

ANALYSIS OF WATER SAMPLING

--FIELD DATA --

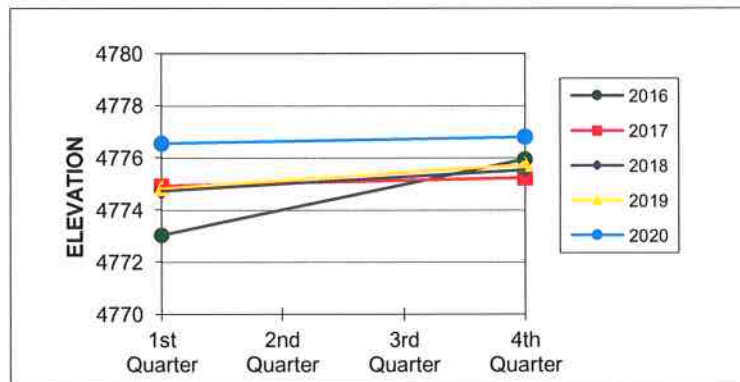
2020

FIELD DATA ANALYSIS
(Most recent 5-yr period)

AMW1

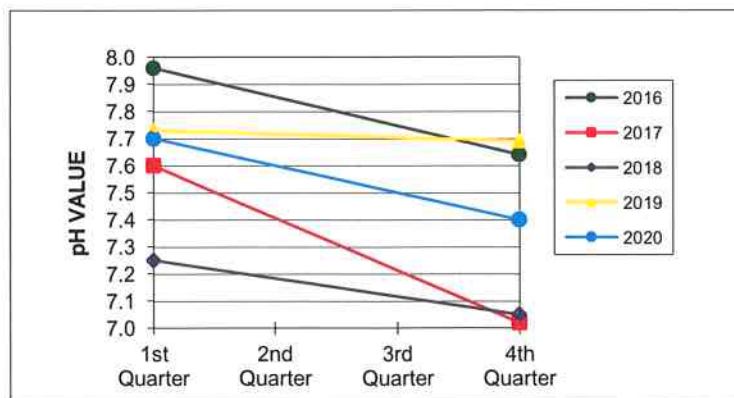
STATIC WATER LEVEL

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
2016	4773			4776
2017	4775			4775
2018	4775			4776
2019	4775			4776
2020	4777			4777



pH

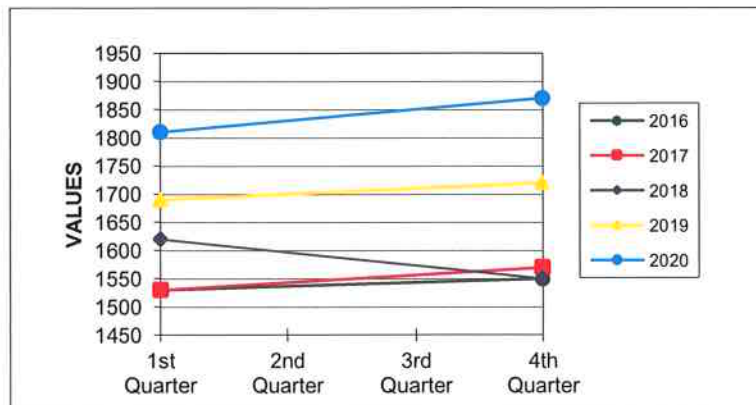
	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
2016	8.0			7.6
2017	7.6			7.0
2018	7.3			7.1
2019	7.7			7.7
2020	7.7			7.4



AMW1

SPECIFIC CONDUCTANCE

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
2016	1530			1550
2017	1530			1570
2018	1620			1550
2019	1690			1720
2020	1810			1870

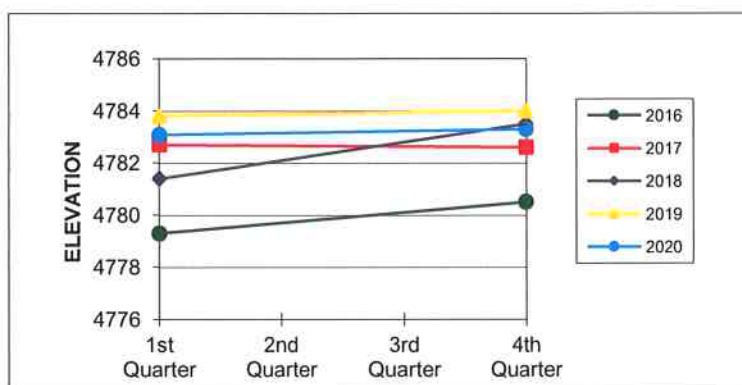


FIELD DATA ANALYSIS

AMW2

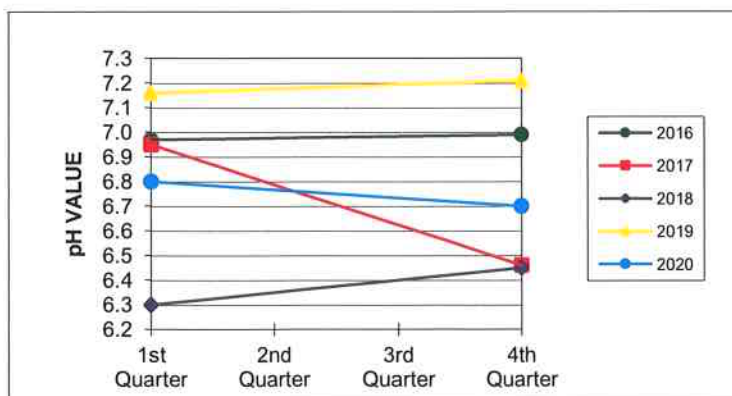
STATIC WATER LEVEL

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
2016	4779			4781
2017	4783			4783
2018	4781			4784
2019	4784			4784
2020	4783			4783



pH

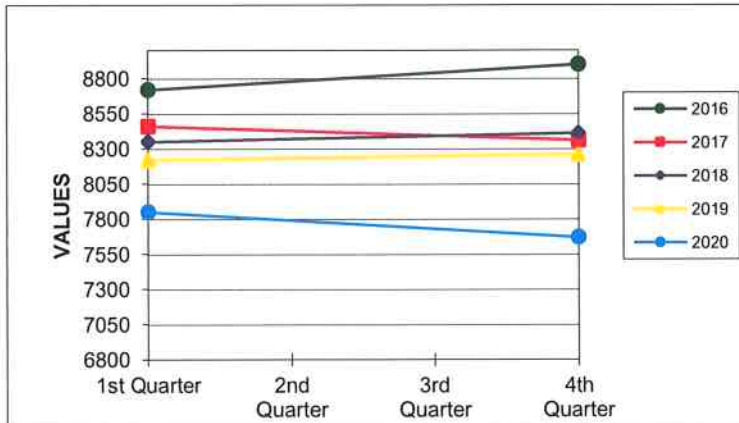
	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
2016	7.0			7.0
2017	7.0			6.5
2018	6.3			6.5
2019	7.2			7.2
2020	6.8			6.7



AMW2

SPECIFIC CONDUCTANCE

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
2016	8720			8900
2017	8460			8360
2018	8350			8410
2019	8220			8260
2020	7850			7670

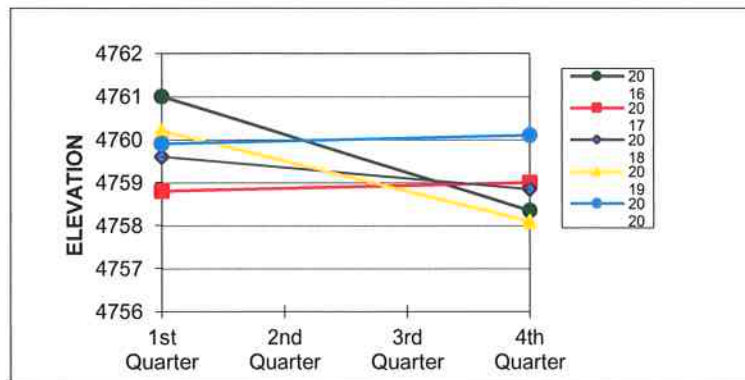


FIELD DATA ANALYSIS
(Most recent 5-yr period)

DH96

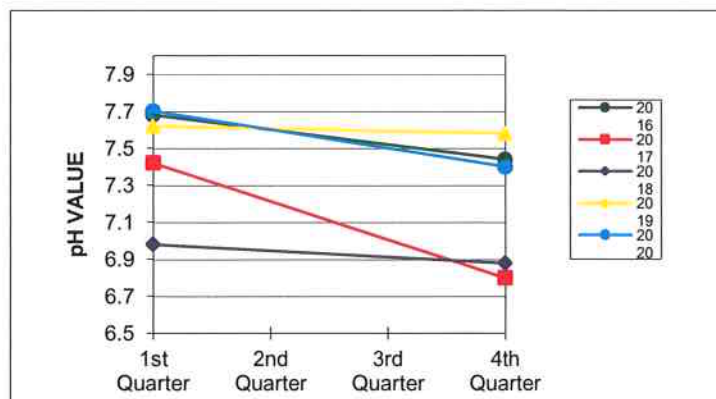
STATIC WATER LEVEL

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
2016	4761			4758
2017	4759			4759
2018	4760			4759
2019	4760			4758
2020	4760			4760



pH

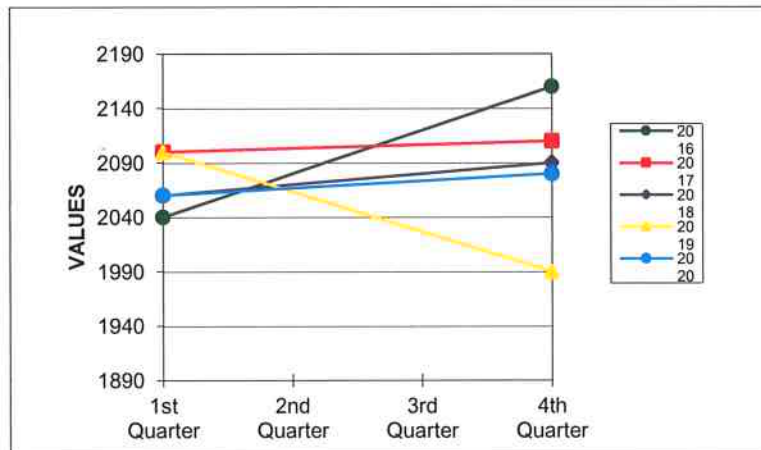
	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
2016	7.7			7.4
2017	7.4			6.8
2018	7.0			6.9
2019	7.6			7.6
2020	7.7			7.4



DH96

SPECIFIC CONDUCTANCE

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
2016	2040			2160
2017	2100			2110
2018	2060			2090
2019	2100			1990
2020	2060			2080

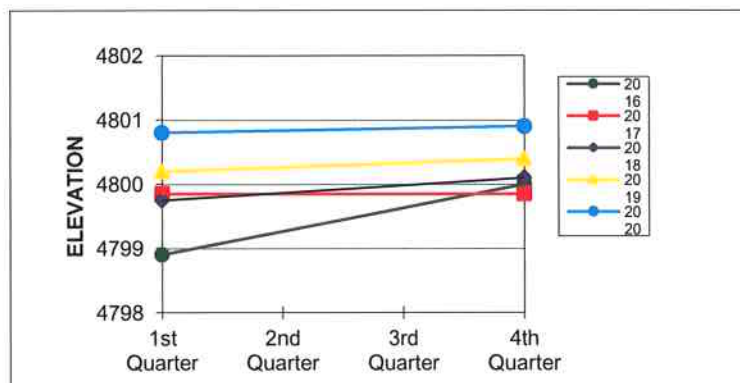


FIELD DATA ANALYSIS
(Most recent 5-yr period)

DH122

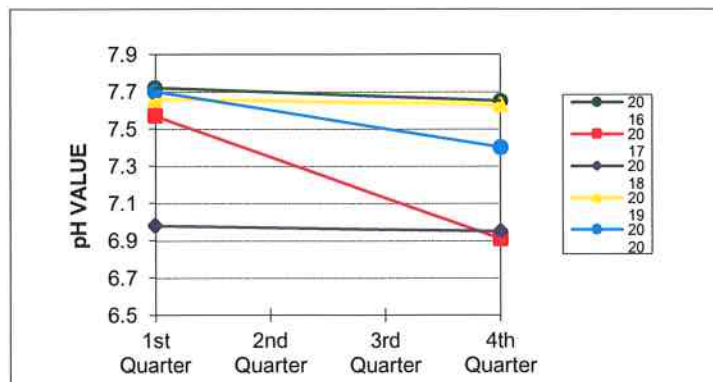
STATIC WATER LEVEL

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
2016	4799			4800
2017	4800			4800
2018	4800			4800
2019	4800			4800
2020	4801			4801



pH

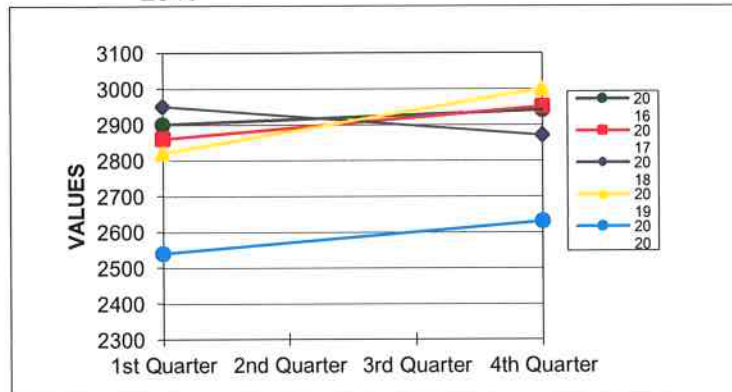
	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
2016	7.7			7.7
2017	7.6			6.9
2018	7.0			7.0
2019	7.7			7.6
2020	7.7			7.4



DH122

SPECIFIC CONDUCTANCE

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
2016	2900			2940
2017	2860			2950
2018	2950			2870
2019	2820			3000
2020	2540			2630

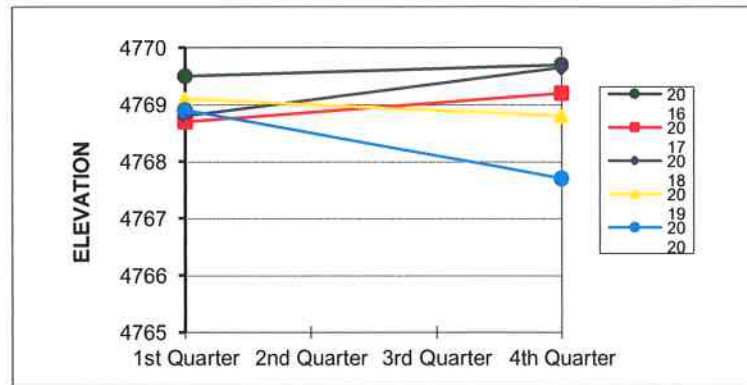


FIELD DATA ANALYSIS (Most recent 5-yr period)

FPW

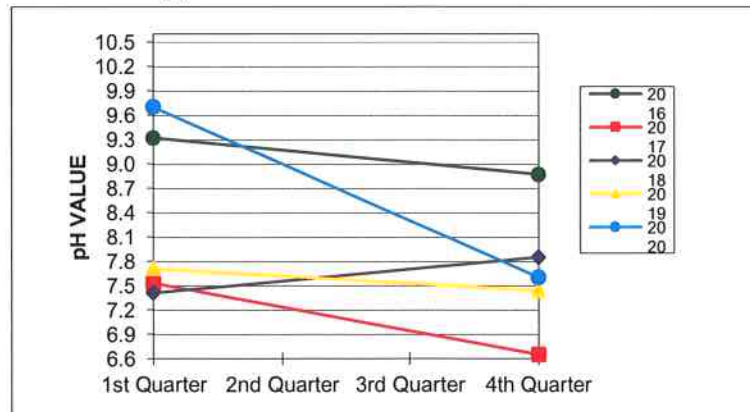
STATIC WATER LEVEL

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
2016	4770			4770
2017	4769			4769
2018	4769			4770
2019	4769			4769
2020	4769			4768



pH

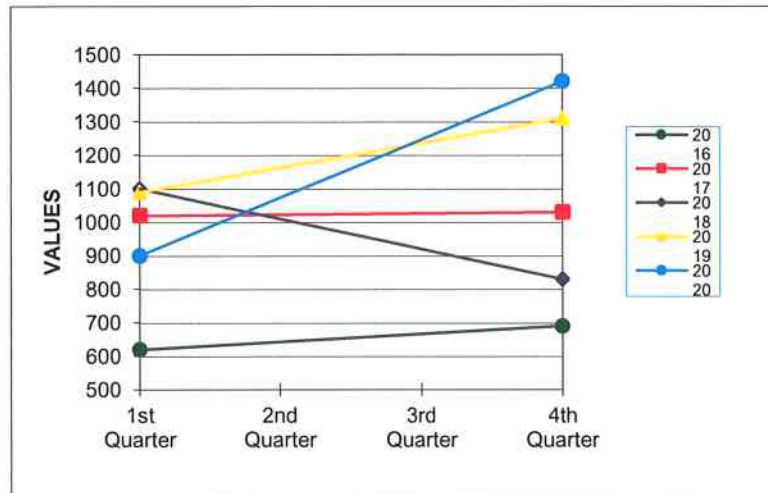
	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
2016	9.3			8.9
2017	7.5			6.7
2018	7.4			7.9
2019	7.7			7.4
2020	9.7			7.6



FPW

SPECIFIC CONDUCTANCE

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
2016	620			690
2017	1020			1030
2018	1100			830
2019	1090			1310
2020	900			1420

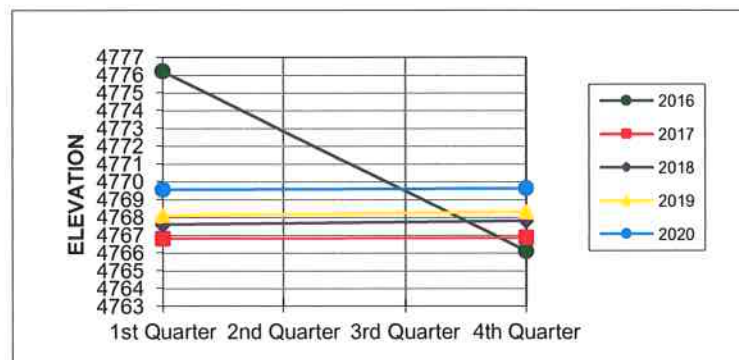


FIELD DATA ANALYSIS
(Most recent 5-yr period)

SMW2

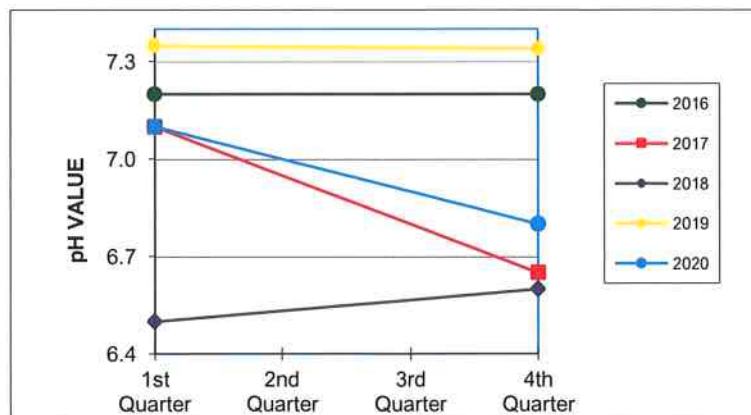
STATIC WATER LEVEL

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
2016	4776			4766
2017	4767			4767
2018	4768			4768
2019	4768			4768
2020	4770			4770



pH

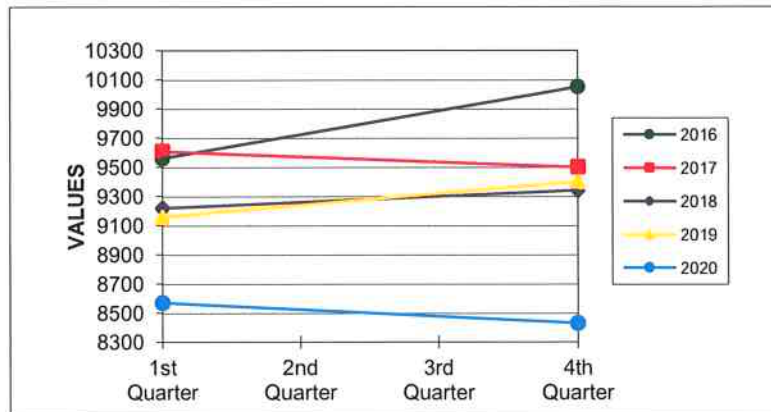
	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
2016	7.2			7.2
2017	7.1			6.7
2018	6.5			6.6
2019	7.4			7.3
2020	7.1			6.8



SMW2

SPECIFIC CONDUCTANCE

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
2016	9560			10050
2017	9610			9500
2018	9220			9340
2019	9160			9400
2020	8570			8430



SURFACE WATER HYDROLOGY

2020

SURFACE WATER HYDROLOGY

The site drainage plan and descriptions of associated structures for the CEC Keenesburg Mine site are found in Appendix K of the Permit. Historically, as part of the reclamation process, CEC continues to maintain the diversion ditches, drainage ditches and drainage swales along the roads and around the north and east sides of the Permit Area. These features serve to convey all surface water runoff to Sediment Pond 2. The present drainage facilities, as well as existing site topographic features, are identified on the Existing Surface Features and Utilities Map (see page 108). Certain surface water control features have been designated permanent facilities (by Permit revision, and at the direction of CDMG and others). These features will remain following the completion of all site reclamation activities. The permanent features include:

- Sediment Pond #2,
- The East and the West Perimeter Ditches
- The Dugout Pond

These permanent drainage features are identified on the Reclamation Contour and Drainage Plan Map (see page 217).

With the exception of Sediment Pond 2 and the Dugout Pond, all previously existing man-made temporary pond sites have been closed and deleted from the drainage control mapping and monitoring requirement. This action was deemed appropriate because: 1) the sedimentation infill of Sediment Pond 2 has been virtually non-existent after more than fifteen years of continuous use; 2) Sediment Pond 2 has not had significant amounts of water stored in it for more than brief periods (except during the unusual and prolonged periods of excess precipitation in 1995, 1999, 2013, and 2018), and 3) even considering those unusual events of 1995, 1999, 2013, and 2018, to date there has not been an observed discharge from Sediment Pond 2. The rain event of 2018 took right up to the spillway, but significant outflow was not observed based on natural debris at the spillway.

Further, CEC implemented a dewatering scheme for Sediment Pond 2 in 1997, in conjunction with the preparation of a, “Spill Prevention, Control and Countermeasures Plan” for the site. This plan was last updated in 2003, but has been the subject of annual review. According to the plan, and when conditions warrant, CEC personnel will pump excess runoff water accumulated in Sediment Pond 2 back to the Dugout Pond, located about 700 feet slightly upgradient and to the south-southeast on the CEC property. The Dugout Pond has an available storage capacity exceeding the total contributing runoff volume associated with a 100-year,

24-hour design storm event (Technical Revision, “Drainage Control Plan II”, January 1995). Pumps can be employed, as needed, to move the accumulated runoff water in Sediment Pond 2 back to the Dugout Pond within a maximum time frame of 72 hours, thus meeting a reasonable evacuation time period for Sediment Pond 2 dewatering. In this manner, CEC can maintain a continued lowered pond level in Sediment Pond 2 during prolonged periods of excess rainfall and runoff at the site (similar to that which was experienced during the spring of 1995). CEC did have occasion to employ this plan during rainfall events in April and May, 1999. This plan was also deployed in May and June of 2018 successfully. The system functioned in accordance with the design.

Except for the surface water accumulation from “recent” rainfall events, the practice of encouraging standing water to “pond” in the former mining pits (now confined to ash disposal B-Pit) has been eliminated. Deep eolian sand deposits (in some places as much as thirty feet in thickness) exist across much of the mine site. The sand’s high infiltration characteristic contributes to a significant loss of surface moisture due to the “deep percolation” of rainfall during most storm events. The result is that normally only a minimal runoff is experienced. As additional segments of the Permit site are reclaimed (topsanded and seeded), less and less runoff has been observed.

DISPOSAL ACTIVITIES DATA 2020

DISPOSAL ACTIVITIES

Ash Disposal

For the calendar year 2020, no mixed fly and bottom ash were transported to, and disposed of at the Coors Energy Company, Keenesburg Mine site. Thus, the total ash disposal activity for the B-Pit ash volume remains at 816,024 tons. The total amount of ash disposed of at the Keenesburg Mine between 1987 and the end of ash disposal was 1,066,044 tons. The last load of ash was disposed of in March 2016. No further ash will be accepted.

In accordance with the conditions of the Permit, the Keenesburg site continued to accept only ash that is the by-product of the coal combustion process, and which is generated at the power plant located in Golden, Colorado, the MillerCoors, LLC (formerly Coors Brewing Company) plant location. Since September, 1995 this power plant has been owned and operated by Colorado-Golden Energy Corporation (CGEC). (formerly Trigen-Colorado Energy Corporation). According to the agreements between CGEC and CEC, ash from this power plant will continue to be transported to, and used for reclamation at the Keenesburg site until the reclamation requirement has been satisfied. As of March 2016, coal is no longer used at the power plant, as such no more ash will be deposited into the Keenesburg mine.

Mine Waste Rock Disposal

CEC obtained approvals from CDRMS (Minor Revision #34), from CDPHE, and from Weld County, to dispose of mine waste rock at the Keenesburg Mine site. During 1998 and 1999 a total of 12,467 tons of mine waste rock, the residual material from “hard rock” mine reclamation sites in the Clear Creek drainage, near Idaho Springs, Colorado, was transported to the Keenesburg site for disposal. This material was placed, in a layer approximately four feet thick, between layers of ash in the existing disposal pit (B-Pit). The specific intent of this method of mine waste rock disposal, as described in MR #34, was to isolate the material and thus minimize the possibility for future contamination.

No additional mine waste rock was received for disposal during the calendar year 2019. The total quantity of this material placed at the Keenesburg site is still 12,467 tons. The placement location and horizontal extent of the mine

waste rock has been identified on the Existing Surface Features and Utilities Map (page 216).

The site has been fully reclaimed, no further ash or rocks will be accepted or placed at the mine. All areas have been graded to final elevations and seeded.

RECLAMATION REPORT 2020

RECLAMATION REPORT

Coors Energy Company (CEC) continues to contract for the consultant engineering services of American Environmental Consulting, LLC, Littleton, Colorado (includes preparation of computer-generated drawings of the mine site, and compilation of volume and area estimates). CEC also contracted with Cooper Aerial Survey Company of Tucson, Arizona to provide the aerial survey and optical scanning/digitizing services, the base information for use by American Environmental Consulting. In 2012, AzTec Consultants, Inc. provided surveying services for the new control points located for subsequent mapping work. These control points were used to place aerial targets again in 2020.

Note: To facilitate easier reference to, and discussion of the various acreage parcels shown on the Vegetation/Revegetation Map (see page 218) a numeric designation has been assigned to each revegetated parcel. This system, initiated for the 2002 AHR Report, has been carried forward with new designations assigned as parcels were first seeded with the reclamation seed mix. Reclamation sitework is now complete.

No additional acreage was "disturbed" during 2020. In fact, the mine closure activities were completed in 2020 and the mine is in post-closure monitoring.

Approximately 55.55 acres were seeded in 2020. This includes 10.76 acres of B Pit, 28.95 acres of the Long-Term Spoils Area, 10.29 acres of Area 38 (Topsand Stockpile), and 5.55 acres of the road alignment. The entire CEC property has now been reclaimed with all reclamation activities completed.

Because of the national debate over classification of ash (hazardous vs nonhazardous), a management decision was made in 2010 to fill in as much of the bottom layer of B-Pit as soon as possible. The ash is normally placed in the pit in two layers, or lifts, before it is covered with spoils (6 feet) and topsand (2 feet). Additionally, management determined that a change from coal fuel to natural gas is economically sound and April 22, 2016 saw the last load of ash disposed of in the facility. The remaining fill into the B-Pit was completed using overburden materials from the onsite soils excavated during previous mining operations.

CEC will also use this opportunity to note that control efforts are being employed, specifically with respect to *Bromus tectorum* (cheatgrass). This particular noxious weed (Classification list "C" species on the State's noxious weed listing), has been the subject of discussions following more recent AHR Report submittals, and most recently the Application for Phase III bond release (SL-06). In response to concerns over this issue, CEC has followed the recommendation of CDRMS and others in pursuing a test application of a control herbicide [Panoramic 2SL, manufactured by Alligare]. The test application was first made during the fall of 2010, specifically to Area 25. Then, following evidence of a successful control effort, the herbicide was applied to areas with noxious weeds.

In 2016, a technical revision to the permit was submitted and included removing approximately 212.45 acres from the mine permit. The reclamation summary for the end of 2020 is unchanged from 2016 and is as follows:

RECLAMATION ACREAGE SUMMARY

Total area remaining to be reclaimed 0 acres

Total area reclaimed and revegetated 225.10 ± acres

Grand Total 225.10 ± acres

[Note: It is still important to recognize that these acreage values vary significantly from the 2005 and earlier AHR Reports. These variances result from the improved accuracy of the photo mapping tools, and a redetermination of total site acreage following the assignment of acreage values to all parcels within the Permit area boundary. The results of this effort were submitted and approved as part of the Permit Renewal Application process in 2006. The most significant change was in the number of acres left "undisturbed" by mining activities, yet still within the Permit Area (a total of 173± acres before TR #42). Additionally, while the Permit Area boundary was changed (adjusted inward) in 2011 by TR #42, this Reclamation Acreage Summary accounts for all acreage reclaimed, whether now inside or outside of the boundary line.]

The total acreage summary and relative status of the acreage is graphically illustrated on page 207 of this report.

Additional Reclamation Information:

The total 435± acres "originally disturbed" by the Keenesburg Mine coal extraction operation can presently be assigned to one or more of the following categories:

- Acreage in previously active mining areas that has been reclaimed (includes the Long Term Spoil Area)
- Acreage backfilled and graded that has been previously seeded and growing
- Acreage designated as long-term mining or reclamation facilities (includes Access Road and SAE's)
- Acreage removed from Permit Area through approval of TR #42

Colorado Division of Reclamation, Mining and Safety

Annual Reclamation Report for Calendar Year – 2020

Kennesburg Mine	C-1981-028	Coors Energy Company
Mine Name	Permit Number	Permittee
PO Box 4030 Golden, CO 80402		
Address		

This report, required by Rule 2.04.13, is due by February 15 of each year, or other date, as agreed upon by the Division. It should include text, discussion, and maps, at a minimum, in addition to any other reclamation monitoring data as required by the approved permit. The location of the acreage reported under each land status category and year of seeding (if applicable) should be clearly identified on a map included with the report.

Land Category	Last Year's Cumulative Total (from last year's ARR)	This Calendar Year			Cumulative Total
		Acres Added (+)	Acres Subtracted (-)		
Acreage in Active Mining Areas ¹	50.00	0	50.00	=	0.00

Land Category	Last Year's Cumulative Total (from last year's ARR)	This Calendar Year			Cumulative Total
		Acres Added (+)	Acres Subtracted (-)		
Acres Disturbed ²	442.88	0	0	=	442.88
Acres Backfilled and Graded	360.09	55.55	0	=	415.64
Acres Topsoiled	360.09	55.55	0	=	415.64

Acreage in Long-term Facilities ³	Last Year's Cumulative Total (from last year's ARR)	This Calendar Year			Cumulative Total
		Acres Added (+)	Acres Subtracted (-)		
Non-Permanent Facilities	80.99	0	5.55	=	75.44
Permanent Facilities (permitted)	0	0	0	=	0
Totals	80.99			=	75.44

Acres Seeded (permanent)	Last Year's Cumulative Total (from last year's ARR)	This Calendar Year			Cumulative Total
		Acres Added (+)	Acres Subtracted (-)		
9 Years and Less	49.35	46.11	0	=	95.46
10 Years and Greater	171.52	0	0	=	171.52
Totals	220.87			=	220.87

Bond Release	Last Year's Cumulative Total (from last year's ARR)	This Calendar Year			Cumulative Total
		Acres Added (+)	Acres Subtracted (-)		
Phase I Released	313.98	0	0	=	313.98
Phase II Released	272.07	0	0	=	272.07
Phase III Released	263.70	0	0	=	263.70

¹Includes pits, topsoil stripped areas in advance of pits, and spoil not backfilled and graded

²Surface Mine Acres Disturbed = B&G + Long-Term Facilities + Active Mining Areas; Underground Mine Acres Disturbed = B&G + Long-Term Facilities; Separately-permitted Loadouts = B&G + Long-Term Facilities

³Includes haul, access and light-use roads, temporary dams and impoundments; permanent dams and impoundments; diversion and collector ditches, water and air monitoring sites; topsoil stockpiles; overburden stockpiles; repair, storage and construction areas; office area, repair shops, and parking; coal stockpiles, loading, and processing areas; railroads; coal conveyors; refuse piles and coal mine waste impoundments; head-of-hollow fills; valley fills; ventilation shafts and entryways; and non-coal waste disposal area (garbage dumps and coal combustion by-products disposal areas).

February 8, 2019

MASS BALANCE

CEC stopped accepting fly and bottom ash for disposal following 2016 and no ash was disposed of in 2020. Reclamation work has been completed. All overburden material from the Long-Term Spoil Area was previously used as fill for the remaining portion of the B-Pit, and as the 6-foot final cover over the top layer of ash in the filled area of the B Pit. No additional overburden was placed in 2020. The 2019 to 2020 topo shows that there is no remaining topsand to be removed and placed for reclamation. No mine waste rock was delivered to the Keenesburg site for disposal during the year. In 2020, the reclamation activities included the final placement of topsand material, seeding approximately 55.55 acres (Areas 43, 38, 35, and 36), and continuing to maintain the quality of the revegetation.

Remaining B-Pit Airspace Volume 0 BCY (final reclamation contours achieved)

Remaining A-Pit Airspace Volume 0 BCY (final reclamation contours achieved)

[A-PIT AND B-PIT ARE CLOSED]

Long-Term Spoil Remaining on Site 0 BCY

Topsand Stockpiled on Site 0 BCY

Review of 2003 versus 2008 Topographic Surfaces

Since reliability of the topographic map work is essential to most activities relative to reclamation, it is important to build reliability into this database. In 2003 through 2005, CEC had the site flown and contoured at 2-foot intervals in the disturbed “active reclamation” areas, as opposed to the 5-foot interval used prior to 2003. For 2006 and after, the entire site has been flown and contoured at the 2-foot interval. This more detailed topographic mapping has resulted in consecutive years of more accurate elevation mapping and better estimates of the volumes of materials used and their placement. CEC has concluded that the expanded 2-foot contour interval mapping for the entire site is a long-term benefit worth the additional investment.

Review of 2011, 2012, and 2013 Topographic Surfaces

In 2012, CEC had the site resurveyed and new control points added for future mapping and volume calculations. The new survey also moved the coordinate system to State Plane coordinates from the previously used local coordinates, however the volumes for 2012 were still calculated based on the local grid system. In 2013, and in subsequent mapping events, the state plane coordinate system alone was used to prepare the surfaces and calculate volumes to ensure mapping activities into the future more accurately estimate the volumes of materials used and their placement and more

accurate comparisons for future activities. This change from local to state plane coordinate system resulted in a change in elevation across the site which also results in a recalculated volume of materials. The following note has been added to each drawing to explain the change:

The October 2012 Aerial survey of Keenesburg Mine was compiled and triangulated on Colorado State Plane North (surface) and reprojected to Local Mine datum using follow report:

Horizontal Reprojection to Local Mine Datum:

Translation north: -1282156.5640 ft

Translation east: -3240307.3930 ft

Rotation: 0°01'39.45"

Origin north: 1318616.5640 ft

Origin east: 3280875.3930 ft

Scale factor: 1.00148829949

Vertical Reprojection to Local Mine Datum:

Note: there is a vertical plane between the New Vertical Datum and Local Mine Datum.

The following points where best fit to match Local Mine Datum.

X 36620.749 Y 28971.406 -3.834 ft at power pole

X 36498.977 Y 36412.435 -0.25 ft at control point 1101

X 40568.000 Y 36460.000 1.273 at control point 1103

X 41733.435 Y 28217.937 -1.834 ft at power pole

In 2013, and in subsequent mapping events, the flyover was mapped in state plane coordinates to match the 2012 change. Additionally, the volume calculations were conducted using Carlson software, arguably more accurate software than the previously used AutoCAD Land Development software (see note below). The two changes together result in a more accurate assessment of the remaining airspace for filling and soils available for use as cover during reclamation.

Computer-Aided Drafting System Software Explanation

As noted above, the volumes for the 2020 AHR Report were computed using the Triangulation by Two Surface Volumes method provided in the Carlson Software programs rather than the previously used AutoCAD Land Development Desktop software. Carlson software, arguably, results in more accurate volume calculations. These methods calculate faster in most cases than other methods and are the most accurate because it uses true TIN to TIN prismatic volumes. The Triangulation method re-triangulates a new surface based on the points from both surfaces (TIN). It uses the points from both surfaces (TIN), as well as any location where the triangle edges between the two surfaces cross. The Triangulation method then calculates the new surface elevations based on the difference between the elevations of the two surfaces.

PRECIPITATION DATA 2020

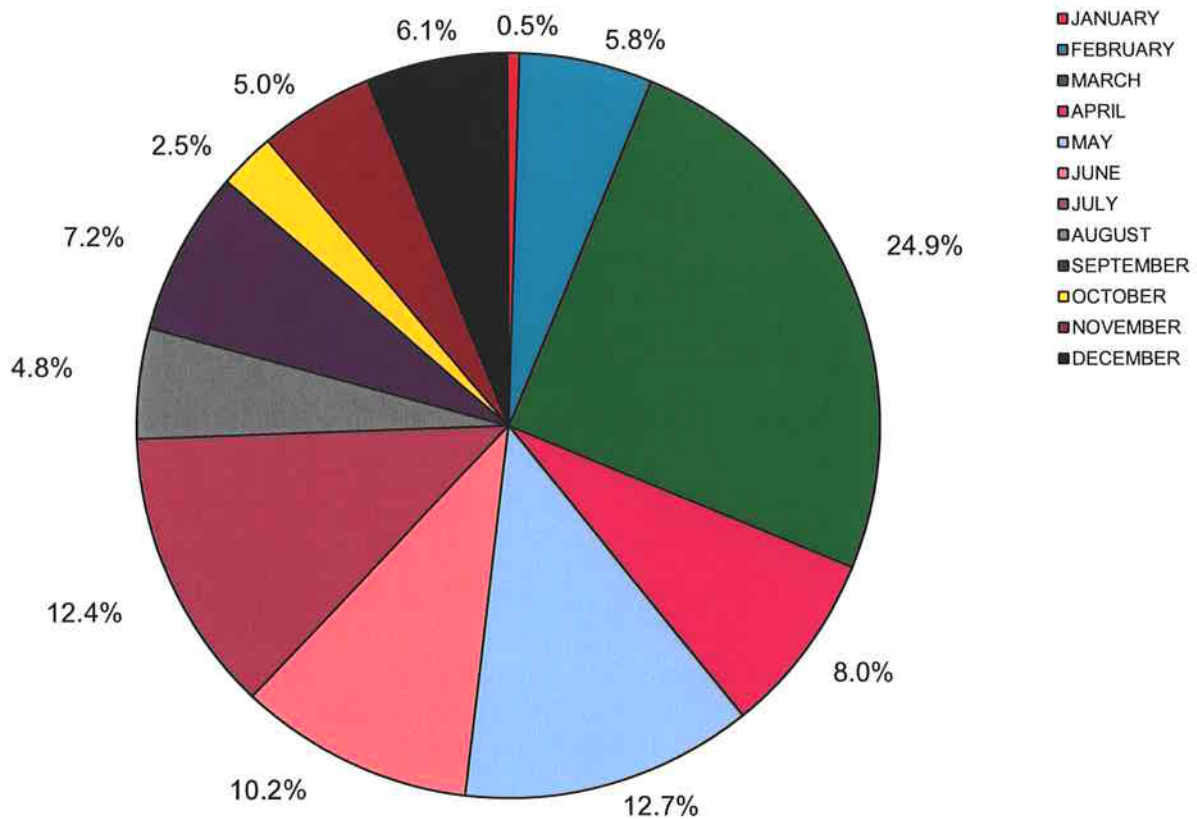
PRECIPITATION KEENESBURG MINE

Month	DAY 2020	AMOUNT	TYPE	POND LEVEL	YTD
January	27	0.05	Rain/Snow		0.05
January Total		0.05			
February	4	0.06	Snow		0.11
February	7	0.03	Snow		0.14
February	10	0.07	Snow		0.21
February	12	0.23	Snow		0.44
February	18	0.13	Snow		0.57
February	19	0.05	Snow		0.62
February Total		0.57			
March	1	0.09	Snow		0.71
March	8	0.60	Rain		1.31
March	19	1.50	Rain/Snow		2.81
March	27	0.25	Snow		3.06
March Total		2.44			
April	18	0.78	Snow		3.84
April Total		0.78			
May	2	0.21	Rain		4.05
May	11	0.14	Rain		4.19
May	14	0.29	Rain		4.48
May	24	0.60	Rain		5.08
May Total		1.24			
June	6	0.08	Rain		5.16
June	9	0.75	Rain		5.91
June	24	0.17	Rain		6.08
June Total		1.00			
July	4	0.37	Rain		6.45
July	9	0.40	Rain		6.85
July	24	0.44	Rain		7.29
July Total		1.21			
August	3	0.47	Rain		7.76
August Total		0.47			
September	7	0.70	Rain/Snow		8.46
September Total		0.70			
October	26	0.24	Snow		8.70
October Total		0.24			
November	10	0.05	Snow		8.75
November	24	0.17	Rain		8.92
November	25	0.27	Snow		9.19
November Total		0.49			
December	1	0.03	Rain		9.22
December	11	0.07	Snow		9.29
December	12	0.09	Snow		9.38
December	13	0.17	Snow		9.55
December	15	0.08	Snow		9.63
December	29	0.16	Snow		9.79
December Total		0.60			
Grand Total		9.79			

2020 MONTHLY PRECIPITATION

<u>MONTH</u>	<u>MONTHLY TOTAL</u>	
JANUARY	0.05	0.5%
FEBRUARY	0.57	5.8%
MARCH	2.44	24.9%
APRIL	0.78	8.0%
MAY	1.24	12.7%
JUNE	1.00	10.2%
JULY	1.21	12.4%
AUGUST	0.47	4.8%
SEPTEMBER	0.70	7.2%
OCTOBER	0.24	2.5%
NOVEMBER	0.49	5.0%
DECEMBER	<u>0.60</u>	<u>6.1%</u>
	<u>9.79</u>	100.0%

2020 PRECIPITATION (BY PERCENT)



PERMIT ACTIVITY SUMMARY FOR 2020

<u>Minor Revisions</u>	<u>Approved</u>	<u>Description of Revision</u>
MR-48	Ongoing	Modification to B-pit boundardy

<u>Technical Revisions</u>	<u>Approved</u>	<u>Description</u>
NA		

<u>"Other"</u>	<u>Approved</u>	<u>Description</u>
SL-10	Ongoing	Phase Change

