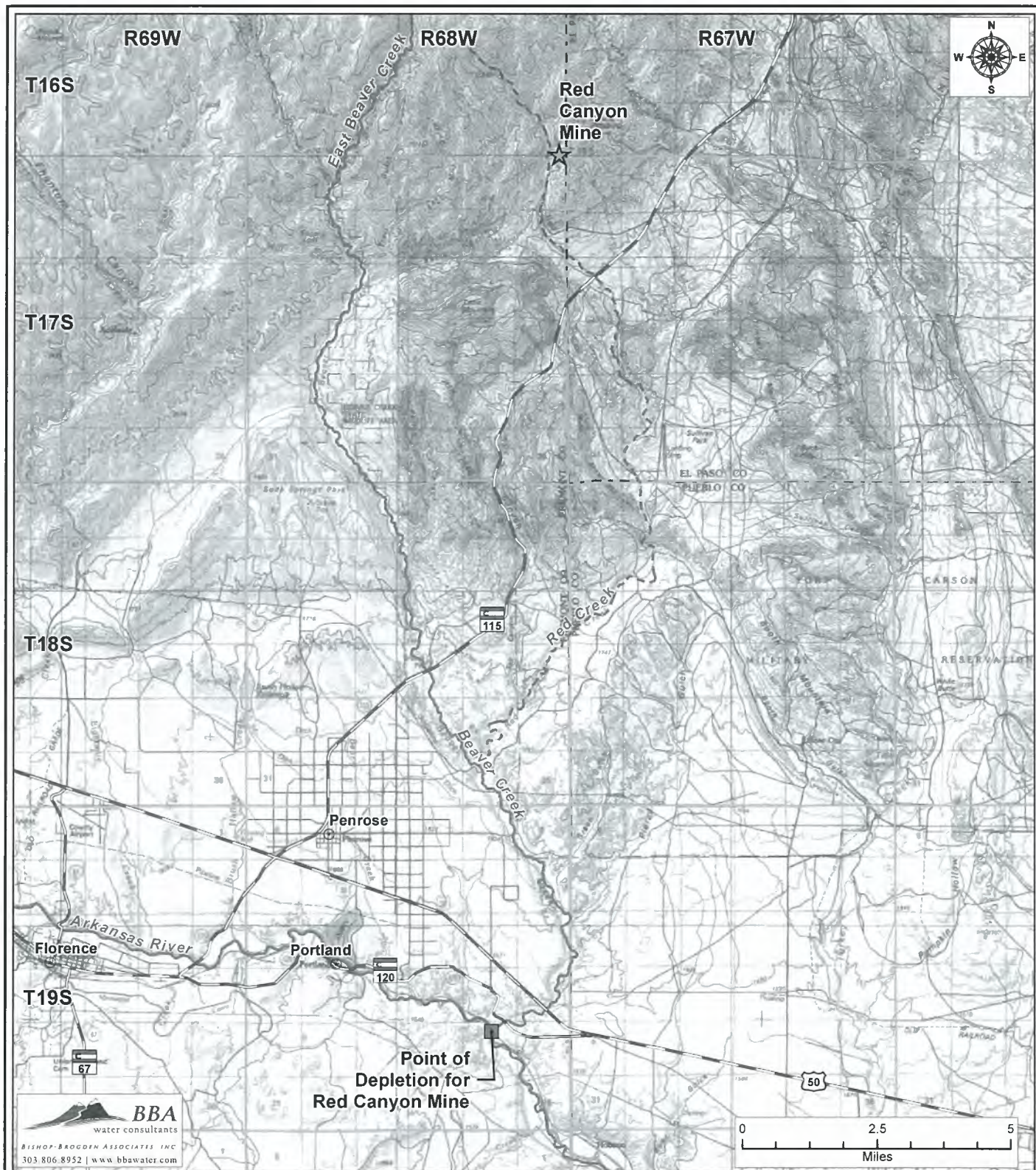


Figure 1
Martin Marietta
Red Canyon Mine
General Location Map

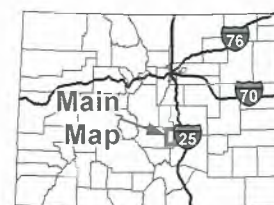
Date: 9/13/2017 | Job No. 1204.11

Legend

- Depletion Point
- ★ Mine Location

Data Source: CDOT, CDSS, USGS, BLM

Colorado



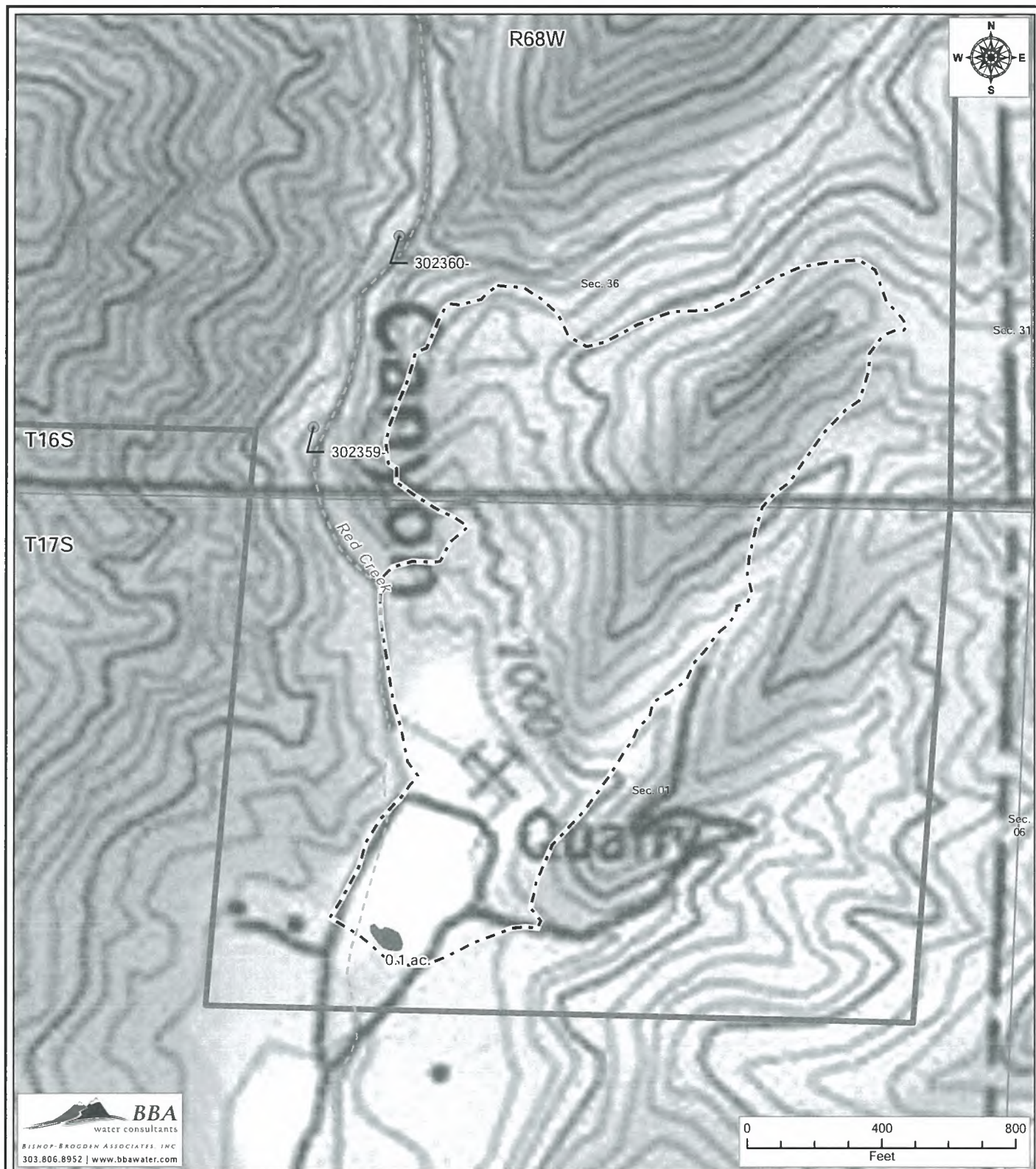


Figure 2
Martin Marietta
Red Canyon Mine
Mining Area Map

Date: 9/13/2017 | Job No. 1204.11

Legend

- Well
- Exposed Ground Water
- DRMS Permit Boundary (Approx.)
- ▬ Current Mining Area (Approx.)

Aerial Photo Date: 9/9/2015
Data Source: CDOT, CDSS, USGS, BLM

Colorado

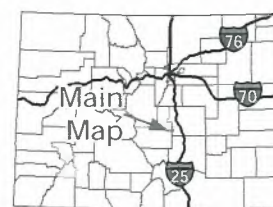


Table 1
Martin Marietta
Red Canyon Mine
2017-2019 SWSP Projected Pumping Depletions
(all values are in ac-ft)

Operational Year	September 1st BOY Well Meter Reading (gallons)	August 31st EOY Well Meter Reading (gallons)	Total Annual Metered Well Pumping	5-Year Running Average	Depletion to be Replaced during SWSP Period
[1]	[2]	[3]	[4]	[5]	[6]
2012-2013	-	-	0.00	-	-
2013-2014	-	-	0.00	-	-
2014-2015	-	-	0.00	-	-
2015-2016	-	-	0.00	-	-
2016-2017	-	-	20.00	4.00	-
2017-2018					4.00
2018-2019					

Notes:

[1] SWSP period is September 1st through August 31st. The 2017-2019 SWSP request is the first SWSP request to be submitted for the Red Canyon Mine.

[2] Beginning of the SWSP period well totalizing flow meter reading. Measurement is taken on September 1st of each year.

[3] End of the SWSP period well totalizing flow meter reading. Measurement is taken on August 31st of each year.

[4] No well pumping has occurred at MM's Red Canyon Mine prior to the 2017-2019 SWSP request. 20 ac-ft of pumping is shown for pumping during the 2016-2017 period in order to ensure replacement requirements for the first year of operation under the SWSP would be greater than zero as described in the 2017-2019 SWSP request.

[5] Equal to the 5-year running average of total annual pumping from [4].

[6] Equal to the 5-year running average of total annual pumping over the previous 5 year period.

*Shaded cell values will be based upon actual well pumping which occurs during the 2017-2018 SWSP period.

Table 2
Martin Marietta
Red Canyon Mine
2017-2019 SWSP Projected Water Balance

Month	5-Year Average Well Pumping Monthly Distribution (ac-ft)	Depletions						Replacements				Balance Credit (+) Deficit (-) (ac-ft)
		Gross Evaporation (ft)	Average Annual Precipitation (ft)	Effective Precipitation (ft)	Net Evaporation (ft)	Net Evaporation Volume (ac-ft)	Total Depletion (ac-ft)	Replacement Supply (ac-ft)	Total Transit Loss % of Release	Total Transit Loss (ac-ft)	Total Replacement Available at Point of Depletion (ac-ft)	
-	[1]	[2]	[3]	[4]	[5]	[6]		[7]	[8]	[9]	[10]	[11]
Sep-17	0.33	0.38	0.16	0.11	0.27	0.03	0.36	0.40	11.00%	0.04	0.36	0.00
Oct-17	0.34	0.27	0.06	0.04	0.22	0.02	0.36	0.41	11.00%	0.04	0.36	0.00
Nov-17	0.33	0.15	0.03	0.02	0.13	0.01	0.34	0.38	11.00%	0.04	0.34	0.00
Dec-17	0.34	0.11	0.05	0.03	0.08	0.01	0.35	0.39	11.00%	0.04	0.35	0.00
Jan-18	0.34	0.11	0.04	0.03	0.09	0.01	0.35	0.39	11.00%	0.04	0.35	0.00
Feb-18	0.31	0.13	0.05	0.04	0.10	0.01	0.32	0.36	11.00%	0.04	0.32	0.00
Mar-18	0.34	0.21	0.06	0.04	0.17	0.02	0.36	0.40	11.00%	0.04	0.36	0.00
Apr-18	0.33	0.34	0.08	0.06	0.29	0.03	0.36	0.40	11.00%	0.04	0.36	0.00
May-18	0.34	0.46	0.14	0.10	0.36	0.04	0.38	0.42	11.00%	0.05	0.38	0.00
Jun-18	0.33	0.56	0.13	0.09	0.47	0.05	0.38	0.42	11.00%	0.05	0.38	0.00
Jul-18	0.34	0.57	0.27	0.19	0.38	0.04	0.38	0.42	11.00%	0.05	0.38	0.00
Aug-18	0.34	0.52	0.30	0.21	0.31	0.03	0.37	0.42	11.00%	0.05	0.37	0.00
Sep-18		0.38	0.16	0.11	0.27	0.03	0.03		11.00%			
Oct-18		0.27	0.06	0.04	0.22	0.02	0.02		11.00%			
Nov-18		0.15	0.03	0.02	0.13	0.01	0.01		11.00%			
Dec-18		0.11	0.05	0.03	0.08	0.01	0.01		11.00%			
Jan-19		0.11	0.04	0.03	0.09	0.01	0.01		11.00%			
Feb-19		0.13	0.05	0.04	0.10	0.01	0.01		11.00%			
Mar-19		0.21	0.06	0.04	0.17	0.02	0.02		11.00%			
Apr-19		0.34	0.08	0.06	0.29	0.03	0.03		11.00%			
May-19		0.46	0.14	0.10	0.36	0.04	0.04		11.00%			
Jun-19		0.56	0.13	0.09	0.47	0.05	0.05		11.00%			
Jul-19		0.57	0.27	0.19	0.38	0.04	0.04		11.00%			
Aug-19		0.52	0.30	0.21	0.31	0.03	0.03		11.00%			
2017-2018 Total	4.00	3.83	1.37	0.96	2.87	0.29	4.29	4.82	-	0.53	4.29	0.00
2018-2019 Total		3.83	1.37	0.96	2.87	0.29			-			

Notes:

[1] Well pumping depletions for water use at the Red Canyon Mine are based upon the average annual well pumping over the previous 5 years, calculated in Column [4] of Table 1. The total annual values is evenly

[2] Total gross evaporation (3.83 feet) is based upon NOAA Technical Report NWS 33 and distributed according to SEO Senate Bill 89-120 criteria

November: 4.0% February: 3.5% May: 12.0% August: 13.50%
December: 3.0% March: 5.5% June: 14.5% September: 10.0%
January: 3.0% April: 9.0% July: 15.0% October: 7.0%

[3] Based upon the average precipitation at the Cripple Creek 3NNW (USC00051977) NOAA weather station for the time period 2006-2017

[4] Assumed 70% effective precipitation. Equal to [3] x 70%

[5] Equal to [2] - [4]

[6] Equal to exposed groundwater area of 0.1 acres multiplied by [5]

[7] Total water provided for replacement by either PBWW or AGUA

[8] Equal to the maximum potential transit loss from the point at which the replacement is made to the point of depletion on the Arkansas River. Assumed 22 miles with a transit loss rate of 0.5% per mile. If there is no call between the point of depletion and Pueblo Reservoir, PBWW is able to make replacements directly from Pueblo Reservoir no transit loss will be assessed

[9] Equal to [2] x [3]

[10] Equals [2] - [4]

[11] Equal to [5] - [1]

* The values shown are an projected estimate of replacement credits available. Actual monthly values will be used in accounting submitted under the SWSP

**Shaded cell values will be based upon actual well pumping which occurs during the 2017-2018 SWSP period

APPENDIX A



Board of Water Works
of Pueblo, Colorado

319 W. 4th Street • P.O. Box 400 • Pueblo, Colorado 81002-0400 • 719/584-0250

February 27, 2017

Mr. David M. Heintz
Martin Marietta c/o Bishop Brogden Associates, Inc.
333 W. Hampden Ave. Suite 1050
Englewood, CO 80110

Dear Mr. Heintz,

This letter is notice that the Board of Water Works accepts your proposal submitted for the February 15, 2017 water lease bid opening. A copy of the proposal summary is enclosed for your information.

Delivery arrangements can be made by contacting Sharon Carleo, Water Resources Coordinator at 719-584-0238. Thanks for your interest in this water lease opportunity.

Sincerely,

Tina Garcia
Purchasing Agent

enclosure

cc: Sharon Carleo
Accounting Department

Name	Unit Price	Quantity (AF)	Total Price	Running Total Quantity (AF)
MARTIN MARIETTA MATERIALS	\$200.00	18	\$3,600.00	18
SYLVAN LAKES METRO DIST	\$200.00	15	\$3,000.00	33
CITY OF FOUNTAIN	\$150.00	250	\$37,500.00	283
ACA PRODUCTS	\$120.00	50	\$6,000.00	333
CWPDA	\$103.00	1,000	\$103,000.00	1,333
MARTIN MARIETTA MATERIALS	\$100.00	5	\$500.00	1,338
MT MASSIVE GOLF COURSE	\$100.00	10	\$1,000.00	1,348
AGUA	\$95.00	500	\$47,500.00	1,848
CWPDA	\$81.00	1,000	\$81,000.00	2,848
AGUA	\$75.00	500	\$37,500.00	3,348
CWPDA	\$63.00	1,000	\$63,000.00	4,348
CITY OF VICTOR	\$50.00	150	\$7,500.00	4,498
LOWER ARK WATER CONSERVANCY DIST	\$45.00	500	\$22,500.00	4,998
CWPDA	\$43.00	1,000	\$43,000.00	5,998
BESSEMER DITCH	\$42.50	5,000	\$212,500.00	10,998
MAURO FARMS	\$42.50	50	\$2,125.00	11,048
BESSEMER DITCH	\$35.50	2,000	\$71,000.00	13,048
OXFORD FARMERS DITCH	\$35.00	1,000	\$35,000.00	14,048
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CHARLES ZIMMERMAN	\$25.75	50	\$1,287.50	17,848
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TRANSIT MIX OF PUEBLO	\$20.00	2,500	\$50,000.00	24,048
LAWMA	\$20.00	2,500	\$50,000.00	26,548
NORMAN HOPKINS	\$20.00	150	\$3,000.00	26,698
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MATT HEIMERICH	\$15.56	225	\$3,501.00	27,423
LOWER ARK WATER CONSERVANCY DIST	\$15.00	500	\$7,500.00	27,923
CWPDA	\$12.50	3,000	\$37,500.00	30,923
FT LYON CANAL	\$12.50	14,000	\$175,000.00	44,923
DAVID TOMKY	\$12.00	90	\$1,080.00	45,013
ENLARGED SOUTHSIDE DITCH	\$12.00	1,000	\$12,000.00	46,013
LEIF BERG	\$11.00	100	\$1,100.00	46,113
HOLBROOK MUTUAL IRRIGATING CO	\$5.02	10,000	\$50,200.00	56,113

Total AF recommended for lease:

14,048 Total Revenue:

\$777,225.00

Avg. \$/AF:

\$55.33

¹It is anticipated that about 400 AF of return flow that is otherwise unusable to Pueblo Water will be used to satisfy the bids from the well augmentation groups (AGUA and CWPDA).

September 14, 2017

Ms. Melissa Peterson
State Engineer's Office
Division of Water Resources
1313 Sherman Street, Room 818
Denver, CO 80203

Re: Substitute Water Supply Plan Request for Martin Marietta's Red Canyon Mine, Water
Division 2, Water District 12

Dear Melissa:

On behalf of our client, Martin Marietta ("MM"), this letter provides a request for a Substitute Water Supply Plan ("SWSP") for MM's Red Canyon Mine (DRMS Permit M-1985-043) pursuant to C.R.S. Section 37-90-137 (11). This is the first SWSP requested for the Red Canyon Mine. The term of this SWSP request is for a period of two (2) years from September 1, 2017 through August 31, 2019.

Pursuant to 37-90-137(11) payment for the \$1,593 fee associated with the original SWSP application for the Red Canyon Mine was made to the Records Section on March 2nd, 2017.

1. PROJECT DESCRIPTION

MM's Red Canyon Mine is an existing gravel/aggregate mine located along Red Creek, a tributary to the Arkansas River. The mine is generally located in Section 36 of Township 16 South, Range 68 West of the 6th P.M. and Section 1 of Township 17 South, Range 68 West of the 6th P.M. as shown in Figure 1.

MM and its predecessor has historically trucked water to the site for dust suppression at the mine. MM has recently completed test-drilling at the site and plans on converting two of the test wells to production wells to reduce or eliminate the need to haul water. During the term of this SWSP, consumptive use at the Red Canyon Mine will consist of dust suppression and evaporation of groundwater at the site as described further below. All dust suppression uses will be 100 percent consumptive.

Under the requested plan, MM will replace all calculated depletions from the Red Canyon Mine to the Arkansas River using a lease for augmentation water with either the Arkansas Groundwater Users Association (“AGUA”) or Pueblo Board of Water Works (“PBWW”). For 2017, MM has finalized a lease with PBWW and copy of the lease award letter is attached in Appendix A. MM will provide a copy of any lease obtained for this SWSP after 2017. Pursuant to the planned lease, MM will provide accounting to the lessor, which will incorporate the MM data into their accounting, and then the appropriate replacement releases will be made in coordination with the Division Engineer’s Office. The calculation of depletions and replacement supplies planned for this SWSP are described in more detail respectively in Sections 2 and 3 of this letter.

2. DEPLETIONS

The depletions at the Red Canyon Mine during the term of this SWSP will consist of dust suppression and evaporation of exposed groundwater.

2.1 Dust Suppression

The use of water for dust suppression at the Red Canyon Mine will occur throughout the entire SWSP period. MM plans to pump water from the wells for dust suppression use within the mining area. Depending on the water production from the two wells, MM may also supplement the well pumping with continued deliveries of trucked-in dust suppression water. The total annual pumping for dust suppression is estimated to be approximately 20 ac-ft at the Red Canyon Mine, as shown in Column 4 of Table 1. MM will meter all water pumped for dust suppression purposes.

2.2 Evaporation

Exposed Surface Area

Based on discussions with MM and site investigations, we have determined that a portion of the mine site includes a pit located on the south side of the mining site that exposes groundwater. The pond level varies throughout the year, but has a maximum surface area of 0.1 acres, as shown in Figure 2. For purposes of this SWSP request, we have assumed the maximum surface area will be exposed year-round.

Gross and Net Evaporation

The NOAA Technical Report NWS 33, Evaporation Atlas for the Contiguous 48 United States (TR-NWS 33) was used to determine the gross evaporation at the Red Canyon Mine. According to TR-NWS 33, the total average annual gross evaporation at the site is equal to 46 inches, or 3.83 feet. The total annual gross evaporation is distributed monthly according to Senate Bill 89-120¹,

¹ Senate Bill 89-120 distributes gross evaporation for elevations below 6,500 feet as follows: November: 4%, December: 3%, January: 3%, February: 3.5%, March: 5.5%, April: 9%, May: 12%, June: 14.5%, July: 15.0%, August: 13.5%, September 10%, October 7%.

as shown in Table 2. Net evaporation is equal to the gross evaporation less the effective precipitation, which is equal to 70% of the average monthly precipitation. Average monthly precipitation at the Red Canyon Mine is based upon the precipitation at the Cripple Creek 3NNW (USC00051977) NOAA weather station for the time period 2006-2017 which averages 16.39 inches per year, or 1.37 feet per year. Therefore, the net evaporation rate for the Red Canyon mine site is 2.87 feet per year. As described above, we have assumed that the maximum of 0.1 acres of ground water will be exposed throughout the SWSP period. During the SWSP period, the resulting annual net evaporative depletion is 0.29 ac-ft, as shown in Table 2.

2.3 Lagged Depletions

The wells will pump water and the pond exposes groundwater tributary to Red Creek, which is normally a dry channel downstream of the mine site. Red Creek is tributary to Beaver Creek and the total distance between the mine site and the confluence of Beaver Creek and the Arkansas River is approximately 20 miles. There are no known water rights located on Beaver Creek between Red Creek and the Arkansas River, which confirmed by the Water Commissioner. The projected point of depletion on the Arkansas River is at the confluence with Beaver Creek, located above Pueblo Reservoir, as shown in Figure 1. Due to the distance from the Red Canyon Mine to the Arkansas River and the indeterminate hydrologic connection, the delayed effects of the depletions to the river are assumed to be similar to the “bedrock”, steady-state well conditions described in the Colorado Water Protective and Development Association’s (“CWPDA”) decree in Case No. 07CW128. As a result, for this SWSP the mine use water depletions will be replaced based on using the average of the total pumping from the prior five (5) years of operations. Specifically, MM proposes to measure and record the total annual well pumping from both wells for dust suppression. This will be combined with the maximum total evaporation of exposed groundwater. The volume of water to be replaced in any one year will be the average of the prior five years total pumping and evaporation. Replacement water from the leased augmentation supplies will be provided on a daily basis throughout the year, or as otherwise allowed by the Division Engineer.

As indicated above, the site hydrology, ground water hydrology between the site and the river, the impacts to the Arkansas River and the proposed replacement methodology for the Red Canyon wells is very similar to the ‘bedrock’ or ‘steady state’ wells described in Colorado Water Protective & Development Association’s (CWPDA’s) decree in Case No. 07CW128. For this SWSP request, we are proposing to replace the lagged depletions using a similar approach as presented below. We have discussed this approach with the Division Engineers Office to confirm its applicability to the Red Canyon Mine.

2.4 Total Plan Lagged Depletions

As described above, MM proposes to replace the depletions from the well pumping and from the exposed groundwater evaporation in any year based on an average of the annual total pumping and evaporation from the prior five years. Given that this SWSP period would constitute the first two years of operation under this methodology, MM proposes to operate the first and second years as follows.

First Year

During the first year of operations under this methodology, there would be no prior pumping and a total of 0.29 ac-ft of evaporation, and the total lagged depletions from the Red Canyon Mine would be minimal. Nevertheless, as discussed with the Division Engineer, MM proposes to replace during this first SWSP plan year the volume of water that would be due **as if** MM had pumped an annual total of 20 ac-ft the prior year, averaged with 4 years of zero. Specifically, MM proposes to replace under this SWSP plan year 4 ac-ft, or 20 ac-ft divided by five, associated with pumping in addition to the 0.29 ac-ft of evaporation.

Second Year

During the second year of operations under this SWSP, MM will replace the ‘projected’ pumping in year 1 with the actual metered total pumping during the first year of operation, averaged with 4 years of zero in the prior years, and use that volume along with 0.29 ac-ft of annual evaporation. Total actual pumping from years 1 and 2 will then be carried over and included future SWSP renewals.

3. REPLACEMENT SOURCES

Depletions from pumping under the first and second year of this SWSP described above will be replaced pursuant to the water lease with PBWW or AGUA. The lease amount in the first year is 5 ac-ft, and MM plans to lease additional water as needed in subsequent years. MM will provide a copy of the lease for subsequent years under this SWSP. The leased water will be delivered in adequate amount, timing, and location to protect existing water rights.

4. OPERATION OF PLAN

4.1 SWSP Operation

MM will pump water from the two wells and meter total annual pumping, which shall be considered 100% consumptive. MM will also replace the evaporative losses from the maximum exposed surface area of 0.1 acres. Under this SWSP plan, and any future renewals, MM will replace to the Arkansas River a volume equal to the average of the total annual well pumping plus the evaporative depletions from the prior five years. The water replaced under this SWSP shall be provided on an average daily basis throughout the year, or as otherwise directed by the Division Engineer. The total out-of-priority depletions will be replaced pursuant to the water lease with AGUA or PBWW.

Under the first year of this SWSP, MM will replace water as if these wells had pumped a total annual volume of 20 ac-ft in the prior year, averaged with zeros for the other four years along with the 0.29 ac-ft of evaporative depletions. Under the second year of this SWSP, MM will use the actual total pumping from the prior, averaged with zeros for the other four years, along with the 0.29 ac-ft of evaporative depletions. In future years’ SWSP, this volume will be replaced with actual annual pumping total for next year and for the following years added to the 0.29 ac-ft of

evaporative depletions. Accordingly, the average depletions will increase for the first four years of this SWSP.

4.2 Measurement and Accounting

MM will meter and will keep records of all well pumping for dust suppression water use from the wells at the Red Canyon Mine. MM will also monitor the exposed ground water area to ensure that it does not exceed 0.1 acres. MM will provide accounting for site operations on a monthly basis, or as otherwise required by the Division Engineer's Office. The accounting forms will be substantially the same as Tables 1 and 2, with the actual depletion and replacement volumes shown for each month instead of the projections shown in this SWSP request.

4.4 Well Permit

The two wells located on the Red Canyon Mine are currently permitted as monitoring wells under Permit Nos. 302359 and 302360 as seen in Figure 1. Well permit applications were submitted to the State Engineer's Office on April 20, 2017 to convert the two wells from monitoring wells to production wells to be used at the Red Canyon Mine. The receipt numbers for each of the well permit applications are 3679456A and 3679456B. Additionally, MM will provide a gravel pit well permit application concurrently with this SWSP request and a receipt number will be provided once received.

5. TERMS AND CONDITIONS

1. The SWSP shall be valid for the two-year period from September 1, 2017 through August 31, 2019.
2. All pumping for dust suppression will be metered and included in the accounting.
3. The exposed surface area of groundwater will not exceed 0.1 acres during the SWSP period.
4. The total depletions requiring replacement at the Red Canyon Mine for the SWSP period are projected to be 4.29 ac-ft for the first year of this plan period, which will be replaced with actual first-year pumping totals for the second year of this plan period.
5. Depletions to the Arkansas River will be replaced on a daily basis, or as directed by the Division Engineer, using water leased from AGUA or PBWW.
6. MM will submit accounting for the Red Canyon Mine to the Division Engineer on a monthly basis, or as directed by the Division Engineer.
7. For matters related to this SWSP please contact:

David M. Heintz, P.E.
Bishop-Brogden Associates
333 West Hampden Avenue, Suite 1050
Englewood, CO 80110
303-806-8952
dheintz@bbawater.com

Ms. Melissa Peterson
September 14, 2017
Page 6

Opinion of Non-Injury

It is our opinion that so long as the terms and conditions in this SWSP request are followed, no injury to other water rights will result.

Please feel free to give us a call if you have any questions or need any additional information.

Very truly yours,

BISHOP-BROGDEN ASSOCIATES, INC.



David M. Heintz, P.E.
Water Resources Engineer

Reviewed by:



Jeffrey A. Clark
Principal - Hydrologist

DMH/JAC/jeb
Enclosures
1204.11

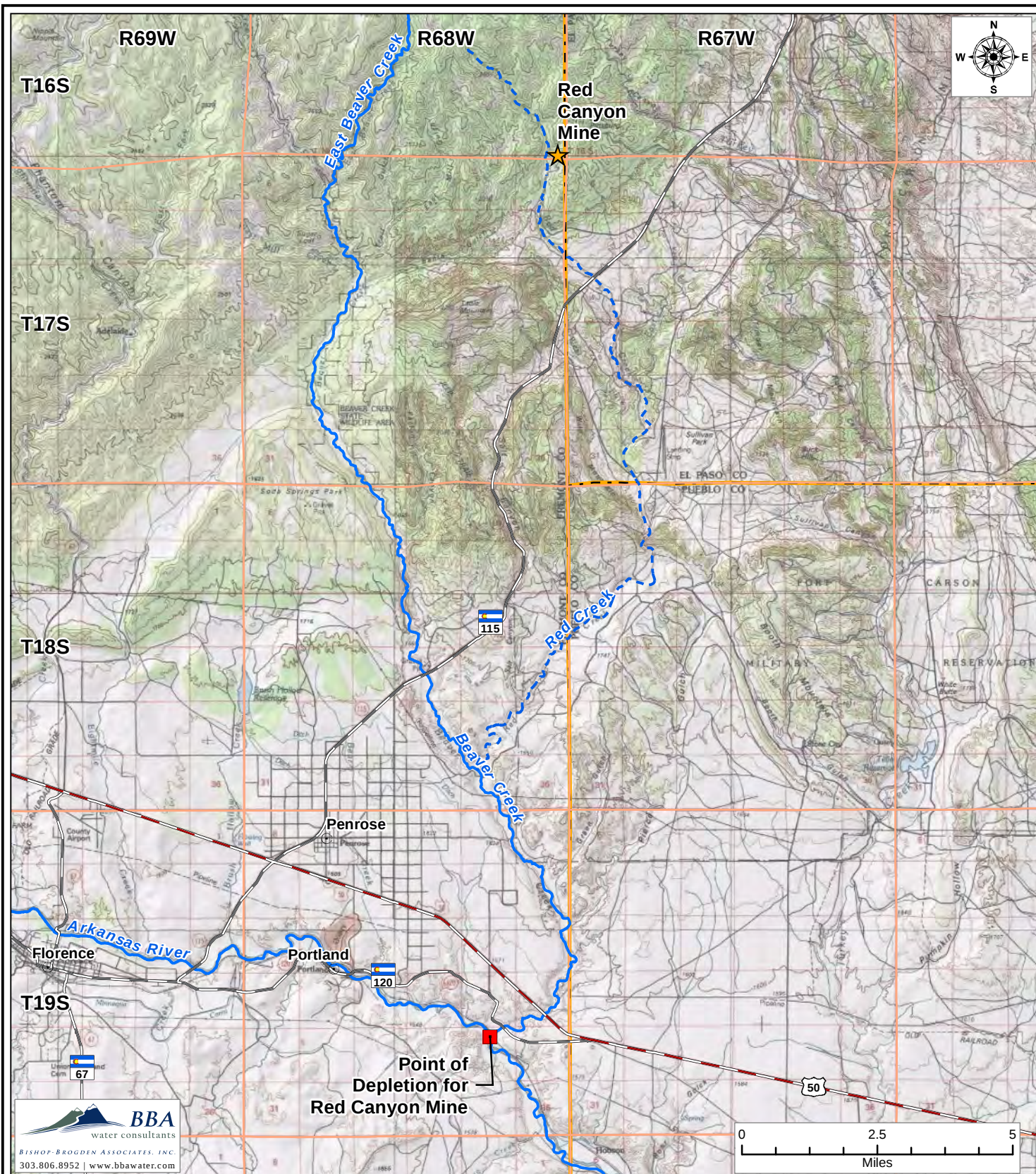


Figure 1
Martin Marietta
Red Canyon Mine
General Location Map

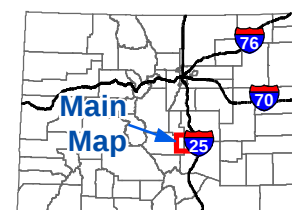
Date: 9/13/2017 | Job No. 1204.11

Legend

- Depletion Point
- ★ Mine Location

Data Source: CDOT, CDSS, USGS, BLM

Colorado



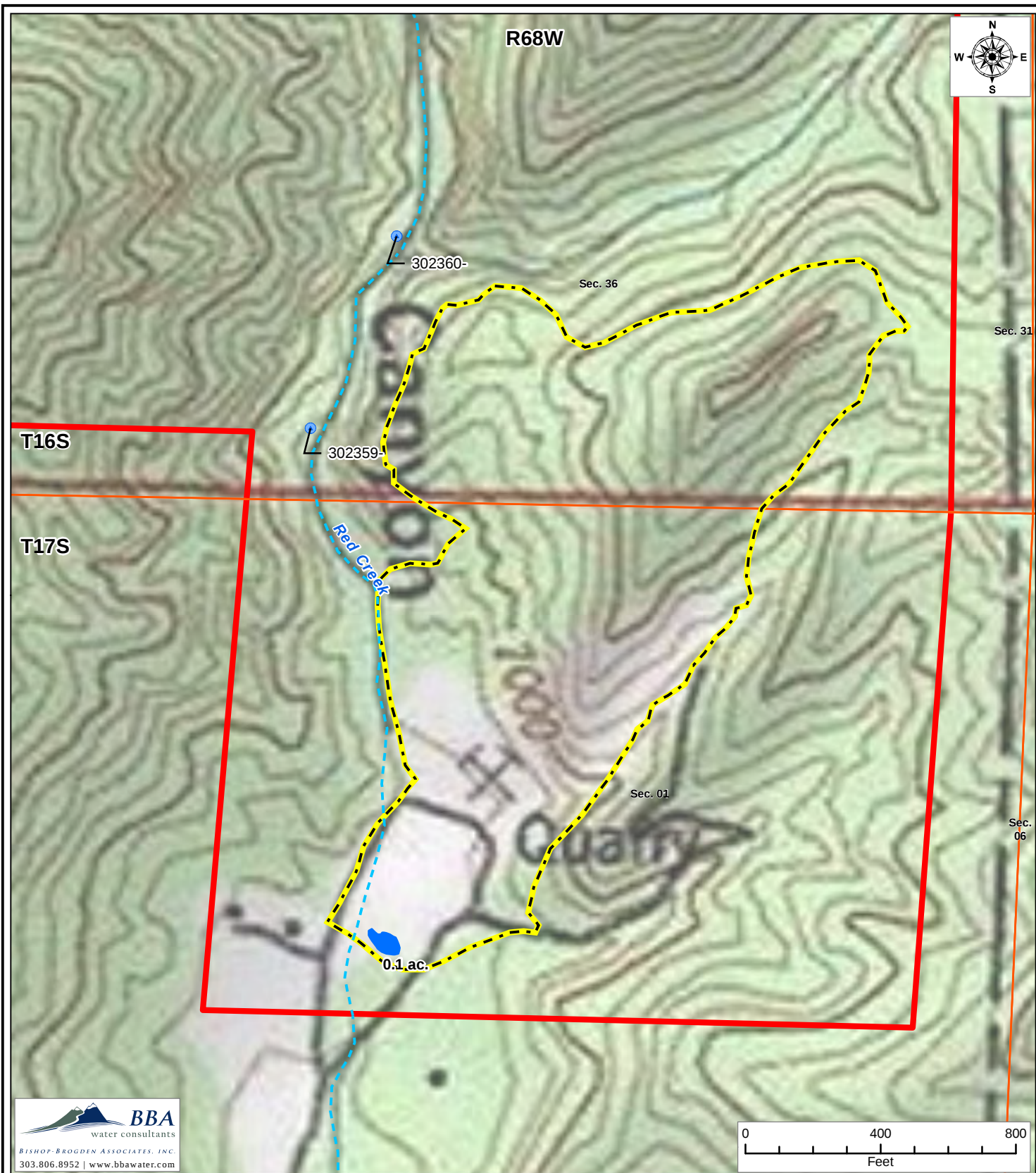


Figure 2
Martin Marietta
Red Canyon Mine
Mining Area Map

Date: 9/13/2017 | Job No. 1204.11

Legend

- Well
- Exposed Ground Water
- DRMS Permit Boundary (Approx.)
- Current Mining Area (Approx.)

Aerial Photo Date: 9/9/2015
 Data Source: CDOT, CDSS, USGS, BLM

Colorado

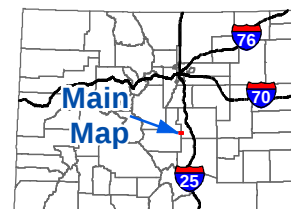


Table 1
Martin Marietta
Red Canyon Mine
2017-2019 SWSP Projected Pumping Depletions
(all values are in ac-ft)

Operational Year	September 1st BOY Well Meter Reading (gallons)	August 31st EOY Well Meter Reading (gallons)	Total Annual Metered Well Pumping	5-Year Running Average	Depletion to be Replaced during SWSP Period
[1]	[2]	[3]	[4]	[5]	[6]
2012-2013	-	-	0.00	-	-
2013-2014	-	-	0.00	-	-
2014-2015	-	-	0.00	-	-
2015-2016	-	-	0.00	-	-
2016-2017	-	-	20.00	4.00	-
2017-2018					4.00
2018-2019					

Notes:

[1] SWSP period is September 1st through August 31st. The 2017-2019 SWSP request is the first SWSP request to be submitted for the Red Canyon Mine.

[2] Beginning of the SWSP period well totalizing flow meter reading. Measurement is taken on September 1st of each year.

[3] End of the SWSP period well totalizing flow meter reading. Measurement is taken on August 31st of each year.

[4] No well pumping has occurred at MM's Red Canyon Mine prior to the 2017-2019 SWSP request. 20 ac-ft of pumping is shown for pumping during the 2016-2017 period in order to ensure replacement requirements for the first year of operation under the SWSP would be greater than zero as described in the 2017-2019 SWSP request.

[5] Equal to the 5-year running average of total annual pumping from [4].

[6] Equal to the 5-year running average of total annual pumping over the previous 5 year period.

*Shaded cell values will be based upon actual well pumping which occurs during the 2017-2018 SWSP period.

Table 2
Martin Marietta
Red Canyon Mine
2017-2019 SWSP Projected Water Balance

Month	Depletions							Replacements				Balance Credit (+) Deficit (-)
	5-Year Average Well Pumping Monthly Distribution (ac-ft)	Gross Evaporation (ft)	Average Annual Precipitation (ft)	Effective Precipitation (ft)	Net Evaporation (ft)	Net Evaporation Volume (ac-ft)	Total Depletion (ac-ft)	Replacement Supply (ac-ft)	Total Transit Loss % of Release	Total Transit Loss (ac-ft)	Total Replacement Available at Point of Depletion (ac-ft)	
-	[1]	[2]	[3]	[4]	[5]	[6]		[7]	[8]	[9]	[10]	[11]
Sep-17	0.33	0.38	0.16	0.11	0.27	0.03	0.36	0.40	11.00%	0.04	0.36	0.00
Oct-17	0.34	0.27	0.06	0.04	0.22	0.02	0.36	0.41	11.00%	0.04	0.36	0.00
Nov-17	0.33	0.15	0.03	0.02	0.13	0.01	0.34	0.38	11.00%	0.04	0.34	0.00
Dec-17	0.34	0.11	0.05	0.03	0.08	0.01	0.35	0.39	11.00%	0.04	0.35	0.00
Jan-18	0.34	0.11	0.04	0.03	0.09	0.01	0.35	0.39	11.00%	0.04	0.35	0.00
Feb-18	0.31	0.13	0.05	0.04	0.10	0.01	0.32	0.36	11.00%	0.04	0.32	0.00
Mar-18	0.34	0.21	0.06	0.04	0.17	0.02	0.36	0.40	11.00%	0.04	0.36	0.00
Apr-18	0.33	0.34	0.08	0.06	0.29	0.03	0.36	0.40	11.00%	0.04	0.36	0.00
May-18	0.34	0.46	0.14	0.10	0.36	0.04	0.38	0.42	11.00%	0.05	0.38	0.00
Jun-18	0.33	0.56	0.13	0.09	0.47	0.05	0.38	0.42	11.00%	0.05	0.38	0.00
Jul-18	0.34	0.57	0.27	0.19	0.38	0.04	0.38	0.42	11.00%	0.05	0.38	0.00
Aug-18	0.34	0.52	0.30	0.21	0.31	0.03	0.37	0.42	11.00%	0.05	0.37	0.00
Sep-18		0.38	0.16	0.11	0.27	0.03	0.03		11.00%			
Oct-18		0.27	0.06	0.04	0.22	0.02	0.02		11.00%			
Nov-18		0.15	0.03	0.02	0.13	0.01	0.01		11.00%			
Dec-18		0.11	0.05	0.03	0.08	0.01	0.01		11.00%			
Jan-19		0.11	0.04	0.03	0.09	0.01	0.01		11.00%			
Feb-19		0.13	0.05	0.04	0.10	0.01	0.01		11.00%			
Mar-19		0.21	0.06	0.04	0.17	0.02	0.02		11.00%			
Apr-19		0.34	0.08	0.06	0.29	0.03	0.03		11.00%			
May-19		0.46	0.14	0.10	0.36	0.04	0.04		11.00%			
Jun-19		0.56	0.13	0.09	0.47	0.05	0.05		11.00%			
Jul-19		0.57	0.27	0.19	0.38	0.04	0.04		11.00%			
Aug-19		0.52	0.30	0.21	0.31	0.03	0.03		11.00%			
2017-2018 Total	4.00	3.83	1.37	0.96	2.87	0.29	4.29	4.82	-	0.53	4.29	0.00
2018-2019 Total		3.83	1.37	0.96	2.87	0.29			-			

Notes:

[1] Well pumping depletions for water use at the Red Canyon Mine are based upon the average annual well pumping over the previous 5 years, calculated in Column [4] of Table 1. The total annual values is evenly

[2] Total gross evaporation (3.83 feet) is based upon NOAA Technical Report NWS 33 and distributed according to SEO Senate Bill 89-120 criteria.

November: 4.0%	February: 3.5%	May: 12.0%	August: 13.50%
December: 3.0%	March: 5.5%	June: 14.5%	September: 10.0%
January: 3.0%	April: 9.0%	July: 15.0%	October: 7.0%

[3] Based upon the average precipitation at the Cripple Creek 3NNW (USC00051977) NOAA weather station for the time period 2006-2017.

[4] Assumed 70% effective precipitation. Equal to [3] x 70%.

[5] Equal to [2] - [4].

[6] Equal to exposed groundwater area of 0.1 acres multiplied by [5].

[7] Total water provided for replacement by either PBWW or AGUA.

[8] Equal to the maximum potential transit loss from the point at which the replacement is made to the point of depletion on the Arkansas River. Assumed 22 miles with a transit loss rate of 0.5% per mile. If there is no call between the point of depletion and Pueblo Reservoir, PBWW is able to make replacements directly from Pueblo Reservoir no transit loss will be assessed.

[9] Equal to [2] x [3].

[10] Equals [2] - [4].

[11] Equal to [5] - [1].

* The values shown are an projected estimate of replacement credits available. Actual monthly values will be used in accounting submitted under the SWSP.

**Shaded cell values will be based upon actual well pumping which occurs during the 2017-2018 SWSP period.

APPENDIX A



Board of Water Works
of Pueblo, Colorado

319 W. 4th Street ▪ P.O. Box 400 ▪ Pueblo, Colorado 81002-0400 ▪ 719/584-0250

February 27, 2017

Mr. David M. Heintz
Martin Marietta c/o Bishop Brogden Associates, Inc.
333 W. Hampden Ave. Suite 1050
Englewood, CO 80110

Dear Mr. Heintz,

This letter is notice that the Board of Water Works accepts your proposal submitted for the February 15, 2017 water lease bid opening. A copy of the proposal summary is enclosed for your information.

Delivery arrangements can be made by contacting Sharon Carleo, Water Resources Coordinator at 719-584-0238. Thanks for your interest in this water lease opportunity.

Sincerely,

Tina Garcia
Purchasing Agent

enclosure

cc: Sharon Carleo
Accounting Department

Name	Unit Price	Quantity (AF)	Total Price	Running Total Quantity (AF)
MARTIN MARIETTA MATERIALS	\$200.00	18	\$3,600.00	18
SYLVAN LAKES METRO DIST	\$200.00	15	\$3,000.00	33
CITY OF FOUNTAIN	\$150.00	250	\$37,500.00	283
ACA PRODUCTS	\$120.00	50	\$6,000.00	333
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CWPDA	\$12.50	3,000	\$37,500.00	30,923
FT LYON CANAL	\$12.50	14,000	\$175,000.00	44,923
DAVID TOMKY	\$12.00	90	\$1,080.00	45,013
ENLARGED SOUTHSIDE DITCH	\$12.00	1,000	\$12,000.00	46,013
LEIF BERG	\$11.00	100	\$1,100.00	46,113
HOLBROOK MUTUAL IRRIGATING CO	\$5.02	10,000	\$50,200.00	56,113
Total AF recommended for lease:		14,048	Total Revenue:	\$777,225.00
			Avg. \$/AF:	\$55.33

¹It is anticipated that about 400 AF of return flow that is otherwise unusable to Pueblo Water will be used to satisfy the bids from the well augmentation groups (AGUA and CWPDA).