J. E. STOVER & ASSOCIATES, INC.

743 HORIZON COURT, SUITE 334
GRAND JUNCTION, COLORADO 81506
PHONE: (970) 245-4101

MINE ENGINEERING
MINE RECLAMATION

CIVIL ENGINEERING
CONST. MANAGEMENT

March 7, 2023

Mr. Clayton Wein
Division of Reclamation, Mining and Safety
1313 Sherman Street, Room 215
Denver, CO 80203

RE: Snowcap Coal Company, Inc.
Annual Hydrology Report – 2022WY
Permit No. C-1981-041

Dear Mr. Wein:

On behalf of Snowcap Coal Company, Inc., enclosed is a copy of its annual hydrology report for the 2022 water year. This submission is designed to supplement previous submissions and should be added to the 3-ring binder provided in 1993. The index pages should replace the previous index pages; the report, diagrams, tables and map should be inserted following the 2022 tab page; and the data pages should be added to or replace existing pages in the data pages binder.

Sincerely,

Tonya K. Hammond

Tonya K. Hammond
Owner's Representative
Snowcap Coal Company, Inc.

Enclosures

cc: SCC File

SNOWCAP COAL COMPANY, INC.
ANNUAL HYDROLOGY REPORT INDEX

Surface Water

SA-# - Rapid Creek, quality monitored near SWGS-04 (Discontinued 1986)
SB-# - Upper Colorado River, quality (Discontinued 1993)
SC-# - Lower Colorado River, quality (Discontinued 1993)
SD-# - Outfall 001, weekly and monthly field and lab data (Discontinued 2002)
SE-# - Outfall 002, weekly and monthly field and lab data (Discontinued 2002)
SF-# - Outfall 004, weekly and monthly field and lab data (Discontinued 2001)
SG-# - SWSG-01, Lower Rapid Creek, daily flows and hydrograph (Discontinued 2016)
SH-# - SWGS-02, Cottonwood Creek, daily flows and hydrographs (Discontinued 2016)
SI-# - SWGS-03, Upper Rapid Creek, daily flows and hydrographs (Discontinued 2016)
SJ-# - SWGS-04, Lower Rapid Creek, daily flows and hydrographs (Discontinued 1986)
SK-# - SWGS-05, Upper Cottonwood Creek, daily flows and hydrographs (Discontinued 1998)
SL-# - Outfalls 001, 002 & 016, WET test (Discontinued 2005)
SM-# - Outfall 004, WET test (Discontinued 1999)
SN-# - Outfall 001, quality (Discontinued 2001)
SO-# - Outfall 002, quality (Discontinued 2001)
SP-# - Outfall 004, quality (Discontinued 1999)
SQ-# - Colorado River, USGS station 09095500 data
SR-# - Coal Canyon Drainage, SWGS-06 & -07, flows (Discontinued 2016)
SS-# - Jerry Creek, SWGS-08 & -09, flows (Discontinued 2011)
ST-# - Spring and Seep Surveys (Discontinued 2005)
SU-# - Outfall 016, quality
SV-# - Outfall 016, Weekly and monthly field and laboratory data

Ground Water

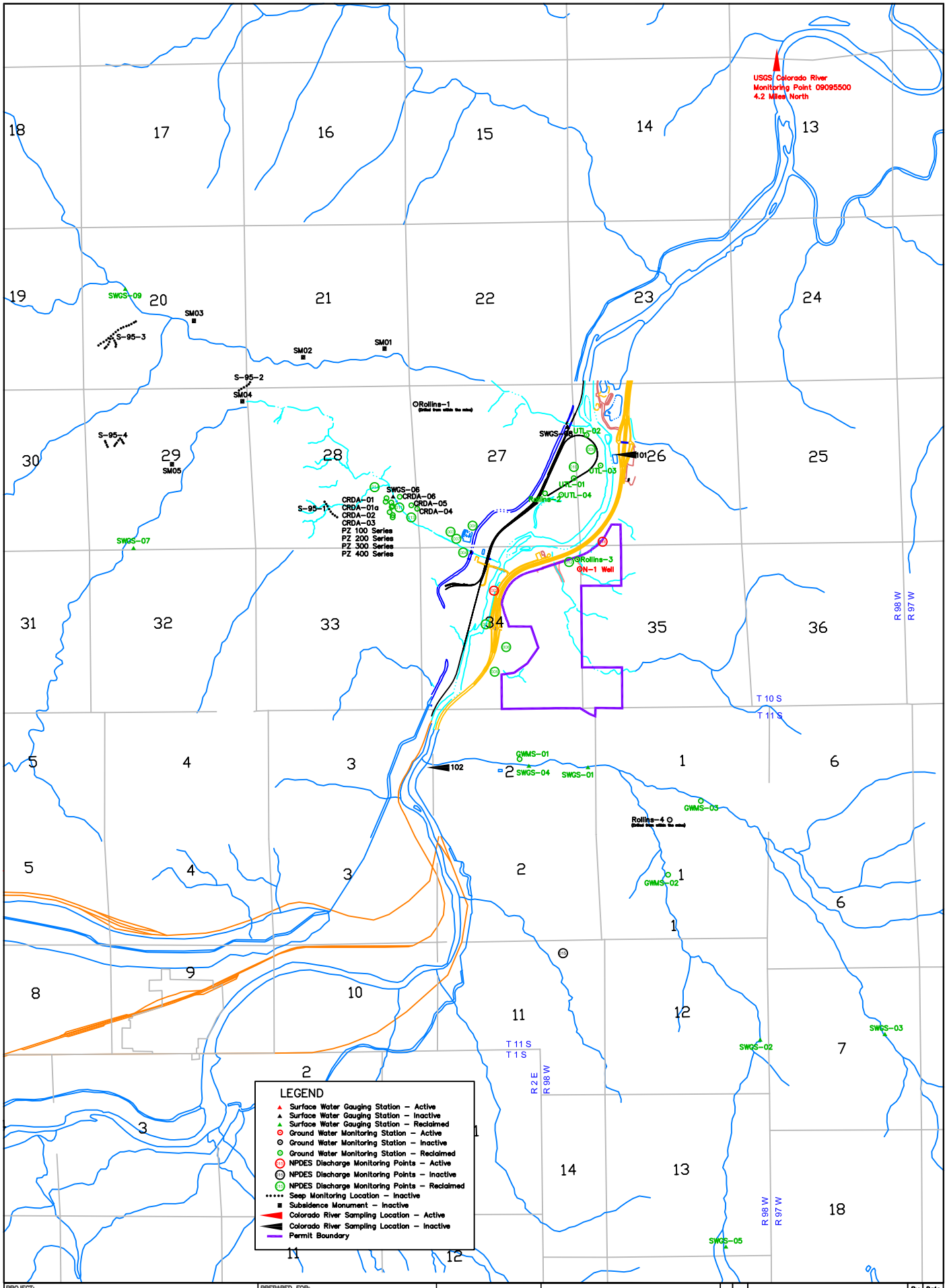
GA-# - Cottonwood Creek and Rapid Creek Groundwater Levels GWMS 01A, 01B, 02A, 02, 03A, 03B (Discontinued 2016)
GB-# - Unit Train Loadout Groundwater Level UTL-01, 02, 03, 04 (Discontinued 2011)
GC-# - Cameo Refuse Disposal Area Ground Water CRDA & PZ #s (Discontinued 2016)
GD-# - Water Quality Data UTL-02 UTL-04 (Discontinued 2010)
GE-# - Rollins Sandstone Wells depth to water and water quality Rollins-1, 2, 3, 4 (Discontinued 2011)

Mine Inflows

MA-# - South Portal inflow and quality data (Discontinued 1999)
MB-# - North Portal inflow and quality data (Discontinued 1999)

Consumptive Use

CA-# - Palisade Domestic Water and Preparation Plant, meter readings (Discontinued 2000)



PROJECT: SNOWCAP COAL COMPANY, INC.

TITLE: ROADSIDE NORTH AND SOUTH MINES MONITORING LOCATION MAP

DWG. NAME: 2022 AHR

DRMS I.D. No. C-1981-041

SCALE: NTS

PREPARED FOR:
SNOWCAP COAL COMPANY, INC.
P.O. Box 1430
Palisade, CO 81526
(970) 241-8118

PREPARED BY: J. E. STOVER & ASSOCIATES
765 Horizon Ct, Suite 204
Grand Jct., CO 81506

DIGITIZED	TKH	03/03/04
DRAWN:		
CHECKED:	JES	03/03/04

REVISIONS		By	Date
1	2022 Annual Hydrologic Map (Oct 2021 thru Sept 2022)	TKH	03/23

REFERENCES
C:\D_Drive\Spars\Old-D-Drive\PowderhornCoal\Powderhorn\ahr\2022MonitoringLocationMap

SNOWCAP COAL COMPANY, INC.
2022 ANNUAL HYDROLOGY REPORT
OCTOBER 1, 2021 THROUGH SEPTEMBER 30, 2022

Introduction

During the 2022 Water Year, the Year, the mines were idle. Mining ceased at the Roadside Portals on December 2, 1999. The North Mine was sealed on February 10, 2000. The Roadside South Mine was sealed on April 12, 2000. The South Fan was sealed May 22, 2000. The 2 West Portals were sealed on April 24, 2000. Production at the Roadside North utilized room and pillar mining with continuous miners and shuttle cars.

Reclamation of CRDA-2 was completed in 2002. The sediment retained by the drop structures in Coal Canyon was harvested for cover material. Material excavated during construction of the upper diversion ditch was also used as cover material. A small amount of cover material was obtained from CBA-1. Topsoil was obtained from Topsoil Stockpiles 2, 7, 8 and 9. Reclamation of CRDA-1 was also completed in 2002. Cover material was obtained from CBA-2. The road to CRDA-1 was left open to accept coal and refuse material from other ongoing reclamation activities. The road begins at the west end of Haul Rd No. 5 and extends to the top of CRDA-1.

The North Portal was regraded to approximate original contour during 2002. Backfill material came from areas filled near Coal Creek and around the coal stockpile area.

During 2002 the RSRDA was graded to final contours. The existing cover was graded off of the slope and used as cover below the first bench. Refuse material was cut from the pile to establish two 10' - 15' wide benches on 30' to 40' elevation intervals. This refuse material was placed in an extension of the pile to the north. Cover material was obtained from the RSRDA borrow area.

During 2003, a portion of the conveyor corridor was regraded and seeded. This work extended from the culvert under Excel's frontage road to the culvert under the railroad loop. The conveyor bridge over the Colorado River was removed during the year.

During 2004, the conveyor corridor, from the Xcel culvert south to Transfer Building #2 and east of the Colorado River where the conveyor tube crossed the river, was graded to approximate original contours and seeded.

No reclamation was performed in 2005 or 2006.

During 2007, a permit revision (PR3) was approved to change the land use at the South Portal from Fish and Wildlife to Industrial/Commercial. Final grading was completed for the approved reclamation plan.

During 2008, seeding was completed at the South Portal and the "G" Substation was removed, graded to approximate original contours and seeded.
During 2009, the rail spur lying south of I.9 Road was reclaimed, graded and seeded. A phase III bond release (SL5) was approved on the reclaimed conveyor corridor lying south of I.9 Road,

and a permit revision (PR4) was approved to change the land use at the Unit Train Loadout from Fish and Wildlife to Industrial/Commercial. Halliburton Energy Services purchased the UTL and began construction of their commercial sand plant operations.

During 2010 coal fines from the UTL were hauled to CRDA-1 and reclamation of CRDA-1 road was finalized in September. Ponds 1 and 2, sewage lagoons, topsoil pile 4 along with other areas of the UTL were reclaimed, regraded and reseeded. A phase III bond release (SL6) was approved for the Commercial/Industrial portion of the South Portal.

During 2011 Pond 7, sumps and ditches at the North Decline and Pond 8 at the South Portal were reclaimed, regraded and reseeded. A phase III bond release (SL7) was approved for the UTL, Railroad Loop, the remainder of the conveyor corridor and the permanent flood control dike.

During 2012 Ponds 6, 10, 11 and 13, CBA#1 Sump and miscellaneous sedimentation control features at the North Portal and along Coal Creek were reclaimed, regraded and reseeded. A permit revision (PR5) was approved allowing Coal Creek and Coal Gulch to remain in their present alignment and allows for the North Portal upper diversion ditch and a portion of Topsoil Pile 2 to remain as permanent features.

During 2013 Pond 9 was reclaimed, regraded and reseeded.

No reclamation was performed in 2014.

No reclamation was performed in 2015.

No reclamation was performed in 2016. Bond release application SL8 was approved on November 14, 2015. With this approval 128 surface disturbed acres achieved Phase III release; 136.5 surface disturbed acres achieved Phase II release and 22.2 surface disturbed acres achieved Phase I release. Also released with SL-8 were 1288.9 unaffected acres and 744 undisturbed acres overlying underground workings.

No reclamation was performed in 2017. A permit revision (PR6) was approved to change the land use at the Roadside North Portal Area from Fish and Wildlife to Industrial/Commercial. Bond release applications SL9 and SL10 were approved releasing 13.1 acres from Phase II liability and 13.6 acres from Phase III liability. Also released were 0.2 acres of undisturbed acres overlying underground workings.

No reclamation was performed in 2018.

During 2019 a hydrologic communication repair above the South Portal Mine was completed as approved by TR69. This repair generated a disturbance of 0.4 acres which was regraded, seeded and mulched.

No reclamation was performed in 2020. Bond release application SL11 was approved releasing

2.4 acres from Phase II liability and 10.4 acres from Phase III liability. Also released with SL11 were 291.3 undisturbed acres overlying underground workings.

No reclamation was performed in 2021.

No reclamation was performed in 2022.

The general format of this report is the same as in previous years.

Surface Water

Water flow and quality on the Colorado River is monitored by the U.S. Geologic Survey (USGS) at various locations. The closest location is Station No. 09095500, which is located upstream approximately 7 miles north east of the mine site. Water quality and flow from this site are used as a general representation of the Colorado River up gradient of the mining operation. There is a diversion to the Government Highline Canal, the addition of Plateau Creek and the addition of other minor drainages between the monitoring site and the mine site. Data Pages SQ-126 through SQ-129 includes information supplied by USGS on this site during the 2022 Water Year. The total flow at this site for the Year was 1,860,710 acre-feet which is 68% of the normal average flow for the period 1934 - 2022 (2,733,263). The estimated TDS load for the Year was 1.12 million tons. This estimate is made by converting values for conductivity reported on page SQ-129 to TDS per acre feet and multiplying by the monthly flow in acre feet. The low flow for the Year was recorded as 912 CFS on December 20, 2021. The river was carrying approximately 1.10 tons of TDS per acre-foot on December 20, 2021. This flow and TDS load equates to approximately 1988 tons of Total Dissolved Solids, TDS, being carried by the river past the mine that day. The mine discharge on January 3, 2022 (the closest monthly analysis), was 109.6 gpm @ 1220 mg/l TDS; resulting in approximately 0.80 tons of TDS being discharged. Comparing the calculated TDS load in the River at low flow and the mine discharge near the same date, the maximum increase in the River's TDS as a result of mine discharge would have been 0.04%.

The surface water monitoring points on Cottonwood and Rapid Creeks were suspended from monitoring with the approval of TR67 on February 23, 2016 therefore no current of future monitored will be conducted. Past monitoring of these points can be found on data pages SG-61, SG-62, SH-28 and SI-28. The Cottonwood and Rapid Creek flumes associated with SWGS 01, SWGS 02 and SWGS 03 were removed in August 2016.

Monitoring on Coal Creek and Jerry Creek started in 1995. The crest stage gages installed in Coal Canyon drainage and Jerry Creek in 1996 were destroyed by a storm in the summer of 1998. Discussions with DRMS indicated there was no need to monitor the upstream locations SWGS 07 and 09. The creeks were then only monitored at the lower monitoring points. The ephemeral flow in Coal Creek was measured at culverts located between the two refuse disposal areas, SWGS 06. These culverts provided a stable cross section and were accessible throughout the year. The intermittent flow in Jerry Creek was measured at the culvert near the Highline Canal, SWGS 08. Beginning July 1999, instantaneous flows were monitored monthly.

Monitoring was suspended for Jerry Creek (SWGS 08) with the approval of TR62 on 11/8/11. Monitoring was suspended for Coal Creek (SWGS 06) with the approval of TR67 on February 23, 2016. Therefore, no monitoring was performed during the Year.

There were four seeps included in the hydrologic monitoring in 1995. The locations of the seeps are shown on the Hydrologic Monitoring Map. They are located adjacent to Coal Canyon drainage and Jerry Creek. They are primarily evident by the white staining on the hillsides from evaporation of the seeps. None of them flow to the creek channel but generally evaporate within a couple of hundred feet of the source. On April 19, 2006, Snowcap Coal Company submitted a technical revision, TR50, requesting to discontinue seep monitoring. The request was approved by the Division on July 25, 2006. Therefore, no monitoring was performed during the Year.

There was no discharge from CDPS discharge points 005 thru 015 during the Year. These outfalls cover sediment pond discharges. Discharge point 015, now inactive, was permitted to allow pumping water from the south end of the Roadside South Portal out the 2 West portals. Discharge point 016 is permitted for gravity discharge from the northwest intake pool. It replaced outfalls 001 and 002 on March 31, 2002.

Discharge point 001 was primarily used as an overflow to a mine water system for the preparation plant during mine operations. During March and April 2000, a discharge pipe was installed from the No. 2 South Mains sump to outfall 001. The routing of this 4-inch diameter pipe is presented on permit Figure 14-6. The capacity of this discharge pipe was about 75 gpm. Flow ceased at discharge point 001 on March 31, 2002. Discharge point 001 was reclaimed during the 1st quarter of 2008 and is no longer operational.

Discharge point 002 was water siphoned from the reclaimed Northwest Intake Portal at the Roadside South Portals. Mine inflows that were not pumped to the preparation plant were routed to an abandoned portion of the mine for discharge from this point. The preparation plant was shut down during December 1999 so all mine inflows in excess of those handled by outfall 001, flow north to the lower portion of the mine where they were handled by the siphon, outfall 002. Flow ceased at discharge point 002 on March 31, 2002.

The following table presents the total dissolved solids concentration in Outfall 002.

Average TDS from Pages SE-8 ≡ SE-11 Outfall 002				
Water Year	1999	2000	2001	2002
TDS (mg/l)	1558	1560	1500	1500

Discharge point 016 was put into service April 1, 2002. Discharge began April 3, 2002. This gravity discharge point handles all of the water that flows into the sealed South Portal. Since it is a gravity discharge point, the flow discharged will equal the flow into the mine. Table M22-1 presents a summary of the monthly flow from the mine. Data page SV-21 presents a listing of flow and water quality monitoring performed at this site during the Year. Data page SU-6 includes a full suite analysis performed on a sample collected during the Year. The average TDS value at discharge point 016 for the Year was 1223 mg/l.

Whole Effluent Toxicity (WET) tests were not performed during the Year. On May 3, 2005, Snowcap Coal Company requested, via letter to the CDPHE, the WET tests be terminated. This request was granted and the CDPS Permit was amended on June 27, 2005, becoming effective on August 1, 2005.

Ground Water

The ground water monitoring points on Cottonwood and Rapid Creeks were suspended from monitoring with the approval of TR67 on February 23, 2016, therefore no monitored was conducted for the Year. The monitoring wells associated with GWMS01 A&B, GWMS02 A&B, and GWMS03 A&B were plugged and abandoned on August 24, 2016. A copy of the abandonment report was included in the 2016 AHR.

Piezometers CRDA-01 thru 06 at the Cameo Refuse Disposal Areas (CRDA) No. 1 and No. 2 were not monitored during the Year. The monitoring was suspended for these piezometers with the approval of TR67 on February 23, 2016. The piezometers were removed and backfilled in May 2016 as specified on page 14-31 of SCC's permit document. Past monitoring shows the water levels in the piezometers were consistently below their critical depths and information can be found on data pages GC-1 through GC-25.

The past results of water level measurements at the unit train loadout are listed on Data page GB-2. Monitoring of these piezometers was discontinued with the approval of SL7 in April 2011 and the UTL-01, UTL-02, UTL-03 and UTL-04 piezometers were sealed and reclaimed on May 17, 2011. The Well Abandonment Reports were included in DRMS's quarterly report dated July 7, 2011. No monitoring was performed during the Year.
A former mine dewatering hole (N-1) located at the North Decline area of the mine is used to monitor the water level in the abandoned portions of the Roadside South Portal. Since discharge point 016 was put into service, the water level in N-1 is virtually constant and it is expected to stay at an elevation of about 4758. The results of monitoring N-1 are presented in Table M22-2.

In order to characterize the Rollins Sandstone two surface and two underground wells were installed during June 1997. The surface wells, Rollins-2 and Rollins-3, were installed at the unit train loadout and the north decline respectively. The underground wells, Rollins-1 and Rollins-4, were installed in the North and South Portals respectively. Depth to water ranged from 56.5 feet

below grade in the North Decline well to artesian in the North Portal well. Monitoring of these wells was performed in accordance with permit requirements. Prior depth to water data is presented on data page GE-1-1. Rollins-1 was sealed in December 1999 and Rollin-4 was sealed in April 2000. Rollins-2 and 3, with the approval of SL-7, were sealed in May 2011. The Well Abandonment Reports were included in DRMS's quarterly report dated July 7, 2011. No monitoring was performed during the Year.

Mine Water

There was no annual mine inflow study performed during the Year since the North and South Portals have been sealed. The last annual mine inflow was performed during December 1999 and reported in the 1999 report.

Discharge Monitoring Reports (DMRs)

DMRs are submitted monthly to the Colorado Department of Public Health and Environment with copies to the Division of Reclamation Mining and Safety and are included herein by reference.

Consumptive Use

There was no consumptive use during the Year.

Impacts

The average total dissolved solids for the mine discharges calculated with total flow for the Year yields the tons of TDS discharged for the year. Outfall 016 discharged a total of 289.4 tons of TDS to the river during the Year.

The 2022 TDS discharge represents 0.026% of the 1.12 million tons calculated to be carried by the River. At the Roadside South Portal, water is expected to perpetually discharge through outfall 016.

Based on flume monitoring from 1985 to 2016, no effects of mining were detected on flows in Cottonwood and Rapid Creeks. Mining ceased at the Roadside Portals on December 2, 1999. No further mining from either portal is anticipated in the foreseeable future.

Consumptive use will be insignificant in the future because mining and washing of coal has ceased. Consumptive use will be for hydro-seeding and dust control during reclamation operations.

ROADSIDE SOUTH PORTAL DISCHARGE

2022 WATER YEAR

OUTFALL 016

DATE	DAYS	METER	K-GAL.	GPM
9/15/2021		481,094		
9/30/2021	15	483,511	2417	111.9
Installed new meter				
9/30/2021		12		
10/1/2021	1	135	123	85.4
10/4/2021	3	620	485	112.3
10/12/2021	8	1,909	1289	111.9
10/18/2021	6	2,866	957	110.8
11/1/2021	14	5,216	2350	116.6
11/15/2021	14	7,887	2671	132.5
12/6/2021	21	11,609	3722	123.1
12/14/2021	8	12,986	1377	119.5
1/3/2022	20	16,145	3159	109.7
1/11/2022	8	17,258	1113	96.6
2/1/2022	21	20,212	2954	97.7
2/14/2022	13	22,217	2005	107.1
3/1/2022	15	24,591	2374	109.9
3/14/2022	13	26,578	1987	106.1
4/4/2022	21	29,915	3337	110.4
4/18/2022	14	32,233	2318	115.0
5/2/2022	14	34,361	2128	105.6
5/10/2022	8	35,528	1167	101.3
6/6/2022	27	39,205	3677	94.6
6/14/2022	8	40,332	1127	97.8
7/5/2022	21	43,642	3310	109.5
7/19/2022	14	45,798	2156	106.9
8/1/2022	13	47,662	1864	99.6
8/9/2022	8	48,776	1,114	96.7
9/6/2022	28	52,659	3,883	96.3
9/14/2022	8	53,829	1,170	101.6
Total	364		**56234**	**107.3**

File TM3

Snowcap Coal Company, Inc.

N-1 Monitoring Well
North Decline
2022

N-1 Top of Pipe - Elevation 4833

Date	Depth to Water	Elevation
10/4/2021	75.43	4757.57
10/12/2021	75.39	4757.61
11/1/2021	75.38	4757.62
11/15/2021	75.35	4757.65
12/6/2021	75.33	4757.67
12/14/2021	75.34	4757.66
1/3/2022	75.41	4757.59
1/11/2022	75.42	4757.58
2/1/2022	75.38	4757.62
2/14/2022	75.38	4757.62
3/1/2022	75.38	4757.62
3/14/2022	75.38	4757.62
4/4/2022	75.33	4757.67
4/18/2022	75.35	4757.65
5/2/2022	75.38	4757.62
5/10/2022	75.40	4757.60
6/6/2022	75.41	4757.59
6/14/2022	75.41	4757.59
7/5/2022	75.36	4757.64
8/1/2022	75.42	4757.58
8/9/2022	75.41	4757.59
9/6/2022	75.41	4757.59
9/12/2022	75.40	4757.60
9/13/2022	75.38	4757.62

Min	75.33	4757.57
Max	75.43	4757.67
Average	75.38	4757.62

Desired Range 4755 to 4762

Water-Data Report 2022

09095500 COLORADO RIVER NEAR CAMEO, CO -- Continued

DISCHARGE, CUBIC FEET PER SECOND
YEAR 2021-10-01 to 2022-09-30
DAILY MEAN VALUES

[e, Value has been estimated.]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	2021	2021	2021	2022	2022	2022	2022	2022	2022	2022	2022	2022
1	1,850	1,510	1,290	1,430	978	1,140	1,940	3,070	5,520	4,250	2,170	2,030
2	1,770	1,540	1,270	1,290	1,090	1,270	1,980	3,260	5,070	4,080	2,280	1,970
3	1,700	1,650	1,260	e985	1,020	1,370	2,060	3,400	5,380	4,010	2,570	1,920
4	1,630	1,690	1,240	e794	980	1,380	2,190	3,400	6,220	3,710	2,480	1,990
5	1,630	1,620	1,220	e1,090	927	1,490	2,130	3,250	6,900	3,670	2,290	2,180
6	1,610	1,580	1,220	1,530	1,000	1,460	2,050	3,140	7,430	3,620	2,120	2,160
7	1,580	1,550	1,230	1,630	1,130	1,290	1,980	3,380	8,030	e3,500	2,010	2,130
8	1,520	1,560	1,270	1,600	1,120	1,230	1,890	4,430	8,570	3,350	2,020	2,110
9	1,610	1,570	1,250	1,520	1,120	1,170	1,870	5,530	8,850	3,240	2,010	2,170
10	1,770	1,610	1,450	1,350	1,120	1,210	1,950	6,140	9,370	3,070	2,020	2,170
11	1,820	1,610	1,300	1,160	1,200	1,170	2,080	6,670	9,670	2,930	2,050	2,150
12	1,850	1,630	1,130	1,120	1,150	1,060	2,190	7,670	10,300	2,700	2,110	2,160
13	1,880	1,580	990	1,160	1,130	1,160	2,170	7,770	10,300	2,590	2,160	2,170
14	1,870	1,580	1,040	1,290	1,080	1,250	2,240	7,160	9,460	2,370	2,360	2,200
15	1,800	1,580	1,180	1,400	1,080	1,300	2,050	7,350	8,230	2,300	2,440	2,540
16	1,790	1,590	1,360	1,310	1,120	1,270	1,980	8,560	7,510	2,380	2,600	2,420
17	1,780	1,650	1,210	1,230	1,130	1,300	1,960	8,970	6,860	2,440	2,880	2,440
18	1,750	1,550	1,200	1,210	1,090	1,350	2,040	9,310	6,750	2,350	2,820	2,410
19	1,820	1,480	1,010	1,280	1,070	1,200	2,140	10,200	7,060	2,280	2,550	2,220
20	1,740	1,370	912	1,250	1,120	1,220	2,290	10,700	7,180	2,170	2,380	2,150
21	1,790	1,450	992	1,240	1,160	1,280	2,570	9,850	6,200	2,190	2,420	2,090
22	1,790	1,490	1,040	1,240	1,170	1,290	3,040	7,820	5,420	2,150	2,430	2,030
23	1,720	1,420	1,120	1,250	1,170	1,230	3,760	6,240	4,980	2,080	2,340	1,910
24	1,710	1,400	1,710	1,170	1,160	1,220	3,860	5,380	4,690	2,170	2,350	1,760
25	1,720	1,390	1,720	1,150	1,150	1,260	3,410	4,970	4,680	2,200	2,280	1,900
26	2,010	1,320	1,510	1,210	1,120	1,340	3,160	4,800	4,580	2,280	2,180	1,950
27	1,870	1,260	1,350	1,140	1,100	1,450	2,810	5,300	4,540	2,320	2,220	1,990
28	1,740	1,270	1,320	1,040	1,080	1,580	2,700	6,540	4,390	2,230	2,200	1,970
29	1,710	1,290	1,310	969		1,870	2,790	7,260	4,160	2,160	2,140	2,040
30	1,650	1,280	1,300	960		2,060	3,070	7,190	4,150	2,070	2,130	2,120
31	1,580		1,360	949		2,040		6,410		2,200	2,110	
Total	54,060	45,070	38,760	37,950	30,760	41,910	72,350	195,100	202,400	85,060	71,120	63,449
Mean	1,744	1,502	1,250	1,224	1,099	1,351	2,412	6,294	6,748	2,744	2,294	2,115
Max	2010	1690	1720	1630	1200	2060	3860	10700	10300	4250	2880	2540
Min	1520	1260	912	794	927	1060	1870	3070	4150	2070	2010	1760
Ac-ft	107,200	89,400	76,890	75,270	61,020	83,130	143,500	387,000	401,600	168,700	141,100	125,900

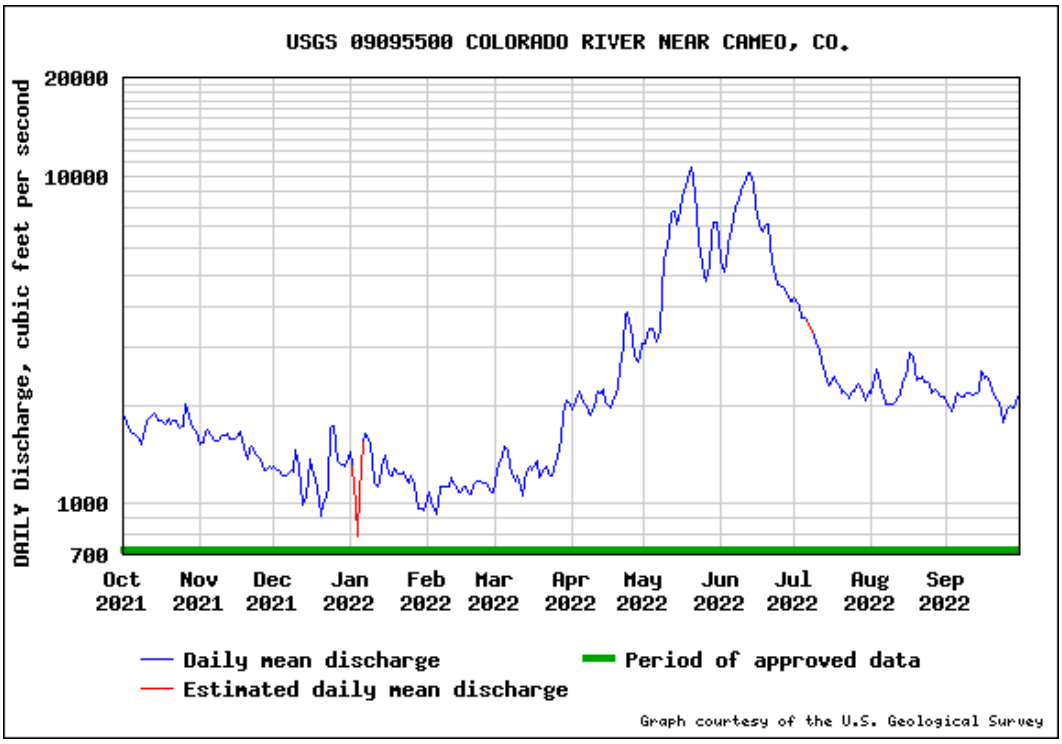
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1934 - 2022, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	2,191	1,923	1,663	1,562	1,577	1,796	3,104	8,680	12,000	5,639	2,819	2,258
Max	3,731	3,253	3,002	2,621	2,775	3,365	8,615	20,290	25,829	17,430	6,571	4,271
(WY)	(1985)	(1985)	(1985)	(1985)	(1986)	(1986)	(1962)	(1984)	(1984)	(1957)	(1984)	(1984)
Min	1,084	1,038	1,004	940	941	1,019	1,428	2,536	2,606	1,515	1,332	1,243
(WY)	(1935)	(1935)	(1935)	(1964)	(1935)	(1935)	(2013)	(1977)	(2002)	(1934)	(1940)	(1934)

SUMMARY STATISTICS

	Water Year 2022		Water Years 1934 - 2022	
Annual total	938,100			
Annual mean	2,570		3,773	
Highest annual mean			7,605	1984
Lowest annual mean			1,751	2002
Highest daily mean	10,700	May 20	38,000	May 26, 1984
Lowest daily mean	794.0	Jan 04	608.0	Dec 23, 2012
Annual 7-day minimum	986.3	Jan 30	852.4	Dec 24, 1939
Maximum peak flow			39,300[a]	May 26, 1984
Maximum peak stage			14.36	May 26, 1984
Annual runoff (cfsm)	0.322		0.472	
Annual runoff (inches)	4.37		6.42	
10 percent exceeds	5,774		8,960	
50 percent exceeds	1,900		2,150	
90 percent exceeds	1,130		1,360	

[a] Discharge affected to unknown degree by Regulation or Diversion



Water-Data Report 2022

09095500 COLORADO RIVER NEAR CAMEO, CO -- Continued

SPECIFIC CONDUCTANCE, WATER, UNFILTERED, MICROSIEMENS PER CENTIMETER AT 25 DEGREES CELSIUS
YEAR 2021-10-01 to 2022-09-30
DAILY MEAN VALUES

Day	Oct 2021	Nov 2021	Dec 2021	Jan 2022	Feb 2022	Mar 2022	Apr 2022	May 2022	Jun 2022	Jul 2022	Aug 2022	Sep 2022
1	1,070	1,170	1,310	1,260	---	1,340	948	705	471	621	901	918
2	1,070	1,190	1,300	1,280	---	1,320	971	683	515	618	923	934
3	1,100	1,180	1,300	1,340	---	1,250	952	657	520	632	864	947
4	1,120	1,160	1,310	1,460	1,380	1,210	931	656	465	662	823	958
5	1,150	1,120	1,320	1,650	1,450	1,190	909	673	424	687	841	916
6	1,150	1,140	1,330	1,470	1,490	1,200	920	703	398	695	870	879
7	1,160	1,140	1,330	1,210	---	1,220	932	709	380	697	911	879
8	1,180	1,160	1,330	1,140	---	1,270	963	617	358	717	946	877
9	1,200	1,160	1,300	1,140	1,320	1,290	987	498	350	728	929	878
10	1,220	1,180	1,270	1,160	1,310	1,320	1,000	443	340	744	926	861
11	1,130	1,170	1,310	1,230	1,290	1,310	959	421	329	784	916	869
12	1,100	1,110	1,320	1,340	1,270	1,300	921	387	316	819	917	873
13	1,090	1,120	1,350	1,460	1,280	1,370	906	366	308	844	892	878
14	1,060	1,150	1,520	1,370	1,290	1,350	882	381	319	852	958	880
15	1,080	1,130	1,550	1,310	1,320	1,280	879	390	345	875	1,060	874
16	1,090	1,140	1,440	1,240	1,330	1,230	926	366	375	885	898	864
17	1,090	1,140	1,310	1,250	1,330	1,250	944	346	401	880	837	859
18	1,100	1,120	1,340	1,300	1,320	1,240	954	343	412	867	807	862
19	1,090	1,150	1,410	1,310	1,310	1,220	928	330	409	890	786	864
20	1,110	1,180	1,450	1,280	1,300	1,250	938	316	397	907	818	904
21	1,110	1,230	1,580	1,270	1,270	1,270	853	322	416	928	857	924
22	1,080	1,190	1,620	1,260	1,280	1,250	764	371	458	933	868	948
23	1,080	1,190	1,550	1,280	1,280	1,230	647	423	493	976	867	982
24	1,100	1,210	1,320	1,260	1,300	1,250	589	477	532	971	872	1,030
25	1,110	1,230	1,230	1,300	1,290	1,260	611	520	544	935	859	1,100
26	1,070	1,230	1,160	1,340	1,330	1,230	652	545	553	930	873	1,060
27	1,080	1,280	1,210	1,300	1,370	1,200	699	531	563	915	902	1,020
28	1,080	1,330	1,260	1,330	---	1,150	759	464	570	882	916	1,030
29	1,090	1,320	1,290	1,410		1,080	774	406	585	890	909	973
30	1,100	1,310	1,300	1,440		1,010	736	406	602	912	919	974
31	1,120		1,280	1,510		959		429		937	913	
Max	1220	1330	1620	1650		1370	1000	709	602	976	1060	1100
Min	1060	1110	1160	1140		959	589	316	308	618	786	859
Mean	**1109**	**1184**	**1352**	**1319**	**1323**	**1235**	**861**	**480**	**438**	**826**	**890**	**927**

Snowcap Coal Company, Inc.
2022 Water Year

NPDES POINT 016 — Chemical Analysis — SU-6

Field Parameters		8/20/2018	8/26/2019	8/17/2020	8/17/2021	8/16/2022
pH	SU	7.18	7.32	7.06	7.09	7.47
Conductivity	umhos/cm	2000	2100	2000	1960	1940
Temperature	(C)	20.9	21.2	21.1	20.9	21.5

Laboratory Results		8/20/2018	8/26/2019	8/17/2020	8/17/2021	8/17/2021
Carbonate (CO_3^{-2})	mg/l	54.3	14.6	40.1	<2.0	<2.0
Aluminum, Dissolved	mg/l	<0.03	<0.05	<0.05	<0.05	<0.05
Arsenic, Dissolved	mg/l	<0.0002	<0.0002	<0.0002	0.00037	<0.0002
Barium, Dissolved	mg/l	1.14	1.52	1.46	1.44	1.49
Boron, Dissolved	mg/l	0.82	0.86	0.83	0.798	0.795
Cadmium, Dissolved	mg/l	<0.0001	<0.00005	<0.00005	<0.00005	<0.00005
Calcium, Dissolved	mg/l	11.1	11	11.2	10.5	11.4
Chloride, Dissolved	mg/l	26.9	23.6	24.7	20.1	20.1
Chromium, Dissolved	mg/l	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Copper, Dissolved	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01
Fluoride, Dissolved	mg/l	1.8	1.6	1.7	1.75	1.88
Hardness, (as Ca Co3)	mg/l	28.0	28.0	28.0	26.0	29.0
Iron, Dissolved	mg/l	<0.02	<0.03	<0.06	<0.06	<0.06
Lead, Dissolved	mg/l	<0.0001	0.0006	0.0001	<0.0001	<0.0001
Magnesium, Dissolved	mg/l	5.6	5.4	5.40	5.07	5.51
Manganese, Dissolved	mg/l	0.027	0.03	0.04	0.041	0.036
Mercury, Dissolved	mg/l	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum, Dissolved	mg/l	<0.02	<0.02	<0.02	<0.02	<0.02
Nickel, Dissolved	mg/l	<0.008	<0.008	<0.008	<0.008	<0.008
Nitrate ($N0_3^{-1}$)	mg/l	<0.02	<0.02	<0.02	<0.02	<0.02
Phosphate (PO_4^{-3}, as P)	mg/l	0.5	0.47	0.43	0.45	0.51
Potassium, Dissolved	mg/l	3.0	3.2	3.1	2.92	3.46
Selenium, Dissolved	mg/l	<0.0001	0.0001	<0.0001	<0.0001	<0.0001
Sodium, Dissolved	mg/l	495	511	464	439	448
Solids, Total Dissolved	mg/l	1250	1240	1230	1220	1180
Solids, Total Suspended	mg/l	<5.0	<5.0	<5.0	<5.0	<5.0
Sulfate, SO4	mg/l	38.6	5.3	15.80	<1.0	8.6
Zinc, Dissolved	mg/l	<0.01	<0.01	<0.02	0.039	<0.02
Ammonia, Nitrogen, NH_3	mg/l	0.66	0.64	0.64	0.538	0.718
Bicarbonate (HCO_3^{-1})	mg/l	1060	1100	1140	1090	1050
SAR	Ratio	31.0	32.0	29.0	28.0	28.0

ROADSIDE SOUTH PORTAL DISCHARGE
OUTFALL 016 - CPDS #CO - 0027146

DATE	METER	FLOW GPM	PH SU	COND. umhos/cm	TEMP C	TSS Month	Unit	TDS Qrtly	Unit	Iron (TR) Qrtly	Unit	Arsenic (T) 2/Mo	Unit	Cadmium (PD) 2/Mo	Unit	Copper (PD) 2/Mo	Unit	Cyanide (WAD) 2/Mo	Unit	Lead (PD) 2/Mo	Unit	Selenium (PD) 2/Mo	Unit	Silver (PD) 2/Mo	Unit	Sulfide (H2S) 2/Mo	Unit
9/30/2021	12,000	Installed New Meter																									
10/1/2021	135,000	117.1																									
10/4/2021	620,000	112.3	7.1	2000	17.4	< 5.0	mg/l	= 1230	mg/l	= 19.0	ug/l	< 0.20	ug/l	< 0.05	ug/l	= 1.13	ug/l	< 3.0	ug/l	< 0.10	ug/l	< 0.10	ug/l	< 0.10	ug/l	= 0.23	mg/l
10/12/2021	1,909,000	112.5	7.0	2000	19.7							< 0.20	ug/l	< 0.05	ug/l	< 0.8	ug/l	< 3.0	ug/l	< 0.10	ug/l	< 0.10	ug/l	< 0.10	ug/l	= 0.50	mg/l
10/18/2021	2,866,000	110.8																									
11/1/2021	5,216,000	116.6	7.0	2000	19.2	< 5.0	mg/l					< 0.20	ug/l	< 0.05	ug/l	< 0.8	ug/l	< 3.0	ug/l	< 0.10	ug/l	< 0.10	ug/l	< 0.10	ug/l	= 0.35	mg/l
11/15/2021	7,887,000	132.5	7.1	2000	19.3							< 0.20	ug/l	< 0.05	ug/l	< 0.8	ug/l	< 3.0	ug/l	= 0.15	ug/l	< 0.10	ug/l	< 0.10	ug/l	= 0.36	mg/l
12/6/2021	11,609,000	123.1	7.1	2000	17.3	< 5.0	mg/l					< 0.20	ug/l	< 0.05	ug/l	= 0.95	ug/l	< 3.0	ug/l	= 0.17	ug/l	< 0.10	ug/l	< 0.10	ug/l	= 0.25	mg/l
12/14/2021	12,986,000	119.5	7.1	2000	17.2							< 0.20	ug/l	< 0.05	ug/l	= 5.32	ug/l	< 3.0	ug/l	= 0.21	ug/l	< 0.10	ug/l	< 0.10	ug/l	= 0.05	mg/l
1/3/2022	16,145,000	109.7	6.9	2000	16.3	< 5.0	mg/l	= 1220.0	mg/l	= 27.4	ug/l	< 0.20	ug/l	< 0.05	ug/l	= 6.7	ug/l	< 3.0	ug/l	= 0.20	ug/l	< 0.10	ug/l	< 0.10	ug/l	= 0.58	mg/l
1/11/2022	17,258,000	96.6	7.4	2100	17.4							< 0.20	ug/l	< 0.05	ug/l	= 4.4	ug/l	< 3.0	ug/l	< 0.10	ug/l	< 0.10	ug/l	< 0.10	ug/l	= 0.24	mg/l
2/1/2022	20,212,000	97.7	7.5	2100	17.2	< 5.0	mg/l					< 0.20	ug/l	< 0.05	ug/l	= 3.4	ug/l	< 3.0	ug/l	< 0.10	ug/l	< 0.10	ug/l	< 0.10	ug/l	= 0.65	mg/l
2/14/2022	22,217,000	107.1	7.4	1960	18.8							< 0.20	ug/l	< 0.05	ug/l	= 3.0	ug/l	< 3.0	ug/l	< 0.10	ug/l	< 0.10	ug/l	< 0.10	ug/l	= 0.31	mg/l
3/1/2022	24,591,000	109.9	7.4	1930	21.5	< 5.0	mg/l					< 0.20	ug/l	< 0.05	ug/l	= 1.9	ug/l	< 3.0	ug/l	< 0.10	ug/l	< 0.10	ug/l	< 0.10	ug/l	= 0.36	mg/l
3/14/2022	26,578,000	106.1	7.5	2000	20.8							< 0.20	ug/l	= 0.08	ug/l	= 4.1	ug/l	< 3.0	ug/l	= 0.18	ug/l	= 0.15	ug/l	< 0.10	ug/l	= 0.55	mg/l
4/4/2022	29,915,000	110.4	7.5	2000	18.5	< 5.0	mg/l	= 1230.0	mg/l	= 20.2	ug/l	< 0.20	ug/l	< 0.05	ug/l	= 3.4	ug/l	< 3.0	ug/l	< 0.10	ug/l	< 0.10	ug/l	< 0.10	ug/l	= 0.44	mg/l
4/18/2022	32,233,000	115.0	7.5	2000	22.9							< 0.20	ug/l	< 0.05	ug/l	< 0.8	ug/l	< 3.0	ug/l	< 0.10	ug/l	< 0.10	ug/l	< 0.10	ug/l	= 0.57	mg/l
5/2/2022	34,361,000	105.6	7.5	2100	18.5	< 5.0	mg/l					< 0.20	ug/l	< 0.05	ug/l	< 0.8	ug/l	< 15.0	ug/l	< 0.10	ug/l	< 0.10	ug/l	< 0.10	ug/l	= 0.75	mg/l
5/10/2022	35,528,000	101.3	7.5	2000	20.4							< 0.20	ug/l	< 0.05	ug/l	< 0.8	ug/l	< 3.0	ug/l	= 0.22	ug/l	< 0.10	ug/l	< 0.10	ug/l	= 0.53	mg/l
6/6/2022	39,205,000	94.6	7.5	2000	21.4	< 5.0	mg/l					< 0.20	ug/l	< 0.05	ug/l	< 0.8	ug/l	< 3.0	ug/l	< 0.10	ug/l	< 0.10	ug/l	< 0.10	ug/l	= 0.53	mg/l
6/14/2022	40,332,000	97.8	7.6	1990	20.8							< 0.20	ug/l	< 0.05	ug/l	< 0.8	ug/l	< 3.0	ug/l	< 0.10	ug/l	< 0.10	ug/l	< 0.10	ug/l	= 0.88	mg/l
7/5/2022	43,642,000	109.8	7.5	1770	24.1	< 5.0	mg/l	= 1210.0	mg/l	= 23.3	ug/l	< 0.20	ug/l	< 0.05	ug/l	< 0.8	ug/l	< 3.0	ug/l	< 0.10	ug/l	< 0.10	ug/l	< 0.10	ug/l	= 0.16	mg/l
7/19/2022	45,798,000	106.9	7.4	1970	21.4							< 0.20	ug/l	< 0.10	ug/l	< 1.6	ug/l	< 6.0	ug/l	< 0.20	ug/l	< 0.20	ug/l	< 0.20	ug/l	= 0.29	mg/l
8/1/2022	47,662,000	99.6	7.4	1990	22.3	< 5.0	mg/l					< 0.20	ug/l	< 0.05	ug/l	= 1.4	ug/l	< 3.0	ug/l	= 0.17	ug/l	< 0.10	ug/l	< 0.10	ug/l	= 0.56	mg/l
8/9/2022	48,776,000	96.7	7.4	1910	21.6							< 0.20	ug/l	= 0.06	ug/l	< 0.8	ug/l	< 3.0	ug/l	< 0.10	ug/l	= 0.11	ug/l	< 0.10	ug/l	= 0.44	mg/l
9/6/2022	52,659,000	96.3	7.4	2000	21.4	= 6.0	mg/l					< 0.20	ug/l	< 0.05	ug/l	< 0.8	ug/l	< 3.0	ug/l	= 0.35	ug/l	< 0.10	ug/l	< 0.10	ug/l	= 0.52	mg/l
9/14/2022	53,829,000	101.6	7.5	1840	21.8							< 0.20	ug/l	< 0.05	ug/l	= 3.3	ug/l	< 3.0	ug/l	= 0.23	ug/l	< 0.10	ug/l	< 0.10	ug/l	= 0.55	mg/l
2022 WY	**Averages**	**108.0**	**7.3**	**1986**	**19.9**	**< 5.1**	**mg/l**	**= 1223**	**mg/l**	**= 22**	**ug/l**	**< 0.20**	**ug/l**	**< 0.05**	**ug/l**	**< 2.1**	**ug/l**	**< 3.6**	**ug/l**	**< 0.15**	**ug/l**	**< 0.11**	**ug/l**	**< 0.10**	**ug/l**	**= 0.44**	**mg/l**

Effective February 1, 2012 monitoring frequencies were changed as follows:
Flow, pH, TSS - Monthly TDS, Iron, Oil & Grease - Quarterly Arsenic, Cadmium, Copper, Cyanide, Lead, Selenium, Silver & Sulfide - 2 Days/Month