TRI-STATE GENERATION AND TRANSMISSION ASSOCIATION, INC.
HEADQUARTERS: P.O. BOX 33695 DENVER, COLORADO 80233-0695 303-452-6111

December 2, 2020

Mr. Zach Trujillo
Environmental Protection Specialist
Colorado Division of Reclamation, Mining & Safety
Department of Natural Resources
1313 Sherman Street, Room 215
Denver, CO 80203

RE: Colowyo Coal Company L.P.
Permit No. C-1981-019
Minor Revision No. 227
Water Monitoring Program

Dear Mr. Trujillo,

Tri-State Generation and Transmission Association Inc. (Tri-State), is the parent company to Axial Basin Coal Company, which is the general partner to Colowyo Coal Company L.P. (Colowyo). Therefore, Tri-State on behalf of Colowyo is submitting minor revision 227 (MR-227) to Permit No. C-1981-019.

MR-227 corrects typographically errors in Colowyo's surface and groundwater monitoring program for laboratory parameters, and revises the annual monitoring to quarterly for groundwater sampling. Groundwater sampling at Colowyo has always occurred on a quarterly basis as reported in the annual hydrology report.

Included in this minor revision is a change of index sheet to ease incorporation of this minor revision into the permit document. If you should have any additional questions or concerns, please feel free to contact Tony Tennyson at (970) 824-1232 at your convenience.

Sincerely,

DocuSigned by:
Daniel Casiraro
B70D69F114324DE...

Daniel J. Casiraro
Senior Manager
Environmental Services

DJC:TT:der

Enclosure

cc: Jennifer Maiolo (BLM-LSFO)
Chris Gilbreath (via email)
Tony Tennyson (via email)
Angela Aalbers (via email)
File: C. F. 1.1.1.207 - G471-11.3(21)d

CHANGE SHEET FOR PERMIT REVISIONS, TECHNICAL REVISION, AND MINOR REVISIONS

Mine Company Name: **Colowyo Coal Company**
Permit Number: **C-1981-019**
Date: **December 1, 2020**
Revision Description: **MR-227 Water Monitoring Program**

Volume Number	Page, Map or other Permit Entry to be REMOVED		Page, Map or other Permit Entry to be ADDED		Description of Change
1					No Change
2A					No Change
2B					No Change
2C					No Change
2D					No Change
2E					No Change
3					No Change
4					No Change
5A					No Change
5B					No Change
6					No Change
7					No Change
8					No Change
9					No Change
10					No Change
12					No Change
13					No Change
14					No Change
15	Rule 4 Page 8 through Rule 4 Page 13 (6 pages)		Rule 4 Page 8 through Rule 4 Page 13 (6 pages)		Section 4.05.13 has been updated to correct typographically errors which caused a pagination shift.
16					No Change
15					No Change
17					No Change
18A					No Change
18B					No Change
18C					No Change

CHANGE SHEET FOR PERMIT REVISIONS, TECHNICAL REVISION, AND MINOR REVISIONS

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Volume Number	Page, Map or other Permit Entry to be REMOVED		Page, Map or other Permit Entry to be ADDED		Description of Change
18D					No Change
19					No Change
20					No Change
21					No Change
22					No Change

4.05.13 Surface and Groundwater Monitoring

Colowyo will report discharges associated with its CDPS permit (sediment pond discharges) in accordance with the Clean Water Act of 1977 on a quarterly basis to the Colorado Department of Public Health and Environment. Surface water and groundwater monitoring data (monitoring locations listed in the tables below) is reported to the Division in an annual hydrology report. Annual hydrologic reports for the period of January 1st through December 31st will be submitted to the Division by April 1st of the following year.

Colowyo monitors the the following sites:

Sedimentation Ponds – Discharges associated with the sediment ponds will be monitored as required under Colowyo's CDPS Permit which is issued by the Colorado Department of Public Health and Environment. Colowyo will measure the quantity and quality of discharges from the permit area in compliance with the CDPS permit requirements. A copy of Colowyo's CDPS permit is available onsite for review as necessary.

At various times, Colowyo may obtain and discharge water under a CDPS minimal discharge permit. In the event that water is discharged under a minimal discharge permit, Colowyo will report as required by the CDPS permit.

Surface Water - Eleven surface water sites will be monitored because of mining activity at Colowyo. These points include five locations along Good Spring Creek, Taylor Creek, Jubb Creek, Little Collom Gulch, and Collom Gulch. Field parameters and laboratory anaylsis are gathered each quarter.

Monitoring Type	Monitoring Location	Monitoring Frequency	Quarterly Field Parameters	Quarterly Laboratory Parameters
Surface Water	Upper Collom Gulch (UCG)[1]	Quarterly	Flow from Parshall Flume. See List Below	See List Below.
Surface Water	Lower Collom Gulch (LCG)[2]	Quarterly	Flow from Parshall Flume. See List Below.	See List Below.
Surface Water	Lower Little Collom Gulch (LLCG)[3]	Quarterly	Flow from Parshall Flume. See List Below.	See List Below.
Surface Water	West Fork of Jubb Creek (WFJC)[4]	Quarterly	Flow from Parshall Flume. See List Below	See List Below.
Surface Water	Confluence of Jubb Creek (CJC)[5]	Quarterly	Flow from Parshall Flume. See List Below	See List Below.
Surface Water	Lower Taylor Creek (LTC)[6]	Quarterly	Flow from Parshall Flume. See List Below	Flow from Parshall Flume. See List Below
Surface Water	Lower West Fork Good Spring Creek (LWFGSC)[7]	Quarterly	Flow Only taken from Parshall Flume. Volume added to EFGSC measurement to apply to actual flow for NUGSC.	Flow Only taken from Parshall Flume. Volume added to EFGSC measurement to apply to actual flow for NUGSC.
Surface Water	East Fork Good Spring Creek (EFGSC)[8]	Quarterly	Flow Only taken from Parshall Flume. Volume added to LWFGSC measurement to apply to actual flow for NUGSC.	Flow Only taken from Parshall Flume. Volume added to LWFGSC measurement to apply to actual flow for NUGSC.
Surface	Upper West	Quarterly	Flow from Parshall	Flow from Parshall Flume.

Water	Fork Good Spring Creek (UWFGSC)[9]		Flume. See List Below	See List Below
Surface Water	New Upper Good Spring Creek (NUGSC)[10]	Quarterly	See List Below. Flow estimated by combining measurements taken from LWFGSC & EFGSC.	See List Below. Flow estimated by combining measurements taken from LWFGSC & EFGSC.
Surface Water	Lower Good Spring Creek (LGSC)[11]	Quarterly	Flow from Parshall Flume. See List Below	Flow from Parshall Flume. See List Below

1. Upper Collom Gulch (UCG) represents the water quality conditions in Collom Gulch upstream of the Collom Lite mining area. No impact on flow or water quality at UCG is anticipated.
2. Lower Collom Gulch (LCG) represents the conditions in Collom Gulch downstream of mining impacts. No impact on flow or water quality at UCG is anticipated.
3. Lower Little Collom Gulch (LLCG) represents the conditions in Little Collom Gulch downstream of all mining disturbances. Because Little Collom Gulch is ephemeral, and the mining area extends nearly to the headwaters, no upstream monitoring location can be established.
4. West Fork of Jubb Creek (WFJC) represents conditions in the Jubb Creek watershed adjacent to the mining disturbance.
5. Confluence of Jubb Creek (CJC) represents the aggregate water quality in the Jubb Creek basin, downstream of potential mining impact areas.
6. Lower Taylor Creek (LTC) represents the water quality conditions of Taylor Creek directly downstream of the South Taylor mining area and immediately prior to the confluence with Wilson Creek and immediately downstream of the Gossard Loadout.
7. Lower West Fork Good Spring Creek (LWFGSC) represents this tributary after potential impacts caused by South Taylor mining.
8. East Fork Good Spring Creek (EFGSC) represents the upstream, undisturbed background condition of the East Fork Good Spring Creek.
9. Upper West Fork Good Spring Creek (UWFGSC) represents the upstream, undisturbed background condition of the West Fork Good Spring Creek.
10. New Upper Good Spring Creek (NUGSC) represents the water quality of Good Spring Creek downstream of the confluence of the east and west forks of the creek and downstream of the South Taylor mining area.
11. Lower Good Spring Creek (LGSC) represents the water quality downstream of the South Taylor and existing mining areas.

Quarterly Surface Water Field Parameters

Temperature	Flow	pH	Conductivity

Quarterly Surface Water Laboratory Parameters

pH	Conductivity @ 25ºC	Total Dissolved Solids	Total Suspended Solids
Calcium (Ca^{+2})^{D}	Magnesium (Mg^{+2})^{D}	Ammonia (NH_3)^{D}	Nitrate-Nitrite^{D}
Sodium (Na^{+})^{D}	Sulfate (SO_4^{-})^{D}	Arsenic (As)^{TR}	Iron - Total^{T}
Mercury (Hg)^{TR}	Manganese (Mn)^{TR}	Selenium (Se)^{TR}	Zinc (Zn)^{TR}
Phosphorus (P)^{T}	Lead (Pb)^{TR}	Bicarbonate (HCO_3)^{D}	
D = Dissolved T = Total TR = Total Recoverable			

Prior to mining at Lower Wilson, the following three surface water monitoring sites will be added to the sampling schedule:

1. Upper Wilson Creek (UWC) represents water quality upstream of all mining impacts.

2. Upper Middle Wilson Creek (UMWC) represents water quality downstream of the proposed Lower Wilson mining area.
3. Lower Wilson Creek (LWC) represents water quality immediately upstream of the confluence with Taylor Creek.

Groundwater – Eleven valley fill groundwater sites and one deep groundwater well will be monitored as a result of mining activity at Colowyo. Please refer to Exhibit 26, Item 1 for additional details regarding the wells in the Collom Area. Field parameters and laboratory anaylsis are gathered each quarter.

Monitoring Type	Monitoring Location	Monitoring Frequency	Quarterly Field Parameters	Quarterly Parameters
Valley Fill Groundwater	MC-04-01[1]	Quarterly	Water level, Temperature, pH, Conductivity	See Below
Valley Fill Groundwater	MC-04-02[2]	Quarterly	Water level, Temperature, pH, Conductivity	See Below
Valley Fill Groundwater	MLC-04-01[3]	Quarterly	Water level, Temperature, pH, Conductivity	See Below
Valley Fill Groundwater	MJ-95-01[4]	Quarterly	Water level, Temperature, pH, Conductivity	See Below
Valley Fill Groundwater	MJ-95-03[5]	Quarterly	Water level, Temperature, pH, Conductivity	See Below
Valley Fill Groundwater	Gossard Well[6]	Quarterly	Water level, Temperature, pH, Conductivity	See Below
Valley Fill Groundwater	A-6 Well[7]	Quarterly	Water level, Temperature, pH, Conductivity	See Below
Valley Fill Groundwater	North Good Spring Well[8]	Quarterly	Water level, Temperature, pH, Conductivity	See Below
Valley Fill Groundwater	MT-95-02[9]	Quarterly	Water level, Temperature, pH, Conductivity	See Below
Valley Fill Groundwater	A-7[10]	Quarterly	Water level, Temperature, pH, Conductivity	See Below
Valley Fill Groundwater	A-8[11]	Quarterly	Water level, Temperature, pH, Conductivity	See Below
Groundwater Well	Trout Creek Well[12]	Quarterly	Water level, Temperature, pH, Conductivity	See Below

1. MC-04-01 – Located in the Collom Gulch valley fill, this site represents the condition of the Collom Gulch valley-fill aquifer adjacent to the Collom Pit.
2. MC-04-02 – Located in the Collom Gulch valley fill, this site represents the condition of the Collom Gulch valley-fill aquifer downgradient of the Collom Pit. This location is additionally designated as a "Point of Compliance" well for valley fill groundwater monitoring purposes.
3. MLC-04-01 – Located in the Lower Collom Gulch valley fill, this site will be located north of the temporay spoils pile in Lower Collom Gulch. This location is additionally designated as a "Point of Compliance" well for valley fill groundwater monitoring purposes.
4. MJ-95-01 – Located in the West Fork Jubb Creek valley fill, this site represents the condition of the West Fork Jubb Creek valley fill aquifer adjacent to the northeast (downgradient) side of the Collom Pit. This location is additionally designated as a "Point of Compliance" well for valley fill groundwater monitoring purposes.
5. MJ-95-03 - Located in the Jubb Creek valley fill just downstream of the confluence of the West and East Forks of Jubb Creek, this site represents the condition of the valley-fill aquifer downgradient of the Collom Pit.
6. Gossard Well – Located within valley fill beneath the rail loop, this site represents the condition of the valley fill aquifer in the vicinity of the Gossard Coal Loadout Facility.
7. A-6 Well – Located in the Good Spring Creek valley fill, this site represents the condition up-gradient of and current mining activities.

8. North Good Spring Well – Located in the Good Spring Creek valley fill, this site represents the down-dip condition below existing and mining activities.
9. MT-95-02 – Located in the Taylor Creek valley fill, this site represents the down-dip condition below current and mining activities.
10. A-7 – Located in the West Fork of Good Spring Creek valley fill, this site represents a potential down-dip condition below South Taylor mining activities.
11. A-8 - Located in the West Fork of Good Spring Creek valley fill, this site represents the condition up-gradient of South Taylor mining activities.
12. Trout Creek Well – Located on the northeastern edge of the Collom Pit, this site respresents the regional aquifer condition of the Trout Creek Sandstone.

Groundwater Laboratory Parameters

pH	Conductivity at 25°C	Total Dissolved Solids	Bicarbonate (HCO_3^-)^D	Calcium (Ca^{+2})^D
Magnesium (Mg^{+2})^D	Ammonia (NH_3)^D	Nitrate^D	Phosphate (PO_4^{-3} as P)^D	Sodium (Na^+)^D
Sulfate (SO_4^{-2})^D	Arsenic (As)^D	Iron (Fe)^D	Lead (Pb)^D	Manganese (Mn)^D
Mercury (Hg)^D	Selenium (Se)^D	Zinc (Zn)^D		
D = Dissolved				

Prior to mining at Lower Wilson, the following three valley fill groundwater monitoring sites will be added:

1. MW-95-01 – Located in the Wilson Creek valley fill, this site represents the upstream, undisturbed background conditions of the valley fill aquifer.
2. MW-05-03 – Located in the Wilson Creek and unnamed drainage valley fill, this site represents valley fill groundwater quality immediately downgradient from Lower Wilson.
3. MW-95-02 – Located in the Wilson Creek valley fill, this site represents the downgradient conditions below Lower Wilson and the haul road.

It is reasonable to expect potential future monitoring activities for the Lower Wilson locations to mirror those for the existing operation as it pertains to frequency and specific parameters.

Groundwater Fill Piezometers - Monitoring of the West Pit fill [ezometer and Section 16 Fill piezometer have been discontinued. The West Pit Fill and West Taylor Fill piezometers will be monitored quarterly for water levels. One additional piezometers will be installed into the toe of East Taylor Fill, once constructed, as described in Exhibit 21 Item 1.

A future spoil water monitoring well will be drilled (and water quality monitored) as identified on Map 41B in the reclaimed Collom Pit area to monitor and measure the potential development of a spoil aquifer. This location represents the lowest point in the Collom Pit.

4.05.14 Transfer of Wells

Please see Section 4.05.14 in Volume 1.

4.05.15 Water Rights and Replacment

Please see Section 4.05.14 in Volume 1 and Section 2.04.7(2) in Volume 15.

4.05.16 Dischrage of Water into an Underground Mine

This section is not applicable to the Collom Mine.

4.05.17 Postmining and Rehabilitation of Sediment Pond, Diversions, Impoundments, and Treatment Facilities

Please see Section 4.05.17 in Volume 1.

4.05.18 Stream Buffer Zones

Lands within 100 feet, or greater distance if required, of a perennial, an intermittent, or an ephemeral stream with a drainage area larger than one square mile are required to be protected under Rule 4.05.18, unless the Division specifically authorizes surface operations within the stream buffer zone. Stream buffer zones have been identified along Wilson Creek and Jubb Creek, as the drainage area reporting to these streams is larger than one square mile. Colowyo will be developing the Collom Haul Road which will be inside the stream buffer zone on both Wilson Creek and Jubb Creek.

The Collom Haul Road will cross Wilson Creek as shown on Map 25E Sheet 1. During construction Colowyo will install a round culvert, and will employ proper best management practices (BMPs) during the construction phase in accordance with Colowyo's approved stormwater management plan, Section 401 certification, and US Army Corps 404 permit..

The Collom Haul Road will also cross Jubb Creek as shown on Map 25E Sheet 1. The construction of the crossing will be similar to the Wilson Creek crossing and will utilize the same BMPs as will be installed at the Wilson Creek crossing.

As shown on Map 25E Sheet 1, the Collom Haul Road will parallel Jubb Creek. There will be one section of the haul road that will be slighty within 100 feet of the stream. As shown on Map 25E Sheet 1, at approximately Station 230+00 to 250+00 there will a slight amount of disturbance within the stream buffer zone on Jubb Creek. Proper BMPs will be employed prior to any disturbance occurring within this area and once the road construction is complete any areas that can be reclaimed will be completed as soon as possible.

Much of Little Collom Gulch will be directly impacted by the Collom Pit, the temporary spoil pile, and the Section 25 Pond (see Map 23C). The Section 25 Pond will protect the lower reaches of Little Collom Gulch that will not be disturbed during mining and reclamation. It is expected that during mining the Collom Pit will intercept and hold surface water runoff thus providing less discharge through the Section 25 Pond. Clean water diversions will be constructed above the active operations (also potentially within Little Collom Gulch) to direct surface water runoff around the disturbed areas. Once mining is complete the entire Collom Pit will be backfilled with the material stored in the temporary spoil pile and the pre-mine profile and function of Little Collom Gulch will be restored.

It is not anticipated that any of the areas that are to be disturbed within the stream buffer zones will have any long term impacts to Wilson Creek, Jubb Creek, or Little Collom Gulch due to proper use of BMPs, sediment control structures, clean water diversions, and due the fact the disturbance will be offset by reclamation. The two road crossing will be stabilized immediately following construction, and Little Collom Gulch will be restored to the premine condition when mining and reclamation activies are complete.

No other areas within the Collom disturbance footprint will impact any stream buffer zones.

4.06 TOPSOIL

The topsoil removal, storage, and redistribution plan for the disturbed area associated with the Collom Pit mining areas will follow the procedures described Section 2.05.3 (5) and 2.05.4 (2) (d) in this volume. Additional information regarding the topsoil resource may be found in the Collom Soils baseline survey located in Exhibit 9, Volume 13. Before the disturbance of any area, topsoil is removed and segregated from other material. Upon removal, this material is either immediately redistributed on regraded areas or stockpiled in locations shown on the Topsoil Handling Map 28C

All topsoil, as classified in section 2.04.9, is removed from areas to be affected by the surface coal mining operations. The graphical representation of the topsoil removal is shown on the Topsoil Handling Map (Map 28C). The average thicknesses for each soils series to be removed can be found on Table 2.04.9-16 as defined in Table 2.04.9-19. Removal techniques for topsoil are described in Section 2.05.3. Furthermore, please see Section 4.06 in Volume 1 for additional information regarding topsoil.

4.07 SEALING OF DRILLED HOLES AND UNDERGROUND OPENINGS

Drill holes and underground openings will be sealed in accordance with the procedures outlined in the Section 4.07 in Volume 1.